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THE JOURNAL

OF THE

ASIATIC SOCIETY

OF

BENGAL.

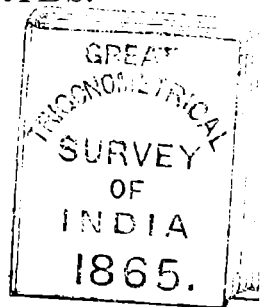
EDITED BY

THE ACTING SECRETARIES.

VOL. VIII.

JANUARY TO DECEMBER, 1839.

NEW SERIES.



"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia* will commit their observations to writing, and send them to the Asiatic Society in Calcutta; it will languish, if such communications shall be long intermitted; and will die away, if they shall entirely cease."—SIR WM. JONES.

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JOURNAL 19
OF
THE ASIATIC SOCIETY.

No. 85.—JANUARY, 1839.

ART. I.—*A Grammar of the Pashtoo, or Afghánee Language.* By
LIEUT. R. LEACH, *Bombay Engineers, Assistant on a Mission.*

To the Secretary to the Asiatic Society.

Political Dept.

SIR,—I am directed by the Honorable the President in Council to forward to you the accompanying Grammar of the Pashtoo or Afghán Language, compiled by Lieutenant Leach, for such notice as the Society may deem it to merit.

2. I am further directed to request that the Grammar in question may be returned when no longer required.

I have the honor to be,

Sir,

Your most obedient humble servant,

H. T. PRINSEP,

Secy. to the Govt. of India.

Fort William, 20th Feb. 1839.

This language is called Afghánee or Avghánee by Persians and other foreigners, and Pashtoo, Pukhtoo, and Pastoo, severally, by the Afgháns of Candhar, Peshawar, Teerai, and by the Afreedees, Khy-beerees, &c. &c.

The language is decidedly of Sanscrit complexion, from the frequent occurrence of the ष *jh* and क् *kgh*; indeed these two letters with the Devnagary उ compose the peculiarity of the language.

The difference between the Peshawar and Candhar dialect is, that in the former the Persian \dot{c} is used, when in the latter the Sanscrit \dot{c} occurs.

The Candharee is reckoned the purest dialect ; and when correctly spoken, resembles in the plaintiveness of its tones the peculiar dialect of Ireland.

The Alphabet is as follows.

<i>Afghánee.</i>	<i>Devna-</i>	<i>English.</i>	<i>Pronunciation.</i>
	<i>gary.</i>		
ا	अ	a	as the second <i>a</i> in parable,
ب	ब	b	as the English,
پ	प	p	Ditto, ditto,
ت	त	t	as the Continental <i>t</i> ,
ث		<i>th</i>	as <i>th</i> in things,
ط	ट	t	as the English <i>t</i> ,
ج	ज	j	as the English <i>j</i> ,
چ	च	ch	as the English,
ح		h	as the aspirated <i>h</i> ,
خ		<i>kh</i>	as <i>ch</i> in the Scotch loch,
ز		z	the Afghan <i>z</i> used for coupling,
د	द	d	the Continental <i>d</i> ,
ذ		<i>th</i>	as <i>th</i> in those
ر	ड	d	the harsh English <i>d</i> ,
ر	र	r	the English <i>r</i> ,
ر	ड	d	the peculiar Maratha <i>d</i> ,
ز		z	the English <i>z</i> ,
ژ		j	the French <i>j</i> in jour,
س	स	s	the English <i>s</i> ,
ش	श	sh	the English <i>sh</i> ,
ښ	ष	jh	unknown in English,
ص		s	the Arabic <i>dwàd</i> ,
ض		dz	the Arabic <i>dzwàd</i> ,
ط		t	the Arabic <i>t</i> ,

The Alphabet (Continued.)

<i>Afghánee.</i>	<i>Devna-</i>	<i>English.</i>	<i>Pronunciation.</i>
	<i>gary.</i>		
ظ	z ... the Arabic z,
ع	ɤX ... the Arabic mark for guttural vowels,
غ	gh ... the Persian guttural,
ف	...	फ	f ... the English f,
ق	k ... the harsh English k,
ک	...	क	k ... the English k,
گ	...	ग	g ... the English g,
ل	...	ल	l ... the English l,
م	...	म	m ... the English m,
ن	...	न	n ... the English n,
و	...	व	w ... the English w, or v,
ه	...	ह	h ... the English h,
ي	...	य	y ... the English y,
س	...	क्ष	kgk ... the Sanscrit.

The same story is told of the Afghán language, that the Mah-rattas tell of the Canarese, viz., That a certain king sent his vizier to collect all the vocabularies and dialects of the earth; on the vizier's return he proceeded to quote specimens before his royal Master: when he came to speak of the Afghánee dialect, he stopped, and producing a tin pot containing a stone, began to rattle it. The king in surprise asked the meaning of this proceeding. The vizier said that he had failed to get a knowledge of the Afghánee language, and could only describe it by rattling a stone in a tin pot.

It is also said, that Mahammad, the Arabian prophet, gave it as his opinion that the Afghánee was to be the language of the infernal regions, as Arabic was to be that of heaven.

In the comparison of languages, in which Arabic is called science, (*ilm*); Turkish accomplishment, (*hunar*); Persian sugar; Hindustanee salt; the Afghán is complimented with the appellation of the "braying of an ass."

An Afghán is immediately discovered by another by the correctness with which he distinguishes between a masculine and feminine noun.

Declension of a Noun Masculine.

	<i>Singular.</i>	<i>Plural.</i>
Nominative	ás, a horse	asán, horses
Genitive	da ás, of a horse	da asáno, of horses
Accusative & Dative	} ás ta, a horse	asánoo ta, horses
.....		
Ablative	la ás, from a horse	la asánoo, from horses

Declension of a Noun Feminine, ending in a Vowel.

	<i>Singular.</i>	<i>Plural.</i>
Nominative	aspá, a mare	aspe, mares
Genitive	dá aspá, of a mare	da aspo, of mares
Accusative & Dative	} aspeta, a mare	aspota, mares
.....		
Ablative	la aspe, from a mare	la aspo, from mares

Examples of forming the Feminine from the Masculine Noun.

<i>Masculine.</i>	<i>Feminine.</i>
spe, dog	spai, a bitch
khar, a donkey	khara, a she-ass
buz, a he-goat	buza, a she-goat
gid, a fat-tailed ram	gida, a female sheep
orará, nephew	orerá, niece
tara, uncle	tarala, aunt

Declension of a Compound Noun.

	<i>Singular.</i>	<i>Plural.</i>
Nominative	gha sadai, a good man	gha sadee, good men
Genitive	da gha sade, of a good man	da gha sadee, of good men
Acc. & Dat.	gha sade ta, a good man	gha sadota, good men
Ablative	la ghasade, from a good man	la gha sadee, from good men

Declension of the 1st Personal Pronoun.

Nom.	za, I	muj, we
Gen.	zmá, mine.	zmuj, ours
Acc. & Dat.	málá, me.	mujla, us
Abl.	la má, from me.	la muj, from us

Declension of the 2nd Personal Pronoun.

	<i>Singular.</i>		<i>Plural.</i>
Nom.	ta,	thou	táso, ye
Gen.	stá,	thy	istáso, yours
Acc. & Dat.	tálá,	thee	tásolá, you
Abl.	la tá,	from thee	la taso, from you

Declension of the 3d Personal Pronoun—proximate.

Nom.	daghá,	this	dagho, these
Gen.	da de,	these	da deev, of these
Acc. & Dat.	dela,	this	deevla, these
Abl.	la de,	from this	la deev, from these

Declension of the 3rd Personal Pronoun—remote.

Nom.	haghá,	that	hagho, those
Gen.	da haghá,	of that	da hagho, of those
Acc. & Dat.	haghá ta,	that	hagho ta, those
Abl.	la haghá,	from that	la hagho, from those

Declension of the Reflective Pronoun.

Nom.	Pakhpul,	I myself
Gen.	Akhpul,	my own
Acc. & Dat.	...	wanting
Abl.	...	ditto

Declension of the Interrogative Pronoun—animate.

	<i>Singular.</i>	
Nom.	sok,	who
Gen.	da chá,	whose
Acc. & Dat.	chá ta,	who
Abl.	la chá,	from whom

Declension of the Interrogative Pronoun—inanimate.

Nom.	sa,	what
Gen.	a sa,	of what
Acc. & Dat.	sa la,	why
Abl.	la sa,	from what

Cardinal Numbers.

1	you	11	you las
2	dwá	12	dwá las
3	dare	13	dyar las
4	salor	14	swár las
5	pinz	15	pinz las
6	shpaj	16	shpadas
7	avo	17	olas
8	atha	18	athlas
9	nah	19	nolas
10	las	20	shil
21	you visht	31	you dergh
22	do visht	32	do dergh
23	dre visht	33	dre dergh
24	salerisht	34	salor dergh
25	pinzvisht	35	pinz dergh
26	shpaj visht	36	shpaj dergh
27	ovisht	37	o,o dergh
28	athvisht	38	ath dergh
29	novisht	39	nah dergh
30	dergh	40	salweght
41	you salweght	51	you pinzost
42	doo salweght	52	doo pinzost
43	dre salweght	53	dre pinzost
44	salor salweght	54	salor pinzost
45	pinz salweght	55	pinz pinzost
46	shpaj salweght	56	shpaj pinzost
47	o,o salweght	57	o,o pinzost
48	ath salweght	58	ath pinzost
49	nah salweght	59	nah pinzost
50	pinzast	60	shpeta
61	you shpeta	71	you avyà
62	doo shpeta	72	doo avyà
63	dre shpeta	73	dre avyà
64	salor shpeta	74	salor avyà
65	pinz shpeta	75	pinz avyà
66	shpaj shpeta	76	shpaj avyà
67	o,o shpeta	77	o,o avyà
68	ath shpeta	78	ath avyà
69	nah shpeta	79	nah avyà
70	avyà	80	atyà

81	you atyá	91	you nawee
82	doo atyá	92	doo nawee
83	dre atyá	93	dre nawee
84	salor atyá	94	salor nawee
85	pinz atyá	95	pinz nawee
86	shpaj atyá	96	shpaj nawee
87	oowa atyá	97	oowa nawee
88	ath atyá	98	ath nawee
89	nah atyá	99	nah nawee
90	nawee	100	sil
1000zil			1,00,000 lakh
			kror 1,00,00,000

Ordinal Numbers.

1st	yawam	6th	shpajam
2nd	doowam	7th	owam
3rd	dreyam	8th	atham
4th	salaram	9th	naham
5th	pinzam	10th	lasam, &c.

*Conjugation of the Auxiliary Verb (masculine.)
Indicative Mood.*

Present Tense.

Singular.

Plural.

1st Person,	zaiyam, I am	muj yoo, we are
2nd	taiye, thou art	táseyást, you are
3rd	hagha, dai, he is	haghádee, they are

Perfect Past Tense.

Singular.

Plural.

1st Person,	zawum, I was	muj woo, we were
2nd	do ta we, thou wast	tási wást, you were
3rd	do haghá woo, he was	haghá woo, they were

Imperfect Past Tense.

Singular.

Plural.

1st Person,	za kedam, I was being	muj kedoo,
2nd	do ta kede	tási kedást,
3rd	do haghá keda	haghá keda,

Pluperfect Past Tense—HAD BEEN.

1st Person	za sawai wam	muj siwee woo
2nd	do ta suwai wee	tasi siwee wást
3rd	do haghá sawai woo	hagha siwee woo

Future Tense—SHALL BE.

1st Person,	zakeajam	muj keajam
2nd do	ta keaja	tasi keajai
3rd do	haghá keajee	hagho keajee

Imperative Mood.

ta sa, be thou tasi sai, be you.

*Subjunctive Mood.**Present Tense.—MAY BE.*

1st Person,	zawam	muj woo
2nd do	ta we	tasi wást
3rd do	haghá see	hagho soo

The Relative Conjugation IF is expressed by KA.

Perfect Past Tense.

1st Person,	za wai	muj wai
2nd	ta wai	tasi wai
3rd	haghá wai	hagho wai

Infinitive Mood KEDA, "BEING," OF "TO BE."

Past Participle, SAWAI WOO, "BEEN."

Conjugation of the Verb WAIYIL, "to speak."

*Present Tense.**Singular.**Plural.*

1st Person,	za waiyam	muj waiyoo
2nd do	ta wai	tasi waiya'st
3rd do	hagha wai	hagho wai

The feminine gender only changes the 1st Person Singular, as a woman says, *za waiyama*.

Perfect Past Tense.

1st Person,	ma' waiyil	muj waiyil
2nd do	ta' waiyil	ta'si waiyil
3rd do	hagha' waiyil	hagho waiyal

Imperfect Past Tense.

1st Person,	ma' waiyil	muj waiyil
2nd do	ta' waiyil	ta'si waiyil
3rd do	hagha' waiyil	hagho waiyil

Pluperfect Past Tense.

1st Person, má waiyalaiwo	muj waiyaleewoo
2nd do. tá wo waiyil	tási waiyaleewoo
3rd do. haghá waiyalaiwo	hagho waiyalai woo

*Future Tense.**Singular.*

1st Person, za bawowaiyam
2nd ditto ta bawowaiye
3rd ditto haghá bawowai

Plural.

muj bawowáyoo
tási bawowaiyast
hagho bawowai

Imperative Mood.

ta wawáya	tási wowáyast
-----------	---------------

*Subjunctive Mood,**Present Tense.*

1st za wowáyam	muj wowáyoo
2nd ta wowáye	tási wowáyast
3rd haghá wowáyee	hagho wowáyee

Perfect Past Tense.

1st ma waiyalaiwoo	muj waiyaleewoo
2nd tá waiyalaiwoo	tási waiyaleewoo
3rd haghá waiyalaiwoo	hagho waiyaleewoo

Adverbs, Post- and Pre-positions, Conjunctions, &c. &c.

porta, above	sarangá, how
kghata, below	bul jalá, again
danana, in	os, now
dabánde, out	biyá, afterwards
dilta, here	makh á mukh, in front
halta, there	bas, enough
de khawa, on this side	ham, also
haghá khawá, on that side	ho, yes
doudande, before	nah, no
douroosta, behind	makava, don't
jirr, quickly	ka, if
ro ro, slowly	pára, sake of
man rwaz, to-day	wodya, gratis
paroon, yesterday	az, than
sabhá rwaz, to-morrow	o, hollá
ba, till	sarra, with

mudám, always
kala, when
cherta, where

wo, and
ya, or
belá, without
wale, but

Vocabulary of Nouns.

rwaz, day,
shpa, night,
halak, boy,
zoe, son,
jilai, girl,
loor, daughter,
peghla, maid,
plár, father,
mor, mother,
uror, brother,
khor, sister,
oba, water,
or, fire,
dode, bread,
ghahar, city,
kalai, hamlet,

ás, horse,
aspá, mare,
osai, deer,
khar, ass,
ghàtar, mule,
behan, colt,
yaboo, poney,
chirg, fowl,
chirga, hen,
kaftara, pigeon,
gidada, fox,
chaghál, jackal,
koj, hyena,
spai, dog,
pishee, cat,
muj'ak, mouse,

yaj, bear
bizo, monkey
sarkaza, hog
bza, she-goat
waz gadai, he-goat
murghumai, kid
mej ewe
maj, ram
warg maj, fighting ram
dusherlá, middling ram
psheerlai, ram
wuchkulai, ram
urai, lamb
ghwa, cow
ghwáyai, bull
sukhwanda calf

kijde, tent wóllen
kor, house
khoona, room
ghole, a yard
wanai, tree
bootai, bush
tirkh, brushwood
már, snake
tá ooz, peacock
zirká, Greek partridge
huja, leak
gazir, carrot
malkhaze, thyme
anár, pomegranate
hindwáná, water melon
mana, apple
meda, man
ghaza, woman
mándiná, female
náreená, male

chughuka, sparrow
oogh, camel
ghanum, wheat
wurijee, rice
urbushee, barley
nakhud, pulse
phascolus, maximus
pyáz, onion
tanzire, partridge
kurak, quail
thalla, sole of foot
warghawe, palm of hand
punda, heel
padkai, ancle
pandai, calf
zangoon, knee
khwale, perspiration
pghá, leg
waroon, thigh
nas, belly

málgá, salt	kunatai, bullock
tel, oil	tatar, beast
ghodee, ghee	lás, hand
shakar, sugar	oja, shoulder
marach, pepper	sha, back
largai, wood	ghádá, neck
kuchee, butter	shund, lip
hagge, an egg	ghágh, tooth
shide, milk	zinne, chin
maste, curds	báarkhoo, cheek
shalumbe, butter-milk	paza, nose
lástai, pestle	sajme, nostril
khat, bedstead	stirgha, eye
tiltak, coverlid	bánoo, eye-lash
bálight, pillow	waridza, eye-brow
nihále, bed	tandai, forehead
ospana, iron	ghwaj, ear
surp, lead	partookh, trousers
mio, copper	partoogagh, breeches string
kál, year	ozgár, idle
zyad, brass	pagde, turban
myasht, month	khaj, sweet
sirazar, gold	turwá, sour
speen zar, silver	mukh, nail
tirkha, bitter	spajme, moon
garm, hot	store, star
sod, cold	wáh, woo, wind
klak, hard	garz, dust
narm, soft	zoná, light
porta, } high	tyára, darkness
boad, } high	angoor, grapes
garan, dear	oma, raw
arzán, cheap	pakha, cooked
spuk, light	shkar, horn
duroond, heavy	swa, hoof
wach, dry	changul, divided hoof
noombd, wet	wadai, wool
zulf, lock of hair	pumba, cotton
tsoonee, woman's hair	jibba, language
bret, mustacheos	ghwajai, hunger
jeera, beard	tajai, thirst
arkh, armpit	kough, shoes

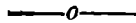
tirkhe, armpit	chaplai, slippers
kund, widow	doond, blind
oghke, a tear	gung, dumb
meda, husband	koon, deaf
ghaza, wife	god, lame with both legs
dároo, gunpowder	rást, straight
purod, grass	koj, crooked
ghalla, grain	tsappa, upset
speen, white	lewánai, mad
soor, red	khapa, angry
tor, black	ranzoor, ill
ábee, blue	starai, tired
zyad, yellow	dard, pain
sheen, green	lár, road
mahee, fish	safar, journey
ghwashe, meat	noom, name
lmar, sun	zeen, saddle
rikeboona, stirrups	kad wasai, great grandson
muloona, bridle	kosai, great great grandson
ghar, hill	zoom, son-in-law
seen, river	warindára, sister-in-law
khight, brick	orara, nephew
nikka, grandfather	orerá, niece
wurr nikka, great grandfather	tra and aka, uncle
masai, grandson	troree, aunt

Vocabulary of Verbs.

rátalal, to come	talal, to weigh
tlal, to go	ve pemawal, to measure
ráydal, to bring	pakhawal, to cook
odal, to carry away	khlas wal, } to open
pátakedal, to place	wáz wal, }
odaradil, to rise	paránatal, }
porta kawil, to raise	tadal, to blind
kgheastan, to sit	parkawal, to cut
akhistan, to take	seere kawal, to tear
wenissa, to seize	mátawal, to break
khudal, to eat	zghastal, to run
chghil, to drink	lwastan, to read
zbeghil, to suck	girzedal, to stroll
chichil, to bite	skawul, to pull
ghwkhán, to chew the cud	pákawal, to wipe

jo owal, to chew
khandil, to laugh
 jādil, to weep
 wahal, to beat
 jāgh } to call
 kawal }
 skandal, to pinch
 gandal, to sew
 beredal, to fear
 tukhedal, to cough
 teláwúl, to push
 ghakhá wal, to press
 lād eghwurzawul, to spit
 ghwul kawal, to ease one's self
 leedal and katal, to see
 tisháwul, to employ
 bázee kawal, to play
 waiyil, to speak
 wuruk kawal, to lose
 mudal, to die

purewatal, to fall
 zejal, to bring forth
 purawal, to borrow
 por warkawal, to lend
 put wal, to conceal
 ghakhauwal, to bury
 zij dedal, to tremble
 kháls wal, to loosen
 garawul, to scratch
 togawul, to pour
 pookawul, to blow
 mityaze } to make water
 kawal, }
 dakawul, to fill [ment
 jāghawul, to play on an instru-
 lirekawal, putting away
 mzaka kandan, to dig
 pághal, to sow
 waswa, to burn



Sentences and Dialogues.

The Afghán Salutation—“ROGH BOD.”

Jod e gha táze gha khushal e gha } Are you well ? quite fresh ? quite
 raghale ? } happy ? welcome ?

Answer. Jha wose pa khair wose } May you be well. May all be
 makhwár-reje. } right with you. May you ne-
 ver be badly off.

Sta noom sa de ?

What is your name ?

Ta soke ?

Who are you ?

Kum yánye ?

Who is there ?

Tási chare zai

Where are you going ?

Tási la kum zae rāgháliyást

Whence come you ?

Dwa myásht me sooeedee chi la }
 Candhára rāghale yam }

It is two months since I came
 from Candahar.

Dá lár da Shikarpoor de ?

Is this the road to Shikarpoor ?

Za khabar neyam pakhpula mu- }
 sapor yam }

I don't know, I am myself a tra-
 veller.

Lár waghaiya

Shew the road.

Tsa khabrá la Bádsháh ávaradi- }
 leeyast ? }

Have you heard any news of the
 king ?

- Wai ee chi Shikarpoor ta wara } They say he has arrived at Shi-
seda. } karpoor.
- Da Hinduwáno pa kághaz kghe } What was the news from Herat
da Harát da bábata tsa kghe- } in the Hindoo's letter ?
lawoo?
- Kshilawoo da kajar tag o da Kam- } It was written that the Persians
ran chapáw pa Farrah bándé } had retired, and that Kamran
oda Mahammad Siddeek Khán } had made a descent on Farrah,
bandee wodál. } and taken away Mahammed
Sideek Khán prisoner.
- So rwaze soo, ee dee chi Kásid la } How mány days is it since a Cos-
Loodiáne rághale de ? } sid arrived from Loodiana ?
- Ka za durwágh zam na gham pinz } If I remember right it is five days.
rwaze soo i dee }
- Wale jar ra naghale ? } Why have you not come quickly ?
- Ma psheen spareshan } I will go out riding by afternoon
prayers.
- Za be khartsa yum muwajam me } I have no money, will you give
ráka ? } me my pay ?
- Madar woka chi da hinde mudda } Wait till the bill of exchange be
poorá see } due.
- Dode zmá da para pakhaka chi } Get ready dinner for me, as I am
wujee yum chi wakhuram } hungry and have an appetite.
- Tsa bara sta zoe zma deedan lara } What's the reason your son does
ranághai ? } not come to see me ?
- Sa lara da kár na kave ? } Why don't you do that ?
- Tasta sawe ? } What is become of you ?
- Ka za spansee darkam dá shpa } If I give you ready money, what
kameesa pa tso mazdooree ba } will you take for making six
jod ke ? } shirts ?
- Da ghar moom laree ka na laree } Has this mountain a name or not ?
- Sardarán da Candahár chi de } The Sardars of Candahar when
wakht da mukadame chi da } they want to get money from
cha tsakha tsa ghwádee akhpul } any one in time of need, are in
da ourate psol wa haghá sadée } the habit of pawning their wives
ta giroje kghee dee } jewels
- Akhpul maindina biya wo poo- } They instruct their wives to get
hawee chi byá pa fand tara da- } the jewels out of pawn by a
khpul psol bidta zeenee rávdá } contrivance of their own.
- Pa Candahár ki jha ás tsa keenruet } What is the price of a good horse
laree ? } in Candahar ?
- Gha ás pa salor souwa pa lás razee } A good horse can be got for 400 Rs.
- Deráwat tso zara rupo, ee mályá } What is the revenue of Derawat
laree } in thousands ?
- Derg h zara rupo, ee mályá laree } It is a revenue of 30,000 Rs.

- Sháh Shuja chi raghalai woo Sardárán tola razá woo chi ghar warkee baghair la you Sardár Kohn Dil Khánchi waigil chi zma sar dai o da Kalá Kungre } When Shah Shuja appeared, all the Sardars were content to give up the city except Kohn Dil Khán, who said, my head with these parapets.
- Tási arvedalai dai chi da Mahammad Shah aká Shikarpoor lare raghalai dai? } Have you heard the uncle of Mahammad Sháh has arrived in Shikarpoor?

—o—

Specimen of Afghan verse from Abdul Rahman.

- Har matloob chighwaje tá, uka da rabab } When the musician turns the screw of the Rebeck
- Padá táuk jhee zma zada kandee kabab } By each turn that is made my heart is burnt.
- Chi saiye panaghma pa taránashum } When I pay attention to the tune and the tone
- Dewána sham grewantsiree most okhráb } I get mad, and tear my clothes frantic and lost.
- Hame tár hame guftar hose as arka } The strings and burthen of the song so distress me
- Chi hetsok na takat laree na tab } That none could bear it or endure it.
- Youve sáz, bulawáze da belto } Let there be music first, then the theme of absence,
- Dream shaar paraghaz ka intikháh } Third, let a poet recite his good verses,
- Tsalaram you sakeeye tar sangkghenee } Fourth, let a cupbearer be near
- Che makh na mahtáb K dilaivee na áftáb } Who has never been looked on by sun or moon—
- Da talor wáda fitne dee pa tslor kunja } These four are four traitors in four corners—
- O pinzame suráeedai da mái nab spajame wakt da noubahar o da zawanee } And the fifth be a bottle of the best wine, and the sixth the time of the new spring and youth,
- Ou owam shughal da bayazoda kitáb } And the seventh reading of albums and books.
- Chidá hoomree áfatooná sara tol shee } If all these wonders be collected together
- Turo tsok saranga zeenee kande ijtanáb } Who can deliver himself from them ;
- Chi dá hasee dilbarán par as arnaka } He who is not affected by any of these rarities
- Ya ba devee yá dcewaz dai yádaw ab } Must be either more than human, a wall or a beast.

Da tsargand bashee parhez da par- hez ga	} Here the abstinence of abstainers will be discovered
Kakádar shee pa spahade pa shráb	
Za Rahman lareeyá zohda pana ghwadam	} When they be surrounded by love and wine.
Dareeyá zohad ázáb de hamitab	
	} May God defend Rahman from hypocrisy ;
	} Hypocrisy is trouble and reproach.

(True Copy)

H. TORRENS,

(Signed) R. LEACH.

Depy. Secy. to the Govt. of India.
With the Govr. Genl.

ART. II.—SISUPA'LA BAD'HA, or death of SISUPA'LA by MA'GHA.
Translated, with Annotations, by J. C. C. SUTHERLAND, ESQ.

—o—

Book I.—The conference between KRISHNA and NA'RADA.

Salutation to the fortunate GANESA !

अथःपतिःश्रीमंतिशासितुंजगज्जगन्निवासोवसुदेवसद्गनि ।
वसन्ददर्शावतरन्तमम्बराद्विरण्यगर्भाङ्गभुवंमुनिंहरिः ॥१॥

1. HARI, husband of SRI, dwelling in the fortunate abode of VASUDEVA, to reform the world, though himself the abode of worlds, saw descending from the sky, the sage, who sprang from a portion of the being, that was conceived in the golden mundane egg.

द्विधाकृतात्माकिमयंदिवाकरोविधूमरोचिःकिमयंऋताशनः ।
गतन्तिरश्चीनमनूरुसारथेःप्रसिद्धमूर्ध्वज्ज्वलनं हविर्भुजः ।
पतत्यधोधाम विसारिसर्व्वतःकिमेतदित्याकलमीच्छितंजनैः ॥२॥

2. Is this the Sun itself parted into two orbs? Is it fire shining with light divested of smoke? The motion of the luminary whose charioteer has no legs is curvilinear. The ascent of flame is a well known property of fire. What is this, which descends diffusing light around? Thus was the sage contemplated by wonder by the people.

चयस्त्वषामित्यवधारितंपुराततःशरीरीतिविभाविताकृतिं ।
विभुर्विभक्तावयवंपुमानितिक्रमाद्भुनारदइत्यवोधिसः ॥३॥

3. The sagacious hero gradually recognized him. First, he remarked a mass of light ; then, perceived an organic shape ; next, discerned the human form ; and, lastly, knew him to be NA'RADA.

नवानधोऽधोवृहत्तःपयोधरान्समूढकर्पूरपरागपाण्डुरं ।
क्षणंक्षणोत्क्षिप्तगजेन्द्रकृत्तिनास्फुटौपमंभूतिसितेनशम्भुना ॥४॥

4. Who, gray like a heap of levigated camphor, clearly resembled for a moment (whilst close under vast fresh clouds,) SAMBHU whitened with ashes, and clad in the skin of a mighty elephant thrown over [his shoulder].

दधानमग्भोरुहकेशरद्युतीर्जटाःशरच्चन्द्रमरीचिरोचिवः ।
विपाकपिङ्गास्तुहिनस्थलीरुहोधराधरेन्द्रं व्रततीततीरिव ॥५॥

5. Who, shining like the Moon in the sultry season, and wearing braided locks, yellow as cream, and splendid like the filaments of the lotus, resembled the king of mountains covered with multitudes of twining plants that thrive in the region of snow.

पिशङ्गमौञ्जीयुजमज्जुनच्छिविशानभेणाजिनमञ्जनद्युतिं ।
सुवर्णसूत्राकलिताधराम्बरांविडम्बयन्तंसितिवाससस्तनुं ॥६॥

6. Who, brilliantly white, girt with a yellow cord made of hyacinthoid alectris, and clad in the skin of a black antelope, shining like antimony, mocked the person of the hero, conspicuous by his black apparel, fastened to a golden cord.

विहङ्गराजाङ्गरुहैरिवायतैर्हिरण्मयोर्वीरुहवल्लितन्तुभिः ।
कृतोपवीतंहिमशुभ्रमुच्चकैर्धनंवनान्तेतडितांगुणैरिव ॥७॥

7. Who, white as snow, and wearing for a scarf a string made of the fibres of climbing plants, gathered from the golden soil, and long like the down on the body of the king of birds, resembled a cloud streaked with flashes of lightning, in the season in which clouds become unfrequent.

निसर्गचित्रोज्ज्वलसूक्ष्मपद्मणालसद्विसच्छेदसिताङ्गसङ्गिना ।
चकासतंचारुचमूरुचर्मणाकुथेननागेन्द्रसिवेन्द्रवाहनं ॥८॥

8. Who, seemed the king of elephants that bears INDRA, ornamented with trappings made of the beautiful skin of a spotted deer, covered with hair, delicate, glossy, and naturally variegated, decorating a body white like the slips of the stalk of a lotus.

अजस्रमास्फालितवत्सकीगुणक्षतोज्ज्वलाम्बुष्ठनखांशुभिन्नया ।
पुरःप्रवालैरिवपूरितार्द्धयाविभान्तमच्छस्फटिकाक्षमालया ॥९॥

9. Who held a rosary of clear crystal beads, but seemingly half filled with coral beads, in front being divided by the rays, emitted from the nail of his thumb, reddened by the strings of his lute continually struck by him.

रणङ्घिराघट्टनयानभस्वतःपृथग्विभिन्नश्रुतिमण्डलैःस्वरैः ।
स्फुटीभवद्गामविशेषमूर्च्छनामवेक्षमाणमहतांमुज्जुर्मुज्जुः ॥१०॥

10. Who looked again and again at his lute surnamed "the large," wherein the rising and descending melodies of various octaves became distinct, by musical notes, which consist of different sets of measured sonorous lengths, and which were separately sounded by the impulse of the breeze.

निवर्त्यसीऽनुब्रजतःकृतानतीनतीन्द्रियज्ञाननिधिर्नभस्वतः ।
समासदत्सादितदैत्यसंपदःपदंमहेन्द्रालयचारुचक्रिणः ॥११॥

11. That Treasure of Knowledge, which is possessed by such as have subdued their passions, dismissing the inhabitants of the sky, who followed him with humble salutations, alighted at the house of him who is armed with a discus, and has stript demons of their conquests, an abode elegant like the palace of INDRA.

पतत्प्रतङ्गप्रतिमस्तपोनिधिःपुरोऽस्ययावन्नभुविष्यलीयत ।
गिरेस्तडित्वानिवतावदुच्चकैर्जवेनपीठादुदतिष्ठदच्युतः ॥१२॥

12. The devout saint, an image of the descending Sun, was not yet standing before the immortal hero, when he hastily rose from his lofty throne, like a thunder-cloud from a mountain.

अथप्रयत्नोन्नमितानमत्फणैर्धृतेकथञ्चित्फणिनांगणैरधः ।

न्यधायिषातामभिदेवकीसुतंसुतेनधातुश्चरणोभुवस्तले ॥१३॥

13. The son of DHATRI alighted before the son of DEVAKI, and as the feet of the saint touched the surface of the earth, it was hardly upheld by multitudes of serpents underneath, who bowed, in despite of their exertions to raise their dilated necks.

तमर्ह्यमर्घादिकथादिपूरुषःसपथ्ययासाधुसपथ्यपूपुजत् ।

गृहानुपेतुंप्रणयादभीप्सवोभवन्तिनापुण्यवतांमनीषिणः ॥१४॥

14. The primeval being shewed due honour to that venerable person with an *arghya* and other ceremonies; for wise persons enter not, with complacency, the houses of them who do not perform the sacred rites of civility.

नयावदेतावुदपश्यदुत्थितौजनस्तुषाराञ्जनपर्वताविव ।

स्वहस्तदत्तेमुनिमासनेमुनिश्चरन्तनस्तावदभिन्यवीविशत् ॥१५॥

15. Ere the people observed them, as they stood rivalling mountains of snow and of antimony, the primeval sage had made the saint sit down in front of him on a seat presented with his own hands.

महान्महानीलशिलारुचःपूरोनिषे दिवान्कंसकृषःसविष्टरे ।

श्रितोदयाद्रेरभिसायमुच्चकैरचूचुरच्चन्द्रमसोऽभिरामतां ॥१६॥

16. Sitting on a lofty throne before the foe of KANSA (who shone like a vast sapphire) the sage exhibited the beauties of the Moon resting on the orient mountain opposite to the dusk at eve.

विधायतस्यापचितिंप्रसेदुषःप्रकाममप्रीयतयज्जनांप्रियः ।

यहीतुमाथर्यान्परिचर्यथामुज्जर्महानुभावाहिनितान्तमर्थिनः ॥१७॥

17. The being who is dear to pious votaries, pleased the saint by special honour shewn to him as he sat down; for the wise delight in repeatedly conciliating venerable guests by respectful treatment.

अशेषतीर्थोपहृताःकमुल्डलोर्निधायपाणावृषिणाभ्युदीरिताः ।

अधौघविध्वंसविधौपटीयसीर्नतेनमूर्द्धाहरिरयहीदपः ॥१८॥

18. HARI bowed his head as he received the fluid poured into his hands by the sage from a gourd, which contained water collected from every holy stream, and most efficacious to remove all taint of sin.

सकाञ्चनेयत्रमुनेरनुज्ञयानवाम्बूदश्यामवपुर्न्यवि च्छत
जिगायजम्बूजनितश्रियःश्रियंसुमेरुशृङ्गस्यतदातदासनं ॥१६॥

19. The golden throne on which the hero, whose body was black like a fresh cloud, sat down at the bidding of the saint, surpassed the beauty of the cliff of *Sumeru*, embellished as it is by the fruit of the *Eugenia*.

सतप्तकार्तस्वरभाश्वराम्बरः कठोरताराधिपलाञ्छनचक्रविः ।
विदुद्युतेवाडवजातवेदसःशिखाभिरास्त्रिष्टवाम्भसांनिधिः ॥२०॥

20. Resplendent like the orb of the Moon, and clad in apparel that equalled the lustre of tried gold, he resembled the ocean embraced by the flames of submarine fire.

—o—
ANNOTATIONS—BOOK I.

V. 1. BRAHMA was born in an egg bright as gold (Menu, c. i. v. 9.) and from his hip sprang NARADA. KRISHNA being an incarnation of VISHNU bears the titles of that deity; the name HARI, and the attribute of pervading and containing the universe are therefore given to him, at the same time that he is mentioned as the son of VASUDEVA. His wife RUKMINI is in like manner considered as an incarnation of SRI or LUKSHMI. In the original, SRI is the first word of the couplet, purposely introduced there as an auspicious beginning of the Poem.

V. 2. The first part of this triplet is an interpolation. The Scholiast leaves it unnoticed. ARUNA is the dawn, or the Charioteer of the Sun, and is figured without lower extremities.

V. 3. The sagacity of KRISHNA is here meant to be contrasted with the stupid wonder of the people.

V. 4. On certain festive days SIVA dances before his wife PARVATI.

V. 5. The mineral anjana that used for collyrium is here meant.

V. 6. BALARAMA, brother of KRISHNA, derives several of his titles from the black apparel constantly worn by him.

V. 7. VISHNU's bird named *Garuda*, is surnamed King of Birds. The down on his body is figured as much larger than that which is observed in his kindred of royal vultures.

The King of Vultures, if the bird usually so named were meant by Sir William Jones, (As. Res. vol. vi p. 128), has been described as a native of America and the West Indies. The Pandits of Behar suppose the gigantic crane to be the *Garuda*.

V. 8. The spotted Axis is the species of deer alluded to in this place. *Airavata*, surnamed King of Elephants, bears INDRA, the sovereign of demi-gods. He is figured white like the royal elephants of Ava.

V. 9. NARADA being an ascetic is painted as here described, with a rosary in one hand, and his Indian lute in the other, his hair braided like an anchorite, his complexion fair, and his body covered with ashes, a sacerdotal string by way of scarf, a yellow cord round his waist, and the skin of an antelope on his shoulders.

V. 10. NARADA's lute, surnamed *Mahati* or "the large," SARASWATI's is called "*Kachhapi*" (testudo), as VISWAVASA's *Tribati* or "the best," and TUMBURU's "*Kulavati*."

The dissertation of Sir W. Jones, on the musical notes of the Hindoos, may be consulted (A. R. vol. iii. p. 45). *Murchana* is here rendered according to the passage quoted by the Scholiast from a musical treatise. "The ascent and descent of the seven notes in due order are called *Murchha*." There are seven in each octave, and consequently twenty-one in the three octaves.

V. 11. The knowledge of God is attained by completely subduing worldly appetites. The discus is KRISHNA'S weapon of offence.

V. 13. DHATRI is a title of BRAHMA. DĒVAKI was mother of KRISHNA. In the infernal regions vast serpents, analogous in figure to the common Naga, are supposed by Hindu mythology to uphold the world on their dilated necks.

Their sensation of NARADA'S weight as he alighted, is termed by the Scholiast a beautiful exaggeration.

V. 14. Water with rice and grass presented to a guest in an oval vessel is named *Arghya*. It is one of the most auspicious ceremonies at the solemn reception of a guest.

V. 15. Primeval sage, like primeval being in the preceding verse, is a title of VISHNU, applied like all other titles and attributes of that deity, to KRISHNA.

V. 16. KANSA was slain by KRISHNA. The Scholiast cites a passage from AGASTYA where sapphires (if this gem be really meant by the Sanscrit terms *Maha Nila* and *Indra Nila*) are described as produced in mines in the island of *Sinhala* or *Silan*.

The earth is supposed by Hindu poets and mythologists to be terminated by mountains. The Sun rises from behind the eastern range, and sets behind the western.

V. 18. NARADA, like other ascetics, bears a gourd by way of water-pot; making continual pilgrimages he had attached water from every holy river or lake.

V. 19. In conformity with the opinion of the Scholiast, *Jumbu* is here taken for the fruit of the *Eugenia*, which when ripe is of a very dark colour; but *Jumbu* is also the name of a river which flows from the mountain *Sumeru*.

V. 20. The notion of submarine fire may be founded on volcanic phenomena observed in ancient times.

ART. III.—*On the Geographic Distribution of Birds, but more particularly of the European Species; with a critical examination of Mr. Swainson's account.* By WM. JAMESON, ESQ., Bengal Medical Service.

The advantages to be derived from a study of the geographic distribution of the organic and inorganic kingdoms, as presented to our view at the present day, are of the greatest importance, seeing that until this subject has been properly examined, that of a former world must remain imperfect; and probably if more attention had been paid to it, many of the numerous errors connected with the distribution of fossil animals would not have been committed. Lately the foot-marks of birds² have been discovered in a formation said to be as old as the new red sandstone; and the author, from an examination of these marks, has not only been able to point out the genus, but even characterise the species. The presumption in doing this, is scarcely

¹ Read to the Wernerian Natural History Society of Edinburgh.

² Prof. Hitchcock in Sillim. American Journ. of Science.

worthy of attention. Cuvier from an examination of the internal skeleton of birds, declared that it was, in many instances, impossible to tell the genus, far less than the species. Let us therefore receive with caution such observations, even although they have been considered as plausible by several of the leading geologists.¹ We examined the casts of those so called foot-marks, in the collection of the Royal College of Surgeons of London,² but were not at all convinced of their ornithological origin, and till we have further evidence than such impressions, we would be inclined to argue the contrary; for we are as much, or rather more, entitled to infer that they are only vegetable impressions.³ To find the remains of birds in such a formation as the new red sandstone would invalidate one of the grand principles of geology.

In tracing out the geographic distribution of the animal and vegetable kingdoms, various methods have been adopted. Some authors, as Humboldt and Latreille, have attempted to trace them according to parallels of longitude and latitude; others, as Illiger,⁴ Fischer,⁵ &c., according to the various Continents—which no doubt is the most unobjectionable method; for we find, that when the former is properly examined, it will not stand the test of minute examination, seeing that we have in each of the individual Continents great groups entirely confined, and which have no representatives in any other of the other Continents under similar degrees of longitude and latitude, as we ought to find, if the views of Humboldt, &c. were correct.

Till the laws which regulate the distribution of both the organic and inorganic kingdoms are explained, such a method can never be adopted. We no doubt find secondary causes, such as light, heat, moisture, greater or less distribution of water, configuration of the land, exercising a powerful influence, which is particularly marked out in certain quarters of the globe; and from authors looking to these individual places alone, they have put more stress upon these causes than what we are entitled to do. Thus, for example, in Northern India, where we find the climate in some places to resemble so much the European, we have a large series of quadrupeds, birds, insects, plants, &c. either identical with the European, or undergoing such slight modifications, as to entitle them to be considered as mere local varieties, or at least the representatives of the European species.⁶

1 Buckland's Bridgewater Treatise.

2 For liberty to examine these we were indebted to Mr. Owen.

3 Our reasons for coming to such a conclusion we shall afterwards give.

4 Abh. d. Akad. d. Wiss. Zu. Berlin. 1806, p. 236 et 1812 a. 13, p. 221.

5 Synopsis Animalium et Conspect. Distribut. Geographiæ.

6 Vigers, Zool. Proc. Pt. i. pp. 7, 22, &c. Gould's Cent. of Birds. Wils. Cab. Lib. India, vol. iii. p. 78. Jameson, Wern. Trans. in Ed. New Phil. Jour.

But although these secondary causes seem to have a certain influence in some places, yet that is far from being universal, all appearing to be subject to some great principle hitherto undiscovered, and which will probably remain for ever so.

Nor is it alone in the organic kingdom that we find the distribution liable to vary from unknown causes. In the mineral kingdom we observe phenomena of a similar nature. Thus we find, as has been well remarked, "the geographical distribution of minerals to be very different from mountain rocks; we do not find the same species everywhere, on the contrary, they seem to have many kinds of distribution, in this respect approaching more nearly to what we observe in the physical arrangement of animals and vegetables on the surface of the earth."⁷

It is foreign to our purpose at present to give all the methods which have been proposed by Humboldt, Latreille, Fabricius, Swainson, &c. in order to point out the erroneous grounds upon which they are based, but shall at present confine our attention to that one most recently given, viz. by Swainson; and as he has entered into some detail, in regard to the birds of one of his divisions, allowing us an opportunity of refuting his statements, we shall therefore direct particular attention to it; we are the more induced to do so, as no person has ventured to point out the erroneous views of this author, which seem to have been based upon a few and unsatisfactory data.

By Mr. Swainson the globe has been divided into a series of zoological regions or provinces, denominated, 1st. the European or Caucasian; 2d. Asiatic or Mongolian; 3d. the American; 4th. the Ethiopian or African; and, 5th. the Australian or Malay. In the European or Caucasian province he includes the whole of Europe properly so called, with part of Asia Minor and the shores of the Mediterranean. In Northern Africa, he states, the zoological peculiarities of this region begin to disappear; they are lost to the eastward of the Caucasian mountains, and are blended with those of Asia and America to the north. 2. The Asiatic range comprehends the whole of Asia east of the Ural mountains, which form a natural and well defined barrier between the two Continents. The chief seat of this zoological region is, he states, probably in Central Asia; its western confines blend into the European towards Persia, and disappear in the west of the Caucasian chain; it is united to the African range among the provinces of Asia Minor, and is again connected with Europe, and also with America, by the arctic regions of the three Continents; finally, its

⁷ Jameson, Werner Trans. Annals of Phil. vol. vi. p. 301.

most southern limits are marked by the islands of Java and Sumatra, where the zoological characters of the Australian regions begin to be apparent. 3. The American province, he states, is united to Europe and Asia at its northern limits, and comprehends the whole of the New World, but into which it blends at the other extremity is uncertain. 4th. The African province. In it he includes the whole of Africa south of the Great Desert; part, at least, of the countries on the Mediterranean exhibits a decided affinity to the European range; while the absence of large animals in Madagascar, and the presence of genera peculiar to New Holland and the extreme-point of Southern Africa, lead us to the fifth, or Australian range. 5. Australian province. Australia, New Guinea, and the neighbouring islands, mark its limits in that direction; Australia Proper is its chief seat, and it spreads over the whole of the numerous islands in the Pacific Ocean; and he moreover remarks, whether this province blends with that of America or Europe, remains for further discovery; but its connexion with Africa and Asia has been already intimated. That the zoology of each of the individual Continents blend with each other at their junction, is a fact that never once has been questioned; but with regard to Madagascar forming the connecting link between Australia and the African Continent, Mr. Swainson can claim no originality in this statement, seeing that it was several years before the publication of Mr. Swainson's elaborate work, pointed out by M. Lesson;⁸ and it is a remarkable fact that lately several animals considered truly African have been detected in New Holland,⁹ and, on the other hand, several pouched animals, which tribe were supposed to be peculiar to New Holland and America, have been discovered in Madagascar.

The divisions which Mr. Swainson has proposed, appear at first sight very plausible; but when thoroughly inquired into, will not bear the test of examination. Thus to arrange under one and the same division the Continents of North and South America, Mr. Swainson has taken for granted what nobody has admitted, or can admit, viz. that the geographic distribution of birds is subject to the same laws as those which regulate man.¹⁰ Upon this argument the whole of his divisions seems to be founded, which is quite at variance with all that is yet known in regard to the geographic distribution of animals. In fact, there is no ground whatever for such an argument; nor have we any evidence whatever, on the other hand, to maintain that

⁸ Annal. de Science Nat. ⁹ Proceedings of Zool. Soc. of London.

¹⁰ The divisions adopted by Mr. Swainson being in accordance with the views of Dr. Pritchard in regard to the distribution of man.

man is liable to be influenced by the same physical laws as those which act upon the lower animals.

If we take into consideration the Continents of North and South America, we shall find them fully as well, if not better, marked out as zoological provinces—at least South America—than any of the others enumerated by Mr. Swainson. Thus among the *Mammalia* in South America, we find, the genera *Priodon*, *Apara Encoubertes*, *Dasyprocta* *Hydrochaerus*, *Cælogenys*,¹⁰ &c. entirely confined; and in regard to the ornithological kingdom, the genera *Pipra*, *Rupicola*, *Alector*, *Crax*, *Penelope*, *Dicholophus*, *Crotophaga*, *Rhamphastos*, *Rhea* *Tanagra*, *Trochilus*, &c. are almost entirely unknown in the Northern Continent. No doubt a few extend their migrations as far north as Mexico; and of the family *Trochilidæ*, or Humming-Birds, four are found throughout the Continent of North America; two¹¹ of these however must be considered as accidental. One, the *Trochilus colubris*, extends as far north as the 57° or 58° on the west coast,¹² it also frequents the warm plains of Saskatchewan, and Mr. Drummond found its nest near the sources of the Elk river. It advances towards the north as the season lengthens, and delays its visits to the Northern States till the month of May, and still as remarked by Nuttall, as if determined that no flower shall blush unseen, or waste its sweetness on the desert air, it launches at once on wings as rapid as the wind, without hesitation, into the flowery wilderness which borders on the arctic circle.¹³ Another species, *Trochilus rufus*, first discovered by Captain Cook at Nootka Sound, hence denominated the Nootka Sound Humming-Bird, has a much more extensive range, having been found by Kotzebue as far north as the 61° parallel of latitude on the Pacific coast; and there are specimens in the Edinburgh Royal Museum of the same species from Mexico. Specimens have also been observed by Swainson from the same quarter, being killed near Real del Monte. In the *Trochilus (ornismya) sephanoides*, Less. we see a similar distribution in the Southern Continent, it having been discovered by Captain King at the Straits of Magellan, and in honour of whom it has been named the *Melisuga Kingii* by Vigors,¹⁴ although erroneously, for it does not at all differ from

10 For the different genera of quadrupeds proper to the two continents of America, see Illiger. Loc. Cit. Fischer. Loc. Cit., and Richardson's excellent Report on North American Zool. in Trans of Brit. Asso. vol. v. for those found in North America.

11 Audubon's Amerc. Ornith.

12 Nuttall's Amerc. Ornith. vol. ii. p. 605.

13 Nut. vol. i. p. 585.

14 Zool. Journ.

Lesson's species,¹⁵ who is quite correct in giving this name as a synonym. Lesson's specimen was received from Chili, and in the Edinburgh Museum there are several specimens, one of which was received by Professor Jameson from Mexico. The occurrence of Humming-Birds and Parrots in such high southern latitudes was long ago pointed out by Cook. His observations, however, were called in question, and denied by Buffon, but happily found to be quite correct by King.¹⁶ But are four species, two of which are accidental visitors, to be considered equivalent to nearly one hundred which are confined to the Continent of South America?¹⁷ The same applies to the *Tanagers*; for of the three species found in North America, one alone is proper to it, the other two being also found in South America. The species we allude to, are the *Tanagra rubra*, Lin. and *T. astaca* Gm. Numerous other examples could be given from the families *Psittacidæ*, *Falconidæ*, *Musicapidæ*, *Tyrannidæ*, &c. tending to shew the exclusiveness of the ornithology of South America. Again, when we turn our attention to North America,¹⁸ we find it characterized by certain tribes, which however are not so numerous as those of the other Continent, but quite sufficient in number to mark it out as provincially distinct from South America. But it is not only by the mammalogical and ornithological kingdoms that these Continents are so pre-eminently distinguished from each other. In every department of animated nature we find similar characters, to notice any of which is foreign to our subject at present. But although we have divided the Continents of America into but two provinces, yet we believe the time is not far distant when the mammology, ornithology, entomology, &c. shall be better examined, and more attention paid to the individual members of each class; we shall then instead of two have many zoological provinces. For as in the botanical so in the zoological kingdom, we shall no doubt find series of birds, quadrupeds, &c. having as their fixed places of abode certain regions of the world, beyond which, although a few may migrate, yet upon a careful examination, the greater number will be found to be confined. This statement is well borne out by the collections which frequently reach this country.

Thus what ornithologist who has paid any attention to the subject of the geographic distribution of birds, could not at once distinguish a collection from Southern, from one from Western Africa; or a collec-

¹⁵ Man. Ornith. vol. ii. p. 80. Hist. Nat. des Ois. Mouches, p. 69.

¹⁶ Zool. Journ.

¹⁷ In Mexico a good many species occur.

¹⁸ Richardson Loc. Cit. Faun. Bor. Amer. &c.

tion from Northern India, from one from Southern India; or a collection from the Malayan Peninsula from one from any other part of Asia. The same holds true in regard to collections from different parts of the American Continents. Moreover, in the Continent of Australasia we have an ornithology in the neighbourhood of Port Jackson quite different from that we find at Moreton Bay. Thus the *Alectura lathamii*, Gray,¹⁹ found at the latter, is not found in the neighbourhood of Port Jackson, its place being there supplied by the *Menura lyra* Sh. or *M. Novæ Hollandiæ* Lath. It has also been shewn by Professor Jameson, that even in some of the larger islands we have a zoology quite different from that we meet with in the adjoining Continents. Thus he states—In the island of Sumatra, which is only a secondary one in point of magnitude in the Archipelago of Notasia, we meet with the Elephant, Rhinoceros, Hippopotamus, &c.; but the species of animals are often different from those in the neighbouring Continents — . Thus the Rhinoceros of Sumatra is different from that of Asia. Madagascar produces many species of snakes, which are found no where else. The inhabitants of Van Diemen's Land are very different from those of New Holland, and the greater number of mammiferous animals and reptiles are specifically different from those met with in the neighbouring Continents.—That many of the islands of the Indian Archipelago have a zoology peculiar to themselves, has been proved by the researches of Raffles, Horsfield, Sonnerat, Leschenault, Reinwardt, Düssumier, Duvaucel, Diard, Belanger, Kuhl, &c., all of whom have increased our knowledge more or less in regard to them. Nor are the islands farther in the south without their own peculiar Fauna. Thus we find in New Zealand not only a great many species, but even many genera which are found to exist no where else. It is here that we meet with that most extraordinary bird the *Apteryx Australis*, first described by Shaw, but whose existence has more than once been called in question,²⁰ although erroneously, as has been pointed out by Yarrel.²¹

In New Guinea we also meet with a particular Fauna. It is here that we find the splendid group of Paradise Birds. We have

19 Proc. Zool. Soc.

20 Lesson Tracte d' Ornith. p. 12. et Man. d' Ornith. vol. ii. p. 210.

21 Tran. Zool. Soc. vol. i. and Zool. Proceed. pt. i. pp. 24, 80. Of this bird there are now several specimens in Europe. In the collection of the Zoological Society of London we saw one specimen, in the Liverpool collection there is an imperfect specimen, and we believe that there is a very fine specimen in the collection of the Earl of Derby, from which Yarrel drew up his description and made his drawing. See Trans. Zool. Soc. vol. i.

therefore in our tables more for convenience, or rather till we get more information on the subject, arranged the birds under the heads of the different Continents, and including all the islands south of Java and Sumatra in the Continent of New Holland, adopting the term of Australasia.

Let us now enter more in detail, and trace out some of Mr. Swainson's so-called zoological provinces. We shall first notice his European or Caucasian Province.

In tracing out the geographic distribution of this province, Mr. Swainson has divided the birds into a series of groups, or orders, thus *Rapaces, Grallatores, Natatores, Gallinaceæ, Scansores, &c.*, which we shall now notice individually. In regard to the first of these groups, he makes the following statement—"The rapacious order, next to the aquatic tribe, is of all others inhabiting the land the most widely spread. This is particularly the case among the nocturnal species. It is remarkable that of thirteen different Owls inhabiting Europe, six only are peculiar; and two of these more particularly inhabit the arctic regions. Of the rest, four occur in America, two in Southern Africa, and one both in Asia and America. The *Falconidæ*, or diurnal birds of prey, in regard to their species, have a more restricted distribution than the nocturnal; yet of these, the Eagles enjoy no inconsiderable range; of four discovered in Europe (I here use his own words²²) one is more properly arctic, three have been found in several parts of Africa, and one occurs in America—leaving three only to Europe. It is singular, he continues, that those rapacious birds which, from the peculiar structure of their wings, have been supposed to enjoy the greatest powers of flight among their congeners, should nevertheless have a much more limited range. This is proved by the fact, that of eight genuine Falcons inhabiting Europe and Northern Africa, two only have been discovered in America. It has, however, recently been stated that the Peregrine Falcon of Australia is absolutely the same as that of Europe.²³ Upon the whole, the distribution of the forty-four European birds of prey appears to be thus regulated—three are more properly arctic; eleven are found also in America, two in Asia and Africa, and one in Asia and America; leaving *twenty-seven*, or more than one half, as

²² Geography and Classification of Animals, p. 22. See also Murray's Encyclop. of Geography, vol. i.

²³ In regard to the identity of the Peregrine Falcon of Europe and Australia there can be no dispute. We examined minutely the specimen described by Horsfield and Vigors in the Linnæan Trans. now deposited in the Museum of that Society, but could not discover one trivial character of difference. For permission to examine it, and the collection generally, we were indebted to Prof. Don.

characteristic of European Ornithology." How Mr. Swainson could have come to such conclusions, seems to us very remarkable ; not one of the statements which he has made, being at all correct. Thus of the thirty-five species of diurnal rapacious birds found in Europe and comprehended in the genera *Vultur*, *Neophron*, *Gypaetos*, *Falco*, *Aquila*, *Haliæetus*, *Pandion*, *Circæetus*, *Astur* *Accipiter*, *Milvus*, *Nauclerus*, *Elanus*, *Pernis*, *Buteo*, *Butaetes*, and *Circus*, four are common to Europe and Asia ; three common to Europe and Africa ; three common to Europe and North America ; ten common to Europe, Asia, and Africa ; four common to Europe, Asia, and North America ; one common to Europe, Africa (?) and North America ; one common to Europe, Asia, and Australasia ; one common to Europe, North and South America ; one common to Europe, Asia, Africa, North and South America ; and three (?) cosmopolite, or found in all the different Continents of the world ; leaving only four species proper to Europe, or in the proportion of 1 to $8\frac{3}{4}$, and it is even doubtful at present whether all the four species are confined to Europe. But Mr. Swainson has marked out in a particularly prominent manner the genera of Falcons and Eagles, properly so called, in order to shew that the distribution of birds is not in an equal ratio with their powers of flight—a statement no doubt quite correct ; but he has been very unfortunate in his illustrations, for among all the tribes of European birds, the Falcons and Eagles possess a most extensive distribution. Thus of the nine species of Falcons (one or two of which seem to be only occasional European visitants), two alone are proper to Europe ; three common to Europe and Asia ; one common to Europe and Africa ; one common to Europe and North America ; one common to Europe, Asia, and North America ; and one common to Europe, Asia, Africa, Australasia, North and South America.²¹

That the maxim, as the powers of flight so is the distribution, is not correct, many instances could be given ; and in no tribe have we a stronger evidence to the contrary than in the *Rallidæ*, seeing that they exist in the western hemisphere, so far north as Hudson's Bay, and in the eastern, as far south as the Sandwich islands, having thus a range of about 105° of latitude, and nearly 280° of longitude ; and it is well known that the powers of flight in this

21 Ch. Luc. Bonaparte, in his Catalogue of American and European Birds, gives a new name to the Osprey of America ; upon what grounds we know not. Gould in his work on the Birds of New Holland, now publishing, has described the Osprey of that quarter as a new species, to do which he is not at all entitled, there being no characters whatever presented to mark them as specifically distinct. In the Ed. Museum there is one specimen from New Holland, agreeing in every character with specimens, killed in Europe. The same remarks apply to the American species.

tribe is not at all well developed, at least to such a degree as to account for its extensive distribution. Nor does this remark apply to this group alone, many other examples, if it were necessary, could be given. In regard to the Eagles, Mr. Swainson's statements are equally inaccurate. Thus of the nine Eagles included in the genera *Aquila*, *Haliæetus*, *Pandion*, and *Circaetus*, two are common to Europe, Asia, and Africa; one common to Europe and North America; one common to Europe and Asia; one common to Europe and Africa; two common to Europe, Africa, and North America; one cosmopolite; leaving only one proper to Europe; for it seems not at all improbable, that the *Aquila imperialis* will be found extending throughout the African Continent.²⁵ Moreover it may be stated as a general rule, that in whatever families we observe a large series of modifications, there we have a wide distribution. This is strikingly the case in the *Falconidæ*, *Anatidæ*, *Sylviadæ*, *Muscicapidæ*, *Columbidæ*, *Fringillidæ*, *Laridæ*, *Turdidæ*, *Laniadæ*, &c. Nor is this rule confined to the ornithological kingdom; we have a similar arrangement exhibited in the mammalogical, as well as in many of the other kingdoms of the organic world; and when we direct our attention to the inorganic, we can trace out a similar arrangement. Thus in those families in the mineral kingdom in which the physical and external characters are very various, in them we find a most extensive distribution, as is well exemplified by the quartz, calcareous spar, and garnet families, modifications of which occur in every formation, from the oldest up to the newest; in every climate, from the inhospitable regions of Melville island to the tropics, and in all the intermediate spaces; and, on the other hand, from the tropics as far south as 70°, and also at all heights and depths yet attained by man, viz. from 20,000 feet above, to 1600 feet below, the level of the sea.²⁶

In regard to the nocturnal birds of prey, comprehended in the genera *Strix*, *Bubo*, *Otus*, *Scops*, *Surnia*, *Ulula*, *Syrnium*, and *Noctua*, we have the following statement to make, which is quite at variance with that given by Swainson. Thus of the fifteen Owls found in Europe, three only are proper to it, one of these doubtful; common to

²⁵ Mr. Gray, in General Hardwicke's Work on Indian Zoology has figured a bird under this name, which however is quite a different species. The specimens noticed in the Asiatic Society's Journal for November, 1838, as varieties of the *Aquila chrysaetos* by Dr. Evans, are quite different birds; in fact they do not belong to the genus *Aquila* at all, being characteristic specimens of the genus *Haliæetus*. The bird is a new species, and the only other specimen we have seen is in the collection of the Zoological Society, London.

²⁶ Jameson's manuscript Lectures on Miner. see also Man. and Syst. of Mineralogy.

Europe and Asia, two ; to Europe, Asia, and Africa, two ; to Europe and North America, five ; to Europe, Asia, North and South America, one ; to Europe, Asia, Africa, and North America, one ; to Europe, Australasia, and North America, one ; thus leaving a proportion of 1 to 5 ; and from these statements it appears evident that the nocturnal birds of prey do not possess such a wide distribution as the diurnal, as stated by Swainson.

But Mr. Swainson in summing up his observations gives, as already stated, 27 species as peculiar to the European or Caucasian province—a number four times larger than we from a most careful and extensive examination have made it ; the number being only seven, and it is even doubtful whether all these are peculiar to this so called zoological region or province.

Having now finished our analysis of the distribution of the Raptacious order, we shall now proceed to another of Mr. Swainson's divisions, viz. the *Gallinaceæ*, whose distribution we shall follow out in a similar manner. “ On looking,”²⁷ says he, “ to the whole number of our *Gallinaceæ*, we find twenty seven species, fourteen of which have their metropolis in Europe ; the remainder are thus dispersed—five extend to Western Asia ; five to the confines of the great African Desert ; two are dispersed over Central Asia and Africa ; whilst two occur in North America.” In the above statements Mr. Swainson differs very considerably from our examination ; at least it is difficult to understand what he has included in his *Gallinaceæ*, for to make up the number of species we must include the genera *Columba*, *Tetrao*, *Bonasia*, *Lagopus*, *Pterocles*, *Francolinus*, *Perdix*, *Coturnix*, *Hemipodius*, *Otis*, *Cursorius*, and *Glareola*, comprehended under which we have twenty-seven species ; of course leaving out the *Tetrao rupestris*, a doubtful species, and which has only been met with in Europe once or twice. Nor do we include the *Phasianus colchicus*, an imported species. We however comprehend the *Tetrao hybridus*,²⁸ considered erroneously by some naturalists as a hybrid between the *Tetrao urogallus* and the *Tetrao tetrix*, it presenting many characters to mark it out as a distinct and well marked species. Of the twenty seven species found in Europe, five are common to Europe and Asia ; three common to Europe and North America ; one or two (?) common to Europe and Africa ; and four common to Europe, Asia and Africa ; thus leaving fourteen proper to Europe, or in the proportion of nearly 1 to 1 ; and of these, one alone is peculiar to the British islands, which is

²⁷ Loco. Citato. p. 23.

²⁸ Yarrel, Proc. Zool. Soc. Gould's Birds of Europe.

rather curious, it being the only bird which is so. Moreover the manner in which Mr. Swainson has traced the distribution of this tribe is much to be questioned, it appearing to us a more plausible than real one, many of his statements no doubt being founded on the peculiarity of the country; at least we are not at all aware of any thing being stated by any author which would authorize him to make such statements, and he makes no mention of being guided by personal examinations, which he no doubt would have done had he travelled in these regions, seeing that there is no individual more ready to inform us of the extent of his travels.

In regard to his next division, we have the following statement—²⁹ “The Swallow-like birds, *Fissirostres*,” says he, “are well known by capturing their food on the wing, and by their migratory habits; only one, the common or European Kingfisher, being stationary. Hence it is, that most of the European species occur in other regions; the proportion of those which appear confined to Northern Africa is as 1 to 3.” He does not give any more details in regard to the *Fissirostres*, leaving his readers to fill up the rest by their own imagination. In his proportional number of species he is not correct. Thus of the fourteen included in the genera *Hirundo*, *Caprimulgus*, *Merops*, *Coracias*, *Alcedo*, three are probably confined to Europe; and of the others, three are proper to Europe and Asia; to Europe and Africa, three; to Europe, Asia, and Africa, three; to Europe, Africa, and North America, one; and to Europe, Asia, Africa, and North America (?) one; thus leaving a proportion of 1 to $3\frac{4}{6}$; but as many of the species, as stated by Mr. Swainson, of this order are migratory, it renders the proportional number very doubtful; at least it is very liable to vary.

In regard to the *Scansores*, Mr. Swainson states their number to be fifteen, including probably the genera *Picus*, *Apternus*, *Yunx*, *Sitta*, *Certhia*, *Tichodroma*, *Upupa*, and *Cuculus*, eight of which he states are confined to Europe; and as for the distribution of the other seven, as in the *Fissirostres*, he gives us no information. The number of species however is eighteen, and of these eleven are proper to Europe; two common to Europe and North America; three common to Europe and Asia; one common to Europe, Asia, and Africa; and one, the Wryneck (*Yunx torquilla*) common to Europe, Asia, and North America, which was many years ago pointed out.³⁰ Whether all of the above ten species are proper to Europe, is at present a question, owing

29 Loc. Cit. p. 24.

30 Jam. Edin. New Phil. Jour. and James Wilson's Quart. Rev.

to the near approximation of several species from Northern India, which still require further examination ; and before the point can be settled, a large series of specimens will require to be examined. In the Indian Creeper (*Certhia vitticauda*, Jam.)³¹ and Indian Nuthatch, (*Sitta Himalehensis*)³² although we have many characters in common with the European, yet still there are many others entitling us to consider them as specifically distinct. The occurrence of the former species in Northern India was a most interesting discovery, pointing out that the genus *Certhia* is more widely distributed than was originally imagined. In several of the Woodpeckers of Northern and Southern India we have also a great similarity with the European species, and in fact so remarkable, as to cause several of the more recent writers to consider them as identical.

In noticing the Crow and Starling families (*Corvidæ* and *Sturnidæ*) Mr. Swainson has made some most extraordinary statements. Thus he states that not only several species, but even peculiar genera are left to characterise this portion of the world. To us this is quite unintelligible. Species we have, we will admit, but as for genera in this group peculiar to Europe, there are none ; and even among the whole birds of this so called province, there is not one genus peculiar to it, if we except one or two among the *Sylviadæ*, whose generic characters however must be called in question ; and even if they should latterly be found to be correct, it would give but little more weight to Mr. Swainson ; for there is no group hitherto more neglected, and of which our knowledge is so imperfect, than the *Sylviadæ*.

For many years, no doubt, the genera *Cinclus*³³ and *Nucifraga* were supposed to be confined to Europe ; but species belonging to the former have been found in North America and Northern India ; and in regard to the latter, we have one species occurring in Northern India, considered erroneously by some authors as identical with the European—it is the *Nucifraga hemispila* of Vigors. We shall after-

31 This bird has received other two names. It has been described by Vigors as the *Certhia Himalayana*, Proc. Zool. Soc. Pt. i. p. 174, and by Swainson as the *Certhia Asiatica*, Anim. Menag. p. 353.

32 Jard. and Selb. Zool. Illust.

33 The distribution of the Dippers stands thus—In Europe we have two species, one proper, the other being also found in Northern India. In America N. and S. (?) one species (*Cinclus Americanus*). The new species described by Bonaparte is the above. Audubon, since the above was written, informed us that he had received two new *Cincli* and a true *Nucifraga* from the Rocky mountains, the latter however had been long before described as a *Corvus*. Brehm has described a third species under the name of *Cinclus melanogaster*, it however appears to me to be a mere variety of the *Cinclus aquaticus*.

wards notice the European genera in regard to their distribution, but in the mean time shall confine our attention to the distribution of the species. In regard to the species included in the genera *Corvus*, *Sturnus*, &c. Mr. Swainson states their number at twenty-one found in Europe, thirteen of which, or more than one half, habitually reside; four occur in Northern and Central Africa; one common to Europe, Asia, and Africa; and three found in America. Nor are the above statements even in regard to the species correct. Thus of the seventeen species, for we cannot make out more, included in the genera *Corvus fregilus*, *Pyrrhocorax garrulus*, *Nucifraga*, *Pastor*, and *Sturnus*, six are proper to Europe; four common to Europe and Asia; one common to Europe and Africa; three common to Europe, Asia, and Africa; two common to Europe, Asia, and North America; and one common to Europe, Asia, Australasia (?) and North America. We mark Australasia with an interrogation, for the occurrence of the *Corvus corone* in that Continent seems doubtful. It is upon the authority of M. Lesson,³⁴ that we make the statement; who, however, we rather think has confounded with it a nearly allied, but quite distinct species. M. Temminck³⁵ has also in his Catalogue of the Birds of Japan given the *Garrulus glandarius*, and marks it as the Japanese variety, which it undoubtedly ought only to be considered, for the characters which it presents vary so little from those of the European, and are of such a trivial nature. It is not to be confounded with the *Garrulus bispecularis* of Vigors,³⁶ a well-marked species, also presenting a close affinity to the European, it however is confined to Northern India. In the *Garrulus melanocephalus*, Bon.³⁷ we have another species presented, bearing a close affinity to the European, but it not only differs in several characters, but also, like the two Indian species, has a quite different distribution, representing in its locality the common *Garrulus glandarius*.³⁸

34 Ann. de Sci. Nat.

35 Man. d' Ornith. vol. iii. Introd.

36 Proceed. Zool. Soc. Pt. i. p. 7. Gould's Cent.

37 Gen. Mem. of the Acad. of Turin, vol. xxxvii. p. 298.

38 Strickland on the Birds of Asia Minor. Proc. of Zool. Pt. iv. p. 97.

(To be Continued.)

ART. IV.—On a new Genus of the Fissirostral Tribe. By B. H. HODGSON, ESQ. Catamandu.

[Note by the Editors.—This and the following paper were transmitted to the late Editor more than two and a half years back, and were acknowledged at the time, though by some accident afterwards mislaid. The expert ornithologist will perceive that Mr. H's. genus *Raya* is equivalent to the *Psarisoma* of Swainson, and the *Crossodera* of Gould; but, by referring to dates, it will be seen that Mr. H. was the first person to characterise this new form, of which he has given two species.]

Dentirostres todidæ, Swainson.—*Fissirostres todidæ*, Vigors.—*Syndactyles*, Cuvier.

Genus—new, *Ráya nobis*. Species two, new, *Sericeogula* and *Rubropygia*. *Rai* and *Rai Súga* of the Nipalese. *Habitat*, Central and lower regions.

These singular birds might be considered with almost equal propriety as the Dentirostral type of the *Fissirostres*, or the Fissirostral type of the *Dentirostres*.

Swainson would regard them in the latter light; Vigors in the former; Cuvier would probably have placed them with hesitation among his *Syndactyles*. They seem to me to be compounded of *Tityra* and *Eurylaimus*—two parts of the latter, and one of the former.

The bill is shorter, broader, more arched along the culmen, less suddenly hooked, as well as more deeply cleft in the head than in *Tityra*; it is longer, and more covered by those frontal plumes which entirely conceal the nares, than in *Eurylaimus*. The nostrils have exactly the same character as in *Tityra*, but they are considerably more advanced, being nearer to the tip than to the gape. The wings agree in their gradation with those of *Tityra*, but they are shorter and feebler than in that genus, or in *Eurylaimus*; and in consonance probably with this feebler structure of the wing is the elongation and extreme gradation of the tail of our birds, a feature in which they differ alike from *Tityra* and from *Eurylaimus*.

The feet of the *Rayæ*, like their bills, more nearly resemble those of *Eurylaimus* than those of *Tityra*; and whilst they differ from both genera by the smoothness of the acrotarsia, they depart from their otherwise strict correspondences with the feet of the former genus by the essential circumstance of a more restricted junction between the toes. In *Eurylaimus* the exterior toe is united to the end of the second phalanx, the interior, to the end of the first. This, the typical syndactyle structure, is only half developed in *Ráya*; the connexion between whose lateral fore toes reaches forward only to the middle of the respective joints.

With these preliminary remarks we shall proceed to characterise the genus or sub-genus *Raya*, thus—

Bill shaped as in *Eurylaimus*, but equal to the head, or longer, and having the soft frontal zone more produced, and concealing the nares; orbits nude; head large and crested; gape very wide and smooth; wings scarcely exceeding the base of the tail, rather feeble; the third and fourth quills longest and equal; the first and second, very slightly gradated; the primaries plus the tertiaries by about half an inch.

Tarsi longer than central digit, slender, smooth, more or less plumose; toes and nails as in *Eurylaimus* exactly, but the connexion of the lateral fore toes reaching only to the centre of the second and first phalanges respectively; tail elongated, firm, conspicuously and equally gradated throughout; tongue short, flat, triangular, sub-fleshy; the tip pointed, cartilaginous, and sub-bifid or sub-jagged. In manners, and food assimilating with *Trogon*, and with *Rucia (nobis)*.

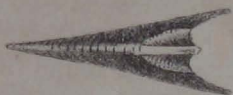
1st. Species. *Sericeogula*. Silken-throated *Ray, nobis*. Parrot-green, changing into verditer blue below; head and neck, superiorly, black; inferiorly, silken yellow; a narrow band of the latter colour circling round the brows, and bottom of the neck, so as to enclose the black colour; a blue spot on the crown, and top of the back, and a yellow one behind each ear; tail, and external edge of the primaries blue; wings and tail, internally, jet black; orbital skin yellow; iris hoary brown; bill lively green; legs dull greenish or yellowish; crest vague; tail considerably elongated, and wedged; the gradation equal, and complete; tarsi plumed at top only; 11 inches long by 13 wide, and $2\frac{1}{2}$ oz in weight; bill $1\frac{1}{8}$ inch; tail $5\frac{1}{2}$; tarsus $1\frac{1}{4}$; central toe $\frac{13}{16}$, and nail $\frac{5}{16}$; hind toe, $\frac{8}{16}$, and nail $\frac{6}{16}$. Sexes alike.

2nd. Species. *Rubropygia*. Red-rumped *Raya, nobis*. Structure less typical; colour slaty grey blue; lower part of the back, tertiaries, and upper tail coverts, red; wings, tail, tibiae, and a band from the eyes to the nape, black; primaries with a blue speculum, and blue tips; the latter margined on the inner side with white; rectrices, except the two central ones, broadly tipped with white; head conspicuously crested; tail shorter, and rather rounded than wedged; tarsi half plumed; bill soft blue; iris brown; orbital skin, orange; feet greenish; size 7 to $7\frac{1}{2}$ inches by $10\frac{1}{2}$ to 11, and $1\frac{1}{4}$ to $1\frac{1}{2}$ oz; bill $\frac{14}{16}$ inch; tail $3\frac{1}{4}$; tarsus $\frac{15}{16}$; central toe $\frac{11}{16}$; hind toe $\frac{6}{16}$. Sexes alike.

Nepal, May, 1836.

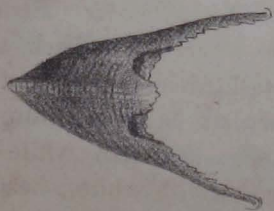
36A

The genus *Sibia nobis*



outside view

inside views



The genus *Raya nobis*

ART. V.—Description of two new Species of a new form of Meruline Birds. By B. H. HODGSON, Esq. Catamandu.

Merulidæ philedones, Cuvier.—*Merulidæ crateropodinæ* ? Swainson.—*Tenuirostres meliphagidæ*, Vigors.

Genus—new, *Sibia nobis*. *Sibya* of the Nipalese. *Habitat*. Lower and central regions of the hills.

What shall we say to a Meruline form compounded of the bill and tongue of *Chloropsis*, the nares of *Cinnyris*, and the wings, tail, and feet of *Cinclosoma* ? for such is the general, though not the precisely accurate, indication of the form I am about to describe.

Cuvier has separated from the promiscuous heap of the Meruline Birds a group which he tells us is distinguished from the *Merles* by a slenderer, sharper, and more arched bill, and by a brushed tongue. To this Cuvierian group my birds unquestionably belong ; but the group itself is so large, and its contents have been so little accurately ascertained, that small way is made to a definite conclusion by the determination of that point. There are a vast number of the aberrant Thrushes, both short legged and long, which closely approximate by the bill and tongue towards the *Tenuirostres* ; but I am nevertheless of opinion that these relations are of secondary, not primary, importance. The birds in question are Thrushes, as Cuvier considered them to be ; but whether or not they can be, most of them, ranged with propriety among the *Brachypodinæ* and *Crateropodinæ* of Swainson, I know too little of his general system to enable me to judge.

It may serve to illustrate the character of our birds to say, that they appear to me to belong to the latter sub-family, serving in many respects to link together the two. Mr. Swainson considers the long-legged Thrushes to be equivalent to the *Tenuirostral Promeropidæ*. It is certainly remarkable that in one of our species we have the long, broad, and gradated tail of *Promerops*.

Genus—SIBIA NOBIS.

Generic character.—Bill and tongue as in *Chloropsis* ; but the bill more depressed and more keeled towards the base ; and the tongue forked as well as brushed. Nares basal, lateral, elongated, pervious, lunated, and almost lineated by a large, soft, sub-arched and nude membrane.

Nareal bristles, none ; rictal, small ; frontal plumes smooth ; wings, medial, round, acuminate, firm ; fifth and sixth quills longest ; first and second considerably, third and four trivially, gradated ; primaries plus tertiaries nearly one inch ; tarsi elevate, stout, nearly smooth ; toes submedial, simple, stout ; fores compressed, hind depressed and large ;

lateral fores and hind subequal, last strongest ; nails stout, moderately curved, acute ; tail various, as in *Promerops* or in *Cinclosoma*.

Species 1st. *Pieaoïdes*. Pie-like *Sibia mihi*. Saturate slaty-blue ; paler and greyer below ; darker and merging into black on the wings and tail ; speculum on the secondaries, and tips of the rectrices, white ; legs plumbeous ; bill black ; iris sanguine ; tail very long, and gradated conspicuously and equally throughout ; head not crested ; 14 inches long and as many wide ; bill $1\frac{1}{8}$ inch ; tarsus $1\frac{1}{4}$; central toe $\frac{3}{4}$; hind toe $\frac{9}{16}$; its nail $\frac{7}{16}$; tail $8\frac{1}{2}$; weight $1\frac{1}{2}$ to $1\frac{3}{4}$ oz. Sexes alike.

Species 2nd. *Nigriceps*. Black-capt *Sibia mihi*. Rusty, with the entire cap and the wings and tail, internally, black ; central wing coverts white toward their bases, slaty toward their tips ; outer webs of the primaries slaty-grey ; of the secondaries and tertiaries, slaty ; the last, rusty, like the body ; two central rectrices con-colourous with the body towards it, then black ; the rest wholly black, and all with broad slaty points ; bastard wing black ; legs fleshy brown ; bill black ; iris brown ; tail moderately elongated, gradated only in the six laterals ; head with a full soft garruline crest ; outer web of the secondaries rather enlarged, discomposed, and curled downwards ; size $8\frac{1}{2}$ to 9 inches, by $10\frac{1}{2}$ to 11, and $1\frac{1}{2}$ oz. in weight ; bill 1 inch ; tarsus $1\frac{5}{16}$; central toe $\frac{10}{16}$, and nail $\frac{4}{16}$; hind toe $\frac{7}{16}$, and nail $\frac{6}{16}$; tail $4\frac{1}{4}$. Sexes alike.

3rd. Species. *Nipalensis, nobis*. Described already as a *Cinclosoma*,¹ and forming a singular link of connexion between the *Cinclosomæ* and the *Sibiæ*. I postpone what I have to say upon the habits and manners of these birds to a future opportunity ; at present it must suffice to observe, that they are indissolubly linked to the *Merulidæ* by the nature of their food and manner of taking it.

Nepaul May, 1836.

ART. VI.—*On the Egyptian system of Artificial Hatching.* By
DON SINBALDO DEMAS.

Several unfruitful attempts have been made in different parts of Europe since the labours of Reaumur to introduce the artificial mode of hatching eggs. In some parts chickens have been brought forth which have not propagated ; in others, for instance in Aranjuez, instead of chickens, hard eggs have been made. Notwithstanding these failures, being persuaded that they proceeded rather from ignorance on the part of the experimentalist than from any real or insuper-

¹ Note.—As Soc. Transac. Phy. Class., vol. xix. p. 143.

able obstacle in the nature of the country where the experiments were performed, since my arrival in Egypt I determined to study in person minutely all the proceedings, without trusting to accounts which would always leave me uncertain of the truth. The enterprize was by no means an easy one. Few in Egypt possess the art, and those few make a secret of it. Besides, this first difficulty vanquished, so much patience and perseverance is necessary to remain for 21 days in an oven at 34° of Reaumur, full of the pestiferous smoke of burning dung—contending incessantly with the stupidity and prejudices of the Arabs, who always suspect some sinister motive, and to every thing oppose difficulties, (believing, among a thousand other follies, that the thermometer warms the room in which it is introduced,)—that no traveller before me, that I am aware of, has examined the matter in a satisfactory manner, or has given a circumstantial description of it. Nevertheless, my intimacy with my countryman Gaitany Bey, who rendered me every facility which the Government could offer, my knowledge of the vulgar Arabic language, and my constitution of the south of Europe, enabled me to overcome all the obstacles which hitherto embarrassed all Europeans who attempted to investigate this subject.

Before entering on a description of the process, I will stop a moment to shew that the artificial hatching, practised from time immemorial in Egypt, is not only a curious fact, but an eminently useful one; since it facilitates with surprising rapidity the reproduction and abundance of the fowl, as well as the egg; both of which may be reckoned among the most pleasing and salutary articles of food for man.

The operation is carried on in an oven, generally composed of eight divisions or cells. In each of them 6000 eggs are hatched every 21 days, for the space of 3½ or 4 months. It is admitted that Egypt contains more than 200 of these ovens. Deducting one quarter of the eggs which may be lost, we shall see that this artificial hatching gives 37½ millions of chickens in one third of the year; which again must produce an immense number of eggs.¹ Thus it happens that although latterly the price of all provisions has been doubled in that country, I have bought in Upper Egypt one egg for half a *para*, and the best fowl for a *piastra*.² It is to be considered also, that the power of establishing these ovens is given by Government to the highest bidder; and that from this circumstance a considerable revenue is received, which cannot fail to raise the price of the article.

1 In the *Encyclopædia Britannica* the number of ovens is stated to be 360; and the chickens produced 92 millions; which I think at least in the present day is a very exaggerated calculation.

2 One Company's rupee=10 piasstras. 1 piastra=40 paras.

To produce $27\frac{1}{2}$ millions of chickens without artificial heat, at least two millions of productive hens would be required in the space of four months!

The artificial mode of hatching does not oppose any obstacle to the natural one, since a hen born by means of the oven, or under the wings of the mother, at every season of the year can as well in Egypt as in any other country cover and hatch its own eggs.

One great inconvenience has been attributed to this method—it is said that the fowl degenerates, and consequently its egg.

This opinion originated in observing that the fowl of Egypt is generally smaller than that of Europe. The fact is true; but I can by no means agree that it is the consequence of artificial hatching. It is to be considered, 1st, That in Egypt several animals are of smaller size than those of other countries. 2d, That the artificial hatching consisting only in applying to the egg the same degree of heat that it might receive under the hen, without changing any of the natural operations, the number of days which it employs in vivifying it, &c. there is no plausible reason to suppose that the chicken does not under this process attain its natural size. 3d, That there is in some parts of Upper Egypt a large kind of fowl called *bigany* or *dinderany*, and its eggs placed in the oven produce fowls equal in size to the mother. 4th, and to me the most convincing argument of all—if the action of fire could so reduce the fruit of the egg during its development, other circumstances being the same, the same cause must continue to operate every year, and small as this annual diminution may be considered in the number of ages that this method has been practised, (we find artificial egg hatching mentioned by Herodotus,) the fowl of Egypt ought to be reduced by this time to the size of a fly at least. Lastly, even admitting the hypothesis of degeneration, we must admit that the decrement has operated in a very slow and imperceptible manner. This diminution being so inconsiderable, can by no means neutralize the beneficial results of artificial hatching.

The economy and benefit that this method is capable of diffusing among those who practise it being sufficiently demonstrated, I will proceed to give a circumstantial narrative of all the steps of the operation, as I have seen it practised in the ovens established in Ghisa, a suburb of Cairo, situated upon the right shore of the Nile.

The building is composed of a corridor with vaulted roof 40 feet long and 5 broad (A B C D, fig. 1st) The vaulted roof has five small apertures to give light. In the centre, to the right hand, there is a door of $3\frac{1}{2}$ feet high and $2\frac{1}{2}$ broad (E, fig. 1st); this leads to another corridor (F G H I, fig. 1st) 48 feet long by 5 broad, also with vaulted

roof, in the centre of which there are three apertures (J K L, fig. 2nd) of nine inches in diameter, to give light from above; to the right and left hand of the corridor there are five divisions or cells of two stoves. Each inferior room or stove has an aperture of $1\frac{1}{2}$ feet square (M, fig. 2nd). The superior room has another aperture above of two feet five inches in height, and one foot nine inches broad (N, fig. 3rd); it has also an aperture of one foot square in the wall of the right hand, and another of equal size in the left, which I have seen constantly stopped up with tow (d, fig. 4th). The walls of the said upper stove begin rectangular from the ground, finish in a vault of $6\frac{1}{2}$ feet high (O, figs. 3rd and 4th), with a hole in the top of nine inches diameter (P, figs. 3rd and 4th). The ground of this room is nine feet long and eight broad (X Z V U, fig. 5th) and has in its breadth, that is to say in the same direction with the corridor, two grooves (Q Q, R R, fig. 5th.) of nine inches broad and two deep, and in the centre an aperture almost round of two feet in diameter (S, fig. 5th). The first room entering to the right hand is destined to keep a fire always kindled; it has only one stove, and its door is larger than the others (T, fig. 2nd). The first room to the left hand has no hole in the ground of the upper stove, but only a fissure of two feet, which separates the ground from the interior of the wall, to which it is notwithstanding united by several iron bars in the form of an oblique grate, (b, fig. 6th.) In this cell the materials destined for combustion are thrown through the hole in the top. They pass through the grate as through a sieve, and are taken away by the inferior aperture to be transported to the opposite cell which contains the magazine of fire.

There are, lastly, to the left hand of the exterior corridor two rooms 15 feet square, with vaulted roofs of 12 feet high, with an aperture in the top; they are intended for the preparation of eggs, as well as a place for chickens recently born, &c. (f and g, fig. 1st).

The material for constructing the oven, is the same employed generally in Egypt for the houses of the peasants; that is to say, mud mixed with straw. The vaults are constructed with burnt bricks. The ground which divides the cell in two stoves is sustained upon two trunks of palm trees parallel to the corridor, and a bed of branches of the same tree supported by the said trunks. Upon this entablature is spread the mud which forms the ground whereon the fire is placed.

A little straw or tow is prepared on the ground of the inferior room; upon it a mat is placed, and upon the mat 6000 eggs,

which are not more than twenty-one days old, taken from a hen-yard in which there is a cock.

For combustibles the dry dung of animals is used, which the Arabs reduce to small pieces with their hands; this material they call *دِيمَس* (*dims*). In the first room to the right hand two pyramids of burning *dims* are formed, covered with common earth. The *dims* must take fire slowly, without making a flame. It is taken up with a fire shovel, put on to a plate of baked earth, and afterwards placed in the grooves (Q Q, R R, fig. 5th) which have been first half-filled with cold *dims*. Again a little *dims* is placed upon the burning portion, and upon the whole a little earth is strewed. The burning *dims* which is taken from the magazine is continually replaced with an equal quantity of cold material.

On the morning of the day destined to begin the operation the fire is placed in the cell to warm it, and at sunset the 6000 eggs are disposed in the manner explained. The fire is renewed three times a day—at dawn, at midday, and at sunset; there is however no very religious exactitude observed in this. If the fire put on in the evening is yet alive at the dawn of the subsequent day, it is left, and is not renewed till midday. In one instance, which I saw, being ready about 12 o'clock to put on the fresh fire, a quarrel happened, and it was not put on till 3 o'clock. At sunset it was not renewed, and this *dims* lasted till the dawn of the subsequent day.

When the new fire is put on, the door of the superior stove is left open, also the hole of the vault, and if the fire is too strong, even the small door of the inferior stove. The aperture in the ground of the superior stove is always covered, as well as the two apertures in the walls to the right and left hand. When the heat begins to mitigate and the smoke to disappear, all the small doors of the inferior stove are stopped up, afterwards the hole at the top of the vault, and lastly the door of the superior stove, which is not generally stopped. The doors of all these apertures are merely handfuls of tow for each. When the fire is recent, and the heat at its greatest strength, the thermometer marks 33° or 34° of Reaumur. When the fire is extinct, and before it is renewed, the heat is 30° sometimes as low as 29°.* Six or

* Reaumur. Fahrenheit. Centigrade.

24	=	86	=	30
28	=	95	=	35
32	=	104	=	40
36	=	113	=	45

seven times every twenty-four hours the operation that I am going to describe is practised.

A man entirely naked enters by the door (N, fig. 2nd); he either carries a light in his hand or he opens the hole of the vault to procure light; he opens also the round hole in the centre of the ground, and comes down through it to the inferior stove. He carries all the eggs placed on the side V fig. 7th to the side U; and those of the side U to the side V. The eggs placed under the central hole are found sensibly colder than those placed at V and U, and these latter not so warm as those of the sides X and Z. Generally they are heaped toward the corners. This operation is very necessary not only to apply the heat to all the points of the egg, but to apply it in the same proportion to all the eggs, so that development may not be effected sooner in one than in another. This removing of the eggs is performed during the day, and several times during the night. Thus the affair proceeds till the 7th day. On this day, as on the 8th, the whole of the groove before the door R R, fig. 5th, is not filled with fire, but only 2 or $2\frac{1}{2}$ feet near the entrance. By these means the heat is diminished gradually; and during these two days the thermometer at its greatest height marks only 32° or 31° of Reaumur. After the 8th day fire is no longer placed in the room. We should naturally expect that the cell unprovided with fire would return to the natural temperature of the surrounding air, but it is not so. We have already said that in the oven there are eight cells destined to the process of hatching. Three or four days after that on which the eggs have been put in the first room, they are placed in the second, and so on successively. The consequence is, that though one or two cells may be without fire, the others contain it; besides which fire is always burning in the chambers wherein the fuel is prepared, the door of which is never stopped, while its temperature ranges from 36° to 38° . All these fires produce a degree of heat which diffuses itself through the whole building, and maintains even in those rooms which are without fires a temperature varying from 27° to $27\frac{1}{2}^{\circ}$. On the 14th day another operation is performed. Half the eggs are left in the inferior room (fig. 8th) and the other half are brought to the upper one upon a circular bed of tow (fig. 9th); in this way they continue wrapping them up two or three times a day, but without bringing down those from above, or carrying up those from below. To this operation of dividing the eggs they do not attach much importance. During my observations of the operation, this division was not executed till the 16th day, because they had no tow ready to prepare the circular bed with. When the eggs are divided, the man does not enter again through the

door of the superior stove, but through that of the inferior one, arranging the eggs below ; afterwards standing up he pushes his head and arms through the hole of the roof, and arranges those above.

The eggs which have not been in the oven eight days they call صري (*el tari*) the fresh. I have eaten some of them after two or three days baking, and they were good. Towards the sixth or seventh day, they look at them before a light. If the egg appears opaque and obscure, it is inferred that the operation will succeed ; on the contrary, if it is transparent and white, they conclude that the chicken will not be formed. The people who keep the oven eat these eggs or sell them. They have the appearance and taste of boiled eggs. Those which go on without fire after the eighth day they call ملوح (*meláh*) the good. Lastly, those which have continued more than twelve days in the cells they call المسكوا (*el mésku*) which has taken ; or that wherein the chicken is already formed. The cells where eggs are divided half below and half above, as they are placed after the fourteenth day, have their doors constantly stopped with great care. During the last days of the process the hole of the top of the vault is not only stopped with tow, but with a great deal of earth upon the tow. Four or five days before the end of the operation, the door in the upper stove being open, as well as the hole of the vault, the thermometer indicates 26° , the hole being stopped $27\frac{1}{2}^{\circ}$, and the door being stopped 27° . Two days before the birth of the chicken, being all well stopped, the temperature reached to 28° , and the day before to $28\frac{1}{2}^{\circ}$. At the moment that the chickens are coming to life the heat is $28\frac{1}{2}^{\circ}$; and in the inferior stove, in which there are about a thousand recently born, 30° ; an augmentation which proceeds no doubt from the animal heat of the young birds, since there is no fire in the room, nor has there been any in it for thirteen days.

It is also curious to observe that the temperature varied during the last few days ; this probably is the effect of the animal heat which begins to develop itself in the inside of the eggs.

If we reconsider all the facts I have detailed, we shall see that the hatching of which we are speaking, consists only in applying to the egg equally and regularly during twenty-one complete days, a degree of heat which beginning with 33° or 34° of Reaumur, falls to $27\frac{1}{2}^{\circ}$ or 27° , and rises again to 28° or 29° with the help of the animal caloric, produced by nature in the process of hatching.

As soon as the chickens are born, the egg-shells are thrown away. The eggs of the inferior stove are carried to the upper, and the chicken to the inferior, which is reserved for them. These are treated with

very little care. They take them up in handfuls and throw them below. Here they remain till the subsequent day, on which they are drawn out to the corridor, where they pass some hours; sometimes one whole day. After this they are carried in covered baskets to particular houses, as will be explained, where they begin to eat ground corn or hard eggs. During the day they are exposed to the sun; before sunset they are carried to a room to be sheltered from the cold. The Arabs *never* help the chicken in breaking the egg-shell.

During the hatching at which I was present, the natural temperature in the shade varied from 13° to 16° ; the day on which the chickens were born it was 16° , and the thermometer exposed to the sun about midday marked 29° . On the subsequent day, under the same circumstances, it rose to $33\frac{1}{2}^{\circ}$. The weather was always perfectly fair excepting the fifteenth day, on which a little rain fell during the night. All the apertures were on that occasion well shut up, and the dampness produced no bad effects.

I have always placed the thermometer in the upper stove (n. fig. 3) in which the fire existed. That which served me for these observations compared with others of Reaumur's, was found to be rather lower than these.

The oven in which I studied this description, began its labours on the 2d of February last. Generally they begin fifteen or twenty days later. The hatching season closes in the month of June at the latest.

In the midst of summer the sun is more powerful, and the eggs more abundant and cheap. Why, then, should this operation be practised in the spring?

To give a satisfactory answer to this objection, there must be facts of which I am not possessed, never having had either opportunity or time to set one of the ovens in operation during the hot season. However I am fully convinced in my own mind that spring is the season best calculated for this operation in Egypt, according to the present mode of working; for the first inventors of these ovens would not have fixed upon this season but through experience, having no doubt made repeated trials.

Where facts are wanting, conjectures founded on observations and reason, may frequently in a great measure supply the deficiency; I shall therefore state what I conceive to be the reasons for giving spring the preference to summer in the lighting of the ovens.

1. During the spring months a hot southerly wind prevails, which ceases at the commencement of summer, yielding to a strong, cold, northerly one; this fills the whole atmosphere with dust and fine sand, of which there is such abundance in Egypt; it is therefore im-

possible that the little tender chickens just hatched should be able to withstand the inclemency of such weather ; whereas if hatched in spring, they become strong enough before summer sets in.

2. The great difficulty of collecting a sufficient quantity of fresh eggs during the summer, must be a decided objection for putting them into the ovens at that time, for in five or six days all the eggs become spoilt, and it takes some time to gather the required number of eggs ; indeed this is the reason which the natives themselves assign when questioned on the subject.

Whatever may be the weight attached to these opinions, yet the very circumstance of this artificial hatching being practised in spring furnishes us with a strong proof that its introduction not only in hot but in temperate climates is feasible.

In this firm conviction, and with the anxious desire of its adoption in other countries with success, I shall venture to offer a few remarks which I trust will be profitable.

Without waiting to shew the different modifications and improvements of which the Egyptian ovens are capable, I shall only mention that the system of large ovens is subject to many inconveniences.

1. This work becomes a monopoly to a few, and Government consequently levy a tax on the establishment.

2. The collecting of so many thousand fresh eggs becomes a work of labour and expense.

3. Taking care of the newly-hatched chickens would be attended with immense trouble and loss ; for at sunset they must be placed in a warm room, their food and drink must be attended to, and cleanliness, and other little cares, must not be neglected to rear them, whilst the oven-keeper must be looking after more fresh eggs to continue his subsistence. In fact, these serious inconveniences have been felt and remedies adopted.

In some districts people bring eggs to the ovens on their own account ; these they mark with ink or otherwise, and pay the proprietor for the use of the oven and his superintendence, taking the chickens away when hatched.

In other districts Government allot six or eight villages for the exclusive use of the oven-proprietors, to whom alone the villagers must sell the eggs. In this case the proprietor farms out a certain number of chickens to several poor families, either paying them when the fowls are sold for the trouble of rearing them up, or receiving back generally one half for the number of chickens given ; the persons taking as many above that number as they may have succeeded in rearing, as a compensation for their trouble.

A small oven worked by a single family on their own risk and profit, would be free from these inconveniences, and no doubt would remunerate them for their labour and expense.

An oven for that purpose ought to be of a rectangular shape, made of baked clay, 3 feet high and 3 feet broad, and from 4 to 6 feet long, with a double roof, so that the fire might be spread evenly on the whole. The lower roof should have a hole to allow of the heat passing into the oven where the eggs are. The upper roof must have an aperture for the smoke to issue, and if necessary to lessen the heat, and also for the purpose of introducing a thermometer. This aperture should be made like the lid of a box to lift up, for the greater convenience of removing the ashes, and renewing the fire; one of the walls of the oven should be made to open to admit of the hands being introduced to remove and shift the position of the eggs.

This oven moreover must be kept in a closed room, out of the way of any current of air; while the room where the oven is placed would be further useful for keeping the newly-hatched chickens till they gain strength.

Perhaps it would be an improvement if the oven were made with a double wall an inch or two apart, and the space filled up with some non-conductor of caloric, such as cork or triturated charcoal.

I think that any potter could make such an oven for the sum of five or ten shillings, and that this artificial hatching might thus be carried on in almost every country house, on a small scale, at all seasons of the year, particularly summer, with successful results. A high temperature must of course be more favourable than a low one for this process. In Egypt itself this fact is acknowledged by a common proverb among the people,

الكتكوت الغول ياكل ويموت كتكوت التوت ياكل ويموت
كتكوت المزجج وياكل وينفرج

“The chicken of the bean (i. e. the chicken hatched at the season of beans) eat and die; the chicken of the mulberry eat and die; but the chicken of the apricot eat and thrive.” The season for beans is in February, and that of apricots in May.

Besides this, a curious circumstance once occurred which still more strongly proves that this is the best season for hatching. Three eggs were forgotten, and left in a basket in July in the house of Mr. Aime at Cairo; these were hatched spontaneously, and produced three chickens which thrived. Why should not then two or three hundred in a small oven succeed?

Before I conclude this brief account, I would just mention that this artificial mode of hatching will apply equally to turkey's eggs. Several Europeans had put them into the ovens in Egypt, and a few did succeed in being hatched, but Arabs being totally ignorant of the principles of the oven-hatching, they subjected them to the same conditions as fowl's eggs—hence the failure of the greater number. But that they might be hatched artificially was evident from some of the eggs which were put in having been hatched. By this means the supply of turkeys would also be cheap and abundant.

I have no doubt that if this artificial hatching of turkeys as well as fowls were introduced into any country, and commonly adopted in farm houses, it would tend greatly to the advantage of the land.

References to the Plate.

Fig.

- 1st. General plan of the oven.
- 2d. Section of the corridor F G H I.
- 3d. Section of one cell in the direction of the corridor F G H I.
- 4th Section of one cell in the direction of the corridor A B C D.
- 5th. Floor of the upper story of one cell.
- 6th. Floor of the upper story of the cell Y.
- 7th. Floor of the under story of a cell.
- 8th. Floor of the under story of a cell after the 14th day.
- 9th Floor of the upper story of a cell after the 14th day.

ART. VII.—*Report on the Mortality among Officers and Men in H. M. Service in Bengal, and on the comparative salubrity of different Stations. By the late Dr. W. A. BURKE, Inspector-General of Hospitals.**

TO W. W. BIRD, ESQ.

President of the Committee for the Insurance of Lives in India.

SIR,

I have the honor to acknowledge the receipt of your letter, which a protracted and severe illness prevented my replying to as soon as I could have wished. I shall now endeavour as far as possible to comply with the request of the Committee in affording all the information in my power regarding mortality in the rank of officers as well as men

* For this very valuable paper we are indebted to Mr. Martin, the Surgeon to the Native Hospital of Calcutta. Dr. Burke's tabulated returns form an important addition to our knowledge of the laws of vital statistics. In connexion with this paper the reader should consult Mr. H. T. Prinsep's paper on the "Value of Life in the Civil Service."—*Journal of the Asiatic Society*, 1832, p. 277, and 1837, p. 341; and his "Table of Mortality," founded on the registers of the Lower Orphan School, 1838, p. 818.—ED.

in His Majesty's service in Bengal, and the comparative salubrity or otherwise of the different Stations for European Troops in this command.

As to the healthiness of the Stations occupied by H. Majesty's Troops in Bengal, the following abstract from their Sick Returns will serve so far, to afford the requisite information for a period of four years, as to their comparative degree of health from 1830 to 1833 inclusive.

STATIONS.	Period of years.	Officers.			Men.			Women.			Children.		
		Average Strength,	Died of diseases in the Station,	Proportion of Deaths to Strength per cent.	Average Strength,	Died of diseases in the Station,	Proportion of Deaths to Strength per cent.	Average Strength,	Died of diseases in the Station,	Proportion of Deaths to Strength per cent.	Average Strength,	Died of diseases in the Station,	Proportion of Deaths to Strength per cent.
Meerut,	4 222	3	1-35	5,900	117	1-98	722	16	2-21	1,200	59	4-91	
Cawnpore, ..	4 226	7	3-10	5,950	271	4-55	914	37	4-04	1,572	145	9-22	
Ghazee pore, ..	4 109	3	2-75	3,754	143	3-80	456	15	3-29	845	56	6-62	
Berhampore, ..	4 118	9	7-62	3,515	236	6-77	473	27	5-71	865	70	8-09	
Chinsurah,	4 119	6	5-04	2,523	154	6-10	469	28	5-96	756	28	3-70	
Fort William,	4 119	7	5-88	3,097	235	7-59	447	48	10-73	761	124	16-29	
Kurnaul,	3 81	1	1-23	2,827	85	3-00	404	7	1-73	679	45	6-62	
Agra,	2 63	..	..	1,513	29	1-91	208	3	1-45	336	30	8-92
Dinapore, .. .	2 56	1	1-79	1,612	56	3-81	189	8	4-23	299	37	12-37	
Boglipore, ..	1 27	..	..	1,037	41	3-95	119	6	5-05	190	16	8-42
Chirra Poonjee,	1 ..	..	..	38	6	15-79	..	..	..	..	..	..
Ladour,	4 ..	..	..	275	16	5-82	..	..	..	..	..	..
Total, .. . . .	..	..	..	32,041	1,389	4-33	1,401	195	4-43	7,503	610	8-30

Among the Officers there were ten more deaths, but none of which occurred in any of the above Stations, viz.—

At Sea	2
On the River	3
At Madras	1
At Sultanpore Benares	1
At Allahabad	1
On the Hills	2

Giving the following proportions of deaths among the Officers His Majesty's service for four years, from 1830 to 1833 inclusive—

Total	Total	Total ratio of
Average strength	Deaths,	deaths to strength.
1140	47	412

Among the Men also there were other deaths, not within the scope of the foregoing Statement ; in consequence of which an abstract is give to include the whole of the casualties regimentally among all His Majesty's Troops throughout the Bengal command, for the period 1830 to 1833.

REGIMENTS.	Period of years.	Strength of Com- mand, 1st January each year.	By disease mite- gimental Hospi- tals.	By accidents, drowned, killed, &c.	Absent Deaths.	Grand Total of Deaths.	Proportion of Deaths to Strength per cent.	Invalided.	Remarks.
11th Lt. Dragoons, ..	4	2,626	75	2	15	92	3.50	18	In the Column 'absent Deaths,' are included, Deaths absent from Regiment in General and Detachment Hospitals, and other Casualties, such as died or drowned at sea, &c.
16th Lancers,	4	2,488	121	12	16	149	5.83	36	
3d. Buffs,	4	3,138	185	13	7	205	6.53	4	
13th Lt. Infantry, ..	4	3,217	87	6	4	97	3.01	13	
14th Foot,	1-1	1,350	58	6	3	67	4.96	0	
16th Ditto,	4	3,047	199	7	9	215	7.05	20	
26th Ditto,	4	3,447	53	3	24	80	2.32	10	
31st Ditto,	4	3,925	100	18	18	136	3.72	8	
38th Ditto,	4	3,927	146	20	22	188	4.78	4	
44th Ditto,	4	3,510	135	9	5	140	4.24	11	
49th Ditto,	4	2,909	110	11	2	223	7.66	8	
Total,	0	33,485	1,369	107	125	1,601	4.78	133	

Shewing the strength and deaths, and the ratio of deaths to strength, in His Majesty's Regiments, in the Bengal command.

	Total Average strength.	Total Deaths.	Total ratio of deaths to strength per cent.
Men,	33484	1601	4.78.

It is to be observed that the strength of the troops in this statement is as given in the Regimental Returns on the 1st January of each year, and which differs from the mean annual strength ; the latter being 32041, the ratio of total deaths to it is 4.99. In the different Stations of His Majesty's Regiments in the Presidency of Bengal, there is so little difference in the periods and duration of the seasons, as well as in their general temperature and climate, that it is upon the innate features of each Station itself, and from the data afforded by

its Returns, that its comparative salubrity would appear to be best deduced.

The steadiness or mutability of the climate, or considerable anomalies of weather, or physical properties, seem more to influence the health of the troops than either its heat or its cold, abstractedly considered.

The causes of sickness in many Stations must be traced to other sources than climate.

The soil of Bengal being composed of alluvial matter, formed by the detritus carried down by the great rivers, and accumulated for ages, there is a poison in the exhalations of such soils, the nature of which is unknown; but from it emanate all those species and varieties of fevers, (dependent on marsh miasma as their remote cause) so frequent in Bengal, and to which one general character appertains—periodicity, or remissions, and exacerbations.

A large proportion however of the cases of sickness and deaths among the European soldiers, may be more or less attributed to excesses, especially in the use of spirituous liquors.

The relative healthiness of each Station is according to the Returns, as follows, from 1830 to 1833 inclusive—

	Deaths to strength.
Fort William	7·59 per cent.
Berhampore	6·77
Chinsurah	6·10
Cawnpore	4·55
Boglipore	3·95
Dinapore	3·84
Ghazepore	3·80
Kurnal	3·00
Meerut	1·93
Agra	1·91

There are given Classification Tables, taken from the Regimental Returns, shewing the different classes, numbers, ages, and deaths, of the soldiers of His Majesty's service in Bengal for the years 1826 to 1833, viz.

Return of the different Classes of Men, Ages and Deaths of H. Majesty's Troops serving in the Bengal Command.

1826.

CLASS.	Age.	11th Light Dragoons, from Bhurt- pore.		16th Light Dragoons, Lancers, from Bhurt-pore.		13th Light In- fantry, from Ava.		14th Foot, from Bhurt- pore.		31st Foot, from Eng- land.		38th Foot, from Ava.		44th Foot, from Ava.		47th Foot, from Ava.		59th Foot, from Bhurt- pore.		87th Foot, from Ava.		Total.		Proportion of Deaths to Strength per cent.
		Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	
From 18 to 20 years.		21	0	6	4	111	64	41	12	102	60	91	21	56	144	22	231	31	72	7	1,015	273	26.89	
" 20 to 25 "		98	4	67	9	388	26	148	23	516	46	174	35	14	144	46	217	28	218	34	2,233	262	11.69	
" 25 to 30 "		150	15	119	2	213	23	210	19	148	23	126	44	46	267	30	214	20	226	51	1,869	273	14.61	
" 30 to 35 "		173	15	270	8	93	8	276	20	86	9	130	29	19	140	28	126	13	194	42	1,649	191	11.58	
" 35 to 45 "		113	12	169	5	57	13	244	23	37	12	90	19	7	83	21	141	26	234	38	1,279	176	13.76	
Under 18 years, ..		12	0	1	0	15	0	3	0	14	0	22	0	31	0	23	0	0	0	0	0	182	0	0
Unknown,		0	0	20	0	0	0	0	0	0	0	194	0	205	0	0	0	0	0	0	0	419	0	0

1826 being the first year these Returns were required, the term "unknown," was applied to those men whose ages the Surgeons could not then ascertain, but afterwards, when ascertained, they were taken into their proper and respective classes.

1827.

CLASS.	Age.	11th Light Dragoons.		16th Light Dragoons.		3d. Foot or Buffs.		13th Light Infantry.		14th Foot.		31st Foot.		38th Foot.		44th Foot.		47th Foot.		59th Foot.		Total.		Proportion of Deaths to Strength per cent.
		Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	
	From 18 to 20 years,	20	2	5	0	46	12	137	24	22	8	114	12	99	23	198	11	94	6	189	10	924	108	11.69
	" 20 to 25 "	134	8	66	16	184	29	464	35	141	8	435	20	297	29	425	21	362	24	326	8	1,561	178	11.25
	" 25 to 30 "	117	10	123	10	86	28	197	13	165	13	262	10	184	27	223	10	255	19	199	11	1,811	151	8.34
	" 30 to 35 "	168	11	260	12	77	16	88	3	272	15	87	6	211	12	175	5	113	14	130	5	2,834	99	3.49
	" 35 to 45 "	144	4	166	6	81	18	58	4	247	19	81	9	122	20	114	1	74	12	104	7	1,194	100	8.37
	Under 18 years, ..	16	0	1	0	0	0	14	0	8	0	13	0	21	0	37	0	13	0	29	0	152	0	0
	Unknown,	1	0	20	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0	0	53	0	0

1830.

CLASS.	Age.	11th Light Dragoons.		16th Light Dragoons.		3d. Foot or Buffs.		13th Light Infantry.		14th Foot.		16th Foot.		26th Foot.		31st Foot.		38th Foot.		44th Foot.		49th Foot.		Total.		Proportion of Deaths to Strength per cent.
		Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	
	From 18 to 20 years.	60	0	25	2	17	1	166	0	159	0	28	1	38	1	12	0	55	0	400	0	12	1	972	6	0.62
	" 20 to 22 "	81	2	32	5	82	5	165	2	0	5	111	3	132	1	131	3	114	8	0	7	204	6	1,052	47	4.47
	" 22 to 24 "	120	6	124	1	195	8	131	8	0	6	119	9	224	0	149	4	256	9	0	8	109	8	1,427	67	4.69
	" 25 to 30 "	191	5	127	2	298	16	144	12	0	10	207	18	306	7	475	10	353	10	412	11	155	22	2,668	123	4.60
	" 30 to 35 "	142	5	114	5	149	9	120	2	382	35	145	16	110	1	130	3	135	6	97	6	246	10	1,770	98	5.53
	" 35 to 45 "	50	5	221	11	131	2	68	2	87	7	207	17	94	6	132	0	152	8	39	5	44	3	1,225	66	5.38

1831.

CLASS.	11th Light Dragoons.		16th Light Dragoons.		3d. Foot or Bufts.		13th Light Infantry.		16th Foot.		26th Foot.		31st Foot.		38th Foot.		44th Foot.		49th Foot.		Total.		Proportion of Deaths to Strength per cent.
	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	
From 18 to 20 years.	24	0	4	1	13	0	165	0	14	0	98	0	1	0	27	0	360	0	16	0	722	1	0.14
" 20 to 22 "	62	3	9	2	27	4	194	3	136	1	103	2	92	1	175	1	0	2	40	3	838	22	2.62
" 22 to 24 "	129	4	89	2	124	11	131	8	119	15	183	6	111	4	214	11	0	19	45	6	1,145	86	7.51
" 25 to 30 "	182	12	208	4	361	23	156	19	206	15	399	10	492	19	272	21	379	5	371	31	3,026	159	5.25
" 30 to 35 "	150	4	93	6	161	7	80	6	111	11	33	4	146	6	154	8	114	7	222	17	1,264	76	6.01
" 35 to 45 "	55	12	225	10	136	11	74	3	208	12	62	3	140	4	160	13	36	6	58	10	1,154	84	7.28
Unknown,	0	0	23	0	0	0	0	0	0	0	0	0	9	0	14	0	5	0	0	0	51	0	0

1832.

Class.	Age.	11th Light Dragoons.		16th Light Dragoons Lancers.		13th Light Infantry.		16th Foot.		26th Foot.		31st Foot.		38th Foot.		44th Foot.		49th Foot.		Total.		Proportion of Deaths to strength per Cent.		
		Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.			
	From 18 to 20 years.	13	1	15	0	9	0	141	0	4	1	7	0	94	0	5	1	178	1	16	1	482	5	1.04
	" 20 to 22 "	55	1	26	0	33	1	195	1	10	2	118	2	109	0	93	0	5	1	71	0	715	8	1.11
	" 22 to 24 "	155	1	85	3	65	7	124	0	83	7	236	5	126	1	95	5	1	4	92	6	1062	39	3.67
	" 25 to 30 "	238	4	214	6	310	33	157	9	189	12	207	9	181	31	383	19	319	11	240	19	2438	153	6.27
	" 30 to 35 "	161	2	87	4	159	16	73	1	136	5	124	5	254	10	183	5	302	8	176	10	1655	66	3.99
	" 35 to 45 "	25	12	229	13	167	15	73	0	209	14	105	1	56	8	199	6	50	1	115	6	1329	76	5.71
	Under 18 years. ..	3	0	13	0	0	0	11	0	0	0	9	0	9	0	12	0	5	0	0	0	62	0	0

• 1833.

Class.	Age.	15th Light Dragoons.		16th Light Dragoons.		Dragoons Buffs.		19th Light Infantry.		16th Foot.		26th Foot.		31st Foot.		38th Foot.		44th Foot.		49th Foot.		Total.		Proportion of Leaths to strength per Cent.
		Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	Number.	Died.	
From 18 to 20 years.		15	0	10	0	107	1	146	1	4	0	6	0	13	0	5	0	73	0	16	0	395	2	0.50
" 20 to 22 "		112	1	20	3	98	0	173	0	10	0	12	1	11	0	111	0	218	1	20	0	785	6	0.76
" 22 to 24 "		64	0	49	10	82	2	131	0	90	1	81	1	9	1	93	0	204	2	63	6	866	23	2.65
" 25 to 30 "		123	3	206	25	99	20	135	13	209	22	389	11	676	19	298	25	126	24	260	22	2512	184	7.32
" 30 to 35 "		133	1	82	4	195	8	76	3	138	9	164	1	147	3	175	16	121	8	183	23	1414	76	5.37
" 35 to 45 "		179	8	191	30	113	5	70	4	217	15	115	3	39	9	200	16	61	10	103	13	1288	113	9.77
Under 18 years.		3	0	10	0	7	0	9	0	14	0	7	0	10	0	9	0	4	0	0	0	73	0	0

General Abstract of the foregoing Returns, giving the Ratio of Deaths of each class for 8 years.

Class.	1830.	1831.	1832.	1833.	Average proportion from 1830 to 1833.		1826.	1827.	1828.	1829.	Average proportion from 1826 to 1829.		Mean average proportion for 8 years.
From 18 to 20 years.	0.62	0.14	1.04	0.50	0.58	26.89	11.69	11.69	7.82	18.09	16.12	8.35	
„ 20 to 25 „	4.58	5.07	2.39	1.71	3.44	11.69	1.125	6.76	6.76	7.62	9.33	6.39	
„ 25 to 30 „	4.60	5.25	6.27	7.32	5.86	14.61	8.34	8.98	8.98	8.60	10.13	8.25	
„ 30 to 35 „	5.53	6.01	3.99	5.37	5.22	11.58	3.49	7.03	7.03	5.57	6.92	6.07	
„ 35 to 45 „	5.38	7.28	5.71	8.77	6.78	13.76	8.37	8.98	8.98	7.04	9.54	8.16	

The General Abstract of the foregoing shews that for the four first years, viz. 1826-27-28 and 29 the ratio of deaths is,

From the age of 18 to 20 years 16·12 per cent.

„	20 to 25	„	9·33	„
„	25 to 30	„	10·13	„
„	30 to 35	„	6·92	„
„	35 to 45	„	9·54	„

For the four last years, viz. 1830-31-32 and 33, the ratio of deaths is,

From the age of 18 to 20 years 0·58 per cent.

„	20 to 22	„	2·24	} 3·44
„	22 to 24	„	4·63	
„	25 to 30	„	5·86	
„	30 to 35	„	5·22	
„	35 to 45	„	6·78	

There will be observed a striking difference between the ratio of deaths in each class of the two periods of four years; viz. first, from 1826 to 1829, and, second, from 1830 inclusive. But there is to be taken into consideration, that in the first period there are included the casualties (in 1826) of the Troops His Majesty's service who had been in active service at Bhurtpore, Ava, and Arrakan. During the campaigns, in the latter places especially, the deaths from disease among the young soldiers recently arrived in India, was very great.

Thus in the 13th Regiment Light Infantry, that had arrived in India in May 1823, and was composed chiefly of young soldiers, the mortality was,

	Strength.	Deaths.	Proportion.
At Bengal from May } to December, 1823 }	653	45	6·89 for 8 months
At Ava in.. .. 1824	608	231	37·99
Do. do. 1825	377	115	30·50

In the 38th Regiment, which arrived in Bengal in May 1823, the mortality was,

	Strength.	Deaths.	Proportion.
In 1822 in Bengal	743	94	12·65 per cent.
In 1823 do.	695	52	7·48
In 1824 in Ava	643	185	28·77
In 1825 do.	458	162	35·37

In the 44th Regiment, which arrived from England in November 1822, the mortality was,

	Strength.	Deaths.	Proportion.
In 1823 in Bengal	661	73	11·43 per cent.
In 1824 at Chittagong } and Arrakan }	588	88	14·96
In 1825 at Arrakan	500	203	40·60

There is a difference however in the mortality of young recruits of Regiments when on active service, and the contrary ; as, for example, in the 13th Light Infantry, which in 1826 in Bengal was joined by 600 recruits, of whom there died in that year 79, being a proportion of 13·16 per cent in Bengal.

His Majesty's 31st Regiment arrived in Bengal in June 1825, and was joined in that year by 500 recruits, of whom there died 65, a proportion of 11 per cent, in Bengal.

The volunteers are generally men from the age of 30 to 35, in which class the ratio of deaths from 1826 to 1829 (including a period of active service) was 6·92, while during the same period, the ratio in the class from 18 to 20 years was 16·12 per cent.

Besides the sending from England of lads too young for the service in India, there was another important circumstance as affecting their health, which was that of their having been sent out at improper periods ; for they arrived in Bengal at the hot and rainy seasons, found to be more especially obnoxious to the lad or boy recruits ; and of such, unfortunately, was the chief part of those sent out in 1826 to 1829, as well as before.

From the difference of habits of military and civil life, young soldiers are in every climate peculiarly liable to disease, and *cæteris paribus* the younger the more susceptible to feel the change ; and this change has a direct tendency to induce a highly inflammatory diathesis, leading to such explosions of disease as witnessed here among the recruits. The tendency to disease exists it is true in all seasons in India in the young and plethoric, but it is in the hot and rainy seasons, and particularly at the commencement and termination of the rains, that endemial diseases are most dangerous, and fatal ; yet this was the very time at which these recruits principally arrived in Bengal.

I took the earliest opportunity, and seized every occasion, to make the strongest representations on these important subjects, and of sending out soldiers for His Majesty's service to India at *proper*

age, and *season*; and there are on record my memorials on these subjects to the Commander-in-Chief in India, and to the Medical Department in England—of December 23d, 1826; May 31st, 1827; 6th January, 1828; and December, 1829—and upon which the Home authorities at last acted. In these memorials it was represented by me,

1st. That the soldier should arrive in India at the *age* and *period* when he can be of the greatest use when called upon for actual service. That age to be 24 or 26, or full grown manhood, as most favourable to health, and least so to disease in India.

2nd. That recruits and soldiers should be embarked in England, so as to arrive in Bengal at the commencement of the cool season, when they might be *marched* to their several Stations up the country, instead of *proceeding* by the river.

These memorials I accompanied with various statements; such as those in this communication, in proof of the great comparative mortality among the lad recruits particularly; as also the comparative mortality between the soldiers arriving in Bengal in the hot and in the cool season, as by the following abstract of statements from December 1825, to July 1829, of casualties of detachments His Majesty's service, arriving in Bengal from England, being,

In the cold season, per cent,	0·75
In the hot season,	3·0
Proceeding by water to join their corps,	6·50
On marching to join their corps,	0·50
Average of casualties on the voyage out,	1·50
Average of casualties from the date of arrival in Bengal } to joining their corps, }	6·75
Ditto of casualties of the whole of the detachments } from their leaving England to join their corps in } Bengal, }	8·0

The accompanying Returns* elucidate these subjects still further, shewing the state of each Regiment His Majesty's service, their strength, the numbers who joined, and that died, from the date of their arrival in the Bengal command to the 31st December last.

On consulting the monthly admissions in the returns of sick, an abstract from which is given on the other side, the number of cases of disease (and they are particularly of the acute kind) and casualties, will be observed to correspond in a most remarkable manner with the range of the thermometer, especially at the Stations in Upper India; and so great is the difference between the cold season and the

* The Returns alluded to, will form an appendix to the next Number.—ED.

hot, that a partial illustration is afforded of the influence of climate which sets all theory on the subject at defiance.

Among the soldiers exposed to the same degree of heat, the influence of the ingesta seems to be more powerfully injurious to the constitution than climate. There is a marked difference in the ratio of sick and casualties between the Cavalry and Infantry Regiments, stationed in the same cantonments, of His Majesty's service in India, in favour of the latter. In the Cavalry the soldier's pay is greater, and among them a superabundance of stimulant food and drink keeps so great a number in an almost perpetual state of proximity to inflammatory diseases.

During the cold months the men continually expose themselves, especially in the Upper Stations, to the direct rays of the sun, which is a great cause of disease, even when all accumulation of heat is prevented by the coolness of the breeze, for then the infringing of the direct rays of the sun upon an opaque body causes a greater increase of temperature than is observable by a thermometer.

Abstract from the Monthly Returns of Sick shewing the proportion of the average daily sick, and of deaths to strength per cent for four years.

Months,	Proportion of the average daily sick to strength per cent.				Total proportion of the average daily sick to strength per cent.	Proportion of deaths to strength per cent.				Total proportion of deaths to strength per cent.
	1830	1831	1832	1833		1830	1831	1832	1833	
January, ..	7.12	5.94	6.33	5.45	6.21	26	23	31	15	24
February,	7.58	5.85	5.96	5.52	6.23	20	10	12	18	15
March, ..	8.64	5.80	6.10	5.89	6.61	18	19	15	15	17
April,	9.24	7.14	6.88	6.22	7.37	28	19	17	15	20
May,	9.75	8.47	7.88	6.78	8.22	20	44	25	25	29
June,	9.34	8.47	7.36	7.19	8.09	31	37	32	37	34
July,	9.14	8.36	7.61	7.72	8.21	30	44	34	74	46
August....	9.49	9.10	7.74	8.29	8.65	34	47	35	74	48
September,	10.71	8.32	8.03	9.79	9.21	71	46	43	1.15	69
October, ..	8.92	8.12	8.20	8.29	8.36	47	64	52	30	48
November,	8.16	7.18	7.05	7.79	7.54	51	60	43	35	47
December,	6.77	7.06	6.23	7.40	6.86	33	22	32	44	33
Total,	8.72	7.48	7.11	7.18	7.62	4.15	4.39	3.73	4.98	4.31

The sick at Landour and Chirra Poongee are not included in the above.

By the returns for four years, the minimum of sickness and deaths occurs in February. January and it are the driest months. The maximum of sickness and deaths occurs in September; being the cessation of the rains, when the exhalations have brought the surface to the consistence of mud—a state that appears especially to generate the miasmata producing fevers, &c.

Berhampore.

With respect to the localities of the Stations “as affecting their salubrity or otherwise,” as required by the Committee, I have in reference to the return of the sick, &c. at the several Stations, given at the commencement, further to add, that at the Station of Berhampore, the Barracks are so placed, that one particularly is close to a large stagnant tank, into which the sewers of the Barracks and necessaries, &c. empty themselves, so that in the dry and hot season especially, the men are enveloped in the stench from it. That the influence of its exhalations spreads far, I have no doubt. The malaria from it, as well as numerous other sources, is of course the active cause of much of the mischief that infests the Station of Berhampore.

For the period of four years, from 1830 to 1833, inclusive, the average proportions of deaths to strength per cent was, *at* Berhampore,

Officers	7·62 per cent per annum.
Men	6·77
Women	5·71
Children	8·09

Cholera prevailed epidemically in Berhampore in 1829 and 1830, and commenced in the temporary sheds recently erected, (not far from the great tank before mentioned) for part of His Majesty's troops; after which it appeared in the women's quarters—a low one-storied brick-building; afterwards on the ground story; and then in the upper story of the Barracks next the great tank, &c.

Fort William.

In the Station of Fort William, in the Barracks generally occupied by His Majesty's troops, the apartments for the men are deficient in height and ventilation. The buildings are too crowded together. The estimate of space, and of domestic convenience, has been too confined for the climate.

From the crowding of the buildings, and height and proximity of the fortifications, the radiation of heat is not only very great, but there is prevented the dissipation of those malarious vapours of which there appears to be so copious a supply from various sources in Fort William.

One of the consequences of all these is, in the warm season especially, the men feel so oppressed at night that they leave their rooms and expose themselves to all the causes and bad effects of suppressed transpiration.

The average ratio of mortality in His Majesty's troops quartered in Fort William is as follows, for four years from 1830 to 1833—

Officers	5·88 per cent per annum.
Men	7·59
Women	10·73
Children	16·29

Fort William is one of the worst, if not the very worst, of the Military Stations in India for children.

Cawnpore.

In the Station of Cawnpore for the period of four years, from 1830 to 1833, the average proportion of deaths to strength is,

Officers	3·10 per cent per annum.
Men.....	4·55
Women	4·04
Children	9·22

As to the locality of this cantonment, none of the Barrack buildings come close to the river, excepting the Hospital in which the sick of the King's Regiment of Infantry are treated. The soil rests on a substratum of Kunkur, which is favourable to the dryness of the Station. The declivity of the site secures it against any accumulation of moisture; the drainage is also facilitated by several small ravines or gullies, which intersect the cantonment, each of which during the rainy season becomes a streamlet; thus the water does not lodge, but runs quickly off into the river (above which all the Barracks are sufficiently elevated) or it is speedily absorbed, so that the wet season at Cawnpore is generally found pleasanter than in many other Stations in Upper or Central India.

The site of the Barracks of His Majesty's Infantry Regiment is pretty high, that of the King's Cavalry Regiment not so high; but that of all however is sufficiently elevated to allow of the water passing off.

The ground in the rear of the King's Infantry Regiment's Barracks is broken in many places, by the violence of the periodical rains, into deep fissures and ravines, containing numerous cavities, which, however individually small, may form in the aggregate a consider-

able deposit of stagnant water, which before its final evaporation cannot fail to be an agent more or less active in the generation of miasmata.

In the Barracks for the European troops here, the plans adopted by the architect would appear to have arisen from the idea of a Regiment standing in open column of companies, which however ingenious in a military point of view, is rather objectionable in a medical one, as it makes one building a screen to another, and thus opposes perfect perfation, an object of paramount importance where masses of men are to be congregated together, and where a perpetual current of air becomes the grand neutralizer of insalubrious miasmata.

The prevailing winds are from the west and east, varying to the north or south. If the buildings were placed in echelon this might be prevented.

Meerut.

In the Station of Meerut the locality is in Meerut deemed good. There are a few jheels and swamps in the vicinity ; but not near, or considerable enough to have much effect on the health of the troops. The country around is flat ; the soil is sandy, with a slight declination to south sufficient to carry off the heavy rains into the Kallee Nuddy to the eastward.

Notwithstanding the northern latitude of Meerut, considerably without the tropics, and in the third climate, the heat is intense in the dry and hot season, and tropical diseases are prevalent during the hot and rainy seasons. For the period of four years, from 1830 to 1833, the average proportion of deaths to strength is, at Meerut,

Officers	1·35	per cent per annum.
Men.....	1·98	
Women	2·21	
Children	4·91	

The diseases are such as arise from sudden and considerable variations of temperature and malaria, and especially among the soldiers, aggravated by exposure to the sun and intemperance.

Dinapore.

In the Station of Dinapore the aspect of the Barracks being the reverse of what it should have been in respect to the prevailing winds, free perfation is prevented. The roof is flat and chunamed ; the length of each building is 800 feet, and width 20 feet ; there is a verandah on each side.

The masses of men, women, and children in these Barracks, is another cause of the unhealthiness experienced generally in them by the troops. There are no separate accommodations for the women and children. The doors and windows are jealousied.

The *cold* weather here was generally ushered in by severe hepatic and dysenteric affections. And in the *hot* season there were severe ardent fevers, very sudden in their operation, and often terminating in apoplexy.

In His Majesty's 13th Light Infantry for the period of two years, for 1830 and 1831 last, at Dinapore, the average proportion of deaths to strength was,

Officers.....	1·79 per cent per annum.
Men	3·84
Women.....	4·23
Children	12·37

The facility with which the men could obtain toddy, and deleterious liquors in excess, was one great source of disease and mortality, as also the difficulty of confining the men within bounds, there being no enclosure to the Barrack compound.

The 13th being a Light Infantry corps, their movements were more likely to expose them to profuse perspiration, and consequently to more frequent alterations of heat and cold, with the usual bad effects.

Boglipore.

In the Station of Boglipore the Barracks formerly occupied by His Majesty's 3rd Buffs, were merely a set of buildings erected temporarily in 1825 as stables for some Native Cavalry, and were very inimical to health.

Ghazeepore.

The Station of Ghazeepore appears to hold a middle station as to healthiness. The soil is readily permeable by the rain falling on its surface, which sinking down to a very considerable depth before it finds a hard bottom to detain it, is soon out of reach of superficial evaporation, and cannot afford the constant supply of moisture necessary in co-operation with other agents to produce the maturity of marsh miasmata. From the continuation of these circumstances it might *a priori* be thought that the Station possesses to a great degree an immunity from marsh miasmata.

For the period of four years, from 1830 to 1833, the average proportion of deaths to strength is,

Officers.....	2·75 per cent per annum.
Men.....	3·80
Women.....	3·29
Children.....	6·62

Kurnaul.

In the Station of Kurnaul the locality of the Barracks for His Majesty's Regiment is the best the place afforded. The soil generally is light and sandy on the surface, but at the depth of 12 or 15 inches it is a stiff clay; in some parts however it is calcareous, (and of which the natives make lime). The large canal in the immediate vicinity forms an irregular semicircle near the Station, and tends in a great measure to drain that part.

For the period of three years, from 1831 to 1833, inclusive, in which it has been occupied by a King's Regiment, the average proportion of deaths to strength per cent is,

Officers.....	1·23 per cent per annum.
Men.....	3·00
Women.....	1·73
Children.....	6·62

Agra.

In the Station of Agra the cantonment for His Majesty's troops is stated to be elevated about 170 feet above the level of the river Jumna, from which the distance is about the same as from the Fort, that is $1\frac{1}{2}$ mile. The immediate banks of the river are deeply indented with water-courses, which serve to convey the rain water into the river.

The 13th Light Infantry Regiment has been healthy ever since its arrival there, a period of two years, in which there died 29 men; but almost all of them had the foundation of their disease laid in Dinapore. This comparative healthiness, as far as locality is concerned, arises from the cantonment enjoying constant ventilation, the water running immediately off, the drainage being good, and there being no stagnant pools, or sources of malaria in the vicinity, and especially that the troops are well accommodated, and so are the sick.

Setting aside intemperance, which is the cause of so many diseases of the soldier in India, they may be said to have enjoyed a state of health at Agra almost equal to what a Regiment would be found to do in the healthiest parts of Europe.

For the period of two years, for 1832 and 1833, in which there has been a King's Regiment in Agra, the average proportion of deaths to strength per cent is,

Officers	
Men	1.91
Women	1.45
Children.....	8.92

I have the honour, &c.

(Signed) W. R. BURKE,

Inspect. Gen. Hospitals H. Majesty's Forces in India.

ART. VIII.—*Observations on the Burmese and Munipoor Varnish Tree, "Melanorrhœa usitata," which has lately blossomed in the Honorable Company's Botanic Garden. By N. WALLICH, M.D.*

When I published my account of this tree in 1830,* I had only met with it in fruit, and was obliged to confine the description of the flower to what could be gathered from a few decayed and not very perfect samples in my possession. The generic character was chiefly derived from specimens of another species, *Melanorrhœa glabra*,† a native of the coast of Tenasserim. As I have recently had a tree of *M. usitata* in flower in this garden, I am able to furnish the following details, accompanied by a lithographic sketch of a flowering panicle, from a drawing made by one of the painters of the establishment.

The individual tree to which I allude is one among several which were raised from Munipoor seeds presented by Mr. George Swinton. The seeds were sown in July 1827, and began germinating exactly a fortnight afterward. About the same period some seeds that had been procured from Martaban, being more fresh, sprang up seven days after being put into the ground. The tree which has blossomed is the largest among the seventeen individuals which we at present possess. It measures in height about 22 feet, with a clean stem of seven feet, having a circumference near the base of 14 inches. It has not many branches, and is now very scantily furnished with leaves. It began opening its flowers on the 20th of January last, and continued nearly one whole month in flower. There are at present a small number of fruits on the tree, which I expect will ripen in the course of next month.

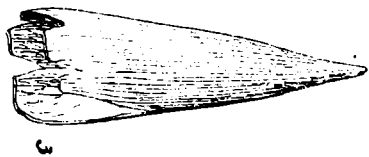
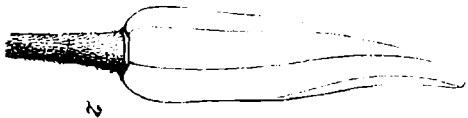
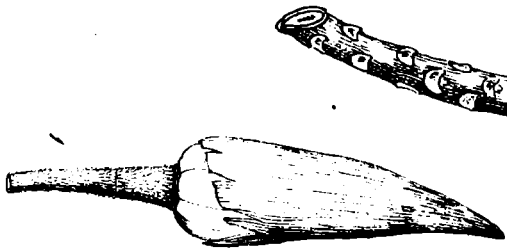
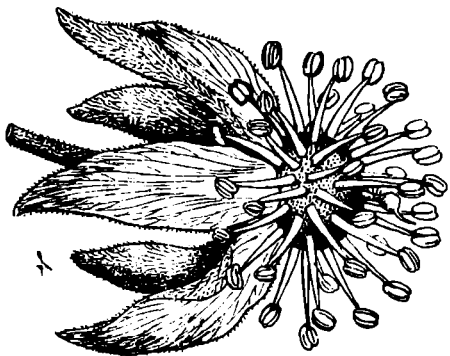
* *Plantæ Asiat. Rar.* 1. p. 9. tab. 11 and 12.

† *Ibid.* 3. p. 50 ab. 283.



Melanorrhoea vitata Wall

70A



Melampyris coccinea Willd.

Panicles of flowers terminal on leafless branchlets, broad-oval, spreading, much and loosely subdivided, 12 to 16 inches wide at the base; the divisions cylindric, covered with much soft down. There is a small linear, caducous bract under each branch. Flowers white, inodorous, rather large, two or three in each fascicle, supported by pedicels half an inch to an inch in length. Calyx smooth, consisting of five sepals which are marginally soldered together into one, forming a conical, attenuated, obtuse hood, slightly marked with parallel veins; it falls off the instant the corolla is ready to expand, leaving an annular vestige on the peduncle immediately under the corolla; its base circular, irregularly slit a little way, in four or five places. *Petals* white, imbricating and slightly contorted in estivation, lanceolate-oblong, rather obtuse, with entire, a little undulated, ciliated margins, thin and membranous, pubescent on both sides, minutely reticulated, half an inch long. *Torus* large, fleshy, hemispherical, pitted for the insertion of the stamens, its base five-lobed. *Stamens* very numerous, straight, spreading in all directions, half the length of the petals; *filaments* subulate, smooth; *anthers* oval, versatile. *Ovary* very small, obliquely oval, smooth, supported from the centre of the torus by a short, cylindric, pubescent pedicel, one-celled; ovule suspended from a lateral ascending funicle. *Style* rising obliquely from the vertex of the ovary, subulate, not reaching to the ends of the stamens. *Stigma* minute, obtuse.

The accompanying figure represents a panicle of flower reduced to one half of its natural size. Fig. 1, flower-bud, the hooded calyx commencing to detach itself, and at Fig. 3, completely separate. Fig. 2, corolla in estivation. Fig. 4, the same fully expanded. Fig. 5, petals separate, showing the pitted torus. Fig. 6, ovary opened showing the insertion of the ovule.

ART. IX.—*Proceedings of the Asiatic Society.*

Wednesday Evening, the 2d January, 1839.

The Right REV. the LORD BISHOP of Calcutta, Vice-President, in the chair.

The Proceedings of the last Meeting were read.

The Meeting then proceeded to the election of Office-bearers for the ensuing year, when the following gentlemen were chosen :—

The Right Rev. LORD BISHOP of Calcutta,	} Were elected Vice-Presidents.	
The Honble. Sir J. P. GRANT,		
H. T. PRINSEP, Esq.,		
Col D. MACLEOD,	} Members of the Committee of Papers.	
Mr. W. CRACROFT,		Capt. FORBES,
Mr. W. P. GRANT,		Dr. STEWART,
Mr. D. HARE,		and
Dr. Geo. EVANS,		Dr. WALLICH.
Dr. M'CLELLAND,		

Dr. GOODEVE and Mr. R. O'SHAUGHNESSY, proposed at the last Meeting, were balloted for, and duly elected Members of the Society.

Messrs. A. PORTEOUS and J. COWIE were proposed by the Officiating Secretary, seconded by the Vice-President.

Dr. O'SHAUGHNESSY apprised the Meeting that the Committee of Finance had recommended 20 rupees per mensem, as an increase to the Clerk HERAMBANATH THAKUR's salary.

Resolved,—That the meeting approve of the decision of the Committee of Finance, and that it take effect from the date of the Clerk's application.

Read a letter from J. K. KANE, Esq., Secretary of the American Philosophical Society, acknowledging receipt of the first part of vols. 19 and 20 of the *Asiatic Researches*, and vols. 5 and 6 of the *Journal of the Asiatic Society*.

Library.

Read a letter from J. VAUGHAN, Esq., Librarian of the American Philosophical Society, forwarding the following works for presentation to the Society—

Transactions of the American Philosophical Society, Vol 6, Part 1, New Series.

Transactions of the Literary and Historical Committee of the Society.

Read a letter from M. CASSIN, Book Agent of the Society in Paris, enclosing account of sales of oriental publications sold by him in France, and forwarding from the proceeds thereof several recent publications for the use of the Society. He had likewise sent several books for sale in this country.

Resolved,—That the books for sale be advertized on the cover of the *Journal, Asiatic Society*, with their prices.

A brochure by the Royal Society of Cornwall, presented by Capt. F. JENKINS through Dr. WALLICH.

Meteorological Registers kept at the Mauritius, during the last six months of 1836, and first six months of 1837, were presented by M. JULIEN DESJARDINS, Secretary of the Natural History Society of the Mauritius.

Read a letter from MADHUSHUDANA GUPTA, forwarding specimens of the plates for the "*Sarira Vidya*" engraved by Native artists.

The Officiating Secretary with reference to the very high cost and inferior execution of the plates submitted, proposed a reference by the overland mail to Professors QUAIN and PAXTON, by whose friendly co-operation he had no doubt casts of their anatomical wood-cuts could be procured at half the price, and in half the time the Native artist would require.

The proposition was seconded by Baboo RAMCOMUL SEN, and unanimously agreed to.

Antiquities.

Read a letter from J. P. GRANT, Esq., Officiating Secretary to the Government of India, intimating that measures have been taken by the local authorities to prevent any further dismantling of the *Kanarak* temple, or Black Pagoda.

Museum.

Read a letter from Major HAY, with reference to a Museum of Natural History collected by him from the Cape and the Eastern Archipelago.

Resolved,—That the Officiating Secretary be requested to inform Major HAY, that the present state of their funds entirely precludes their purchase of his collection, but that the Society will be happy to allow the use of their rooms for the reception of the specimens, and to employ their establishment for their care and preservation. It was further decided that the Society make a representation Government on the subject.

The Officiating Secretary then laid before the Meeting the Annual Report of the past year's transactions.

[This Report will appear in a subsequent number.]

Baboo RAMCOMUL SEN submitted the Account Current of the Society for the past year, in which a balance of rupees 7,755 : 1 : 2 stands in favour of the Society on the 31st December, 1838.

[The Account Current will be found at the end.]

Proposed by Baboo RAMCOMUL SEN, seconded by Mr. HARE, and unanimously agreed, that a sum of rupees 4,500 be invested in Company's five per cent. Government Securities.

The Officiating Secretary informed the Meeting, that with reference to a communication made by him to Messrs. SHERRIFF and Co. regarding the repairs of the Society's house, that these architects report that the roof of the house is in a very ruinous state, and unless immediate steps are taken, serious danger is apprehended.

Mr. H. T. PRINSEP remarked that Mr. JAMES PRINSEP thought that additional rooms might be built for the Museum.

Resolved,—That Col. MACLEOD be requested to furnish a plan to that effect, and an estimate of the probable expense, in order that the Society may determine on the subject at their next Meeting.

After the conclusion of the routine business, Mr. H. T. PRINSEP called the attention of the Members present to M. MASSON's large collection of coins and relics then exhibited on the table.

This collection Mr. PRINSEP stated had been made from the funds advanced to M. MASSON by the Government; the proceeds having been forwarded through Col. POTTINGER to Bombay for transmission to the Honble. Company's Museum in England, were ordered by the Right Honble. the Governor General to be first sent to Calcutta for examination and arrangement by the gentlemen connected with this Society.

The articles having consequently been sent round in the "John Adam" from Bombay, were laid upon the table of the Society in order that if any gentlemen were disposed to undertake their examination and arrangement, the Society might form them into a Committee for the purpose.

The collection consisted of some hundred gold and silver coins and several thousand copper coins.

Some discussion arose as to the steps to be taken by the Society with this collection. By an unfortunate coincidence, all the leading numismatologists of the Society being absent from Calcutta, either through illness (as Mr. JAMES PRINSEP and Professor MALAN,) or on Military duty (as Col. STACY, Capt. CUNNINGHAM, and Mr. TREGEAR) it was suggested that the Government be requested to forward the collection to England, where the Court of Directors might refer the examination to Mr. J. PRINSEP, who will no doubt be happy to meet the wishes of the Court.

Dr. The Asiatic Society,

<i>Establishment and Charges.</i>		
To paid Secretary's Office Establishment, from December 1837 to 30th November, 1838.....	722 0 11	
„ Ditto for Contingent charges.....	153 0 0	
<i>Oriental Library.</i>		
„ Paid Establishment for the Custody of Oriental Books deposited by Government, from ditto to ditto, at 78 Rs.	936 0 0	
<i>Library and Charges.</i>		
„ Paid Establishment, from ditto to ditto....	1,627 15 0	
„ Contingent Charges.....	325 2 5	
„ For binding Books.....	285 12 0	
	2,238 13 5	
<i>Museum.</i>		
„ Paid Establishment, from ditto to ditto ..	2,619 11 6	
„ Contingent Charges.....	705 7 6	
„ Making Cabinets.....	246 0 0	
	3,571 3 0	
		7,621 1 4
<i>Printing.</i>		
„ Paid Mr. Huttman for printing 20th vol. 1st. part of the Researches.....	925 0 0	
„ Kossinauth for plates.....	244 0 0	
„ Mr. Huttman for Paper for ditto.....	120 0 0	
„ Munnoololl for Oriental Catalogues.....	250 0 0	
		1,539 0 0
<i>Building.</i>		
„ Paid for making a Cook Room for the Librarian in the Secretary's Office.....		199 12 1
<i>Journal Asiatic Society.</i>		
„ Paid J. Prinsep, Esq. for the Journal Asiatic Society being supplied to the Members of the Society in 1837.....		2,190 8 0
„ Remitted to England for the bust of Mr. Wilson.....		1,000 0 0
<i>Establishment and Charges for the Statistical Committee.</i>		
„ Paid Establishment for the Statistical Committee..		383 3 0
„ Balance in the Bank of Bengal.....		7,755 1 2
		20,688 9 7
Co's. Rupees.....		20,688 9 7

for the year 1838.

Cr.

By Balance of account closed up to 31st Dec. 1837...	.....	2,323	3	10
<i>Members.</i>				
„ Collections made for quarterly Contributions and admission fee from January to December, 1838....	.....	7,848	15	6
<i>Subscriptions for Busts.</i>				
„ Subscriptions made for the Busts of Sir William Jones, H. T. Colebrooke, and H. H. Wilson....	.....	1,778	0	0
<i>Government Allowance.</i>				
„ Cash received from the Sub-Treasurer, allowance for the Custody of Oriental Books transferred from the College of Fort William, from 1st Dec. 1837 to 30th Nov. 1838, at 78 Rs.....	.....	936	0	0
„ Ditto ditto for the Museum of the Society from ditto to ditto at 200 Rs.....	.....	2,400	0	0
„ Ditto ditto towards the Publication of Oriental Works, and Works on Instruction in the Eastern languages, for Oct. and Nov. 1838 at 500 Rs.....	.....	1,000	0	0
4,336 0 0				
„ J. Prinsep, Esq. balance of the Fund appropriated for the publication of Oriental Books.....	.....	3,599	1	1
„ Sub-Treasurer, interest on the Government Securities deposited with the Govt. Agent up to 30th June, 1838...	.....	803	5	2
4,402 6 3				
				7
Co's. Rupees.....	.....	20,688	9	7

RAMCOMUL SEN,

Officiating Secretary Asiatic Society.

CALCUTTA,

31st December, 1838.

Meteorological Register, kept at the Assay Office, for the Month of January, 1839.

Day of the Month.	Atmospheric Pressure.			Temperature.			Hygrometry.			Aqueous tension.			Weather.		Atmospheric Pressure.			Temperature.			Hygrometry.			Aqueous tension.			Weather.						
	Old Stand Barometer.	Height at 32 Fah.		River water.	Well water.	Air.	Dew point.	Depression.	Differential thermometer.	Hair Hygrometer.	By Dewpoint.	By Wetbulb.	By Hair Hygrometer.	Direction.	Force.	Aspect of Sky.	Old Stand Barometer.	Height at 32 Fah.		River water.	Well water.	Air.	Dew point.	Depression.	Differential thermometer.	Hair Hygrometer.	By Dewpoint.	By Wetbulb.	By Hair Hygrometer.	Direction.	Force.	Aspect of Sky.	
1	29,907	29,898		73,9	75,4	74,7	54,5	9,6	9,6	80	51	55	59	S.	0	clear.	29,810	29,787		80,9	80,9	43,6	43,6	14,2	12,9	72	40	46	s.	e. 0 ¹ / ₂	clear.		
2	,949	,937		74,3	76,3	74,1		5,5	5,5	91	72	80	80	S.	0	do.	,845	,822		87,3	87,3			13,3	12,3	74	45	49	s.	e. 0 ¹ / ₂	do.		
3	,017	,008		74,2	73,6	75,7		7,8	7,4	86	63	70	S.	e. 1 ¹ / ₂	do.	,913	,887		83,3	83,3			13,8	12,7	75	44	51	s.	e. 0 ¹ / ₂	do.			
4	,008	,993		76,5	76,9	76,9	63,5	6,6	6,7	89	65	69	76	S.	w. 2 ¹ / ₂	cir.-cum. haze																	
5	,059	,059		72,2	74,7	70,5	52,0	12,4	11,8	71	55	37	44	N.	w. 3	cir. cum.	,948	,928		75,9	75,9	49,5	49,5	14,0	12,0	69	41	36	N.	o. 2	cumuli.		
6	,076	,065		72,1	74,6	70,9	56,0	10,6	8,9	78	62	45	57	N.	o. 2	clear.	,946	,926		74,9	74,9			13,4	12,6	69	36	42	N.	o. 2	clear.		
7	,029	,019		71,7	74,1	68,3		9,4	9,2	79	56	56	64	N.	e. 1	do.	,944	,926		74,4	74,4			13,4	11,9	71	36	45	N.	o. 2	cir. cum. few.		
8	,985	,973		72,2	74,5	69,5	53,0	8,7	8,1	82	59	54	63	n.	o. 0 ¹ / ₂	do.	,855	,839		75,3	75,3			12,2	10,4	75	42	51	e. n. e.	0 ¹ / ₂	clear.		
9	,059	,937		73,9				5,3	5,3	95	89			S.	e. 4 ¹ / ₂	Nimbi.	,832	,806		78,0	78,0			9,0	9,0	86	60	70	S.	e. 4 ¹ / ₂	cldy. all day.		
10																																	
11																																	
12																																	
13	,035	,025		72,6	77,3	71,5		5,3	5,3	93	71	84		N.	o. 2 ¹ / ₂	ovrct. cum. st.	,928	,907		75,1	75,1			6,7	6,1	89	67	76	n.	e. 0 ¹ / ₂	cum. strat.		
14	,008	,999		71,7	76,1	73,4		5,8	5,8	92	70	82		N.	e. 2	cldy.	,903	,882		76,1	76,1			5,8	5,0	94	71	87	n.	e. 3	Nimbi.		
15	,020	,019		71,6	74,4	70,5		3,5	3,0	97	80	93		N.	e. 2	do. showery.	,914	,898		72,9	72,9			4,9	4,3	94	75	87	o.	e. 0 ¹ / ₂	do.		
16	,996	,000		71,6	74,4	70,1		6,2	5,4	91	66	80		n.	e. 2	do. haze	,936	,917		72,3	72,3			7,6	6,6	88	61	74	n.	e. 1 ¹ / ₂	cir. strat. cldy.		
17	,046	,049		71,7	75,6	70,1		5,4	5,1	93	70	84		n.	o. 1	cir. cum. & st.	,936	,913		75,2	75,2			7,1	6,1	89	65	76	e. n. e.	0 ¹ / ₂	cldy.		
18	,007	,992		71,7	75,6	72,4		6,7	6,8	89	65	76		n.	o. 1	cir. strat.	,891	,867		74,9	74,9			6,5	5,2	91	69	80	N.	o. 1 ¹ / ₂	do.		
19																																	
20																																	
21	,040	,037		71,6	74,5	70,6	65,0	5,0	4,6	94	85	72	86	n.	w. 2 ¹ / ₂	cldy.	,928	,913		73,5	73,5	63,0	63,0	7,6	6,3	87	73	62	N.	e. 1 ¹ / ₂	cldy.		
22	,065	,060		70,4	73,9	69,8	56,5	9,1	8,7	79	65	52	57	N.	o. 2 ¹ / ₂	overc. cl.	,960	,942		72,6	72,6			10,3	9,1	77	56	49	N.	o. 2 ¹ / ₂	do.		
23	,158	,148		70,1	73,8	68,1	50,0	9,9	9,0	78	54	47	56	N.	o. 2 ¹ / ₂	clear.	,047	,047		71,9	71,9			11,1	9,3	76	54	45	N.	o. 2 ¹ / ₂	clear.		
24	,160	,170		69,4	73,4	67,0	52,0	9,2	9,0	78	61	50	56	N.	o. 2 ¹ / ₂	do.	,004	,998		70,9	70,9	48,8	48,8	6,9	10,3	73	47	65	N.	w. 2	do.		
25	,077	,084		69,0	73,7	66,5	48,5	8,1	7,6	82	55	55	63	N.	o. 2 ¹ / ₂	do.	,958	,944		71,7	71,7	49,0	49,0	6,1	11,3	73	47	67	N.	e. 1 ¹ / ₂	do.		
26																																	
27																																	
28	,110	,127		69,0	73,7	68,5	51,0	6,8	6,2	88	57	62	74	S.	w. 2	fine.	,010	,998		75,3	75,3	48,0	48,0	11,6	10,7	79	41	45	S.	w. 1 ¹ / ₂	clear.		
29	,140	,141		70,6	74,5	71,1	52,0	5,2	5,3	75	53	72	51	S.	e. 0 ¹ / ₂	hazy.	,014	,980		78,3	78,3	47,0	47,0	12,9	12,1	77	35	43	S.	e. 1	do.		
30	,113	,120		71,0	74,3	70,5	54,0	4,6	4,9	84	59	75	87	n.	o. 0 ¹ / ₂	do.	,992	,982		75,1	75,1			11,3	9,9	77	40	46	n.	e. 0 ¹ / ₂	cir. cum. few.		
31	,995	,095		70,4	74,2	71,3	51,0	8,2	7,5	82	52	57	63	n.	o. 1 ¹ / ₂	do.	,976	,954		75,1	75,1	50,0	50,0	10,0	10,0	79	44	52	n.	e. 0 ¹ / ₂	cldy. haze.		
Mean.	30,044	30,039		71,8	74,8	70,9	54,2	7,3	6,9	85	59	61	70				29,932	29,916		75,4	75,4	50,5	50,5	10,0	9,3	79	46	53	Lt.	N. 11			

JOURNAL

OF

THE ASIATIC SOCIETY.

 No. 86.—FEBRUARY, 1839.

ART. I.—*Report on the Settlement of the ceded portion of the District of Azimgurh, commonly called Chuklah Azimgurh, by J. THOMASON, ESQ. Collector of Azimgurh, dated Agra, December 16th, 1837.*

1st. The completion of the settlement of Chuklah Azimgurh, affords the opportunity for offering some remarks on its state. The settlement operations have extended from the year 1833 to 1837, and been conducted either by myself, or others acting under my superintendence. I am hence desirous to place on record the principles which have guided me, and to note some circumstances, a correct understanding of which is essential to the future prosperity of the district. My remarks are intended to be strictly practical, and to convey impressions and opinions having reference to the locality.

2nd. A brief statistical account of the Chuklah will form a fitting introduction to the subject.

3rd. It lies between the 25th and 27th degrees of north latitude, and the 82nd and 84th degrees of east longitude. It is bounded on the west by the Oude territories, on the north by the river Goggra and district of Goruckpore, and on the south and east by the river of Benares. The country is generally low, with water near the surface, and abounding in large jheels, or lakes. It is traversed from west to east by several rivers or streams, all of which take their rise from lakes situated either in the district itself or in Oude, at a short distance to the west between the Goggra and the Goomtee, and fall into the Ganges; of these the Surjoo and the Tonse are navigable during the rains, whilst the Plurchee, the Koonwur, the Bainseshee, the Munglaai, the Beysoo, and the Gunghee, are never navigable, but are highly valued for the irrigation which they extensively supply.

4th. The soil is generally fertile, and peculiarly adapted for the cultivation of the Sugar-cane. There are however Salt or *Oosur* plains, which no culture can ever render productive.

5th. The size and general character of the several sub-divisions of the district will best appear from the following tables. They show the arrangements which have been made for the fiscal and civil administration and for the police of the district, and the charge which the establishments constitute on the resources of the district.

I.

Table showing the size and resources of the several Pergunnah Divisions of the Chuklah.

Name of Pergunnah.	Name of Tuppah.	No. of Villages.	Area in Acres of cultivated Land.	Area in Acres of culturable Land.	Area in Acres of uncultivated waste.	Total Area in Acres.	Highest Jamma of present Settlement.	Population.
Atrawlee } Tilhenee, }	.. ..	361	43,867	22,642	7,989	74,498	81,587	46,271
Kowreeah, } Gopalpoor, }	.. ..	145	20,924	12,777	4,910	38,611	37,917	18,840
Suggree, ..	.. ..	175	16,467	7,417	6,819	30,703	27,920	15,818
Akberpoor, ..	.. ..	71	7,120	1,353	6,620	15,093	14,918	10,599
Buchour, ..	.. ..	40	3,203	720	1,681	5,604	5,656	3,494
Baroohur, ..	.. ..	37	3,117	808	3,126	7,051	8,881	4,710
Birman, ..	.. ..	35	3,975	1,055	3,330	8,360	7,498	4,461
Bindrowl, ..	.. ..	120	11,327	1,986	13,136	26,449	24,447	18,886
Bilaree, ..	.. ..	72	6,586	1,451	5,651	13,688	14,245	9,806
Chinchool, ..	.. ..	92	10,536	5,316	9,494	25,345	16,794	12,059
Havelee Khoo- } mabad, .. }	.. ..	93	4,684	1,180	3,866	9,730	8,630	5,595
Khas, ..	.. ..	64	8,202	7,689	8,152	24,043	14,558	10,908
Koorkoonar, ..	.. ..	52	6,118	1,556	3,876	11,550	12,019	3,983
Total of Pergh. } Suggree, }		676	64,867	23,114	58,932	1,46,913	1,27,646	84,501
Ghosee,	Chakeysur, ..	60	9,760	4,152	3,971	17,883	20,507	7,319
	Havelee,	159	14,800	8,039	15,727	38,566	28,271	11,416
	Simree,	28	3,750	2,401	5,532	11,683	7,951	2,473
	Koorhune,	65	8,783	3,717	7,121	19,621	17,560	9,958
	Gontha,	63	8,118	3,109	6,214	17,441	19,790	11,506
Total of Pergh. } (Ghosee, }		375	45,211	21,418	38,565	1,05,194	94,079	42,672
Nuthoopoer, ..	.. ..	327	38,647	10,276	26,784	75,707	58,887-6	38,724
Mahol,	Uturahee Roo- } shungunge, }	89	22,006	7,101	17,429	46,636	46,926	29,481

Table showing the size and resources of the several Pergunnah Divisions of the Chuklah.— (Continued.)

Name of Pergunnah.	Name of Tuppah.	No. of Villages.	Area in Acres of cultivated Land.	Area in Acres of culturable Land.	Area in Acres of uncultivated waste.	Total Area in Acres.	Highest Juma of present Settlement.	Population.
Nizamabad,	Powai,	118	14,923	11,547	5,662	32,132	29,810	14,107
	Deedargunge,	162	23,759	15,798	9,140	48,697	52,412-4	30,863
	Mahol,	165	18,783	15,534	5,263	39,580	38,553	22,215
	Total of Pergunnah. Mahol, }	534	79,571	49,980	37,494	1,67,045	1,67,711	96,666
	Utharsee, ..	75	8,557	1,968	3,165	13,690	17,907	18,407
	Belah, ..	112	15,576	5,312	15,461	36,349	41,941	19,106
	Phurchuk Havelee, }	182	14,205	5,385	12,619	32,209	31,487	19,205
	Dobartah, ..	122	12,106	4,120	7,596	23,822	27,995	15,087
	Dowlutabad, ..	114	19,838	4,427	20,278	44,543	47,982	29,208
	Dealpoor, ..	56	7,793	1,708	11,203	20,704	20,335	9,004
	Kotah, ..	136	13,347	6,873	9,811	30,031	30,658	21,270
	Goozarah, ..	83	8,070	2,947	7,494	18,511	18,563	12,495
	Nundaow, ..	130	14,172	4,330	17,241	35,743	41,654	26,889
	Hurbunspoor, ..	140	12,446	4,680	8,959	26,065	28,889	12,946
Total of Pergunnah. Nizamabad, }	1150	1,26,110	41,750	1,13,807	2,81,667	3,07,411	1,83,617	
Kurriat Mittoo, }	Amdhyce, ..	28	2,876	1,691	2,572	7,139	6,844	2,706
	Taree, ..	38	3,596	965	3,100	7,661	7,452	2,554
	Total of Pergunnah. Kurriat Mittoo, .. }	66	6,472	2,656	5,672	14,800	14,296	5,260
Cheriakote,	Havelee, ..	122	8,185	3,241	3,354	14,780	16,320	8,005
	Khanpoor, ..	78	6,013	2,355	4,102	12,470	11,643	7,121
	Dhurwara, ..	52	7,186	3,099	4,269	14,554	12,152	9,026
	Suleemabad, ..	38	2,575	1,444	1,251	5,270	4,969	3,260
Total of Pergunnah. Cheriakote, }	290	23,959	10,139	12,976	47,074	45,081	27,412	
Belhabans,	Ooturuha, ..	89	12,764	5,312	6,478	24,554	25,548	6,472
	Duhkunha, ..	74	7,218	3,223	3,834	14,275	14,389	8,421
	Total of Ph. Belhabans, }	163	19,982	8,535	10,312	38,829	39,937	14,893
Mahomedabad Gohna, }	Oowkaf, ..	30	1,566	903	1,355	3,824	3,757	1,369
	Behrozpoor, ..	121	14,304	8,125	12,187	34,616	32,543	22,800
	Purduha, ..	61	9,842	5,987	8,981	24,810	21,079-8	9,755

Table showing the size and resources of the several Pergunnah Divisions of the Chuklah.—(Continued.)

Name of Pergunnah.	Name of Tuppah.	No. of Villages.	Area in Acres of cultivated Land.	Area in Acres of culturable Land.	Area in Acres of uncultivated waste.	Total Area in Acres.	Highest Jumma of present Settlement.			Population.
	Chitpoor,	47	5,076	4,662	6,993	16,731	11,966	0	0	5,129
	Havelee,	120	8,196	5,178	7,768	21,142	16,155	0	0	9,725
	Khanpoor,	64	6,278	3,685	5,527	15,490	12,810	0	0	6,816
	Kair,	101	9,819	5,820	8,731	24,370	21,784	0	0	9,440
	Nudwan,	78	9,983	4,288	6,431	20,702	20,036	0	0	12,628
	Nusseeroolahpoor,	72	9,702	5,542	8,314	23,558	19,741	10	0	17,987
	Walledpoor,	65	6,295	2,347	3,521	12,163	13,878	0	0	8,584
	Total of Ph. Mahomedabad Gohna.	759	81,061	46,537	69,808	1,97,406	1,73,750	3	0	1,04,233
Mhownat Bhunjun,	.....	64	4,886	3,888	5,530	14,304	11,727	6	9	14,625
Deogaon,	Burdah,	81	5,198	1,751	5,252	12,201	12,160	12	0	9,377
	Chowree,	70	13,478	3,962	11,883	29,323	25,429	0	0	16,164
	Sonaree,	23	3,526	929	2,786	7,241	7,507	8	0	4,583
	Saifabad,	22	2,489	756	2,266	5,511	4,759	0	0	4,636
	Shahpoor,	52	5,729	1,965	5,896	13,590	12,522	0	0	7,737
	Shah Suleempoor,	34	3,814	1,469	4,405	9,688	7,631	0	0	3,889
	Kusbah Havelee,	102	7,580	1,992	5,974	15,546	16,533	4	10	12,218
	Koobah,	111	12,556	3,249	9,746	25,551	24,001	0	0	22,948
	Khurson,	21	2,840	834	2,503	6,177	8,146	0	0	4,471
	Total of Pergh. Deogan.	516	57,210	16,907	50,711	1,24,828	1,18,689	8	10	86,023
	Grand Total,	5,541	6,29,234	2,78,036	4,50,309	13,57,579	13,06,642	12	0	7,79,555

Note.—The total area is inserted, as given by the Survey conducted on the principles of European science. The cultivated and culturable areas are given from measurements made by natives in the method of the country. The Jumma is the maximum which can be reached during the term of the Settlement, but its perfect attainment is dependent on the lapse of some Maafee tenures which are held rent-free during the lives of the present incumbents. The population is given from the average of several estimates made by different persons, and under different circumstances, and has been corrected as much as the nature of the case admits. It is however at best but an approximation to the truth.—Total area 2,121 square miles; and 367.5 inhabitants to the square mile.

II.

Table showing the extent of the several Fiscal Divisions of the Chuklah, and the cost of the Tehseeldaree Establishments.

Name of Tehseeldaree.	Name of Perghs. it contains.	No. of Villages.	Total Area in Square Miles.	Population.			Highest Jumma of Settlement.	Charge of Establishment.	Per Centage of Charge on Jumma.
				Agricultural.	Non-Agricultural.	Total.			
1. Koelsah,	{ Atrowleah Tilhahnee, Kowreeah, and Gopalpoor.	681	224	59,421	21,508	80,929	1,47,424	6,336	4 1½
2. Suggree,	Suggree, ..	676	230	65,102	19,399	84,501	1,27,646	4,476	3 6½
3. Ghosee,	{ Ghosee and Mithanpoor, .. }	702	282	53,528	27,868	81,396	1,52,966	4,596	3 0
4. Mahol, ..	Mahol, ..	534	261	69,740	26,926	96,666	1,67,711	5,316	3 1
5. Nizamabad	Nizamabad,	1,150	440	1,34,334	49,283	1,83,617	3,07,411	9,108	2 15
6. Cheriakote, ..	{ Cheriakote, Keriat Mitthoo, & Belhabans, }	519	158	34,697	12,868	47,565	99,317	4,284	4 8
7. Mahomedabad Gohna,	{ Mahomedabad, Gohna, & Mownat Bhunjun, }	823	331	73,765	45,093	1,18,858	1,85,477	4,812	2 9¼
8. Deogaon,	Deogaon, ..	456	195	63,517	22,506	86,023	1,18,689	4,008	3 6
	Total, ..	5,541	2,121	5,54,104	2,25,451	7,79,555	13,06,642	42,936	3 4½

Note.—The area, population, and Jumma are entered as in the preceding Table.

Goggra is the general channel for these importations. Golahs, or grain markets, are established all along the course of this stream, and the supplies are thence poured in, as necessary, to all the manufacturing towns in the district.

7th. Sugar is the staple produce. It is cultivated throughout, and always yields a high rent, generally 12 or 15 rupees the acre; but in some parts of Pergunnah Mahol, where the finest Sugar land is situated, it runs as high as 30 or 40 rupees the acre. An effort has been made to ascertain the value of the Sugar annually produced in the district, founded on a calculation of the quantity of land shown by the settlement returns to be under Sugar cultivation, and the average produce of the land. This estimate gives a total area of 1,02,735 beegahs (acres 57,877), the produce of which is 12,32,707 Ghazeepore maunds (11,55,663 cwt.) of Goor, or inspissated juice. This may be valued at 33,89,946 rupees, and is calculated to yield 3,08,177 maunds (2,88,916 cwt.) of Sugar of 1st quality, and 1,23,271 maunds (1,15,989 cwt.) of Sugar of 2nd quality, and to give the manufacturers a net profit of 4,12,957 rupees. For this estimate, I am indebted to the ingenuity and research of my successor in the collectorship of the district, Mr. R. Montgomery. As the calculation is curious, I have given it in detail in the Appendix (A)

	F.	A.D.		
Price of Goor in	1236	1829	.12	Srs. for the rupee
„	1237	1830	.12	„
„	1238	1831	.14	„
„	1239	1832	.17	„
„	1240	1833	.23	„
„	1241	1834	.20	„
„	1242	1835	.16	„
„	1243	1836	.16	„
„	1244	1837	.12	„

} 8th. The price of Sugar has varied considerably during the last few years. When that article formed part of the Company's investment, about 5 or

6,00,000 were advanced to persons in the district for its supply, and then prices were steady; but when this demand was suddenly stopped in 1832-3, and the Company withdrew from the market, prices of course fell, and some distress was consequently experienced till the trade found new channels. Lately, the reduction in England of the duties on East India Sugar, has occasioned much speculation, and a great rise of prices. It is not likely they will continue long at the same standard, but a much lower rate will handsomely remunerate the cultivator, and lead to considerable extension of the cultivation.

9th. The immediate effect of the demand for the home market has been to draw down to Calcutta a great deal of the Sugar, which till lately had found its way to Mirzapore, and thence to the markets of

Central India, and the Western Provinces. The total quantity for which certificates have been granted under Act xxxii, 1836, from the time the provisions of that enactment came into operation in December 1836, till November 1837, was 1,58,162 maunds. All the raw produce of the district is manufactured into Sugar within its limits, and exported in the refined state. European skill or capital has not yet been largely or successfully employed in the manufacture: this is generally conducted at small native factories scattered all over the districts. There are scarcely any large villages without one or two of these factories, which afford a ready market for the produce of the surrounding country. The largest native factory belongs to Deep Chund Suhoo, and is situated at Decha, in Pergunnah Nizamabad, about eight miles south east of Azimgurh. The same person has also a similarly large factory at Muchaitee in Jaunpore, just on the southern border of Pergunnah Deogaon, whence a great deal of the raw material is drawn. It should however be remarked, that the juice is expressed, and inspissated, i. e. formed into Goor, by every cultivator himself, at simple mills, and boilers erected in the immediate neighbourhood of his field. The manufacturer confines his labour to converting this Goor into refined Sugar.

10th. Indigo was some years ago much more cultivated than it is at present: the quantity now annually manufactured is about 1,500 maunds. It is reckoned a good quality in the market, and brings a good price, but still neither the climate nor soil is peculiarly adapted to the production of the plant; and whilst Sugar is so much in demand, advances can readily be obtained by the cultivators on Sugar-cane crops, and the facilities of procuring land for Indigo will be diminished. Since, however, Europeans have been permitted to hold land, several villages, or parts of villages, have passed into the hands of the Indigo planters by sale, or mortgage, and in these Indigo can be cultivated to any extent that may be found profitable.

11th. About 1,700 maunds of Opium are annually produced in the district. This, at the cost price of 300 rupees per maund, would bring upwards of 5,00,000 of rupees into the hands of the agriculturists. The cultivation of the Poppy is at present confined almost entirely to the *Keorees*, a class of industrious cultivators, some of whom are to be found in almost every large village in the district, conducting the garden cultivation in its immediate precincts. They are generally tenants with rights of occupancy, or at will, and are very seldom themselves proprietors of the land. They constitute almost a separate community, having *Mahtoes* or Sirdars from amongst their own body, through

whom their concerns, especially in the Opium department, are managed. The cultivation of the Poppy might be very much increased, and the north eastern parts of the district are peculiarly adapted for its production; but the expenses attending the cultivation are heavy, and now that Sugar yields so profitable a return, and is so much in demand, it is not probable that the production will be greatly increased at the present price. The cultivation is also generally unpopular; the Zemindar is jealous of his *Keorees* taking advances from the Opium department, because it renders them, in some measure, independent of him, and introduces into the village another authority than his own. The *Keorees* themselves would like the employment, if they were always sure of protection from the exactions of the inferior officers of the department. This of course depends upon the nature and vigilance of the superintendence exercised over the department. At present the organization is far more complete and efficient than it has been for some time.

12th. The manufactures of the district are a considerable source of wealth to it. These consist mainly of Cotton cloths, but some Silk goods are also made, and others, containing a mixture of Cotton and Silk, commonly called Tussur. The demand for these goods used to be very great, but is now much diminished by the competition of English goods. English twist is also very extensively introduced into the market, and has in a great measure supplanted the use of the native thread. This again has much injured the quality of the cloth, for though the English is more regular and even in its texture, it is far less durable than the country thread. The Cloth is made at looms erected in the private houses of the weavers, who are congregated in great numbers at some of the principal towns, such as Moobaruck-poor, Kopah, and Mhow, and are also to be found in many large villages in all parts of the district. They are all Mahomedans, a weak and sickly looking people, but mostly possessing fire arms, and very liable to be excited to riot by any thing which affects their religious prejudices. They have of late years been particularly turbulent, in consequence of the spread amongst them of the tenets of Seyud Uhmud. This sect is especially opposed to the ceremonies of the Mohurram, and the several superstitions which characterize the prevailing belief of the Sheeas; whilst, by its general intolerance, it tends to embroil the whole body of Mussulmans with the Hindoo population.

13th. Every loom pays a small acknowledgment to the Zemindar,

under the title of *Kurgahee* (from *Kurga*, a loom). This is commonly called a tax, but it is more properly a rent, or equivalent for permission to reside on the estate, and obtain the protection of its owner. The payment is very trifling, generally of a few annas on each loom in the year; it is highly prized by the Zemindars, and cheerfully paid by the weavers, when no attempt is made to raise the rate, or to infringe upon the established custom regarding it.

14th. It is calculated that there are 13,682 looms in the district, of which 10,561 are for the manufacture of Cotton, and 3,121 of Silk and Tussur goods. These looms probably produce 10,00,000 of pieces in the year, which may be valued at 23,00,000, and are supposed to yield a net profit of nearly 4,00,000 to the manufacturers. The particulars of this estimate, also furnished to me by the kindness of Mr. Montgomery, will be found in the Appendix (B.) It is not likely to be too high, for the value of the exports in Cloth are supposed to be about 10,00,000 rupees, which would leave only 13,00,000 rupees worth to clothe 8,00,000 of people. None but the more wealthy classes wear any other than the manufactures of the district.

15th. It is not easy to account for the existence of these manufactures, so far inland, and in a country where no Cotton whatever is produced. Their rise was probably occasioned by peculiar encouragement afforded by former Governments; and in Mhow, tradition especially states this to have been the case, when the little Pergunah formed the appanage of one of the Begums of the imperial house of Delhi, in the reign of the Emperor Shah Jehan. Probably, too, the superior fertility of the soil, the uniformity of the climate, and the exemption of the country from the severe droughts which occasionally lay waste other districts, has contributed to this. The great variation of the price of food in the large grain districts, would tend to discourage the formation of a manufacturing community. The habits which would be naturally engendered in a year of plenty would necessarily cause ruin and emigration in a year of local scarcity. On the other hand, a district which is always dependent on commerce for the support of its redundant population, would never suffer much distress, except in a season of general famine, when the whole country would be reduced to equal misery and destitution.

16th. There is not much trade passing through the district. The Goggra and Goomtee on either side of it, and the Ganges at no great distance, are the great channels of commerce. Some Salt finds its way across from the Ganges to the Goggra, and grain is carried back in return, but this is mostly intended to facilitate the supply of the local

wants of intermediate towns. A considerable quantity of Cotton however passes from Mirzapore, and the markets near Allahabad to Goruckpore, and Nipal through Jaunpore and Azimgurh.

17th. The chief Exports and Imports of Goods may be roughly stated thus, though the latter are evidently much underrated—bullion, in shape of cash remittances by the Government, is not mentioned.

Exports.

Cotton and Silk Piece Goods (entirely in hands of					
Native traders),	..	..	..	..	10,00,000
Opium,	..	..	..	..	5,09,700
Indigo,	..	..	..	..	2,70,000
Sugar exported by Europeans,	..	..	..	..	19,00,000
Ditto ditto by Natives,	..	..	..	..	3,50,000
					Total Rs. .. 40,29,700

Imports.

Raw Cotton,	..	..	..	..	2,15,000
Miscellaneous Spices, &c.	..	..	..	..	90,000
Grain,	..	..	..	..	9,40,000
					Total Rs. .. 12,45,000

18th. The total Receipts and Disbursements of the Government Treasury in the whole district (including Pergunnahs Secunderpore, and Badaon of the province of Benares,) are Rs. 19,64,150, thus,

Receipts.

Land Revenue,	..	..	..	..	14,77,150
Stamps,	..	..	..	..	35,000
Abkaree,	..	..	..	..	72,000
Miscellaneous,	..	..	..	..	3,80,000
					Total Rs. 19,64,150

Disbursements.

Local Expenditure,	..	..	..	..	5,63,000
By Bills,	..	..	..	..	8,27,150
Transported to Benares,	..	..	..	..	5,74,000
					Total Rs. 19,64,150

It is only during the last year that so much money has been drawn from the district by bills, and that is occasioned by speculation in Sugar, which is generally paid by bills on the Collector, drawn either direct from Calcutta, or intermediately from Ghazee-pore, Benares, or Mirzapore.

19th. The inhabitants of the district are generally very illiterate. The Rajpoots, who constitute the great mass of proprietors, are seldom able to read or write. Endeavours have been frequently made to obtain returns of village schools, but these have been very unsatisfactory. Indeed there are very few professed instructors of youth; nor is instruction regularly afforded to the youth of any part of the country, except at the Sudder station and its immediate neighbourhood, where the Residents have established schools. In other parts of the country the village *Putwaree*, or some other *Lallah*, occasionally gives instructions in Hindee as it suits his leisure or inclination, and his neighbours will occasionally send their children, and acknowledge his services by small presents, perhaps of money, or more probably grain or other agricultural produce. All Brahmins of any learning have a few disciples attached to them, but this sort of instruction is not professedly for gain. It is restricted to their own class, and partakes greatly of the nature of a religious duty.

20th. The returns show seventy-seven schools, where instruction is given for remuneration. The number of scholars is supposed to be 674, and the total monthly emoluments of the teachers about 300 Rs. per mensem. The great majority of these are for the instruction of Mahomedans in Arabic, Persian, or Oordoo. There are also supposed to be 134 schools where instruction is given to 1,334 scholars, without any express remuneration to the teacher, all of which, with one exception, are kept by Brahmins for giving instruction in Sanscrit.

21st. Having thus generally stated the extent, disposition, and resources of the district, I proceed to explain the nature of the landed tenures, as they are now found to exist. In doing this it will be necessary first to decide in whom the proprietary right to the land actually rests.

22nd. In discussing this subject, it is of little use to view it theoretically, and to refer to the maxims and principles laid down in books of law. Supposing these to be ever so clear and decisive (which they by no means are) it is questionable if they ever were acted upon with any consistency; or supposing them at any time to have been acted upon, the period has long since passed away, and the disuse into which they have fallen for centuries has practically annulled them. It is of

more use to look to the actual state of things, and ascertain as far as may be possible, what that was in any one part of the country, or at any particular time. It is my purpose to do this as far as I may be able, for the tract of country to which this report refers, and for such period as we may have tradition or history to direct us.

23rd. The whole of Azimgurh must have originally formed part of Rama's kingdom of Ujodhya. The inhabitants of that time are called by the present race of men *Rajburs* and *Assoors*. The latter is evidently only another instance of the tendency to attribute every thing that is old or wonderful to superhuman agency. There are still existing a race of men called *Burs*, a very low class, who generally tend swine. They are said to be the descendants of the aborigines, and it is not impossible they may be; but they have lost all traces of their original character, and I do not know a single instance of their now possessing proprietary right.

24th. The inhabitants of the country, by whatever name they are distinguished, were a powerful and industrious race, as is evident by the large works they have left behind them. Immense mud forts still exist, such as are seen at Hurbunspoor and Oonchagaon, near Azimgurh, and at Ghosee, which are attributed to them; and traces of a large excavation still exist, which seems to have connected the Koonwur and Munghai Nuddees, and is known by the name of Asooraen. The Huree Bandh at Ameinuggur, in Pergunnah Nizamabad, is another work generally attributed to them.

25th. These people were overwhelmed by incursions of Rajpoots, who seem to have come over from the west, under different leaders, and to have completely subjugated the country. Whether the incursions were successive or simultaneous, or at what time they took place, there are no means of ascertaining. An inscription found in Deogaon shows that in the middle of the twelfth century that Pergunnah was included in the dominions of the king of Canoje, and was probably a favorite place of resort for the court.

26th. These invasions of the Rajpoots are the foundation of the present existing proprietary right in the land. Different tribes located themselves in different spots. The descendants of each chief multiplied, till at length, in some instances, they displaced all other occupants of the land, or at least assumed to themselves all proprietary privileges. The stocks were numerous: each Tuppah, or sub-division of a Pergunnah, is marked by the prevalence of its own stock. These all pretend to trace their origin to a single person, who first conquered the country. Thus, the Gautum Rajpoots came from the Dooab un-

der two leaders, Gen Rai and Men Rai. They established themselves in Tuppah Dowlutabad, and there founded two villages. Mehannugur was the residence of Men Rai, and Goura of Gen Rai. To one of these two stocks all the Gautums of that part of the country trace their origin. It is impossible to say when this incursion took place, but circumstances will afterwards be stated, which show that in the beginning of the seventeenth century, the family had increased to such an extent, that some of the stock were obliged to leave the country in search of subsistence.

27th. It is not to be supposed that the families regularly multiplied without interruption from the first stock to the present day. Violent changes constantly took place. Tribes were swept away by the incursions of foreigners, or by the aggressions of their neighbours. During the fifteenth century the kings of the Sherki dynasty from Juanpoor, exercised great sway in the district. Parts of the country seem indeed to have been held by Mahomedans. Pergunnah Belhabans is said to have been peopled by Mahomedans, who were exterminated by an incursion of the Bais Rajpoots, who are at present in exclusive possession of the country. Thus too Tuppah Shah Suleempoor, in Pergunnah Deogaon, seems both from its name and the numerous Mahomedan tombs still existing, to have been not very long ago in the possession of Mussulmans, though it is held entirely by a race of Bhoomjars, who came originally from Goruckpore, and are of the same stock as the Rajah of Benares.

28th. The occasional incursions and supremacy of the Mussulmans is strongly marked in different parts of the country by the existence of shrines and tombs of Shuheed Murds, who are believed to have fallen in contests with the inhabitants of the country, either Hindoos, if in later times, or evil genii, if in older times. Thus the town of Mhow obtains its distinctive title of 'Nath Bhunjun' from the exploit of a saint called Mullick Tahir, who expelled the evil genius Deo Nauth, and made the country habitable by men; or, in other words, was some adventurer, who drove out the original inhabitants, and located a colony of Mussulmans. The followers of Mullick Tahir have however long since given place to a colony of Dhoonwar Rajpoots, and no trace of the exploit now remains but the old shrine, with numerous other graves strewed around it, where the devotion of all classes, Hindoos as well as Mahomedans, constantly keeps a light burning. Instances similar to this are numerous.

29th. Near the close of the 16th century a member of the Gautum family of Rajpoots in Tuppah Dowlutabad, Pergunnah Nizamabad,

who had left his native village of Mehannuggur, in consequence of the smallness of his share being insufficient for his support, found employment in the imperial court at Delhi, turned Mussulman, became an eunuch of the palace, and obtained in the fourth year of Jehangire (A.D. 1609,) a grant of the Zemindarry of 22 Pergunnahs, in which Chuklah Azimgurh was included.

Rajah Ubluman Sing
Alee Mahomed Nadir
Dowlut Khan,
Rajah Hurbuns,
Rajah Dhurnee Dhur,
Rajah Azim Khan,
Rajah Ikram Khan,
Baboo Mahabut Khan,
Rajah Iradut Khan,
Rajah Jehan Khan,
Rajah Azim Khan.

From A.D. 1609 to A.D. 1771, nine successions of these Rajahs are said to have taken place. Their power appears to have varied greatly. Their rule is said to have been very oppressive. They never paid more than 50,000 to 1,00,000 Rupees into the imperial treasury, and even this was often withheld, and the efforts of the Rajahs are said to have been uniformly directed to the annihilation of all other rights but their own. The Canoongoes were proscribed, and all Pergunnah records that could be found destroyed. Hence none are now found of a date belonging to this period, or prior to it. The Rajahs were first much resisted by the other tribes of Rajpoots, and it was not till after much fighting that Azim Khan, the fourth of the race, about A.D. 1620, overcame the Bais Rajpoots of Uthaisee, and founded the Fort of Azimgurh. Mahabut Khan (said to have reigned from 1677 to 1722) was the most powerful, and established his authority from the Goggra to the Ganges. In 1771, the Nuwab of Oude, Shoojahood Dowlah, resumed the grant, expelled and proscribed the family, and governed the district by Chukladars, till it was ceded to the British in 1801.

30th. Subsequently to our acquisition of the country, the descendants of this line sued the Government in the Provincial Court of Benares for their restoration to the Zemindarry. The suit was of course thrown out, but in the course of it the claimants produced an Altumgha Sunnud as the foundation of their right, granted in the fourth year of Jehangire. Doubts may be entertained of the authenticity of this document, but there is no reason to doubt that some such Sunnud was given, and the document produced in Court, if not the identical one, was probably an imitation of it, or at least was drawn up in the form which such grants generally assume. As the document possesses some interest, from the light it is calculated to throw on the proper meaning of the much contested term *Zemindar* I subjoin a copy of it, and a translation in plain English, divested of the redundancies of the original.

[1839.]

درینوقت میمنت اقتران فرمان
والاشان واجب الاذعان صادر شده که
اهمن سنگه زمیدار منه نگر نظام آباد
از بنده مقبول بارگاه والاجاه بدین
اسلام درآمد نظر بر استحقاق بخطاب
راجه نادر دولتخان ممتاز شده بسمت
ودو پرگنه از صوبه اله آباد ابتداء
نیمسان خریف سخا قوئیل حسب
الضمن مرحمت فرمودیم باید که
فرزندان نامدار کامگار و الاتبار و وز
رای ذوی الاقتدار و حکام کرام و اعمال
کفایت فرجام و متصدیان مهمات
دیوانی و متکفلان معاملات سلطانی و
جاگیرداران حال و استقبال ابداء و مو
بدا در استقرار و استمرار این حکم
مقدس و معلی کوشیده بر زمینداری
پرگنات بخطاب مذکوره نسلا بعد
نسل و بطنا بعد بطن خالدا و سخلدا
بحال و برقرار داشته بزرهای
مشخص مال واجب سرکار مبلغ یک
لکه و بست و پنجهزار روپیه نانکار بر
قبولیت مجرا داده باشند که مع
سرد و سردیه و غیره ابواب
زمینداری صرف معشیت خود
پردازد و از تصادم تغییر و تبدیل این
امر مقدس مصیون و محروس داشته
سند مجدد نطلبند و از یرلیغ کرامت
تبلیغ والا انحراف نه و رزند یازدهم
شهر ربیع الاحرسنه چهارم جلوس فقط

It has happened in this propitious time that Ubhinan Sing, Zemindar of Mehannuggur in Nizamabad, has embraced Islamism, and been honored with the title of Rajah Nadir Dowlut Khan. We have therefore bestowed upon him 22 Pergunnahs in Soobah Allahabad from the commencement of the Khureef Crop, and according to the specification below. Our illustrious sons, and rulers of the provinces, and Mootsuddies must ever use their strongest endeavors perpetually to maintain this grant, and confirm the Zemindaree of the above Pergunnahs to the afore-mentioned person, and his descendants, for ever. They will deduct 1,25,000 Rupees, as his Nan- kar from the total Jumma payable to the Government, in order that he may spend it, and the fixed allowance per village and per centage in the Jumma and other Zemindarry dues for his support. This Sunnd will not require renewal. Dated Rubeeool Ak- hir 15th, in the 4th year of the reign.

ضمن مینو یسد

پرگنات حسب ضمن بست دو
 پرگنه نانکار یک لک ۲۰ هزار پرگنه
 نظام آباد پرگنه کوریہ سلہنی پرگنه
 گوپال پور پرگنه سگری پرگنه
 محمد آباد پرگنه گھوسی پرگنه
 جکسر پرگنه نتھو پور پرگنه چریا
 کوت پرگنه قریات متو پرگنه بلہا
 بانس پرگنه دیو گانو پرگنه نانائت
 بہنچن پرگنه شادیا باد پرگنه
 بہیری آباد پرگنه پچو تر پرگنه
 سیدپور بتری پرگنه ظہور آباد
 پرگنه بہد اون ابواب زمینداری
 وغیرہ سی صد یکرپیہ

Specification on the reverse.

Pergunnahs 22, Nizamabad,
 Kowreea Tillhenee, Gopalpore,
 Suggree, Mahomedabad, Goh-
 na, Ghosee, Chukeysur, Nu-
 thoopoor, Cheriakote, Keriak
 Mittoo, Belhabans, Deogaon,
 Mownat, Bhunjun, Shadee-
 abad, Behreeabad, Puchotur,
 Seydpoor, Bittree, Zuhoo-
 bab, Bhudaon.

Nankar 1,25,000 Rupees,
 Zemindarry dues per village
 2 Rs., per cent 1 Rs.

31st. If the holder of this Sunnud had been in power when we first acquired the country, it is not improbable that we should have acknowledged him sole proprietor of all this tract of country, and have reduced the real proprietors to the rank of mere tenants.

32nd. From these revolutions the Pergunnah of Mahol was generally exempted. A family of Seyuds obtained possession of it in a Zemindarry grant at a very early period, the tradition of which is now lost. They contrived to locate themselves firmly in the Pergunnah. Branches of them entirely suppressed the Rajpoot communities in many of the villages. The Rajah was dispossessed of the government by the Nuwab of Oude, previous to our acquisition of the country, but he still retains many villages as his private property. Some of these have passed from him, by sale for arrears of revenue, to the hands of the notorious Amil Sheo Lall Dhoobe, and yet in some of these villages the old Rajpoot communities exist, though they have long been broken down, and the members reduced to the rank of mere cultivators on fixed rates. Instances sometimes occur of the strength with which ancient proprietary associations are maintained, even long after all exercise of the rights has ceased. The two contiguous villages of Mohujah and Newadah had long been held by

the Mahol Rajah. Soon after the cession they passed, by public sale, into the hands of Sheo Lall Dhoobe. No proprietary right had ever been claimed by the village communities, and yet in 1834 they fought regarding their common boundary, and lives were lost on both sides.

33rd. The above historical facts have been mentioned merely to illustrate the mode in which the proprietary right was generally exercised, and how this right was transferred, and the present existing diversity of tenure introduced. I suppose the original conquest of the Rajpoots to have been the general foundation of the existing proprietary right in the soil. That right we often still find exercised in its original purity, but in many places no trace of it can be found. A few instances in which the mode of its annihilation, and the rise of a subsequent right is known, may account for these irregularities.

34th. Tuppah Hurbunspoor extends along the south bank of the Touse, opposite to Azimgurh. It was held originally by a tribe of Sukrawar Rajpoots, a remnant of whom still survive in Ooncha-gaon. In order to strengthen their fort, the Rajahs of Azimgurh determined to lay waste a great part of this tract, and encourage the growth of jungle upon it. The Sukrawars were accordingly expelled, and the country depopulated. The soil however is rich, and in time, when the whim of the day had passed away, it was considered desirable to bring this tract again under cultivation. The Sukrawars were, however, then broken and ruined, and in no condition to assert their rights in opposition to the Rajah of the time. In this space, accordingly, to the south of Azimgurh, in its immediate vicinity, we find all sorts of tenures existing. The village of Siddharee was given to Baboo Baz Bahadoor, a member of the family, and added to his Talookah. He located cultivators upon it, and it is now his absolute property. A portion of land, formerly called Sarungdurpoor, was given to Ikram Khan, who brought it into cultivation, and there located a body of Puleear Rajpoots from Sumaidah, in Tuppah Behrozpoor, Pergunnah Mahomedabad, and called the place Ikrampoor. He passed away, and the resident Rajpoots became recognized as the proprietors. Thus too Jaffurpoor is formed out of the land of the old villages of Pooranahpoor, Bullaisur, and Golwarah. Baboo Jaffur Khan brought the land into cultivation, and located some Dhoonwar Rajpoots, who afterwards, on the extinction of his family, became the proprietors. Another tract of this waste land was assigned to some Buneeahs, who brought it into cultivation, built a large village, and have left traces of their industry and wealth in numerous topes, and some artificial bunds for irrigation. This village was called Bodhaitah. In the days of the Chukladars it was plunder-

ed, and the inhabitants massacred ; since which time it has remained without one inhabitant (Be-chiragh). In default of other claimants, the Canoongoe of the Pergunnah engaged for it, and now holds it in proprietary right as his Zemindarry. A Bunniah in Azimgurh, who claims his descent from the old proprietors, attempted to establish his right in the Special Commission Court, but failed. Ask any intelligent resident in the neighbourhood, who is the rightful Zemindar?—he he will answer, the Bunniah. Question him more strictly, and he will admit the prior right of the Sukrawar Rajpoots. Tradition reaches no higher.

35th. Achar, and its dependant villages in Pergunnah Mhownat Bhunjun, was held by a tribe of Kaut Rajpoots. The Dhoonwars of the neighbouring estate of Khabseh were the more powerful: they attacked, and massacred most of them. The little mud Ghurree is still shown where the last who held their ground were put to death. This took place only a few years before the cession. Some of the family fled into the neighbouring district of Ghazeepore, then in our possession, and have in vain since attempted to recover their rights.

36th. A family of Chundel Rajpoots emigrated from the Juanpore district and settled in Pergunnah Nuthoopore, where they acquired much land about the place where the Durgah of Kullooah Bund has since flourished. A chur was subsequently thrown up between the Kuttooby Talow and the river Goggra. Of this chur the Chundels took possession. Their prosperity kept pace with the increase of the chur, and the Chundels of Doobarree are now one of the most flourishing clans. Their Talookah till lately was included in Pergunnah Secunderpore ; it has now been annexed to Nuthoopore.

37th. In many cases the origin of the present Zemindarry right has been the rent-free grant of waste land to the ancestors of the present proprietors, such grant having been made by the actual sovereign, the Emperor of Delhi, or his local representative. The grantee brought the land into cultivation, and as the former proprietors had passed away, on resumption of the grant by some succeeding ruler, was acknowledged as proprietor. Some terms of this sort are said to have had their origin in grants by the Sherki sovereigns of Juanpore.

38th. The appropriation of waste lands was sometimes, however, founded on mere acts of usurpation by powerful individuals or communities, or has grown up by sufferance. Thus the powerful Pulwars of Kowreeah have encroached on the neighbouring forest land in Pergunnah Nizamabad. Their occupation of Kadarampoor is a case in point. The rise of some Aheer communities appears to illustrate the latter mode of appropriation noted above. These people

were familiar with the forest, fixed their residence on some favorable spot, and began to cultivate ; and when a settlement came to be made, appeared to be the most convenient persons to admit to engagements for the land. Thus the villages of Tunbolee in Tuppah Phurchuk Havelee, Pergunnahs Nizamabad and Muhason, in Tuppah Chitpore, Pergunnah Mahomedabad, are held by Aheers.

39th. These instances serve to show in what way the original proprietary right, resting on conquest, may have often terminated, and been replaced by another right founded on grant of the ruling power, actual usurpation, or voluntary act, sanctioned by sufferance. It is immaterial now to discuss the validity or the legality of the circumstances, which originally created the right previous to our rule ; it was asserted and maintained whenever there was strength enough to support its assertion. Since our rule commenced, it has been recognized, legalized, and consolidated. When no other private rights are prejudiced by the recognition, its admission must be beneficial.

40th. Under the circumstances stated above, the proof of the proprietary right is of very different degrees and nature.

41st. It is of course strongest where the village communities have flourished for centuries, and where they have been powerful enough to hold together, and to keep out intruders. In other cases, where the origin of the right is not so clear, we find it settled on the prescription of many years, and capable of immediate adoption. Generally in the formation of a settlement, possession is the point regarded, and if this be for only a few years, it is still sufficient to give a title, till a better be shown ; it being always borne in mind, that possession is only good as far as it goes, and that a Talookdar who has been recorded by us as Zemindar, may still have below him bodies of people, exercising full proprietary rights, and entitled to the recognition and confirmation of all those rights. In the settlement however of Towfeer Mouzahs, and of resumed Maaffees, the greatest difficulty often occurs. Here the proprietary right has been long in abeyance. All around a proprietary right is exercised, and has been so for ages, so that there is every reason to believe it has existed on the spot in question, but it has been in abeyance once, and perhaps disputed for so many years as to be difficult of determination. If wells have been dug, or trees planted, or bunds erected on the spot, these are always appealed to as proofs of old proprietary right. The enjoyment of the fruit of the trees, or of the fish of the ponds, or of any other of the spontaneous products of the soil, are adduced as proofs of possession of that right. It is a common and convenient practice to refer to the Canoongoe's records, though these are of doubtful authority. Under present rules the case

is referred to a jury, but even they are often perplexed, and I have known cases where contending parties have agreed to leave the determination of the point to lot.

42nd. In rent-free lands some neighbouring Zemindar has generally acquired some recognition of his proprietary right from the Maafeedar, either by direct money payment, or by an allowance of land called *dobiswee* (i. e. equal to two biswas in the beegah, or ten per cent. of the whole area) free from the payment of rent, or by cultivating a large portion of the land on favorable terms. Generally too the Zemindar appropriates to himself the *sayer*, or spontaneous productions of the land, but all these of course often depend on the relative strength of the Maafeedar and of the claimant of the Zemindarry.

43rd. In the large *co-parcenary* villages, intricate questions sometimes are raised by the claimants of shares, and it becomes difficult to decide whether a man is a sharer or not. A member of a village community often falls into distress, either because his share is really inadequate to his support, or because he has become impoverished by his own fault, or by misfortune. Under these circumstances he may make over his share to a *co-parcener*, or let it lie waste. In either case he may leave the village, or continue to reside in it. If he continue to reside in the village, he may still have his share of the *sayer*, though he have no cultivation. If a partition of waste land attached to a village takes place, he immediately asserts his claim, and if the settling officer were to take the determination on himself, he would find the task no easy one.

44th. I have thus endeavored to show the probable origin of private proprietary right in the land, and of the forms under which it is found to be at present exercised. I will proceed next to classify these forms, and to point out the principal features which characterize them.

45th. The proprietary right in the land may rest either in a single individual, or in a community of people. This community may divide amongst themselves the profits of the estate either according to their ancestral shares, or according to some arbitrary rule, having reference to the quantity of land which each member cultivates. Of the two latter tenures the former has been sometimes styled the *Zemindarry*, the latter the *Putteedaree*, or *Bhyachara*. None of these terms have local application. The term *Zemindar* is generally applied in the district to any one having a proprietary right in the land, whilst *Putteedar* is restricted to those members of the village community who are not under engagements directly with the Government. The term *Bhyachara* is not known.

46th. We will proceed to consider separately the three classes of tenures mentioned above. First, those where the proprietary right rests in a single individual.

47th. All these are evidently liable to partition under the existing laws, in the course of the succeeding generations. The vesting of the entire right in an individual is rather incidental than natural to the tenure, and yet deserves special notice, because it is generally created in a way that brings with it special rights and relations. The sole proprietors of villages are mostly those who have purchased them at public sale for arrears of revenue, or under decrees of Court, or by private contract.

48th. Purchasers by public auction, on account of arrears of rent, must be held to have become possessed of all of what is commonly termed the Zemindarry right. From the cultivated land they may collect the established and fair rates : of the uncultivated land they have the entire disposal. The *Sayer*, including the *Phulkur*, the *Bunhur*, the *Julhur*, and whatever Zemindarry cesses are levied in the village, of right belong to them, as does also the whole of the timber, which is not the personal property of the resident who planted it, or his heir. With the former non-proprietary cultivators the relations of the purchaser are well defined. He steps into the place of the former proprietors, and is entitled to collect whatever they used to collect before. From the old proprietors he is entitled to demand for their Seer the average rate paid in the village, or its neighbourhood, for similar land, by similar classes of cultivators, though this may be some times difficult to determine immediately.

49th. An individual may have become possessed of a village under sale in satisfaction of decrees of Court, and this is more frequently the case than might be expected, even where the former proprietors were numerous. A wealthy and intriguing man who once gets a footing in a village will soon contrive to bring the interests of all the others to sale, and by purchasing them, become himself the sole proprietor. The right thus acquired is evidently more absolute than where it rests on sale for arrears of revenue, though the latter gives the better title. The latter absolutely transfers only the Zemindarry right, guaranteed by the State against all other claimants ; the former gives the whole of the rights and interests of the persons whose estates were sold, but liable to challenge by any other claimants. In the latter case, the old proprietors retain their rights as cultivators ; in the former, they lose them, and sink to the ranks of mere tenants at will.

50th. Purchases under special contract are of course ruled by the terms of the contract ; but here, as well as in the case of sales under

decrees of Court, our mistaken practice has introduced much confusion. It became customary to consider the recorded Malgoozar the absolute proprietor of the whole share, for which he paid the revenue; and hence the sale of his rights and interests was held to be a conveyance of the whole share; a transfer of the names was made in the Collector's books, or, in technical terms, *Kharij Dakhil* was taken out, and it became no easy matter to determine what really was transferred. No doubt recorded Malgoozars have often taken advantage of this misapprehension of their rights seriously to injure their co-parceners and enrich themselves at their expense, but great injustice has also been caused the other way. A *Putee* has raised money on mortgage, or stood security in the name of its recorded Malgoozar, and received all the benefit accruing from either transaction; and afterwards, when the terms of the contract have come to be enforced against them, have endeavored to throw the whole weight on the Sudder Malgoozar alone. The Government has frequently been thus a loser by accepting a Sudder Malgoozar as security in the full amount of his recorded liability. Cases of this sort must of course be decided each on their separate merits. I would only mention one rule, which I have found arbitrators adopt. Co-parceners living together, and holding their property jointly and undividedly, are held to be bound by the act of their recorded managers. The presumption in such cases is strongly in favor of common agreement to the act, and they must be very strong and peculiar circumstances which could establish a right of exemption from all the liabilities implied in the deed.

51st. Talookahs are not always held by an individual, but they frequently are held either by one person or by a few living together, and exercising their rights as one. Any collection of villages held together, either by one person or by many, is in the common usage of the district called a Talookah; but I employ it here in the more restricted sense in which it is generally received in the Western Provinces, as meaning a collection of villages, each having a separate community of its own, which by some act of the ruling power had been assigned to an individual, who was to collect the revenue from them, and pay over a certain portion of it to the Government.

52nd. Of such Talookahs there are not many in Azimgurh, nor are the few that exist of any great size. Talookah Baz Bahadoor perhaps is the only one which deserves very particular notice. Baboo Baz Bahadoor was a junior member of the family of Gautum Rajahs of Azimgurh, already mentioned. He obtained from the Rajah of the time several villages. Some of them were waste, and he brought them into cultivation; some of the village communities were weak, and

either he hoped to crush them, or they anticipated advantages from being placed under his care. He thus acquired about 20 or 30 villages in different Pergunnahs, and by superior address managed to keep some hold of them till we acquired the country. Our first act was of course to call him Zemindar, and constitute him absolute proprietor of the whole. He himself however was not in a condition to avail himself altogether of the favorable opportunity. He fell into pecuniary difficulties—was obliged for sometime to make over his estates in mortgage to a banker, and at the last settlement was unable to enter into engagements himself, and saw many of his villages transferred in farm to the members of the village community. Now in some of these villages the Talookdar was the only claimant of the proprietary right. The lands had been waste, and he had brought them into cultivation at his own cost, and here his recognition as Zemindar was proper. Where, however, the village communities had retained their rights, these were confirmed to them with reservation of a Talookdaree right. Some cases were found in which the Talookdar had never exercised any right whatever over the village, nor derived any profit or emolument from it for many years, although he had all the time been nominal and recorded Zemindar. These were severed from the Talookah and settled with the proprietors.

53rd. If the proprietary right rests in many members of a village community, they many divide the profits according to their ancestral shares, or according to some arbitrary rule regulated by the quantity of land in the cultivation of each proprietor, or, in other words, his Seer land.

54th. When the profits are divided amongst the several co-parceners according to their ancestral shares, they may, or they may not, be cultivators of the land, i. e. the holders of Seer. The simplest form which the case can assume, is when they all live together as a joint undivided family, one person managing the estate for the rest, or appointing a common manager, and dividing the profits at the close of the year. Sometimes they divide the estate, their responsibility continuing joint—sometimes the cultivators only are divided by the Putwaree, each collecting from those assigned to him; and this assignment may take place annually, or when once made may continue in force till a re-partition is demanded. There are instances where each person collects from each cultivator the portion of the rent which is his share, but this is very uncommon.

55th. When the proprietors cultivate themselves, the case is rather more involved. If the Seer of each parcener bears the same proportion to the total quantity of Seer land, that his share does to the

case as they aver. They have no idea that an arrangement of this sort enables them more effectually to conceal the real resources of the village, and would be more effective in resisting the inroads or power of an auction purchaser, if any one were to attempt to take their estate at a sale for arrears of revenue. It is certain that many under-let their Seer, and do not cultivate at their own risk. All aver that they give portions of their Seer in payment of service to their ploughmen, herdsmen, and other agricultural labourers. The Putwaree however does not enter these appropriations of the Seer in his accounts: their all appears as Seer, his papers merely showing the extent of each man's Seer, and the portion assessed on him for payment of the Jumma and village expenses. An exception to this may perhaps be said to exist in what are called in Deogaon, Muzhooree Ryots; but these are only persons to whom the village community have made over shares which have lapsed, or are in abeyance from any cause, so that the land may not be waste and leave a heavier burden on the rest of the village. Where the whole of the land is Seer, in these cases the custom which regulates the payments is called *bhaiunsee*, in other places it is called *beegah dam*; in both, the practice is the same. The payments of the early *kists* are made according to a low established rate on the Seer land, and towards the close of the year the whole community assemble to audit the accounts. The village expenses are added to the Government Jumma, and from the total is deducted the payment of the Ryots, if there are any. The remainder is distributed according to the *bach,h* upon the owners of the Seer land.

59th. This audit of accounts (or *boojharut*, as it is called) is a most important process to the whole of the community. The right of admission to the audit is the criterion of proprietary right. It may so happen that a proprietor has lost his Seer, either from poverty or its accidental appropriation or destruction. Still he has a voice in the audit, and can claim a scrutiny of the Putwaree's papers. It may so happen that the force or fraud of a part of the community or of an individual in it, has for a course of years kept some of the community from the audit. Such exclusion is fatal to the possession of the party. He is considered as dispossessed.

60th. In a community it must always happen that there are some members of superior intelligence or wealth who obtain a preponderance in the brotherhood. Where so much respect is attached to hereditary right, this influence often descends from father to son, although the descendant may not be distinguished by personal worth. The engagements with Government run in the names of these indivi-

duals, who are commonly styled *Lumberdars* (i. e. bearing the number in the Government Registers). These persons in many parts of the country arrogated to themselves the whole of the proprietary right, and imposing upon the ignorance of the European officers of the Government, succeeded in obtaining recognition of themselves as the owners or *Zemindars* of the estate, instead of mere managers on the part of the whole community. This however was less the case in Azimgurh than in the other neighbouring districts, especially in the province of Benares. The hereditary right of the managers had not become established, and it had been usual on re-settlement of the estate to alter the name of the manager, and sometimes to increase the number of managers. In the present settlement the question has been set at rest by the filing of an agreement entered into by the whole of the village community, declaring the office to be elective, not hereditary, and the incumbent to be liable to be ousted by the voices of the majority of the *Puttee* or *Thoke* he might represent, on proved mis-management.

61st. Still under any circumstances the audit of the accounts is the fertile source of discord in the community. The village expenses are primarily authorized by the *Lumberdars*, or managers, and as they frequently include fees or bribes to public officers, or other items utterly unsusceptible of proof, are regarded with a very jealous eye by those of the community who are not managers. The power which the *Putwaree* possesses of fomenting these discords is great, and frequently used in the most injurious manner. It remains to be proved by the result, how far the avowedly elective nature of the office will be now effectual to stifle these dissensions.

62nd. Although, however, the profits of the estate may be divided according to the *Seer* cultivation of the proprietors, it does not follow that the ancestral sharers are always lost sight of. Sometimes they are, and in such cases the only record of right consists in the *Seer*, which regulates not only the direct profits arising from cultivation, but also the *Sayer*, and other proprietary dues. Of this the best instances are *Kotelah* and *Sirsal*, and some other villages held by Mahomedan communities in *Tuppah Phurchuk Havelee*, in *Pergunnah Nizamabad*. The origin of these communities seems to be totally lost, probably they were originally Hindoo communities, and the genealogy was lost in the confusion which occurred when the Mahomedan faith was adopted.

63rd. In other class of cases the ancestral shares are known and recorded, but profits are still enjoyed according to the *Seer*. This no doubt has often resulted from over-assessment. When the demand

of the Government is excessive, the proprietors are compelled to throw their profits as cultivators into the common fund, and of course those who do not cultivate could not share the profits, whilst amongst the cultivators the profits would be made to correspond with the cultivation. Accordingly we find that since the cession, and especially lately, when the cultivated area, and consequent assets of the village, have increased without a correspondent increase of demand, many changes have taken place, and villages which formerly paid *Beegah dam* (i. e. by a rate on the Seer,) now pay *Khoo taitee* (i. e. according to ancestral shares.)

64th. In the large Rajpoot communities where the whole of the lands are Seer, though the ancestral rights are well known, yet the custom of paying according to the Seer prevails from another cause, viz. from the constant transfer of land or of shares (generally by mortgage, but sometimes by sale) which takes place amongst the several proprietors. The natural multiplication of some branches of the family of course reduces their shares to so small a fraction that some are obliged to seek other modes of subsistence, and leave their shares in the hands of the wealthier members of the family. In other cases, want or temporary distress induces the mortgage of part of the share. The mortgage generally conveys the land with its portion of the revenue. Instances where the land is mortgaged free of revenue are rare, and the periods of such mortgages are short, nor are they often made, except to regular money dealers, the security of course being bad, as it is liable to be endangered by default of the mortgager. Wherever transfers of this sort are paid amongst the members of the brotherhood, the effect is to lodge large portions of the village in the hands of the wealthier proprietors ; and as the mortgages are often not reduced for a long series of years, or perhaps not at all, and are at length lost sight of, the ancestral shares cease to regulate the profits of the proprietors.

65th. I would here remark a curious distinction in these mortgages, which will often be found to afford the clue to disputes amongst the proprietors. Mortgages are either of specific fields, or of shares ; the former are called *Khet khut*, the latter *Khoont khut*. A man in distress will mortgage away all his fields one after the other, and at last he makes over his share also ; but this transfer, perhaps, carries no land with it. *Khet khut* does not impair the proprietary right of the mortgager, nor does it create any such right in the mortgagee ; but the execution of *Khoont khut* at once terminates the connection of the mortgager with the village, and substitutes the mortgagee in his place. The *Khoont khut* probably conveys only a nominal right,

or at least only a right to some small item of Sayer, still it is given with great reluctance, and only under the sternest necessity, and on account of the higher value attached to the privileges it represents, may command a considerable sum.

66th. A similar distinction often exists in titles acquired otherwise than by mortgage. In the village of Burragoon, in Tuppah Chitpoor, Pergunnah Mahomedabad, there were two Puttees in one half of the villages, and only one in the other half. The owners of the latter found themselves numerically the weaker, and fearing that they might be overborne by the two Puttees, summoned a distant member of the family from a neighbouring village, gave him an interest in their half, and had his name inserted in the engagements with Government, together with the representative of their Puttee. There was much waste land in the village, and it was agreed that in each half the waste land was to be apportioned on the Seer of the proprietors. The stranger claimed his share, the owners of the one Puttee resisted it. On further inquiry it was discovered that the stranger had acquired a right to certain fields only, not to a share, he was an owner of *khet* not of *khoont*, and his claim of course fell to the ground. This is an instance of one of the modes, in which the practical bearing of the distinction develops itself.

67th. The mortgage bonds of this sort are frequently worded so as to be deeds of sale, and yet by common custom redemption is allowed. It is astonishing what good faith is generally observed among the members of the large Rajpoot communities regarding these mortgages. A member may have been absent for years, but when he returns to his village in circumstances admitting of the redemption of his share, a meeting of the community is held, his share is determined and given up to him, or the mortgaged fields traced out and restored. An attempt to resist any claim of this sort is highly reprobated amongst the Rajpoots, and indelibly fixes a stain upon the person who resists. Unfortunately the artificial system which is springing up under the influence of our Courts weakens and undermines this generous conduct. Supported by the strong arm of our civil power, a man will now venture to brave the hostility of a community, which in another state of Society, would summarily have enforced its own award.

68th. The man in possession is now supported by the Government till he is ejected by the decree of a Civil Court. The usual way of resisting claims of redemption is either by pleading actual sale, instead of mortgage, and taking shelter under the rule of limitation, which bars the admission of a claim after a certain period, or admit-

ting the mortgage, by bringing forward a long counter-statement of expenses incurred in maintaining possession of the mortgaged lands, or in cultivating them. This account may be swelled to a length far exceeding the value of the land, or the means of the mortgager, and he is at the same time tempted to bring forward a counter-claim for the refund of mesne profits. A case of this sort can only be settled by arbitration. In some parts of the district, as in Tuppahs Chowree and Koobah, Pergunnah Deogaon, the admitted custom is, that redemption takes place on payment of double the mortgage money, and here disputes of this sort are less liable to cause litigation. The village of Ailwul, held by a body of Bissen Rajpoots, which includes a part of the town of Azimgurh itself, is an instance of the ruin which disputes of this sort occasion. Two of the Puttees deserted the village during the oppressions of the period prior to the cession. After that they returned and reclaimed their shares. This was resisted by the remaining proprietor, who had borne all the difficulties which had led to the expulsion of his weaker brothers. The arbitrators absolutely, and free of expense, restored their shares to the claimants. A bloody affray ensued, and the subsequent bitter animosity between the parties compels the constant interference of a Suzawul on the part of the Government to collect the Jumma for the several individuals separately.

69th. The system of *Beegah-dam*, however, very frequently prevails in villages where the shares are the subject of dispute, and here the greatest animosity prevails. The lapse of a share by failure of issue, the conflicting claims of children by different mothers, and the irregular transfer by widows, who may retain the management of their husband's land, are amongst the fruitful sources of these dissensions. Here the contending parties dispute to the utmost the point of inherent right, and when driven from that, the predominant party fall back on the question of village custom; and dropping all mention of the manner in which they originally acquired their large portion of Seer, claim the maintenance of the custom which makes it the criterion of their interest in the village.

70th. The circumstances of Tolookah Sithwul, Tuppah Phurchuk Havelee, Pergunnah Nizamabad, so clearly illustrate many of the curious and difficult questions attending cases of this sort, that I cannot refrain from mentioning it somewhat in detail.

71st. This Talookah originally belonged to a family of Rajpoots, who are now represented by four branches. Between the years 1085 A. F. and 1130 A. F. (A. D. 1677-1722) they sold the estate to a Raneer of the reigning family at Azimgurh, who founded on it a Bazar, now called Ranec-ka-Serai. It was subsequently re-purchased

for 875 rupees by Tannee Rai, a distant relative of the proprietors, and a resident on the estate, but not himself an owner before that time. From the period of the purchase to the present day the descendants of Tannee Rai held with the heirs of the original proprietors, and all paid *Beegaj-dam*, but till sometime after the cession, the family of Tannee Rai remained superior. About the year 1820, the descendants of one of the old branches sued for a quarter share of the estate, and on inspection of the genealogical tree, and a reference to the law officers of the Court, obtained a decree in their favor. In this suit the real question was never brought forward, nor the circumstances explained, under which the Tannee Rai branch was introduced. This decree was never executed, but at the time of settlement, the holders of the decree claimed execution of it from the officer who was conducting the proceedings. They were of course referred back to the Civil Court for an order on the Collector to give possession under the decree, and at the same time a proceeding was held, setting forth all the peculiar features of the case for the consideration of the Court. Now we are able to perceive in this particular case the origin of the tenure, and the means whereby a new branch was introduced amongst the community of proprietors, alien to the original stock, but still possessed of rights in reality far stronger than any of the others. The principle of the Civil Court's decision went to the exclusion of these, in fact, the rightful owners, and whose proprietary tenure had been sanctioned by the uninterrupted possession of upwards of 100 years. Similarly good reasons, no doubt, often exist, though the trace of them has been lost, for the numerous apparent anomalies, which exist in tenures of this description. The memory of the transaction had been maintained by its comparatively recent date, the high station of some of the parties concerned, and the existence of the Bazar, which was named in commemoration of it. Similar transactions which were not rendered equally illustrious, were doubtless often forgotten in the convulsions and revolutions of former times.

72nd. It is well to remark some of the incidents of this tenure, and the points wherein they vary from each other.

73rd. Sometimes the Sayer are divided according to hereditary shares, sometimes according to the Seer; the latter prevailing where the shares are acknowledged, the former where they are unknown.

74th. The sharers may themselves cultivate, or they may have the option of under-letting their Seer. This depends more than any thing else on the circumstances in life of the sharers. If they are respectable men, who do not cultivate themselves, or have other means of liveli-

hood, they are accustomed to under-let their Seer ; but not if they are themselves of the class of cultivators, and have no other means of occupation. In some instances each person pays the *bach, h* upon his Seer, whether it be cultivated or not ; but in general he only pays upon what has been actually cultivated. The former custom is usual when the proprietor is at liberty to under-let his Seer.

75th. The managing proprietor, or Lumberdar of each Puttee, sometimes receives a fixed sum, or pecuniary allowance. This is the case in Sithwul, which has just been mentioned. Each manager there gets 25 Rupees, which is charged to the village expenses. Instances of this are at present rare, because the other unauthorized advantages possessed by the proprietor have generally caused the office to be much an object of desire ; now that the situation has become elective, and held only at the pleasure of the community, it is probable that it will more frequently be remunerated by money payments.

76th. Generally the Zemindars are not allowed to extend their Seer without the consent of the community, but where there is much culturable waste land attached to the village, or cultivators are scarce, the rules on this head are little attended to.

77th. In all villages or estates held by communities, exertions have been made in the present settlement to specify and place on record the several peculiarities and incidents of the tenure, which have been referred to above. The members of the community have been called upon voluntarily to define these in a joint deed, executed by as many members of the body as could conveniently be brought together. The points alluded to in these deeds, are the mode in which the profits of the estate are to be divided, and the rules regarding the enjoyment of the Sayer, the cultivation of waste land, the management of Seer land, the rights, privileges, power and tenure of Lumberdars, or managing proprietors. As far as practicable, whenever a desire to that effect has been expressed, the non-proprietary cultivators and the waste land have been divided amongst the several sharers or families of sharers, so that whilst the joint responsibility is maintained, there still exists the greatest encouragement for the improvement of each several share.

78th. I have thus attempted to describe the principal sort of proprietary tenures ; but before proceeding to any other branch of the subject, would briefly notice the topographical distribution of property which prevails in different parts of this district, and mention the mode in which the settlement proceedings bear in this respect on the state of property.

79th. The simplest form of an estate is, where an individual,

or community of individuals own the whole of a plat of ground lying within certain limits, and bearing a fixed name, as a Mouzah. This may from time immemorial have borne a single name, and be generally recognized as such, or it may contain within its area two or more Mouzahs, Uslee or Dakhulee, or both, whose separate boundaries have long been lost sight of, and which have become intermingled so as to form one village, probably bearing the double name.

80th. The estate however may comprise two or more such Mouzahs, and these may be situated together or at a distance from each other.

81st. The ancestors of many of the Rajpoot communities were possessed of large tracts of land containing many villages. As their descendants multiplied, this tract of land was subdivided, and formed into separate Mehals. This subdivision sometimes was effected so as to assign whole Mouzahs to different branches of the family. It was seldom, however, especially when the subdivision was amongst many sharers, that the property could be so divided. In this case, perhaps, some entire Mouzahs were given to each branch of the family, and the inequalities thence arising were made good in the division of some Mouzahs held jointly by all, or else each Mouzah was divided so that every branch of the family should have a portion. The whole Mouzahs, or portions of Mouzahs, belonging to each branch, were collected together, and made into one Mehal, or estate. But in the Mouzahs held jointly, the division probably was not in distinct portions, but field by field, or as it is commonly called, *Khet Bhut*. Now these fields sometimes became the subject of sale from one person to another, and the purchaser might call the purchased field by the name of his own Mouzah. It thus happens that many Mouzahs in Tuppah Chowree, Pergunnah Deogaon, contain within them fields known by the name of other Mouzahs, perhaps two or three miles distant, and have attached to them fields in other Mouzahs at an equally great distance. In Tuppah Koobah, Pergunnah Deogaon, the case was still more involved by the circumstance, that sets of fields in several Mouzahs, belonging to different branches of the family, bore distinct names. This distinction existed sometimes in the Government records, and not in common usage, sometimes in both.

82nd. Now in all cases of this sort, the system of survey which has been followed is the most convenient which could have been devised. The professional survey gives the locality of the villages, or of the plots of ground constituting the site and the bulk of the village, whilst the native field maps give the several fields within the circuit of each village. These fields can be distinguished by different colors

according to the different Mehals to which they are attached ; and the fair proportion of Jumma allotted to the Mouzah, may be readily assigned to each field, or knot of fields. The fragments of villages thus assessed may be grouped together in Mehals, so as to suit general convenience, and without any trouble to the revenue officers of the Government, or any risk to the interests of the Government.

83rd. It may be useful to attempt a definition of these two terms, a *Mouzah*, or village, and a *Mehal*, or estate.

84th. A *Mouzah*, or village, is one or more parcels of land called by a certain name, of fixed limits, and known locality, neither of which are liable to change. At the time of settlement, each *Mouzah* has a name and number assigned to it in the Government lists, and must so remain till the ensuing settlement, or till, for any special reason, it should appear fit, under express orders from the Government, to break up or alter the arrangement of the *Mouzahs*.

85th. A *Mehal*, or estate, consists of one or more *Mouzahs*, or a part or parts of one or more *Mouzahs*, covered by one engagement with the Government, or *Durkhaust*, and belonging to one individual or body of persons, who are jointly responsible for the *Jumma* assessed upon the whole. These are liable to constant variations, according as transfers of property may take place. An annual adjustment of Mehals at the time of making up the annual *kistbundee* if done with discretion, and under certain precautions, will be found very conducive to the comfort of the people, and the convenience of the Government officer.

86th. I would now proceed to notice the right possessed by non-proprietary cultivators, i. e. cultivators not under engagements with the

V. p. 23, Gov. Genl's minute of Sept. 26, 1833. Government themselves, or through their representative. These may be divided into,

First,—Those having an hereditary and transferable right to hold their land at a fixed rate.

Second.—Those having a right of occupancy at a fixed rate, either for a certain period or during their own lives, or those of their immediate descendants.

Thirdly,—Mere tenants at will.

87th. Under the first term I would include all holders of resumed *Maaffees*, with whom such an arrangement has been expressly concluded by the Collector at the time of settlement, and generally those who by purchase, gift, or special compact, have obtained rights of this nature from the *Zemindars*, such as *Bisweedars*, *Sunkullupdars*, the holders of land at reduced rates, or rent free, as security for loans, the holders of land on special terms in lieu of proprietary claims on the estate. These persons may be, as it happens, themselves cultivators or

may have cultivators under them. At the time of settlement the extent of land held by them, and the conditions of their tenure, have been clearly recorded. The proprietor is of course responsible to the Government for the Jumma fairly assignable to their holding, but he may sue them summarily for the amount, and on failure of payment may oust them or bring their tenures to sale. It may happen, and it frequently does happen, especially in Talookahs, that a whole Mouzah may thus be held as an under tenure by the old proprietors, who are responsible to the Talookdar and not to the Government, and who yet may manage the village concerns according to established custom as a proprietary body. The provisions of Act VIII. of 1835, which authorizes the sale of under tenures of this sort, on failure to pay the amount decreed in a summary suit, afford considerable facilities for the realization of the rents from tenures of this description.

88th. In the second class may be placed the former proprietors of estates sold by auction for arrears of rent, as regarded their Seer land—ousted proprietors, or old claimants of proprietary right, as regards the land they have long had in possession, and generally those who, whether actually resident in the village, or otherwise, may be proved to have long held the same land on the same terms for a course of years. The period which constitutes such prescriptive right has been no where settled. It has been held, that land so possessed since the cession may come within this class. A shorter period however might fairly be assigned, and probably the Civil Courts would recognize the term of twelve years as sufficient to constitute the claim. It is not unfrequently the case that tenures of this sort originate in contracts entered into by the Zemindars themselves, with cultivators whom they may engage to bring waste land into tillage.

89th. Now it is evident that all tenures of this kind are liable to adjustment at the time of settlement. No proprietor is at liberty to fix rates which should hold good beyond the term of his own tenure, or lease, nor would the settling officer be justified in recognizing rates which fall below the average of the Government demand, or the fair proportion of assessment which may be levied from the fields in question. It is sufficient that the fair rate fixed at the time of settlement should be invariable during its duration, and that the extent of land thus held, with the rate and right of permanency, should be clearly defined. Of course if the holders of this land extend their cultivation, and take other fields than those which they are recorded to possess, they do not carry their privileges with them, but must make their own terms with the Zemindars for their new requisitions.

90th. The most perplexing cases of this sort which are likely to

occur, have reference to estates formerly held by large bodies of cultivating proprietors, which are brought to public sale for arrears of Government revenue. In such cases it is only the proprietary right of the defaulters which is extinguished, their rights as cultivators remain intact. They are still entitled to cultivate their Seer land at a fixed rate, but the rate requires to be defined. Before the present settlement there was the greatest difficulty in deciding cases of this sort. The Putwaree's papers, supposing them perfectly genuine, show only the extent of each Zemindar's Seer and the *bach*,^h he had hitherto paid. But the extent was stated in an arbitrary Beegah, commonly called the Bhaiunsee Beegah, much larger than the ordinary standard Beegah, being used only amongst the brotherhood, where relative and not absolute area was the only requisite. In order then fairly to fix rates for the Seer land, it was requisite that the auction purchaser should first measure the land, and then determine the average rates which were paid by other cultivators for similar land. It was seldom, in former times, that auction purchasers were able to accomplish this. Any attempt to measure the lands of a turbulent village community would have inevitably led to a breach of the peace and bloodshed, and the loss to the proprietor would have been immense. The matter used generally to end in a compromise, which of course was more or less favorable to the purchaser according to the strength or influence of the two parties. The rate once fixed, and in general it was a very low one, the efforts of the old proprietors were always directed to including in their Seer the best, and richest Ryottee land. Hence the rental was soon reduced so low as to yield no profit to the Zemindar, and ultimately, in all probability, the estate was returned on the hands of Government as over-assessed. No other purchaser would of course come forward, a Government Suzawul was helpless, and unless some great exertions were made by the officers of Government, the deterioration of the estate was permanent.

91st. Talookah Oonhaitch, formerly included in Pergunnah Puchotur, Zillah Ghazee poor, illustrates the process. It was permanently settled in 1197 F., but broke down in 1223, and for many years had been held *kham* by Government at a considerable annual loss. It has now been re-settled with the former village communities at the old Jumma, and arrangements made with the proprietors for the repayment of the balances by instalments within twenty years. The Jumma, and the instalments have now been regularly paid two years, without the smallest default. The estate has since been transferred to Azimgurh, and forms part of Tuppah Purduha, Pergunnah Mahomedabad.

92nd. The case under the new settlement will be very different. In all estates held by cultivating bodies of proprietors, the custom of *bach, h* only is recorded regarding the Seer. There is no necessity for vexing or alarming the proprietors by fixing Ryottee rates on their Seer. If therefore the estate be brought to sale by public auction, there will not be found any rates fixed on the Seer. But still its extent and locality will be certain, and the rates paid by other cultivators of similar rank in life for similar land will be found recorded. There are generally in Azimgurh two rates of rent for the same land, varying according to the rank in life of the cultivators. The respectable, or *Ushraf*, pay less than the lower classes, or *Urzal*. The Zemindars would of course pay the *Ushraf* rates.

93rd. The cause or origin of this distinction is not very clear, but reasons may be alleged in its justification. The *Ushraf* are generally Brahmins or Rajpoots, who are connected with the Zemindars by ties of religion, family connexion, or friendship, and hence are somewhat favored; besides which their respectability gives better security for payment. On the other hand, the *Urzal*, consist of Bhurs, Chumars, and low caste persons, who are generally located on the estate at some expense of capital, and are liable at any time to be left entirely dependant on the Zemindars, who must either support them during a season of scarcity or see his estate depopulated, and his future sources of profit destroyed.

94th. The third class, or tenants at will, consist mostly of those who are styled *Urzal* in the preceding paragraph. They neither have nor assert in general any rights, other than the will of the Zemindar. They take what land he gives them, and pay the utmost that they can, either in money or in kind. Besides their direct contributions to his rental, they render him many personal services. If Kuhars, they carry his palankeen, merely receiving in return food to support them during the time. Other classes bring him wood, tend his cattle, or perform numerous other similar services for very inadequate remuneration. Under former Governments this power was no doubt recognized, and permitted. They were then predial slaves, who were beaten without mercy for misconduct, and were liable to be pursued, and brought back if they attempted to escape. Their state is now much improved. The power is now conventional. A Chumar can now sue his Zemindar in the Criminal Court for an assault, and if detained against his will, can bring his action for false imprisonment. He can even recover in a Civil Court the wages of labor performed. Nothing vexes or annoys the Zemindars in our whole system, so much as this. It has struck at the root of a power, which has long

been exercised most tyrannically, and yet so strong is the force of habit and custom, that often as the power of the Zemindar is still abused, it is very rarely that they are brought into Court to answer for their misconduct.

95th. The foundation on which the right of the Zemindar now avowedly rests, is that of pecuniary obligation. He expends capital in locating the cultivator in the village, he builds his house, feeds him till the harvest time, supplies him with seed, grain, and implements of husbandry. On all these, an exorbitant interest is charged, and in consideration of the pecuniary obligation thus incurred, the services of the man are exacted. Hence the connexion is rather personal than resulting from the tenure of the land, and various circumstances support this view. In mortgages those rights are seldom, if ever, transferred; in private sales very rarely, unless specified; in public sales by authority for arrears of revenue, never. Hence an auction purchaser never acquires any rights over the tenants at will of a former Zemindar, and thus the Zemindar always struggles to include all such cultivation under the term of his Seer. In the partition of an estate, each Puttee keeps its own Ryots, and sometimes the most violent disputes exist as to the right to certain Ryots.

96th. An instance may go far towards exemplifying these customs. In the partition of a village in Nizamabad, held by Rajpoots a dispute arose regarding the right to an Aheer. Each party claimed the man as his own Assamee, and wished his name to be inserted in the list of his own Puttee. Both claimants, and the man himself came forward. The facts of the case were admitted by all. A's ancestors had first located the man in the village, given him his house, supported him, and for a long time retained his services—such as the first day's ploughing of the season, the first day's use of his bullocks in the Sugar Mill, the usual petty offerings of grain, molasses, &c. To improve his cultivation the man had dug a well, for which purpose he borrowed money from a Mahajun. A, was in reduced circumstances, and could not pay the debt. The creditor pressed for payment, and at last B came forward, paid the debt, and subsequently claimed the services of the man, who now left his former house, and resided in one assigned him by B. The man himself, apparently a respectable and sensible cultivator, never thought of denying the obligations of his situation, but said that on A's inability to support him his services were transferred to B. The matter was referred to several respectable Zemindars, who were present, and they unanimously and at once decided that A's right was indefeasible, except by his own transfer to B, and that the Aheer was consequently still bound to

render as before all the usual service to A, whilst B might claim in liquidation of the new debt, whatever else the Aheer might be able to do. This decision was communicated to the parties; the Aheer was registered as A's Assamee, and all parties went away apparently satisfied that the case had been fully heard.

97th. There are however many varieties of this class. In proportion as they are good cultivators, and raised above the menial castes, they acquire by prescription, rights which at length become valuable. The Keorees are an instance of this. They are by far the best cultivators, and they excel in gardening. A Zemindar is always glad to get some of them located in his village. He treats them liberally, because they improve the ground by constantly manuring it, and pay him high rates, and that punctually. Hence their cultivation is never interfered with. They get as much as they like, and are allowed to keep it as long as they will. The self-interest of the Zemindars would always be sufficient to protect them, except against sallies of passion. Lately however the independance of this class has been established by the rapid spread of Poppy cultivation in the district. The Keorees are the only class of people who will produce Opium. By taking advances from the Opium Department, and putting themselves under the protection of that powerful establishment, they have quite freed themselves from any dependance on the Zemindars. It is needless to say, that nothing is consequently more odious to the opulent and powerful Zemindars than this Department.

98th. It is clear that non-proprietary cultivators of this third class by long prescription would rise to the second class, and acquire the right of holding their land at fixed rates.

99th. The better to define and secure these rights, it has been one great object of the settlement proceedings to form an accurate record of each of these classes, according to their several designations. In the two first classes, the extent of their cultivation and rate of payment has been determined; and in the third, the land actually held, and the rate actually paid recorded; this rental thus formed by the village Putwaree, in the presence of as many members of the community as may be on the spot, has been afterwards advertized for information in the village, and at the place where it was drawn out, a time fixed for hearing objections, and at the close of that time, the question has been finally disposed of. Whenever the prevailing rates may have been reduced below the fair Pergunnah average, from collusion, partiality, by special contract, or other cause, it has been sometimes necessary to re-adjust and fix the rates, which may be hereafter demanded.

100th. The future maintenance of those arrangements must be left to

the Courts of Law, but it is well to see how the present practice of the Courts affects them. Summary suits for rent will be decided according to these rates, unless proof be adduced that they have been set aside by the Dewanny Courts, or altered by voluntary agreement; and such voluntary agreement should never be admitted on the denial of either party, except under the clearest documentary proof, or alteration of the rates previously made by both parties in the register of the village. Any cultivator forcibly dispossessed of the land he holds, according to the register, might sue summarily before the Collector for re-instatement, to whatever class he might belong, and would be re-instated accordingly. A summary process is provided to maintain a cultivator in possession against his Zemindar, but no summary process for ejecting a tenant at will is open to the Zemindar. If any Ryot fails immediately to liquidate a demand for rent, adjudged against him in a summary process by the revenue authorities, he is liable to ejectment, and his land is then made over to the Zemindar. Tenants at will seldom resist the requisitions of those who are really their Zemindars, that is, who claim the supremacy which has been before described; but few would yield up their possession in favor of an auction purchaser. In such cases, then, although the Zemindar possesses legally the right of ousting the tenant at will, he can only legally enforce it through a regular suit. The Courts also can of course always take cognizance of claims to be removed from one class of cultivators to another. It is however very questionable how far they could interfere in altering the rates fixed by the revenue officer, unless on pleas originating subsequently to the settlement. They could at least only take cognizance of the question as between man and man, between the Zemindar and the Ryot, as it might be affected by contracts existing between them. They could not positively alter any rate fixed by the Collector. If the estate were held *kham*, or farmed, or sold by the Government in consequence of default, the settlement rates might be demanded, notwithstanding the decree of the Court. If this were not the case, the rental might be reduced below the Government demand, and the interference of the Civil Courts might be thus exercised in regulating the Jumma, which it is an established principle that they have no power to call in question.

101st. If it were desired to introduce the European system of farming, or, in Indian parlance, to make the whole lands of the village Seer, this could only be effected by purchasing up the rights of the two first classes, and by purchasing out, or ejecting, the last class, probably by long and expensive litigation. The insuperable aversion

which the upper classes (*Ushraf*) have to engage with their own hands in any agricultural operations, would render it very difficult to persuade them to part with their rights.

102nd. It is necessary to allude here to the great number of summary suits regarding the payment of rent, which are instituted in this district. The number is still increasing, and the causes

Number of Suits instituted in the three first quarters of

1823— 374
1833— 647
1834— 358
1835— 675
1836— 882
1837—1305

which have produced so much litigation deserve note.

First,—The operations of the Special Commission under Regulation I, 1821, and I, 1823, for the reversal of fraudulent sales, and transfers of property; was one of the chief causes. In the early period of our rule the district suffered exceedingly from the effects of our Code. This was hastily introduced, immediately on the cession, and gave a rich harvest to numerous intriguers, who poured in from the neighbouring districts which had been longer under our rule, and were better accustomed to the tricks and chicanery, which an artificial system of the sort is likely to produce amongst an illiterate people. The choice too of some of the first agents for introducing the new system appears to have been unfortunate. The natural result was, that extensive frauds were perpetrated both in the registration of owners of estates at the time of the first settlement, and subsequently in the transfer of property under forced and collusive sales. To remedy this state of things was highly desirable, and the remedy ought to have been promptly administered immediately the evil was discovered. As it turned out, the attempted remedy was almost worse than the evil.

103rd. In 1829, that is, twenty-six years after the commencement of the evil, the Commission was called into operation in the district. Its conduct was entrusted to Mr. R. M. Bird, the Commissioner of Revenue and Circuit for the division, who was perfectly aware of the necessity, and importance of the measure. The Regulations quoted above confer an immense discretionary power, and admit of great latitude of interpretation. Mr. Bird commenced the work with energy, and began to act on the strong views he justly entertained upon the subject. Had these views been then carried through with promptitude and decision, great good might have resulted. An immense number of suits were immediately instituted, but in the mean time a change had taken place in the views of the superior authorities on the subject of this Commission. Some of the first cases decided by Mr. Bird gave rise to much discussion, and were reversed in appeal. No further decisions were passed, and the time of the

Commissioners was speedily so completely occupied with their other duties, that the investigations lay thus in abeyance for seven years, till in 1835 a separate officer was appointed to close the investigations. When this took place, the views which led to the original enactment, had become completely altered, and all the claims which had been kept alive for seven or eight years, were speedily thrown out. In addition to this, the appellate authority, as well as the primary, had become clogged and overwhelmed, till about the same period a special provision was made for the discharge of its functions. Hence many of the claims which had been allowed by the Special Commissioner in the early part of the period between 1829 and 1836, and the parties put in possession accordingly, were disallowed in appeal at the close of the period, and the decree holders again dispossessed, and made to account for mesne profits.

104th. Amongst a people extremely sensitive regarding their rights in landed property, it may well be conceived what injury resulted from operations such as these. It is unnecessary to notice here the evil effects upon the prosperity and morals of the people. Its effect in all estates which had been purchased at public auction for arrears of public revenue (and very numerous they were) shewed itself in the refusal of the members of the old village communities to pay their rents. Hence the proprietor of such an estate was sometimes compelled to file sixty or seventy suits in a single village or Mehal.

105th. *Secondly*,—By far the larger number of suits were instituted in Pergunnah Nizamabad, and many of these resulted from the fiscal mismanagement of the Pergunnah whilst under settlement, from 1822 to 1834. It was the field where every young and inexperienced officer began to make settlements, or to introduce a new system, and hence was the subject of many crude and rash experiments. Amongst these was the arbitrary fixing of rent rates, from which the Government demand was deducted. In proceedings under Reg. VII, 1822, this was frequently done, and with the most injurious effect. The arbitrary rates could often not be exacted, but they gave the Malgoozar a pretext for demanding them, and consequently involved him in litigation.

106th. *Thirdly*,—The very unsettled state of the landed property was another fruitful source of litigation. Disputes regarding boundaries, and between Putteedars, were constantly thrown into the summary suit file.

107th. *Fourthly*,—But all these causes were ten-fold magnified by the delay which used to occur in the decision of these suits, then falsely called summary. Till the Sudder Board of Revenue took up the subject in 1833 with their wonted energy, suits of this sort used to

remain on the file ten years or more. When the Civil Courts had the charge of the summary file, very few decisions were ever passed, and these few were based on no fixed principles. Contumacious cultivators derided the efforts of the proprietor to compel payment by the institution of summary suits, whilst these were still placed on the file by the disheartened proprietors, lest failure to assert the claim might have compelled reference to a regular suit, which seemed more expensive and still more hopeless of speedy termination.

108th. A recourse to distress and sale of personal property of the tenant was equally fruitless, replevin immediately took place, and further proceeding was stopped till that could be disposed of.

109th. A very different state of things has followed close upon this. Within the last three years summary suits have been decided and enforced, through the agency of the Tuhsildars, with a promptitude never known before. A month or six weeks is the average duration of a suit, and none lie over for more than three months, whilst the Cutcherry of the Tuhsildar is a tribunal at the door of every man. In the mean time, the Special Commission has nearly closed its course, rent rates have been adjusted, and boundary and Putteedar disputes settled. It must also be remembered that the division of property is very minute, the number of subordinate tenures large, and that every effort has been used to induce the Malgoozars to have recourse to summary suits, instead of relying on the irregular and illegal interference which used to be exercised by the Tuhsildars in the adjustment of their Putteedaree disputes, and collection of their rents. When all these things are taken into consideration, it will not perhaps be considered strange that the summary suit file is heavy. It will rather be thought a happy proof of the efficiency of the process, and a sure indication that regularity and legal modes of redress are rapidly taking the place of confusion and misrule.

110th. The state of the rent free lands requires some notice. All the claims to hold land free from the payment of revenue have been investigated and finally disposed of. The quantity resumed and settled is very large. This consisted mostly of unauthorized grants by Amils, or Tuhsildars, or Zemindars, in which the original grantee, however, had generally demised, and the property had devolved upon the heir, contrary even to the terms of the grants. A large portion of the grants had conveyed tracts of waste land which had been brought into cultivation after the commencement of our rule.

111th. An uniform principle regulated the settlement of all these tenures. Possession and the actual state of things was maintained so far as it was unaffected by the assertion of the right of the Govern-

ment to its share of the produce. If any other than the Maafeedar was in possession of the Zemindarry, i. e. the proprietary right, the settlement was made with him. If the Maafeedar had obtained the Zemindarry right by legal transfer or by prescription, the settlement was made with him. If he had not obtained the Zemindarry, but seemed to possess other rights as an under tenant or cultivator, those rights were secured to him on easy terms, and he was protected from any encroachment on the part of the Zemindar, so long as he faithfully performed his part of the contract.

112th. A few tenures were confirmed for life, or in perpetuity. The latter are old religious endowments, which appear to have been held from time immemorial, and to have been respected by all.

113th. The settlement of this province for twenty years has been formed in the seasons 1833-34 to 1856-7, and extends according to the year in which each settlement was formed from A. F. 1241 to 1264. In all, the settlement has been conducted professedly under the system generally designated as that of Regulation ix, 1833. The adjudication and demarcation of village boundaries prior to survey, the measurement both by Ameens and by professional Surveyors, the determination of the Government demand from general considerations of former fiscal history, and comparison with other neighbouring and similar villages, without a minute scrutiny into the assets of each estate, and the subsequent record of proprietary rights and rent rates, are the main features of the system. In particular cases the system may have been a little deviated from, as will hereafter appear, but this arose from peculiar circumstances.

114th. The former assessment was in general light. The country was imperfectly cultivated. There had been no settlement since 1220 F. and subsequent to that period much waste land has been brought into cultivation. There was therefore less caution necessary in fixing the Government demand than where the assessment had formerly been overstrained, and large reductions were called for.

115th. Very few instances of recusance on the part of the Zemindars ever occurred. It is true that the average of the assessment on the cultivated land is not low, but it must be remembered that the land is very valuable, and pays rates generally much higher than elsewhere. Sugar, Indigo, and Opium are the crops which bring the greatest pecuniary return, and it is satisfactory to bear in mind that the rates were assumed about 1833-34, when all these products were in less demand than general. The advances of the Government for Sugar had ceased a little before that period, and materially deranged the market for that article. The failure of the agency houses in Calcutta

had depressed the Indigo market, and the cultivation of Opium even now is less extended than it might be.

116th. The chief labor of the settlement consisted in the difficulty of deciding the numerous boundary disputes, and fixing the relations between the proprietors amongst themselves, or the proprietors on one hand, and the numerous subordinate tenants on the other. The whole area of 2,121 square miles is parcelled out into 5,541 villages, which gives an average of less than 245 acres to each village. When we advert to the former state of this district, and the rapidity with which it has been in our hands, it is not surprizing that numerous disputes should exist between the different villages. The adjudication of these had never yet been attempted on any uniform plan, and it was a task of no small difficulty, in many cases, to reconcile or give effect to the different decisions which had been formerly given; voluntary arbitration between the parties was the means generally employed for determining the boundary, but where the parties would not arbitrate of their own accord, persons were appointed by lot, under the established mode, to settle the dispute.

117th. I cannot say that I contemplate with satisfaction the mode in which this duty has been performed. Too much was left to private arbitration, and the awards thus given were too strictly followed. The venality of the arbitrators became at length notorious, and there were some, who were known to have amassed large sums in this method. When the work was nearly completed, all persons were convinced that the preferable method was to refer as little as possible to arbitration, and in the cases which were so decided, to tie down the arbitrators within the narrowest limits, and to insist upon a prompt decision in the immediate presence of the superintending officer. This plan was pursued very successfully after the completion of the unsettled portion of the district, in the permanently settled Pergunnah of Secunderpore.

118th. Whatever may be the defects of these operations, it is however certain that the amount of good has been enormous, and quite throws the other into the shade. Possession has been scrupulously upheld, so that the main injustice which could ever be inflicted was to transfer more or less of the culturable waste between two interjacent villages to one or the other. To this waste it was seldom that any title could be made good. By no other plan than that prescribed by the system of settlement could these have been ever brought to adjudication. They have now been all decided, marked off, and a record of the boundary formed both by native Ameens in a rough manner, and by professional Surveyors, on scientific principles. It is scarcely

first attempted to make settlements, and obtained his experience. The results, as might be expected, were very incongruous. In 1833-4-5 all these operations were recast on the model adopted on Reg. ix, 1833. The professional survey was conducted by Capt. Simmonds, whilst the field measurement, where it had not been already completed, was conducted by the revenue authorities. One great evil of this was, that the revenue survey, especially on its first commencement in 1833-4, was far from correct. The interior survey, especially, was often considerably in excess of the truth, as is always likely to be the case, when it is not checked by the native field measurements. The culturable land was also given considerably in excess, from an opinion held by the surveyor, that all the land which would produce any thing whatever should be classed under this head.

128th. In estimating the settlement, advertence must always be had to the mode in which the "general statement in acres" was from necessity drawn out, and the averages there exhibited.

129th. The cultivated area was always taken from the measurement on which the settlement was formed. This was frequently many years previous to the professional survey, and exhibited a much smaller cultivated area than was found to exist at the time the settlement was prolonged for the extended period from 1241 to 1262. The prolongation of the settlement was partly thus determined on considerations, which, although they may have influenced the first settlement, were not the foundation of it. The total of the cultivated area there exhibited in the general statement is considerably less than the survey gives, and also below the fact. This of course makes the average rate of assessment higher than it would otherwise have been. The total area was necessarily taken from the survey returns, which were undoubtedly under this head correct.

130th. The diversity of plan and of persons who had conducted the operations in this Pergunnah, produced its natural effect in great inequality of assessment. In the remarks I have made on the errors of inexperienced officers, I by no means except myself from the number. On first joining the district in 1833, with no previous revenue experience, I found the Pergunnah distracted, and almost ruined by the mal-administration of the preceding ten years. Large balances accrued annually, not from over-assessment, but from unadjusted rights and disputed claims. Affrays frequently occurred, from ill-defined boundaries. There were numerous unadjusted claims, and every thing pointed out a state of considerable disorganization. It became an object of great importance to terminate this state of things as soon as possible. At the close of the year the revenue survey commenced, and did

not terminate its operations in the Pergunnah till the end of the next season. It thus happened that this was the first part of the district prepared for settlement, and in addition to the other causes which urged a speedy termination of the settlement, it became necessary at once to enter on the revision and completion of the operations here, or to remain unoccupied. The settlement was completed and reported in the middle of 1835. Two years' experience since then has convinced me that some of the assessments are higher than they ought to have been. Some of the errors were those of my predecessors, which I left uncorrected; some my own, into which I was betrayed either by erroneous surveys, or by the partial assumption and application of averages. I think, however, that these cases are few. During the two years above alluded to, a Jumma of nearly three lacs has been collected, with a real balance of only one or two hundred rupees at the close of the year. Even this has been realized soon after; and in addition, large sums have been collected in each year, the balance of former years. In one instance, a small village was sold for its arrear and fetched a good price, and in another a farming arrangement was made for the share of a defaulter. Both these cases were peculiar, and with exception to them, the whole has been collected by the ordinary methods. Imprisonment of the person, and distress of personal property, have been very rarely resorted to. It is probable that so long as the present high prices of Sugar are maintained, and the demand for Indigo and Opium remain what they are now, little difficulty will be experienced in collecting the revenue during ordinary seasons. Any failure, however, of these sources of profit, or adverse seasons, will probably throw some of the villages, for a time at least, on the hands of Government. It was for some time a question in my own mind, whether I should propose a reduction of the Jumma on a few estates. The remission of 2 or 3,000 rupees on ten or eleven villages would have been all that was required. But after consulting with the most intelligent natives in the district, it seemed best to avoid shaking the confidence of the people in their settlement, or to check the efforts they were rapidly making to improve their estates by extending the cultivation, or increasing the means of irrigation. If the opinion had once prevailed, that default and reluctance to pay might produce a reduction of assessment, these industrious habits would have been checked, and many estates have been injured at a small advantage to a few. The operation too of this principle would have probably been felt in other Pergunnahs where no such inequality existed.

131st. The confusion in this Pergunnah was not confined to the assessment. The demarcation of boundaries was also attended here

with far more difficulty than elsewhere; it had previously been the custom to measure the village before the boundaries were fixed. This pernicious practice had given rise to endless intrigues and chicanery on the part of the native Ameens. The lands of one village had sometimes been measured, or rather the measurement inserted in the papers of another village, and the settlement formed on this measurement. It hence became often necessary before the demarcation of a boundary, to examine many previous proceedings, and refer to voluminous documents. This, and the habit of intrigue and litigation, which it had fostered amongst the people, rendered the work very tedious and difficult. I fear that in some cases knavery and corruption obtained their ends, and I know not how this could have been avoided. But in every case, a clear decision has been given, a good demarcation on the ground has been made, and a record of the boundary has been formed. The value of this can only be known to those who were acquainted with the previous state of things. It has already in many cases of itself altered the face of the country, and saved many persons from ruin.

132nd. The imperfections of the boundary work in some degree affect the value of the survey, at least in the eastern and southern portions of the Pergunnah, which were surveyed in the first season. The professional survey cannot be there taken as an infallible indication of the boundary, but references must also be had to other documents put up with the proceedings in each case. In the western and northern parts, which were surveyed in the second season, there is little or no fear of error.

133rd. The same imperfections which adhered to the other parts of this settlement, exist also in the record of the fractional shares of proprietors, and in the adjustment of the rent rates. In the previous settlements it had been usual to express the hereditary rights of the proprietors in fractions of a rupee, without ascertaining whether their actual interests in the State did, or ought to correspond with them. Arbitrary rates were also frequently fixed, which never could be paid. Great progress was made by myself in correcting these irregularities, and amending the records. Mr. Montgomery has since been actively employed in the same way, and I trust that all material defects have already been remedied, or will be soon.

134th. The circumstances of Cheriakote and Keriak Mittoo are so similar, that they may be considered together. These were surveyed by Captain Simmonds, and settled by Mr. Montgomery in the season of 1834-5. The culturable area has been often overstated. There is no reason, however, to think that the defects of this survey have produced any evil consequences.

135th. The assessment is light. It has been collected now for two years without any balance, or the smallest difficulty. In June of each year, the whole demand for the Fussly year, beginning on the 1st of October, has been collected.

136th. There is no reason to believe that the boundary work has been otherwise than well done, and that thoroughly. A few cases about which doubts existed, have since been examined and put to rights.

137th. The rights of proprietors and rent rates have been generally recorded, but the complete form, subsequently introduced, was not then in use. Voluntary agreements were not then entered into by the proprietors, and the partition of the waste land in each village amongst the several co-parceners has not been so thoroughly done here as elsewhere. The rule of partition has always been fixed, but that rule has not yet been universally carried into effect.

138th. The survey and settlement of Pergunnah Belhabans were completed in the same season of 1834-5. The survey was conducted under the immediate superintendence of Lieut. Fordyce, then an Assistant to Capt. Simmonds, and was executed in a superior manner. The Pergunnah is held by one large brotherhood of Bais Rajpoots, who agreed to their Jumma in the gross, and distributed it themselves equally on every beegah of cultivation throughout. This singular proceeding was prevented from falling unequally on the several members of the communities, from the circumstance of the property of each being scattered about different Mouzahs, and in the mode generally known as *khet khut*, so that every man had land of each sort. It must however be borne in mind, that this measure has produced a very unequal village assessment, as those which have poor lands are taxed equally with those that contain good lands. Each Mehal must always be held responsible for its Jumma, not each Mouzah.

139th. The assessment is light, but some difficulty will always be experienced in collecting it, for the people are very unruly, and bear a bad reputation in the district. They are said, it is to be feared with reason, to harbour thieves and bad characters of all descriptions, and no doubt to participate in their gains.

140th. Something is wanting in the Pergunnah in working out the principle laid down at the time of settlement regarding the division of the waste land in each village amongst the several Puttees. This has not been regularly enforced, and no doubt cases exist, where an actual partition is necessary, and ought to be immediately carried through.

141st. Pergunnah Deogaon was surveyed by Mr. Terraneau in the season of 1834-5, and settled by myself in 1835-36.

142nd. The boundaries were very well laid down by the Native Deputy Collector, Seyud Nawazish Ali, and the very respectable Tuh-sildar, Meer Muxood Ali. The villages were so much broken and intermixed, that this was a work of no ordinary difficulty. It was done not only completely, but with the fewest possible complaints, either on the score of partiality or unnecessary expense.

143rd. This Pergunnah was unfortunately chosen as the one in which a new survey party commenced its operations. The villages often consisted of broken fragments of land, some larger, some smaller, some mere fields, others tracts of cultivated and uncultivated land, scattered about at considerable distances from each other. The only way to survey those villages satisfactorily would have been to make certain defined circuits in different directions, of the ordinary size of villages, and corresponding as nearly as convenient with existing boundaries, to have surveyed the same circuits professionally, and by native Ameens, and after thus testing the accuracy of the latter, to have taken out from the native field maps the several fields or parcels of land constituting each village, and to have added these up as giving the total area. This however was seldom attempted, and where it was tried, was done so incorrectly as to be nugatory. The native measurements were frequently approved, and passed as agreeing with the professional, when the areas surveyed were totally different. The professional survey itself is often grossly incorrect, both in its representation of the cultivation, and its delineation of the boundaries. The native maps have received scarcely any check, several of them are scarcely intelligible, and in many fields belonging to different persons, different Puttees, and even different Mehals, have been grouped together in one number.

144th. I have done what I could to remedy this state of things, by examining the boundaries, making additional native maps where necessary, distributing the fields and holdings afresh. Such inaccuracies in the professional maps as I happened to meet with, were noted on their face, but I well know that there are many which must have escaped me. The total areas were taken from the professional survey, so that the total of the Pergunnah, according to the survey, and according to the settlement papers will agree, but the areas of the several villages will often differ considerably, owing to the adjustments which were found necessary.

145th. This Pergunnah was the highest assessed in the district, and very little increase on the former settlement could be anticipated. Not only was the rate of the former Jumma on the land high, but the land itself is inferior in quality to that of other parts of the dis-

trict, yielding mostly very uncertain rice crops, and the Zemindars are numerous, each holding a small portion of Seer land on which he subsists, whilst from being Rajpoots of high caste, they are unthrifty cultivators. The main object in the settlement was to equalize the assessment, and much has been done towards this. The settlement has perhaps given more satisfaction than any other in the district, and this result was mainly attributable to the impartial, upright, and very conciliatory conduct of the Tuhsildar.

146th. In estimating the character of the settlement by the averages, it must be borne in mind that the cultivated area has certainly been under-measured, and that no land has been put down by the professional survey under the head of cultivable. Whatever was not under the plough, or had not evidently been so within the two or three preceding years, was classed as barren waste.

147th. The record of proprietary rights has been carefully, and well done by the Tuhsildar. The Persian papers are very complete, though the English statements have not been as yet drawn out in the form best adapted to elucidate the peculiar tenures of the Pergunnah. These however are now in a course of preparation, on a plan prescribed by the Sudder Board of Revenue subsequently to the conclusion of the proceedings. No difficulty will be experienced in giving the materials any form which may be thought most expedient.

148th. Pergunnah Mahol was surveyed by Lieutenant Fordyce, in the seasons 1834-5 and 1835-6, and settled by Mr. Montgomery, in the latter year.

149th. The boundaries were mostly laid down by the Native Deputy Collector, and by the Tuhsildar, Buksish Ally Khan. The work was not satisfactorily performed. The people are low, and litigious. The Tuhsildar had little experience in the Pergunnah.

150th. The survey was very well conducted, and may be relied upon.

151st. The settlement though showing a high average, is very light, for the land is exceedingly valuable. The finest Sugar land, perhaps, in all India is to be found here.

152. The tenures are simple, being mostly Zemindarry, where the co-parceners held jointly or severally according to their hereditary shares. The point of greatest importance was the formation of good rent rolls to show the rights, holding, and rates of all the non-proprietary cultivators. This has been carefully done by Mr. Montgomery, and these relations are now placed on the best footing. The rent rolls, or *Jummabundee*, were formed after the settlement, drawn up in the common Nagree character, published to those concerned in every possi-

ble way, by personal explanation to as many as were present, and by suspension in the village before the eyes of all ; objections against any parts of these were afterwards heard, and orders passed as each case required.

153rd. Pergunnahs Mahomedabad, Gohna, and Mhow were surveyed in the years 1834-5, and 1835-6, and settled by myself in the latter year.

154th. The boundaries were decided and marked off by two Tuh-sildars, Ahmed-oolah Khan, and Zuheer-ool-huk, who were there successively under the personal superintendence, first of Mr. Montgomery and Mr. Chester, and latterly of myself. These proceedings were unnecessarily protracted, rendered very expensive to the people, and sometimes in the final result unfair. Great exertions have however been used to render them complete, and to correct any errors that may have been committed. The undertaking was of vital importance to the prosperity of the district, for there is much waste land, the title to which was greatly disputed, of great capability, and now covered with wood, which is in high demand at the Sugar factories scattered all over the district.

155th. The boundaries were often erroneously laid down, and little pains taken to reconcile the professional and *khusreh* maps. The important point to be borne in mind is, that the professional map cannot always in itself, and alone, be held conclusive on the form of a boundary. Before a certain conclusion can be arrived at, the maps of the two continuous Mouzahs must be compared, the proceeding held on the adjudication of the boundaries examined, and reference had to the *khusreh* maps, and any other sketches of the boundary there may be. If the process be carefully conducted, on the occurrence of any dispute it will be impossible to fall into any great error.

156th. The assessment is light, more so than is shown by the averages, for there is good reason to believe that the cultivated land was much under-measured, and the culturable land was avowedly shown as barren waste.

157th. Great exertions were used to make the rebords of proprietary rights and rent rates as perfect as could be, and sanguine hopes may be entertained, that these are placed on a satisfactory footing.

158th. The Pergunnahs of Gopalpore, Kowreeah, and Atrowlcah Tilhence were surveyed by Lieut. Fordyce in 1835-6, and settled by Mr. Montgomery in 1836-7. Three large Talookahs had however been previously settled by the late Mr. George Bird, in 1831-2, and the arrangement confirmed by the Government. These were incor-

porated into the present settlement, with no further change than the extension of the period of the lease.

159th. The boundary work was done almost entirely by the Tuh-sildar, Sheikh Waheedooz-zuman, with constant supervision and occasional assistance from the Native Deputy Collector, or the European functionaries. It appears to have been very well performed.

160th. The survey was well conducted. These Pergunnahs are undoubtedly the best surveyed in the district.

161st. The assessment is fair and equable. Adverting to the nature and capabilities of the soil, it is low ; but if the character of the people and the nature of the tenures is borne in mind, it is quite as high as it ought to be. In comparing the averages of this assessment with those in other Pergunnahs, it must be remembered that here the survey is a very faithful representation of the extent and character of the land, and that therefore the rate of assessment is not actually as much below that of the rest as it appears to be. The Zemindars are high caste, pugnacious Rajpoots, and their tenures *bhyachara*. There are also many Brahmins who hold lands at low rates as under-tenants, and exercise a powerful religious influence over their superstitious landlords. The revenue administration of this district has always been most difficult. The late operations will materially facilitate the collections, but still difficulties must be anticipated. It is only some years of firm and consistent rule, which will suffice to bring the turbulent inhabitants to industrious and regular habits.

162nd. The settlement of Pergunnah Suggree occupied a long period, and was not finally completed till the year 1836-7. Some few settlements were made by Mr. Barlow, under Regulation VII, 1822, but the greatest bulk by Mr. Montgomery, who also recast the prior settlements. The work was completed and reported in 1834, before the introduction of the new system, but the Commissioner judiciously declined forwarding the report then, and desired the whole to be reviewed under the new rule. This was admirably done by Mr. Montgomery.

163rd. The Kishwaree survey was long ago completed by the revenue authorities, so that the Surveyor was relieved from this duty, and desired merely to survey the boundaries, sketching on the geographical features of the country and omitting the interior survey, or that part of the operations which was designed to distinguish the cultivated from the uncultivated lands.

164th. The adjustment of boundaries had formerly, as in Pergunnah Nizamabad, been much mismanaged, but before the approach of the survey these were all definitely settled, and well marked off, so

that no difficulty was experienced. Some of the decisions may, as in other cases, have been unfair, but the survey is now a faithful record of what the decision was. There can never be any doubt hereafter on that score. The professional operations afforded also a complete and very satisfactory proof of the correctness of the former Khusrey survey.

165th. The assessment is light and equable, and has now for three years been collected without any balance. The record of proprietary rights, &c. has been completed on the plan prescribed, and the settlement is now as perfect as of any other of the district; though it has only been brought to this state at a great expense to the people, and with much personal vexation to them.

166th. Pergunnahs Ghosee and Nuthoopoor were surveyed by Mr. Terraneau in 1835-6, and settled in 1836-7 partly by myself and partly by Mr. Montgomery. The boundary work had been slowly advancing for the preceding year or two, but it was completed by the Native Deputy Collector just previous to the survey. The work was ill done. The large quantity of rich land lying waste about different parts of the Pergunnahs rendered it certainly a task of some difficulty, whilst the wealth and intriguing character of some powerful men in the Pergunnahs added to the difficulty of executing the work with fairness to all parties. The evil, instead of being detected and exposed by the survey, was concealed and aggravated by its operations. Not only were the defects of the demarcation concealed, but where the demarcation was plain and evident, and no dispute whatever existed, errors of the most fatal nature were committed in the survey. Had the professional maps been received and recorded without question, the greatest confusion would have ensued. As it was, the assistance of a professional surveyor was obtained. All the maps were carefully reviewed, compared with each other, with the record of the adjudication of the boundary, and with the Ameen's map. Whenever any doubt existed, a personal examination of the boundary and renewal of the demarcation took place. This was superintended either by myself or by Mr. Montgomery. We always found that adequate decisions had been passed, but that these decisions had not always been clearly marked off. The whole has been now carefully corrected, and no future doubts can well arise, as to the position and direction of the boundary. I am however bound to say, that owing to various causes, which it is needless to enumerate here, the decisions have been more influenced by corrupt motives, and are more unfair, than in any other part of the district.

167th. The assessment is light, and will be easily paid, as the soil is very rich, and there is much fine culturable land, which will

rapidly be brought into cultivation. It must also be borne in mind that the cultivation has been under-measured. The rights, &c. of the proprietors have been well recorded, and the subsequent separation of shares generally completed.

168th. The settlement of each Pergunnah has been thus reviewed. Under ordinary seasons, and with good management, I have little doubt of the stability of the whole, with the exception of a few villages in Nizamabad.

169th. If the present demand for the staples of the district, Sugar, Opium, and Indigo, continues undiminished for a few years, the advance of the district in wealth and prosperity will be more than repaid. Its welfare will however depend much for the few first years on the firmness of the civil administration. If the arrangements made at the settlement are disregarded, the boundaries violated, the rights of proprietors and cultivators neglected, and misrule allowed to prevail, great confusion will ensue, industry will be checked, and improvement stopped. The effect also will immediately be felt in the collections of the Government revenue. The number of persons from whom these collections are to be made are numerous, and their rights nicely balanced. Each man now knows what he has to pay, and it will be difficult to make the redundancy of one compensate for the deficiency of another. If rights are usurped, the injured party will be deprived of the power of meeting the demand against him, and a balance will accrue. If hereafter balances should arise in the district, it must be remembered that this may be occasioned by mal-administration as well as by other causes, and is more likely perhaps to do so here than in many other parts of the country.

170th. The Tuhsildaree establishment should not be diminished. It is now strong and well disposed, but this is necessary on account of the minute division of property, and the numerous persons from whom the collections have to be made.

171st. Much increase must not be expected to the present demand. The Pergunnah of Deogaon is settled fully as high as it can ever bear. Much good would arise from its being declared perpetual. The same is the case in Gopalpoor, Kororeeah, and Atroleeah Tilhenee. In Mahol, Cheriakote, Belhabans, and Sugree, the assessment has reached its maximum, or so nearly, that further investigation would not be repaid. In Nizamabad there is still much valuable uncultivated land. The total demand from this Pergunnah will probably never be increased, but its readjustment and fresh distribution after the expiration of the present period of settlement would be a great advantage. In Mahomedabad, Mhow, Ghoosee, and Nuthopoor there is still much

valuable waste land, which will probably be made productive in the course of the present lease. Fifty thousand rupees might thus very probably be added to the rent roll of Government on the renewal of the settlement.

(Signed) J. THOMASON,

Collector of Azimgurh.

Offy. Secy. to the Lt. Govr., N. W. P.

Agra, December 16th, 1837.

ART. II.—MR. HODGSON, on *Cuculus*.

To the Editor of the Journal of the Asiatic Society.

SIR,—Amongst the numerous new birds forwarded by me to London, some years back, when I was young enough to imagine that learned Societies existed solely for the disinterested promotion of science, was a very singular form combining all the essential internal and external characters of *Cuculus* with the entire aspect of *Dicrurus*.

Unceremoniously as many others of my novelties have been appropriated, this one still, I believe, remains undescribed, and I therefore beg to present to you a description and sketch of it.

SCANSORES,

Cuculidæ,

Genus *Pseudornis* nob,

Generic character, essential characters of *Cuculus* with the entire aspect of *Dicrurus*. Tail 10, forked. Type *Pseudornis Dicruroides* nob. Habitat. The mountains exclusively. Specific character, Black, with a changeable blue or green gloss. Inner wing and tail coverts, and pair of extreme tail feathers, cross barred with white. An oblique white bar across the wings internally, and high up. Bill black. Iris hoary brown. Palate red. Legs and feet blue. 10 to $10\frac{1}{2}$ inches long, whereof the bill is $1\frac{1}{16}$ and the tail $5\frac{1}{2}$ to $5\frac{3}{4}$. Tarsus $\frac{12}{16}$. Long anteal toe $\frac{11}{16}$. Long postal toe $\frac{9}{16}$. Weight $1\frac{1}{2}$ oz. Sexes alike. General manners of *Cuculus*, but exclusively monticolous and a forester.

Remark.—The bill, tongue, feet, and wings are precisely those of *Cuculus canorus*, with these trivial diversities—if such they can be reckoned—that the wing is hardly so elongated, and the bill is less rounded on the culmen.

The tail consists of ten feathers, and is both in relative size and in form like that of the genus *Dicrurus*; that is to say, it has ten feathers, and is divaricated and forked, though the fork be not deep.

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PSEUDORNIS DICRUROIDES NOB.

Type of GENUS **PSEUDORNIS NOB.** $\frac{1}{2}$ Nat: Size

T. Black. Asiatic Lib. Esse. Calcutta.

There is this difference, however, as compared with the *Dicrurine* tail, that in our bird the two extreme feathers are much *smaller* than any of the rest; whence the fork of the tail becomes lessened in depth, these plumes not contributing to it.

The singular assumption of the entire aspect of so remote a genus as *Dicrurus* on the part of this strictly *Cuculine* bird will, I fancy, be generally considered extraordinary; and has suggested the generic name of *Pseudornis* ($\psi\epsilon\upsilon\delta\omicron\sigma$ falsus) The *Cuculus lugubris*, although described as having a *wedged* tail, will, I think, be found to have a forked one, and to constitute a second species of our proposed new genus, which will be, in that event, placed on a firm basis.

If it be remarked, that supposing *Lugubris* to have really a forked tail, it is, in fact, specifically identical with our bird, why then the specific name *Dicuroides* will merge in that of *Lugubris*, but the new type of form may still claim to be recognised, and surely will do so.

The green glossed black plumage and the forked tail, are as universally the marks of the *Dicrurine* sub-family as they are, I believe, universally excluded from the *Cuculidæ*.

I am, Sir,

Your most obedient servant,

W. B. HODGSON.

Nepal, March, 1839.

ART. III.—*Report on the Coal and Iron Mines of Tálcheer and Ungool, also remarks on the country through which it was necessary to travel in search of those minerals, the produce, inhabitants, nature of the soil, roads, &c. &c.* By Mr. M. КИТТОЕ, Curator and Librarian Asiatic Society's Museum.

March 31st, 1838.

All necessary preparations having been made, and assistance received from the superintendent tributary Mehaults, I left Cuttack on the 14th March, in company with Mr. R. Beetson, (contractor for the transport of salt from the coast to Calcutta) and proceeded by regular marches through Dhenkennal, direct from Kuckur on the Mahanuddee to the Brahmenee at Atturva, encamping first at Kuckur Govindpoor, and secondly at Deogaon, under the famous hill of Kuppilás, near to the summit of which, at an elevation of 1000 or 1200 feet, is a fine spring of fresh water, round which are several ancient temples built by Pertaub Rudr Deo, king of Kalinga, in the sixteenth century of the Christian era.

From Atturva we proceeded up the south bank of the Brahmenee to Tálcheergurh, where we arrived on the seventh day, encamping at Nadurra. and Kumalung, the distance travelled being 30 Ooriya coss of $2\frac{1}{2}$ miles to the coss on an average.

We halted one day at Tálcheer, and interchanged visits with the Rája (who is a very intelligent man, and has travelled all over India) likewise his eldest son. I presented the old gentleman with a musical snuff-box, with which he was much delighted.

After duly examining the coal beds I proceeded to Mungulpersád, a stockaded village on the borders of Ungool, the distance seven coss in a westerly direction, over an undulating country, with, generally speaking, indifferent soil and much shingle.

We remained one day at this place, and having inspected the coal beds, &c. returned by a more direct (though crooked enough) route through the states of Tálcheer and Ungool, to the bank of the river (at Mungulpoor) along which we proceeded, via Nadurra, Nágnaáh, Chundpál, Kapeepoor, to Kewátbund, near to which place the river enters the plains, throwing off that branch called the Kursooa, which is the only navigable channel to the sea. We reached this place on the 26th, thirteen days from the date of our leaving Cuttack.

The country is neither so mountainous nor jungly as it is represented to be, but for the most part, much neglected; although the soil appears generally good, and productive.

The lands in the immediate vicinity of the Brahmenee are very rich. Great quantities of cotton, sugar-cane, castor-oil plant, linseed, &c. &c. are grown for home consumption, as well as for exportation; the chief profits of which are monopolized by the Mukhteears and Survurakars of the states, who farm the villages from the Rája, and make the most of their bargain by extorting the utmost fraction from the cultivators, who are in fact mere slaves; indeed so are all the inhabitants of these hill provinces; they nevertheless seem happy in their poverty and degraded state.

A great deal of very fine tobacco is grown along the banks and on the muddy deposits of the river, and such lands fetch an exceeding high rent; notwithstanding which the profits on this article of commerce are very great.

Wheat and barley are cultivated in small quantities, and what little I saw appeared to grow most luxuriantly; maize, &c. is also grown on the high lands by the meaner classes, but rice is the chief article of food.

The land in Tálcheer and in Ungool is not so good as in Dherkuomál; and the trees are stunted in growth owing to the shingle,

laterite, and sandstone rocks which are near the surface. There is more jungle and waste land on the opposite side of the river.

From the third march from Atturva to the plains (commencing at Kewátbund) the level lands vary much in extent, the hills in some places coming within 3 or 400 yards of the river, and in others, receding for two or three miles, forming no connected chain, but all more or less isolated (apparently of volcanic origin), the land between them being perfectly level, except where ravines or beds of laterite and kunker occur to interrupt it. At Atturva the hills recede gradually, till at Kurugpursád they branch off in a south-westerly direction, through the state of Hindole into Ungool, towards the Mahanudde; the hills on the opposite side of the river also recede in a north westerly direction towards Keonjur and Bounnaragurh.

Shortly before reaching Kurugpursád the country commences to be undulating, and extensive beds of shingle occur, with red marl. Sandstone rocks are met with at Mungulpoor, protruding through the soil, which are very close grained and white; granite also sometimes occurs in huge detached masses, which have a very singular appearance, particularly at Kukurdung, in Ungool, where they rise in detached blocks of sixteen and eighteen feet in height, and of most fantastic shapes, somewhat resembling the Stonehenge. The land on the north bank of the river is likewise undulating, with rocks. No hills of any magnitude are to be found within twenty or thirty miles of Tálcheer and the coal localities visited by me.

From Tálcheergurh to Mungulpersád, a distance of sixteen miles or more, I saw much shingle and rising ground, on which there is iron ore and laterite, also kunker (calcareous nodules) and sandstone rocks. I observed near the different villages much scattered cultivation beneath the sál and other jungle trees, the underwood having been cleared away; this is the consequence of overtaxing the arable and clear lands, and taking nothing for cultivation of this kind, which is little inferior to the best.

There are no wells, and but few tanks throughout the country. Except in the low lands, in the vicinity of the river, water is very scarce, and what little there is, is of bad quality, particularly in Ungool, where some of the wells and tanks contain naphtha.

There is much waste land overgrown with long grass, which affords excellent pasturage for buffaloes and cows; there are consequently very fine herds of both descriptions of cattle, which are far superior to those of the Mogulbundee (or plains). There are but few goats and sheep.

The people of these states are more artful than even the inhabi-

tants of the plains of Oorissa, who are bad enough. Their craftiness is beyond any thing credible. I have travelled a great deal during my residence in India, and had much intercourse with the different classes of natives, but never did I meet with such provoking knaves as the people of the Gurhját (hill states). It is next to impossible to obtain any correct information even on the most trivial subjects. Every question put by a stranger is considered and re-considered, ere a reply is given, and that, too, is an interrogation as to the object you have in asking it. And should you ask the distance from one place to another, you will be answered at random, or told, "I don't know; I have never been there; I was born in this village; so was my father," and such like;—this is to prevent your asking them to go with you and show the path, and if you take them, they will lead you by the most tortuous route.

I was informed that it is more than any ryot's head is worth to give information regarding the internal economy of the state, or about its resources, or, indeed, on any subject. With such people to deal with, it is not surprising that very little information has been gained by me during such a hurried trip. What I have obtained regarding the Hingolae mines, was from an ascetic, to whom I made a suitable present. I also heard of coal and iron mines in Bumurrarhurh, from a merchant of Cuttack, and accordingly despatched an intelligent peon to examine them, and to bring specimens, &c.

There is no road along the banks of the Brahmenee, but an irregular and narrow footpath; indeed there are no hackery roads at all. The only road of any consequence is that leading from Cuttack through Dhenkernalgurh, past Kurugpursád and Mungulpoor, and on to Boad; it is tolerably wide and smooth, and is much frequented by Bunjaruhs, who bring cotton, iron, and turmeric in return for salt and tobacco. From Mungulpoor, onwards, the road is nearly due east and west.

Remarks on the Water Carriage for Coal, &c. &c.

The Brahmenee is navigable for good sized boats from the end of June to the middle of December, and sometimes later. Coal could be laden in small canoes and conveyed to Kurugpursád at most seasons of the year indeed. The Dhenkernal boatmen assert that small boats only can navigate the river above that place at any season owing to the numerous rocks; this is however not to be relied upon, for there are but few, which could be removed at a trifling expense.

From Kewatbund (at the edge of the plains) boats and rafts are floated down that branch called the Kursooa.

The furthest point towards the sea to which the coal could be taken is Hunsoogolá, where large sloops anchor. It would be preferable to make this place a depôt, Auligurh being many miles further up the river. It is to these places that Messrs. Beetson's sloops come for salt. There is a bankshall belonging to them at Aul, where sloops are built and repaired. The timber is cut and purchased in Dhenkennal, where it is very cheap, and may be had of any size and quality, viz. sál, sissoo, bijesál, kúrumb, gírahu, &c. A native contractor offered to carry the coal from Tálcheer to Hunsoogola, at the rate of twenty-five rupees per 100 maunds, or four annas per maund; the boats making three trips each season. The lading is included in this amount. Mr. Beetson however informs me that it could be done for one anna per maund, or, at the utmost, two annas.

From Hunsooa Mr. Beetson would contract to carry the coal to Calcutta, or to any port lower down the coast; and from his experience of the natives of Oorissa, and his industrious habits, I should venture to recommend any contract for the working of the mines, or transport of the mineral, to be offered to him.

The iron mines are worked by the different traders, who give grain, tobacco, and salt, to the value of one rupee per maund of metal. Should the coal mines be worked eventually, it would be necessary to pay for the labour in like manner, for money is unknown to the lower orders; cowries alone are current, and there is a great scarcity of them even. Although there are but few inhabitants, many poor people from the surrounding states would flock to earn food, if proper protection be afforded them. Some difficulty would be experienced at the outset, but that would soon subside.

On the Tálcheer Coal.

That which I shall distinguish by the appellation of "Tálcheer Coal," is found near the town and guruh of that name; the town gives name to the whole district, which is 14 Ooreya coss in circumference, or forty-two English miles, more or less.

Tálcheergurh (the Rájá's stockaded palace) and town (called Patna) are situated on the south bank of the river Brahmenee, on a sandstone rock, rising to the height of 20 or 30 feet from the level of the water. The surrounding country is undulating, with a thin stratum of soil resting on shingle, composed of the debris of primitive

rocks, iron clay, jasper, &c. Half a mile or less above the gurl, is a small nullá called, "Billaijooree," about fifteen yards wide, with a sandy bed, and dry except in the rainy season after heavy falls in the interior, where it takes its rise, and winding considerably, joins ultimately with the Brahmenee at this place.

About 400 yards from the mouth of the nullá, coal seams are exposed to view for some distance along the banks, alternately, on either side; these seams vary in quality and thickness, and are curved parallel with the undulations of the superstrata. In almost every place where the coal seams cease abruptly, they will be found to rest against the sandstone.

The superstrata generally consist of alluvial soil, shingle, marl, blue clay passing into peat, mixing with shale and coal of inferior quality, beneath which the good coal is found; this again rests on indurated blue clay containing particles of coal, mica, and fossil plants. The stratum is about $1\frac{1}{2}$ foot thick, beneath which a stiff grey clay mixed with sand and mica, is found.

I made a perpendicular cut in the north bank, at a spot where inferior specimens had been collected by workmen sent some years ago by Mr. G. Becher, executive officer of the division. Having dug down for two or three feet below the surface of the bed of the nullá, I met with a hard blue rock containing particles of coal and fossil plants, in this I bored a hole $1\frac{1}{2}$ foot deep, and blasted it with one pound of country powder, which enabled me to ascertain the thickness, viz. $1\frac{1}{2}$ foot, as before said.

The section thus afforded, gave

Shingle and clay, averaging,	10	ft.
Blue clay passing into peat,	$1\frac{1}{2}$	ft.
Shale, or slaty coal and lignite,	$1\frac{1}{2}$	ft.
Good glistening coal,	1 to $1\frac{1}{2}$	ft.
Grey rock with fossils and coal,	1	ft.
Ditto ditto, with mica,	6	inches,
Stiff grey clay with mica and sand (?)		

Digging a few feet apart from this spot, in the bed of the nullá, the coal was three feet below the surface, without the peat and clay, &c. and under the opposite bank the coal is several feet deeper still.

I burnt a heap consisting of several maunds of the different kinds mixed together, the whole was consumed, leaving fine white ashes, but no cinder or coke. The glistening or good qualities emitted much gas, and burnt with a bright flame; the remainder soon attained a red heat with less gas—the whole gave out an intense heat.

The bed of coal thus examined is (as will have appeared) very thin,

but I should think that on mining, any quantity could be obtained, and at little cost, from its being so near the surface, and labor cheap in the extreme. It possesses, further, great advantages in being so near to a navigable river.

I shall treat hereafter on the method of working the mines, and of transporting the coal, &c. in a separate paper at the close of my report.

Coal fields of the Hingolai Tacooranee at Mungulpersád.

Of the two coal fields exposed to view, and which were visited by me, that which I have called the "Tacooranee" is the more extensive. It is laid bare by a broad nullá passing through it, called the "Sungurra," it comes from the hills in Ungool, in a south-westerly direction, and is about thirty yards wide, having a sandy bed. The coal appears on either side alternately, for a distance of upwards of a mile, the beds averaging from five to fifteen feet and more in height from the level of the sand. This coal (like that at Tálcheer) rests against the sandstone, and in some places passes into it, apparently mixing with it. The quality of the mineral varies very considerably, as will be seen by the numerous specimens presented to the Committee.

In one spot the coal has apparently been reduced to ash by volcanic action for a space of fifty yards, and upheaved above the common level of the contiguous beds; it is bounded at each extremity by dykes of white rock.

The superstrata vary in kind and thickness; in some places there is blue clay, above which is marl and shingle; in others, simply marl and iron ore, laterite, and shingle, and frequently but a thin stratum of clay. At the spot where the "Tacooranee" (goddess) called "Hingolai" is supposed to preside, the coal is entirely bare for a space of 1000 or 1200 yards (superficial) with an undulating surface. It is at this place that at the full of the moon of Chát-Byesk, the priesthood set fire to a heap of coal, which they keep burning for three successive days, commencing the day preceding the full of the moon, when hundreds of deluded creatures flock from the surrounding country to worship the goddess of destruction, who is supposed thus to shew her presence in the burning rock. I was unable to ascertain how far up the nullá the coal is exposed to view, as the inhabitants of one state will say nothing about their own country, and still less about that of another Rája; and as the Ungool territory is only half a mile distant, without any alteration in the general appearance of the country, which is undulating, I did not deem it necessary

to proceed further. There was sufficient coal at this place to afford an ample supply for the next century.

The cost here of working either the coal or iron mines would be the same as at Tálcheer, it would, however, be necessary to construct a road (perhaps a rail road) to the river side, a distance of sixteen or eighteen miles, but perhaps less in a direct line. The nullá is not navigable at any season, however from the tolerably level nature of the country it might be rendered so for two or three months, by constructing dams and locks at convenient distances. At all seasons water is found from one to three feet below the surface of the sand; this prevented my ascertaining the actual depth of the coal measures and the quality of the lower veins.

Note on the Iron Mines.

Iron ore is found in great abundance both in Tálcheer and in the adjacent states of Ungool and Dhenkennal. There are iron works in each, and the Cuttack and Berhampoor markets are supplied by them. Some of the iron is of a superior and malleable quantity, but much of it is very coarse-grained and brittle, the prices vary accordingly.

I saw the remains of several iron works on the road between Tálcheer and Mungulpersád, the "Lohorás," or iron workers, having forsaken them last year in consequence of the famine, and subsequent pestilence (cholera) which almost depopulated the country.

The process of smelting the ore is the same as that pursued in other parts of India, and which therefore it will be superfluous for me to describe.

Had I met with any iron workers I would have tried to smelt the ore with coal, as it is abundant on the surface at the coal mines, as I have before mentioned.

A great quantity of iron is made in the Sumbulpoor state also.

ART. IV.—*Objects of Research in Affghanistan.* By PROFESSOR
LASEN, of Bonn.

[We have the pleasure to insert the following article by Professor Lassen, and which in order that no time should be lost in its circulation, we have already caused to be published in the Newspapers of this Presidency. Such communications as Professor Lassen's queries may elicit we shall be happy to publish without delay.—EDS.]

1. A country which has hitherto not been explored, is Kandahar and its neighbourhood ; the capital of Demetrius, called by his name Demetrias, was situated in Arachosia, and it seems probable, that coins of Demetrius will be found most numerously in that part of Affghanistan, if Mr. Masson should have means for sending some qualified person there. Another class of coins might also be chiefly expected from Kandahar. Arachosia belonged, at least generally, to the empire of the Arsacidæ, who can only be supposed to have occasionally possessed parts of Kabul ; Parthian coins bearing a Greek legend on one side and a Bactrian on the other, will probably have been struck only by such kings, as ruled in Kabul and its neighbourhood. Vonones (or by the native legend his son Vologases) is the only known Parthian king, from whom we have as yet coins of the above description ; another name found on a coin published by Swinton is not legible ; a new coin was lately edited by Mr. Millingan, having no Greek, only a Bactrian legend, evidently an Arsacidan one, though not legible. It would be of great importance to complete this Parthian series, because the chronology of the Arsacidæ might then be brought to bear on that of the Indo-Scythians.

2. From the country to the westward of Kabul and the sources of the Kabul river, which the Chinese call by the name of Kissin, coins of the first dynasty of Indo-Scythians may be expected chiefly, if the researches could be extended to the neighbourhood of the Lake Yarah. Segistan still bears the names of the first Indo-Scythians, who were properly called Sacæ, and their capital must have been somewhere in Drangiana. Also the Greek king Artimachus appears from one of his coins to have reigned near the Lake Yarah, and it would not be unreasonable to expect coins of him and his successors, (perhaps even Greek monuments of other kinds,) from those tracts, if made accessible.

3. The town Nagara, mentioned by Ptolemæus, with the Greek surname of Dionysopolis, must have been the capital of some Greek kingdom, probably of Agathocles and Pantaleon, who exhibit the symbols of Dionysos on their coins. The Chinese mention Nakoloho which is the same name, as the site of the flourishing Buddhist establishment, about 400 years of our era in the Chinese place

Nakoloho on the river Hilo, which must be the Hir found on D'Anville's maps. It would be of importance to determine the exact situation of Nagara, and to ascertain, whether the name both of the river and the ancient town are not still traceable. I suppose the Hir to be Surshud. The ruin of Nagara may be expected to yield a new harvest of Greek coins, and its neighbourhood might perhaps furnish us with Greek inscriptions.

4. Sultan Baber mentions a monument in Lawghan, which the Mahomedans supposed to be the grave of Lamech; the Chinese travellers passed through this country, called by them Larpho, on the road to Peshawer, from which it may be concluded, that they went to see some Buddhist monument there. Would it not be possible to get some further information of what remains still to be found in Lawghan?

5. Pliny mentions a town Copissa, 'destroyed by Cyrus,' in the country of the Paropomasidæ; by the accounts of the Chinese travellers Kapisa is the valley of the Gurbad river. Are no remains to be found along that river? and is the name at present quite unknown? It would be of some interest, because it might be conjectured that the name of Kapisa has some relation to the name of the king Kadphises, who on his coins spells his name in the native legend Kapissa.

6. The Chinese speak of a flourishing Buddhist kingdom Udjana, or Ujjana, which was situated on the western bank of the Indus and on the Sewad river, the capital was not far from the last mentioned one, and was called Mangala. As far as I know, this country has not been explored at all, and might be expected to yield coins of the dynasty ruling for several centuries there: topes might also be sought for in that neighbourhood.

7. Jan Messon, as well as Sultan Baber, speaks often of a river, which he calls Baran, without giving any more definite description of its course. Is this river different from the lower part of the Penjhir? or is it only the name for a part of that river?

8. A theory has lately been set forth respecting the topes, that they are to be regarded as dehgops, and contain relics of Buddhist saints; moreover, that the coins found in them have been placed there at different times as offerings, and consequently that the date of coins found in a tope, affords no clue to the period of its erection. Now, this theory supposes that the topes had entrances and openings, by which the coins might be inserted, and the relics taken out at certain festivals to be shown to the people, as is mentioned by the Chinese travellers of dehgops. Are there any traces of such entrances or openings in any of the topes of Kabulistan?

9. Is the dialect of the Kohistanis of Kabulistan a peculiar one, or related to the Lawghans, or that of the inhabitants of Kaferstan?

10. The Kirdhkis mentioned by Mr. Elphinstone as forming part of the population of Eastern Kabulistan, speak an Indian dialect; is this dialect nearly related to Punjab? and are the Kirdhkis to be regarded as emigrants from India in comparatively modern times, or remains of the ancient Hindu population? As far down as to the times of Mahmud of Ghazna it may be shown, that the inhabitants of Kabulistan were Indians, and most probably direct descendants of the Gurses, Ascadars and Gandars spoken of by the ancients.

ART. V.—*On the detection of Arsenical Poisons by MARSH'S process—its inapplicability to the Sulphurets of Arsenic—and the mode of obviating the fallacy occasioned by Antimonial Compounds.* By W. B. O'SHAUGHNESSY, M. D. *Acting Joint-Secretary to the Asiatic Society.*

In December, 1836, I exhibited to a large party at Government House the very beautiful process invented by Mr. MARSH of Woolwich, for the detection of minute quantities of arsenical poisons. The method consists in placing the suspected substance in very dilute sulphuric acid, and introducing a slip of pure zinc. The hydrogen is evolved in combination with the metallic arsenic, and on examination presents most distinct and remarkable phenomena. If ignited, the flame is of a leaden blue color, and diffuses a powerful odour of garlic, and a dense white smoke. If the flame be reduced to the size of a pea, and applied to the interior of a thin glass tube, a crust of metallic arsenic is formed on the tube, surrounded by a white ring of arsenious acid. To this, by a little dexterous management, the several tests for arsenic may be applied, namely the ammoniacal-nitrates of silver and copper, and the sulphuretted hydrogen gas.

A few months after the meeting referred to, I had occasion to apply the process to the examination of the contents of the stomach of the Munshi of the Coroner's Office, who had been poisoned by arsenic contained in a ball of sweetmeat. The results were quite conclusive, and were, moreover, checked by the performance of the common process on a portion of the large quantity of arsenic adherent to the mucous membrane of the stomach.

Up to the time of this occurrence, and indeed for some months later, I participated in MARSH'S opinion, that this admirable process was applicable to all the arsenical poisons—to those not dissolved by water

as well as those soluble in that liquid; but on the occasion of a second death by one of these poisons, which came under investigation before the Police in 1838, I had proof that this opinion was erroneous.

The deceased was a young female, to whom a large quantity of crystallized yellow orpiment (sulphuret of arsenic) had been administered in curry, and in consequence of which she died after a few hours' illness. On examination of the body a quantity of yellow powder was readily separated from the contents of the stomach, and the mucous membrane of that organ was observed to be sprinkled all over with shining gold-like crystals.

On applying MARSH'S process to a portion of the yellow matter, no indications whatever of arsenic were obtained.

A quantity of the powder was then dissolved in liquid ammonia, and MARSH'S process applied, still with negative results.

I then tried the effect of converting the sulphuret into arsenious acid, which was done by boiling the yellow matter with a few drops of nitric acid. On diluting the solution with water, it was found that a single drop tested by MARSH'S method gave a most distinct metallic crust, which was readily proved to be arsenic by the application of the silver, copper, and sulphuretted hydrogen gas.

These facts are of much practical importance, especially in this country, where orpiment is commonly used as a poison. They shew that in all cases where arsenic may have been employed, we must, in the event of MARSH'S process proving negative, apply a modification of the experiment I have related, so as to bring the sulphuret of arsenic into the state of an oxide. For this purpose the insoluble parts of the contents of the stomach should be boiled in a capsule of glass or porcelain, with small quantities of nitric acid, until red fumes are no longer given off. The mass should then be diluted with water, neutralized with carbonate of potash or soda, and, lastly, examined by MARSH'S method.

To shew the delicacy of this process, I may state, that I have applied it to the one-tenth part of a grain of orpiment mixed with four ounces of solid and fluid animal matter. By boiling with nitric acid, diluting with water and neutralizing, ten ounces of a liquid mixture were obtained, from half a fluid ounce of which the metal was reduced, although the quantity could not have been quite the 200th part of a grain.

I have next to notice the only serious fallacy to which this most ingenious method is liable, and which was first pointed out by Mr. Thomson in the *Philosophical Magazine* for May, 1837. It consists in the indications given by the soluble antimonial compounds, several of which are employed in medicine, one especially as an emetic in the treatment of cases of suspected poisoning.

By repeating MARSH's process on a mixture containing tartarized antimony, it will be seen that the gas evolved burns with nearly the same color, and deposits a similar crust on the glass tube.

On examining closely the distinguishing characters of this crust, it is very possible for an experienced eye to distinguish it from one produced by arsenic. The eye however must be experienced indeed, and that to a degree which very few observers can be supposed to lay claim to. Again, the sulphuretted hydrogen produces with crusts of arsenic and antimony yellow stains so faintly differing in tint as to lend even a practised experimentalist but little assistance in his research. The sulphate of copper, again, gives only such indications as are too faint to be relied on individually, though of some value as corroborating evidence.

Nevertheless the silver test can be readily applied so as to give unquestionable evidence of the nature of the crust of metal and of oxide obtained by MARSH's process. This may be accomplished by a method which differs slightly from one pointed out by Mr. Thomson in the paper alluded to. The tube on cooling should be moistened with a solution of nitrate of silver in distilled water, and then held over the mouth of a bottle containing strong ammonia, so that the vapor may traverse the tube. If the crust be arsenical, it instantaneously assumes a vivid canary color, owing to the formation of the arsenite of silver. No approach to such an effect is produced by the antimonial compounds, so that this test affords a simple, but most conclusive check on MARSH's invaluable method

It is right to repeat a precaution as to the zinc employed. That found in the bazar often contains traces of arsenic, and should always be tested itself by MARSH's process before being employed in pursuit of any legal investigation. Secondly, the zinc by which arsenic has been once detected should never be used again, as the surface often unites with and retains as much of that metal as may falsify a further experiment.

ART. VI.—*Proceedings of the Asiatic Society.*

Wednesday Evening, the 6th February, 1839.

The Honorable Sir E. RYAN, President, in the chair.

The Proceedings of the last Meeting were read and confirmed.

Messrs A. PORTEOUS and J. COWIE, proposed at the last Meeting, were balloted for, and duly elected Members of the Society.

Mr. WM. JAMESON proposed by the President, seconded by Mr. H. T. PRINSEP.

The Honorable Sir H. SETON proposed by the President, seconded by the LORD BISHOP of Calcutta.

The Rev. JOHN HENRY PRATT, of Caius College, Cambridge, M. A. proposed by the President, seconded by the LORD BISHOP of Calcutta.

Mr. EDW. THOMAS proposed by Capt. FORBES, seconded by Dr. O'SHAUGHNESSY.

Mr. J. W. LAIDLAY proposed by Mr. W. STORM, seconded by Dr. O'SHAUGHNESSY.

Mr. A. C. DUNLOP proposed by Mr. HARE, seconded by Dr. GOODEVE.

Read a letter from C. G. MANSELL, Esq. stating that in consequence of his proceeding to England for a short time he was obliged to withdraw from the Society, which he hoped to rejoin on his return to India.

Read the following letter from Government sanctioning the purchase of 100 copies of the Latin and Anamitan part of the Cochin-Chinese Dictionary, prepared by the Right Rev. the BISHOP of Isauropolis, for 1000 rupees, in addition to the payments already made for the first part of the work in question.

'No. 16.

'To W. B. O'SHAUGHNESSY, Esq. M. D. *Officiating Secretary Asiatic Society.*

'*Genl. Dept.*

'SIR,—I am directed to acknowledge the receipt of your letter, dated the 22d ultimo, and in reply to state, that his Honor in Council has heretofore refused to incur the expense of 2000 rupees towards executing the revised Latin Anamitan Dictionary, nevertheless rather than the 100 copies subscribed for by Government should be mutilated, and imperfect, his Honor the President in Council consents to add 1000 rupees to the payments already made by Government, under the condition of obtaining 100 complete sets of the work, besides the separate vocabularies.

'I have the honor to be, Sir,

'Your most obedient servant,

'*Council Chamber, the 2d Jan. 1839.*'

'H. T. PRINSEP,

'*Secy. to the Govt. of India.*'

Library.

The following books were presented :

Transactions of the Society of Arts, &c. vol. 51, part 2nd—*by the Society.*

Rapport sur les Poissons Fossiles decouverts en Angleterre par L. Agassiz, Neuchatel, 1835—*by the Author.*

Actes de la Societe Helvetique des Sciences Naturelles—*by the Society.*

Map of the Eastern Frontier of British India, with the adjacent countries extending to Yunan in China, by Capt. R. B. PEMBERTON—*by the Government of India.*

The following books were received from the booksellers :

Georgii Wilhelmi Freytagii Lexicon Arabico-Latinum, Tome 4th.

Lardner's Cabinet Cyclopædia—Literary Men of France, vol. 1st.

Museum.

King and Queen of White Ants, presented by W. STORM, Esq.

Physical.

The Secretary read the following correspondence which took place with Government regarding Major Hay's collection of Natural History Specimens.

Copy of the letter addressed to Government, pursuant to the recommendation of the Committee of Papers.

To H. T. PRINSEP, Esq.

Secretary to the Government of India, General Department.

'STR,

'I am directed by the Asiatic Society to request that you will submit to his Honor the President the accompanying copies, 1st, of a letter from Major Hay, relative to his Museum of objects of Natural History; 2d, of a report by a Special Committee of the Asiatic Society appointed to examine that collection.

'In submitting these documents to the notice of his Honor in Council, the Asiatic Society direct me to add a statement of their views on the several subjects referred to by Major Hay and the Sub-Committee.

'In the opinion of the Asiatic Society, the collection imported by Major Hay is of the highest value, in a scientific point of view. It not only affords to the naturalists of India standard specimens for reference in pursuit of their numerous researches, but it possesses the still greater value of being available for the introduction of the systematic study of Natural History among the Natives of Bengal, a study impracticable without the aid of such a collection, and indispensable as a preliminary measure to the full investigation of the Zoology and Natural History of our Indian possessions.

'The duplicates contained in Major Hay's collection would, moreover, serve the twofold end of completing the Museum of the Court of Directors in London, and of procuring for India exchanges of valuable objects neither comprised in Major Hay's collection, nor indigenous in this country.

'The Society while thus fully aware of the valuable opportunity now afforded for the promotion of the study of Natural History in India, are not insensible to the difficulties which oppose themselves to the procural of Major Hay's Museum. The estimate of its pecuniary value, submitted by the proprietor, far exceeds the resources of the Society, or any subscriptions which might be collected among individuals anxious to promote the object in view.

'It seems possible still that were the Government to extend its patronage and pecuniary aid to the Museum, that the current efforts of the Society and of individual subscribers might lead to the accomplishment of some arrangement which would secure the acquisition of this Museum for Bengal.

'In the event of such measures being adopted, the Society will gladly apply their establishment to the custody of the Museum, and they pledge themselves at all times to facilitate the application thereof to the furtherance of the chief end of its acquisition, namely, the instruction of the Natives of Bengal in the several subjects, such collections are capable of illustrating. For this purpose the Museum might be held available for the illustration of lectures in Natural History, delivered at any Government Institution in Calcutta, such precautions being taken as would secure it from injury or loss.

'I am directed finally to refer to your letter of the 26th July, 1838, in which you state "that the Governor General of India in Council will be ready to receive from the Society recommendations for the purchase or other procurement of objects of more than common interest, of which the Society may receive information, and for the obtainment of which it may want the necessary funds."

'The Society most respectfully represent the present occasion as one eminently deserving of the patronage of the Government, in the spirit of the views expressed in the preceding extract.'

I have, &c.

'7th Jan. 1838.'

W. B. O'SHAUGHNESSY.

‘ To the Secretary of the Asiatic Society, &c. &c. Calcutta.

‘ SIR,

Agra, December 2nd, 1838.

‘ I beg to forward for the consideration of the President and members of the Asiatic Society some papers connected with a collection of natural curiosities lately accumulated by myself on a visit to the Cape of Good Hope, and Islands in the Eastern Archipelago.

‘ In the first instance, I will briefly state my views in forming it; and afterwards proceed, as far as I am able, to give details. Until the publication of Swainson’s volumes on the Classification of Animals, and afterwards of the Quadrupeds and Birds, I never prosecuted the science with that ardour which these books enticed me to. His distinctions, however, appearing so beautifully clear, it occurred to me that a Museum classified from these books, upon one uniform principle, could not fail to prove interesting; and that such was much wanting in Calcutta, I had not a doubt. I was then at the Cape of Good Hope for the benefit of my health, and having much leisure time, I took the thing in hand. My first care was to get the specimens in the vicinity of the Cape, selecting chiefly those in illustration of *genera*. I then became acquainted with that unexceptionable, *practical* naturalist and taxidermist, Monsieur Verreaux, who had been extolled for his art by his master Cuvier; had been the personal friend of Levaillant; the intimate associate of Ruppell and Lesson; and well known to several other naturalists of note. In such a person how could I fail to be interested? Through this individual I procured the only duplicate skins existing of the large collection formed by that zealous naturalist, Dr. A. Smith, who had just returned from the scientific expedition into the interior of Africa, and whose work of African Zoology is only now in course of publication. My original purchase was limited to one hundred pounds, adding for this sum only twenty genera; and a few new species. Finding however my little stock, by the addition of new discoveries, increase in interest, I determined to endeavour to procure from South America those gorgeous specimens for which that country is so celebrated, to add to the beauty of the whole. With this view I made a list of the most interesting genera, and wrote to Rio Janeiro, where I knew Dr. Natterer, the German naturalist, had been collecting for the Emperor of Austria. From that country I procured many rare and interesting birds, and a vast collection of insects. Monsieur Verreaux hearing of the illness of his father in Paris, determined upon a hasty return to his own country, and wishing to go immediately, unincumbered, offered me the whole of his remaining specimens then at the Cape, mounted and in skin. I had now become the purchaser of animals, birds, &c. to the amount of fifteen hundred pounds. The remainder of my purchases at the Cape from different naturalists being about five hundred more. I shortly determined upon leaving the Cape and proceeding to Java, with the intention of returning to India via the Eastern Archipelago, for the purpose of adding largely to (what I shall now denominate) the *Museum*. On this tour I was obliged to content myself with skins, obtaining large numbers, and curing them myself. From the Buggeese I was fortunate enough to procure some rare and interesting specimens from the Moluccas and Borneo: in fact I left no part of the Eastern Archipelago untouched, and have now brought to Calcutta the whole of my labours.

‘ Here, however, my difficulties commence. Upon my arrival I find my circumstances changed, and that independent of the whole of my private means expended in the forming this Museum, when my accounts are closed, I shall have a balance against me of about twenty thousand rupees, to meet which I supposed I had resources, but sundry misfortunes have left me none.

‘ My return to Calcutta had been so arranged that I should have had three months remaining of unexpired leave to devote to the arrangement of all I had gathered together; instead of which I found myself hampered by the most unforeseen difficulties, with no immediate funds to defray the expenses. Obligated to hurry to the Upper Pro-

vinces to join my regiment, forming a portion of the army of the Indus, it now became a serious consideration what was to become of all I had with so much labour and anxiety amassed together.

‘ With only ten days to remain in Calcutta, honor pointed out to me but one course, which was to expose the whole for inspection, and eventual sale in satisfaction of my creditors. This I have done, and the greater portion is now to be seen at the rooms of Moore, Hickey, and Co. Up to the time of my leaving, I had however found it impossible to unpack, and expose for view in a secure place, the valuable portion of skins; but, although I have no list of the whole, I beg to forward a list of those now exposed for sale, the remainder are in various boxes in the godowns of Moore, Hickey, and Co. and at my own agent’s, John Lowe and Co.

‘ My great desire is, that if this Museum is sold, it should be disposed of to some Public Society, or to any number of persons who would allow it to remain as a Museum for public reference.

‘ I have estimated the expense of the whole at thirty thousand rupees: but my sole wish is to realise a suffice to pay my debt, and with this view I offer it to the Asiatic Society.

‘ My original intention was to have exhibited it, and have demanded one rupee for the entrance of each person to defray its expenses, after which I should have handed it over to one of the Public Societies gratis.

‘ From the published proceedings of your Society, I glean that you are not in the habit of expending large sums of money on specimens, but nevertheless you might probably do me the honor at an early meeting of your Society to bring the matter forward; and a discussion on your part might bring it to the notice of Government, or it might assist me in disposing of what may be on my return from Cabul a mere wreck, from want of a little care.

‘ I beg also to notice, that just one year ago I despatched from Cape Town into the Namaqua country an intelligent man, furnished with a waggon and oxen, and every necessary for the purpose of collecting. Up to the latest accounts he had not returned. The expense incurred in fitting out the expedition amounted to nearly four hundred pounds, and upon his return I am entitled, without paying any thing more, to the half of every thing, which I will add free of expense to any Society or parties who may purchase the whole Museum; and as the man deputed was formerly with Captain Alexander on his travels, and at the same time an experienced person in preparing skins, &c. it is probable that he will return with many of great interest and value.

‘ I shall now proceed to forward catalogues of the specimens in Calcutta, forming the Museum.

‘ I have the honor to be, Sir,

‘ Your most obedient servant,

‘ WILLIAM E. HAY.’

‘ P.S. I have succeeded in getting lists of the mounted specimens printed, but not of the skins, which must be forwarded hereafter. I have added one sheet of the skins, but time will not admit of more.’

Report of a Special Committee of the Asiatic Society on the Zoological Collection recently introduced to India by Major W. E. HAY.

‘ In estimating the value of this collection, your Committee beg to state that they must be guided by different considerations from those by which they would be influenced were the objects comprising it indigenous to India.

‘ The collection has been made in Africa, South America, and the Straits composing the Molucca islands; many of the objects it contains are the result of Dr. A. Smith’s mission to the interior of South Africa, other parts of it were collected under the direction of M. Verreaux, and the rest by Major Hay himself, aided by M. Verreaux in

determining most of the species; so that the collection comprises many of the most remarkable forms from quarters of the world from which the Society have hitherto received no contributions, and with which persons residing in India could only become acquainted through the medium of books.

'The value of a collection that places it in our power here, to become acquainted with several hundred animals which otherwise we should only know by their published descriptions, must obviously be great; for so long as this country remains without such collections in every department of Natural History, so long must we be deficient in one of the first requisites for advancement in the higher branches of natural science.

'Major Hay's collection has yet another peculiar recommendation to us in this country, which elsewhere, perhaps, would be of less importance; namely, that most of its contents have been identified by Dr. Smith and M. Verreaux, so that the species it contains would be so many land-marks to which we could safely refer in the classification of the animals of this country—an object which still in a great measure remains to be accomplished.

'Such being our views of the importance of Major Hay's Zoological Collection, we are of opinion that the pecuniary estimate of its value, referred to in Major Hay's letter to the Society, is not over-rated; but we regret that in the present condition of the Society in regard to disposable funds, we cannot recommend so great an outlay.

'As, however, the safety of this valuable collection is an object worthy of our solicitude, we beg to recommend that the rooms of the Society be offered for its reception, that it might be at once safely and economically exhibited on the part of Major Hay, or those into whose hands it may have fallen.

'Were such an offer to be accepted, instead of being exposed to injury in a public sale room, without the necessary attention from persons accustomed to such a charge, the collection might be much augmented in value by the exchange of duplicates with the Society. In recommending this course, we are guided equally by all interests concerned, for while we form the very highest estimate of the value of the collection, in a scientific point of view, we cannot but regret to think that if it were put up for sale, it would barely realise the expenses which have been perhaps already incurred by its exhibition.

'D. M. LEOD,
'W. CRACROFT,
'J. M. CLELLAND,
'GEO. EVANS.'

No. 72.

The Officiating Secretary to the Asiatic Society.

'Genl. Dept.

'SIR,—I am directed to acknowledge the receipt of your letter dated the 7th instant, forwarding copies of a letter from Major Hay, relative to his Museum of objects of Natural History, and of a report by a Special Committee of the Asiatic Society, appointed to examine that collection.

'2nd. In reply, I am directed to state, that the President in Council cannot regard a collection of prepared Birds, and other animals, as falling within the class of objects which the Government of India expressed its readiness to receive from the Society recommendations to purchase, or otherwise procure. Such preparations have always appeared to Government to be too perishable to be made objects of collection in a climate like that of Bengal, and fall within the exception referred to in the last paragraph of my letter, dated the 26th July, 1837. His Honor in Council cannot therefore entertain the proposition that the Government should purchase Major Hay's extensive collection of objects of Natural History, but would suggest that the specimens are better adapted for the Museums of Europe, where the climate is less destructive.

'I am, Sir, your obedient servant,

'H. T. PRINSEP,

'Council Chamber, the 6th Jan. 1839.'

'Secy. to the Govt. of India.'

Read a letter from Dr. LORD, dated Peshawar, 4th November 1838, forwarding two boxes of specimens of Natural History, collected by him while he was attached to Capt. BURNES's mission.

Read a letter from J. G. MALCOLMSON, Esq. regarding M. AGASSIZ' opinions on the erratic blocks of the Jura, &c. &c.

Read a letter from Mr. PRICHARD to Mr. J. W. GRANT, on the microscopic examination of lignite from Sandway.

Notes on the dissection of the *Arctonix Collaris*, by Dr. GEO. EVANS.

A paper on Artificial Hatching in Egypt, by M. DEMAS.

Notes on a new genus of the *Fissirostres*, *Todidæ*, Vigors, by Mr. B. H. HODGSON.

On the conclusion of the business, the Officiating Secretary read the following report from Col. D. M'LEOD, Chief Engineer, on the best and most economical mode of extending the accommodation of the Society's House, with the view of having carried into effect any additions and improvements that may be determined on, simultaneously with the general repairs of the building, now become absolutely necessary for its preservation.

Col. D. M'LEOD, also forwarded two plans, No. 1 and 2, with his report, and an estimate from Messrs. SHERRIFF and Co., the builders, amounting to rupees 10,664-15.

' To the Officiating Secretary to the Asiatic Society.

' SIR,—In compliance with the desire expressed at the last meeting of the Society, that I would examine and report on the best and most economical means of extending the accommodation of the Society's House, with the view of having carried into effect any additions and improvements that may be determined on, simultaneously with the general repairs of the building, now become absolutely necessary for its preservation, I beg leave to state to you, for communication to the next meeting of our Society, that I have repeatedly, and carefully examined the building in communication with Mr. ROWE, the builder, and with reference to the extent of additional accommodation which I am led to understand will soon be found desirable, if not indispensable, for the Society's rapidly increasing collections in all departments. I have the honor to report my opinion as follows:

' 2nd. In addition to the ordinary repairs of cleaning up the interior and exterior of the building, and painting, it has been ascertained that the decayed state of the staircase roof is such as to demand its immediate removal, and renewal; and it is, I believe, generally agreed that a skylight in that apartment, or in the passage between it and the Hall is indispensable, as the effect of the valuable collection of pictures placed there is quite lost, from the absence of a proper or sufficient light. The roof of the staircase, however, being about three feet higher than that of the passage, the light from the former would in a great measure be intercepted by the architrave over the colonnade, and would consequently be so far defective. I would therefore recommend its being placed on the roof of the passage, in its centre, on a design (a drawing of which accompanies) now of general adoption in the Department of Public Works, and which I have always found to answer the purpose extremely well, and to continue water proof. The cost of such a skylight, measuring eight feet by six feet, as appears by Mr. ROWE's estimate, will only amount to Rs. 150.

' 3rd. It was also I believe admitted, that a small staircase leading to the roof, such as is appended to almost every dwelling house here, is much needed, in lieu of the very inconvenient ladder, with trap door, now existing for that purpose; this deficiency I propose to supply in connection with the extension of the building, which I have now to suggest.

' 4th. Two different modes of effecting this object have occurred to me, in both of which, however, is included the erection of a large room, in two floors of thirty-six feet by twenty-four feet, on either side of the staircase room to the east and west.

' 5th. The first, as represented in both floors of plan No. 1, would leave the present

staircase (which is in substantial condition) precisely as it now stands, and the proposed new side rooms free and entire, with the exception of having the northern part of one side cut off for the purpose of adding a small back stairs, and a retiring closet attached thereto. The cost of this arrangement, including the sky light, exclusive of the removal of the decayed roof, and of other repairs, is shewn in Mr. ROWE'S estimate No. 1, to be rupees 8485-10, and if interior new doors are not judged requisite to the new rooms in the upper floor, this estimate will be reduced to rupees 7861-10, as there exist old ones which may be applied to the lower floor.

6th. The second, as represented in plan No. 2, would remove entirely the present double staircase, and introduce it as a handsome single one into the curtailed new side room. The very thick walls now existing in the basement on each side of the flight of stairs, as well as the colonnades over them, would in this case become quite unnecessary, and ought to be removed, so as to leave the whole of that apartment from wall to wall, in the line of east and west, free, and uninterrupted both above and below. The extra accommodation thus to be obtained, would be about equal with that of the first proposal, and the effect produced on the general appearance of the rooms, on entering from the new staircase, would certainly be more grand and imposing; but on proceeding to arrange all matters necessarily involved in carrying this measure into effect, I find, that as shewn in Mr. ROWE'S estimate No. 2, it is unavoidably more expensive than the first by rupees 3178-3-6, and as the advantage is only in appearance, I fear it must, as matter of course, be rejected in favor of plan No. 1.

7th. Should the latter also be found too expensive to be met by the available funds of the Society, the only alteration I have at present to propose, is to reduce the size of the new side rooms, so as that the walls shall be in a line with the other walls of the house—leaving them I believe about 26×18 feet, which would of course diminish the charge considerably. But the Plan No. 1, if practicable, I would recommend, as it would be the means, I think, of preventing all future patching of the building—it provides at once two rooms of 36×24 feet and two rooms of 26×24 feet, with a suitable back stairs and closet in two floors, while it cannot be said to affect injuriously the light or the ventilation of the present apartments.

8th. I would further beg leave to bring to the notice of the Meeting, that the dampness of the lower, or basement, floor is greatly complained of as a serious evil. I observe that this defect cannot conveniently be remedied by raising and new fluing, besides which that process would be attended with a heavy expenditure. I would therefore recommend that an expedient now successfully adopted, of laying the floor in a composition of tar and sand, (a specimen of which may be seen in the Society's House, executed I understand about two years ago by Mr. Rowe,) be resorted to in the lower apartments, to correct this evil. Its cost, as shewn, in Mr. ROWE'S estimate No. 3 will be Rs. 1007.

9th. It only remains to show in abstract the total expense in which the Society will be involved by the adoption of plan No. 1, for extending the accommodation, in addition to the requisite general repairs. The following is the abstract:

For the ordinary repairs, as per Mr. ROWE'S estimate, ..	Rs.	854	8	0
For the new Roof to the Staircase,	"	771	13	0
For new laying the floor of the Basement,	"	1007	0	0
For the proposed Skylight,	"	150	0	0
For the proposed 4 additional Rooms and all connected with them,	"	7861	10	0

Grand Total of Expenditure, " 10,614 15 0

10th. In conclusion, I have to observe in reference to Mr. ROWE'S estimates, that the rates are very fair and moderate throughout.

'I have the honor to be, Sir,

'Your most obedient servant,

'Fort William, February 6, 1839.'

'D. McLEOD.'

No. 2.

‘ Estimate for building two additional Rooms, Back Stairs, and Closet; also removing the Staircase, &c. and fixing a new Staircase in the Western Room, as per Plan No. 2.

Building two Rooms, &c. as particularized in

Estimate No. 1.	8485	10	0
Alterations in the Staircase Room, 1 wall,			
53½ × 3 × 18½	2969¼		
One Architrave, 53½ × 2 × 3	321		
Fixing Beams, 103½ × 1½ × 1½	232¾		
Ditto ditto 2nd Story, 103½ × 1½ × 2½	388		
Roof and Floor, 53½ × 23 × 2	2461		
	6372 @ 13/8	860	3 6
Balustrade, 53½ × 1½ × 3¼	300¼	13/8	40 8 0
8 Pillars, each 20 feet,		2/	320 0 0
Inside Cornice, 153 feet,		/8	76 8 0
Outside ditto, 54 ditto,		1/	54 0 0
WOOD WORK.			
34 Beams, each 28 feet, 14 × 8 @ 1/8			1428 0 0
60 feet Architrave,.... 18 × 10 @ 1/			120 0 0
2500 feet Rafter..... 3 × 2 @ /6			150 0 0
Principal Staircase, including landing to be fixed in the New Western Room,			900 0 0
			3949 3 6
			Co's. Rs. 12,434 13 6
Deduct the renewal of the decayed Roof,			771 0 4
			11,661 13 6

N. B. The above includes changing the old roof of Staircase Room.

Resolved,—That the Society approve of Col. M'LEOD'S Plan No. 1, and sanction the sum estimated for the construction of four additional rooms, and repairs of the premises, and that the Secretary be requested to communicate the resolution of the meeting to the Builders, with orders to commence the work, with as little delay as possible.

Meteorological Register, kept at the Assay Office, for the Month of February, 1839.

Forenoon, 10 A. M.

Afternoon, 4 P. M.

Day of the Month	Atmospheric Pressure.		Temperature.		Hygrometry.		Aqueous tension.		Weather.		Atmospheric Pressure.		Temperature.		Hygrometry.		Aqueous tension.		Weather.											
	Old Stand Barometer.	Height at 32 Fah.	Well water.	River water.	Air.	Differential thermometer.	Hair Hygrometer.	By Wetbulb.	By Hair Hygrometer.	Wind.	Aspect of Sky.	Old Stand Barometer.	Height at 32 Fah.	Air.	Dew point.	Differential thermometer.	Hair Hygrometer.	By Wetbulb.	By Hair Hygrometer.	Wind.	Aspect of Sky.									
1	30,040	,037	71,7	74,8	74,3	5,7	6,0	92	71	82	n.	1	hazy cir. str.	,920	,901	77,9	8,5	9,0	87	61	72	s.	0	1	cldy. haze.					
2	,060	,065	72,3	75,0	75,0	7,7	7,0	91	62	80	n.	0	do.	,942	,929	75,7	4,5	4,6	95	77	89	o.	0	0	do.					
3	,060	,045	72,0	74,7	74,0	7,0	9,0	90	65	78	n.	0	do.	,931	,908	78,0	9,0	10,0	82	60	63	s.	0	1	haze					
4	,032	,019	72,6	75,7	73,8	6,1	5,9	91	70	80	n.	0	do.	,895	,867	79,7	11,6	11,5	79	50	57	s.	w.	1	cldy. haze.					
5	,988	,986	74,9	74,9	74,9	3,4	3,7	98	82	95	S.	1	cir. str. haze	,885	,853	80,3	9,4	9,6	85	59	68	S.	w.	1	do.					
6	,982	,968	73,4	76,2	76,7	5,4	6,0	92	74	82	S.	0	cldy. drizzle.	,914	,899	77,2	6,2	5,9	90	70	78	N.	e.	1	do. drizzle.					
7	,020	,001	73,2	76,0	75,2	5,2	5,2	94	75	86	o.	0	clearing.	,942	,927	75,9	6,6	6,3	89	69	76	n.	o.	0	cir. cum. & st.					
8	,977	,973	73,2	75,9	75,0	6,7	9,0	90	67	78	s.	0	dull.	,920	,905	75,5	10,9	11,2	78	50	56	S.	o.	2	cldy. cir. cum.					
9	,948	,948	72,5	72,5	72,5	9,4	9,1	80	52	59	s.	0	overct. fine	,827	,806	77,3	12,6	12,0	74	44	49	N.	w.	2	clear.					
10	,908	,892	76,4	76,0	75,7	4,6	5,1	94	77	87	S.	E.	4	,785	,755	81,5	8,2	8,8	89	65	76	S.	E.	3	cir. cum.					
11																														
12																														
13																														
14	,844	,843	77,4	76,7	79,3	5,5	5,9	94	75	87	S.	0	cldy. cir. str.	,725	,694	84,4	9,1	9,7	89	62	76	S.	e.	3	Fine.					
15	,786	,773	77,4	76,2	78,9	5,1	5,7	95	76	89	S.	e.	5	,663	,630	84,9	7,8	8,8	89	67	76	S.	e.	2	cir. cum.					
16	,752	,733	77,4	76,2	78,9	9,1	9,2	82	60	63	N.	1	cir. cum. bz. fr.	,634	,637	85,5	15,7	15,7	72	39	46	S.	e.	1	Fine.					
17	,860	,832	77,0	75,7	78,0	9,0	10,0	82	60	63	N.	1	clear.	,750	,750	83,2	16,7	16,5	70	35	44	n.	w.	1	do.					
18	,914	,894	75,7	75,4	76,8	11,5	12,1	74	47	49	N.	1	do.	,810	,775	85,7	20,4	19,2	59	22	30	n.	w.	1	do.					
19	,954	,938	76,3	76,2	74,0	3,6	4,2	96	82	91	n.	1	do.	,838	,822	83,9	18,4	17,0	64	29	36	n.	w.	1	clear.					
20	,002	,972	77,1	75,3	78,0	13,7	13,4	72	40	46	s.	0	do.	,886	,867	87,4	8,6	18,6	60	65	40	S.	e.	0	do.					
21	,045	,012	77,5	76,2	79,4	9,7	10,1	83	57	65	o.	1	do.	,933	,915	87,3	16,6	17,0	72	37	46	S.	e.	1	do.					
22	,014	,975	78,6	77,5	81,7	8,4	9,3	85	64	68	o.	1	do.	,894	,862	88,0	12,4	13,6	80	52	59	s.	o.	1	do.					
23	,986	,953	78,8	78,0	82,7	9,4	9,1	85	59	65	s.	0	do.	,868	,848	93,1	14,4	11,7	78	50	56	s.	o.	1	do.					
24	,970	,943	79,0	78,1	82,9	9,9	10,0	83	59	65	s.	0	do.	,850	,827	93,0	17,0	18,0	69	40	42	s.	w.	0	do.					
25	,954	,913	78,3	77,0	85,4	12,2	11,3	78	36	46	n.	0	do.	,815	,798	92,8	17,9	16,0	71	37	45	s.	w.	0	do.					
26	,894	,862	78,3	77,0	85,4	16,3	17,3	72	36	46	n.	0	do.	,784	,756	93,1	21,4	22,7	64	27	36	S.	e.	2	cir. cum.					
27	,872	,837	78,6	77,3	84,7	13,8	14,1	77	45	54	n.	0	clear. pist.	,776	,756	92,4	18,1	15,1	69	36	42	n.	0	1	clear.					
28																														
29																														
30																														
31																														
Mean,	29,952	29,929	75,7	76,2	78,0	8,2	8,7	86	62	71	Sand N.	1	Between cl. & cldy. at inter. val. showery indications.	29,842	29,843	83,6	12,5	12,8	77	50	56	Sand N.	1	1	Between cl. & cldy. at inter. val. showery indications.					

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OF

THE ASIATIC SOCIETY.

No. 87.—MARCH, 1839.

ART. I.—*Notice of an Inscription on a Slab discovered in February, 1838, by Capt. T. S. BURT, Bengal Engineers, in Bundelkhund, near Chhatarpur.—By the Editors.*

Captain BURT will have imputed, to the right causes, (Mr. PRINSEP'S illness, and absence) the delay, with which we notice the impression of the above inscription, so obligingly forwarded by him. This communication, has added to the obligations which antiquarian science owes to him. The legend of the inscription is now presented to our readers with a translation—a relevant extract from Captain BURT'S Journal*—some explanatory notes,—and a prosodial key to the inscribed verses, or rather Poem. A facsimile of the inscription is not added, because the character resembles the specimen published in our number for April, 1837; and Captain BURT describes it as No. 3, *Allahabad* pillar.

This slab, it will be seen, was found detached at one of several temples at *Khajrao*, nine coss from *Chhatarpur*, which is on the high road connecting *Saugar* and *Hamirpur*. *Khajrao* is described by Captain BURT as near *Rajgarhy*, which we assume to be the *Rajgarh* of the maps—a fortified town on the right bank of the *Cane* river S. E. from *Chhatarpur*. The place abounds with remains of temples, statuary, and monuments of ancient times. The slab was found in the temple dedicated to "LALAJEE." This name, (unknown to the Sanscrit theologians) is probably the appellation locally current of some divinity whose *alias* we cannot conjecture. It may however be assumed, that

* Captain BURT'S letter covering the inscription has been mislaid. We hope we have not taken a liberty in making an extract from a Journal of his Travels, in the hands of Thacker & Co., for the press.—EDS.

the slab does not belong to this edifice ; and that that, celebrated in the polished verses now presented, has yielded to the mouldering hand of time. We may also assume, that its site, was the consecrated spot, described by Captain BURT, and that it gives us the genealogy of Rajas who formerly ruled in that part of the country.

We learn that Raja BANGA erected a lofty temple for the reception of an emerald emblem of SIVA, and a stone image of the god. On the death of this Raja, seemingly by voluntary immersion in the confluence of the *Yamuna* and *Ganga*, his territory was administered by the priest YASONHARA,—perhaps, during the minority of his heir JAYA VARMA DEVA. The original inscription, of sixty stanzas, was engraved and put up in 1019 *Sambat*, or 962 A. D.—that is about 877 years ago. From the two last, or supplementary, stanzas we learn, that it was engraved by order of Raja JAYA VARMA DEVA in “irregular” letters. He afterwards had it re-engraved in clear character : then because effaced, he again, at the distance of fifty-four years, had the poem re-engraved in the *Kakuda* character on the slab, from which Captain BURT has taken a faithful impression. It bears the date Friday, *Vaisakh* 3d, *Sudi Sambat* 1173, A. D. 1016. The poet was SRI RAM, who has not failed to give his own genealogy, and the caligraphist was “that GAUD'A' KAYASTHA.”

The pious BANGA appears to have been of the Lunar race. The pedigree given by the slab is this

NANNUKA

|

VAG-YATI

|

VIJAYA

|

VIHALA

|

SRIHARSA,+KUNKATI his wife of the Gangetic race.

|

YASO-DHARMA DEVA+NARMA DEVA his wife.

|

BANGA.

BANGA appears to have been succeeded by JAYA VARMA DEVA, who may have been his son.

In the 12th vol. of the Asiatic Researches there is copy of an imperfect inscription taken from a slab translated by Capt. PRICE, who found it near *Mow*, a town ten miles from *Chhatarpur*. A place of that

name, in a North Westerly direction, appears on the map near the left bank of the Dassaun river. The name of JAYA VARMA DEVA is in the royal genealogy recorded on this slab; of which the date is effaced. This genealogy has also its VIJAYA; but it cannot be identified with that of BANGA. It appears however that when ANANTA, the Brahmin minister of his father and grandfather, drowned himself in the *Yamuna*, some other (probably a Brahmin) was appointed to the administration by JAYA VARMA,—because, as Capt. PRICE infers from words used in the inscription, he had abandoned worldly concerns.

In the *Khajrao* slab it is not stated that JAYA VARMA DEVA was the son of BANGA, but we learn that the priest YASONDHARA administered after the pious suicide of BANGA.* These circumstances afford some grounds, though weak, to identity the JAYA VARMA DEVA of both slabs. In case of identity, we may suppose that the two genealogies exhibit distinct branches of one family, and that JAYA VARMA DEVA succeeded collaterally. No doubt local inquiry would fling light on the history of the Kings or Chieftains here recorded.

The poet elevates BANGA into a great monarch and conqueror. Kings of *Oude* and even *Ceylon* attend to do him homage, and his captives are the wives of the kings of *Andra*, *Rud'ha*, and *Anga*. All this of course is the exaggeration and fancy of the poet. But the 19th stanza seems however to indicate the actual conquest by VIJAYA of southern territory.

BANGA'S piety was not limited to the erection of the shrine. He also built mansions for seven Brahmins who officiated at the temple, which he endowed with lands. "Two *yavas* at *Sri Brahma kalpa*; one in the vicinity. *Kalpa gram*, on the south of the snowy mountains, was another." This obscure *sloka* introduces a new land measure. The *yava*, or barley corn, is the lowest linear measure,—and suits, neither royal munificence, nor priestly expectation. We have *Kalpi* on the right bank of the *Yamuna*; but unless to fill up the verse it would hardly be described as south of the snowy mountains. Is any *Sri Brahma kalpa* known in the vicinity?

We should be much gratified if this, and other points connected with this inscription receive the attention of Captain BURT, or any other intelligent correspondent who may have the opportunity of local inquiry. We will not dismiss the temple, without noticing $\chi\rho\epsilon\epsilon\eta\alpha$ "the carpenter," the Christopher Wren who built the "cloud-capt" fabric. No Indian name approaching to this is now known. Was he foreigner?

* In the 9th verse of the *Mow* slab the name of JAYA VARMA'S father is incomplete. But BANGA would not suit the metre, and would make an incongruous compound.

Of the character of the Poem a few words remain to be said. It is composed in an ambitious style by an accomplished scholar. His verses are polished and elaborate; some however are obscure, and the quaint pedantry of *Sanscrit* Poetry here abounds. But in spite of these defects, many of the verses may be justly commended as containing much of truly poetical imagery, conveyed in lofty and polished diction. But we must leave space for Captain BURT's narrative.

Extract from the Journal.

I reached Chatterpore at 9 o'clock at night, (which was an earlier hour than I had stipulated for by twelve or thirteen hours), but my reason for pushing on was in order to have time to pay a visit to Khajrao, a place situated about nine pukka (full) koss (eighteen English miles) from Chatterpore, to the right of my road, and lying not far from Rajpore, or Ragurhy, or I think it is more correctly called Rajnuggur. The natives at a distance sometimes call Chatterpore Chatpore. It was whilst I was on my return trip from Eraw to Saugor that I heard, from a palky bearer, of the wonders of this place—Khajrao, near Chatpore, as he called it; and which he stated to be situated from Saugor seven *munzils*, or daily stages, for native pedestrians, which, at fifteen miles per day, is about the thing, Chatterpore being distant from Herrapore fifty miles, or one hundred from Saugor. I may as well now employ my twelve or thirteen hours spare time in taking a look at Khajrao along with the reader.

Immediately on my arrival at Chatterpore, at 9 o'clock at night, I told the *dank moonshee*, (baboo, or writer) to procure a double set of sixteen bearers, and two spare men for a *bangie*, containing my food and printing materials, to start as soon as possible for Khajrao. I wished to arrive there before sunrise in the morning, and it lay at a distance of eighteen or twenty miles thence by an indifferent road. I left a pair of trunks and a pair of patarahs (tin boxes) under the care of the baboo, as I should not require them until my return, and in about an hour started for Khajrao, viâ Rajnuggur, and reached the temples of the former at seven or eight o'clock in the morning. The ruins which I went to see lie at some distance from the village, which lies beyond them, and this place I did not see, as a quantity of jungle intercepts the view of it. I was much delighted at the venerable, and picturesque appearance these several old temples presented, as I got within view of them. They reared their sun-burnt tops above the huge trees by which they are surrounded, with all the pride of supe-

rior height and age. But the chances are, the trees (or jungle rather) will eventually have the best of it. My first inquiry, after taking breakfast, was for ancient inscriptions, and a temple close by was immediately pointed out as the possessor of one. I went there, and sure enough there was an inscription in the No. 3 Sanscrit character of the Allahabad pillar, in the most perfect and beautiful state of preservation, engraved on a stone slab which measured about five feet by four, and was completely covered on the upper side with writing; the stone was laying at a slope against a step in the side wall of the temple. It was the largest, the finest, and the most legible inscription of any I had yet met with, and it was with absolute delight that I set to work to transfer its contents to paper. I took two copies, one on a plain white paper, without ink, by pressing it in a wet state with towels into the hollows formed by the letters, and another reversed with ink, which I spread upon the stone. The facsimile, or impression, obtained was the most beautiful specimen I have by me, and I regretted that the surface of the stone twenty square feet, was too large for me to spare time to make a duplicate with ink. The date of it is 1123,* Sunbat, or 771 years ago, as was distinctly pointed out in the lowermost line of the inscription; having done this I took a look around,—“*Si monumentum quæris, circumspice,*”—and could not help expressing a feeling of wonder at these splendid monuments of antiquity having been erected by a people who have continued to live in such a state of barbarous ignorance. It is a proof that some of these men must then have been of a more superior caste of human beings than the rest.

Khajrao is situated one koss distant from Rajnuggur, the Rajah of which sent to express a hope I would pay him a visit on my return: and as I was in his dominions, I thought it was as well to do so in the evening. I found in the ruins of Khajrao seven large *Divallas*, or Hindoo temples, most beautifully and exquisitely carved as to workmanship, but the sculptor had at times allowed his subject to grow rather warmer than there was any absolute necessity for his doing; indeed, some of the sculptures here were extremely indecent and offensive; which I was at first much surprised to find in temples that are professed to be erected for good purposes, and on account of religion. But the religion of the ancient Hindoos could not have been very chaste if it induced people under the cloak of religion, to design the most disgraceful representations to desecrate their ecclesiastical erections. The palky bearers, however, appeared to take great delight at the sight of those to them very agreeable novelties, which they took good care to point out to all present. I was much struck with the beauty of the

* The impression gives 1173 *Sambat*.

inner roofs of the temples, which were circular, and carved in a most elaborate style.

I told one of the bearers to try and find out whether there were any passage or steps leading to the roof inside or outside the building : as if there were, I intended to pay a visit to it. After searching about for some time, he reported that there was a way ; so I went to look at it, and found that the only means which presented itself of access to the upper story, existed on the inside, and from one of the side passages (dark as Erebus), and that it was requisite to ascend by climbing up the sacred images.

From the side wall, which was perpendicular, I first sent up one of the bearers, and then by laying hold of the leg of one god, and the arm of another, the head of a third, and so on, I was luckily enabled, not however without inconvenience, to attain the top of the wall ; where, on the roof, I found an aperture, just large enough for me to creep in at. On entering upon the roof, I found that my sole predecessors there for several years before had been evidently the bat and the monkey, and the place was not for that reason the most odoriferous of all places in the world. However, it was necessary that I should see and inspect the nature and formation of these upper stories. The circular roofs, before referred to, were formed by the overlapping of huge long blocks of stone, which stretched from the capital of one pillar to that of another, and upon both of which they are supported. The others are placed so as to fill up the corners of the square (or other angular figure of which the plan of the roof was formed) by other huge long blocks laid across these interstices diagonally, from the centre of one face to centre of another. The same occurred above them, smaller blocks being used as the circle contracted, and as the roof tended towards a point. Here a square stone was laid on, resting upon the superincumbent ones. There was no masonry, I mean no plaster of any kind, used for the purpose of cementing these slabs to one another, their own weight and position alone being sufficient to give them permanence—a permanence which has lasted for ages, and which would, unless disturbed by the growing of trees or other disturbing cause, sempiternally exist. I saw nothing else worthy of notice, only here and there, immense parallelipedons of stone, in some of which, the presence of holes apparently drilled for the intrusion of the lever for raising them was indicated. There appeared to be no way of returning excepting that by which I had effected my ascent, so I set about my descent as well as I could, for this was more difficult than the ascent ; but after resting first one foot, then another, upon any projection I could meet with, I managed to effect, without loss of limb my perilous descent. I

noticed a vast quantity of beautiful sculptures of all kinds, to attempt to describe which would exceed the limits of this work, even if I possessed the means of doing so ; but as I do not, and have made no sketches there, I must *per force* be excused from inserting any. Having visited several temples, in all seven, of which the names are as follow, I went to take a look at the rest of the wonders of the place. One temple was dedicated to *Mahadeo* ; a second to *Parwatti* ; a third to *Kundari* ; a fourth to *Lalaji* ;⁽¹⁾ in which I found the large inscription ; a fifth to *Nandeo*, or the *Mahadeo bullock god* ; opposite to which and facing it, in an outer building, contemporaneously erected, is a splendid figure of the largest *bail*, (or ox) I have ever seen ; the animal was sitting upright upon the ground, and in this state measures seven feet long, five feet high, and three and quarter feet broad, and weighs by my old way of calculating $68\frac{1}{2}$ tons, or $1872\frac{1}{2}$ maunds. I had not sufficient time to make a drawing of him, being obliged to notice more interesting matters. The sixth temple is consecrated (may I use this term ?) to *Chatterbhoj* ; and the seventh (what think ye of that reader) to our fourth friend of the Hog species—to *Barao*,⁽²⁾ and in which there is, without exception, the finest, (and last) but not largest, specimen of this animal I have as yet seen ; and I don't think there are many others in India, excepting one of which I know the locality, but have not visited it. The dimensions of this interesting object are as follow—His height is five and three quarter feet, his length eight feet, breadth three and quarter feet ; all these dimensions are approximations, made by means of my walking stick, which measures rather more than a yard in length : so that each of them may be perhaps increased by about one inch ; his weight will be, according to our method, ninety tons, or about 2461 maunds. This is pretty well for the weight of the gentleman just after breakfast. What the deuce would it be after luncheon ? I am happy to say we have in this specimen unequivocal proof of the presence of a complete and well formed snake which is lying under him,⁽³⁾ partly in an incurvated position, but evidently subdued ; the female figure, that should be here has been taken away (confound the rascally despoilers), and nothing remaining of her beautiful form (for I am sure it must have been beautiful, judging from the rest) but two feet, and her hand, which is posited upon the left throat or neck of the

1. Divinities by the name of KUNDARI and LALAJI are not found in the Sanscrit theogonies, they may be familiar designations locally current.

2. The *Varaha Avatar* of VISHNU is well known.

3. The snake ANANTA or SESHIA, which upholds the earth. The child is the infant HARI described as reposing on this snake.

animal. One additional circumstance occurs too in this specimen, which is the remains of a child resting upon the snake's neck. I should conceive that this figure of a child is meant to represent the child of *Prithei*, viz. mankind, born of earth (or *Prithec*), and of whom the fable represents *Hiran*, the snake, to have been the enemy or destroyer, but who has here triumphed, and is resting upon the serpent's neck—"Thou shalt bruise his head, and he shall bruise thy heel." Another very extraordinary fact is, that the tail of the *Barao*, though broken off, (as indeed is that of each of the other specimens) must evidently have joined on to the tail of the reptile; this would seem to convey the idea that the tail was either part of the enemy, or the enemy itself; but this discussion I must leave to the learned, being unable to grapple with it myself. The tusks of the Hog are curved in the finest and most determined manner. I do not recollect in what direction the woman's feet are turned in this specimen, whether towards the animal, or sideways from him. I would willingly have given a hundred rupees (10*l.*) to have had a good sight of the "*Prithee*" creature, (who has been taken away,) and that in a mutilated state too, as they have left her feet and one arm. The *Barao* stands on a fine thick slab raised on a high chabutra, which is accessible by steps formed of red granite, (mind that). The roof is well formed, strong, and likely to last for ages; as is also the Hog. I think he was covered with parallel rows of human figures, like unto the others, but upon this fact I beg to say I do not feel justified in speaking decidedly.

Let us now look in at the little *Mahadeo*, or *lingam*, which is to be seen in another temple, situated not far from this one. In order to arrive at it, it is necessary to ascend a considerable number of steps, at the top of which is situated the representation of the vital principle. Let us now measure the height of the gentleman. The natives objected to my going inside, without taking off my boots, which would have been inconvenient; so standing at the door way, I saw a bearer measure the height with my walking stick, it amounted to $2\frac{2}{3}$ of its height, or eight feet, and its diameter about $1\frac{1}{3}$, or four feet. Its weight will be about $7\frac{1}{2}$ tons, or 207 maunds. It was erected in a receptacle, which was raised from the ground about four feet, and twenty-five feet in diameter. That of the room exceeded it by perhaps three or four feet on each side,—there being a passage all round it. I understand a light is regularly kept burning there during the night time, and it was considered by far the largest lingam in India, and is consequently much venerated. The dimensions of the stone slab from which I copied the inscriptions in the other temple, were $5\frac{1}{2}$ feet length, 3 feet breadth, and $\frac{1}{2}$ foot thickness—its weight is therefore about

12½ hundred weight, or 17 maunds. This stone lies detached from some part of the building (from whence I cannot say) and rests inside one of the temples before mentioned. I must return to state a peculiarity I met with in this *Barao*. His two left legs were both placed foremost ; perhaps this was intended to add to his strength or durability, by giving him what they might have considered greater base ; but I should doubt whether the base would not have diminished instead of increased by this arrangement. In the other specimens, I think the legs of none were advanced, but as if the animal were standing still. A large tank exists within fifty yards of this Hog, but there was not much water in it at the time I was there. A great deal of jungle surrounds these ruins. Near the water entrance to one temple I found a lion or two (stone ones, not living animals) ; one of whom seemed to be seizing a wrestler by the left arm, with one paw up and mouth open ready to destroy him. Was this *Narsing*, again, and *Heran kussup*?⁽⁴⁾ I had a desperate hunt here (not after a hare) but after my pencil, with which I intended to have “knocked off” the last named figure, but I was obliged to “knock of,” altogether (as the sailors say) or leave work, because I could not find it. After sending two or three men to two or three places to hunt for it, I was obliged to depart without making the intended drawing, and after I had progressed about a mile from the place, when it was too late to return, lo, and behold, I found the pencil upon my palanquin drawer. I soon after got to Rajnuggur, but before finally taking leave of the seven temples, I shall state my opinion, that they are most probably the finest aggregate number of temples congregated in one place to be met with in all India, and all are within a stone's throw of one another.

त्र्यानमः शिवाय ॥

विधुष विकट वटानामजायमानाय वीजभूताय ।

मुदान्तर्नमः पालनविलयज्ञते निष्क्रियायापि ॥१॥

तूर्णं घूर्णति यत्र गोत्रशिखरिष्टङ्गः समूहस्वसन्

प्राच्यौषीन्नतमूर्तिरार्त्तविरुतं कुर्वन् कुकुङ्कुम्भिना ।

सप्तान्भोध्यवधि प्रधूतवसुधावन्धःकवन्धीकृतः

स्ताम्भाद्रिः क्षयकाण्डताण्डवविधिः शैवः शिवायास्तुवः ॥२॥

4. HIRANYA KASIPU, Gold-clad, or *Daitya* or *Titan*; for whose destruction VISUNU took the form of the man-lion.

कस्त्वं द्वारि दिगम्बरः कृपणकः कस्मादकस्मादहो
 वामे शूलधरो धिगायुधविधिं वर्हास्त्वदर्हाननु ।
 मां जानीहि महेश्वरं स्फुटमिदं वक्ष्येभवे स्थितिः
 प्रेयस्याः परिहासतो विहसितः शम्भुः शिवायास्तुवः ॥३॥

पशुपतिवदनकृद्गनि कृतवसतिः पद्मसद्गनि सदा या ।
 जयति विलक्षणरूपा मुक्ताभा भारती चैयं ॥४॥

गिरिशशिरसि यच्छन् हस्तमिन्दोः कलायां
 मृदुकमलमृणालायांशगृध्रुः शिशुत्वे ।
 जयतिविधुतमूर्द्धोन्नाल नीलाम्बुजेन
 स्मितकुपितमृडानीताडितो नागवत्सः ॥५॥

कल्पादौ किल केवलं खमखिलं ध्वान्तावनद्धं ध्रुवं
 शून्यं वीचय सिसृक्षतो जगद्भूद्भवादमुद्रोनिलः ।
 तत्राभूदनलोनलाज्जलमभूद्बीजादमोघाज्जला
 ज्ज्वालामालि हिरण्यमयं महद्भूदण्डं विभोर्ब्रह्मणः ॥६॥

तदण्डभाण्डखण्डाभ्यां सप्तैवं विदधे धिया ।
 ब्रह्मा ब्रह्मनिधीन् पुत्रान् मरीचिप्रमुखान् मुनीन् ॥७॥

मध्ये तेषां प्रहततमसां मानसानां मुनीनां
 श्रीमानत्रिः प्रथितमहिमा नेत्रपात्रैः प्रसूतं ॥
 यस्य ज्योतिःपटलजटिलं मण्डलं वद्भूमिन्दो
 श्चान्द्रत्रियः समजनि मुनिस्तस्य पुत्रः पवित्रः ॥८॥

द्वारापास्तसंस्तसंशयविपर्यासप्रकामोज्ज्वल
 क्रान्तालोकविलोकिताखिलजगत् स्वर्गापवर्गस्थितेः ।
 सर्वज्ञप्रतिमस्य तस्य कृतिनः कान्तस्य पुण्यात्मनः
 पारंगन्तुमतस्तदीयमहसः कोवा महिम्नां क्षमः ॥९॥

नीरन्ध्रो नितरां निसर्गसरलः सारोत्तमोभ्युन्नतो
 निर्यन्धिः प्रद्युलायभागशुभगः पर्वस्वखर्वस्थितिः ।
 आमूलं फलितोद्य सेवितविपत्क्रूरारिदावाग्निना
 न स्नानिं गमितस्ततः समभवद्वाध्वर्थ्यमात्यङ्गतः ॥१०॥

आचन्द्रं चन्द्रात्रेयवंशजाः क्षितिभुजः क्षितिमाद्योतते ॥११॥

ये पूर्वे नृपविष्ठितक्षितितलाः संक्रान्तधर्मप्रियाः
 प्राणप्रार्थनयाप्यखिन्नमनसः पर्थ्याप्तसत्यव्रताः ।
 निःसिन्दूरितदुर्विनोत वलवत् सामन्तसीमन्तिनी
 सीमन्ताः पृथिवीभुजो विजयिनस्तेभ्योखिलेभ्यो नमः ॥१२॥

कालेनेह महावंशे प्रशंसाप्रांशुरंशुमान् ।
 मुक्तामणिरिव श्रीमान्ननुकोभून्महीपतिः ॥१३॥

तेन विक्रमवलेन धन्विना क्रामता युधिवधाय विद्विषाम् ।
 धुन्वता धनुरधिजयमर्जुनं स्मारितादिवि विमानगामिनः ॥१४॥

तस्मादुदारकीर्तिरजनि जनानन्दसुन्दरः श्रीमान् ।
 तनयो विनयविधाने वाक्पतिरिव वाग्यतिक्षितिपः ॥१५॥

विद्यावदातसद्येन कविप्रजानामातङ्कशङ्कुमकलङ्कितविक्रमेण ।
 तेनापमीय शयनिर्मललोचनेन सङ्कोचिताः पृथुककुन्दुकथार्थ
 कथाः ॥१६॥

तस्य चमातिलकस्व लोकतिलकः पृथिवीपतेर्भूपतिः
 स श्रीमान् विजयो जयाय कुशली जज्ञे हतज्ञः सुतः ।
 यस्योदात्तमतेः प्रसूतिसमये धर्म्या महिम्नां निधेः
 सानन्दं सुरसुन्दरीभिरवनौ क्षिप्ताः सलाजाः स्रजः ॥१७॥

किन्नरीभिरधिकं धरासखीराकलय्य विजयस्य भूभुजः ।
काकलीकलमगीयत स्फुरत् प्रोच्चमुल्लुलकमुज्ज्वलं यशः ॥१८॥

विनयनतसुमित्रापत्यसम्वाहिताहिः

प्रवरहरितभूमिः क्रान्तपथ्यन्तभूमिः ।

सुहृदुपकृतिदक्षो दक्षिणाशां जिगीषुः

पुनरवितथयोधे धन्वते ⁽⁵⁾ तूर्थ्यमर्थ्यः ॥१९॥

तस्मान्नृपतिसमुद्रादुदपादि नरेन्द्रचन्द्रमाः ।

स्पृहणीयः श्रीवाहिलनामा विहृततमा वन्दिवाग्ध्युदयः ॥२०॥

प्रसन्ने तत्र भूपाले प्रसरच्चित्रभानवः ।

प्राभवन्नमितावासाः सरोषे द्विषदालयाः ॥२१॥

कोशपानमसिधारयोषितं प्रान्वभून्न जनरत्नसम्पदां ।

पक्षपातमिषुषु स्वभूपुरे प्रापुरस्य न सुहृत् सभासदः ॥२२॥

तस्मात्तीव्रप्रतापोज्ज्वलनकवलितोत्तानभूपालतूलात्

संपश्चीतद्रुमाणामनणुगुणगणालङ्घतेः कीर्त्तिहर्तुः ।

सश्रीहर्षेरिहर्षज्वरहरणमणिः क्षीणनिःशेषदोषः

सन्तोषाय प्रजानामजनि निजभुजाक्रान्तविभ्रान्तकीर्त्तिः ॥२३॥

यं टृण्ड्वैव कृपाणपाणिमकृतन्यापातभावं युधे

क्रोधाक्रान्तविलोचनोत्पलदलभ्रूमङ्गसीमाननं ।

उत्साहोद्दयार्दतः ⁽⁶⁾ करतलाद्वाधोमुखाः कीर्त्तयो

दिग्भ्यः साध्वसवेपमानवपुषस्तस्थुः परेषां क्रमात् ॥२४॥

तेनाच्युतेन भीमेन वाणेन कृतवर्मणा ।

समुद्रपरिखा पृथ्वी पुरी शूरेण रक्षिता ॥२५॥

5. Sic in Orig. : but it seems an error of the engraver.

6. Sic in Orig. There appears an error of the engraver, the words *utsāhodayārdra-*
tab give no intelligible sense, and are omitted in the translation.

अपक्षधर्म्मारिविचक्षणक्रमः सदैव दोषाकरसङ्गभङ्गुरः ।
विनिष्ठतक्रूरभुजङ्गभङ्गुरस्तिरस्कारोति स्स सतूर्णमर्णवं ॥२६॥

हस्तापास्तप्रवरतुरगैर्द्रुमुक्तासपलै
द्रुरारान्तेः सपदि शिरसा शासनं धारयद्भिः ।
तस्य द्वारि द्विरदमदनिःस्यन्दपङ्काङ्कितायां
सेवाहेतोः प्रणतिपरमैराश्रितं भूमिपालैः ॥२७॥

चन्द्रोज्ज्वलगुणा वर्चोमहार्घा हृदयङ्गमा ।
हारवलीव तस्यासीत् कंकुतेति प्रियोत्तरा ॥२८॥

वर्णः स्वर्णरुचिर्विलोचनयुगं नीलं सचन्द्रोत्पलं
पाणिः शोणमणिर्द्युतिः सचरणा दन्तच्छदोविद्रुमः ।
सद्यःशुक्तिविमुक्तमौक्तिकतलस्रच्छन्तु चेतोयतः
स्त्रीरत्नं भुवनैकभूषणमभूत् तत्सङ्गमे कामिनी ॥२९॥

तस्यास्तस्य स्मरणविहिताघौघविध्वंसनायाः
सत्तीर्थायास्त्रिदशसरितः सन्ततेः पुण्यकीर्तेः ।
धर्म्माधारः पितरि सुतरां साधुरिद्वप्रभावो
भीष्मोपेन्द्रभ्रमवृत्तिसुतः श्रीयशोधर्म्मदवः ॥३०॥

तस्य विप्रचरणप्रणामजं रञ्जितं शिरसि सुशिवतं रजः ।
अप्यकालपलितावृत्तिं दधत् सन्दधावधिककामनीयकं ॥३१॥

एकस्मै याचमानाय द्विजाय पलदः शिविः ।
यावदर्थिजनं प्रादात् कोटिकोटिमसैानृपः ॥३२॥

रत्नं भूमिलितालिकेन सदसि न्यस्तं सचेतायितं
गन्तुं पत्रपुरःसरेण चरणैः स्थानं प्रभाविस्मितं ।
वक्तुं जीवजयादिशो नतिचयं कर्तुं विनीताकृति
स्तस्मिन्नाजनि राजकेन जयिनि त्रासादिदं लक्षितं ॥३३॥

नित्योदितेन्दुभुजगाधिपधाम नित्य

मानन्दिकुन्दकुसुमं गगनाङ्गणं वा ।

तेनाद्य तद्द्वयमिदं यशसाभ्यधायि

संस्थापितं सितसुधाधवलं चरित्रं ॥३४॥

सप्तसप्तिमहिमतुल्यः सप्ताकूपारपारदृशवापि ।

न पुनरिहृतस्य नृपतेर्गुणसागरपारगः कश्चित् ॥३५॥

गांधारीं भजता प्रहृष्टशकुनिस्वानप्रियां प्रेयसीं

भीष्मद्रोणनरास्यकर्णमुखदेव्याकार्यं संमूर्कता ।

तद्गर्भमभवौ बोधितवता प्राण्यापि वंशक्षयं

नप्राप्ता धृतराष्ट्रता समुदयोविद्वेविणेत्यङ्गतं ॥३६॥

कस्मात् षष्टिसहस्रसूरिभिरसूनु व्युत्सृज्य खातः हत

स्तत्पौत्रप्रमुखैः पुनस्त्रिभिरासवभोभिरापूरितः ।

वृत्तान्तं सगरस्य सागरविधावाकार्यतूर्णं मुधा

स्पर्धावानधिकं व्यधत्त जलधेर्वेक्षत्तडागार्णवं ॥३७॥

वेश्मेदं शारदेन्दु द्यतिसुरभिखुरक्षुण्णभग्नान्नाक्षपादं

पृक्तंचक्षुष्यमुष्मादपथयति रथं सारथिः सप्तसप्तेः ।

यत्कुम्भः श्रातकुम्भस्तुहिनगिरिशिरश्चुंविबिम्बार्कतर्कं

कुर्वन्नास्ते समगतां मुदमसुररिपोर्वेश्मवैकुण्ठमूर्तेः ॥३८॥

भह्वावंशसमुत्पन्ना प्रसन्नावनितावनौ ।

नर्मदेवाभवद्देवी पुण्या तस्य महीपतेः ॥३९॥

सदानसूया विहितागसेष्यसावरुन्धती जीवितमभ्युपासिता ।

वभौ मदान्धं क्षमयन्त्यनिन्दिता मदालसाभून्नपुनः कथंचन ॥४०॥

सा देवी नरदेवाद्देवाधिपतेः सचीव सच्चरित्रं ।
तस्मादसूत पूतं जयंतमिव वङ्गमङ्गभुवं ॥४१॥

यशोदानन्दतां चक्रे पुतनामारणक्रियां ।
जातो वृष्णिकुले कंसरिपोऽच्छेत्ता नरोत्तमः ॥४२॥

तस्मादवाधितक्रोधान्नृसिंहान्नखलाविनः ।
हिरण्यकशिपुप्राणत्राणं चक्रे न केनचित् ॥४३॥

देवाकर्णय कोशलेश्वरमितस्तूर्णं समाकर्णयता
मादेशः क्रथनाथ सिंहलपते नत्वा वह्निः स्थीयतां ।
त्वं विज्ञापय कुन्तलेन्द्रवदने दत्त्वोत्तरीयाञ्चलं
नर्मस्थानगतस्य वेत्त्रिभिरिति त्यक्तुं समुक्तं वचः ॥४४॥

का त्वं काशीनृपतिवनिता कात्वमन्धाद्रिपत्नी
कात्वं राढापारिवृढवधूः का त्वमङ्गेन्द्रपत्नी ।
इत्यालापाः समरजयिनो यस्य वैरिप्रियाणां
कारागारे सजलनयनेन्दीवराणां बभूवुः ॥४५॥

का त्वं कस्य किमर्थमत्रभवती प्राप्ता शशाङ्कोज्ज्वला
स्फूर्जत् कीर्तिरहं बुधैकसुहृदः श्रीवङ्गपृथ्वीपतेः ।
भान्ता विश्वमशेषमागतवती स्फारीभवत् कौतुका
लोकालोकमहामहीध्रशिखरस्थायिश्रियं वीक्षितुं ॥४६॥

मरकतमयं स्वङ्गं लिङ्गं यदर्चितमैश्वरं
त्रिदशपतिना तस्माल्लब्धं प्रसाध्य किरीटिना ।
तदवनितलं तेनानीतं युधिष्ठिरपूजितं
जयति जगति श्रीवङ्गेन प्रणम्य निवेशितं ॥४७॥

धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
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 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥
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 धर्मो धर्मस्य विजयः कश्चित् क्षणिको नरः परमं धर्मं विजयते ॥५४॥

त्वाक्षारिकप्रवरसावरवंशजन्मा

श्रीनन्दनः कविरभूत् कविचक्रवर्ती ।

तस्यात्मजः समजनि श्रुतपारदृशवा

श्रीमांस्तपोधिकवलो वलभद्रनामा ॥५६॥

सूनुः सूनुतगीर्गिरीन्द्रगरिमा भद्रस्य तस्याभवत्

भूपालैर्भुं विवन्दिताङ्घ्रिरनघः साहित्यरत्नाकरः ।

श्रीरामो रमणीयसूक्तिरचनाचातुर्थ्यधुर्थ्यः कृती

तेनेयं विहिता प्रशस्तिरतुला तत्रालये सूचिता ॥५७॥

न संकीर्णावर्णाः क्वचिद्दिह न सापत्न्यकलुषाः

स्थिताः कायस्थेन प्रथितकुलशीलोज्ज्वलधिया ।

पशंपालेनायं विहितपदविद्येन लिखितः

प्रशस्तेर्विन्यासः कृतयुगसमाचारसदृशः ॥५८॥

विज्ञानविश्वकर्त्ता धर्माचारेण सूत्रधारेण ।

क्षिच्छाभिधेन विदधे प्रासादः प्रमथनाथस्य ॥५९॥

यावत् पृथ्वी सपृथ्वीधरनगरवनोदन्तमुद्रासमुद्रै

र्यावद्भ्राजिष्णुरूयणद्युतिरियममृतस्यन्दनः शीतरश्मिः ।

यावद्ब्रह्माण्डभाण्डस्थितिरियमथवा व्याप्तता स्थाणवीयः

प्रासादस्तावदेष ब्रजतु नरपतेर्दत्तकैलासहासः ॥६०॥

लिपिज्ञानविधिज्ञेन प्राज्ञेन गुणशालिना ।

सिंहेनेयं समुत्कीर्णा सदृणारूपशालिनी ॥६१॥ संवत् १०१९॥

श्रीपृथ्वीपतिराजश्रीवङ्गदेवराज्ये श्रीमरकतेश्वरस्य

प्रशस्तिःसिद्धा

उद्यतोच्चमहोभृतोमसृणिता मत्तद्विपतापदैर्छिताः ।
सङ्गरसङ्गभङ्गुररिपुपुत्रप्रियाश्रुत्करैः ॥६२॥

दिग्दन्ती जयवर्मदेवनृपतिः कीर्णाक्षरैर्योलिख
त्तेनालेखि पुनः प्रशस्तिरमलैरेषाक्षरैः क्षमाभुजा ।
विद्वद्भिर्जयपालहस्तकरणोऽमूग्यादराददितो
गौडः सोलिखदक्षराणि ककुदाकाराणि वंशाङ्कुरः ॥६३॥
कायस्थो जयवर्मदेवनृपतेर्वंशस्य दीप्यत्कला
साहित्यांबुधितः समुद्गततमोरुन्धन्ननिन्द्यद्युतिः । संवत् ११ ७३
वैशाख सुदी ३ शुक्ले

Translated by J. C. C. SUTHERLAND.

SALUTATION TO SIVA.

1. With internal joy be there reverence, to the unborn God, the cause of those vast holy fig trees, which approach the moon: who himself devoid of action, is the preserver and destroyer.

2. For your welfare (*saiva*) be the mystic dance of the god, which occurs at periods of annihilation; in which rapidly whirl the summits of all the crested mountains, and in which, that mount (affixing as it were the earth shaken to the seventh sea), becoming like a headless but yet panting corse, falls a prostrate image,—trembling and whining by the voices of its elephants.

3. “ Who art thou on the threshold, naked and abject? How unreasonably dost thou bear a trident in thy left hand. Fie on this warlike shew. Truly those peacock’s feathers become thee !” Thus gibed by his beloved, the god with a smile replies, “ Know me to be MAHESVARA.” “ It is clear indeed, (she adds) and the confirmation is in your want of clothes.” May that god SAMBHU be for your welfare.

4. This beautiful BHĀ'RĀTĪ⁽⁷⁾ too excels, resplendent as pearl; she who ever dwells in her lotus abode on the face of PASU-PĀTĪ.⁽⁸⁾

7. *Sarasvati*—eloquence personified.

8. Name of SIVA as lord of the animate world.

5. Excellent is that young elephant, who in his immature age, eager to snatch the tender filaments of the lotus, thrusts his proboscis on the section of the moon, fixed on the brow of *Siva*, and who is struck by MRID'A'NI' (smiling in her anger) with the agitated lotus sprout on her head (9)

6. Truly, in the beginning of the *kalpa*, the universe proceeded from BRAHMA wishing to create, when he had perceived the eternal void, enveloped in darkness and merely atmosphere. From him, when he had finished, proceeded the air. In that was produced fire; from fire proceeded water; from that prolific cause proceeded BRAHMA'S vast golden egg, streaked with rays of light.

7. By his wisdom, from the two segments of that egg BRAHMA created his sons, the seven *Munis* (MARICHI and the rest) the abode of holiness.

8. Amongst these dark-dispelling, intelligent *Munis*, was the illustrious ARRI of celebrated greatness; in the cavity of whose eye, was produced the orb of the moon, whose abundant light radiates like luxuriant hair. From him was born his pure son CHANDRATREYA.

9. Who can measure the glory and greatness of that holy man, the beloved image of the Omniscient, pure in soul; of him, who hath assured heaven and beatitude to the whole world, illumined with light, surpassed by his excessive splendor, dispelling all doubt and illusion?

10. From him sprung the wonderful VAYVARYAMA—faultless—naturally upright—of excellent disposition—eminent—unprejudiced—symmetrical from his large upper extremities—not slightly observant of fasts—fruitful to the root,—and never wasted by the spontaneous fire of cruel foes, the votaries of misfortune.(10)

11. As long as the moon (endures) the sovereigns of the race of *Chandratreya* illuminate the earth. [*The rest of this sloka is wanting.*]

12. Reverence to those ancient monarchs through whom the surface of the earth was encompassed by kings, who were friendly to the faith which has descended down—unvexed even when their lives were begged—strictly adhering to truth—who robbed of vermilion tint, the coronal streaks(11) of the wives of the powerful but rebellious chieftains.

9. DURGA' is described as fondling a young Elephant. One of SIVA'S names is MRIDA', or delighted; whence his consort is called MRID'A'NI.

10. A double meaning pervades this verse; the epithets have a twofold sense, one applicable to the saint, and one to a tree. It would be impossible to preserve the *double entendre* in the translation.

11. The *Hindu* wife stains the line on the head made by the partition of the hair with red lead. The widow abstains from this and other ornaments.

13. In process of time in this great race the illustrious NANNUKA became sovereign ; exalted in panegeric, and radiant with splendor,—like a gem amongst pearls.

14. The chariot-borne denizens of the sky were reminded of ARJUNA, by that stalwart bowman, rushing on to destroy his foes and brandishing his strung bow.

15. From him sprang an illustrious son, the sovereign VAG-YATI, of excellent fame—celebrated by the happiness of mankind, and like VAKPATI⁽¹²⁾ in the observance of courtesy.

16. By that matchless warrior—whose eye was bright like the snake's—and who was kind to those eminent for learning—the shreds of anecdotes of PRITHUKA and KUNDA were put to shame, when he had dispelled the keen fear of his poet subjects.⁽¹³⁾

17. Of him, (the ornament of the earth) was born a grateful son the illustrious VIJAYA, renowned for victory ; on the birth of which magnanimous treasure of greatness, holy garlands with parched corn, (*laja*)⁽¹⁴⁾ were scattered down by the delighted wives of the immortals.

18. By divine choristers, joined by their earthly companions, was melodiously warbled the bright and exalted glory of the sovereign VIJAYA.

19. Like that snake, who is bent in humility, when made to uphold [the earth] by the son of SUMITRA'⁽¹⁵⁾—rich in his extended verdant plains—conqueror throughout the world—that lord (skilled to reward his friends) about to subdue the southern quarters, once again in no mimic war, sounds his martial musick.

20. From that monarch, resembling as it were the ocean, was born the amiable king VAHILA, the moon of men ; by whom, darkness was dispelled, and who bade pour forth the stream of poet's praise.

21. Innumerable houses became pervaded by brilliant light when the king was pleased ; so also the mansions of his enemies, when he was angered.⁽¹⁶⁾

22. In regard to gems and the wealth of the people *Kosa pána* in its sense of ordeal, was not known ; but in its sense of adhering to the scabbard, was familiar to their swords. *Paxapáta*, in the sense of

12. A name of VACHASPATI the *Guru* of the Gods.

13. These are Pauranik Heroes, to whom various feats of valor and generosity are attributed.

14. *Laja*, vulgarly called Khoi.

15. LAXMANA.

16. A double entendre or pun (the rhetorical figure *slesh*) pervades this *Sloka*. Indeed an epithet is construed with each of the antithetic members. It is said to be a stalk with two flowers.

loss of plumage, did exist in his capital in respect to arrows ; but in the sense of partiality was not obtained by his friendly courtiers.⁽¹⁷⁾

23. From him, by the blaze of whose intense glory, great kings were consumed like cotton—from him, graced with every eminent virtue, who robbed of their renown wide spreading trees—was born, for the delight of mankind, that SRI HANSHA,—a gem dispelling (as it were a fever)⁽¹⁸⁾ the joy of his enemies, who (exempt from every sin) by his own right arm, subdued capricious glory.

24. Unconquered in war—armed with a sword—with his face dilated by the frown above the petals of his lotus-like eyes inflamed with anger—whom, having seen, the glories of his enemies gradually receded from all quarters, with faces quailing as if under the palm of his hand, and with bodies now trembling with fear.

25. The sea-girt world like a citadel was preserved by that mailed hero, by means of his unerring and terrific arm.

26. Skilled to counteract his enemies, he soon reproached the sea ; for he was unaddicted to partiality (*apava dharma*), and was averse to association with the evil minded (*doshā kara*), and inimical to vile and cruel detractors (*bhujanga*).⁽¹⁹⁾

27. Kings (who by their hands were able to push aside strong horses) cheerfully submitting to his dominion, would eat at the threshold of that hero—stained as it was by the mud caused by the exudations from the heads of elephants.

28. His most beloved wife was KANKUTA, like a necklace, being bright as the lustre of the moon ; inestimable, and heart penetrating.

29. She, who longed for his society, was the ornament of women—the sole grace of the world. For her colour shone like gold—her eyes were like the dark lotus, which expands before the moon—her hand was ruby-red—grace was in her steps—her lips were of coral—and her mind was pure like the pearl itself, just emancipated from its parent shell.

30. Of him and her (the offspring of the celestial *Ganga*)⁽²⁰⁾ of pure renown, the remembrance of whom destroys a multitude of sins

17. This verse is in the true vein of Sanscrit pedantry. The words explanatory of the double sense of the words (on which the poet puns) are of course wanting in the original.

18. There is a fabulous gem by contact with which fire loses its combusive virtue. It is here alluded to.

19. The influence of the moon on the tides has been long known to the Indians, and is often alluded to in *Sanscrit* poetry. According to the *pava*, or semi-lunation, the tides increase or decrease ; the sea is thus said to be affected by the *pava*. It is likewise not indifferent to the *Doshākara*, the moon, or night-maker. It abounds also with *Bhujunga*, serpents. It is probable that the pedantic author of these verses, some of which are in the true poetic vein, considered the puns of this stanza as his *chef d'œuvre*.

20. It is indicated that KANKUTA was of the *Gangetic* race.

and abounds in holy shrines) the son was YASO-DHARMA DEVA, the abode of virtue, naturally obedient to his father, of great prowess, and creating a doubt whether he was BHISHMA or UPENDRA.⁽²¹⁾

31. Though shewing like premature grey hairs, still the brilliantly white dust on his head (received in prostration to the feet of Brahmins) obtained increased beauty.

32. SIVI only gave a piece of his flesh (*pal*) to a single bird (*dwija*)⁽²²⁾ who begged it ; but that king bestowed millions on all who asked.

33. Through awe of that victorious monarch, kings conceived these notions ;—when prostrating their foreheads on the ground, that he was an animated gem ;—when preceding his equipage, that to march on foot was an office distinguished by dignity ;—that to speak to him, was as if on every side there were life and triumph ;—and that to make every sort of obeisance, was a graceful attitude.

34. His brilliant conduct covered with glory, as if overspread by a coat of white plaster, now placed him on a level with these miracles,—the mansion of the king of snakes, ever illuminated by the moon—and the expanse of the atmosphere strewed with jasmine flowers.⁽²³⁾

35. Though in greatness rivalling the luminary borne by seven horses, and capable of seeing beyond the seven seas, no man in this world could scan the ocean of his mind.

36. When his power was annihilated, dominion (*Dhrita-rashtra*) and prosperity were denied to the enemy—who poured forth those plaintive notes (*Gandhari*) grateful as the warbling of a bird (*Sakuni*) ; who fainted at hearing the mangling by terrific (*bhishma*) crows (*Drona*) of the ears (*Karna*) and faces (*Asya*) of men (*Nara*)—and who was now conscious of that hero's valor and prowess (*Dharma prabhava*). This was strange.⁽²⁴⁾

21. BHISHMA was the son of GANGA ; his father was SANTANU : he was general of DURYODHANA, the opponent of his cousin YUDHISTHARA. UPENDRA is a name of KRISHNA.

22. A passage in the *Mahabharat* is alluded to. SIVI was celebrated for his generosity ; a bird demanded surrender of his prey which had taken refuge with SIVI. His offer of other food is rejected, and the victim or a piece of SIVI's own flesh insisted on. The just and generous king complies with the latter alternative. Puns again are perpetrated on the words *pal* and *dwija*, which signify a weight and a *Brahman* respectively, besides the senses taken in the translation. The partakers of YASO DHARMA DEVA's liberality were *Brahmans*.

23. These are impossible events, something like Virgil's leaves inscribed with king's names.

24. A play on the words runs through this Sloka—DHRITA-RASHTRA was husband of GANDHARI, the sister of SAKUNI. BHISMA, DRONA, KURNA, and NARASYA, are generals of DHRITA-RASHTRA and his son DURYODHANA. DHARMA-PRABHAVA is a name of YUDHISTHARA, nephew of DHRITA-RASHTRA. See *Sri Bhagavat Purana*. The ambiguity is lost in the translation. BHISMA and the rest might be taken as the CLOANTHI and GYAANTES of the enemy's army with less outrage to common sense.

37. What boots it that a ditch was dug by the sixty thousand royal sons of SAGAR who devoted their lives; and that it was filled with water by his grandson and two other descendants in the first and second degree? Hearing the narrative of the origin of the sea (*Sagar*), he idly emulous made a vast undulating lake greater than the sea itself.⁽²⁵⁾

38. Resplendent as the autumnal moon, as soon as that palace, which had bruised the horses' hoofs and shattered the chariot wheels, was seen by the charioteer of the sun, he swerved his car from its path, —that palace of which the golden ball, gave the idea of the solar disc kissing the summits of the snowy mountains, and constituted the delight of the household image of VAYKUNTA, the foe of demons.

39. Of that great king the chaste queen was NARMA DEVA, high-born, happy, and beloved on earth.

40. Even when injured she was always unresenting; but when benefited, lavish of her life; forgiving the arrogant, but never addicted to pride herself.

41. The queen bore to that god amongst men a virtuous and pure son, BANGA;—just as SACHI bore JAYANTA to the Ruler of the Gods (INDRA).

42. That best of men (*Narottama*) born in the race of VRISHNI, the cleaver of the skulls of his foe, surnamed pure (*PUTA NAMA*) imparted gladness to his encomiasts, (*Yasodā nandatā*) and adhered to peaceful pursuits.⁽²⁶⁾

43. By that lion-like man, resistless in his anger, safety of life was never allowed to the robber of gold (*Hiranya Kasipu*).⁽²⁷⁾

44. “May it please your Majesty from this place to listen to the “lord of *Kosala* (Oude)?” “Lord of *Kratha* let the mandate be “quickly heard.” “Oh Ruler of *Sinhala* (Ceylon) prostrate yourself, “and stand outside.” “Speak chief of *Kuntala*, first putting up your “cloth to your mouth.” Such were the words spoken by the door-

25. Allusion to the *Puranic* origin of the Ocean is made. SAGAR had determined to reap the fruit of an *Asva-Medha*. The first stage of this is the release of the victim horse with a label. When fairly caught after battle with rivals he is slain, and the sacrificer obtains his vow. INDRA alarmed for his throne had the labelled horse picketed in *Patāla*, in the centre of the earth, before the *Muni* KAPILA. SAGAR'S sons baffled in their chase dug for the victim. Finding him, they abused the *Muni*, by whose curse they became ashes. By the successive austerities of ANSUMAN, DILIPA, and BHAGIRATHA, grandson, great grandson, and great great grandson of SAGAR, the celestial Ganges was brought on earth, and filling the excavation, reanimated the ashes of their progenitors who ascended to heaven. The poet indicates that YASODHURMA DEVA dug a great Tank.

26. A play on words pervades this stanza. It may refer to KRISHNA or NAROT-TAMA, also called PUTANAMA, who was the delight of YASODA, his adoptive mother.

27. The same *Jeu de mots* is kept up.

keepers to dismiss attending kings when he had retired into the female apartments.

45. "Who art thou?" "The beloved of KA'SHI's lord;" and thou? "The wife of the king of *Andhra*;" and thou? "The spouse of the chief of *Radha*;" and thou? "The bride of the prince of *Anga*."—Such were the colloquies with the wives of his enemies detained as captives, while their lotus-like eyes were suffused with tears.

46. "Who art thou? of whom? and for what object art thou come; thou who art resplendent as the luminary whose emblem is the hare?" "I am gleaming fame; and wandering over the universe, I am come, fervently anxious to behold the glory of the monarch BANGA, the sole friend of the learned, which has reached the crest of the vast mountain of *Lokálok*."⁽²⁸⁾

47. Placed by BANGA, after prostration made, that divine symmetrical *Linga* made of emerald, is victorious in this world. Worshipped by INDRA, it was obtained from him by ARJUNA, who had pleased him and brought by him on earth, and adored by YUDHISHTARA.

48. In the fane, a stone god put up by that king shews a second HARA, the remover of the bonds of pain.

49. By that King BANGA was erected this fane of the lord SAMBHU, the chief of the gods, with its summit, bright like the autumnal clouds; of which, by gliding near the golden cupola, (furling as it were the sky) ARUNA, rendered radiant, abashed the crest of MERU.⁽²⁹⁾

50. For the nice construction of its spire the skill of no mortal could have availed; VISWA KARMA⁽³⁰⁾ himself must have turned this arch.

51. How this vast *Vata* tree surpasses!—A hundred times were given by him crores of golden coins, in quantities equiponderous with his body, by which they were weighed.

52. Enthusiastic in the true faith, and delighting to benefit others, seven high born *Brahmins* were located in palaces, revered by gifts of wealth, grain, and lands;—perfectly pure, though their bodies were tinged by smoke from ever-enduring sacrifice.

53. Two *yavas* at *Sri-Brahma Kalpa*; one in the vicinity. On the south of the snowy mountain, *Kalpa gram* was another.

54. Having ruled this earth, girt with waters as if by a girdle, and unsubjected to any other; when he had lived 109 autumns, with eyes closed, and (as ordained) fervently reciting the name of RUDRA, the royal BANGA obtained final beatitude by abandoning this mortal coil in the conflux of the *Yamuna* and *Ganges*.

28. The Sun never reaches this mountain.

29. *Aruna* is the Dawn, the charioteer of the Sun.

30. The celestial architect.

55. Then did this glory of the world's lord attain perfection, when the wise priest YASONDHARA, skilled in the *vedas*, and the friend of the gods, here administered—according to law—scattering light on jurisprudence.

56. Born in the tribe of TWAXARA, and in the family of SAVARA, was a poet called SRI NANDANA, the prince of bards. To him was born a son, the illustrious BAL BHADRA, who had read through revealed law, and was powerful by the observance of religious austerities.

57. Of that BAL BHADRA, SRI RAMA was the son; great as it were like a vast mountain,—of pleasing speech,—whose feet earthly kings adored,—exempt from sin,—and celebrated as the ocean of literature,—and skilled in elegant composition. By him composed, this incomparable panegyric was published in the temple.

58. Who had learned the science of words,—by the sensible KAYASTHA PASAMPALA, distinguished by his race and disposition, the transcript of this panegyric was arranged. Here are no confused letters nor any obscure from rivalry.⁽³¹⁾

59. This temple of PRAMATHA NATH was constructed by the architect XIÇCHA, virtuous, and a VISWA KARMA in science.

60. As long as this world with its mountains, cities, forests, its histories, memorials, and seas [shall remain]; as long as this sun shall shine; as long as water shall ooze from the luminary whose rays are cool; as long as the segment of the divine egg shall be fixed, that is expanded; so long let this temple, dedicated by the monarch to SIVA endure,—mocking as it does mount *Kailasa*.

61. By the wise, and gifted SINGHA skilled in the science of writing, was this specimen of calligraphy engraved. *Sambat 1019.*

In the reign of Raja BANGA, lord of the earth, this PANEGYRIC OF THE EMERALD IMAGE was finished.—

62. Afflicting even infuriated elephants,—by the abundant tears of the children and wives of his enemies (broken in the conflict of war) of that great king these lines became obliterated.

63. The king JAYAVARMA DEVA (like an elephant supporting the universe) rewrote in clear letters the above verses, which he had before written in irregular letters (*kirna*). These letters, in the *Kakuda* form that GAUDA KAYASTHA, aided by the learned, inscribed by the hand of JAYA PAL,—that *Kayastha* of untarnished lustre, having a numerous progeny, the radiant moon of the king's race, who, the dispeller of gloom, had risen from the ocean of polished literature.

Sambat 1173. Friday 3 Vaisakh (Sudi) bright half.

31. The distinction of nearly uniform is preserved.

Prosodial Key.

A sloka, or stanza, consists of four *padas*, lines, or quarter slokas. They are generally, but not always, identical. Metre is *Jati*, or measured by *matras*, or instants. In this, one long syllable and two short syllables are equivalent. Or it is *Vritta*, scanned by defined feet.

The following slokas are *Jati* of the *Arya* species. First and third *padas* have 12 *matras* ; second has 18 ; and fourth has 15 *matras*.

1. 4. 15. 20. 35. 41. 50. 51. 59. 62.

The other slokas are in the following metres, in which all four *padu* are identical.

	Slokas.
Sarddula Vikriditam | - - - | ॐ ॐ | ॐ ॐ | ॐ ॐ | - - - | - - - | - |	{ 2. 3. 6. 9. 10. 12. 17. 24. 29. 33. 36. 37. 44. 46. 49. 52. 54. 57. 63.
Malini ..... | ॐ ॐ | ॐ ॐ | - - - | ॐ - - | ॐ - - |	5. 19.
Mundacranta ..... | - - - | - ॐ ॐ | ॐ ॐ | - ॐ ॐ | - - - | - - |	8. 27. 30. 45.
Rathodhdhuta ..... | - ॐ - | ॐ ॐ ॐ | - ॐ - | ॐ - |	14. 18. 22. 31
Vasantatilakam ..... | - - - | - ॐ ॐ | ॐ ॐ | ॐ ॐ | - - |	16. 55. 31. 56.
Srugdhara ..... | - - - | - ॐ - | - ॐ ॐ | ॐ ॐ | ॐ - - | ॐ - - |	23. 38. 60.
Vansasthivilam..... | ॐ ॐ ॐ | - - - | ॐ ॐ ॐ | - ॐ - |	26. 40.
Hurini..... | ॐ ॐ ॐ | ॐ ॐ | - - - | - ॐ - | ॐ ॐ - | ॐ - |	47.
Sikhurini..... | ॐ - - | - - - | ॐ ॐ ॐ | ॐ ॐ - | - ॐ ॐ | ॐ - |	58.

Anush-tup.—This is a very common measure. Each Pada consists of four dissyllabic feet: the third foot must be an Iambic, and the first syllable of the last foot is alternately long and short. The syllables of the remaining feet may be either long or short.

ART. II.—*Account of a Journey to Beylah, and Memoir on the Province of Lus.* By Lieut. CARLOSS, Indian Navy.

On the 10th of January, having received an answer to a letter I had written to the chief of Lus, announcing my arrival at Soonmemy with a letter and some presents from the Bombay Government, I commenced my journey to Beylah. Two chiefs with a small party of followers had been sent to accompany me to the capital, but as they were not ready to proceed, and I did not wish to delay my journey, I started, accompanied by Dr. Hardy, without them.

The road for some distance led over a confused mass of low hillocks covered with loose sand, or across the low swampy hollows between them, and the country had every where a most barren and desolate appearance, there not being a tree or a bush to be seen. About five miles from Soonmemy we arrived at a ridge of sand hills, about 150 feet high, from the summit of which the Poorally river was visible to the W. N. W., with an extensive tract of thick mangrove jungle stretching along the left bank ; at this place we halted for a short time

until the chiefs who were to accompany us made their appearance, and then continued our journey across a low flat plain, covered with saline bushes. About an hour after sunset having reached a spot where the land was higher, and water procurable, halted for the night. In the course of the evening many travellers had collected at this spot, and by the time we arrived forty or fifty had encamped about the wells, which are merely small holes dug at the foot of a high bank, yielding a scanty supply of brackish water. There was a Syud amongst them, a noted story-teller, who continued to entertain a large audience with his tales until the night was far advanced, and as he possessed a deep and melodious voice, the effect of the kind of recitative style in which they were chaunted was extremely pleasing.

On the following morning started for Layaree, a small town six miles distant, which we reached early in the afternoon. The level plain between the sand hills and Layaree is scored throughout with marks made by the passage of water, and overrun with saline bushes, intermixed here and there with patches of stunted tamarisk trees. Our attendants told us that the Poorally flows through this plain during the inundation, and pointed out the beds of two deep water courses through which the water escapes in the latter part of the season. The river, they said, had no decided bed from Layaree, where there is a bund thrown across it, to its mouth, a distance of about twelve miles, but discharges itself into the bay and harbour of Soonmemy by several outlets, through the low grounds near the sea coast.

Layaree is a small town, containing about fifty mud built houses, prettily situated in a grove of large baubool trees; there is a large tank near it filled by a canal from the river, and half a mile to the N. E. is seen the small village of Charro, which is the residence of the darogah, or collector of taxes. At least a third of the population is composed of African slaves, who perform all the out-door labor. In my walks about the place I met several who complained bitterly of the treatment they received, and earnestly begged me to receive them on board the vessel, for they had determined to escape from their masters on the first opportunity. In the immediate vicinity of the town the country is open, and the ground laid out in fields, in which wheat, jowaree, cotton, and oil seed are cultivated. Farther off the land is overrun with high thick jungle, but in the small open spaces that occur here and there, is covered with grass, which although of a coarse kind, affords excellent pasturage for the flocks and herds.

Shortly after our arrival at Layaree, and before the baggage camels had come up, word was brought that a chief had just arrived from Beylah with Teeruthdass, the Jam's dewan, and wished to see me. As soon as a place had been prepared to receive them, by spreading

mats and carpets under the shade of a large tree, he came attended by a few armed followers, and delivered a complimentary message from the Jam, expressing his satisfaction at my visit. The chief was a little old man, with a strongly marked Arab countenance.

In the course of the conversation that ensued, I found they wanted me to remain at Layaree until they received further instructions from Beylah respecting my journey; but as this would have delayed me many days, I told them decidedly I should take it ill, if any objections were made to my proceeding immediately, and that on the following morning I should either continue my journey, or return to the ship. This seemed to puzzle them extremely, and they at last begged I would stop only one day, when they would be ready to accompany me, to which I agreed. In the course of the evening one of their attendants brought a quantity of rice flour, ghee, &c. for the use of the party.

13th. On sending to the chief to tell him I was ready to proceed, he said he should be detained a short time at Layaree to settle a dispute that had occurred there, and would join me at the next stage. At 10 started. For about three miles passed through cultivated grounds in which nothing but the oil seed plant was apparent, and then turning to the N. E. pursued a track leading along the bank of a deep dry nullah, running through thick tamarisk jungle: it extended several miles, and the trees were every where leafless and withered, with the exception of the small patches of undergrowth springing from their roots. As soon as we had got clear of the jungle we came upon an extensive tract of cultivated ground, watered by canals from the river, and dotted here and there with huts; at this place, where we halted for half an hour, the soil being good yields abundant crops of oil seed and cotton, and game is plentiful.

On resuming our journey, crossed a level plain thinly overspread with withered saline bushes, and extending as far as the eye could reach, apparently to the foot of the mountains on either side. We traversed it for a distance of eight miles, and after passing through an open jungle of tamarisk and mimosa trees, about five miles beyond it reached the Poorally river, and halted for the night. The distance from Layaree to this place is about eighteen miles. Here the Poorally is about 400 yards broad, and flows from east to west, which is a proof that we must have crossed its course before we arrived at Layaree, as our attendants asserted; the banks on both sides rise perpendicularly to a height of fourteen or fifteen feet, and a stream of water twenty yards broad and two feet deep pursues a winding course through the centre of its bed.

The morning of the fourteenth was extremely cold, the thermometer having fallen to 35° at day light. During the night the camels

had strayed some distance into the jungle, and the drivers being unwilling to go after them in the cold, became sulky and intractable when ordered to do so. This brought on a quarrel between them and one of the chiefs who attended us, which did not terminate until he drew his sword, and threatened to slay them on the spot if they did not immediately bring them in; frightened at his meances, they departed in haste to look for their beasts, but so much time elapsed before they could be found, that we were not ready to start until near noon.

Having proceeded four or five miles across a level plain, thickly covered with low salt bushes, we came again upon the river, which at this place is joined by the Rahto, a stream of some magnitude, flowing from the mountains to the eastward; at the point of junction the bed of the Poorally is nearly a mile wide, and when full must form a fine sheet of water. The greater part of it is overrun with jungle, and the water meanders through it in two streams, about fifteen yards wide and as many inches deep. The soil is covered in many places with a thin saline incrustation, which from the taste appears to be natron. Two alligators were lying asleep on the bank a short distance from the place where we crossed.

On the opposite side of the river we met a fine-looking young man, mounted on a camel and attended by a few soldiers, who civilly stopped to salute us. He was a son of Arab Oosmanany, the chief of the Arab Gudoor tribe, and when he had been told that we did not understand the language, endeavoured to find out from the interpreter the object of my visit to Lus.

Late in the afternoon we reached Oot, two small villages about five miles from Beylah. During this day's journey the road gradually inclined toward the western range of mountains, and we had passed through a level country, alternately overrun with saline bushes or thick jungle. We were now not far from the head of the valley, which is encircled by high mountains, and numerous thin columns of sand were visible in every direction, caused by the eddying currents of wind sweeping out of their recesses. They moved over the plain with great rapidity, and whenever one came near us, I could hear the chief who guided my camel mutter to himself, "Pass away from the road good demon, and do us no harm; I am only going to Beylah with the English gentlemen who have brought presents for the Jam." Amused with this odd request, I asked him the meaning of it, when he told me with great gravity that we were now in the territory belonging to the ancient city Shuhr Roghun, once the favorite residence of the fairy Bad-dul Jamaut, and that these columns were demons who had since taken possession of it, to whom it was necessary to speak sweetly to prevent them from playing us any tricks.

Oot consists of two small villages belonging to Arab Oosmanany, the chief of the Arab Gudoor tribe, one containing about 50 and the other 25 houses. The baggage not having come up, the carpets were spread under the shade of a large tree, and we were quickly surrounded by the whole population, to whom our dress and appearance seemed to afford considerable amusement. Arab Oosmanany, the chief, was at the village waiting to conduct us to Beylah; and being informed of our arrival came to pay us a visit, the whole of the villagers having been previously summoned to compose his retinue. In the course of conversation, I told him that amongst the presents there was one for him, which he begged might be delivered in the presence of the Jam. In the evening he sent us a sheep, with a quantity of flour, rice, ghee, &c., and requested we would let him know if we wanted any thing else.

At noon next day the Kossid who had been dispatched to Beylah the night before, to announce our approach, having returned, we left Oot accompanied by Arab Oosmanany and a small party of military followers. For the whole distance the road passed through a succession of cultivated ground, interspersed with small thickets composed of a high bushy tree which appears something like the willow. As we left Oot we met ten or twelve hideous looking beings dressed as women, and mounted on donkeys, who saluted us as they passed; from their peculiarly disgusting appearance and bold manners, I was induced to inquire of my companion who they were: he laughed, and said they were eunuchs. Descending by a deep irregular water course into the dry bed of a river flowing from the N. E. and about 700 yards broad, we crossed it and entered Beylah. On approaching the town the housetops were seen literally covered, and the streets thronged with people: as we entered it the crowd set up a wild shout, shrieking and hallooing with all their might, and created such a dust that I was almost suffocated. The ladies also favoured us with a shrill scream, but whether of welcome, admiration, or disgust, I could not exactly make out. The young Jam, we were told, was amongst the spectators. Arab Oosmanany turned off to the palace to report our arrival, and we were conducted to a house which had been prepared for our reception; it was a most wretched dwelling, but with the exception of the palace, as good as any other in the town. The people crowded into the outer room without ceremony, and although the Jam had sent six soldiers to keep them out, they found it impossible to do so, and I was at last obliged to turn every one out myself and fasten the door: whenever it was opened a general rush was made, and some hard fighting took place between the guard and the mob before the latter could be driven back. Some of the principal inhabitants confiding in their rank, rudely walked into

the inner apartment where we were sitting, but they were soon made sensible of their mistake by being immediately turned out of the house, and told that whoever wished to see us, must first ask and obtain permission.

About two hours after our arrival one of the chiefs brought a complimentary message from the Jam, but the real object of his visit it appeared was to ascertain precisely my rank, which having done, he departed ; shortly after Arab Oosmanany came alone, and informed me that the Jam would give me a public audience next day.

Late in the afternoon a chief came to conduct us to the house where the Jam was waiting to receive us, but no horses having been sent I requested him to go back and get three, which in a few minutes made their appearance. Preceded by the presents, and attended by a party of soldiers, we proceeded through the town, and after having passed with some difficulty through several narrow streets, filled with a crowd of people, shouting as if they were mad, alighted at the door of the Kutchery, which, from the dense mass collected round it, was hardly approachable ; on entering the court-yard we were received by one of the chiefs, who taking me by the hand led me towards a covered veranda, or room open in front, where the Jam was seated in state ; although the hall of audience was merely a rude mud building, without ornament or furniture of any kind, the coup d'œil was rather imposing, the group drawn up inside being arranged so as to produce the best possible effect. In the centre sat the young chief, on a square platform raised about a foot high, and covered with a carpet and cushions of silk richly embroidered. His relations and chiefs were disposed on either side according to their rank, Ularacky, his chief confidential adviser being seated on his right hand a little in advance, and his tutor, the Hadgi Hafiz, on his left, and the back ground was filled up by a body of well dressed, fine looking military retainers. My conductor having led me up to the musnud, the Jam desired me to sit down on a carpet laid in front of it, and the usual complimentary speeches and inquiries were made by the minister Ularacky, who conducted the whole business. During the time the interview lasted, the young chief, who I imagine had been well tutored for the occasion, sat without uttering a word, with a vacant incurious expression of countenance which was no doubt assumed. He is a handsome lad, of thirteen or fourteen years of age, with fine expressive eyes, rather fair complexion, and a profusion of long jet black ringlets falling on each side his face. At present his countenance is rather feminine, and when we saw him in his state robes, which from their peculiar fashion aided the resemblance, he appeared more like a young Indian queen

than the chief of a wild tribe of Noomrees. He wore an under dress of crimson and gold kincaub, with trowsers of striped silk, and over this a mantle of pale blue satin richly embroidered with gold and silver thread, colored silk, &c., in the pattern peculiar to the Cashmere shawls. His turban formed of splendid kincaub was extremely large, and adorned with a feather of open gold work, set with emeralds, sapphires, rubies, &c. and another ornament richly set with jewels, similar to what I believe is called in Europe a *sevigni*, from which hung several strings of large pearls. A gold-hilted sword, with a shield ornamented with chased gold knobs lay before him, and completed his equipment. After the presents had been exhibited, which appeared to excite the admiration of all present, I took leave, and attended as before by a party of soldiers, amongst whom I distributed a few rupees, as is customary on these occasions, returned to the house.

During the week I remained at Beylah I had several long conversations with Ularacky, the Jam's minister. Ularacky is the second chief of the Jamootry, the particular tribe to which the Jam belongs, and has been chosen by the Jam's mother in consequence to conduct the government of the province under her superintendence; he is a fine intelligent old man, without any of the prejudices against Europeans which generally exist in the minds of those natives of India who have had no intercourse with them; but being surrounded by chiefs belonging to the other tribes, who are jealous of his influence with the reigning family, he is obliged to act with the greatest caution.

Beylah contains about 800 houses constructed of sticks and mud, and between four and five thousand inhabitants; it covers a small piece of elevated ground rising above the banks of a river of some size, flowing from the N. E. which joins the Poorally about a mile farther to the westward, and with the exception of the N. E. quarter, which is surrounded by a ruinous mud wall, is entirely undefended. The palace of the Jam is within the walls, and is the only brick building in the place. About Beylah a large portion of the land is under cultivation; and the face of the country presents a pleasing succession of grassy plains and small woods, which with the advantage of being placed nearly at the junction of two rivers, and at an equal distance from the mountains on either side, renders it the best spot in the province that could have been selected for the site of the capital. The Poorally passes about a mile to the westward of it, and spreading over a large extent of surface forms several swamps, which are fed by numerous springs; in some of them rice is cultivated, and the ground about their banks is every where much broken by deep gullies worn by the water flowing into them in the rainy season.

Ularacky having communicated to me the decision of the durbar respecting the survey of Soonmemy, and finding the Jam's answer to the Government letter would not be ready for two days, I determined to employ the interval in visiting Shuhr Roghan, an ancient excavated city, situated amongst the mountains to the northward; on stating my wish to Ularacky, he at last obtained the requisite permission from the Jam's mother; who as a compliment, sent one of her confidential attendants with her son's state-matchlock to accompany me.

Beyond the town the road for some distance wound through a thick wood occupying the bed of a deserted river; here and there it opened out into small but picturesque glades, but in general the underwood was so dense, that we had some difficulty in making our way through it: the bushes were full of birds, amongst which I noticed several parrots, and a very pretty little bird with green and golden plumage: it was decidedly the most beautiful spot I had seen in the province. On ascending from the bed of the river we came upon an open plain thickly covered with large rounded stones, and cut up in every direction by deep water courses, and about four miles from the town crossed the dry bed of a river about 500 yards wide; a short distance beyond it is situated the small village of Momadary surrounded by fields, and to the eastward a grove of lofty trees was visible, where my attendants said the Jam had a large garden. From Momadary to the head of the valley the stony plain is thinly dotted with bushes, and every where deeply furrowed by channels; this part of the valley rises slightly to the foot of the hills, and from its appearance, must have water flowing over its surface in the rainy season, towards the Poorally, from one range of mountains to the other.

About nine miles to the northward of Beylah, a range of low hills sweeps in a semicircle from one side of the valley to the other, and forms its head. The Poorally river issues from a deep ravine on the western side, and is about 200 yards broad; it is bounded on one side by steep cliffs, forty or fifty feet high, on the summit of which there is an ancient burying ground, and the water runs bubbling along it in two or three small rivulets, amongst heaps of stones and patches of tamarisk jungle. Having crossed the stream we pursued our way up its bed amongst the bushes, until we gained the narrow ravine through which it flows, and then turning into one of the lateral branches entered Shuhr Roghan. The scene was singular; on either side of a wild broken ravine the rocks rise perpendicularly to the height of four or five hundred feet, and are excavated as far as can be seen; in some places where there is footing to ascend, up to the summit; these excavations are most numerous along the lower part of the hills, and

form distinct houses, most of which are uninjured by time; they consist in general of a room fifteen feet square, forming a kind of open veranda, with an interior chamber of the same dimensions, to which you gain admittance by a door; there are niches for lamps in many, and a place built up and covered in, apparently intended to hold grain. Most of them had once been plastered with clay, and in a few, when the form of the rock allowed of its being done, the interior apartment is lighted by small windows. The houses at the summit of the cliffs are now inaccessible, from the narrow precipitous paths by which they were approached having been worn away; and those at the base appear to have been occupied by the poorer class of inhabitants, for many of them are merely irregular shaped holes, with a rudely constructed door. The rock in which these excavations have been made, is what I believe is called by geologists Conglomerate, being composed of a mass of rounded stones of almost every variety of rock, embedded in hard clay; it contains a large quantity of salt (I think natron), which is seen in a thin film on the walls of all the chambers, and at two or three spots in the upper part of the ravine, where water drops from the overhanging crags.

It would be singular if such a place as Shuhr Roghan existed amongst a people so superstitious as the Noomrees without a legend of some kind being attached to it, and they accordingly relate the following story: In the reign of Solomon the excavated city was governed by a king celebrated all over the East for his wisdom, and the great beauty of his only daughter Buddul Tumaul; she was beloved by seven young men, who from the great friendship existing among them, were called by way of distinction "the seven friends," but they perished one after the other in defending the object of their adoration from the designs of half a dozen demons, who, attracted by her surpassing beauty, made repeated attempts to carry her off. At this interesting period of her history Syful Mullik, son of the king of Egypt, arrived at Shuhr Roghan, who being the handsomest man of his time, and as brave as he was handsome, had been dispatched by his father on his travels, in the hope that by the way he might conquer a few kingdoms for himself. The princess, as a matter of course, fell in love with him; the demon lovers were in despair, and made a desperate effort to carry her off when at her devotions, but were all slain in the attempt by the prince. The father of the fair princess rewarded him for his gallantry with the hand of his daughter, and the happy couple lived to reign for many years in peace and security over the excavated city. Such was the tale related to me by my attendants, which forms the groundwork of a story written in the Persian

language, entitled, "The Adventures of Syful Mullik with the Fairy Buddul Tumaul." I obtained a copy of the work at Kurachee.

A short distance above the entrance of the city, the broken precipitous ravine in which it is situated decreases in width to ten or twelve yards, and forms a deep natural channel in the rock. For about half a mile the cliffs are excavated on both sides to a considerable height, and taking the remains of houses into account, I think there cannot be less altogether than 1500. In one place a row of seven, in very good preservation, was pointed out by the guides as the residence of "the seven friends," and further on we came to the grandest of all, the palace of Buddul Tumaul. At this part, the hill, by the abrupt turning of the ravine, juts out in a narrow point, and towards the extremity forms a natural wall of rock about 300 feet high, and twenty feet thick; half way up it had been cut through, and a chamber constructed, about twenty feet square, with the two opposite sides open; it is entered by a passage leading through a mass of rock partly overhanging the ravine, and on the other side of the apartment two doors give admittance to two spacious rooms; the whole had once been plastered over, and from its situation must have formed a safe, commodious retreat. At the summit of the hill near it there is another building, which my attendants said was the mosque where the princess was rescued by Syful Mullik, when the demons attempted to carry her off. Having seen every thing worthy of notice in this troglodytic city, we quitted it, and returned to Beylah.

On the 21st the letter and presents for Government having been delivered to me by Ularacky, I left Beylah late in the afternoon, and on the evening of the 24th arrived at Soonmemy. On the road we met a party of fakeers proceeding to Hinglaj: they presented a most grotesque appearance, their faces besmeared with paint, and their ragged garments decorated with tufts of feathers, and a variety of irregular ornaments. Their *agwa*, or chief, who was a portly, well-dressed personage, marched at their head, and carried a long white wand as the badge of his office. These poor wretches had collected from all parts of India, and as we approached them they set up a loud shout, exclaiming "Hurrah for the holy saint of Hinglaj—we are going to visit our good grandmother—praises to *Kalee*, the holy goddess! hurrah, hurrah."

Hinglaj, the shrine to which they were proceeding, is situated about a day's journey from the sea-coast, at the extremity of the range of mountains dividing Lus from Mukran, and is said to be of great antiquity. The temple is merely a small building erected on one of the mountain peaks, and is held in great veneration by both

Hindoos and Mussulmen. It is dedicated to *Kalee*, the goddess of fate, and there is a large circular tank or well near it, which the natives say has been sounded to a very great depth, without bottom having been obtained; they relate that one of the priests employed himself for a whole year in twisting a rope for the purpose, but it was not long enough. Those who can swim, jump into the tank from an overhanging rock, and proceed through a subterranean passage to another part of the mountain, which is believed to purify them from their sins. There is also a species of divination practised by throwing a cocoon into the water, and according as the bubbles rise in a larger or less quantity, the individual will be happy or miserable. This account of the place, which is celebrated all over India, was furnished by people who had been there several times.

Memoir on the Province of Lus.

The small province of Lus is about 100 miles long by 80 broad, and is bounded to the south by the sea, to the north by the Jahlawan hills, and to the east and west by ranges of high mountains, which descend from the great mass occupying Beloochistan, and separate it from Sinde and Mukran. Besides these, which terminate on the sea-coast (one at Rus Mooaree, and the other 100 miles further to the westward, near Rus Arubah) there is another spur sent off from the Jahlawan hills, called Jebbal Hahro, which runs down the centre of the province nearly to the coast, and divides it into two unequal portions. These three ranges are all of the same formation, principally coarse sandstone, and of the same average altitude, each being about 3000 feet high.

The climate of Lus is subject to considerable variation; in the winter season it is delightful, the atmosphere being clear, dry, and cool, but in the summer months it is as disagreeable from the excessive heat. During my journey to Beylah, in the month of January, the thermometer stood at 35° for three mornings running, and it did not rise higher than 67° even in the hottest part of the day. Situated just without the limits of the south west monsoon, and nearly encircled by high mountains, which not only reflect the sun's rays, but exclude the wind, the heat in the summer season is intense; and although the atmosphere is occasionally cooled by refreshing showers, it is severely felt by the inhabitants.

The western division of the province, lying between the Hahro and Hinglaj mountains, is the smallest and least productive of the two.

The greater part is occupied by a mass of barren hills, with small valleys between them ; and the remainder forms a level sandy district near the sea, which in most places is barren and almost destitute of inhabitants.

The eastern division of the province is watered by the Poorally and its numerous tributaries, and the only productive part of it is the valley or plain through which that river takes its course. From the sea to the Jahlawan hills it measures about sixty-five miles in length, and in width decreases gradually from thirty-five miles ; its breadth on the coast as you approach its upper extremity, where it terminates in a semicircle of hills, is eight or nine miles across. With the exception of a belt of low broken hillocks on the sea coast, about eight miles broad, the whole face of the valley is perfectly flat, and it is to this circumstance the province owes its name of *Lus*, and which in the language of the country signifies a level plain. On looking down it from the upper extremity, where the ground rises slightly at the foot of the hills, the horizon appears of a misty blue color, and is as level and well defined as it is at sea : the only elevated spot I saw, was the rising ground on which Beylah is built, and that is not more than ten or twelve feet high. There is a tradition amongst the natives, that at a remote period the valley was an inlet of the sea, and from its extreme flatness, alluvial formation, and small elevation above the level of the ocean, there is reason for believing it was once the case.

The soil is every where alluvial, and is composed of a light loose clay mixed in a greater or less proportion with fine sand ; in some places it preserves a hard smooth surface, and contains a portion of saline ingredients, but in others crumbles into fine dust, which is blown in clouds by the lightest breeze, and renders travelling very disagreeable ; it is also in many parts encumbered with large rounded stones, and at the head of the valley above Beylah, where there are numerous streams and water courses, they are so thickly strewed over the surface, that the whole plain, from one range of hills to the other, appears like the bed of a large river. Near the coast there is scarcely a tree or a bush to be seen, and the country has a most barren and desolate aspect. A confused mass of undulating hillocks, 80 or 100 feet high, covered to some depth with loose sand and thinly overrun with creeping plants, extends about eight miles inland, and in the small hollows and plains between them, which are so low as to become saturated at high tide by the sea, the land produces nothing but saline shrubs or coarse reeds. Beyond the sand hills the level plains commence, and small patches of stunted tamarisk trees appear here and there ; but as you approach Lay-aree they attain a greater height, and the jungle becomes dense.

From that village to Beylah the face of the country every where presents the same appearance in its general features, and in the vicinity of the different streams a large portion of the land is under cultivation ; but beyond these spots it is either covered with saline bushes or thick tamarisk jungle, and from the poverty of the soil would not yield sufficient to repay the cultivator for his toil in clearing it. In some of the jungles the baubool (*mimosa*) is abundant, and in others the trees are withered and leafless for miles, and there is no sign of vegetation, save in the undergrowth beneath them. About and above Beylah the tamarisk and baubool almost entirely disappear, and are succeeded by a tree which from a short distance appears like a species of willow, and is so high and bushy, that at those places where it abounds it forms thick and extensive woods ; game is every where plentiful, but particularly so on the eastern side of the valley ; herds of antelopes and spotted deer are frequently seen in the open country, and the wild hog is sometimes found in the thickets ; the jungles are full of hares and partridges, and the lakes and swamps swarm with water fowl of every description.

On the banks of the Poorally and its tributary streams a large portion of the land is under cultivation ; and this is also the case along the eastern side of the valley, where there are several small lakes left by the waters of the inundation : at these spots the soil is a rich mould, and yields abundant crops of wheat, jowaree, oil seed, cotton, and esculent vegetables. In the dry season most of the fields are irrigated by cuts from the rivers, but some depend entirely upon the rains for a supply of water ;—on the former a tax is levied of one-third, and on the latter of one-fifth of the produce.

The principal river of Lus is the Poorally, which rises to the northward amongst the Jahlawan mountains, and issues upon the valley through a deep ravine about nine miles to the N. W. of Beylah ; on leaving the hills it flows in several rivulets along a bed 300 yards wide, but near Beylah it increases to nearly a mile in breadth, and the water spreading over a large extent of ground forms a succession of swamps ; amongst these there are many small springs, and part of the land is turned to account in the cultivation of rice. Above Beylah the plain up to the foot of the hills is every where deeply scored with the beds of rivulets and water courses, but they are only filled during the inundation months, and then empty themselves into the Poorally. The first tributary stream of any size flows from the mountains to the N. E., and passing close along the elevated ground on which the capital is built, joins the river below the swamps ; opposite the town it is 700 yards broad, and when I crossed

it in the month of January its bed was perfectly dry. From the junction of this stream the river pursues a winding course to the southward, and has an average breadth of 400 yards; at some places however it is much wider, especially at the confluence of the Khato, a large stream descending from the eastern range of mountains, where it is nearly a mile across, and when full, must form a fine sheet of water: here its bed is overrun with jungle, and the stream winds through the centre in two small rivulets, 15 yards broad, and 15 inches deep. The Khato is from three to five hundred yards broad, and is only filled in the rains. Four miles to the N. E. of Layaree the Poorally receives the water of the Hubbe, a river of some size flowing from the eastward, and below the point of junction is confined by a dam, or bund, to retain its waters in the dry season for agricultural purposes. From this spot to its mouth *it has no bed*; as the river fills during the rains the bund is swept away, and the water escapes through a level plain covered with bushes, about five miles broad, which it inundates to a depth of two or three feet. This plain is bounded by the sand hills on the coast, and extends in a winding direction to the mouth of the river, which is situated at the head of the harbour of Soonmemy, and only runs four or five miles into the land. The water also finds another outlet through a line of lakes and swamps on the eastern side of the valley, where the ground is very low, and reaches the sea at a large lagoon on the shores of the bay, a few miles below the harbor. Serundo, the largest of the swamps, is several miles in length and very irregular in shape; its width in some places exceeding a mile, and at others contracting to four or five hundred yards. In the dry season, when it has a depth of four or five feet, the water is salt and charged with vegetable matter from the thick mangrove jungle growing along its banks, but during the inundation it is perfectly fresh, and the swamp then assumes the appearance of an extensive lake. Water fowl of all kinds resort to it in incredible numbers, and alligators are almost equally abundant.

The water of the Poorally holds in solution a large quantity of saline ingredients, and every stone in its bed that is at all exposed to the influence of the sun is covered with a thin incrustation. As far as I could judge from the taste it is natron, and the flavor of the water is scarcely affected by it. In the swampy parts of the river near Beylah alligators are numerous, and they are met with here and there throughout its course.

In the whole province there are not more than ten or twelve towns or villages, and the largest of these, Beylah, does not contain more than 5,000 inhabitants; Soonmemy has not half that number, and

Ootul, a town situated on the eastern side of the valley, which ranks next in importance, scarcely a fourth; Layaree, Oot, Momadary, and the others, are small villages of thirty or forty houses each, part built of mud, and the rest of mats, and none have more than 150 or 200 inhabitants. The people generally are scattered over the face of the country, and have no fixed habitations; their huts are erected wherever there is pasturage for their cattle, and being constructed of stakes and reed mats, are easily removed to other spots when the supply of fodder is exhausted. Beylah, the capital, is built upon a rising ground, on the north bank of a small river flowing from the mountains to the north-east, which joins the Poorally about a mile to the westward of the city. It contains about 800 houses built of mud, and a population of about 5000 souls. The palace of the Jam is situated in the north-east quarter, and this part of it is surrounded by a mud wall of no great strength, which is the only defence of the place.

The productions of Lus, are grain, (chiefly wheat, and jowaree) oil seed, a kind of gram called gogur, and cotton; ghee is made in large quantities, and sent to Kurachee or Soonmemy for exportation, and the flocks furnish a small supply of wool:—cotton cloth, with the coarse woollen dresses worn by the peasantry, and coarse carpets made at Beylah, are the only articles manufactured in the country.

It is difficult to form an estimate of the amount of the population, from the people being so much scattered over the face of the country, but I do not think it exceeds 25,000 souls. It is composed principally of Noomrees, descendants from the ancient Summa and Soonvia Rajpoots, whose chiefs formerly ruled in Sinde, and who are divided into seven tribes—the Jamootry, Arab Gudoor, Shooroo, Boorah, Shukh, Warah, and Mungayah. The Arab Gudoor is said to be a branch from the celebrated Arab tribe the Koreish, and to have settled in Lus in the reign of the third caliph Omar. That the family of Arab Oosmanany, the chief, is from an Arab stock is evident, for in him and all his relatives the Arab form and features are strongly marked, but the resemblance is not visible in the tribe generally, and it is no doubt of Noomree origin. The Jokeeas, and Jukreeas, who are also Noomrees, and inhabit the mountainous country to the eastward, were also formerly subject to the chief of Lus; but when Kurachce was taken by the Scindians they threw off their allegiance, and have ever since acknowledged the authority of the Ameers. Besides Noomrees there are also many Hindoos, and a large number of African slaves: the latter perform all the work. The chiefs and a few of their military followers are robust, and good looking men, but the Noomrees generally possess few of those qualities, either physical or moral, which would entitle them to

be considered a fine race. Amongst the lower orders mixture of the different castes and tribes is observable, and a large number exhibit marks in their features of their African descent. In appearance and bodily strength the men are inferior to the inhabitants of most Asiatic countries, and they are ignorant, indolent, and superstitious. The women possess few personal charms even when young, and are remarkable for their bold and licentious manners. The dress of both sexes is much the same as it is in Sinde, and there is in fact a marked resemblance, both in character and appearance, between the people of the two countries.

Jam Meer Mahomed, the chief of Lus, is about fourteen years of age, and does not at present take any part in the government of the province, which is conducted by Ularacky, the chief of the Jamootry, under the direction of his mother. Jam Deenah, his cousin, is the only male relative he has; he is about forty years of age, and much liked by the people for the kindness and generosity of his disposition. The Jam's sister was married some years ago to Meer Sobdar, one of the Sinde Ameers, and it is settled that when he is of age he is to espouse one of that prince's sisters in return. He has also a half sister in the harem of Meerab Khan, the Kelat prince, and another married to the chief of the Jokecas. The mother of these two girls resides at Soonmemy and is in such a destitute condition that she has lately been obliged to sell her clothes and jewels to obtain the necessaries of life.

The Jam is not independent, but like all the Brahoocy chiefs, holds his dominions under the feudatory tenure of furnishing a certain number of troops when required for the service of his lord paramount, the sovereign of Kelat. The Jam's father was formerly obliged to send him a portion of the duties collected in his territories as a yearly tribute, but after his marriage with one of the prince's daughters, this was no longer demanded. At present the Jam is kept in complete subjection, for his small state is every where exposed to the attacks of the Brahoocy tribes, who if commanded by the Kelat chief would quickly overrun it; and he would not in consequence dare to disobey any order from that prince, or act in any business of importance without his sanction. The number of troops he is expected to bring into the field in time of war was fixed at 4500; but at present the whole military force of the province does not exceed 2700 men, which are furnished by the different tribes in the following proportion:

Jamootry,	600
Arab Gudoor,	600
Shooroo,	200
Boorah,	300
Shukh,	100
Warah,	100
Mungayah,.. .. .	300
Brahoocys,.. .. .	500
<hr/>	
Total, ..	2,700

Since the death of the Jam's father, who expired about eight years ago, the revenues of the province have decreased considerably, and do not now amount to more than 35,000 Rupees annually. They are derived from a duty of three per cent. levied on all imports and exports, and a bazar toll of one per cent. collected at the towns they have to pass through on the road to Beylah. There is also a land tax of one-third the produce on all grounds irrigated from the rivers, and one-fifth on those which depend solely upon the rain for a supply of water. Last year the revenue collected at the different towns was as follows:

At Soonmemy,	Rupees, 12,000
At Layaree,	2,000
At Ootul,	3,000
At Beylah,	9,000
At Oomarah,	1,000
Land tax,	8,000
<hr/>	
Total, ..	35,000

Soonmemy is the principal sea-port of Lus, and for such a miserable looking place possesses considerable trade. The town generally called Meany by the natives is mean and dirty, and does not contain more than 500 houses; they are built of sticks and mud, and have a small turret rising above the roof open to the sea breeze, without which they would scarcely be habitable in the summer months, on account of the excessive heat; formerly the town was surrounded by a mud wall, but as no pains were taken to keep it in repair it gradually fell to decay, and now scarcely a vestige of it remains. It contains a population of about 2,000 souls, most of whom are employed in fishing, and are extremely poor, and there are besides a few Hindoos who have the whole trade of the place in their hands. At Meany the water is extremely bad. I examined all the wells in the neighbourhood, and caused others to be dug in the most promising spots, but it was so brackish that it was not drinkable, and I was obliged to send to

Kurachee for a supply for the vessels. The harbour, which has been formed by the Poorally river, is a large irregular inlet spreading out like that at Kurachee in extensive swamps, and choked with shoals; the channel leading into it is extremely narrow, and has a depth of sixteen or seventeen feet at high water in the shallowest part, but it shifts its position every year, and vessels of any size could not navigate it without great difficulty, until it had been buoyed off inside. There is six or seven and even ten fathoms in some places, but towards the town the channels become shallow, and the trading boats cannot approach it nearer than a mile; at the spot where they anchor they are always aground at low water. During the south-west monsoon the harbour cannot be entered, for the bar at the entrance is exposed to the whole force of the swell, and the breakers on it are heavy. There is another small sea-port belonging to Lus, situated on the western side of the Hinglaj mountains, at Ras Ambah, it is called Ournarah, and is the place to which the productions of the western division of the province are sent for exportation.

The total value of the trade of Lus does not exceed five lacs of rupees; the imports are—from Bombay, cloths, silks, iron, tin, steel, copper, pepper, sugar, and spices; the Persian Gulf, dates and slaves; and from Sinde, a small quantity of coarse cotton cloth. The greater part of the articles brought from Bombay are sent to Kelat, for although highly prized in Lus the people are too poor to purchase them, and they receive in return wool, of which 800 candys arrived in the course of last year, and different kinds of dried fruits. The exports, are—grain (principally wheat and jowaree) ghee, wool, oil seed, and a quantity of gum; a duty of three per cent. is levied on all imports and exports, which may be paid either at Soonmemy or Beylah, and a bazar toll of one per cent. at Layaree and Ootul, two towns on the road.

Most of the articles imported from Bombay are sent to Kelat, and from that city distributed throughout Beloochistan; the quantity is very small for the supply of such an extensive kingdom, and is not likely to become greater until the Kelat prince takes measures to prevent the caravans from being plundered in their route from Beylah to his capital. The intermediate districts are inhabited by various Brahoocy tribes, such as the Mingulls, Bezinyas, &c. and to each of the chiefs, the merchant has to pay from one to four rupees for the camel load, as may be determined at the time; their followers also frequently pillage the caravans. Meerab Khan, the Kelat prince, has no doubt the power to repress these outrages, and he would certainly interfere to prevent them, if the advantages that would accrue to

himself from the increase of the trade, were pointed out in a favorable manner. All the merchants of Lus are of opinion, that the commerce would be considerably enlarged if security were afforded to the trader, and of this there can be little doubt, for cloth and other articles of European manufacture are in great request throughout Beloochistan, and the supply is not at present adequate to the demand.

Formerly the commerce of Lus was much more valuable than it is at present, and a large portion was sent by the Kelat route to the northern provinces of Hindoostan; within the last forty years it has from various causes gradually declined. In 1808 Soonmemy was taken, and plundered by the Joasmy pirates, and for some years the merchants were afraid to send goods there; the port was just beginning to recover from this blow, when the Ameers of Sinde issued strict orders to the merchants of Kurachee to discontinue their practice of importing goods to any of the ports of Lus under the severest penalties, and this measure, which at once took away half the trade of the place, completed what the pirates had begun. In the meantime the trade with the northern provinces had ceased entirely, for they had become so unsettled that the Patan merchants, who are the great carriers in that part of the world, ceased to come to Kelat for goods, and as they afterwards found the route from Upper Sinde much the safest, they resorted to it in preference, and have since obtained the small supply of goods they require from the merchants of that kingdom. Before the trade of Lus had suffered from the causes above mentioned, its value is said to have been five times greater than it is at present, and it was also much more lucrative to the merchant, for at that period goods of European manufacture sold for double the price that is now obtained for them.

T. G. CARLOSS,

1st February, 1838.

Lieutenant, Indian Navy.

ART. III.—*On three new species of Musk (Moschus) inhabiting the Hemalayan districts.*

To the Editor of the Journal, Asiatic Society.

SIR,—Several years ago I called the attention of Dr. Abel to some remarkable, and apparently permanent distinctions of colour characterising the Musks, or Musk Deer of the Cis and Trans-Hemalayan regions. These I subsequently inserted in my amended catalogue of *Mammalia*, under the specific names of *Leucogaster*, *Chrysogaster*, and *Saturatus*, but without giving specific characters, owing to my conti-

nued inability to establish the species upon a more solid basis than that of distinction of colour. The partial investigations which I have been enabled to make, strongly favour, however, the supposition that the superficial diagnostics are supported by others of more importance in the form of the crania, and in the structure and position of the musk pod. And, though I am still unable distinctly to expound these latter differences, I think it may stimulate curiosity to indicate summarily the three presumed species as marked by their diversities of colour, in the hope that attention may be thence drawn to the structural peculiarities which I believe to exist in the skulls, and in the musk bags.

1st. Species, *Moschus chrysogaster*, *nobis*. Bright sepia brown sprinkled with golden red; orbital region, lining, and base of ears, whole body below, and insides of the limbs, rich golden red or orange; a black-brown patch on the buttocks posteaally; limbs below their central flexures fulvescent.

2nd. Species, *Leucogaster*, *nobis*. Body above, and the limbs deeper brown sprinkled with fulvous: below the head, neck, and belly, together with the insides of the ears, and the orbits, hoary white.

3rd. Species, *Saturatus*, *nobis*. Throughout saturate dusky brown, somewhat paler below: chin only, and lining of the ears pale and hoary.

Drawings of the above animals were transmitted to London, through the Society, in May 1836.

I am Sir, your obedient servant,

B. II. HODGSON.

Nepal, April 15, 1839.

ART. IV.—On *Isinglass* in *Polynemus sele*, *Buch.*, a species which is very common in the *Estuaries of the Ganges*. By J. McCLELLAND, Assistant Surgeon.

There are nine species of *Polynemi*, or Paradise fishes, enumerated by authors, and although they are all pretty well described, I am not aware of any more valuable property being known regarding them than their excellence as an article of food, of which we have a familiar instance at this season in the *Pol. paradiseus*, or Mango-fish, *Tupsi Muchi* of the Bengalese.

Buchanan has five species in his work on Gangetic Fishes, but three of these are small, and probably varieties only of the *Tupsi*; two of them however, are of great size, and so common in the estuary of the Hoogly that I have seen numerous hackeries, or bullock carts, conveying them to the Calcutta bazar, during the cold season. They are not

confined to the estuary of the Hoogly, but probably extend to all the estuaries of the Ganges, as Buchanan says they do; and we know that Dr. Russell also describes two large species in his work, long since published, on the fishes of the Madras Coast.

The very valuable production, *Isinglass*, having been recently found to be yielded by one of the fishes of the Hoogly by a writer in Parbury's Oriental Herald, it became an interesting object to determine the systematic name of the fish affording an article so valuable, and to learn as much as possible regarding its habits. Having procured a specimen of this fish from the bazar, I was surprised to find it to be a *Polyne-mus*, or Paradise fish, although the writer alluded to described it as resembling a Shark. My surprise was not that a person unacquainted with fishes should compare it to a Shark, or to any thing else, but that a nearly allied species to the Mango-fish should contain a natatory vessel of such size and value, while that organ is quite absent in the Mango-fish itself, though a general character of nearly all others.

I had come to the determination never to describe single or detached species of fish, but as the object of this paper is to elucidate the commercial side of a question already before the public, I shall not pretend to offer any remarks on the scientific part of the subject, which is indeed beyond my province, as my observations have hitherto been confined to the fresh water species of India.

The species affording the Isinglass is the *Polynemus sele*, Buch.; *Sele*, or *Sulea*, of the Bengalese, described, but not figured, in the Gangetic Fishes; but if Buchanan's drawings had not been placed under a bushel since 1815, probably this useful discovery would have been sooner made, and better understood by the writer in Parbury's Oriental Herald, to whom we are indebted for it.

The annexed figure from Buchanan's unpublished collection at the Botanic Garden, conveys an excellent representation, about half size, of a specimen from which I obtained 66 grains of Isinglass: but as the writer in Parbury's Oriental Herald states that from half a pound to three quarters of a pound is obtained from each fish, we may suppose either that *P. sele* attains a much greater size than 24 pounds, the limit given to it by Buchanan, or, that the Isinglass is also afforded by a far larger species, namely *Polynemus teria*, Buch. or *Teria bhangon* of the Bengalese, *Maga jellec* of Russell, which Buchanan was informed sometimes equals three hundred and twenty pounds avoirdupois, and which I frequently have seen of an uniform size, that must have been from fifty to an hundred pounds at least, loading whole cavalcades of hackeries at once on their way to the Calcutta bazar, as I have already stated, during the cold season, when they would consequently seem to be very common.

Although the sound, or natatory vessel is the part of the fish that would afford the principal inducement to form fisheries, one of the obligations that speculators should be obliged to enter into with the Government is, to cure all parts of such fishes as might be taken for their sound. Considering the scarcity of fish in many parts of India, and the great, I may say unlimited demand for it in some parts of the country even when badly preserved, as well as the excellence of the flesh of all the *Polynemi*, the curing of these fishes might prove no less profitable to the parties themselves, than it would unquestionably be to the country. I was happy to find the attention of the Royal Asiatic Society directed to the subject of curing fishes in India by Dr. Cantor, (vide Proceedings, 21st April, 1838) but a something was then wanting to be known in order to give a direct inducement to the undertaking.* I therefore regard the discovery of the *Ichthyocolla* of commerce in one of the larger *Polynemi* of India as a circumstance eminently calculated to direct attention to a promising and almost unlooked for source of enterprise. We first of all require to know whether more *Polynemi* than one afford it, and to be fully acquainted with the habits and the methods already employed for taking such as do. *Polynemus sele*, Buch. is the species I examined and found to contain it; but this species is supposed to be a variety only of *Polynemus lineatus*, which is very common on all the shores to the eastward; it therefore becomes a question of some importance to determine whether *P. lineatus* yields the same valuable article, and if it

* Should Dr. Cantor still be in London, I would recommend those who may be interested in the important question of Isinglass to consult him, as no one is so competent to afford information regarding the fish by which that article is yielded in India. He will, I am confident, on a re-examination of his notes regarding the *Polynemi*, readily distinguish those with large sounds, and be able to afford more valuable information regarding their habits, and the quantities in which they are procurable, than could be expected from any one who had not devoted his thoughts to the subject, during a survey of the place in which these fishes occur. I am not sure that the species of *Polynemus* Dr. Cantor particularly refers to in his paper as the *Salliah*, or *Saccolih*, is not the very fish that affords Isinglass; if so, it appears to be considered by Dr. Cantor as a new species, and his notes will probably afford all that it is essential to know regarding its habits. Thus, as Sir J. E. Smith somewhere observed, "the naturalist who describes a new species, however trifling it may seem, knows not what benefit that species may yet confer on mankind."

In an interesting account of Kurachee by Lieut. Carloss, read at the last anniversary Meeting of the Bombay Geographical Society, cod sounds and shark's fins are mentioned among the exports from that place, and fishing is said to be carried on to a considerable extent along the coast of Sinde. As however the Cod, *Morrhua vulgaris*, Cuv., is quite unknown in the Indian Seas, the species from which the sounds alluded to by Lieut. Carloss are taken are no doubt *Polynemi*, the larger species of which are sometimes called by the English, Rock-Cod. It will be curious to learn if the Chinese have monopolised this trade on the coast of Sinde as well as in the Hoogly.

be really common to the eastward; if so, it seems strange that the Chinese should send for it to the Hoogly. Next, do the *Pol. Emoï* and *Pol. plebeius*, supposed by Buchanan to correspond with his *Sele*, contain the same valuable substance? and do either of Russell's species, namely, the *Maga booshee* and *Maga jellee*, (Indian Fishes, 183, 184,) yield it? These are questions easily determined along our coasts by merely opening such fish as correspond with the one here figured, and ascertaining whether they contain an air vessel or not, and whether that vessel if present be large or small. Mergui, Batavia, Singapore, Tranquebar, Madras, and Bombay are points at which observations might be made. This question may be so easily ascertained, that it is hardly worth forming a conjecture about it; but if any of the species common to the coasts of the Eastern seas possessed so valuable a property, the chances are that it would have been long since discovered. It is therefore probable that the large gelatine sound will be found to be peculiar to *Pol. sele*, and perhaps *Pol. teria*,* Buch. both of which seem to resort chiefly to the Gangetic estuaries at certain seasons, particularly during the North-east monsoon, when it is easy to imagine that the shelter afforded in those estuaries at that season, might account for many peculiarities which their ichthyology appears to present, compared with that of open coasts. It is during the cold season that the two gigantic fishes above mentioned appear to be caught in most abundance, a circumstance the more favourable to any improved operations that might be resorted to with a view to convert them to useful purposes. Whether both contain the same valuable substance, I am unable to say, having as yet only examined *P. sele*.

GEN.—POLYNEMUS.

Two fins on the back, with long filaments attached to the sides in front of the pectoral fins. Opercula covered with scales; preoperculum serrated behind. Example. The common Mango-fish of Bengal.

YIELDING ISINGLASS.

P. Sele, Buch. Plate —

Sele, or *Sulea* of the Bengalese.

Five filaments, the first reaching from the front of the pectorals to midway between those fins and the anal, the other filaments progressively shorter; no streaks on the sides, lateral line deflected on the lower lobe of the caudal fin. The fin rays are as follows;—first dorsal seven, second dorsal fourteen, pectorals thirteen in each, ventrals each six, anal twelve or thirteen, caudal twenty (?). The teeth are very fine, continuous below round the edges of the jaws, but interrupted at the

* *P. quadrifilis*, Cuv. *P. tetradactylus*, &c. and probably refer to the same

anterior part of the upper jaw, behind which a small detached group of palatine teeth are placed on the vomer.

The liver consists of an elongated left lobe and a short right one, under which the gall bladder is situated. The stomach is a short muscular cul-de-sac, both orifices of which being placed at the anterior extremity, from which numerous small *cecæ* are given off, the intestine extends straight to the vent; in all these respects it corresponds nearly with *P. paradiseus*. The air vessel, which is quite absent in the latter, and on which the peculiar value of this species seems to depend, is a large spindle-shaped organ about half the length of the fish, thick in the middle and tapering toward the extremities, where it ends in front by two, and behind by a single tendinous cord; similar small tendinous attachments, about twenty-two in number, connect it on either side to the upper and lateral parts of the abdominal cavity. This organ, which is called the sound, is to be removed, opened, and stript of a thin vascular membrane which covers it both within and without, washed perhaps with lime water and exposed to the sun, when it will soon become dry and hard; it may require some further preparation to deprive it of its fishy smell, after which it may be drawn into shreds for the purpose of rendering it the more easily soluble. The fish which I examined weighed about two pounds and yielded about sixty-five grains of Isinglass, not quite pure, but containing about 10 per cent. of albuminous matter, owing perhaps to the individual from which it was taken being young and out of season, and not above a tenth part of the ordinary size of the species. But the solution after having been strained appeared to be equal to that of the best Isinglass, which costs in Calcutta from twelve to sixteen rupees a pound. As the subject thus seemed to be of consequence, I gave a portion of the substance in question to Dr. O'Shaughnessy for its chemical examination.

- a. Breadth of the back,
- b. Scale magnified,
- c. Scale from lateral line magnified,
- d. Air vessel or sound natural size.

Calcutta, 3rd May, 1839.

ART. V.—*Journal of the Mission which visited Bootan, in 1837-38, under Captain R. BOILEAU PEMBERTON. By W. GRIFFITH, ESQ. Madras Medical Establishment.**

The Mission left Gowahatti on the 21st December, and proceeded a few miles down the Burrumpootur to Ameengoung, where it halted.

On the following day it proceeded to Hayoo, a distance of thirteen miles. The road, for the most part, passed through extensive grassy plains, diversified here and there with low rather barren hills, and varied in many places by cultivation, especially of *sursoo*. One river was forded, and several villages passed.

Hayoo is a picturesque place, and one of considerable local note; it boasts of a large establishment of priests, with their usual companions, dancing girls, whose qualifications are celebrated throughout all Lower Assam. These rather paradoxical ministers are attached to a temple, which is by the Booteas and Kampas considered very sacred, and to which both these tribes, but especially the latter, resort annually in large numbers. This pilgrimage, however, is more connected with trading than religion, for a fair is held at the same time. Coarse woollen cloths and rock salt form the bulk of the loads which each pilgrim carries, no doubt as much for the sake of profit as of penance. The village is a large one, and situated close to some low hills; it has the usual Bengal appearance the houses being surrounded by trees, such as betel palms, peepul, banyan, and caoutchouc. To Nolbharee we found the distance to be nearly seventeen miles. The country throughout the first part of the march was uncultivated, and entirely occupied by the usual coarse grasses; the remainder was one sheet of paddy cultivation, interrupted only by topes of bamboos, in which the villages are entirely concealed; we found these very abundant, but small: betel palms continued very frequent, and each garden or enclosure was surrounded by a small species of screw pine, well adapted for making fences.

Four or five streams were crossed, of which two were not fordable: jheels were very abundant, and well stocked with water fowl and waders. At this place there is a small bungalow for the accommodation of the civil officer during his annual visit; it is situated close to a rather broad but shallow river. There is likewise a bund road.

We proceeded from this place to Dum-Dumma, which is on the Bootan boundary, and is distant ten miles from Nolbharee. We continued through a very open country, but generally less cultivated than

* Presented by the Government

that about Nolbharee; villages continued numerous as far as Dum-Dumma. This is a small straggling place on the banks of a small stream, the Noa Nuddee; we were detained in it for several days, and had the Booteas alone been consulted, we should never have left it to enter Bootan in this direction. The place I found to be very uninteresting.

December 31st. We left for Hazareegoung, an Assamese village within the Bootan boundary.

We passed through a much less cultivated country, the face of which was overrun with coarse grassy vegetation. No attempts appeared to be made to keep the paths clean, and the farther we penetrated within the boundary, the more marked were the effects of bad government. We crossed a small and rapid stream, with a pebbly bed, the first indication of approaching the Hills we had as yet met with. The village is of small extent, and provided with a Nam-ghur in which we were accommodated: it is situated on comparatively high ground, the plain rising near it, and continuing to do so very gradually until the base of the Hills is reached. There is scarcely any cultivation about the place.

We left on January 2d for Ghoorgoung, a small village eight miles from Hazareegoung; similar high plains and grassy tracts, almost unvaried by any cultivation, were crossed; a short distance from the village we crossed the Mutanga, a river of some size and great violence during the rains, but in January reduced to a dry bouldery bed. There is no cultivation about Ghoorgoung, which is close to the Hills, between which and the village there is a gentle slope covered with fine sward.

We entered the Hills on the 3d, and marched to Dewangari, a distance of eight miles. On starting we proceeded to the Durunga Nuddee, which makes its exit from the Hills about one mile to the west of Ghoorgoung, and then entered the Hills by ascending its bed, and we continued doing so for some time, until in fact we came to the foot of the steep ascent that led us to Dewangari. The road was a good deal obstructed by boulders, but the torrent contains at this season very little water.

The mountains forming the sides of the ravine are very steep, in many cases precipitous, but not of any great height. They are generally well wooded, but never to such a degree as occurs on most other portions of the mountainous barriers of Assam. At the height of about 1000 feet we passed a choky, occupied by a few Booteas, and this was the only sign of habitation that occurred.

We were lodged in a temporary hut of large size, some 200 feet below the ridge on which Dewangari is situated: our access to that

sacred, although after the first distrust had worn off, the Soobah did not object to my fishing. We passed a Sam Gooroo* engaged in building a wooden bridge; he was the only instance I met with of a Bootea priest making himself useful. He inquired of Capt. Pemberton, with much condescension, of the welfare of the 'Goombhanee' and his lordship the Governor General.

24th. Left for Khegumpa. The march was almost entirely an uninterrupted ascent, at least until we had reached 7000 feet, so that the actual height ascended amounted nearly to 5000 feet. It commenced at first over sparingly wooded grassy hills, until an elevation of about 4000 feet was attained, when the vegetation commenced to change; rhododendrons, and some other plants of the same natural family making their appearance. Having reached the elevation of 7000 feet by steep and rugged paths, we continued along ridges well clothed with trees, literally covered with pendulous mosses and lichens, the whole vegetation being extra tropical. At one time we wound round a huge eminence, the bluff and bare head of which towered several hundred feet above us, by a narrow rocky path or ledge overhanging deep precipices; and thence we proceeded nearly at the same level along beautiful paths, through fine oak woods, until we reached Khegumpa. The distance to which, although only eleven miles, took us the whole day to perform.

This march was a beautiful, as well as an interesting one, owing to the changes that occurred in the vegetation. It was likewise so varied, that although at almost unfavourable season of the year, I gathered no fewer than 130 species in flower or fruit. Rhododendrons of other species than that previously mentioned, oaks, chesnuts, maples, violets, primroses, &c., &c. occurred. We did not pass any villages, nor did we meet with any signs of habitation, excepting a few pilgrims proceeding to Hazoo.

Khegumpa itself is a small village on an exposed site; it does not contain more than twelve houses, and the only large one, which as usual belonged to a Sam Gooroo, appeared to be in a ruinous state. The elevation is nearly 7000 feet. The whole place bore a wintry aspect, the vegetation being entirely northern, and almost all the trees having lost their leaves. The cold was considerable, although the thermometer did not fall below 46°. The scarlet tree rhododendron was common, and the first fir tree occurred in the form of a solitary specimen of *Pinus excelsa*. In the small gardens attached to some of the

* So are they called from their peculiar sanctity. Sam is a priest, and Gooroo also a priest; each priest is therefore twice a priest.]

houses I remarked vestiges of the cultivation of tobacco and Probosa.* In the vallies however surrounding this place there seemed to be a good deal of cultivation, of what nature distance prevented me from ascertaining.

25th. Left for Sasee. We commenced by descending gradually until we had passed through a forest of oaks, resembling much our well known English oak; then the descent became steep, and continued so for sometime; we then commenced winding round spurs clothed with humid and sub-tropical vegetation; continuing at the same elevation we subsequently came on dry open ridges, covered with rhododendrons. The descent recommenced on our reaching a small temple, about which the long leaved fir was plentiful, and continued without interruption until we reached a small torrent. Crossing this, we again ascended slightly to descend to the Dimree river, one of considerable size, but fordable. The ascent recommenced immediately, and continued uninterruptedly at first through tropical vegetation, then through open rhododendron and fir woods, until we came close upon Sasee, to which place we descended very slightly. This march occupied us the whole day. After leaving the neighbourhood of Khegumpa we saw no signs of cultivation; the country, except in some places, was arid; coarse grasses, long leaved firs, and rhododendrons forming the predominating vegetation. We halted at Sasee, which is a ruined village, until the 28th. The little cultivation that exists about it is of barley, buckwheat, and hemp.

28th. We commenced our march by descending steeply and uninterruptedly to the bed of the Geeri, a small torrent, along which we found the vegetation to be tropical; ascending thence about 500 feet, we descended again to the torrent, up the bed of which we proceeded for perhaps a mile; the ascent then again commenced, and continued until we reached Bulphai. The path was generally narrow, running over the flank of a mountain whose surface was much decomposed; it was of such a nature that a slip of any sort would in many places have precipitated one several hundred feet. The face of the country was very barren, the trees consisting chiefly of firs and rhododendrons, both generally in a stunted state. We reached Bulphai late in the evening; and the latter part of the march was very uncomfortable owing to the cutting severity of the wind. The vegetation was not interesting until we came on a level with Bulphai, when we came on oaks and some other very northern plants. We were well accommodated in this village, which is a very small one, situated in a somewhat

* *Eleusine coracana.*

sheltered place, and elevated to 6800 feet above the sea. The surrounding mountains are very barren on their southern faces, while on the northern, or sheltered side, very fine oak woods occur. The houses were of a better order than those at Sasee, and altogether superior to those of Khegumpa. They are covered in with split bamboos, which are secured by rattans, a precaution rendered necessary by the great violence of the winds, which at this season blow from the south or south-east. Bulphai is a bitterly cold place in the winter; and there is scarcely any mode of escaping from its searching winds. The vegetation is altogether northern, the woods consisting principally of a picturesque oak, scarcely ever found under an elevation of 6000 feet. There is one small patch of cultivation, thinly occupied by abortive turnips or radishes, and miserable barley. It was at this place that we first heard the very peculiar crow of true Bootan cocks, most of which are afflicted with enormous corns.

On the 31st we resumed our journey, ascending at first a ridge to the N. E. of Bulphai, until we reached a pagoda, the elevation of which proved to be nearly 8000 feet; and still above this rose to the height of about 10,000 feet a bold rounded summit, covered with brown and low grass. Skirting this at about the same level as the pagoda, we came on open downs, on which small dells, tenanted by well defined oak woods were scattered. After crossing these downs, which were of inconsiderable extent, we commenced to descend, and continued doing so until we came to Roongdoong. About a third of the way down we passed a village containing about twenty houses, with the usual appendage of Sam Gooroo's residence; and still lower we came upon a picturesque temple, over which a beautiful weeping cypress hung its branches. We likewise passed below this a large temple raised on a square terraced basement. From this the descent is very steep, until a small stream is reached, from which we ascended very slightly to the castle of Roongdoong, in the *loftiest* part of which we took up our quarters. From the time that we descended after crossing the downs, the country had rather an improved aspect, some cultivation being visible here and there. We met a good many Kampas, pilgrims, and one chowry tailed cow, laden with rock salt, which appears to be the most frequent burden.

There was more cultivation about Roongdoong than any other place we had yet seen, although even here it was scanty enough. It would appear that they grow rice in the summer, and barley or wheat during the winter; and this would seem to be the case in all those places of sufficient altitude where the fields were terraced. The elevation of the place is 5175 feet, yet a few orange trees appeared to flourish;

this was the highest elevation at which we saw these trees living. There is a species of *Atriplegia*, the *Mooreesa* of the Assamese, likewise cultivated about Roongdoong: the seeds are eaten as well as the leaves, which form a sort of *turkaree*. The ingenuity of the Bootas was well shewn here by the novel expedient of placing stones under the ponies' feet to enable them to get at the contents of the mangers! The ponies appeared tolerably well fed, at least I saw them enjoy one good meal, consisting of wild tares and the heads of Indian corn, which had been previously soaked; besides these luxuries, they were supplied with a slab of rock as a rolling stone or scratch-back. Our host, the Dhoompa, who is appointed by the Deb himself, was an impudent drunken fellow, and presumed amazingly on his low rank. He was one of the most disagreeable and saucy persons we met with in Bootan.

Feb. 1st. Our march commenced by descending, gradually at first and then very rapidly, to the Dumree Nuddee; crossing this, which is of small size, at the junction of another torrent, we wound along the face of the mountain forming the right wall of the ravine, ascending very gradually at the same time. We continued thus until we came on the ravine of the Monass, which we followed upwards, the path running about 1000 feet above its bed for about two miles, when we reached Benka. We passed two or three small villages on the right side of the Dumree, and a few others were seen on its left. The country throughout was of a most barren appearance, the vegetation consisting of coarse grasses, stunted shrubs, and an occasional long leaved pine. Benka, or as it is better known Tassgong, is a small place situated on a precipitous spur, 1200 feet below which, on one side, the Monass roars along, and on the other a much smaller torrent. From either side of the village one might leap into eternity: it is elevated 3100 feet above the sea.

We were lodged in a summer house of the Soobah, about half a mile up the torrent, and in which, as it was an open house, and as they kept the best room locked up on the score of its being sacred, we were much incommoded by the furious gusts of wind sweeping as usual up the ravine.

The place itself is the Gibraltar of Bootan, consisting of a large square residence for the Soobah, decorated in the usual manner, of a few poor houses much crowded together, and the defences. These consist of round towers of some height, and a wall which connects the village with the tower; and on the opposite side of the torrent there are other defences of towers and outhouses. All seemed to be in a somewhat ruinous state.

A few days after our arrival we had an interview with the Soobah, on the open spot in front of our residence. On this he had caused to be pitched a small silken pavilion, about half the size of a sipahis' paul. He came in all possible state, with about thirty armed followers, preceded by his state band, which consisted of a shrill clarionet and a guitar, (guiltless of sound) a gong and a bell, ponies, a Tartar dog, gentlemen of the household, priests, all assisted in forming a long string which advanced in single file.

He was polite and obliging, and maintained his rank better than any other of the Soobahs we saw. After the interview, at the end of which presents of decayed plantains, papers of salt, scarfs, and strips of coarse blanket were returned, we were treated with music and dancing women, who only differed from their compeers of India in being elderly, ugly, very dirty, and poorly dressed. The spectators were then seated on the ground and regaled with rice and chong.

On his departure the noise far exceeded that attending on his advent. Shrieks and outcries rent the air, the musketeers made fearful report, and, in fact, every one of the followers, of sufficiently low rank, made as much noise as he could. The most curious parts of the ceremony were,—the manner in which they shuffled the Soobah off and on his pony; the mode in which the ponies' tails were tied up; and the petition of the head of the priests for at least one rupee.

It was here that we first heard of the deposition of the old Deb, and the consequent disturbances.

Feb. 5th. Punctually on the day appointed by the Soobah did we leave this place, and descended by a precipitous path to the Monass, which we crossed by a suspension bridge, the best and largest, I suspect, in Bootan. The bed of this river, which is of large size (the banks which are mostly precipitous being sixty or seventy yards asunder) and of great violence is 1300 feet below Benka. We then commenced ascending very gradually, following up the north side of the ravine, until we reached Nulka: the march was a very short one. The country was perhaps still more barren than any we had hitherto seen, scarcely any vegetation but coarse grasses occurring. Near Nulka the long leaved pine recommenced. We passed two miserable villages scarcely exceeded by Nulka, in which we took up our abode. No cultivation was to be seen, with the exception of a small field of rice below Nulka.

Feb. 6th. We descended to the Monass, above which Nulka is situated 6 or 700 feet, and continued along its right bank for a considerable time, passing here and there some very romantic spots, and one or two very precipitous places. On reaching a large torrent, the Koollong,

we left the Monass, and ascended the former for a short distance, when we crossed it by a wooden bridge. The remainder of the march consisted of an uninterrupted ascent up a most barren mountain, until we reached Kumna, a small and half-ruined village, 4300 feet above the sea.

Little of interest occurred: we passed a small village consisting of two or three houses and a religious building, and two decent patches of rice cultivation. The vegetation throughout was almost tropical, with the exception of the long leaved fir, which descends frequently as low as 1800 or 2000 feet. I observed two wretched bits of cotton cultivation along the Monass, and some of an edible *Labiata*, one of the numerous makeshifts ordinarily met with among Hill people.

Feb. 7th. Left for Phullung. We ascended at first a few hundred feet, and then continued winding along at a great height above the Koollong torrent, whose course we followed, ascending gradually at the same time, until we reached our halting place. As high as 5000 feet the Kumna mountain retained its very barren appearance; at that elevation stunted oaks and rhododendrons commenced, and at 5300 feet the country was well covered with these trees, and the vegetation became entirely northern.

Throughout the march many detached houses were visible on the opposite bank of the Koollong, and there appeared to be about them a good deal of terrace cultivation. On the left side of the torrent two villages were seen, both as usual in a ruinous state.

8th, and 9th.—We were detained partly by snow, partly by the non-arrival of our baggage. On the 9th I ascended to a wood of *Pinus excelsa*, the first one I had noticed, and which occurred about 1000 feet above Phullung. The whole country at similar elevations was covered with snow, particularly the downs which we passed after leaving Bulphei. Tassong was distinctly visible. The woods were otherwise composed of oaks and rhododendrons. At Phullung they were endeavouring to keep alive the wild indigo of Assam; a species of *Ruellia*, but its appearance shewed that it was unsuited to the climate.

Feb. 10th. To Tassangsee. We continued through a similar country, and at a like elevation, with the exception of a trifling descent to a small nullah, and an inconsiderable one to the Koollong, on the right bank of which, and about 500 feet above its bed, Tassangsee is situated. We crossed this torrent, which even here is of considerable size and not fordable, by means of an ordinary wooden bridge, and then ascended to the village. This is constituted almost entirely by the Soobah's house, which is a large quadrangular building; on the same side, but several hundred feet above the house.

there is a large tower ; also a small one on the same level, and some religious edifices. We were lodged over the stable.

The country about Tassangsee is picturesque, with large woods of *Pinus excelsa*, which here has much the habit of a larch, a few villages are visible on the same side of the Koollong, and a little cultivation. The Soobah was absent at Tongsa, to which place he had been summoned owing to the disturbances, so that we were relieved from undergoing the usual importunities and disagreements between his followers and ours. The place is said to be famous for its copper manufactures, such for instance as copper cauldrons of large dimensions ; but I saw nothing indicating the existence of manufacturers, unless it were a small village below the castle, and on the same side of the Koollong, which looked for all the world like the habitation of charcoal burners. A little further up this stream a few small flour mills occur.

Snow was visible on the heights around, and especially on a lofty ridge to the north. We found Tassangsee to be very cold owing to the violent south or south-east winds ; the thermometer however did not fall below 34°. Its elevation is 5270 feet, the vegetation entirely northern, consisting of primroses, violets, willows, oaks, rhododendrons, and pines ; very fine specimens of weeping cypress occur near this place.

Feb. 14th. Resumed our journey, interrupted as usual by the non-arrival of our baggage, and scarcity of coolies—and proceeded to Sanah. We descended at first to the torrent, which bounds one side of the spur on which the castle is built, and which here falls into the Koollong ; the march subsequently became a gradual and continued ascent, chiefly along its bed. We crossed two small torrents by means of rude flat wooden bridges, and passed two or three deserted villages. Snow became plentiful as we approached Sanah. This we found to be a ruined village, only containing one habitable house. It is situated on an open sward, surrounded with rich woods of oaks and rhododendrons, yews, bamboos, &c. Its elevation is very nearly 8000 feet.

Feb. 15th. We started at the break of day, as we had been told that the march was a long and difficult one. We proceeded at first over undulating ground, either with swardy spots, or through romantic lanes ; we then ascended an open grassy knoll, after passing which we came on rather deep snow. The ascent continued steep and uninterrupted until we reached the summit of a ridge 11,000 feet high. Although we had been told that each ascent was the last, we found that another ridge was still before us, still steeper than the

preceding one, and it was late in the day before we reached its summit, which was found to be nearly 12,500 feet. Above 9500 feet, the height of the summit of the grassy knoll before alluded to, the snow was deep; above 10,000 feet all the trees were covered with hoar-frost, and icicles were by no means uncommon. The appearance of the black pines, which we always met with at great elevations, was rendered very striking by the hoar-frost. Every thing looked desolate, scarce a flower was to be seen, and the occasional fall of hail and sleet added to the universal gloom.

The descent from the ridge was for the first 1500 feet, or thereabout, most steep, chiefly down zigzag paths, that had been built up the faces of precipices; and the ground was so slippery, the surface snow being frozen into ice, that falls were very frequent, but happily not attended with injury. It then became less steep, the path running along swardy ridges, or through woods. In the evening I came on the coolies, who had halted at a place evidently often used for that purpose, and who positively refused to proceed a single step further. But as Captain Pemberton and Lieut. Blake had proceeded on, I determined on following them, hoping that my departure would stimulate the coolies to further exertions. After passing over about a mile of open swardy ground I found myself benighted on the borders of a wood, into which I plunged in the hopes of meeting my companions; after proceeding for about half an hour slipping, sliding, and falling in all imaginable directions, and obtaining no answers to my repeated halloos; after having been plainly informed that I was a blockhead by a hurkarah, who as long as it was light professed to follow me to the death—"Master go on, and I will follow thee to the last gasp with love and loyalty"—I thought it best to attempt returning, and after considerable difficulty succeeded in reaching the coolies at 8½ p. m. when I spread my bedding under a tree, too glad to find one source of comfort.

I resumed the march early next morning, and overtook my companions about a mile beyond the furthest point I had reached; and as I expected, found that they had passed the night in great discomfort. We soon found how impossible it would have been for the coolies to have proceeded at night, as the ground was so excessively slippery from the half melted snow, and from its clayey nature, that it was as much as they could do to keep their legs in open day-light.

We continued descending uninterruptedly, and almost entirely through the same wood, until we reached Singé at 9½ a. m. The total distance of the march was fifteen miles—the greatest amount of ascent was about 4500 feet, of descent 6100 feet. We remained at

Singé up to the 18th, at which time some coolies still remained behind. This village, which is 6330 feet above the sea, is of moderate size, containing about twelve houses; in the best of these we were lodged, and it really was a good house, and the best by far we were accommodated with while in Bootan.

On the night of the 17th snow fell all around, though not within 1000 feet of Singé. The comparative mildness of the climate here was otherwise indicated by the abundance of rice cultivation about and below it. It stands on the border of the wooded and grassy tracts so well marked in the interior of Bootan, at least in this direction, and about midway on the left side of a very deep ravine, drained by the river Koosee. On both sides of this, villages were plentiful; on the opposite or western side alone I counted about twenty; about all there is much cultivation of rice and wheat; the surface of the earth where untilled, being covered with grassy vegetation and low shrubs.

Feb. 18th. We commenced a steep descent, and continued it until we came in sight of the river Koosee, which is not visible from Singé. We then turned to the north, following the course of the river upwards, the path running about 800 feet above its bed. Thence, after descending another ravine, drained by a tributary to the Koosee, we again ascended slightly, to re-descend to the Koosee, up the bed of which we then kept until we came to the Khoomar, a considerable torrent, which we crossed about 100 yards from its mouth by a wooden bridge; within a quarter of a mile of this we crossed the Koosee itself by a similar bridge, and then ascended gradually along its right bank until we reached Singlang, which place became visible after passing the Khoomar.

After arriving at the Koosee the country became barren, resembling much that about Tassgong; and the only cultivation we passed in this portion of the march was some rice along the bed of that river.

The usual delays took place at Singlang, and as it was the residence of a Soobah, we suffered the usual inconveniences. We were miserably lodged in a small open summer house, up a small ravine, and at a short distance from the castle, which is a large and rather irregular building.

The village itself is a poor one, most of the inhabitants being quartered in the castle. We had an interview with the Soobah in an open place close to the village: it was conducted with much less state than that at Tassgong. We found the Soobah to be very young, in fact almost a boy; he behaved civilly, and without any pretension. None of his armed men were present, and the whole number of Bootas collected to see the show could not have exceeded 100. We

sat in the open air, while the Soobah was sheltered by a paltry silken canopy. Nachnees more than ordinarily hideous were in attendance.

There is but little cultivation about this place, which is 4520 feet above the sea, and the surrounding mountains are very barren. About the village I noticed a few stunted sugar canes, some peach and orange trees, the castor-oil plant, and a betel vine or two. The only fine trees near the place were weeping cypresses; the simul also occurs.

Feb. 23rd. After the usual annoyances about coolies and ponies, we left Singlang without regret, for it was a most uninteresting place. We commenced by an ascent of about 1000 feet, and then continued following the course of the Koosee *downwards*. We continued retracing our steps until we reached Tumashoo, to which place we scarcely descended, and on arriving found ourselves opposite Singé, and not more, as the crow flies, than three miles from it. We were told subsequently that there was a direct road from Singé to this, which is about the centre of the populous parts of the country I have mentioned as being visible from Singé; so that it was quite plain that we had been taken so much out of our way in order to gratify the Soobah by enabling him to *return* us some decayed plantains, balls of ghee, and dirty salt. The road throughout was good, and evidently well frequented. At an elevation of about 6000 feet we came on open woods of somewhat stunted oaks and rhododendrons; the only well wooded parts we met with being such ravines as afforded exit to water courses. We passed several villages in the latter part of the march, some containing 20 and 30 houses, and met with a good deal of cultivation as we traversed that tract, the improved appearance of which struck us so much from Singé.

Tumashoo is an ordinary sized village, about 5000 feet in elevation. We were lodged in the Dhoompá's house. I observed that the cattle here, which were *Milhans*, were kept in farm yards, better supplied with straw than the poor beasts themselves. A few sheep were likewise seen.

Feb. 24th. Left for Onjar, ascending at first over sward or through a fir wood for about 800 feet, when we crossed a ridge, and thence descended until we came to a small torrent which we crossed; thence we ascended gradually, until we surmounted a ridge 7300 feet high; descending thence very gradually until we came over Onjar, to which place we descended by a steep by-path for a few hundred feet. The road was generally good, winding along at a considerable height above the Koosee, until we finally left it on its turning to the south. Singé was in sight nearly the whole day. The

features of the country were precisely the same. At the elevation of 7300 feet the woods became finer, consisting of oaks and rhododendrons, rendered more picturesque from being covered with mosses, and a grey pendulous lichen, a sure indication of considerable elevation. Various temples and monumental walls were passed, and several average sized villages seen in various directions. A fine field of peas in full blossom was noticed at 5500 feet, but otherwise little cultivation occurred. Oonjar is a small village at an elevation of 6370 feet.

Feb. 25th. Leaving this place, we continued winding along nearly at the same altitude until we descended to the river Oonjar, which drains the ravine, on the right flank of which the village is situated. This river, which is of moderate size, is crossed twice within 200 yards. From the second bridge one of the greatest ascents we had yet encountered commenced; it was excessively steep at first, but subsequently became more gradual. It only terminated with our arrival at the halting place, which we denominated "St. Gothard," but which is known by the name Peemee. Its elevation is about 9700 feet, and we had ascended from the bridge as much as 4350 feet. Snow commenced at 7500 feet, and became heavy at 8500 feet; Peemee was half buried in it, and ornamented with large icicles: it consists of one miserable hut. This hut would not have withstood the attacks of another such party as ours, for the men made use of its bamboos for firewood, and the horses and mules eat very large portions of it. Our people were put considerably out from not considering it proper to use snow water, the only fluid to be procured, as there is no spring near.

Feb. 26th. We continued the ascent through heavy snow. For the first 1000 feet it was easy enough, but after that increased much in difficulty. Great part of the path was built up faces of sheer precipices. About noon we passed through the pass of Rodoola, which consists of a gap between two rocks, barely wide enough to admit a loaded pony. One of the rocks bore the usual slab with the mystic sentence "*Oom mainee pamee oom.*" There is nothing striking in the place, which besides is not the highest part of the mountain traversed. The elevation was found to be 12,300 feet.

The remainder of the ascent was very gradual, but continued for about $1\frac{1}{2}$ miles; and I consider the actual pass from which we commenced descending to be at least 12,600 feet. The descent was at first very rapid, passing down the bold face of the mountain, which was covered entirely with stout shrubby rhododendrons. We then descended gradually through a fine wood of the black fir. On recommencing the steep descent we passed over swardy patches surrounded

by fir woods, and we continued through similar tracts until within 1000 feet of our halting place, to which we descended over bare sward.

The march, which was one of thirteen miles, lasted nine hours; the greatest ascent was nearly 4000 feet, the greatest descent nearly 5000 feet. It was with great difficulty that many of our followers succeeded in effecting it: with the usual apathy of natives, they wanted to remain in a ruined log hut, at an elevation of 12,500 feet, without food, instead of pushing on. Capt. Pemberton very properly ejected them all, and when once they had passed the snow, they regained a good deal of their miserable spirit. The road throughout the ascent was buried in snow, the depth of which alone enabled us to cross one very bad place where the constructed road appeared to have given way, and at which most of our ponies had narrow escapes. On the descent the snow became scanty at 9500 feet, and at 9000 feet disappeared almost entirely, lingering only in those places which throughout the day remain obscured in shade.

From the summit of Rodoola a brief gleam of sunshine gave us a bird's-eye view of equally lofty ridges running in every direction, all covered with heavy snow.

The vegetation of the ascent was very varied, the woods consisting of oaks, rhododendrons, and bamboos, up to nearly 11,000 feet. Beyond this the chief tree was the black fir; junipers, alpine polygonums, a species of rhubarb, and many other alpine forms presented themselves in the shape of the withered remains of the previous season of active vegetation. That on the descent was less varied, the trees being nearly limited to three species of pines, of which the black fir scarcely descended below 11,600 feet, when it was succeeded by a more elegant larchlike species, which I believe is *Pinus Smithiana*; this again ceased toward an altitude of 9500 feet, when its place was occupied by *Pinus excelsa*, now a familiar form.

We found Bhoomlungtung to occupy a portion of rather a fine valley. The village is of moderate size, but of immoderate filth, only exceeded in this respect by its tenants, to whom no other Booteas could come near in this, as it would seem, necessary qualification of an inhabitant of a cold, bleak, mountainous country; it is situated on the left bank of a good sized stream. We were lodged in the chief house, but were annoyed beyond measure by the smoke arising from a contiguous cook room, in which operations were going on day and night. The valley is not broad, but is two or three miles in length: it is surrounded on all sides, but especially to the south and east by lofty mountains. The elevation of Bhoomlungtung is nearly 8700 feet,

and we considered it to be the most desirable spot we had yet met with.

The valley is for the most part occupied by wheat fields, but the prospect of a crop appeared to me very faint. Two or three villages occur close to Bhoomlungtung. The tillage was better than any we had seen, the fields being kept clean, and actually treated with manure, albeit not of the best quality; in a few instances they were surrounded with stone walls, as were the court yards of all the houses, but more commonly the inroads of cattle were considered sufficiently prevented by strewing thorny branches here and there. The houses were of ordinary structure, but unspeakably filthy.

With the exception of a sombre looking oak near Bhoomlungtung, and some weeping willows, the arboreous vegetation consists entirely of firs. The shrubby vegetation is northern, and so is the herbaceous, but the season for this had not yet arrived. It was here that I first met with the plant called after Mr. James Prinsep; the compliment is not, in Bootan at least, enhanced by any utility possessed by the shrub, which is otherwise a thorny, dangerous looking species. Here too we first saw English looking magpies, larks, and red-legged crows.

March 1st. Proceeded to Byagur or Juggur. We were told that the march was a short one, and that we should continue throughout down the bed of the Tung-Tchien, the river of Bhoomlungtung; we found, however, that we soon had to leave this, and commence ascending. After a second descent to a small nullah, we encountered a most tedious ascent, which continued until we surmounted a ridge overlooking Byagur, to which place we descended very rapidly. The height of this ridge was 9950 feet, yet we did not meet with a vestige of snow. The distance was fourteen miles. We passed two or three small villages, but saw scarcely any vegetation after leaving the valley. The vegetation continued the same, the road traversing either sward or fir woods, consisting entirely of *Pinus excelsa*.

The valley in which Byagur is situated is still larger than that of Bhoomlungtung: it is drained by a large river which is crossed by a somewhat dilapidated wooden bridge; the elevation is about 8150 feet. The village so called is a moderately sized one; but there are several others in the valley, which is one of the very few decently inhabited places we met with. The inhabitants are much cleaner than those of Bhoomlungtung. The Soobah was absent at Tongsa; his castle, which is a very large, irregular, straggling building, is situated on a hill 500 feet above the plain, some of its defences, or outworks, reaching nearly to the level of the valley. During the hot weather

it is occupied by Tongsa Pillo, on which occasion the Soobah retires to Bhoomlungtung.

The cultivation is similar to that of the other valley, but the crops looked very unpromising. The soil is by no means rich, and the wind excessively bleak; wheat or barley are the only grains cultivated. The mountains which hem in this valley are not very lofty; to the north, in the back ground, perpetual snow was visible. To our west was the ridge which we were told we should have to cross, and which in its higher parts could not be less than 12,000 feet.

March 4th. We commenced ascending the above ridge almost immediately on starting; surmounting this, which is of an elevation at the part we crossed of 11,035 feet, we continued for sometime at the same level, through fine open woods of *Pinus Smithiana*: having descended rapidly afterwards to a small nullah, 9642 feet in elevation, we then reascended slightly to descend into the *Jaisa* valley. On the east side of the ridge, i. e. that which overlooks Byagur, we soon came on snow, but none was seen on its western face, notwithstanding the great elevation. The country was very beautiful, particularly in the higher elevations. I may here advert to the bad taste exhibited in naming such objects after persons, with whom they have no association whatever. As it is not possible for all travellers to be consecrated by genera, although this practice is daily becoming more common, we should connect their names with such trees as are familiar to every European. As we have a *Pinus Gerardiana* and *Webbiana*, so we ought to have had *Pinus Herbertiana* and *Moorcroftiana*, &c. By so doing, on meeting with fir trees among the snow-clad Himalayas, we should not only have beautiful objects before us, but beautiful and exciting associations of able and enduring travellers. Of Capt. Herbert, the most accomplished historian of these magnificent mountains, there is nothing *living* to give him a "local habitation and a name." It will be a duty to me to remedy this neglect; and if I have not a sufficiently fine fir tree hitherto undescribed in the Bootan collection, I shall change the name of the very finest hitherto found, and dignify it by the name *Herbertiana*. The prevailing tree was the Smithian pine. We saw scarcely any villages, and but very little cultivation. *Jaisa* is a good sized village; it was comparatively clean, and the houses were, I think, better than most we had hitherto seen. We were lodged in a sort of castle, consisting of a large building, with a spacious flagged court yard, surrounded by rows of offices. The part we occupied fronted the entrance, and its superior pretensions were attested by its having an upper story.

There is a good deal of wheat cultivation around the village, which is not the only occupant of the valley: this is the highest we had yet seen, and is perhaps one of the highest inhabited vallies known, as it is 9410 feet above the sea; it is drained by a small stream, and is of less extent than either that of Byagur or Bhoomlungtung. The surrounding hills are covered with open fir woods, and are of no considerable height. Larks, magpies, and red-legged crows, continued plentiful, but on leaving this valley we lost them.

March 5th. We proceeded up the valley, keeping along the banks of the stream for sometime; we then commenced ascending a ridge, the top of which we reached about noon; its elevation was 10,930 feet. The descent from this was for about 2500 feet very steep and uninterrupted, until we reached a small torrent at an elevation of 8473 feet; from this we ascended slightly through thick woods of oak, &c. until we came on open grassy tracts, through which we now gradually descended at a great height above the stream, which we had left a short time before. We continued descending rather more rapidly until we came to a point almost immediately above Tongsa, by about 1000 feet; from this the descent was excessively steep. The distance was 13 miles. On the ascent snow was common from a height of 9000 feet upwards. The vegetation on this, or the eastern side, was in some places similar to that above Byagur. Beautiful fir woods formed the chief vegetation, until we came close to the summit, when it changed completely. Rhododendrons, *Bogh puttah*, and a species of birch, and bamboos, were common, mixed with a few black pines. The woods through which we descended, were in the higher elevations almost entirely of rhododendrons; and lower down chiefly of various species of oak and maple—the former being dry and very open, the latter humid and choked up with underwood. After coming on the open grassy country we did not revert to well wooded tracts.

No villages occurred, nor did we see any signs of cultivation after leaving the valley of Jaisa until we came near Tongsa, above which barley fields were not uncommon. Tongsa, although the second, or at any rate the third place in Bootan, is as miserable a place as any body would wish to see. It is wretchedly situated in a very narrow ravine, drained by a petty stream, on the tongue of land formed by its entrance into the large torrent Mateesum, which flows 1200 feet below where the castle stands. The village is 6250 feet in altitude: it consists of a few miserable houses, one of the worst of which was considerably lent to us. The castle is a large and rather imposing building, sufficiently straggling to be relieved from heaviness of appearance: it is so overlooked, and indeed almost overhung by some

of the nearest mountains, that it might be knocked down by rolling rocks upon it. It is defended by an outwork about 400 feet above.

The surrounding country is uninteresting, the vegetation consisting of a few low shrubs and some grasses : of the former the most common are a species of barberry, and a hitherto undescribed genus of *Hamelidæ*. No woods can be reached without ascending 12 or 1500 feet.

Barley was the chief cultivation we saw, but the crops alternated with rice, which is here cultivated, as high as 6800 feet. In the gardens attached to the cottages, or rather huts, we observed the almond and pear in full blossom: the only other trees were two or three weeping cypresses and willows, and a solitary poplar.

Our reception was by no means agreeable. I was roared to most insolently to dismount while descending to the castle; our followers were constantly annoyed by the great man's retainers; and, in fact, we got no peace until we had an interview with the Pillo on the 15th. Before the arrival of this personage, who had just succeeded to office, great efforts were made to bring about an interview with the ex-Pillo, and a stoppage of supplies was actually threatened in case of refusal. The firmness of Capt. Pemberton was however proof against all this.

It had been previously arranged that the former Pillo, the uncle of the present one, should be admitted at this interview on terms of equality; this kindness on the part of the nephew being prompted probably by the hopes of securing his uncle's presents afterwards. We were received with a good deal of state, but the apartment in which the meeting took place was by no means imposing, or even well ornamented. The attendants were very numerous, and mostly well-dressed, but the effect of this was lessened by the admission of an indiscriminate mob. We were not admitted however into the presence without undergoing the ordeals which many orientals impose on those who wish for access to them.

We were most struck with the difference in appearance between the old and new Pillos: the former was certainly the most aristocratic personage we saw in Bootan; the latter, a mean looking, bull-necked individual. A novel part of the ceremony consisted in the stirring up of a large can of tea, and the general recital of prayers over it, after which a ladleful was handed to the Pillos, who dipped their forefinger in it, and so tasted it.

The meeting passed off well; and afterwards several less ceremonious and more friendly meetings took place. We took leave on the 22nd. This interview was chiefly occupied in considering the list of presents, which the Pillo requested the British Government would do themselves the favour of sending him. He begged most

unconscionably, and I thought that the list would never come to an end; and he was obliging enough to say, that any thing he might think of subsequently would be announced in writing. He was very facetious, and evidently rejoiced at the idea of securing so many good things at such trifling expense as he had incurred in merely asking for them. Nothing could well exceed the discomfort we had to undergo during our tedious stay at this place. Our difficulties were increased subsequently to our arrival by the occurrence of unsettled weather, during which we had ample proofs that Bootan houses are not always water-proof; we were besides incessantly annoyed with a profusion of rats, bugs, and fleas; nor was there a single thing to counterbalance all these inconveniences, and we consequently left the place without the shadow of a feeling of regret.

On the 23rd of March we resumed our journey; and having traversed the court yard of the castle, we struck down at once to the river Mateesum by a very steep path. Having crossed this by a bridge, we gradually ascended, winding round the various ridges on the right flank of the ravine of this river. We left it when it turned to the southward, in which direction Bagoa-Dooar was visible, and continued ascending gradually until we reached Taseeling, seven miles from Tongsa, and 7230 feet above the sea.

Taseeling consists of a large house, principally used as a halting-place for *chiefs* going to and from Pুনukka and Tongsa. The surrounding mountains are rather bare, as indeed is the country between it and Tongsa. There is some cultivation to be seen around it, and several villages. As we approached Taseeling open oak and rhododendron woods recurred. The vegetation near the Mateesum was subtropical; the road was good, and in one place was built in zigzag up the face of a cliff.

March 24th. To Tchinjipjee. We commenced by ascending until we had surmounted a ridge about 800 feet above Taseeling; during the remainder of the march we traversed undulating ground at nearly the same altitude, at first through an open country, afterward through beautiful oak and magnolia woods, until we came on the torrent above which we had been ascending since leaving the Mateesum; a little farther on we came on the finest temple we had seen, and situated in a most romantic spot. It stood on a fine patch of sward, in a gorge of the ravine, the sides of which were covered with beautiful cedar-looking pines; the back ground was formed by lofty mountains covered with heavy snow.

Following the river upwards for about a mile and a half, we reached Tchinjipjee, which is situated on the right bank of the torrent.

The march was throughout beautiful, particularly through the forest, which abounded in picturesque glades. No villages or cultivation were seen.

Tchinjipjee is perhaps the prettiest place we saw in Bootan; our halting place stood on fine sward, well ornamented with (*Quercus seme carpifolia?*) very picturesque oaks, and two fine specimens of weeping cypress. The surrounding hills are low, either almost entirely bare or clothed with pines. The village is of ordinary size, and is the only one visible in any direction; its elevation is 786 feet. There is some cultivation about it, chiefly of barley, mixed with radishes.

March 27th. We continued following the river upwards, the path running generally at a small height above its bed. Having crossed it by a rude wooden bridge, we diverged up a tributary stream, until we reached a small village; we thence continued ascending over easy grassy slopes, here and there prettily wooded, until we reached the base of the chief ascent, which is not steep, but long, the path running along the margin of a rhododendron and juniper wood: the height of its summit is 10,873 feet. Thence to Rydang was an uninterrupted and steep descent, the path traversing very beautiful woods of rhododendrons, oaks, yews, &c. Snow was still seen lingering in sheltered places above 10,000 feet. The march throughout was beautiful. In the higher elevations the *Bogh Pat* was very common.

Besides the village mentioned, two temporary ones were seen near the base of the great ascent, built for the accommodation of the Yaks and their herdsmen: of this curious animal two herds were seen at some distance.

Rydang is prettily situated towards the bottom of a steep ravine: its elevation is 6963 feet. A few villages occur about it, with some barley and wheat cultivation.

March 28th. We descended directly to the river Gnee, which drains the ravine, and continued down it sometime, crossing it once; then diverging up a small nullah we commenced an ascent, which did not cease until we had reached an elevation of 8374 feet. Continuing for sometime at this elevation we traversed picturesque oak and rhododendron woods, with occasionally swardy spots; subsequently descending for a long time until we reached Santagong.

Oak and rhododendron woods continued common until we approached Santagong, in the direction of which the trees became stunted, and the country presented a barren aspect. Several villages were however seen in various directions, surrounded with cultivation.

Santagong is 6300 feet above the sea ; it is a small village, but the houses are better than ordinary. The surrounding country, especially to the north, is well cultivated, and the villages numerous. The country is bare of trees ; almost the only ones to be seen are some long leaved firs, a short distance below Santagong, close to a small jheel abounding in water fowl.

March 29th. From Santagong we proceeded to Phain, descending immediately to the stream, which runs nearly 1800 feet below our halting place. Crossing this, as well as a small tributary, we encountered a steep ascent of 1000 feet. Subsequently we wound along, gradually ascending at the same time, until we reached an inconsiderable ridge above Phain, to which place we descended slightly. The distance was six miles. The country was bare in the extreme, and after crossing the stream above mentioned, villages became rather scanty. Towards Phain the soil became of a deep red colour.

This place, which is 5280 feet above the sea, is a small village, containing six or seven tolerable houses. The country is most uninteresting and uninviting, scarce a tree is to be seen, the little vegetation that does exist consisting of low shrubs. A few villages are scattered about it, and there is some rice cultivation.

We were detained here until the 1st of April, in order that we might repose after our fatigues ; but in reality to enable the Pুনukka people to get ready our accommodations. Wandipore, a well known castle situated in the Chillong pass, is just visible from Phain, below which it appears to be some 1200 feet, and about three miles to the south west. Its Zoompoor, one of the leading men in Bootan, made some ineffectual attempts to take us to Pুনukka viâ his own castle ; various were the artifices he resorted to for this purpose, but he failed in all. Among others, he sent a messenger to inform us that the Deb and Dhürma were both there, and very anxious to meet us, and that after the meeting they would conduct us to Pুনukka.

April 1st. To Pুনukka. We descended rather gradually towards the Patchien, proceeding at first north-west, and then to the north. On reaching the stream, which is of considerable size, we followed it up, chiefly along its banks, until we arrived at the capital, no view of which is obtained until it is approached very closely. The valley of the Patchien was throughout the march very narrow ; there was a good deal of miserable wheat cultivation in it, and some villages, all of moderate size. The country continued extremely bare. The distance was about eleven miles. Pুনukka, the second capital in Bootan, the summer residence of a long line of unconquered monarchs—Pুনukka to which place we had been so long looking forward with feelings of de-

light, although the experience of Tongsa ought to have taught us better, disappointed all of us dreadfully. For in the first place I saw a miserable village, promising little comfort as respects accommodation, and one glance at the surrounding country satisfied me that little was to be done in any branch of natural history. For a narrow, unfruitful valley, hemmed in by barren hills, on which no arboreous vegetation was to be seen, except at considerable elevation, gave no great promise of botanical success.

On reaching the quarters which had been provided for us, and which were situated in front of the palace, we were much struck with the want of care and consideration that had been shewn, particularly after the very long notice the Bootas had received of our coming, and the pressing invitations sent to meet us.

These quarters had evidently been stables, and consisted of a square enclosure surrounded by low mud walls. Above the stalls small recesses, scarcely bigger than the boxes which are so erroneously called a man's "long home," had been made for our special lodgements; that of the huzoor, Captain Pemberton, was somewhat larger, but still very much confined. Having added to these a roof formed of single mats, an oppressive sun, and a profusion of every description of vermin, Capt. Pemberton determined on renting quarters in the village, and this, owing to his liberality, was soon accomplished; and from the two houses we occupied did we alone obtain comfort among the numerous annoyances we were doomed to experience during our lengthened stay.

The capital of Bootan is for pre-eminence, miserable. The city itself consists of some twelve or fifteen houses, half of which are on the left bank of the river, and two-thirds of which are completely ruinous, and the best of these '*Capital*' houses were far worse than those at Phain or Santagong, &c. Around the city, and within a distance of a quarter of a mile, three or four other villages occur, all bearing the stamp of poverty, and the marks of oppression.

The palace is situated on a flat tongue of land formed by the confluence of the Matchien and Patchien rivers. To the west it is quite close to the west boundary of the valley, the rivers alone intervening. It is a very large building, but too uniform and too heavy to be imposing: it is upwards of 200 yards in length, by perhaps 80 in breadth. Its regal nature is attested by the central tower, and the several coppered roofs of this.

The only cheering objects visible in this capital, are the glorious Himalayas to the north, and a Gylong village 12 or 1500 feet above the palace to the west; elsewhere all is dreary, desolate looking, and hot.

During the first few days of our stay, and indeed until our interview with the Deb, we were much annoyed by the intruding impertinence and blind obstinacy of his followers. They were continually causing disputes either with the sentries or our immediate followers, and it was only by repeated messages to the palace, stating the probable consequence of such a system of annoyance, that Captain Pemberton succeeded in obtaining any respite.

After many delays, we were admitted to the Deb's presence on the 9th. Leaving our ponies, we crossed the bridge built over the Patchien, which was lined with guards, and defended by some large, wretchedly constructed wall pieces. We then entered a paved yard, and thence ascended by some most inconvenient stairs to the palace, the entrance to which was guarded by a few household troops dressed in scarlet broad cloth. We then crossed the north quadrangle of the palace, which is surrounded with galleries and apartments, and was crowded with eager spectators, and ascending some still more inconvenient, or even dangerous stairs, reached a gallery, along which we proceeded to the Deb's receiving room, which is on the west face of the palace: at the door of this the usual delays took place, these people supposing that their importance is enhanced by the length of delay they can manage to make visitors submit to.

The Deb, who was an ordinary looking man, in good condition, received us graciously, and actually got up and received his Lordship's letter standing; the usual conversation then took place by means of interpreters, and the Deb having received his presents, and presented us with usual plantains, ghee, and some walnuts, dismissed us; and this was the first and last time I had the honour of seeing him, as I was indisposed at the time of our leaving. To return, the room was a good sized one, but rather low; it was supported by well ornamented pillars, hastily hung with scarfs and embroidered silk. The most amusing part of the ceremony was that exhibited by the accountant general's department, who were employed in counting and arranging courie shells—really emblematic of the riches of the kingdom—apparently with no other aim than to re-count, and re-arrange them, yet they were very busily engaged in writing the accounts. A day or two after, our interview with the Dhurma took place. He received us in an upper room of the quadrangular central tower: while we were in his presence we remained standing, in compliment to his religious character. The Dhurma Rajah is a boy of eight or ten years old, and good looking, particularly when the looks of his father, the Tungso Pillo, are taken into consideration. He sat in a small recess, lighted chiefly with lamps, and was prompted by a very venerable looking,

grey-headed priest. He had fewer attendants, and his room was less richly ornamented than that of the Deb. Around the room sat priests busily employed in muttering charmed sentences from handsome gilt lettered black books, which reminded me of those used in some parts of Burmah.

Very few of our attendants saw either of the Rajahs, and it was expected that no one would presume to enter the Dhurma's presence empty handed. To some of the sipahis, who were anxious to see him, his confidential advisers said, "Give forty rupees, come into the quadrangle under the Dhurma's window, and then you may see him, or you may not see him; I will not be answerable for any thing, but receiving the forty rupees."

During our protracted stay at this place, nothing particularly worthy of notice occurred. Intrigues seemed to be constantly going on, and the trial of temper on the part of Captain Pemberton must have been very great; it was however soon evident that no business could be transacted with a Bootea Government without being enabled first to enforce abundance of fear, and consequently any amount of agreement from them; messages to and fro passed continually, the bearer being a very great rascal, in the shape of the Deb's Bengal Moharrer. Thus he would come and appoint the next day for a meeting; then he would return and say, that such a place was better than such a place; as evening drew near he would come and say, unless you agree to such and such, there will be no meeting; and after bearing a message that no change in this respect would be made, he would make his appearance and say, all the minsters were sick, and so could not meet.

My only amusement out of doors was a morning walk up or down the valley. I was prompted to this chiefly by the pangs of hunger, as the Bootea supplies were very short, indeed wild pigeons afforded me at least some relief. During the day I examined such objects as my collectors brought in, for it was too hot to think of being out after 9 A. M. I also had a few Bootea patients, most of whom were labouring under aggravated forms of venereal.

The climate of Punukka has but little to recommend it, and in fact nothing, if viewed in comparison with the other places we had seen in Bootan. The greatest annoyance existed in the powerful winds blowing constantly throughout the day up the valley, and which were often loaded with clouds of dust. The mean temperature of April may be considered as 71°.

The maximum heat observed was 83°, the minimum 64°. The mean temperature of the first week of May was 75° 3'; the maximum

80°, and the minimum 70°. The cultivation in the valley, the soil of which seems very poor, containing a large proportion of mica, was during our stay limited to wheat and buck-wheat, but scarcely any of the former seemed likely to come to ear. Ground was preparing for the reception of rice, which is sown and planted in the usual manner. Crops just sown are immediately eaten up by the swarms of sacred pigeons that reside in the palace, so that husbandry is by no means profitable; more especially as there are other means of providing for the crops, such as they may be. Thus we saw several small fields, amounting perhaps to an acre in extent, cut down to provide fodder for some ponies that had lately shared in a religious excursion to Wandipore.

Cattle are not frequent. There were some pigs. The fowls were of the most miserable description, and very scarce. In spite of offers of purchase and plenty of promises, we were throughout allowed three a day, and they were rather smaller than pigeons. Towards the latter end of our stay, rice became bad and scarce.

We saw nothing indicating any degree of trade worth mentioning. Parties changing their residence frequently passed through from the north-east, generally accompanied by ponies, whose most common burdens appeared to be salt. No direct intercourse appears to exist with Thibet, as even the tea, which they consume in large quantities, is said to come from Paro Pillo's.

There are a great number of Assamese slaves about Pুনukka; indeed all the agricultural work, as well as that of beasts of burden, appears to devolve upon these unfortunate creatures, who are miserably provided for, and perhaps dirtier than a genuine Bootea himself. During my morning walks I was almost daily entreated for protection. In one case only, and in this by the merest accident, was Captain Pemberton enabled to get such evidence as authorised him to claim it as entitled to British protection. Connected with this case is an act of black treachery, to which I shall hereafter refer.

We stopt so long here, and we had daily so many instances proving that no confidence could be placed on any thing coming from the palace, that I began at last to despair of getting away. The old Deb was very anxious to see us, and the new Deb still more anxious that we should accompany him when he left Pুনukka, in the hope that the presence of the Mission would be advantageous to him.

It was entirely owing to the firmness of Captain Pemberton that we were enabled to avoid such a disagreeable meeting; and the Deb, feeling at last convinced that his views could not be carried into effect, gave orders for getting rid of us as speedily as possible; and on

the 9th May at noon we left Punukka, the most uninviting place I have ever seen in a hilly country. On the morning of the same day there was a demonstration in the palace of great boldness; the roof of the northern side was covered with troops, who shouted, fired, and waved banners.

We crossed both bridges of the palace without any interruption or annoyance, at which I was most agreeably surprised; and then gradually ascended the right flank of the valley, following the course of the united rivers, Patchien and Matchien. We proceeded in this direction for sometime, until we came on a ravine affording an outlet to a tributary of the Panukka river, which we then followed, gradually descending through fir woods until we reached the torrent. Crossing this, which is a small one, we commenced the ascent to Telajong, which we soon reached. We were lodged in the castle, which is in the hands of the old Deb's followers, and who threatened to fight very hard. Its elevation is about 5600 feet, and it is situated towards the base of very steep mountains, which we crossed next day. It is somewhat ruinous, but might even in Bootea hands make a stout defence against a Bootea force.

The march was a moderate one; up to the ravine the country had the same barren aspect, but on changing our direction we came on fir woods. About Telajong the country is well wooded, chiefly with oaks, and the vegetation is considerably varied. Near the torrent we met with a village or two, and a little cultivation, chiefly of buck wheat.

April 10th. We descended to a small nullah just below the castle, and then commenced an ascent which lasted for three or four hours, and which was generally moderately steep. On surmounting the ridge, which was of an elevation of about 10,000 feet, we commenced a long, and uninterrupted descent along the course of a small torrent (the path being well diversified with wood and glade) until we reached Woollokha, distant fourteen and half miles from Telajong.

About 1200 feet above this we came on rather fine wheat cultivation, among which two or three villages were situated. Above this elevation we came on fine woods of oaks and yews, diversified with swardy spots; and on reaching the summit of the ridge an open sward with beautiful rhododendron, birch, and juniper woods. Herbaceous monocotyledons abounded here, in fact the vegetation altogether was very rich, and the first spring vegetation we had yet met with. Gooseberries and Currants were common from 9000 feet upwards: Euphorbus, Primroses, Saxifragis, Clematisses, Anemones, Ranunculuses, &c., were some among the many European forms that I met

with on this march. Near the summit, on the descent, a genuine larch was observed, and lower down two species of poplar were very common. The scenery was generally very beautiful. We passed a delightfully situated Gylong village not much below the summit, and near Woollookha saw Symtoka, a rather large square building belonging to the Deb Rajah, situated two or three hundred feet above our road.

Woollookha is a good sized village, and the houses are very good : it is close to the river Teemboo, which drains Tassisudon valley, a few miles distant to the north. There are several villages around it, and a good deal of cultivation of alternating crops of barley, wheat, and rice. The valley, if indeed it can be called so, for it is very narrow, is picturesque enough, although the surrounding hills are not well wooded. The banks of the river, which here flows gently enough, are well ornamented with weeping willows.

11th. We continued our route following the river, the path generally laying down its bed, or close to it, occasionally ascending two or three hundred feet above it. Halted at Lomnoo, an easy march. The features of the country remained the same until we neared our halting place, when woods of *Pinus excelsa* became very common ; roses occurred in profusion, and the vegetation generally consisted of shrubs ; villages were tolerably frequent, and the cuckoo* was again heard.

12th. To Chupcha. Continued for some time through a precisely similar country, still following the river, but generally at some height above its bed. After passing Panga, a small village at which our conductors wished us to halt, although it was only six miles from Somnoo, we descended gradually to the river Teemboo, and continued along it for some time, during which we passed the remains of a suspension bridge. Leaving the rivers soon afterwards, we encountered such a long ascent that we did not reach Chupcha till rather late in the evening, most of the coolies remaining behind. Having surmounted the ridge immediately above Chupcha, and which is about 8600 feet in altitude, we descended very rapidly to the village, which is about 600 feet lower down the face of the mountain. The road was for the most part tolerably good ; in one place it was built up along the face of a cliff overhanging the Teemboo. The scenery was throughout pretty, but especially before coming on the ascent : some of the views along the river were very picturesque.

* * The first time I heard this bird was about Punukka. Although in plumage it differs a good deal from the bird so well known in Europe, yet its voice is precisely similar.

After leaving Panga no villages were passed, and one small one only was seen on the opposite bank of the Teemboo ; but up to the above mentioned place the country continued tolerably populous. The vegetation, until the ascent was commenced, was a good deal like that about Somnoo, *Pinus excelsa* forming the predominant feature. From the base of the ascent it became completely changed—oaks forming the woods, and from 7500 feet upwards, various rhododendrons occurring in profusion, mixed with wild currants, &c. We were detained at Chupcha for two days, at the end of which the last coolies had scarcely arrived : it is ten miles from Somnoo, and sixteen miles from Panga, and about 8100 feet in elevation, The greatest ascent, and this too after a march of twelve miles, must have been between 2500 and 3000 feet. We were lodged comfortably in the castle, although it was not white-washed, nor had it the insignia of a belt of red ochre. It is a short distance from the village, which again is two or three hundred yards to the west of the direct road. We thought Chupcha a delightful place : the scenery is varied, the temperature delightful, varying in doors from 46° to 52°

The face of the mountain although very steep, is about the castle well cultivated : the crops which were of six ranked barley, were very luxuriant, and certainly the finest we ever saw in the country. The red-legged crow recurred here. During our stay, I ascended the ridge immediately above the castle, passing through a very large village of Gylongs, elevated at least 9000 feet. This village was the largest I saw in Bootan, and was ornamented with a pretty religious building, surrounded by junipers, and more decorated than such edifices usually are. Up to the village the path passed through beautiful woods of *Pinus excelsa* : above it I came on open sward, which continued on the south face up to the very summit of the ridge, which was nearly 11,000 feet. The north face of the mountain was well wooded : on it rhododendrons, a few black pines, beautiful clumps of *Pinus Smithiana*, Bogh Pat, Mountain Pears, Aconites, Columbines, Saxifrages, Primroses, &c. were found in abundance. The southern face was decorated with a pretty yellow Anemone, and the pink spikes of a Bistort. From the ridge still loftier ones were visible in every direction, all of which were covered with snow, which lightly sprinkled the one on which I stood. At this season snow scarcely remains for a day under 11,000 feet, except in very sheltered situations.

15th. I left Chupcha with much regret. We descended by a precipitous path to a torrent about 1800 feet below the castle. Crossing this, we descended gradually until we came on the ravine of the

Teemboo ; at which point there is a small pagoda, visible from Chupcha. We then turned southwards, and continued for a long time at nearly the same level, passing a small village, Punugga, three or four hundred feet below us, and in which Capt. Turner had halted on his ascent. The descent to Chuka was long and gradual, becoming tolerably steep as we approached it. We reached the Teemboo by a miserable road, about half a mile from Chuka castle, which occupies a small eminence in what has once been the bed of the river.

The march was seventeen miles. The road in many places was very bad, and scarcely passable for loaded ponies. The scenery was frequently delightful, and vegetation was in the height of spring luxuriance. The hills bounding the ravine of Teemboo continued very high until we reached Chuka ; they were well diversified, particularly at some height above us, with sward and glade, and richly ornamented with fine oaks, rhododendrons, ædar-like pines, and *Pinus excelsa*. Water was most abundant throughout the march, and in such places the vegetation was indescribably rich and luxuriant.

No village besides that of Punugga was passed or seen, nor did I observe any cultivation. I was much impeded by droves of cattle passing into the interior, for the road was frequently so narrow, and the mountains on which it was formed so steep, that I was obliged to wait quietly until all had passed. These cattle were of a different breed from those hitherto seen in Bootan, approaching in appearance the common cattle of the plains, than which however they were much finer and larger.

We were sufficiently well accommodated in the castle of Chuka, which is as bare of ornament as its neighbour of Chupcha ; it is a place of some strength against forces unprovided with artillery, and commands the pass into the interior very completely. There is a miserable village near it, and several trees of the *Ficus elastica*.

16th. To Murichom. We descended to the Teemboo, which runs some fifty feet below the castle, and crossed it by a suspension bridge, of which a figure has been given by Capt. Turner ; it is very inferior in size and construction to that of Rassgong, although, unlike that, it is flat at the bottom. We continued following the Teemboo winding gradually up its right bank, chiefly through rather heavy jungle, and descending subsequently about 600 feet to its bed by a dreadfully dangerous path, built up the face of a huge cliff. We continued along it until we crossed a small torrent at its junction with the large river, and then ascended gradually, following the ravine of this through humid jungle. As we approached Murichom we left the Teemboo a little to our left, and continued through a heavily

wooded country. Before ascending finally to Murichom, we descended twice to cross torrents. We reached Murichom late in the evening, the distance being eighteen miles.

No villages were seen until we came in sight of Murichom. The mountains were much decreased in height, and clothed with dense black jungle. We passed two water-falls, both on the left bank of the Teemboo, the one most to the south being the *Minza peeya* of Turner. Neither of them appeared particularly worthy of notice. The vegetation had almost completely changed, it partook largely of the sub-tropical characters, scarcely a single European form being met with. The road was absolutely villainous,* it was very narrow, frequently reduced to a mere ledge, and painful owing to the sharp projections of the limestone, the prevailing rock of this part of the country. Murichom is a small village, rather more than 4000 feet above the sea; the houses, which are about eight or ten in number, are thatched: it is prettily situated: there is a little cultivation of wheat and maize about it. Although at so considerable an elevation, most of the plants were similar to those of Assam.

17th. Leaving Murichom we descended rapidly to a small torrent, from which we re-ascended until we had regained the level of Murichom. The path then wound along through heavily wooded country at an elevation of 4000 or 4200 feet: we continued thus throughout the day. At 5 P. M. finding that the coolies were commencing to stop behind, and failing in getting any information of my companions, I returned about $1\frac{1}{2}$ mile to the small village of Gygoogoo, which is about 300 feet below the path, and not visible from it. It is a miserable village of three or four bamboo huts. We had previously passed another and much better village, but as this was only six miles from Murichom, Capt. Pemberton determined to push on.

18th. I proceeded to Buxa. The path was somewhat improved, and the ascent gradual until an elevation of about 5500 feet was surmounted, from which the descent to Buxa is steep and uninterrupted. This place is seen from a ridge about 1200 feet above it. I reached it between 9 and 10 A. M., and found that my companions had arrived late on the preceding evening, having accomplished a march of twenty miles in one day. Scarcely any coolies had arrived, however, before me. The features of the country remained the same, the whole face being covered with dense black looking forest. Even on

* Such is the nature of the path from Chuka to the plains, although it is the great thoroughfare between both capitals and Rungpore, that either the trade of Bootan with that place must be much exaggerated, or some other road must exist between these two points.

the ridge, which must have been between 5000 and 5500 feet in elevation, scarcely any change took place. As I descended to Buxa vegetation became more and more tropical, and on reaching it found myself surrounded with plants common in many parts of the plains of Assam.*

Buxa is rather a pretty place, about 2000 feet above the sea. The only decent house in it is that of the Soobah, who is of inferior rank. The huts are of the ordinary description, and do not exceed twelve in number. The Soobah's house, with some of those of Bengal officers, occupy a low rising ground in the centre of the pass, which is divided from the hills on either side by a small torrent. A view of the plains is obtainable from this place.

Captain Pemberton left Buxa a day before me, as I was detained behind for coolies, none of whom had yet arrived. On the following day I rejoined him at Chicha-cotta. The descent to the plains is steep at first, and commences about a quarter of a mile from Buxa. On reaching the steep portion a halting place, called Minagoung, is passed, at which place, all bullocks, which are here used as beasts of burden, are relieved if bound to Buxa, or provided with burdens, if bound for the plains. The descent from this place is very gradual, and scarcely appreciable; the path was good, and bore appearances of being tolerably well frequented; it passed through a rather open forest, low grasses forming the under-plants. The plains were not reached for several miles, indeed the descent was so gradual, that the boundaries of the hills and those of the plains were but ill defined. At last however the usual Assam features of vast expanses of grassy vegetation, interrupted here and there with strips of jungle, presented themselves. The country is very low, entirely inundated during the rains, and almost uninhabited. Saul occurred toward that which may be considered the Toorai of these parts, but the trees were of no size.

Chicha-cotta is eighteen miles from Buxa, and is situated on a grassy plain; it is small and miserably stockaded, nor is there any appearance about the place indicative of comfort or security. To Koolta. We continued through nearly a desolate country, overrun with coarse grasses, until we came on the river, which is of considerable width, but fordable; we now found ourselves in the Cooch-Bihar territory, and were much struck with the contrast between its richly cultivated state, and the absolute desolation of that belonging to Bootan. We continued traversing a highly fertile country, teeming with population,

* Plantains, jacks, mangoes, figs, oranges, &c., are found about the huts of Buxa.



Scale 32 Miles to an inch

until we reached those uncultivated portions of Assam, that are so frequent in the immediate vicinity of the Brahmaputra.

Our marches to Rangamutty were as follow :—

From Koolta to Bullumpore.

From Bullumpore to Kuldhooba.

From Kuldhooba to Burrumdungur.

From Burrumdungur to Rangamutty.

At Rangamutty, where we received every civility from the Bhoorawur, we took boat and arrived at Goalpara on the

Beyond this it is scarcely necessary to trace our progress. I have only to add, that but one death occurred during the time the Mission was absent.

(To be continued.)

ART. VI.—*Report on the Museum of the Asiatic Society.*

By Dr. WM. JAMESON.

[The subjoined very important Report on the state of our Museum, forms a part of the Proceedings of April, but we deem it well deserving of the earliest publicity. During the few weeks Dr. Jameson held the office of Curator, his exertions have accomplished more than could be readily believed, in reducing the chaotic materials of the Museum into systematic arrangement and disposition. His suggestions will doubtless receive the attentive consideration they are so strongly entitled to, and we trust before long that our Museum will be guaranteed from such reproaches as Mr. Jameson now too justly inflicts on it. His accomplished successor, Dr. M'Clelland, has all the skill and zeal essential for success, but the means at his disposal are manifestly too limited to enable him to execute all the measures his judgment would dictate. We anxiously hope that the naturalists of the Society will be excited by Dr. Jameson's Report to consider of the best and readiest means for the establishment of a Museum befitting the first Scientific Institution in the East. As our funds have been heavily drawn on this season for the erection of a new suite of apartments, to accommodate our growing collections, we think it would be worthy of those who feel the importance of such ennobling pursuits, to come forward with the means for furnishing our Museum with every essential appurtenance of the best and most

durable kind. We shall be happy to act as Trustees for a 'Museum Fund,' should our suggestions meet the approbation of those who understand and appreciate the object in view.—Eds.]

In reporting upon the present state of the collection of the Asiatic Society, we have felt much disinclination, fearing lest by so doing we might be considered as attacking the proceedings of our predecessors; we however consider it our duty, from the place we now hold, and the more so as we leave this in a few days for the Upper Provinces, trusting that when the statement has been laid before the Society, active measures will be taken to improve its condition.

We shall first notice the *Minerals* and *Rocks*. In these two departments the collection is exceedingly rich as far as numbers are concerned. Of the former there are upwards of two thousand specimens, and of the latter probably upwards of four thousand; but the miserable condition in which they have been kept—packed in drawers one above another, without paper, or any other material intervening—has rendered many of them entirely useless and unfit to be placed in the collection. In particular we would mention the *Zeolites*, many of which originally must have been magnificent. The *Apophyllites* (a species of zeolite) are very fine, and still valuable specimens, and had they not been so much destroyed, the Society might have claimed the merit of possessing, of this particular variety, the finest specimen, probably, in the world. Most of the other specimens have been equally neglected, and many of value destroyed. In regard to labels, there were but few attached, and of these many wrong. The *Rocks*, of which there is a most magnificent and extensive collection, would have been doubly valuable if they had been furnished with labels, indicating the locality from whence they had been obtained; at present after a collection containing every variety has been laid aside for the Society's own Museum, the others, when named, will form valuable duplicates for exchanging. To this department of the Society's Museum no attention whatever has been paid, although probably the most important. Lying beneath one of the tables in the Museum there was a large collection, said to be sent by Dr. Helfer, but as not one of the specimens was labelled, that is intimating where found, we have not been able to make use of them. In fact such a collection is quite useless to a Society; and even if some important mineral should be found in it, the value of the discovery could not be followed up. It would be of importance to intimate this to individuals engaged in making such collections.

Mammalia.—The collection of quadrupeds consists of about seventy specimens, many of which are exceedingly good, and a few very rare, among which we would characterise the *Hylobates albinus*, *Hylobates hoolock*, *Ailurus refugens*, *Ictides albifrons*; but in this department the collection of the Society is very deficient, not containing above a fifth of the quadrupeds found in India. Moreover many specimens, from their bad condition, would require to be replaced as soon as possible.

Birds.—The number of birds prepared amount to upwards of six hundred specimens, and in addition to these there is a considerable collection in boxes, many specimens of which are not as yet in the Museum. Among the birds, there are some exceedingly rare and valuable specimens, and several new to science, which we shall now notice briefly. 1. *Larus kroicocephalus*. The discovery of this species is probably one of the most interesting which has been made in ornithology for some time. In size it is equal to the *Larus marinus* of Europe, and possesses in the head and neck colours

one of the principal characters essential to the genus *Kroicocephalus* of Eton, in every other character it is a true *Larus*; and as the colour of the head and neck disappear in winter, we have therefore this species representing in summer the genus *Kroicocephalus*, and in winter *Larus*; shewing the necessity of abandoning the former genus. The specimen in the Society's collection is partly in a state of change from the summer to the winter. In the Edinburgh Royal Museum there is another specimen in perfect summer plumage: these probably are the only two specimens known. The name we have adopted is one which we proposed to the Wernerian Society, being the generic one of Eton reduced to trivial value. Belonging to that interesting genus the *Leiothrix*, Swains. of which there is but one species described, there are two new species in the collection of the Society, in the Edinburgh Museum there is a third, and in the Zoological Society's Museum of London a fourth, all of which are peculiar to India, and thus the number of species is now increased to five, shewing the necessity and importance of making new genera, if the characters presented are sufficiently marked, although at first only one species should be presented. We could enumerate a large series of genera which were represented a few years ago by one species only, but which now contain from three to twelve species. In a bird lately laid before the Society by Dr. Evans, and considered by him as a variety of the *Aquila Chryractus*, the Society has a new species belonging to the genera *Haliaëtus*; the only other specimen we have seen is in the collection of the Zoological Society of London. We cannot omit mentioning the *Eurylaimus Dalhousiæ* as exceedingly rare and valuable species, three specimens only being known to exist in collections. Many other novelties, some of them extremely interesting in illustrating ornithological geography could be pointed out, which however would extend our report to an undue length; we however may state that Dr. Helfer has sent lately to the Society a new *Chalcites*, and *Irena puella*, and *Calyptomina viridis*, both of which were supposed to be confined to the Asiatic Islands.

Osteology.—The Osteological Department of the Society's collection is small, but still there are several splendid skeletons. The magnificence of the Fossil Osteological collection cannot be too strongly pointed out; but it is much and deeply to be regretted that there is no proper accommodation for it; which we hope will soon be remedied by proper cases being provided, and placed in the new apartments now building, in order that the many unique and valuable specimens may be properly exposed to view.

In regard to the *Ichthyological*, *Erpetological*, *Conchological*, &c. departments of the Society we have not had any leisure to examine, and therefore forbear at present giving any report. But as there is much room for improvement in the departments we have already noticed, we beg to offer a few suggestions.

Minerals and Rocks.—Before the collections of Minerals and Rocks can be generally useful, there must be proper means for exhibitions, and we hope soon to see cases fitted up on the plan we proposed, or any other which may be suggested, furnished to the rooms. The advantages in having collections of Rocks and Minerals arranged and labelled properly, would no doubt be of the greatest consequence, seeing that it would form the basis for comparison of any collections which may hereafter reach the Museum; and also be of use to individuals for comparing their own private collections. As far as it lay in our power, during the short space of time we have had, we have arranged the Minerals in the tables formerly occupied by eggs, birds' heads, &c. only temporary however, expecting that more suitable cases will be provided. The Rocks are still lying

exposed for want of accommodation, but a few of them so arranged that when cases are provided, they can be removed by any individual.* The system we have followed is that of Werner, as improved by modern authors. If any member would now visit and see the extent of their Mineralogical collection, I am sure they would be convinced of the necessity of having proper cases.

The Bird cases since last Meeting have been fitted up with shelving, which has enabled us to arrange systematically the collection, and the system we have adopted is that of the Baron Cuvier. Moreover, in addition to the advantage derived in having a systematic arrangement, the cases will now contain three times as many specimens as they did formerly. To us it appears a most extraordinary idea, to suppose that objects of Natural History cannot be properly preserved in this country. No doubt in cases fitted up in the same manner as those of the Society at the present moment, they could not, either here or any where else; but if these cases were made air-tight, by lining the edges of the doors with chamois leather poisoned with arsenic, according to the plan adopted with the cases of many of the European collections, we would be bound to say, that the collections could be preserved nearly as well here as in Europe. At least this is a subject well worthy the attention of the Society.

In conclusion, we shall offer a few brief remarks in regard to the desiderata. To increase their collections, public bodies have generally adopted one plan, viz.—a memorial giving a brief account of the manner how to prepare, collect, and pack objects of Natural History, and at the same time pointing out those objects most to be desired. If such a memorial was got up under the auspices of this Society, and distributed among its numerous members and correspondents throughout India, the Society would not only possess for itself a collection in a very short time, but at the same time would have at its disposal, for making exchanges, a large series of duplicates; and in the space of a few years by so doing with the different collections in Europe, America, Cape, and Sydney, it would thus bring together, with little expense to itself, a collection which would vie with the various noble institutions on the European continent, and at the same time worthy of this the so-called City of Palaces. Before this can be done, a Catalogue of the collection must be made. Moreover the Society could in a series of tables exhibit by specimens, that is by bringing together the rocks of the different districts bordering on each other, the Geology of the whole of India, and thus in a manner supply that great desideratum, at least to individuals here, viz. the want of a Geological Map, and probably it might be the means of leading to this desirable object; an undertaking worthy of support from such an institution, and from the country at large.

W. J.

* Dr. McClelland informs us they have been once more swept into chaos by the unguarded hands of *assistants* since Mr. Jameson's departure. Nothing can more clearly prove the futility of attempting to do any thing in this department before proper cabinets are procured.—EDS.

ART. VII.—*Proceedings of the Asiatic Society.*

Wednesday Evening, 6th March, 1839.

At a Meeting held at the Grand Jury Room of the Supreme Court.

The Honorable Sir E. RYAN, President, in the chair.

The Proceedings of the last Meeting were read and confirmed.

The Honorable Sir H. SETON, the Rev. JOHN HENRY PRATT, Dr. WILLIAM JAMESON, Mr. E. THOMAS, Mr. J. W. LAIDLAY, and Mr. A. C. DUNLOP, proposed at the last Meeting, were ballotted for, and duly elected Members of the Society.

Read a letter from Mr. CHARLES RITTER, acknowledging his election as an honorary Member.

The Officiating Secretary apprized the Meeting of the departure of their Curator, Dr. GEORGE EVANS, to Europe; and after some discussion it was resolved that Dr. WILLIAM JAMESON be appointed to the office, on the same allowances as those drawn by his predecessor.

Library.

Read a letter from H. T. PRINSEP, Esq. forwarding for inspection Dr. ROBERT WIGHT'S Illustrations of Indian Botany:

The following books were presented:—

Bulletin de la Societ  de Geographie, vol. 9th—*by the Society.*

On the Ovulum of Santalum, by WILLIAM GRIFFITHS, Esq.—*by the Author.*

Die Stupa's (Topes) and die Colosse Von Bamiyan, by CARL RITTER—*by the Author.*

Journal of the Royal Asiatic Society, No. 9—*by the Society.*

Proceedings of the Bombay Geographical Society for August, 1838—*by the Society.*

Ditto of the American Philosophical Society, Nos. 1, 2, and 3, from January to August 1838—*by the Society.*

5 Copies Alif Leila, vol. 1st in Arabic—*subscribed for by the Society.*

Lardner's Cyclopædia—Literary and Scientific Men, vol. 9th—*from the Booksellers.*

Read an application from PREMCHAUND Pundit, Editor of the "Nyeshadha," regarding the 2nd part of the work in Manuscript, and offering to making over the same to the Society, on condition of his being remunerated for his trouble in compilation.

Resolved that the application be referred to the Committee of Papers.

Museum.

A Gumsoor Battle Axe was presented by Mr. J. G. BALMAIN.

Statistics.

Read a letter from H. H. SPRY, Esq., Secretary to the Statistical Sub-Committee, intimating that in consequence of the Society's declining to publish the Documents compiled by them, they will no longer prosecute their researches.

The Annual Report for 1838, which had been presented on the 1st of January, was then read, and adopted by the Meeting.

Secretaries' Annual Report.

The indisposition and absence of the Rev. Mr. MALAN since his appointment, and the short period during which we have held the office of Officiating-Secretaries, will we trust constitute a sufficient apology for the incompleteness of the present anniversary notice.

We have endeavoured by a diligent perusal of the proceedings of the year just elapsed to become familiar with the state and prospects of the Society, and we have also

sought more detailed information from the gentlemen severally responsible for the Library, Finance, and Museum departments.

On the general statistics of the Society we have to state that the accession of Members to the Society during the year 1838 was as follows:—

Ordinary Members,	....	25
Honorary Members,	....	1
Associate Members,	....	1

The loss of Members by deaths, departures to Europe, and withdrawals, has been—by departure to Europe, MESSRS. W. ADAM, A COLVIN, H. WALTERS, COL. BURNEY, and Mr. JAMES PRINSEP. By withdrawals, MESSRS. W. BRUCE and W. DENT.

By deaths in India, MESSRS. A. E. DOBBS and JOHN BELL, and in France Monsieur A JACQUET, an honorary Member, and one of the most distinguished Orientalists of the day.

We designedly forbear on this occasion from the attempt at any minute obituary notice of the Members whose deaths we so deeply lament. The decease of M. JACQUET was only announced at our last meeting. His friend and fellow labourer, EUGENE BURNOUF, in the letter which conveys this melancholy news, gives a touching narrative of the circumstances of M. JACQUET'S malady and death. A victim to consumption, induced by his unremitting studies, he died at the age of 28, in the delusive confidence of revealing by his future labours much of what is still mysterious in the history and chronology of the Hindoo nations. A quarter of an hour before death he was still ardently pursuing his studies. In the homage paid to his memory in France, the Asiatic Society of Bengal most unanimously and profoundly concur.

Publications.

We have to state that during the past year the 4th and last volume of the "*Mahabharata*" has been the only work printed in the Oriental department. The volume will be immediately published, and will cost the Society between 4 and 5,000 Rupees. The liberality of Government has most opportunely enabled the Society to meet from its own resources this heavy outlay, which otherwise would have fallen on our respected Secretary, Mr. PRINSEP. The sale of the work in France has unfortunately proved far short of M. BURNOUF'S sanguine predictions.

The publication of the "*Sharira Vidaya*," or translation of "Hooper's Anatomist's Vade Mecum," has been sanctioned by the Society in conjunction with Mr. MUIR, who has generously subscribed 1,000 Rupees for this special object. There is yet however much difficulty in this undertaking. The professional members of the Society consider the work wholly useless without plates, and the lowest estimate yet obtained places the cost of such illustrations at $6 \times 250 = 1,500$ Rupees. A reference to Europe was evidently expedient to procure cheaper and better cuts than are obtainable in India, and for the result of such reference the work is now postponed.

The publication of the "*Sharya-ul-Islam*" by the Newab TAHAWUR JUNG, has unfortunately been much retarded. The delay is attributable to the conjoint inactivity of the Printer and of the Moulavee employed to correct the proofs. Means are being taken however to accelerate the completion of the work. An advance of 800 Rupees has this month been made to the Printer, in pursuance of a resolution of the Committee of Papers and Finance.

The Transactions of the Society will soon be augmented by the publication of the 2nd Parts of the 19th and 20th Volumes. We may be pardoned for anticipating that the literary reputation of the Society will be well sustained in their pages. If the Society has been reproached with neglecting the Natural History of Asia, the part of the

Physical Researches now in the press, will, we are confident, more than remove that stigma. The bulk of the Physical Part will consist of Dr. M'CLELLAND'S elaborate paper on "Indian *Cyprinidæ*."

In connexion with the subject of publications, we should not omit to notice two works by Members of the Society, to which Government has contributed either by subscription or by still more direct support. The first is the version by Mr. TORRENS of the ever-charming "*Alif Leila*." The second is the remarkable and valuable Cochīn-Chinese Dictionary, by the Right Rev. the Bishop of Isauropolis, now Roman Catholic Bishop of the Diocese of Bengal.

Antiquities.

In antiquarian enterprise, research, and discovery, the past year has been most prolific. Among the events of interest we notice in our records, we may particularize the liberal grant by Government for the erection of the Allahabad pillar—the receipt from the Rev. Mr. WILSON of fac-similes of the Girnar inscriptions—Mr. PRINSEP'S most important discovery of the name of ANTIOCHUS in two of the edicts of ASHOKA—Mr. PRINSEP'S translation of the religious edicts of ASHOKA, discovered in Gujerat and in Cuttack—and the discovery that the inscription of Junegurh related the circumstance of the repair of a bridge in the time of CHUNDRĀ GUPTA, by ASHOKA, his grandson.

To these let us add, the interesting fruits of Mr. KITTOE'S Researches in Cuttack—the active and successful measures adopted by Government to procure fac-similes of the Junegurh and Girmaghur inscriptions—the verification by Lieut. POSTANS of Mr. PRINSEP'S views as to the reading of the name of ANTIGONUS next to that of PTOLEMY in the 14th edict, in the Girnar inscriptions—the measures taken by Government to prevent the demolition of the Kanarah Temple—and, lastly, Professor LASSEN'S simultaneous proposition of an alphabet for the Pali and Bactrian languages, nearly identical with that described by Mr. PRINSEP in the July number of the Journal. On even this disjointed and hasty glance, we may well be proud of the progress the Society has accomplished in the fulfilment of one of the chief objects of its institution. It will, we doubt not, be universally admitted that the Asiatic Society during the past year has justified its high name, and retained its natural position, as the most energetic and successful agent of antiquarian discovery in the East.

Statistics.

Owing to the lamented deaths of Sir B. MALKIN and Mr. BELL, the retirement of Messrs. WALTERS and ADAM, and the withdrawal of Messrs. BIGNEL, CURNIN, and M'CLINTOCK, the Committee was at the end of the year 1838 reduced to four Members, Messrs. EWART, SPRY, BAILLIE, and STEWART. Mr. W. P. GRANT has since been elected a Member.

It is understood that Dr. STEWART has been for some time engaged in tabulating translations of the Records of Native Mortality in Calcutta, with the view to illustrate the localities of disease in this city, and the effects of climate on the health of its inhabitants. Dr. SPRY has prepared a series of tables illustrating the state of education among different classes of Society in Bengal. Mr. EWART has ready for press some very valuable original tables connected with the currency and trade of Calcutta. The only paper which has yet appeared in common with the labors of this Committee, is the very important document by Mr. H. T. PRINSEP, on the decrement of juvenile European life in Bengal. This valuable contribution to vital statistics has already appeared in the Society's Journal.

The Statistical Committee have met with the most willing and efficient support from the Government, and from the Parent Society. Access has been granted to all official records connected with the subjects of finance, commerce, education, and judicial administration. The Society has already contributed 500 Rs. to defray any expenses incurred by the Committee. High expectations are consequently entertained as to the harvest to be reaped from so fertile a field, by such active labourers, and under such warm and constant encouragement. The form best suited for the publication of the documents already prepared has excited considerable discussion, and still awaits a final decision.

Library.

The Librarian has been kind enough to comply with our request for a detailed report of the accessions to our collection during the last year, and he has classified the entire under the heads of languages and subjects. We now beg leave to present his report, by which it appears that we have received,

Publications in English,	..	117
in French,	.. ..	31
in Latin,	.. ..	3
in German,	.. ..	5
in Dutch,	.. ..	2
in Persian,	.. ..	6
in Arabic,	.. ..	4
in Turkish,	.. ..	1

Total, .. 174 up to the period of Mr. Csoma's Report.

On the last day of the old year, we had the pleasure of receiving from M. CASSIN the highly important consignments exhibited on the table at the last meeting.

199 vols. 4to. and 8vo.

109 Pamphlets.

The works in question embrace some of the most important and valuable publications in every department of Natural History.

The mode in which this supply has been obtained is also very gratifying, the expense having been defrayed by the sale of our Oriental Publications in Paris. It is pleasing to observe this reciprocation of benefits by the cultivation of apparently opposite pursuits—We have exchanged the ancient lore of the East, for the most modern and useful sciences of Europe. Each branch of our labors thus proves auxiliary to the other. The researches of the naturalist are promoted by the discoveries of the philologist and antiquarian, and thus, each in our particular sphere, we sustain the reputation and enhance the utility of a Society established for the universal purpose of investigating “whatever is performed by man or produced by nature” in the East.

Museum of Natural History.

Mr. EVANS has sent in an Annual Report, which will be published separately for your information.

Miscellaneous.

During the past year some miscellaneous passages in our history deserve to be recorded in our annual notice.

In January we had the gratification of witnessing the erection in our apartments of the bust of our distinguished associate, Professor WILSON. The feeling excited on

this occasion, led on the following month to the adoption of measures, by which we look forward to an early instillation of the like remembrances of Sir Wm. Jones, of Mr. GOVERNORCK, and Dr. MITL. This is indeed an object worthy of a grateful and wise Society, and must excite in the present Members the ambition of ultimately deserving such inestimable rewards.

In February a despatch was received from the Court of Directors, ordering 40 copies of each number of the Society's Journal—an act of generous patronage most fitly bestowed on the periodical, as it was then conducted. It was moreover but the forerunner of still greater munificence, in the grant authorized in September of 500 Rupees per mensem for the encouragement of Oriental Publications.

Nor while we acknowledged this princely aid from Government, should we be silent on the liberality of some individual benefactors. Among these, Mr. Muir stands pre-eminent—his subscription of 1000 Rupees to the expenses of the "*Sharwa Tidya*" will we trust ere long be instrumental in placing a practical work on Anatomy within the reach of the hereditary physicians of the East. Another act of warm co-operation, and we have done. Let us commemorate the readiness with which Mr. James PRINSEP sustained, by an outlay of 6,000 Rupees, the publication of the "*Mahabharata*," which would otherwise have necessarily been discontinued. For this we are fortunately enabled to indemnify Mr. PRINSEP, but he is not the less entitled to this grateful notice of his unrivalled liberality.

In conclusion of this very imperfect Report, we should have dwelt in due and deserved detail on the vast loss we have experienced in Mr. PRINSEP's departure to Europe, had not the subject been so fully and recently before the Society, and so perfectly dealt with in the President's address. We have now only to express our earnest hopes that in full health and spirit Mr. PRINSEP may soon return to the scenes of his brilliant and numerous triumphs. His absence must not however altogether nullify the movement he excited. It seems to us too that the best proof, of the esteem and affection in which we hold him, will be the perseverance in his pursuits, and in the support of his Journal, until his presence enables the Society to enjoy again the advantage of his inestimable labours.

(Signed)

J. C. C. SUTHERLAND,

W. B. O'SHAUGHNESSY, M. D.

Acting Secretaries.

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OF
THE ASIATIC SOCIETY.

No. 88.—APRIL, 1839.

ART. I.—*Journal of the Mission which visited Bootan, in 1837-38, under Captain R. BOILEAU PEMBERTON. By W. GRIFFITH, Esq. Madras Medical Establishment.*

(Continued from page 241.)

PART II.

[*Remarks on the nature of the country, especially its vegetation, boundaries, and divisions—its government, population, sects, character, customs, manners, and dict—political relations.*]

The following remarks suggested themselves to me during the bird's eye view I had of Bootan ; their superficiality is only to be excused by the shortness of my stay, the want of proper interpreters, the jealousy of the Booteas, and extreme mendacity of such of their Bengal subjects from whom, in my total ignorance of the Bootea language, information was alone to be expected. And as I had daily opportunities of seeing the constancy with which the head of the Mission amassed all available information, I contented myself with remarking on external rather than internal objects, on the face of nature, rather than on that of men. Bootan, I need scarcely observe, is a mountainous country, forming a considerable part of the most magnificent chain of mountains in the universe ; in it are to be found all degrees of elevation, from 1000 to 25,000 feet. In its extent it is rather more limited than was supposed, since Capt. Pemberton has ascertained that the country to the eastward, which is ruled by the Towang Rajah, is directly dependent on, and forms a portion of the Lhasa government.

The boundaries of the country are, Thibet to the north ; the plains of Assam and Bengal to the south ; Sikkim to the west ; and the Kampa country to the east. Its greatest breadth will hence be about 90, and its greatest length about 210 miles.

The physical aspect of this country, so far as regards its most essential point—mountains, presents perhaps but little deviation from that of other parts of the Great Himalayan chain ; but on this point I am unable to give any information. Every variety of surface was met with, from bluff-headed to peaked highly angular summits. In some places the paths were built up the naked faces of precipices ; in others, very considerable elevations might be attained by very gradual ascents, over a sufficiently practicable country. The two most rugged and most peaked were, as might be expected, the two highest—Dongdola and Rodola : the others, which generally averaged 10,500 feet, were very easy. Of the rivers, which are in all cases mere mountain torrents, nothing need be said. The largest we saw was the Monass, which forms the principal drain of the eastern portion of Bootan. No lakes appear to occur : there is below Santagong a jheel of small extent, but it is of no depth, and does not derive its presence from springs or the embouchure of small tributaries. It abounded with water fowl, and was choked up with sedges, and a plant belonging to the family *Hydropeltidæ*, hitherto not, I believe, found in India. Neither is Bootan a country of valleys ; in fact, with the exception of those of Bhoomlungtung, Byagur, and Jaisa, we saw none worthy of bearing the name. That of Pudukka owes its existence to the vagaries of the river, as its only level part has obviously at some previous time formed part of its bed. The three valleys otherwise mentioned are, if viewed in comparison with other valleys situated in similarly mountainous countries, perfectly insignificant, for they consist of a gentle slope from the bases of the contiguous hills to the bed of the draining stream. The valley of Tassisudon is probably of like extent with that of Pudukka, but Turner's accounts are so little to be relied on, that even in a simple matter like this no just conclusion is to be formed. I have only to add, that the three valleys are represented as being close to some of the passes into Thibet : this alone is perhaps sufficient to account for their great elevation.

Hot springs occur one day's journey from Pudukka, and appear to be the resort of many invalids, victims to the most frequent disease, lues venerea. From specimens procured by our guide, Chillong Soubah, there must be at least two springs ; of one the water is of a yellowish tint, and highly sulphureous ; that of the other is limpid, and possesses no sensible properties. I did not hear of the existence of such springs elsewhere.

Of the climate, which is necessarily so varied, it would be useless to attempt to give an account; indeed the only two places of the climate of which the mean could be given for even one month, are Tongsa and Pুনukka. The mean for the month of March at Tongsa may be estimated at $56^{\circ} 3'$, the maximum heat between the 6th and 21st instant being 63° , and the minimum 51° . I have elsewhere stated the results of the observations made at Pুনukka. Throughout the barren portions of the country, which are so generally limited to inconsiderable elevations, the heat must no doubt be great during the summer months; at Pুনukka in April the sun was found very incommoding after 9 A. M.; and as a proof of the heat at such elevations as 7000 feet in some places, I may advert to the culture of rice at, and above Tongsa. The ravines are, however, very narrow about this place, and the faces of the mountain on which the cultivation occurred had a western aspect.

In very many places, however, more abstracted from the influence of radiated heat, delightful climates may be found. It is curious, though not singular, that the best situations were always found occupied by Gylong villages. Considerable elevation is, in addition to other minor causes, requisite at least for a Bootea, during the summer months: thus the Gylong villages were rarely seen under 8000 feet, and oftener about 9000 feet; and the chiefs find a summer change of residence necessary, during which they repair to elevations varying from 7000 to 9000 feet.

The change in the Deb's residence from Pুনukka to Tassisudon in the summer, and vice versa in the winter, is to be accounted for, especially the latter change, on principles of equalization; that is, the ryots about the one place are obstinate enough to refuse supplies for more than six months; such at least was the story heard by us, although it is rendered doubtful, by the total want of regard evinced by the rulers of the land for the interest of their subjects. The most delightful climate we experienced was that of May at Chupeha, which is situated on the steep face of a mountain with a south west aspect, yet the temperature ranged from 46° to 51° . A week afterwards, and we were exposed to the unmitigated fierceness of a Bengal sun at the hottest time of the year.

The most disagreeable part of the climate of Bootan exists in the violence of the winds, more particularly in the valleys. The direction of these winds, which are very gusty, is invariably up the ravines, or contrary to the course of the draining torrents, no matter what direction these may have; the winds therefore are dependent upon local circumstances, as might be expected from the dryness of the

soil, and its effects on vegetation. The winds are more violent throughout the lower tracts than elsewhere, and as in many of these places they are enabled to supply themselves with dust, they often became very positively disagreeable, and formed no inconsiderable part of the annoyances we were subjected to during our residence at Pুনukka. These partial winds* are frequently so violent as to unroof the houses; it must be remembered, however, that the roofs are generally mere shingles, kept in their places by large stones. During our stay at Pুনukka, the regal or sacred part of the roof was blown off; the clattering that ensued from the falling of the copper plates, mixed with the noise of the shingles and stones of other parts of the palace, was very great; a deputation was immediately sent from the palace to request that we would fire off no more guns near the palace, and we found out afterwards that we were looked upon with a very suspicious eye.

We were not much incommoded with rain, neither should I consider it to be abundant throughout the lower elevations, at least no part of the vegetation I saw in such tracts seemed to indicate even a small amount of moisture. We were only once delayed by snow, and on our return enjoyed uninterrupted fine weather until we reached Buxa, where, as might be expected from its proximity to the plains and the season, the weather was unsettled.

As regards quantity of vegetation, Bootan exhibits, it appears to me, considerable peculiarities. In the other parts of the Himalayan chain I have seen, and generally throughout India, the bases and lower portions of the mountains are the most thickly wooded, and it is generally a tolerably certain indication of elevation when less wooded tracts are met with; but in Bootan not only is the vegetation of the lower ranges contiguous to the plains unusually scanty throughout a considerable part of their extent, but throughout the interior it is generally absolutely barren within certain elevations. This scantiness at the base of the mountains is perhaps at its maximum due north from Gowahatti, in which direction the vegetation is almost entirely graminaceous; to the westward it certainly lessens, but even to the north of Rungpore (Bengal) the woods are thin, especially when contrasted with the Toorais of other portions; at the same time the vegetation of the lower ranges is in this direction nearly as dense as it is elsewhere. Of its extent to the eastward I have no actual evidence to offer; but as to the north of Jeypore there is a well defined Toorai, and

* The general winds have, it would appear, the usual direction; that is, they blow from the plains.

as to the eastward again, it would appear to *again* become deficient: it probably is irregular in its distribution, and depends consequently on local causes.

But while there is such difference in the amount of vegetation along the tract at the base of the mountains, the vegetation on these up to an elevation of 1600—3500 feet is uniformly scanty, except to the westward, in which direction, as I have mentioned, they do not differ in absolute amount from the well wooded mountains to be seen elsewhere.

Between Dewangiri and Pুনukka we found that the surface of the interior below 5000 feet in elevation was uniformly very barren, and after crossing the ridge above Telagoung we found similar appearances, but with a very dissimilar vegetation, at elevations of from 7000 to 11,000 feet, but they were by no means so uniform or so general. Throughout the barren tracts* of the first of the above portions of Bootan the vegetation consists for the most part of grasses, among which a few low shrubs occur. The arboreous vegetation is confined almost entirely to *Pinus longifolia*, which is very commonly much stunted. The barren tracts to the westward of Telagoung were remarked almost entirely along the Teemboo, the southern face of the ravine of which was generally remarkably barren, even at very considerable elevations. Grasses did not form here so predominant a portion, shrubs on the contrary abounded, and among these the most common perhaps was a species of *Rosa*, very much like the *R sericea* of Royle's Illustrations.

In Bootan it is only at high elevations, and under certain circumstances, among which aspect and especially humidity are the most important, that the grand forests which have excited the admiration of all travellers in the Himalayas to the westward, make their appearance. The requisite elevation is scarcely ever less than 7000, and is generally about 8000—8500 feet; at such, oaks, magnolias, rhododendrons, and several species of firs attain to great perfection. Between, or on the borders of the woods, patches of swards, adorned in the spring with beautiful herbaceous plants are frequently met with, and form the prettiest object in the whole scenery of Bootan. The vegetation of such, and of much higher elevations, is generally well diversified, until indeed one reaches an elevation of 11,500 feet; at such I found it generally reduced to black firs, stunted junipers, and shrubby rhododendrons, the bulk, as regards amount of species,

* These lower mountains are very frequently curiously marked with transverse ridges. These have much of the appearance of ancient terrace cultivation, but on inquiry I was assured that such was not their origin.

consisting of herbaceous plants, whose growth is confined to a very few congenial months, and which were almost all hid from my view by the heavy snow, so constant between the latter end of October and the commencement of May. Another striking feature in Bootan is the constancy with which southern faces of mountains are, especially towards their summits, bare of trees or shrubs; this it has in common with other parts of the Himalayas both to the westward, where it has struck all travellers, and to the eastward, as on the Mishmees. I am not prepared to state whether any satisfactory explanation of this has been given; it struck me to be due, in Bootan at least, to the searching severity of the winds, which are quite sufficient to keep down all luxuriance of vegetation. Whatever the secondary causes may be, there can be no doubt that the primary one is due to the influence of the south-west monsoon, to which all these faces of the Himalayan mountains are freely exposed.

The higher the altitude the greater, as indeed might be expected, was the uniformity of vegetation, and it was only in such that any general features of vegetation could be said to occur. A very constant feature of high altitude, such as from 11,000 to 12,500 feet, existed in the black fir, a lofty tabularly branched tree of a very peculiar appearance, in comparison at least with other Bootan species, and which, when seen standing out in dark relief, might, from the very frequent mutilation of its lower branches, be mistaken at a distance for palm; with these there was as nearly a constant association of the same species of other plants. The most striking among the partial features of the vegetation of Bootan was presented to us by the three valleys, so often alluded to; these may well be called the region of pines of that country. The range of the three species was most distinct and very instructive, although the Smithian Pine, a little further to the westward, descended to a somewhat lower elevation than it did in the tract above mentioned.

Still more partial features were presented by the *Pinus excelsa*, and more especially by the *Pinus longifolia*, the distribution of both of which appears to depend on local causes. The latter species was not seen on our return, nor was there a vestige of a fir visible after reaching Chuka; no species but the long-leaved was seen below 5500 feet.

I have in the foregoing few remarks merely glanced at the most familiar features of the botany of Bootan. As the importance of strict determination has been much insisted on before correct views can be formed of the botanical geography of any country, I have purposely omitted all details, until the collection shall have been duly examined; but even when this has been done, the difficulties are almost insuper-

able, for although Roxburgh died thirty four years ago, and the number of plants indigenous to India has been increased fourfold since that time, the means exist of determining but a very few more than those described by Roxburgh himself. It is familiar to all botanists that of the 8000 species distributed eight or ten years since by the Honorable Company, not more than 1000 have yet received their promised share of elaboration.*

Bootan is divided into provinces which are ruled by Pillos, of whom there are three—the Paro, Tongsa, and Tacca : they derive their names from their respective residences ; the rank of the two first is, I believe, equal, and they are admitted into council, while that of Tacca Pillo is very inferior.

The provinces are again divided into districts, equivalent to Soubahships ; of these there are several. The Soobah's jurisdictions through which we passed were those of Dewangiri, Tassgong, Tassangsee, Lenglung, and Byagur, all of which are in Tongsa Pillo's province. After leaving Tongsa we came into the province of Punukka, and after leaving this capital we came on the tract attached to that of Tassisudon, or as it is called Tassjeung. The Soobahs all exercise supreme jurisdiction within their own limits, but pay a certain annual amount of revenue to their respective Pillos. The Soobahs of Dewangiri and Buxa are of subordinate rank.

But besides these governors of provinces, and governors of districts, there are other officers of high rank, who assist in moving the machine of government ; they do not however make good exemplifications of the proverb, “ in the multitude of counsellors there is wisdom.” The offices of these additional counsellors are as follow—the Tass Troompoon, or warder of the palace of Tassisudon ; the Puna Troompoon of the palace of Punukka ; and Wandipore Troompoon of the castle of Wandipore ; then there is the Lam Trimpe on the part of the Dhurma, and Deb Trimpe on the part of the Deb.

* The following passage was erased from the proof of Dr. Griffith's M.S. in the office of the Secretary to Government. We insert it as a note, on Dr. Griffith's and our own responsibility, and in the confidence that Dr. Wallich can readily give a full and a satisfactory answer to the implied charges.—EDS.

“ Had Dr. Wallich never been in India the matter would have been otherwise, as it would not then have been a matter of policy to remove every vestige of an Herbarium from the Botanic Gardens, and to publish a confused catalogue of names without characters. As the matter now stands, Indian botanists are reduced to this,—they must either give up all the advantages they possess by being in India, and wait until all the species, amounting to 3 or 4,000, named by Dr. Wallich have been described by others in Europe from dried, and in many cases very imperfect specimens, or they must in no case acknowledge the authority of any body to name an object without giving it a character, and publish such new species as they may deem to be new with their names and their descriptions.”

The supreme authorities are the Dhurma and Deb Rajahs ; the latter representing the temporal government in its strictest sense, as his reign is generally short ; the former the spiritual in as strict a sense, for he is, although infinitely divisible, quite eternal. The immortality of the Dhurma is not so well known as that of the Lama of Thibet, it is nevertheless equally true ; both appear to have been firmly believed by Captain Turner, whose account of the behaviour and intelligence of the Grand Lama, an infant of some months old, is very amusing and characteristic. The present Dhurma is, as I have mentioned, the son of Tongsa Pillo, a curious coincidence.

The chief test of the authenticity of the infant in whom the Dhurma condescends to leave the regions of æther for those of gross spirits, consists in his recognising his former articles of wearing apparel, &c. ; and to avoid any supposition that might arise from the probability of any mortal child being struck with shewy gew-gaws, this child is bound to assert that they are actually his own ; if it does so, surely it is satisfactory evidence. The infant Dhurma may as well be found in the hut of the poorest peasant as in the residence of an officer of high rank, but I dare say, if the truth were known, he is usually made for the occasion.

When he has been completely tested he is removed to the palace, and his life thenceforward becomes one of almost absolute seclusion. Surrounded by hosts of priests, and in the apparent enjoyment of most things deemed desirable by a Bootea, he is nothing but a state prisoner, virtually sacrificed to state ordinances. Neither is it probable that he enjoys any power sufficient to recompense him for being cut off from the merry side of life, for if his teachers have been wise teachers, they probably rule him throughout. But all this holds good only on the supposition that his life is as really monastically rigid as those of some orders of Christian monks were not. We heard strange accounts, especially at Pুনukka, sufficient to suggest that a priest is not necessarily virtuous in Bootan more than any where else.

His revenues are, I believe, derived from certain lands in the plains, and above all from offerings. He is also said to trade, but none of them can derive much profit from commercial speculations.

It is in the Deb that the supreme authority as regards the internal economy of the country is vested. But supreme though he be called, as he can do nothing without consulting all the counsellors, including the Pillos, who have no cause to dread his displeasure, his power must be extremely limited, and very often disputed ; and, if it is remembered that he is always checked by those counsellors who are actually present with him, and that he holds no, or at least very little, territory

on the plains; and that a Pillo has no check on himself, that his province is perhaps remote from the capital, and that he has filled up all his offices with his own relations and friends, it is evident, I think, that the change from governor of a province to that of supreme ruler of the country must be attended with loss of power. Besides, the Deb is only expected to retain office for three years, at the end of which he is expected to retire, provided he be weak enough.

The present Deb, if indeed he now exists, has no authority out of Punukka, and not too much even in his own palace. He was formerly Tacca Pillo, and this seemed to be the grand source of complaint against him.

The chief object of the Deb, as is that of all his officers, is to accumulate money. The sources of this are plunder, fines, reversion of property to him by death of the owners (and this seems to be carried to a frightful extent), tributes from the Pillors, offerings on accepting office, trading, and the proceeds of lands in the plains; but this last source cannot yield much, since the occupation of the best part by Herr Govindh. Our Deb, in addition to his usual sources, added another during our visit, by robbing the Dhurma of all his presents. The revenues of the Pillors are derived principally from their Dooars, or territories in the plains, by plunder either of their own subjects, or those of the British government, fines, in short by every possible method.

Nothing can be said in favour of this many-headed government; each Deb, each Pillo, each Soobah, each officer in fact of high or low degree, is obstinately bent on enriching himself at the expense of his subjects or his inferiors; and their object is to do this as rapidly as possible, as removals are always probable, and are almost sure to depend upon a change of the Deb. There is no security for property, and not much for life, but fines are fortunately deemed more profitable than bloodshed, and, in short, the only safety of the lower orders consists in their extreme poverty. The whole proceedings of this government with the Mission were characterised by utter want of faith, honesty, and consideration. The trickery, intrigue, and falsehood could only be equalled by the supreme ignorance, presumption, and folly exhibited upon every occasion. Procrastination was a trump card in the game they played, mildness of deportment was pretty sure of inducing insolence, and they were only kept in decent order by perceiving that you were determined not to be trifled with.

I am not disposed to assign their behaviour to the nature of the present temporary government; it was only natural in an ignorant, very conceited people, who find that they are treated with distinguished consideration by the only power that admits them to an equality. The

preceding Deb, from convictions of interest, and from having tasted more than once of British liberality, might have treated the Mission with some consideration, but the issue as to business would doubtless have been the same. I regret much not being able to state more about the government of the country, and more especially its internal economy. The usual punishment for crimes is in fines, a method always resorted to wherever money is considered as the grand object. In Bootan I have little doubt but that the commission of grievous crimes would be encouraged, were the lower orders in condition to pay the fines.

I have before adverted to an instance of black treachery: that instance was furnished by a Mahomedan, Nuzeeb-ood Deen, a native of Calcutta; who having accompanied a trader into Bootan had been detained and placed in a state of captivity for twelve years. By some fortunate neglect on the part of the Booteas in the palace, he contrived to gain admission to Capt. Pemberton; and his tale was so consistent, and bore such evidences of truth, that Capt. Pemberton claimed him as a British subject; and the justice of the claim was very strongly urged by the prevarication of the Booteas, who indeed finally admitted it. Nuzeeb-ood Deen returned to the palace, but very luckily for him, Capt. Pemberton, who suspected that the Booteas might dispose of him privily, insisted much that he should be forthcoming when he called for him, and wrote to the Deb to the same purpose; yet even under these circumstances, it was unanimously agreed that he should be cut to pieces and thrown into the river, but they refrained from doing so from fear of the consequences. As soon as he was given up, which happened a day or two before our departure, he placed himself under Captain Pemberton, who advised him not to associate with Booteas, and above all to eat or drink nothing from their hands. Nuzeeb-ood Deen however was not proof against a cup presented to him by a boy with whom he had been very intimate during his captivity. The consequences were every symptom of having partaken of some narcotic poison; he was saved by the action of powerful emetics, but did not recover for some time afterwards; he was carried through the palace and throughout the first march on a Bootea's back.

The *population* of the country is certainly scanty, and indeed could not be otherwise under existing circumstances. Villages are very generally "few and far between," in addition to their being small. The only decently populated bits of country we saw about Santagong and Tamashoo. The valley of the Teemboo as far as Panga was also tolerably populous, but it must be remembered that this is the principal part of the great thoroughfare of the country. The palaces and

castles are the only places well inhabited, but the inmates might very advantageously be dispensed with, as they consist of idle priests in excess, and bullying followers; both too happy to live at the expense of the poor cultivators.

The causes of this scantiness of the population exist in polyandry, and one of its opposites *agynny*, in the bad government, and the filthy and licentious habits of the people. The great rarity of aged people struck us all very forcibly, and is a proof that whatever may be the proportion of births, the proportion of life is below average. The bad influence of polyandry is supposed to be counteracted by the idea, that the spouse of many will be faithful to the eldest so long as he may be present, and after him to the second, and so on;—such an idea is at best absurd, and as regards Bootan women, is positively ridiculous, their chastity not being of such a quality as to induce them to be particular as to relationship, or even acquaintance.

The expected celibacy of so large a portion of the inhabitants, although probably assumed in some degree, and which depends either on acceptance of office or on the course of education, must be very pernicious. The large number thus withdrawn from propagating—the only good in their power—would lead us to suppose that polygamy would be of much more likely occurrence than polyandry; and the custom is rendered still more paradoxical by the contrariety of custom observed amongst most other Asiatic people, who make polygamy almost an invariable consequence of worldly prosperity.

In very many places there is obviously an extreme disproportion of females to males, yet it would be too much to assume that there is a general disproportion, although the two causes above adverted to be would sanction such a belief, unnatural as it may supposed to be. We could not ascertain that the apparent disproportion of females was the result of unnatural conduct on the part of the Booteas, although in my opinion they are sufficiently capable of destroying either male or female offspring, did they consider it expedient to their interests.

Of the diseases, which in all countries form so essential a part of the causes tending to diminish population, I know nothing. The few patients I had at Punukka were all suffering from venereal, frequently in its worst form. Chillong Soobah assured me that such cases occur in the proportion of one in five.

The number of half-ruined villages would suggest the idea that the population was formerly more extensive than it now is. But it must be remembered that, in this as well as most other hilly parts of India, the population is partly migratory. In a country where agriculture is not understood, where no natural means exist for renovating the soil,

and no artificial ones are employed, the population must vary their abodes in accordance with means of subsistence. The only cause for surprise is that they should build such substantial houses; they may do so with a view of returning to them after the ground has been sufficiently fallowed.

Education. Of the course of this essence of the growth of the mind I can state nothing. If the assumption of the habits of priesthood be considered as the first step of education, it is rather extensive; but I doubt whether a Bootea boy may not wear these robes for years and then throw them off improved in no good, but in all vice. There is scarcely a village in Bootan in which some exterior decorations, as well as the whole air of the house, do not indicate it to be the favoured residence of a priest; yet I never heard the hum of scholars in any other place than Dewangiri, in which, and it is a curious coincidence, priests were comparatively uncommon.

The Booteas appear to have no caste; they are divided, however, into several sects, and in the account of the Persian sent into Bootan by Mr. Scott, whose account may be found in the fifteenth volume of the Asiatic Researches, as many as fifteen are enumerated. It does not appear, however, that the possession of the higher offices is confined to the higher sects; for Tongsa Pillo is known to be a man of a low sect, although he may be considered, from his station and connexions, the most powerful man in the country.

Most Booteas have much of the same appearance; to this however the people about Bhoomlungtung, Byagur, and Jaisa, as well as those about Rydang are marked exceptions, and have much more of what I imagine to be the Tartar appearance.*

If we look at those sects which do not depend upon blood, but upon education or circumstances, we may divide the inhabitants into labourers, priests, idle retainers, and great men, which is in many places another word for tyrants. The labourers are better acquainted with poverty than any thing else, and are lucky in being allowed to have such a safeguard.

Perhaps the most numerous, and certainly the most pernicious class, is that of the Priests or Gylongs. Their number is really astonishing, particularly when compared with the population in general. Not only do they swarm in the castles and palaces, of which they occupy the best and most exalted parts, but they inhabit whole villages, which may be always recognised by the houses being somewhat white-washed, of a better than ordinary description, and always in the best and

* The people again towards Buxa are of very distinct appearance, but this results from a tolerably free admixture of Bengalee blood.

coolest situations. Of their grades of rank I can say nothing, but much importance seems to depend upon due agedness. The highest were usually admitted to the interviews, and of course expected to be recompensed for the honour they did us ; but as they were well contented with two or three rupees, their ideas cannot be said to be extravagant. They are perhaps rather more cleanly than other Booteas, and are reported to bathe publicly every week ; but although we frequently saw processions in single files, in all cases headed by a small drum, a sort of gong, a clarionet, and an incense bearer, the priests following according to their seniority, the youngest novice ending the tail, I am not convinced but that the bathing part may be more nominal than actual ; one thing at least is certain, that the duty, whatever it was, was agreeable, otherwise we should not have seen the processions so often.

They are kept in order in the castles by hide whips, in the use of which some of the brethren are neither sparing nor discriminating. The dress is becoming, consisting of a sleeveless tunic, generally of a chocolate colour, and edged with black or yellow. They are certainly better off than any other class : their chief duty is to be idle, to feast at the expense of the country, and at most, to tell their beads and recite mutterings.

The idle retainers form also a large portion, though by no means equal to that of the priests. As little can be said in the favour of these as in that of those, but they have one disadvantage in not being able to make use of their religion as a cloak for evil deeds. In these two classes all the most able-bodied men in the country are absorbed : they are taught to be idle and to become oppressors, and what is very bad in such a thinly populated country, they learn to look upon the ordinance of marriage, and its usual consequences, as a bar to their own interest. Of the great men I can only say that their influence is undeviatingly directed to the furtherance of their interests ; they become governors to oppress, not to protect the governed—they rule by misrule ; and as being the sources of the two great evils I have just mentioned—priests and retainers—they are themselves the greatest curse that ever was inflicted upon a poor country.

Of the moral qualities of the Booteas it is not in my power to give a pleasing account. To the lower orders I am disposed to give credit for much cheerfulness, even under their most depressed circumstances, and generally for considerable honesty. The only instances of theft that occurred did so on our approach to the Capital. How strange, that where all that should be good, and all that is great is congregated, there is little to be found but sheer vice ; and how strange, that

where good examples alone should be led, bad examples alone are followed.

To the higher orders I cannot attribute the possession of a single good quality. They are utter strangers to truth, they are greedy beggars, they are wholly familiar with rapacity and craftiness, and the will of working evil. This censure applies only to those with whom we had personal intercourse; it would be perhaps unfair to include the Soobahs, whom we only saw once, in such a flattering picture, but it certainly would not be unreasonable; and I must make one exception in favour of Bullumboo, the Soobah of Dewangiri, and he was the only man of any rank that we had reason to be friendly towards and to respect. In morale they appeared to me to be inferior to all ordinary Hill tribes, on whom a Bootea would look with ineffable contempt; and although their houses are generally better, and although they actually have castles and places called palaces, and although the elders of the land dress in fine cloths and gaudy silks, and possess money, ponies, mules, and slaves, I am disposed to consider them as inferior even to the naked Naga.

They are not even courageous. I am inclined to rank courage among physical rather than moral qualities, yet it could not so be classified in the consideration of a Bootea, in whom other physical qualities are well developed. I therefore consider it among those other qualities which, as I have said, are absent in Bootan. A Bootea is a great boaster, but a small performer. All the accounts I heard of their reputed courage were ludicrous. Turner mentions seriously that one desperate revolution superinduced the death of one man in battle; and we were told that in the late protracted one, the only sufferers were two sick people who were unable to escape from a burning house. In a military point of view they could only make up for their deficiency in numbers by an excess of courage and of perseverance under difficulties. They are not even well versed in the use of their national weapons. The Gourkha Soubahdar who accompanied the Mission looked on them with the utmost contempt, and this knowledge he had gained by long experience. In Mr. Scott's time a handful of Assamese sebundies would take stronghold after stronghold, and lead off all the tenants, excepting the defenders who had run away, as captives; and very lately 700 Booteas, with every advantage of ground, were totally routed by seventy of the same sebundies. Their courage may therefore be written down as entirely imaginary.

Their ideas of religion appear to be very confused; religion with them consisting, as indeed it may do among other more civilised people, of certain external forms, such as counting beads, and mutter-

ing sacred sentences. The people throughout are remarkably superstitious, believing in an innumerable host of spirits, whose residences they dare not pass on horseback; and while they are near these abodes they keep the tenant at bay with volleys of incantations. The offerings to these spirits are usually flowers, or bits of rag; this practice they have in common with most of the tribes to the extreme east of Assam.

Of any marriage ceremonies I could not hear; but as chastity would appear to be unknown, no particular forms are probably required; nor do I think that there is a particular class of prostitutes. We all had opportunities of remarking the gross indelicacy of Bootea women; of this and of their extreme amiableness, the custom of polyandry is a very sufficient cause. So far as I could see, there is no distinction of rank among Bootea women, and those only are saved from the performance of menial duties who are incapacitated by sickness or age.

If the account given by Mr. Scott's Persian of the ceremonies attendant on birth be true, another sufficient cause exists for scantiness of population, as well as for a disproportion of women. He asserts that the second day after birth both child and mother are plunged into the nearest river; but so great is the dislike of a Bootea for this element, that I am inclined to discredit the account, and more especially as regards the mother.

The disposal of corpses is much the same as among the Hindoos: the ashes of the body are collected, and are, I believe, thrown into the nearest river. The ceremonies, of course, begin and end with a donation to the officiating priest. The only part of them I witnessed was the burning, and this only in one instance; it was done in a slovenly and disgusting manner.

Of the social habits, little favourable could be said in any place where the women are looked on as inferior beings, and used as slaves. The men generally are excessively idle, and spend most of their time in drinking *chong*, for the preparation of which, as well as that of arrack, there are provisions in most houses. I do not think I ever saw a male Bootea employed, except indeed those who acted as coolies. All the work in doors and out of doors is done by women, to whom about Pudukka Assamese slaves are added. The men are great admirers of basking in the sun, and even prefer sitting shivering in the cold to active employment.

I need scarcely add that both sexes are in all their habits inexpressibly filthy. The women in their extreme indelicacy form a marked contrast with such other Hill tribes as I am acquainted with.

The only use either sex make of water is in the preparation of food

or of spirits—no water ever comes into contact with any part of their person ; they scarcely ever change their clothes, especially the woollen ones. The people about Bhoomlungtung are far the dirtiest, and as they wear dark woollen cloths, rendered still darker by long accumulation of smoke and dirt, they look more like representations of natives of Pandemonium, than of any place on the earth's surface.

As they, at least the official part, are very assuming, so does state enter largely into all their proceedings. All our interviews with them were conducted with all possible state on their part ; and that exhibited to us at Tongsa and Punukka, was striking enough, and will ever after form in my mind as bitter a satire upon state as one could well wish. The effect was much lowered by the usual Asiatic want of arrangement, by an assumption of superiority among the inferiors (probably enough at the instance of their superiors), and by the admixture of the *profanum vulgus*, who had no opportunity of hiding inherent dirt under fine robes. On these occasions the behaviour of the chief was certainly gentlemanly, but the impression was soon obliterated by a messenger overtaking us, probably on our return, for another watch, or another telescope, or any other thing. In personal appearance I did not observe much difference between the higher and the lower orders, with the exception of the ex-Pillo of Tongsa, who seemed to have the best blood in the country concentrated in him. The presents given as returns of the magnificent gifts of the Governor General were beggarly ; and yet there was a good deal of parade in their exhibition. To us narrow silk scarfs were always given, occasionally varied with a foot and a half of blanket. The scarfs are habitual gifts among all the upper classes, and very generally form the inner envelope of letters.

Fine woollens and embroidered China silks form the dress of the nobles ; thick cotton or woollen doublets or tunics are common to every body else, but the chiefs probably have similar dresses in private, at least their principal officers certainly have ; and the only difference in such cases is the belt, from which the *dha* is on occasions suspended these are embroidered, and have a rich appearance. The dress of all is certainly cumbrous, especially when the peculiarly Chinese boots are donned. The boots of the higher orders are certainly not made in Bootan ; those of the lower orders consisted of a foot of some skin, with party-coloured woollen leggins, which lie above the calf. They are worn by both sexes.

The general receptacle for odds and ends, and a most capacious one it is, is between the skin and the doublet. Into this, which (consequent to one side being formed by the body) is not of the cleanest description.

every thing is thrust, from a handful of rice to a walnut, from a live fish to a bit of half putrid dried meat. Tobacco is carried in a small pouch suspended from one side.

A *dha*, or straight sword of a heavy description, is worn by all who can afford it, and the belt of this secures the loose doublet about the waist, and prevents the innumerable deposits therein from falling down. Those who cannot wear *dhas* from poverty, wear ridiculous looking knives, which dangling from the belt have a very absurd appearance. It is lucky that the people are not quarrelsome, and not inclined to resist the followers of chiefs, otherwise from the men being so generally armed, and so generally addicted to drinking, assaults might be expected to be of common occurrence; I only saw however one instance in which a man had been wounded. I certainly shuddered at times, expecting every moment to see adverse parties multiply each other by division; but latterly I was persuaded that cutting blows were rarely resorted to. The end of these disputes, which barring the blows were very fierce, was always brought about by the arrival of some third person, who by espousing one, espoused the stronger cause, and when this was done the weaker withdrew, or was made to withdraw by blows with the flat side of the weapon.

The accoutrements of a man of war differ, so far as his mere dress goes, in nothing. His defences consist of a well quilted iron skull-cap, which, when out of danger, is worn slung on the back; lappets are attached to it which defend the face—perhaps from cold. They also carry circular leathern shields, apparently of rather good manufacture. Their weapons of defence are first the *dha*, which is a heavy unwieldy weapon, without any guard. They are worn on the right side, but this to us awkward mode of wearing does not hinder a Bootea from disengaging his weapon readily, the sheath being first seized by the left hand. A blow from this weapon must cause a desperate wound, and judging from their quarrels, in which not a vestige of any skill in self-defence was shewn, the first blow, when actually struck, must decide the matter. Their fire arms, which are all matchlocks, and which vary in size from musketoons to huge wall pieces, are contemptible: they are of Chinese manufacture. Their powder, which they manufacture themselves, is powerless; indeed in one sense it may be considered as positively lessening power, for Captain Pemberton and Lieut. Blake ascertained that in ordinary charges it could not cause the discharge of the wad, and hence it actually weakened the cap. To remedy this badness they put in very large charges, but after all they seem to depend more on the effect of the noise than on that of the missile, for so little reliance is placed on this, that the marksman is

said to follow up the discharge by the piece by the discharge of a stone. It is likewise said that few venture to take aim except with the stone ; they generally attach the gun to a tree, and without pointing it consider that they have performed a dangerous feat by causing its discharge. All the musketeers I saw, even when there was no ball in the gun, certainly averted their faces very studiously when the due fizzing of the powder warned them that the explosion would soon come on.

The most common weapon next the *dha* is the bow : this we only saw practised at Dewangiri, and the result was not alarming. The bows are longer than ordinary, at least so they appeared to my inexperienced eyes. It must be remembered that they do not, as in some more civilised places, fire at marks the size of an ordinary house. The mark which we saw was a small battledoor-shaped piece of wood, the distance was 150 yards, and the situation of the mark was pointed out by branches of trees ; scarcely an arrow alighted within reasonable distance, yet the mark bore several marks, which we knew were made for the occasion. Each archer was very noisy in applauding his own skill, and challenging the others to equal it.

The dress of the women likewise consists of a loose garment, and is very similar to that worn by Hill tribes to the eastward of Assam. They have very few ornaments: the chief ones consist of a plate of silver fastened round the head, and crossing the upper part of the forehead, wire ear-rings of large dimensions, and peculiar rings fastened to a straight silver wire and worn projecting beyond the shoulder. They appear to be fond of flowers, and frequently decorate themselves with garlands, particularly of the scarlet rhododendron and the weeping willow.

The diet of the lower orders is very, very poor ; they appear to live entirely on grain of an inferior nature, or in the wheat districts on coarse, abominably dirty chowpatties. There can be little doubt but that in many places they are not unfrequently much pinched by want.

The chiefs and their followers, and the inmates generally of the castles, live chiefly on rice brought from the plains ; they likewise consume much dried fish, and very likely not a little dried meat, which they prepare by means of fire and smoke. They are as strict in their ideas of not eating flesh of living animals as the Burmese are ; and they are beyond doubt very fond of animal diet : the salt is I believe brought from Thibet : they eat with the hand.

Their beverages are in the first place tea, but this is I believe used only by persons of some rank or property : they procure this from

Thibet, in the form of huge flat cakes: it does not possess a particle of aroma. Still more common is the beverage called *runga pat*, which may be likewise used for the tea; if their accounts can be relied on it is prepared from the leaf of a pear or medlar. I had no anxiety to taste it as it was of a muddy appearance and reddish colour.

Of intoxicating fluids they have two; one of these is merely fermented, and is known by the name of *chong*; it is a vile preparation from rice, made in the same manner, but very inferior in quality to that used by the Singphos. To this drink, which is not strong, they are immoderately addicted, and it generally is carried with them on journeys in large horns made from the horns of the *Mithan*.

The distilled liquor I had one opportunity of tasting; it was very clear, and much resembled weak whisky, as the Soobah had I imagine diluted it prior to distribution to the spectators.

The *political relations* of the country are as limited as the boundaries. With *Sikkim* they appear to have no intercourse. In the *Kampas* to the eastward there is some reason to believe that they pay an annual tribute. That they are tributary indirectly to *Lhasa*, and now directly to *China*, there can be no doubt, although the official people most strenuously denied it. It was affirmed indeed that a considerable time ago the Chinese were in actual possession of the country, but relinquished it finally on account of its poverty. *China* also exercises its authority in inflicting fines on them, and keeps guards on all the passes into *Thibet*. The tribute is taken I believe annually to *Lhasa* accompanied with an envoy. With the *British* government its chief relations have existed owing to the occupation of certain tracts in the plains called *Dooars*, from their being situated near the passes into the mountains. These tracts are of considerable extent, and are held by the *Booteas* on toleration, as the tribute they are under the obligation to pay is not only so small in amount as to be quite nominal, but is generally allowed to lapse into arrears.

In assigning the continuation of the possession of these tracts wherever an accession of dominion was gained, the *British* government acted with its usual liberal policy; but this liberality has been so little appreciated by the people of *Bootan*, that the system, as it has worked hitherto, has been fraught with mischief; it has been most positively injurious to the territories in the plains, and it is, I think, injurious to *Bootan* itself.

We had ample opportunities of observing the extremity of misrule to which the *Dooars* in *Assam* as well as those in *Rungpore* are subjected by the infamous government of the *Booteas*, and it was the more striking from the contrast presented by our *Assamese* territories.

and as much so, by those of Cooch Behar. The crossing of a river eighty yards wide is sufficient to carry one from a desert into a country, every inch of which is highly cultivated; yet the richness of the soil is in favour of the tracts immediately contiguous to the Hills, and such are, in Assam at least, especially esteemed by the most laborious part of the population, the Kacharies; and were it not for this predilection in favour of these tracts, and the short-sightedness peculiar to a native population, by which immunity from taxation is preferred to security of property, the Assamese Dooars would rapidly become totally depopulated.

A gift long granted as a favour, in the eyes of an Asiatic, is soon considered as a right; and although the Bootea government has received some severe lessons in the shape of capturing their impregnable places, and of a resumption of portion of the Plain tracts, yet the free and quick restoration of the same on apologies having been made, with copious professions of better behaviour in future, has been attended with a very different result from that which would be occasioned by gratitude. The very severe lesson which they were taught in 1836, in which they were completely disgraced by being defeated by a handful of sebundies, and then punished by losing a Dooar, has taught them nothing. That very same Dooar, perhaps too liberally restored, has been for some months seizable for arrears of tribute. Nor is this all; since that restoration it would appear that their officers have become more than usually insolent. I think that it may fairly be assumed, that they argue on the certainty of restoration, so that a good foray might possibly, if its consequences were only temporary resumption, be a source of profit to them. By the plan of allowing barbarians to hold country in the plains, the inhabitants of those plains lose a portion of their most fertile soil; many of them are besides exposed to all the inconveniences and dangers of an unsettled frontier, for such must such a frontier be;* and hitherto it has not been attended, at least in many places, with the expected effect of securing the friendship of the Booteas, and the quiet of the frontier.

But no argument can place the matter in a clearer light than the facts connected with Herr Govindh, a subject of Bootan, but who is now independent both of Bootan and of the English government, and who therefore enjoys considerable tracts of country without paying any thing for them; nor can any thing more forcibly point out the weakness of the Bootea nation, for not only does Herr Govindh keep them in effectual check, but he has, I believe, offered to take all the Dooars

* Occupation of such tracts is very favourable to the carrying off of slaves, an habitual practice I have no doubt with the Booteas.

from them, if the government will allow him to pay 40,000 Rupees a year as tribute.

It acts injuriously on Bootan by diminishing the energies of its inhabitants, and suppressing the development of those resources which every habitable country may be supposed to possess. It must be remembered that the cultivation of the Plain tracts is not, as in some other instances, carried on by the inhabitants of the mountains, but by the natives of the Plains, who after reaping the produce of their labour appear to be compelled to take it to the first station in the Hills, from which it is distributed to the appointed places.

In all cases of entreaty for restoration it has been urged that the inhabitants of Bootan cannot subsist without these tracts, but they forget that by labouring in their own country they might supply themselves either with grain, or the means of purchasing it; and further, that the supplies drawn from the Plains are only enjoyed by the chiefs and their followers.

Some distress would doubtless result from immediate and final resumption, but this distress would be confined to the better orders, and would be a due punishment to them; it would in a short time be abundantly counteracted by the reduction of the Gylongs, and by the compulsion of a great number of idle hands to work for subsistence. It would also, I think, have a beneficial effect in lessening internal commotions. The ambition or rapacity of a chief is now readily seconded by the greediness of his idle followers, but were these necessitated to become agriculturists they would certainly not respond very readily to his call; as matters now stand, in short, there is a ruinous drainage of a very fertile tract of country, without any sort of return whatever; for the revenue derived from one Dooar during, a short season that it remained in our hands was amply beyond all proportion to the tribute; and it may fairly, I think, be stated that a country which draws every thing from another, and makes no return, may be compared to a parasite, the removal of which is always desirable, and very frequently essential. The Bootan government has been invariably treated with great liberality by the greatest power in the East, and how has it requited it? It has requited it by the rejection of a treaty which could only be productive of advantage to them, by shuffling mendacity, by tampering with British subjects, and by inconsiderate conduct to a British Mission, evinced in many other ways than that of opening its dâks. They object to forwarding communications to Lhasa, they object to British traders entering their country, and, in fine, they object to every thing that is reasonable, and that would be mutually advantageous. In short,

they shewed themselves to be ignorant, greedy barbarians, such as should be punished first, and commanded afterwards.

The objection raised against the resumption of the Dooars, on the plea that no check will then exist on the Booteas, is one contrived to meet expediencies: it has never been attended with the supposed effect. The affair of Herr Govindh, and the recent victory at Silka-bhari are convincing proofs that the Booteas may easily be kept within their own limits. And even arguing the necessity of an increased military force, it must not be forgotten that the same tract which now yields us nothing but a few debased coins, a few inferior ponies, with abundance of disputes and law suits, would in a very short time become equal in richness to any of the neighbouring tracts, rich as these undoubtedly are.

PART III.

[*Natural productions, agriculture, domestic animals, arts, and commerce.*]

Few wild quadrupeds were seen by us in Bootan. Tigers, leopards, and elephants are to be found on the lower ranges, and probably the former straggle up to as considerable a height as they do to the westward. The chief beasts of prey in the interior are bears, but they do not seem to be numerous, and foxes of large size and great beauty: these last are confined to considerable elevations, and none were seen under 8000 feet.

Monkeys as usual abound on the lower ranges, on which the *Hoollock* of Assam likewise occurs. Some long-tailed monkeys occurred above Bulphai, 8200 feet above the sea; and in January I likewise saw a flock of noble ones not far from Tongsa, at an elevation of 5800 feet; these were white, and in form and size resembled the Langoors. Among wild ruminants, I may mention the barking deer, which however scarcely ascend above 4000 feet, and the musk deer, the most valuable wild animal of the country. It would appear to be rather common on the higher ranges, as several skins were brought to us from Punukka; the price for us, of a perfect one, that is without the musk, being five rupees.

The smaller animals that came under our notice were a species, I believe, of *Lagomys*, which Lieut. Blake found dead on the path, one or two animals of the weasel kind, and rats which swarm in very many of the houses.

Three or four species of squirrel were likewise procured, all from elevations of 5500 feet, yet all were likewise natives of Assam. The

most striking one is a black one, with a whitish belly, measuring, including the tail, nearly three feet.*

The variety of birds is, of course, considerable, but the lower ranges seem to be by far the most productive; on these jungle fowl and two species of black pheasant are found. The raven is found throughout, but the very familiar crow or jackdaw never leaves the plains, and never leaves populous places. Throughout the higher portions of Bootan it has as noisy, but scarcely possibly as mischievous a substitute in a red-legged crow. This is common in the three elevated valleys, and not rare elsewhere at elevations of 8000 to 9500 feet: and below these it is scarcely to be seen. Cuckoos, larks, magpies, jays, and sparrows were the chief European forms met with, but except the latter, perhaps, all were of different species from the birds known by those names in Europe.

The cuckoo is rather widely dispersed. I first heard it about Punukka, and subsequently along the Teemboo, at an elevation of 7000 feet; below this height, at least in this direction, its peculiarly pleasing voice was not heard, although I think I saw the bird considerably lower. With the magpie, which has much of the plumage of the European bird, but a shorter tail, we became familiar at Bhoomlungtung, but lost it at Jaisa. The jay, a figure of which may be seen in Mr. Royle's Illustrations, was found pretty constantly throughout the wooded tracts between 5500 to 7000 feet; it is a noisy, but not a very wary bird. Larks were very common in the elevated valleys, and afforded us some good shooting; in habits, plumage, and voice they are to an uninitiated eye the prototypes of the bird so well known in Europe. In the same valleys Syrases were common. Wild fowl are, as might be expected, rare; the only place where they occurred in tolerable plenty was in the jheel below Santagong. The most destructive and numerous bird is the wild pigeon, which is to be found in plenty in almost every village, and in literal swarms in the castles and palaces: they do a great deal of damage to the poor ryots, who are not allowed to destroy them, on account of their being sacred. This exclusion holds good very strictly about the residences of the chiefs; and, although the villagers were in all cases delighted to see them shot, yet they keep no check on their increase, as they have no means of destroying them, and appear never to have thought of doing so by means of their eggs. At Byagur, the place of this bird was supplied by another very curiously marked species, which, it is said, likewise occurs about Simla.

* *Sciurus beng-moricus*, McCl.

None of the wild birds are made subservient to use ; indeed the natives appear to be very deficient in means for procuring them. The sacredness of life may be one reason, but even the most superstitious will eat any bird one shoots, provided it be large enough to promise a substantial repast.

The same remark is applicable to fish, which are common in most streams below 4000 feet. The two most common are the *Bookhar*, which is scarcely found higher than 2000 feet, and the *Adoe*, which is found as high as 4000 feet, and perhaps higher, but its habits render it difficult to see. The *Bookhar* abounds in the Deo Nuddee below Dewangiri ; it is from the sport it affords, and the great readiness with which it takes a fly, to be considered as the trout of India. The *Adoe* is said to refuse all bait, and I have found this to be the case not only in this instance, but in all those which have a similarly situated mouth, such as the *Sentoosee*, *Gurriah*, and *Nepoorah* of Assam. At Punukka, where the *Adoe* is plentiful, it is caught by nooses ; such as were so caught were all small, and the young anglers were obviously afraid of detection. At this place I saw a solitary instance of the use of a casting net, but I suspect that it was under authority ; elsewhere I observed none even of the ordinary rude expedients for catching fish. Both of the above fish are nutritious food, and are so plentiful that they really might form a valuable acquisition to the miserable diet of the lower classes ; but this would not suit the benevolent ideas of the priests, who however appear to eat stinking dried fish from the Plains with great sang froid. To the poor in Bootan every thing is denied. Bees appear to be plentiful, but their buildings are passed with indifference by the lazy Bootea.

Of the vegetable productions that occur naturally in Bootan, the application for purposes of life is confined to timber, fuel, and dyes.* Of the various kinds of timber trees I am quite ignorant ; they are used chiefly for rafters, planks, and troughs, either for aqueducts or for mangers. A great part of the planking is derived from fir trees, which are always preferred for fuel. Of the turpentine procurable from their various species of *Pinus* they seem to make no use, so that they are ignorant of one great value of these valuable trees ; that of the *Pinus excelsa* is very abundant, and highly fragrant. In the lower ranges the bamboo becomes of almost universal application, and constitutes the greater portion of the huts of the inhabitants of these districts ; baskets of various sizes, and implements for clearing the rice from the husk by agitation, &c. are likewise manufactured from it.

* Although the *Bogh Puttur*, or path, is found in abundance on the higher ranges, yet it is not resorted to for furnishing an article of trade. The tree is a species of birch, and the thin flakes of its bark are used in the composition of *hookah* snakes.

In similar places rattans are in demand, and several valuable sorts may be procured. They form the fastening of all the bamboo work, are used in some places to secure the roofs from the effects of the violence of the winds, and form a great portion of the baskets in which loads are in this country universally carried. These are very convenient receptacles, forming a rather narrow parallelogram; they are frequently covered with hides, they open at the top, and are the most convenient hill baskets I have hitherto seen.

The Booteas depend on the plains for supplies of betel-nuts, otherwise they might advantageously cultivate the tree on many of the lower ranges. So far as I had an opportunity of judging, they possess few wild palms of any description, excepting rattans; I observed one, which grows on inaccessible places as high as 2000 feet, and which will probably prove new, but I did not succeed in obtaining the specimen requisite for actually determining whether it is so or not. *Ficus elastica*, the caoutchouc tree, occurs about Dewangiri, but not in abundance, and may be expected to occur throughout greater part of the ranges between the Plains and an elevation of 3000 feet. They are aware of the properties of the juice, and use it to make vessels formed from split bamboos, water-proof. The Simool tree likewise occurs within similar elevations, but they make no use of it, although in Assam the cotton is used for the manufacture of a very light and excessively warm cloth, excellently adapted for quilting.

A solitary mango tree occurs here and there in villages even as high as 4000 feet. The finest occurs at Punukka, in the royal gardens, which are emblematic of the poverty and want of horticultural skill in Bootan. It bears its flowers there at a time when the fruit is fully ripe in the Plains.

Jack trees occur every where about the villages on the lower ranges, and is one of the few fruit trees from which they derive any gratification. These trees thrive remarkably well at elevations of 2000 feet, particularly if within the influence of the Plains.

In villages at similar elevations two or three species of fig may be found, but the fruit is not edible; no oranges are cultivated with a view to the market; a few occur in some of the villages; the tree does not occur above 5500 feet, and in such altitudes it requires a sheltered, sunny place. The oranges which we received as presents, all came from the Plains. With the orange, the shaddock also occurs in tolerable frequency.

One of the most common fruit trees is the pomegranate, it does not thrive however above an elevation of 4000 feet: I saw no fruit on

the trees, which were however loaded with flowers; very fine ones occur about Punukka.

They likewise possess peaches, (perhaps the almond) and pear trees: but I am unable to say of what nature the fruit may be; we saw the trees during their flowering season.

The Bheir also occurs at low elevations; and in the gardens of Punukka I observed another species, forming a handsome good sized tree, but like most of the others, it was not bearing fruit. In the same garden there is cultivated a species of *Diospyros* with edible fruit, which also I did not see, and in fact we did not appear to have been in Bootan during the fruit season. The only fruit which we enjoyed were walnuts; we procured these only at Punukka, most of them in presents from the Deb, and a few by purchase, but these were of inferior quality; these walnuts are very good, and would be much better were care taken at the time of gathering. The trees are said to be cultivated in orchards at considerable elevations, but we saw no attempt at any thing of the sort, although we met with a few isolated trees here and there.

On the lower ranges, but scarcely above 3000 feet, the papaw occurs, but so far as I could see did not promise much return. Pine-apples, which occur so profusely on the Khasy hills, and are of so much use to the natives, are very rare in Bootan, as well as in those parts of the Dooars which we crossed.

On our return, we met with a fruit which promised under improved cultivation to be agreeable enough; it was about the size of a pigeon's egg, with a large smooth shining black seed; in flavour it approached somewhat to the Sappadillo, to the natural family of which it would seem to belong. The only ornamental tree to which the Bootas are particularly attached is the weeping cypress: these occur about all the castles and palaces, and especially about religious buildings. It is as ornamental a tree as can be well conceived, and as it thrives between elevations of 5000 to 7000 feet, I was very anxious to obtain seed for introduction into England; but all that I did obtain were bad, and I imagine that the female tree was alone met with. Of the gramineous plants found wild in Bootan no use seems to be made; wherever such plants are in requisition for thatching, the Plains are resorted to, as these, at least under the admirable management of the Bootea government, abound with *Oollookher*, *Kagara*, *Megala*, *Nol*, and *Iko-ra*. The plants of the hills themselves are chiefly coarse species of *Andropogon*, not serviceable for thatching; among these the lemon grass occurs abundantly. I am not aware whether the natives of these mountains use any plants occurring naturally as *vegetables*, cooked or uncooked; I

never saw any of that scrambling into the jungle on the part of the coolies which so generally occurs in Assam and Burmah, where every second or third plant is a favourite dish.

Of their medicinal plants I am quite ignorant. Our guide, Chillong Soobah, who had a great leaning to the practice of physie, assured me that the Booteas were quite ignorant of any medicine whatever; but this is so contrary to the prevailing practice among barbarous and semi-barbarous nations, that I place no confidence in the assertion.

Of the mineral productions of the country I had no opportunity of learning any thing. The only article of this nature that I saw turned to account was clay for pottery; and this was only met with at Punukka. In short, whatever the resources of the country are, one thing is at least certain, that they have not yet been developed; and I give the greater part of the nation credit for being amongst the most idle and most useless on the face of the globe.

Of the agriculture of Bootan little is to be said, as so very large a proportion of the supplies is derived from the Plains. The state in which the little agriculture is, that is carried on, argues as little in favour of the amount of agricultural skill they possess, as the uncultivated state of the Dooars does in favour of their numerical extent, or of that of their Plain subjects.

Of *Cerealia*, or culmiferous plants, they have the following sorts: rice, wheat, barley, raggy, millet, maize; and of farinaceous grains, not the produce of culmiferous plants, they have buckwheat; and of *Atriplex*, one or two species of the leguminous grains. They cultivate one or two species of *Phaseolus*, one of which is the *Phaseolus*, Max; the Oror, *Cytisus Casan*; the Pea, *Pisum sativum*.

The only oily seeded plant I saw, and of this only fragments, was the *Tel*, *Sesamum orientale*; I saw no reason however for supposing that they manufactured this oil themselves.

Of the culmiferous plants, rice forms the staple article of food, and is perhaps exclusively used by the chiefs and their adherents, and the very numerous establishments of priests. It is only the staple article viewing the Dooars as forming part of Bootan, for in the interior the proportion borne by this grain to that of either wheat or barley is very small.

Most of the spots available from situation and elevation are cultivated in rice, but in all I saw, judging from the remains of the stubble, the crops must have been small. The cultivation is conducted in the ordinary manner, as is likewise the mode of preparing the slopes for irrigation, or in other words, terracing: as might be expected it is generally a summer crop, and in all places of sufficient elevation, is

made to alternate with winter crops of wheat or barley. The highest elevation at which we saw it cultivated was about Tongsa, to the north of which village there is a slope cultivated with it from an altitude of 5500 feet to one nearly of 7000 feet.

It is principally used boiled in the ordinary manner, and in the preparation of their fermented and spirituous liquors. They do not seem to prepare it for eating in the dry state, as is so generally done by Hindoos. Wheat is perhaps the most common grain cultivated in the interior, yet I saw no instance of the promise of fine crops; it is cultivated as low as 3500 feet, and as high as 9000 feet, but the fields we saw at this elevation were miserably poor, from the effects of the bleakness of the winds. No particular steps are taken to favour its growth, except in the three elevated valleys, where manure is employed from some attention to agriculture being absolutely indispensable. The grain is, I think, of inferior quality; it is principally eaten in the shape of chowpatties, or cakes of heated dough. The flour is ground in mills turned by water, but the meal is badly cleaned.

Barley is nearly of equally extensive cultivation, and I think arrives to somewhat greater perfection than wheat; the cultivation is precisely the same, and probably its application. Two or three sorts occur; of these the finest indisputably is a six-rowed barley, but I am unable to say whether it is identical with the *Hordeum hexastichon*, the bear or bigg of Scotland. This sort occurred in great perfection along the ravine of the Teemboo, especially about Chupcha; it was the only crop, really worthy of the name that we saw in the country.

Of the remaining grains of this nature, Raggy,* *Bobosa* of Assam, is the most common; it is of a very inferior nature, and is only used as a makeshift. Millet and maize are so limited in extent, as not to be worth consideration.

Of the other farinaceous grains, buckwheat is the only one cultivated to any extent; it occurs throughout the greater part of Bootan, but especially about 4000 feet. This grain is either a great favourite with all Hill people, or it is of such easy cultivation as to compensate for its inferiority to some others. The Booteas do not appear to feed their cattle on it, and ours by no means approved of it. It is probably used as a bread corn.

The species of *Atriplex*, and one or two of a nearly allied genus, *Chenopodium*, are scarcely worth notice. They occur in Bootan, as in most other mountainous countries in the East, and are more valuable as affording sorts of spinach than for the grains. Equally unworthy

* *Cleusine Coracana*.

of notice are the leguminous grains of Bootan ; and the few species I saw of the produce appeared to me more probably derived from the Plains than from any labour of their own. The only actual cultivation of such I saw was a small plantation of oror below Benka or Tassgong, and this we were told was more with a view to the produce of lac than dâl ; and of the pea, I saw one flourishing field of small extent between Tumashoo and Oongar.

Of their various other " plants cultivated as vegetables for the table," I am quite as ignorant ; every thing in fact is derived from the Plains. We did not even meet with yams or *kuchoo*s, both of which I have seen among other Hill people in great perfection. They are unaware of the value of the potatoe.

Every body has heard of Bootan turnips, but very few have, I imagine, seen them. With the exception of a few we obtained at Dewangiri we saw none, nor when we reached the interior did we ever hear of any. There is no doubt however that excellent turnip seeds have been sent to some from Bootan, but whether from this *bhote ka moolkh* or the far finer one to the westward, I cannot state ; I only state their extreme rarity, so far as the Mission was concerned. Far more common is the *Mola*, or radish, which I suspect Turner mistook for turnips, for one has only to imagine that an actual Bootan radish is a real Bootan turnip, and it is so. The Bootan radishes grow to a large size, but they are very coarse and spongy, and heavy of digestion even to a Hindoo stomach. The cultivation chiefly occurs between 5000 to 7000 feet.

Of plantains they possess a few specimens, which may be seen struggling for existence as high as 3500 feet. I did not even see any of the wild plantain, easily distinguishable from the white powder with which the under surface of the leaves is covered, and its large stature. This is common on the Himalayan range to the eastward, and ascends as high as 5000 feet.

Of that most useful family the Gourd family, I saw no sorts under cultivation. As they depend on the Plains for all that in their opinion makes life tolerable, so do they depend upon their jungles for all flowers to which they may have a fancy, or which may be considered as agreeable for offerings. There is no such thing as a flower garden in the whole parts of the country we saw. The royal gardens at Punukka are scarcely an acre in extent, and stretch along the river from the bridge to the village. It was made originally with a view to use, never for ornament, and possesses now neither the one nor the other recommendation, although it has an Assamese gardener: oranges, shaddocks, pomegranates, the mango, jack, bheir, &c. &c. are to be found

in it. The Booteas shew some taste in their selection of wild flowers, which is more than can be said for the natives of Bengal, who approve of such vile things as *Ganda*, and *Champa*, and many other equally strong or equally gaudy productions. With Booteas rhododendrons, especially the scarlet and the white arboreous sorts, are favourites, and I observed formed the greater part of some offerings lying in the presence of the Dhurma.

The only cotton, and it was a miserable specimen, that I saw, I have mentioned as occurring along the Monass; yet we were told that a good deal was cultivated in similar places throughout Bootan. That we saw none is accounted for by the bulk of the population wearing woollen cloths, and by the remainder obtaining their supplies from the Plains. No plants were observed used for making cordage, the ropes used for fixing the loads being either made of twisted rattan, or horse-hair. On emergencies the bearers resort to the jungles, in which some very tenacious creepers may be found; but they appear to prefer the species of *Daphne* for this purpose, as the inhabitants of Upper Assam do the *Ood-dal*, a species of *Sterculia*.

No sugar is cultivated in Bootan; a few solitary specimens occurring about villages being the only specimens we saw. The cane itself is imported from the Plains, as well as *ghoor*. The same is equally applicable to tobacco, large quantities of which must be consumed, as all the men are great smokers.

They do not appear to me to be great pân eaters; their supplies of this are also derived from that source, which they do not scruple to drain so freely. A few straggling plants of hemp are to be met with amongst most villages at rather low elevations, but I never saw any to an extent sufficient to warrant me in supposing that any use was made of it.

Of plants cultivated for dyeing, I am not aware that any cultivation is carried on. At Phullung, one villager was attempting to rear a few plants of the wild indigo, so much used in Upper Assam, and which I have elsewhere stated is a species of *Ruellia*. Of this plant which appears to abound in colouring material of a deeper, but less brilliant hue than that of indigo, I have not been able to meet with any account that can be depended on. I have seen that in one of the volumes of the Transactions of the Agricultural Society it is mentioned as *Ruellia carnosâ*: no good authority for the name is given, and on that of the book itself few, I imagine, will be willing to adopt it.

The most common dye in Bootan is that furnished by the *mungisth*. It appears also to be the favourite colour. As the supply obtained from the jungles is plentiful, no means are resorted too to cultivate it. It

forms one of the few articles of export from the country, and is generally exchanged for dried fish. In Bootan at least two species are used, one of these is Roxburgh's *Rubia mungista*. Of the different species of *Rubia* very little is known, and that little is a good deal confused. From Mr. Royle's account it would appear that the article *Munjeeth* is the produce alone of *Rubia cordifolia* (*R mungistha* Roxb.) The two species used in Bootan are very distinct, and very general constituents of other mountainous floras; one of them has leaves without stalks.

Agriculture being in such a poor state, we need not look for improvement in the implements by which it is carried on. The plough is a lumbering article, on the ordinary Indian principle, and the others are equally bad imitations; but as the Booteas pride themselves on being warriors, they are not inclined to turn their swords into ploughshares, and until this is done no improvement can be expected. Manures, so far as I had opportunities of judging, are chiefly confined to the three great valleys; they consisted chiefly of rotten fir leaves, and appeared to me to be of a very poor description. In these parts ashes of stubble and weeds are likewise spread over the surface, but the greatest portion of labour was expended in pulverising the surface. The natives likewise make use of the accumulation of filth under their houses, which judging from the depth of the layer is not always removed annually. This is excellent manure, and is principally used about the little plots of ground attached to most of the villages.

Of fences they are generally very regardless, or at best, place them where they are of no use. Thus the yards of many of the houses, and in some parts what are called gardens, are surrounded with stone walls; some few rising crops are protected by branches of thorny shrubs, but generally the only defence exists in the shape of a herd-boy, who is regardful only of damage done by his own charge.

In domestic animals they cannot be said to be rich. Chowry tailed cows certainly are not common, and would appear to be kept chiefly by the officers of high rank. As their range is restricted to very high elevations, they must be in Bootan of very limited utility. I only saw one sufficiently close to ascertain what kind of creature it was, and I was much disappointed in finding it an heavy, clumsy-looking animal; the specimen, however, was not a fine one. The only herds seen by the Mission were at elevations of nearly 10,000 feet. The Chowry tails exported to the Plains probably come from Thibet; and judging from those which we saw, they are of very inferior quality. The cattle are used as beasts of burden.

A much finer animal is the *Mithun*; this is the same as the Mithun

of the Mishmees, or the animal so known in those parts to the Assamese by that name, but is very different from the Mithun of the Meekir hills. This animal is not uncommon: the finest we saw were at Dewangiri, and none were seen after leaving Tongsa. Nothing can exceed the appearance of a fine bull; it appears to me intermediate between the buffaloe and the English bull, but the cows have much less of the heavy appearance so characteristic of the buffaloe. Their temper is remarkably fine, and their voices or lowing very peculiar, resembling a good deal some of the cries of the elephant. I am not aware that they are of much use to the natives: the oxen are employed at the plough. As the Booteas do not seem to care for milk, they are probably kept with a view to sacrifice, which is with an Asiatic not unfrequently another word for feasting.

The other breed which they possess, and which we only saw between Punnukka and the Plains, assimilates much to the common cattle of Bengal; it is however a much larger and a much finer animal.

Sheep are not very common: the most we saw were rams, which formed a standing part of the russia. The ewes are used by the Kampas as beasts of burden, but I am not aware that they are of any use to the Booteas. Throughout Bootan I only saw two flocks.

Goats are common enough, and appear to be of the ordinary Plain breed. We saw no *Khussies*, at least live ones, unless I except the six shawl goats sent by the former Deb as presents to the Governor General.

All these animals are turned out during the day, either alone, or attended by boys. The cattle are picketed at night either in yards or about the villages: the goats find their own quarters in the ground floors of their owner's houses. Either no fodder at all is given, or they are provided with coarse straw, which evidently requires great effort to be eaten. During the rains their condition is much bettered; in the cold weather it is bad enough, as the looks of the beasts testify.

Pigs of ordinary customs are common enough, and were the only animals I saw slaughtered: they are kept with more care than either ponies or cows. They are generally treated to a wash once a day, consisting of a decoction of herbs, of which the common stinging nettle appears to be a favourite, and radish peelings. Most of the pigs we saw engrossed the tender cares of the women, who certainly paid much more attention to them than they would appear to do to their own children. They have peculiar cries well known by the pigs, who are generally very obedient, particularly if they see the wash-tub; at night they also occupy the ground floors. The ponies of Bootan are sufficiently well known, and are I think much over-estimated. They

are very inferior to the *Ghoonts* of Simla, in size, strength, and appearance. Like all such creatures they are spirited, and sufficiently headstrong: they understand their duties perfectly, and are orderly enough on a line of march, unless the road is particularly easy. Very few first class ponies are to be found in Bootan, and none are to be obtained except, perhaps, at most exorbitant prices. The *Booteas* patronise nothing but stallions, the mares being almost exclusively used for breeding or for carrying loads; in such cases they are not led, but follow their leader quietly. Ridden ponies are always led; in difficult ascents they are assisted by pushing up, and in descents they are equally assisted by vigorous pulling at the tail. They form a part of all out of door ceremonials, and are dressed out with gay trappings; their switch tails are then converted into regular cock-tails, and ornamented with chowrys. Three or four ponies were selected as presents to the Mission, but as the hour approached for presenting them, the liberality of the *Deb* rapidly fell, and one alone was given to the Governor General. This creature never reached the Plains, for after falling twice, once a height of 15 to 20 feet, it expired above *Buxa*: we heard afterward that it had been very ill for a long time, so that the *Deb* thought it a capital opportunity of getting rid of him.

The mules are fine, and of much more reasonable price than the ponies: they are chiefly kept for riding, and are mostly of good size.

Both ponies and mules are stabled and provided with litters, not as may be supposed of the cleanest description. Their food varies a good deal; on some rare occasions they partake of Indian corn and wild tares; still better off are those which have participated in some religious ceremonies—for these, the green corn of the poor *ryot* is not considered too good; generally, however, they are fed on the worm wood, which is so common throughout Bootan below 5500 feet, and which is cut up, and then boiled; and in some places they are fed on the young boiled leaves of an oak, not unlike the celebrated English tree. We saw few in good condition. It is probable enough that the ponies of the *Deb* and his chief ministers are occasionally treated to paddy husks, as the *Deb* very graciously sent us a handful or two of this nutritious material, in compliance with our requests for some grain for our ponies. Of grass they are deprived except during the rains, although *Deab* grass is to be found about *Punukka* in sufficiency to feed six or seven ponies a day.

The ordinary dog appears to have been brought from the Plains, but its pariah qualities are not improved, neither is its condition. Of this, one was so convinced, that he took advantage of our escort, and returned to his native country with us, evidently highly pleased at

his escape, and very grateful to us for our good offices. Many of the better orders keep Tartar dogs : these are large, shaggy, powerful beasts, apparently very fierce, and the most incessant barkers I ever met with ; they are always kept chained up. At a white face they appear perfectly furious, but perhaps they rely on the chain. Turner says they are not so bad if one is armed with a bludgeon. Mr. Blake found that in almost every instance their eyes were of different colours.

Of domestic birds, the common fowl is the only one : in many places it reaches considerable perfection ; about the capital the breed is as bad as can be imagined. They all appear to be low-bred, and the old birds, especially the cocks, are generally lame from corns. Their crows are most curious, and very unlike those of any other variety I know of ; it is of inordinate length, and when once commenced can not be stopped, for fright only changes it to a hasty gobble. The bird, while he is undergoing the process, walks along with neck and tail at full stretch, and with his beak wide open, totally absorbed in the business. No care is taken of the fowls, or at most, they are allowed to stand round when rice is cleared or pounded.

They have no ducks or geese, a want they share with all the mountainous tribes I have seen. A peacock is occasionally to be seen in the castles, and at Tongsa we saw one associated with a tame jacana.

Fine Arts.—The ordinary form of houses in Bootan is that of a rather narrow oblong, disproportionately high, building : the better order are rather irregular in shape. They are built either of slabs of stone, generally unhewn, or of mud well beaten down ; the walls in all cases are of considerable thickness, and almost universally slope inwards. They are for oriental houses well provided with windows, and are further furnished with small verandahs, of which the Booteas seem very fond. There is little or no ornamental work about them, with the exception of those infested by priests, in which there is generally a rather ornamental verandah. The roofs throughout the interior are of bad construction ; they are formed of loose shingles, merely retained in their places by heavy stones placed on the top of each ; this necessarily requires a very small slope, but even small as it is, the whole roof occasionally slips off. In some few places where bamboos are available the roofs are formed by bamboo mats, placed in several layers, and secured either by stones or rattans. In the better order of houses the great perviousness of the roof is compensated for by the imperviousness of the ceiling of the uppermost story, which is well laid down with mud ; houses situated near the plains, where proper grasses are obtainable are thatched : (the most common grass is the Oollookher, *Saccharum cylindricum*), such roofs from their slope,

thickness, and projecting eaves are excellent. The generality of houses have a court-yard in front surrounded by a stone or mud wall, the entrance to which is, or has at one time been, furnished with a stout door. Access to the first floor, (for the ground floor is invariably occupied by pigs, goats, &c.,) is gained by a rude sort of stair, intermediate between real stairs and ladders, and rather dangerous: a greater degree of safety is sometimes insured by the presence of a banister. Each story is divided into several apartments, which are generally defective in height; no regularity in their distribution appears to be ever observed; they are not provided with chimneys, and in many instances we found the smoke almost intolerable.

The houses of the poorer orders, situated near the plains, are miserable habitations, but still are better than those in common use in Bengal and Assam, in as much as they are built on muchowns.

The castles and palaces are buildings of a much superior nature; indeed it is said that they are erected by Thibetans or Chinese. They are of immense size, varying a good deal in form, according to the nature of the ground on which they are built, and which is invariably a spur or tongue of land situated between the junction of two streams. If the ground be even, the form chosen seems to be parallelogrammic, but if it be uneven, it has no form at all. They are, particularly in the latter case, ornamented with towers and other defences, either forming part of the building or detached from it.

The national walls and roofs are preserved; the former are of great thickness, pierced in the lower part with narrow, utterly inefficient loop-holes. In the interior there are one or two large court-yards. The first and second stories are the chiefly inhabited ones, the ground floor, however, is not so profaned as in other houses. Most of them are ornamented with a raised square or oblong tower or building, in which*
* * take up their quarters. That of Pুনukka is the largest and loftiest, consisting of several stories, and several roofs gradually decreasing in size—an obvious imitation, except in the straightness of the roofs, of the Chinese form; it is in part covered with copper, as the Bootas assured us, gilt.

All these large buildings, as well as the summer-houses attached to them, the houses of recluses, or active priests, the resting houses of chiefs, and religious edifices of every kind or description, are white-washed, and most are ornamented with a belt of red ochre, not far from the roof. The residences of the great men, and some of the religious edifices, are distinguished by a folded gilt umbrella stuck on the top, resembling a long narrow bell, rather than that for which it is intended.

* A blank in the M.S.—EDS.

In none do there appear to be any particular accommodations for sleeping, but in each house there is a *cloacus*. One room is set apart for a cook-room, and constitutes the principal inconvenience in a Bootea house; no use is made of the uppermost story for this purpose, as the Booteas consider it sacred; and as they have no chimneys, out of pure reverence they are content to bear smoke in its blackest and most pungent forms. Their fire-places, that is for cooking, are good and powerful; these are likewise used as furnaces for their stills. A good representation is given of them in Turner's Bootan. The flooring of the houses is generally good, of many really excellent; the doors are folding, and the fastenings of the windows of similar construction; the only very deficient part of a good Bootea house exists in the stairs and want of chimneys.

To the castles, stables are appended; but in spite of their being deprived of this copious source of filth and vermin, the deficiency is made up by the number of inhabitants.

Of their religious edifices, some are of picturesque appearance, being ornamented with carved window-frames and verandahs. The most common are the pagodas, which approach in form to the ordinary Boodhistical forms, such, at least, as are universal throughout Burmah. Those of Bootan are, however, vastly inferior in size, form, and construction, and are mostly such as an ordinary Burmese peasant would be ashamed of building. They are built of slabs of unhewn stone, and are not much ornamented, particularly as they are not provided with a red belt. The handsomest and the largest* we saw was that close to Chinjipjee, this was ornamented with small pagodas at each corner, and had the umbrella, which was of curious form, garnished with bells, with the usual long tongues. In the upper portion each face had a nose of portentous dimensions, and two Chinese eyes. I am not aware whether, as in Burmah, they contain images or not, but slabs of inscribed slate are very generally let into their sides.† Appended to these are long walls of poor construction covered with roofs; on each they bear inscriptions, and in some instances paintings situated in recesses. The other forms generally occur as small square buildings; they are either built up over large idols or are empty, but decorated with paintings of gods, much resembling, especially in gaudiness, the common sorts of Hindoo deities; or they contain the peculiar cylinders which contain incantations, and which are constantly, or at

* The name of this, *Chiotackari kocho*.

† The pagodas are always surrounded by poles either of bamboo or fir, to which are attached longitudinally long strips of coarse cotton cloths, entirely covered with inscriptions.

least ought to be, kept in motion by the action of water. In some places where running streams are not obtainable, as in the Soobah's houses, these are revolved by the hand.

There is nothing particular in the construction of their flour mills, which are very small; the pivot is vertically attached at the bottom to an horizontal water wheel, and passing above through two horizontal stones, of which the upper one alone revolves, the flour is hindered from falling off the under stone by the person in attendance.

Of bridges they have two kinds, the suspension and wooden; the latter are, I think, of better construction than the former, although not of equal ingenuity. The finest suspension bridge in Bootan is that across the Monass, below Tassgong, and has a span of about sixty yards. The chains are slight, and the links too long; the masonry by which the chains are supported is massive, and built into tall respectable looking towers. The motion is very considerable. The great fault in this bridge, and in this respect it is inferior to that of Chicka, is that its bottom or platform is not flat, but forms the segment of a circle, and is continuous with the sides, which are made of bamboo matting.

The wooden bridges, which are thrown over all the second class torrents, are solid looking, and impress one with the idea of great strength. Considerable pains are taken in the selection of such spots where the span is less, and where solid abutments either exist, or may be readily made. The supports are large beams placed in pairs, with a cross timber between each, and which pass through the abutments, on which towers are erected for the purpose of giving stability. The beams gradually increase in length from below upwards, so that each projects somewhat beyond that immediately below it. On the upper pair, which form a slightly inclined plane, planks are placed. As the upper beams only project over perhaps one-third of the span, the centre of the bridge is made up of horizontal beams and planks; if quite complete the bridge is covered with a chopper, and provided on either side with a stout open balustrade. Small streams are crossed by planks, or timbers, the upper surface of which is rendered plane. From the consideration of their buildings it would appear that they possess considerable architectural genius;* but we were told that all those of superior construction are built by Thibetans or Chinese; this was certainly the case with the bridge erecting over the Deo Nuddee, not far from Dewangiri. As long as nature supplies rocks of easy and perfect cleav-

* Turner in mentioning their aqueducts draws a comparison between the Bootas and the wonderful ancients; he compares a few wooden troughs, applied end to end, and so badly constructed that one kick would demolish considerable portions, to those masterpieces of master minds which laugh at time.

age, the houses are built of such materials, and these are used perhaps in all cases in the constructions of rank or sacred character. In many places mud is resorted to; the mud is pressed tightly between planks, and then assiduously beaten down by feet and clubs; in this they shew great dexterity, five or six persons, chiefly women beating at once a piece of mud of small dimensions. The mud is beaten down on that which has been previously so treated, so that when they come to any height, there must be considerable danger of falling, particularly as the beaters make most extraordinary antics. When each piece is sufficiently compacted it is allowed to dry. As portions of mud of a parallelogrammic form are thus treated, the house presents lines, which at first lead one to suppose that it is built of blocks of coarse sand-stone. The process is very tedious.

The sculpture they possess would appear to be Chinese: some of the figures were really excellent; the finest we saw were at Dewangiri, especially that of the Dhurma, before which it is considered impossible to sin, and this may be the reason of the natives striving so strenuously to do so. All these figures were well dressed. The few figures of Boodh that I saw were rather rude, in the usual position, and with the usual long fingers and toes. These people certainly have an idea of drawing, and this was very pleasing. To a native of the Plains you may shew a drawing which you have every reason to be pleased with, particularly if you have done it yourself, and he says, "*kya?*" or he mistakes a house for a boat, or a tree for a cow. In Bootan, however, the case is very different; our sketches were recognised immediately, no matter what subjects we intended to represent. They are also ready at comprehending charts. And with regard to their own performances we had opportunities of judgment presented to us by the walls of many houses, which were covered with scrawls; they excel in the representation of animals, particularly when the shape depends upon the will of the artist.

Music enters into most of their ceremonies, and the favourite instrument emits a sound like that of a bassoon. Another favourite instrument is a clarionet, particularly when made from the thigh bone of a man: the sound of this is equal to that of any Bengal musical instrument, and is as disagreeable as it is continuous, the skill of the performer depending entirely upon his length of wind. One of these instruments generally heads every procession of sufficient importance.

At two of our interviews with Soobah we had an opportunity of witnessing the mode of dancing, which was done entirely by women, and as certain qualifications for dancing girls exist to a remarkable extent in Bootan, they are chosen indiscriminately. The dancing merely consists in slow revolutions and evolutions, and outturning of the

hands. They danced to their own music, which consisted of a low monotonous chanting, of a much more pleasing nature than the al-tissimo screeching so admired in India.

Of their manufacturing skill I saw few or no instances. All the woollen cloths of ordinary quality are imported from Bengal or Thibet; their own manufacture being, it is said, confined to the production of coarse, often striped, blankets, scarcely a foot wide. They make but very little cotton cloth, and the manufacture of this appears to be confined to the villages near the Plains; the article is of poor and coarse quality: all their silks and many other parts of their fine apparel are Chinese.

I have before mentioned the use they make of bamboos, and rattans: in the work of articles manufactured from these materials they are not superior to the wildest of the Hill tribes to be found about Assam.

Their ordinary drinking cups are wooden, and look as if they were turned; and they are perhaps the best specimens of manufacture we witnessed.

Their workers in metal are very inferior; we saw some miserable blacksmiths and silversmiths, provided with utterly inefficient apparatus; however there is not much demand on their skill, as all their arms, and all their better sort of utensils are of foreign manufacture, principally Thibetan. They are said to manufacture the copper pans used for cooking or dyeing, and which are frequently of very large dimensions; and they went so far as to point out the place of manufacture, viz. Tassangsee. But I doubt this, for in the first place the vessels resemble much those made in Thibet; and in the second, I saw nothing like any manufacture going on at Tassangsee, except that of burning charcoal, which is much used in cooking. Paper they certainly do make, and in some quantity: I had no opportunity of seeing the process. The material is furnished by two or three species of *Daphne*. The article varies much in size, shape, and quantity; the finest being white, clean, and very thin; the worst nearly as coarse as brown paper. If bought from the manufacturers themselves it is cheap, the price being six annas for twenty large sheets; if from an agent the price of course increases in a centesimal proportion. It is well adapted for packing, as insects will not come near it, always excepting the formidable white ant, who however consumes the contents of the paper, not the article itself. This paper appears to be precisely the same as that manufactured to the north-west and south-east by the Shan Chinese.

The only potteries, I saw were near Pুনukka, but although they supplied the capital, there were only two or three families employed. The clay is obtained close to the potteries, and is of tolerable quality;

it is pulverised by thrashing with a flat club, and is then sifted. It is subsequently kneaded by means of water into the proper consistence. The operations are conducted entirely by the hand, and the dexterity which is shewn in fashioning the vessels is considerable. Of vessels for containing water the upper half is made first, and the under is added afterwards. Those made during the day are burnt at night, being covered with straw, which is then set on fire; the finishing operation, if required, and which is intended as a substitute for glazing, is rubbing them over with tarry turpentine; they are then packed and carried off to market, or rather to the palace: the artists are the poorest of the poor, and as filthy as any other class in Bootan. They live close to the potteries, in the most miserable hovels imaginable. The wares they furnish are of several sorts—dishes, and pans, (some of which have very small inefficient handles) gurrachs, and large oblong vessels for containing water; of these one family consisting of ten or twelve can make a considerable number, say sixty in one day.

Of their manufactures of leathern articles I can say nothing: the only articles I saw of this nature were the boots, which are of untanned hides, and the reticules for holding tobacco, which are of decent fashioning, tanned and coloured. And I believe I may here close the list, meagre as it is, for the sugar, oil, ghee, &c. they use, is all brought up from the Plains. As their manufactures are at so low an ebb, not much is to be expected in the way of commerce; and this must continue to be the case so long as they derive every thing from the Plains, and make no returns whatever; so long as they may live an idle life at the expense of others. Throughout the country indeed there is but little evidence of frequency of intercourse. The busiest place by far was Dewangiri, but this depended chiefly on the steps taken for the provision of our party, and on the daily assembling of the Kampas prior to descending to Hazoo. The Deb is stated to be the principal merchant, but we only met two coolies laden with his merchandise! All the Soobahs likewise trade, but I apprehend their dealings are altogether insignificant; for excepting their followers, who are disinclined to pay, even had they money, and the priests who will not pay, I know none from whom advantage in the way of traffic could with any reason be expected.

The exports from Bootan to the Plains are generally exposed for sale at annual fairs, of which Hazoo and Rungpore are the principal. The articles are ponies, mules, woollen cloth, and rock salt. To these I must add a peculiar spice, known in Assam by the name of *Jubrung*, and which is used, I believe, to some extent by the natives in their cookery. It is very fragrant, very aromatic, and excessively pungent, and if kept in the mouth but a short time, occasions a

remarkably tremulous sensation of the tongue and lips. It is the capsule of a species of *Zanthoxylon* found on other mountains to the north-east, although I am not aware whether it is used as a spice elsewhere than in Bootan. Captain Jenkins first pointed it out to me, and I had several opportunities of seeing the shrub producing it during my visit to Bootan. All these are of inferior quality, scarcely less so, perhaps, than the article in which they pay the greater part of even their nominal tribute. From Thibet they obtain all their silks and tea, there is, however, very little intercourse between the countries.

I am afraid that this very imperfect account will be considered as prejudiced; but I believe it will be found, if put to the test, tolerably faithful. I went into the country prepossessed in favour of every thing bearing the name of Bootan—I expected to see a rich country, and a civilized people. I need not say how all my expectations were disappointed. Whatever ulterior benefits may be derived from the Mission, one, and that by no means inconsiderable, has already resulted—I allude to the demolition of the extravagant ideas entertained, even by our frontier officers, of the prowess and riches of Bootan. As the Mission will have been the means of reducing this people to their proper level among barbarous tribes, we may expect their demeanour will become more respectful, their behaviour more cautious, and the payment of the tribute more sound and more punctual. In a word, they will understand that they are tolerated by—not the equals of—the gigantic British power. I have stated my opinion of them with some severity, but with impartiality; and my conviction is, that they are in all the higher attributes very inferior to any other mountainous tribe I am acquainted with on the north-east frontier.

It must not be supposed that, however disgusted with the inhabitants of the country, the Mission was not a source of great gratification to me. It afforded me an opportunity of visiting a very alpine country; and, what is much more important, of fixing, through the kindness and skill of Captain Pemberton, the localities of nearly 1500 species of plants with such accuracy, that the collection will be of much interest to all students of botanical geography. It afforded me too an opportunity of profiting from the valuable instructions of Captain Pemberton; so much so, that it will always be a matter of regret to me that I was so ignorant of so many essential requisites during the other journeys I have had the honour of performing.

WILLIAM GRIFFITH,

Asst. Surg. Madras Est. in Med. charge Bootan Mission.

ART. II.—*Account of Tamba Patra Plates dug up at Baroda in Goojrat ; with Facsimile and Translation.*

(Laid before the Meeting of the Asiatic Society of 5th June, 1839.)

The Tamba Patras now submitted to the inspection of the members of this Society were placed in my hands by Mr. W. P. GRANT, who obtained them from BENI RAM, of *Baroda*, and whose account of the method of their discovery as derived from that person, was, that they were dug up in excavating the foundations of a house in that city.

The grant is peculiar in many respects. It is in a character not exactly corresponding with any previously observed, but sufficiently similar to that of the grants decyphered by Mr. WATHEN to be easily made out by persons accustomed to the work, after a little study and comparison. The pandits and antiquaries of *Baroda*, indeed, were baffled in their attempts to make out the character, and the plates were put into my hands as undecypherable ; but KAMLAKANTA, the pandit who assisted our late Secretary in his discoveries, undertook the task of reading them with confidence, and accomplished the complete transcription into Devanâgrî in about a fortnight. The plates are submitted to inspection with a transcript, fac-simile, and close translation, the latter made by SARODA PARSHAD CHAKRAVARTI.

They are found to be the record of a deed of grant made by KARKA' Raja of *Lâtêshwara* to BHA'NU BRAHMIN, son of SA'MADITYA, in the year of Saka 734, corresponding with 812 A.D., that is, just one thousand and twenty-seven years ago. Their state of preservation is wonderful for such a period, but that may be owing partly to the purity of the copper, and partly to the care with which the edges have been beaten up so as to take all the friction, and prevent the faces of the plates from rubbing against one another. Their present appearance is owing to an acid having been used to clean them.

Although uniformly clean and bright, the marks of corrosion will be observed in several places, which are the effect of antiquity ; but fortunately the letters are so deeply engraved that scarcely any are completely effaced.

The historical facts deducible from this Tamba Patra are the following :—

First, That towards the end of the 8th and beginning of the 9th century of our era, that is during the reign of CHARLEMAGNE of France, Hindoostan and the Dukhun were divided into four kingdoms :—The *Gajara* Raj westward—the *Mahwa* Raj central—to the east the *Gourha* Raj, (including *Bengal* and *Behar*)—and the *Lâtêshwara* Raj

to the south ; of which last the reigning Raja in 812 A.D. was KARKA' Raja, the maker of this grant.

Secondly, That in the *Lâtéshwara* Raj the following kings, ancestors of KARKA' Raja, had successively reigned :—

1. GOVIND Raja.
2. KARKA, Raja, his son.
3. KRISHNA Raja, his son.
4. DHRUVA Raja his son, who obtained the beatitude of dying at Allahabad where the waters of Jamna and Ganga unite.
5. GOVINDA Raja II, son of Dhruva.
6. INDRA Raja, brother of Govinda.
7. KARKA, Raja II, son of Indra Raja.

Thirdly, It further appears that in 812 A.D. KARKA Raja had no son ; but his brother DANTI VARMA signs as heir presumptive.

Fourthly, The capital of the *Lâtéshwara* Raj appears to have been *Elapúr*, where a magnificent fort and temple of Siva are stated to have been erected by the third of the above race—the KRISHNA Raja.

It remains to identify this dynasty. Of all the lists of Rajas and races collected in the late Secretary's useful tables, the one, and indeed the only one, which contains names corresponding with those found in the present grant is that given in Table XLIV. page 121, headed "Rajas of Chera or Konga," (comprehending *Salem* and *Coimbatore*) and stated to be taken from the late Colonel Mackenzie's manuscript collections.

Amongst the twenty-six princes of that dynasty, taken from the *Kongadesa Raja Kal*,* all the names of our list are found except that of INDRA Raja, the father of KARKA Raja II. This latter name, KARKA, I take to be identical with that of KONGANI, which occurs thrice amongst the twenty-six. The period assigned in the useful tables for the Rajas of *Kongadés* corresponds exactly with the date of our grant ; nevertheless I do not feel quite satisfied with the evidence to the identity of *Lâtéshwara* with the Kongadés, and I should wish the attention of the learned and curious to be directed to the determination of this point, and to the ascertainment of the locality of the famous fort of *Elapúr*.

H. T. P.

* The notice of this work will be found in page 198 of Professor WILSON's printed account of the collection of Col. MACKENZIE's manuscripts, and again in the Rev. Mr. TAYLOR's more recent examination of the manuscripts at Madras. There are, it appears, two copies of the work in Tamul on Palm leaves, from which Mr. TAYLOR has had a copy transcribed on paper, and deeming the work valuable, he has translated it.

स वो ऽध्याह्नसामीशो यन्नाभिकमलाश्रितः ।
हरश्च यस्य कान्तेन्दुकलया समलङ्कृतः ॥१॥

स्वस्ति स्वकीयान्वयवंशकर्त्ता श्रीराष्ट्रभूपामलवंशजन्मा ।
प्रयाणशूरः समरैकवीरो गोविन्दराजः क्षितिपो वभूव ॥२॥

यस्याक्षिमात्रजयिनः प्रियसाहसस्य
दमापालवंशहनमेववभूव सैन्यं ।
मन्ना च शङ्करमधीश्वरमीश्वराणां
नावन्दतान्यममरेष्वपि यो मनस्वी ॥३॥

पुत्रीयतश्च खलु तस्य भवप्रसादात्
सूनुर्वभूव गुणराशिरुदारकीर्त्तिः ।
यो गौणनामपरिवारमुवाह मुखं
श्रीकर्कराजसुभगव्यपदेशमुच्चैः ॥४॥

सौराज्यजल्पये पतिते प्रसङ्गान्निदर्शनं विश्वजनैकसम्पत् ।
राज्यं कुलैः पूर्वमहो वभूव क्षिताविदानीन्तु नृपस्य यस्य ॥५॥

अत्यद्गतं चेदममंस्त लोकः कल्पिप्रभावेण यमेकपादं ।
जातं वृषं यः हतवानिदानीं भूयश्चतुष्पादमविघ्नचारं ॥६॥

विष्णौ जगत्त्राणपरे मनस्ये तस्योचिते तन्मयमानसस्य ।
धर्मात्मनस्तस्य नृपस्य जज्ञे सुतः सधर्मा खलु कृष्णराजः ॥७॥

यो वंश्यमुन्मूल्य विमार्गभाजं राज्यं स्वयं गोत्रहिताय चक्रे ।
ब्रह्मण्यभा तस्य च कापि साभूदिप्राय या केवलजातयोऽपि ॥८॥

श्रेष्ठद्विजन्मोचितदानलुब्धाः कर्माण्यनुष्ठानकृतानि चक्रुः ।
 इच्छातिरेकेन ह्यधीबलानां पयो यथा मुञ्चति जातु मेघे ॥
 भवेन्मनस्तद्विरतौ तथाभूद्यस्मिन् धनं वर्षनि सेवकानां ॥६॥

यो युद्धकण्डूतिगृहीतमुच्चैः सौण्ढ्यौष्मसंदीपितचापदन्तं ।
 महावराहं हरिणीचकार प्राज्यप्रभावः खलुराजसिंहः ॥१०॥

एलापुराचलगताङ्गतसन्निवेशं
 यद्दीक्ष्य विस्मितविमानचरामरेन्द्राः ।

एतत् स्वयम्भुशिववामनकृत्रिमेश्री
 दृष्टेदशीति सततं बह्वर्चयन्ति ॥११॥

भूयस्तथाविधकृतौ व्यवसायहाने
 रेतन्मया कथमहो कृतमित्यकस्मात् ।
 कर्त्तापि यस्य खलु विस्मयमाप शिल्पी
 तन्नामकीर्त्तनमकार्थ्यत येन राज्ञा ॥१२॥

गङ्गाप्रवाहहृिमदीधितिकालकूटै
 रत्यङ्गताभरणकैः कृतमण्डनोऽपि ।
 माणिक्यकाञ्चनपुरःसरसर्वभूत्या
 तत्र स्थितः स्वयमभूष्यत येन शम्भुः ॥१३॥

नृपस्य तस्य ध्रुवराजनामा महानुभावस्तनयो वभूव ।
 तृणीकृतान्यस्य पराक्रमेण प्रतापवर्द्धिर्द्विषतो ददाह ॥१४॥

लक्ष्मीप्रसाधनविधावुपयोगिकृत्यं
 यश्चिन्तयन् स्वयमभूदनिशं कृतार्थः ।
 किञ्चात्र चित्रमनपेक्ष्यसहायमीशः
 सर्वःपुमान्निजबधूं स्ववशां विधातुं ॥१५॥

यो गङ्गायमुने तरङ्गसुभगे गृह्णन् परेभ्यः समं

साक्षाच्चिह्ननिभेन चोत्तमपदं यः प्राप्तवानैश्वरं ।

दहासम्मितवैभवैरिव गुणैर्यस्य भ्रमद्भिर्दिशो

व्याप्तास्तस्य वभूव कीर्त्तिपुरुषो गोविन्दराजःसुतः ॥१६॥

प्रदेशवृत्तिच्यवसायभाजां पुरातनानामपि पार्थिवानां ।

यशांसि यो नाम जहार भूयो भग्नप्रचण्डाखिलवैरिवीरः ॥१७॥

उन्मूलितोत्तुङ्गनरेन्द्र वंशो

महानरेन्द्रीव्रततुक्तुल्यः ।

स्वेच्छाविधायी चरितानुकारं

चकार यो नाम विधेः क्षितीशः ॥१८॥

हिङ्गीरश्चिचितरणोच्चरणनरातीन्

कुर्वन् क्षणेन विदधेऽद्भुतकर्म यश्च ।

चक्रे तथाहि न तथाश्चु वधं परेषां

पार्थीऽपि नाम भुवनत्रितयैकवीरः ॥१९॥

कल्पक्षयक्षणसमुद्भववातहेला

दोलायमानकुलशैलकुलानुकारं ।

यन्मुक्तचण्डशरजालजवप्रपन्ना

युद्वागतारिपुगजेन्द्रघटा चकार ॥२०॥

भ्राता तु तस्येन्द्रससानवीर्यः श्रीमान्भुवि क्षमापतिरिन्द्रराजः ।

शास्ता वभूवाद्भुतकीर्त्तिसूतिस्तदा तु लाटेश्वरमण्डलस्य ॥२१॥

अद्यापि यस्य सुरकिन्नरसिद्धसाध्य

विद्याधराधिपतयो गुणपक्षपातात् ।

गायन्ति कुन्दकुसुमश्रियशोयथास्व

धामस्थिता सहचरीकुचदत्तहस्ताः ॥२२॥

येनैकेन च गुज्जरेश्वरपतियोद्भुं समभ्युद्यतः

शौर्यप्रोद्धतकन्दरो मृग ईव क्षिप्रं दिशो ग्राहितः ।

भीतासंहतदक्षिणापथमहासामन्तचक्रायते

रक्षामापविलुद्यमानविभवं श्रीवल्लभेनादरात् ॥२३॥

तस्यात्मजः प्रथितविक्रमवैरिवर्ग

लक्ष्मीहरोहरपदाम्बुजलग्नचित्तः ।

श्रीकर्कराज्यपरिपालनसर्वरीशः

शास्त्रार्थबोधपरिपालितसर्वलोकः ॥२४॥

राज्ये यस्य न तस्करस्य वसतिर्याधेः प्रसूतिर्मृता

दुर्भक्ष्यं नच विभ्रमस्य महिमा नैवोपसर्गाद्भवः ।

क्षीणो दोषगणः प्रतापविनताञ्चैवारिवर्गास्तथा

नो विद्वत्परिपन्थिनी प्रभवति क्ररा खलानां मतिः ॥२५॥

गौडेन्द्रवंशपतिनिर्जयदुर्विदग्ध

सद्गुज्जरेश्वरदिगर्गलताञ्च यस्य ।

नीत्वा भुजं विहृतमालवरक्षणार्थं

स्वामी तथान्यमपि राज्यफलानि भुंक्ते ॥२६॥

तेनेदं विद्यच्चञ्चलमालोक्य शाश्वतं क्षितिदानं परमपुण्यं प्रवर्त्ति
तोऽर्थधर्मदायः। सच्च लाटेश्वरसमधिगताशेषमहाशिष्टमहासामन्ता
धिपतिसुवर्णवर्षश्रीकर्कराजदेवो यथासम्बन्धमानकान। राष्ट्रपति
विषयपतिग्रामकूलाधिकारिकमहत्तरादीन् समनुबोधयत्यस्तुवः
संविदितं यथामया सिद्धशर्मसमावासितेन मातापित्रोरात्मनश्चैहि
कामुष्मिकपुण्ययशोभिवृद्धये श्रीवल्लभोविनिर्गततत्तातुर्विद्यसामान्य
वात्स्यायनसगोत्रमार्ध्यन्दिनसब्रह्मचारिब्राह्मणभानवेभट्टसोमादित्य

पुत्राया ऋद्धिकवर्तुशीत्यन्तगतपदकानिषानयान्मैतृव्यव्याघाटनानि

पूर्वगतो जन्मवर्षिकप्रमाणसन्तथा देविष्यन्तो महासनकाब्जानङ्गीना तथा
पत्न्यन्तोऽङ्गीर्द्धिनं तथात्तरतो वरधाकथाम एवमसौ वृत्तिराघाटनो

पलायिनः सपरिकरः सर्मनवानप्रत्ययः सदेवदशापरराधः
सोपशमनविद्विकः सधन्यवृद्धिरुद्योदेयः सवृत्तजकोपानाम

हृत्तमप्रज्ञेपणो यः स वन्दकौण्डवसिरेत्पर्वतसमकालीनः पूर्वपौत्रो

दानवधर्मोपयः पूर्वप्रदत्तदेवदशवृद्धिरुद्योदेयः अमिच्छद्वन्द्याशन

शकर्मपकाजानानसर्ववनेसरशानर्ष सनर्ष वृत्तिवृद्धिरुद्योदेयः महा

वृशाखस्य द्वादशदिवसु वलिचपवैश्वयदेवराष्ट्रहृषीषानिषिपव

महावृत्तकनिकथानसपूर्णाधुः प्रतिपादितः। यतोऽस्त्योषितया

वृद्धिदेवस्थिरा अञ्जनी भोजयतः प्रतिदेशतो वा वपतः कपूयञ्च

न कूलचित्ते प्रतिवन्दयता काट्या नङ्गीना विविभिस्सहस्रैरनुचैः सामा

न्वर्षमिदंनमनवाकङ्किर्वृद्धिर्बालान्यनिन्यान्वैश्वरव्यापिण्येनयत्तयज

वृत्तिवृद्धिर्बालान्यनिन्यान्वैश्वरव्यापिण्येनयत्तयज

वृत्तिवृद्धिर्बालान्यनिन्यान्वैश्वरव्यापिण्येनयत्तयज

वृत्तिवृद्धिर्बालान्यनिन्यान्वैश्वरव्यापिण्येनयत्तयज

अथं जानतीति ॥

पतिजाठदेस मर्कित कविपदस्य लज्य श्रीपरमापिता पदा
दिनः बालानामययन्त्युला बालाबालानां पदं कालपा पदञ्च
निदिवननइतिनाथ पतिवोषपमान परिशोनीनपानजानिमी
विषयपरिशोना वीषियथ श्रीपरमान्यस्य धीविशिशयस्यसिभिव
तकश्रीवाविद्विद्याय मदेतो गणितपि किलजानितिवलपतिव
उसंनना नमदिदयेति ॥ अथञ्च यामोनीननरपतिपरीखणान
स्य ॥ लिखितश्चैतन्मया महासिधविद्यया विधायकैवकैरुशोभ
देतिनवन्मो । स्वहन्तो मम श्रीककरूजस्य श्रीमदिदंरजस्यन
नृपाणां कालकालपावनीया भवन्ति । इतकश्चात्र राजपुत्रश्री
वन्देन अथो अथो यावन् रामभद्रः । सानात्तयाय वमसुपे
उक्ताश्च भगवता रामभद्रे ॥ सर्वानानान् अतिवः पाषि

अतिविमलमनोनि राममनीनूनिह पृषुषैः परकीनूयो विबोष्याः ॥
इतिकमलदेलाभर्षलात् । अथमनविचल्य मनीष्यजीवितञ्च ।

मह्यं मह्यंभगं अथ दानात्कथोऽनपावत् ॥
स्वदेतां परदेतां वा यथाहं च नराधिप ।

निन्मसाव्यधानप्रतिमान्ति नाति को नाम साधिः पुनररादेदीत् ॥
यानीह देतानि पुरानरेदुं देनानि यमनाथ्ययश्चकारात् ॥

TRANSLATION OF TAMBA PATRA PLATES.

1. May he in whose lily-like navel Brahmá took his abode, and with whose wife's brother (i. e. the moon) Siva is ornamented, protect you.

2. There was a Rájá named GOVINDA Rájá who was the superior of his race, and the ornament of the *Surastra* kingdom ; he was sprung from a spotless line, a hero in enterprize, and most valiant in war.

3. He (GOVINDA Rájá) was most gallant, intelligent, and victorious at his first glance over all. His armies were like ploughs rooting up the royal families (of his enemies). He never adored other gods but Siva, the god of gods.

4. From him, anxious to obtain children, was born through the favor of Siva, KARKA Rájá, who was possessed of all good qualities. The name was well adapted to him.

5. His (KARKA Rájá's) kingdom, (which lost the appellation *Sowrájya* through the ruin that had fallen upon it, but the remains of the splendour of which are esteemed by the universe) was formerly governed jointly by the descendants of this race, but afterwards by him alone.

6. Men were struck with surprise by his restoring the *Vrishá* to its four legs, which had been reduced to one by KALI' (yúga), and by his making it to walk without limping.*

7. It is not wonderful that he governed his people with propriety, (being so gifted) ; having placed Vishnú as the object of his meditation, he (died and) was succeeded by his son named KRISHNA Rájá, who was virtuous, and like the son of DHARMA (JU'DHISTHI'RA) : he expelled those who were addicted to evil, for the prosperity of his line and reign.

8. His devotion to Bráhmans was unspeakable and confirmed, and those who were only nominally Bráhmans (i. e. who had fallen off from their religion) resumed their former rites through the greedy desire of obtaining gifts from him, which were due to more perfect Bráhmans.

9. By his constant liberality the minds of his attendants were refreshed like those of farmers by exuberant showers.

10 He who was like a lion among Rájás, and powerful in sovereignty, overcame his boar-like rivals like deers ; though their teeth, curved like bows, were radiant with the rays of heroism, and they itched with the desire of fight.

11 The immortals walking on the firmament, being astonished with

* This is a figurative mode of saying "That he restored to virtue the three parts which it is supposed to have lost in the Kali yúga," the word for quarter पाद being the same as for foot, makes the conceit which gives point to this expression.

the view of his fort of *Elapúr*, declared continually that the beauty of that fort was no where to be found but in the works of Swayambhú, Siva, and Bámana.

12. The architect of it was himself struck with wonder at its beauty. His name has been proclaimed every where by the king himself.

13. The image of SAMBHÚ' (Siva) established therein, though wonderfully ornamented with the symbols of Gangá, the crescent and the kálakúta (a kind of poison), yet was further adorned with ornaments of gold and jewels, and several other materials.

14. His (KRISHNA Rájá's) son was DHRU'VA Rájá : his enemies, who were humbled by his might, were burnt by the fire of his spirit.

15. He was successful in his endeavours to bring LAKSHMI to submission, how wonderful!! for even SIVA, though lord of all, was unable to make his wife obedient to him without resuming his godhead.

16. From DHRU'VA Rájá, who established peace with all his enemies, and who attained the final and the highest rank of gods (dying) at the junction of the waters of *Gangá* and *Yamúná*, immersed in them with remarkable signs, and whose merits covered the universe, was born GOVINDA Rájá, who was famous.

17. He deprived all the kings of antiquity who had their communication with different countries of their fame, and destroyed all his enemies.

18. He was in all circumstances irresponsible, and resembled the *Creator* in his conduct, destroying all rival claimants to royalty in his time, and setting them at defiance.

19. He did such wonders in battle, that his foes acknowledged that they had been taught by men ignorant of military affairs. He was like PA'RTHA, the only hero in the three regions who never deprived his enemies of their lives.

20. The elephants of his enemies which came forward in battle and were pierced with his shafts, resembled the wall mountain of the world shaken by the winds at the end of *kalpa* (during the deluge.)

21. His brother INDRA Raja, a king powerful like INDRA, governed the kingdom of *Látéshwara*. He performed many wonderful deeds.

22. To this day, the Gods, Kennaras, Síddhas, Sádhdhyas, and the Vidyádharas, who have heard of his qualities, are singing his *kunda*-flower-like fame, lost to all sense of shame in their transports, and putting their hands on the breasts of other's females, (i. e. they are so deeply engaged in song that they have become out of sense.)

23. He soon reduced the king of *Gujjara*, who prepared to engage in war with him, and who raised his head with bravery, to fly skulking like a deer, and after plundering all his estates restored him again, out

of compassion, saving his chieftains from ruin who were afraid of (him) and scattered in different places.

24. His (INDRA Rájá's) son was the LAKHSMI enticer, whose mind was devoted to the lily-feet of HARA (Siva), and whose spirit was felt by his enemies, like the moon in disposition—KARKA Rájá who preserved mankind.

25. There was no robber in his kingdom, nor any sort of mortification, nor famine, nor fear, accidental or natural. All kinds of vice were reduced to a low ebb, and his enemies were humbled; none had the presumption to show disrespect to those who were learned.

26. The owner of *Málava*, in order to defend his kingdom from the invasion of the king of *Gourha* (Bengal) used the (uplifted) hand of KARKA Rájá as a stay on the lord of *Gujjara*, and thereby enjoyed all he desired.

27. He having considered life to be fickle as the lightning, and the virtue of giving land durable, executed this religious gift.

28. He, the king of *Látéshwara*, possessed of armies and many chieftains, brought into submission in different countries, and in whose reign there was a shower of gold, thus proclaims to all his statesmen, the treasurers, the functionaries, and those who have the care of castes, with the respect due to them.

Be it known to all of you, that for promoting the virtue and fame both here, and in the next world, of his father, and mother, and himself, he, the said Rájá, has presented for continuing his five *jagnas* to the Bráhman BHÁ'NU', who belonged to the line of VA'TSA'YANA, and was acquainted with the four *Vidyás*, and who was a religious student, the son of SOMA'DITYA, the fertile village called PATTANAK, part of the tract containing eighty-four *anghotans* (each 100 begas) bounded on the east by the village of *Jambúbábiká*, on the south by *Mahá Sanaka*, on the west by a *nala* (*ankootaka*), and on the north by the village *Bagghachha*. The land within the above boundaries is to be enjoyed with all marriage and other fees from cultivators, with all fishing and fruit privileges, with all that may be washed or deposited by torrents, with all fines for petty offences, with all free labour privileges, with all rights of treasure-trove and mines, without interference of any kind from government officers. It is to be enjoyed in full property as a perpetual inheritance by the said Bráhman, his sons, and posterity for ever, so long as the sun, moon, and rivers, and the mountains shall endure! It is not to be touched by the hands of the king's servants, nor to be claimed on the part of gods and Bráhmans, by whom it was heretofore possessed. Given in the year of Saka's death 734 on the 12th of Bysakh (24th April, 822 A.D.)

Let none obstruct his (BHA'NU's) enjoying, or letting others enjoy it; or his ploughing, or letting others plough. After this, let future Rájas of our race, or of any other race, reflect that wealth and life are unstable as lightning, and fickle as water in the leaf of water lilies, and so let them respect this our grant, and confirm the grantees in possession. He only whose mind is blackened by the darkness of ignorance will resume, or be pleased at seeing others molest its possessor, reckless of the guilt of the five deadly sins and other heinous crimes, as described at length by VE'DAVYA'SA.

He who grants lands lives 60,000 years in heaven, but he who confiscates or resumes, or allows others to do so, is doomed to hell for a like period.

Those who resume lands granted by others will become black serpents in the dry holes of the forest of the *Vindhya* mountain.

Gold is the first offspring of fire, and the earth the wife of VISHNU, and cows are the daughters of the sun. He who grants these things gives also the three regions.

The earth has been enjoyed by many kings, as the SA'GARA Rája and others, and he who rules it in his turn, is the sole enjoyer of its fruits.

But what generous man will take again the grants made by Rájas who have gone before him, and whose gifts are like wreaths of flowers, spreading the fragrance of a good name, and of the reputation for wealth and virtue.

Oh ye virtuous kings, respect the grants of lands (given by others), for to preserve their grants is better than a fresh donation.

Men whose minds are cleared from sin, considering life and wealth fickle as water in the leaf of the water lily, will never destroy the fame of others.

It is further said by RA'M BHADRA—You who are the best of Rájas, are hereby repeatedly prayed by RA'M CHANDRA to preserve this bridge of virtue for ever.

Confirmed by the counter-signature of the presumptive heir and brother of the king, DANTI VARMA, and signed with the autograph of myself the KARKA Rája, son of INDRA Rája, and prepared and engrossed by the hereditary servant of the king for peace and war, NUNADITYA, son of DURGA BHATTA. For the good of my father and his ancestors have I made this grant to the Bráhma BHA'NU', who has served my family with his prayers for many years. May he enjoy the grant, and profit by it!

N.B. There are several counter-signatures, apparently autographs, in the last four lines of the last plate, which besides that they are of doubtful reading, it would be of little interest to transcribe. On the outside are the words "Tis for the good of my father and mother."

ART. III.—*Collection of Facts which may be useful for the comprehension of ALEXANDER THE GREAT'S exploits on the Western Banks of the Indus (with map).*

By M. A. COURT, *Ancien Eleve de l'Ecole Militaire de Saint Cyr.*

(Translated for the Journal of the Asiatic Society from the French Original M.S.)

The military achievements of Alexander in the regions which lie between the Indus and the Cophenes form one of the most brilliant episodes of his history.

Those regions at present are known by the name of Yousoufzeïs, Kooner, Suwat, Dhyr, Bajore, and Moumends. More northward lies Kaffristan, which occupies the southern and northern sides of the gigantic snow-topped chain of mountains which bounds this country to the north, and is but an extension of the Himalayas, and to the west reaches Hindo-Koosh at the Khound, an enormous ridge, the tops of which are flat, and almost perpetually covered with snow, a circumstance which renders it observable at a great distance: there are likewise visible the banks of the Indus, from which it is about eighty koss distant.

Those regions are bounded on the east by the Indus, on the south by the river of Cabul, which is no other but the Cophes or Cophenes of the Greeks, placed by Arrian at the eastern extremity of Paropamis, and the source of which Pliny collocates in the north western part of this mountainous province, assigning its course eastward, and stating that after its confluence with the Choes near Nyssa, it falls into the Indus to the south west of Taxila below Ambolima (probably *Amb*)—data that perfectly combine with the Cabul river, which I have described in my journey through Affghanistan. This name Cophes, by which it was known to the historiographers of antiquity, seems to have been given it by the Greeks, who may have derived it from *Cophenes* who perhaps then governed the country it washes in the name of his father Artabazus, whom Alexander had appointed prefect of Bactria. This is at least what induced Arrian to adopt the above opinion, who relates that Alexander was accompanied, on his arrival at the banks of the Indus, by Cophes and Assagetes, *ὑπαρχοὶ* or *sub-rulers* of the province situated to the west of that river. Or perhaps it is the name which it originally bore, and from a corruption of which the Mahometans formed the word *Kaffristan*.

This vast extent of mountainous country is very little known to Europeans. The geographical details which Quintus Curtius gives of it are too succinct, and it is a matter of much regret, that the veracious

Arrian has been incomparably dry, when treating this subject. Add to this the disastrous conquests of the Mahometans, who spread throughout trouble and confusion, besides the custom that prevailed, wherever the Greeks of Alexander's army were to be found, of changing the names of the places which they traversed, and we must unavoidably conclude that it is no easy task for a traveller to discern true from false.

Among the Oriental works (that treat on this subject) we have only the commentaries of Baberch on which we can rely for exact information. The few modern travellers extant are vague and uncertain. Those regions would procure for any European who would survey them, the glory of throwing a brilliant light on Alexander's march, and of enriching science with hitherto unknown facts relative to the Bactrians ; in as much as they are overspread with ruins, cupolas, and inscriptions, all referring to those conquerors, and attributed by their actual inhabitants to the Caffrans. They are alluded to by the Chinese Religious, who traversed those countries in the commencement of the 7th century of our era, and whose manuscript exists in the Oriental Library of France. But whatever European may undertake a similar journey, must expect to encounter numberless dangers, and almost insurmountable obstacles from the barbarity of the tribes who inhabit them, and above all from the jealousy of the chiefs, who, naturally suspicious, are always inclined to form sinister judgments of the projects of any stranger who travels through their district. This was the lot of Dr. Henderson, who desirous of crossing those regions to repair to Badakchan, although he was disguised as a fakeer, and had a perfect knowledge of Persian, was seized, stripped, and beaten, for having put his foot in Suwat, and was compelled to return to Peshawur, where I had the good fortune to attend him. Subsequently I myself having become intimate with the chiefs of those regions, had cherished some hope of being enabled personally to explore them ; but unfortunately the rank I hold in the army of the Maharajah of Lahore occasioned them so much terror, that they imagined that my researches, far from being actuated by curiosity and an interest for science, were only directed to explore the country, so as to facilitate its conquest by Runjeet Sing. I was thus constrained by their earnest remonstrances to abandon my intention of undertaking such a journey, and to content myself with having recourse to the people of Peshawur to survey secretly the country, so as to acquire some knowledge of its geography.

The items which I have had here transcribed in Persian were collected by them, and I only give them publicity in order to fix the attention of the geographers and archæologists who may happen to come hither after me, and to facilitate thereby the combination of modern

with ancient geography. I may possibly avail myself of these materials hereafter, to furnish a complement to my conjectures on Alexander's marches through Bactria.

The country which I am about to describe, is intersected by three principal rivers, viz. the Khonar, the Penjecooreé, and the Suwat.

The first directs its course S. S. W. along the southern side of the snowy chain above alluded to, dividing Caffristan from the cantons of Bajore and Dhyr, and after rolling its impetuous waters through a bed strewn with rocks, wherein it would be difficult to meet any sand, it falls into the Cabul river, almost opposite the city of Jellalabad. I know not where it rises; some place its source in Cachgar, which it intersects. The proximity of the snowy chain, and the direction of the river's course, denote that it must necessarily have more than one influx. During the liquefaction of the snow it acquires so great a volume of water that it cannot be crossed but on rafts. This river, as I have stated in my memoirs, is denominated *Sind* by the Kaffrees who inhabit its banks, and *Khonar* by the Affghans, a name borrowed from a town that is the capital of a canton or district situated on its western bank, between Jellalabad and Bajore. Some travellers improperly give it the name of *Khameh*.* This may be possibly the *Choes* of Arrian, which Alexander coasted on his march to *Suastus*, to which his troops may have given the name of *Choes*, a corruption probably of that of *Cheva*, a canton situated at its confluence with the Cabul river, which may have anciently given its name to this river, as the town of Khonar gave its own. As the Greeks sometimes translated the names of foreign places, and liked to call them by particular ones somehow connected with the traditions they indiscriminately adopted, they may possibly have *baptized* with the name of *Choes* one of the rivers of those regions, in memory of the festival of *Choes* (Χόες) or of the libations which the Athenians celebrated in the month of Anthesterion in honor of Bacchus, and which they also styled Ἀνθεσῆρια.

After what Strabo relates, we would be led to suppose that the river in question is his Choaspes, which disembogues, according to him, into the Cophenes.

The Penjecooreé rising in Ghilghit, flows between the Khonar and the Suwat: its direction is from north to south. It is called *Penjecooreé* because it is formed from the union of *five* other rivers, viz. the Tal, the Laori, the Awchiri, the Neag, and the Jindé; the first of which is the most considerable of the five. Besides those influents, it receives

* This river is marked "*Kama R.*" in Tassin's map.

several others of inferior note, such as the Berravol and the Caron; the latter intersects the district of Penjecoore between the Awchiri and the Suwat.

The river of Penjecoore is the most considerable in those regions next to that of Cabul; hence I have to say of this also, that during the liquefaction of the mountain snows it cannot be crossed but with rafts. Without being very deep its current is extremely rapid, and its bed is so sown with rocks and slippery stones, that of ten persons that wade it when its water is low, half are sure to stumble. After leaving Dhyr. until its confluence with that of Suwat, it is known by the name of Penjecoore, and thence, until its union with the Cabul river, by that of Suwat.* I am inclined to think that it is the *Guræus* of the Greeks.

Respecting the Suwat, I am at present unable to speak of it, being occupied at this very moment in getting its source explored. The Hindoos only know it by the name of *Sihon pedra nadi*. The latter is undoubtedly the *Soobah Vastoo* of the Chinese Religious, and the *Suastus* of Ptolemy. I would have it here observed, that the Suwat and Penjecoore rivers are frequently confounded with one another by the inhabitants themselves of lower Yousoufzeis, because they mix their streams before they disembogue into the Cabul river, i.e. the Cophenes. This mistake only takes place below their confluence, which occurs at the point of Goozar Mamani, situated six or eight koss from the ruins of Talache, in as much as above it they retain their distinct denominations.

The Suwat is indisputably the *Suastus* of Arrian, on which Alexander sailed after coasting the Choes.

Of a vast number of ruined cities which those regions present to one's view, those that most deserve the attention of geographers and archæologists are the following:—

1st. The ruins of *Talache*, situated between the confluence of the Penjecoore and the Suwat. In the midst of these massy and immense ruins exists an enormous cupola, of much more elaborate architecture than other monuments of that description, because it is said to support around its base a number of *basso relievos*.

2nd. The ruins of *Berikoot*, attributed to the Caffre Béri, on the eastern side of the Suwat, not far from the city of Manglore, or Mangar, near which is the cupola of Chinguerdar, attributed to Abou-Padsha, and equally remarkable with that of Talache. A beaten

* "*Landyk river*" of Tassin. The "*Penjecoore R.*" of M. Court has no representative in Tassin.

track through a rock leads to those ruins which are delineated on the back and top of the mountain. Farther on, on the same grounds, are those of Hira and Badakhel: the latter, being the vastest of all, are assigned to Doomma Padsha.

3rd. The ruins of the city of *Aritchend*, improperly denominated *Artechend* by the Mahometans. They are observable on a height environed on all quarters by deep ravines. They are eighteen koss north of Peshawur, and six east of Fengui. They are attributed to the Kaffrans, and may possibly be the *Arigæum* of the Greeks, which was razed by them, and whose advantageous position induced Alexander to order Craterus to demolish its walls. To the west of these ruins, and on the western bank of the Suwat and Penjecooré united, lie those of Khound, which reach down to the river.

To the north of Aritchend are the ruins also of *Sakout*, where the impression of a foot is visible, and those of *Diguer*, situated on the southern side of mount Malekan. To the south of Aritchend are also observable those of *Radjer*, or *Razor*, of *Seidabad*, and *Kalader*: they are attributed to the Caffre Farikhi.

4th. We cannot consider with equal attention the ruins of *Béhi*, attributed to the *Rajah Verrat*, which according to the inhabitants of the place were the former sojourn of the monarchs of that country. They lie to the north east of the present city of *Achnagar*, and are situated on the level of mount *Béhli*, insulated as it is, in the centre of the immense plain of *Yousoufzeis*. There are visible there, it is said, grand traces of massy walls, some *basso-relievos*, and the ruins of a subterraneous aqueduct, (which conveyed thither the water of the *Penjecooré*) after leaving the ruins of *Radjer* situated close to *Achnagar*. Directing your course thence towards *Booner* you meet, at twelve koss distance, mount *Mahram* which contains also some ruins, and may probably be the *Meros* of *Arrian*, which *Alexander* ascended with all his army after taking possession of *Nyssa*, by our geographers supposed to be identical with *Achnagar*. But what destroys this probability is, that the district the *Macedonians* recognised with jubilee is not discoverable in those parts, and cannot be traced out, but in a more northern latitude beyond the *Malekan* ridge. I must however here remark, that there are several mountains in those regions called *Mahram*, and among the rest one in *Bajore*, and another at *Cashmeer* close to the city.

5th. The ruins of *Meidan*, where a rather unimportant inscription has been reported to me to exist, merit not to pass unnoticed, in consequence of their extent and proximity to the *Penjecooré*. The same must be said of those of *Ganchal*, situated in the canton of *Tal*, three days journey north east of *Meidan*, and twelve koss from *Dhyr*, as well as

from the castle of Soun, observable to the south of the river Awchiri, and containing lead mines in its vicinity.

6th. The ruins of *Doomma*, situated on a very lofty mountain, whence the surrounding country is discernible; those of Dankool are a little further up. Those cities bear the names of the monarchs that founded them, and are situated in the eastern part of the Yousoufzeis, not far from the Indus.

7th. I shall draw attention in the last place to the ruins that are two koss to the west of the present town of Dhyr, and which are assigned to the Kaffrans, who were dispossessed of them by the Mahometans, when that city was governed by the Caffer Kirkat. These merit that the greatest attention should be paid to them by travellers, in as much as, after the relations of Kazan Khan, chief of Dhyr, and on account of the combination of the latter name with the *Dyrta* of Arrian, I have scarcely any doubt on my mind that this is the city which Alexander passed, when he was pursuing the brother of Assacanus, and whence he set out for the Indus. If my opinion could be borne out, with such a cue it would be extremely practicable to determine the true positions of Ora, Bazira, Massaga, and other places mentioned by the above historian, concerning which I have been unable to obtain any precise information, notwithstanding the thorough researches I have made. Nevertheless I shall observe that the Hindoos of those districts assured me, that a city called Massangar, known also by the name of Maskhiné, exists on the southern frontier of Kaffristan, close to Baba Kara, twelve koss from Bajore, and four from mount Mahram, which is in that canton. They also added that the tribe called *Assacenis* exists in that country. If such a relation were well-founded, we should discover there the Massaga of the Greeks, the capture of which cost so much blood to Alexander, and the massacre of whose intrepid garrison cast a blemish on the exploits of that conqueror. I am not aware if this Massangar be identical with the one alluded to by Forster, who travelled through Suwat.

I have been similarly assured that there exist in the district of Booner the traces of a town called *Oora*, which has been also denominated *Doora*, and which on account of its proximity to the Indus may probably be the Ora of Arrian, (although Bazira has not been yet discovered in its vicinity) especially as that river is not known higher up, but by the name of *Ab Sind*, whence it may be conjectured, with some probability, that the country it washes in that part may have been the region of that Abissares, on whom our historians waste so many hypotheses, and who, according to Arrian, sent resources to Ores, when Alexander was besieging that city. *Apropos* of Abissares, I do not deem it here

superfluous to remark that there is a mountain two days' journey N. of Dhyr, by name *Ser-Adkamoos-Ouré*, situated on the route leading to Badakchan, a region near which is a place called *Hissar*. This latter word in Hindee signifies a *fortress*, whence the present city of Achtnagar is also known by the name of *Hissar*.

I had also had scrupulous researches made concerning the *Aornos*, but with similar mal-success. Alluding to this rock, I have already observed in my journey through Affghanistan that a similar mount presents itself (with all the peculiarities described by Arrian) in the canton of *Naoghi*, near Bajore, where the vestiges also exist of a city named *Ambar*, which is probably the Ambolima of Ptolemy, placed by him on the lower branch of the Choes or Cophenes.

The persons I commissioned to explore the country about Dhyr reported to me, that in the canton of Laori, near that of Dhyr, there exists a mountain corresponding in all its particulars with the *Aornos*. Others have assured me that there is a similar one in the canton of Booner, a region, like all the rest of Yousoufzeïs, interspersed with insulated mountains, whither the inhabitants take refuge in case of imminent danger, and which, considering the proximity of the city of Amb, capital of a canton situated on the Indus, renders such an opinion sufficiently probable. I must also subjoin, that beyond the territory Mola Goori, situated below the confluence of the Penjecooré and the Suwat, to the west of both those rivers united, a mountain is observable called *Salata*, and also named *Azarno*, which on account of its insulated position and elevated form, resembling a flattened or headless cone, may be easily taken for the *Aornos*. This mount is quite perceptible from Peshawur, behind the defile of Fengui, as its summits far surpass the Malekan ridge. I shall also observe that on mount Guendeguer, to the N. E. of Azerou, places situated to the east of the Indus, there is the fort of *Serikoot*, a name bearing a striking resemblance to that of *Sisicotte*, to which Alexander confided the garrison of *Aornos*. The former is a renowned stronghold of those regions, having cost the Sciks a great deal of blood, and being the place whither the inhabitants of the surrounding countries resort for shelter in cases of peculiar peril.

After surmises of this sort, we must infer that it is extremely difficult to know which opinion to embrace, especially as the ancient historians themselves are not agreed on this important point, which constitutes one of the most brilliant of Alexander's exploits. Arrian collocates *Aornos* near Bazira; Strabo towards the sources of the Indus; and Quintus Curtius on the banks of that river. With reference to the latter opinion, I would observe, that a rock exists opposite

Attok, with all the peculiarities described by him, on a mountain that is topped by a castle, attributed to Rajah Hody. It cannot be ascended but on the side of the Indus, by a steep passage hewn through the rock, and enclosed by two walls of defence, running up zig-zag according to the protuberances of the mount. The space immured by those walls is filled with ruins of habitations gradually rising from the brink of the river up to the castle. Those works are all entire, and have the appearance of great antiquity. The three heights whereon Alexander sacrificed to the gods still exist, but I must avow that no arable ground or spring can be discovered. There are only two reservoirs built by the vizier of Zamenchah. The heights are at present occupied by small forts defended by the *Mazbis*, an Indian sect in the service of the Maharajah of Lahore.

Of the great number of cupolas existing in those regions I shall distinguish the following :—

1st. That of Talache, which I have already alluded to, and the five or six others that are discoverable not far from those ruins, in the defile that leads from the Suwat to the Penjecoóré.

2nd. That of Chinguerdar, situated between the ruins of Berikoot and the town of Manglore. Another is observable more to the southward.

3rd. That of Charbag, present capital of Suwat.

4th. Those that exist among the ruins of Sedougan, to the east of Manglore.

5th. Those of Berikoot, situated near the village of Nakmira.

6th. That of Charkootliá, fifteen koss to the east of Aritchend, as well as that near the ruins of Seidabad. The latter is as large as that of Chinguerdar.

7th. That of Sepel-banda, near the village of Khari, and as large as that of Chinguerdar.

8th, Those of Heniapor, one of which is near the village of Fooraseuk, and the other under mount Jaffer.

9th. That near Sonigheran.

10th. The two existing on the ruins situated at the foot of mount Sookker, near the village of Riga.

11th. Those in the villages of Fakttahind and Caboolgheram.

12th. Those, in fine, of Chammeley, situated on the top of a mountain.

All those massy cupolas which I am describing, are in the Yousoufzeis territories, by which is meant all the territory comprised between the Indus and Penjecoóré, from the snowy chain to the lower branch of the

Cabul river, viz. the Cophenes, and which includes Yousoufzeïs proper, Booner, upper and lower Suwat, Penjecooré, and the dependencies of Dhyr.

Remarkable places being points that may serve for comparative geography, as well as rivers and mountains, I shall select the following for observation :—

1st. The cave Cashmeer Ghar, situated in the territory of the Baboozeïs, on a mountain which cannot be ascended but by a steep passage, hewn in a great measure out of the rock. This place is also called Pelley, and is sixteen koss from the town of Soukhor. The cave is said to be of an immeasurable depth, and to have so large an aperture, that it is impossible to discern the direction by casting in a stone. As both sides of the entrance are of solid masonry, and the front is encumbered with enormous cut stones, one would imagine that it is one of the subterraneous temples attributed to the Pandoovans, or to the Caffers. At present it is a place of shelter for myriads of wood-pigeons. Quite close to it are visible the traces of a town or castle, whence idols are sometimes dug up ; a basin also is observable there continually supplied with water. I had been assured that an inscription was discoverable, but my men could trace out none whatever. I am not aware if this cave be identical with that of Roostam, to which I have alluded in my description of Yousoufzeïs.

2nd. The sandy cave of Dekia, situated at the foot of mount Ghardoom in the district of Dhyr, on which there are the traces of a town.

3rd. The Khial cave, near the ruins of Meidan, in the canton of Bajore.

4th. The vast basin that exists on mount Bikary, to the west of Dhyr, being a place of pilgrimage for the Hindoos, who give out that their *Pir* disappeared on that spot.

5th. The basin situated to the east of Dhyr in the district of Tal, where a fire exists under a cupola maintained from time immemorial, and kept up at present by a Guebrian woman.

6th. Lake Mansoroor in Bajore, situated on a mountain fifteen koss from Bendy Berravol, which is continually supplied with water in consequence of the perpetual snow.

7th. Mount Hilo, situated in Yousoufzeïs, by the Mahometans denominated *Hilum Pilum*, and by the Hindoos *Ramtaht*. This place is much frequented by the latter, who perform an annual pilgrimage thither during the month of April, in memory of Rajah Ramtchend. Those Hindoos likewise make the pilgrimage of Chamra, situated near Ootchan, country of the Samoozeïs

Prior to my drawing this article to a close, I deem it an interesting topic, to make an observation on the region of Tchêlas, situated on the eastern bank of the Indus, four days' journey (more northward) from Pakhley and Dembor. This region is said to be highly remarkable for the number of ruined towns it contains. Although situated in the neighbourhood of the snowy chain, it may well have been the *Taktchashilas* of the Chinese Religious, a word which may be decomposed into *takt*, a throne, *chah*, a king, and *shilas* a corruption of *Tchelas*; and thus form a ground for a probable hypothesis, that the Greeks thence derived their *Taxila*. The inhabitants of Upper Suwat who repair to Tchêlas, cross the Indus at Goozer Chekhi, whence is visible on the eastern bank mount Mehoor, situated almost opposite the Cabool-Gheram ruins, which are discoverable on the contrary beach.

Higher up, on the upper branch of the Indus, lie the regions of Ghilghit, Ashoor, Goræi, Khélooman, and Balooman, formerly inhabited by the Caffers.

The ferry points of the Indus from Attok to the snowy ridge are the following: Attok, Bazar Hound, Monari, Pehoor, Notchy, Kabbel, Chetabla, Amb, Derbend, Chetterbahi, Mabera, Toohara, Marer, Didel, Kamatche, Behar, Pachetlehi, Guendoo, Mattial, Bâttera, Jendial, and Manial, Kallehi, Palles-pattan, Pohoo-Goodje, Koonchir and Jalkoot.

ART. IV.—*Remarks upon the Rain and Drought of the last Eight Seasons in India.* By the REV. R. EVEREST, *Landour.*

In two former papers I endeavoured to trace the variations of the past seasons, as to drought and moisture, by means of the prices of corn, having assumed that the wettest years produced the most abundant harvest, and the driest the reverse. An examination of the subject shewed that the more extensively the averages of prices were taken, the greater approximation there was to a regular ascending and descending series, or curve, with recurrent periods of from six to ten years; thus leading to the belief, that, if the average of certain atmospheric phenomena over a surface sufficiently extensive could be taken, the result would exhibit recurrences nearly or altogether regular. I will now shew how far the Register of the different Rain Gauges corroborate or not this opinion. The following are the annual depths of Rain that have fallen in different parts of India during the last eight years.

	Calcutta, inches.	Madras, inches.	Bombay, inches.	Dehli, inches.	
1831	58·78	40·30	99·64	..	To obtain the average variation, let us take the maximum and minimum at each place, and divide the whole difference between them into one thousand parts; then for the number itself substitute the proportional part of the difference.
1832	50·25	20·07	78·20	..	
1833	60·36	36·99	71·00	14·15	
1834	68·73	40·17	66·59	36·85	
1835	85·50	37·26	62·19	27·70	
1836	45·66	47·59	87·99	35·00	
1837	43·61	49·27	64·99	10·55	
1838	53·02	54·33	50·78	20·31	

Thus at Calcutta we have 1835 1837
 85·50 43·66

These will by the proposed substitution become ... 1835 1837
 ... 1000 000
 and the whole will stand thus:—

	Calcutta.	Madras.	Bombay.	Dehli.	Average.	
1831	362	295	769	..	475	It appears from this average that the minimum has recurred in five years, which is a period somewhat shorter than we should have been led to expect from an examination of the prices of corn for many years back.
1832	158	000	441	..	200 —	
1833	400	246	452	137	309	
1834	600	293	401	1000	573	
1835	1000	250	352	652	563	
1836	050	401	635	929	504	
1837	000	425	376	000	200 —	
1838	225	499	216	371	328	

I have before stated, as one of the results of such an examination, that there was a more perfect recurrence at the end of fifty six years than at any other period. Thus comparing together different years with that interval between them, we have the following:—

<i>Maxim</i> : or years } of abundance. }	.....1815.....1822-23.....1829.....1835-36
	.....1759.....1767 .....1773
<i>Minim</i> : or years } of scarcity. }	.....1819-20.....1826.....1832
	.....1763 .....1770.....1776

In searching for data to elucidate this part of the subject, I obtained sight of an old manuscript Register in the Surveyor General's Office, from which I was enabled to compare the annual amounts of rain for the last eight seasons with those fifty-six years before. The Register appears to be imperfect, and, unfortunately, to have been kept by an illiterate person. The daily entries begin towards the latter end of 1776, but, from a note we learn what had been the annual amount of rain both in that year, and in the year previous. I here subjoin them, and place by the side of each the depths registered 56 years afterwards.

Annual depth of rain at Calcutta in inches.

Rain inches	Rain inches		
1775 55·24	58·78	1831	It will be observed that the depths are much less in the earlier period than in the later. This is partly owing to the height of the Gauge above the ground in the former case, for which allowance might be made, but this would not be worth while, as there are other sources of error which could not be calculated.
—1776 39·26	50·25	1832—	
1777 62·07	60·36	1833	
1778 59·30	68·73	1834	
+1779 64·51	85·50	1835+	
1780 64·20	45·66	1836	
1781 59·90	43·61	1837—	
—1782 41·07	53·02	1838	
1783 52·22	....	....
1784 51·58	....	....
+1785 69·75	....	....

For the years 1784-85 we have another register published in the Asiatic Researches, which gives the annual amount thus:—

Year,	1784	.....	1785.
Inches,	81·0	.....	77·5

Let us now recapitulate the principal *maxima* and *minima* for 56 years. They are—

Max. 1779...1786...1796...1806...1815...1822-23...1829...1835-36
Min. . . 1782-3...1792-3...1802...1811-12...1819-20...1826...1832

The *maxima* for Bengal are generally earlier than the above. They are, 1784-5 1794 1804 1813.

On referring to the list we see that no *minimum* recurred at the end of 56 years from 1782 viz. in 1838 ; but somewhat earlier, viz. in 1837. It was not, however, to be expected that the recurrences would happen regularly in the same locality, and our lists are much too few to enable us to estimate the average effect over the whole surface of the country. The *maxima* above stated shew very nearly four equal intervals of seven years each = 28 years ; one of ten years, and two of nine years each = 28 years.

Admitting the case to be as we have supposed, then we might reasonably expect that similar phenomena would be observed in other parts of the world, in particular, such lakes or large natural reservoirs as the Caspian, and the North American lakes would indicate, by their increase or diminution, the variations of the seasons over an extended surface, better than any other artificial means that could be devised. In Brewster's Edin. Journal of Science, vol. 7. 1827 (July to October), we find a paper by Mr. De Witt Clinton, on the periodical rise and fall of the North American lakes. Unfortunately no record has been kept of the changes, but it is stated that there is a rise for three years, and a corresponding declension—being altogether a period of six years. It is added, that some extend the time of rise to five, and others to nineteen

years. Probably these periods would be more correctly stated at $4\frac{2}{3}$ and $9\frac{1}{3}$ years respectively, which would give recurrences at the end of nine and nineteen years. Some particular times of *maxima* and *minima* are stated; they are—

Max. 1797 1815.

Min. 1802-1811 1822.

These numbers (except the last) nearly coincide with our own, which are for the same period—

Max. 1796 1806 1815 1822.

Min. 1802 1811

It must be recollected that these periods of the North American lakes are only stated from the memory of the inhabitants; and besides it is almost too much to expect that the changes in distant parts of the world should be exactly contemporaneous.

ART. V.—*Statistical Record of the duration of diseases in 13,019 fatal cases in Hindoos.—Extraordinary mortality among Lying-in Women—Compiled by Dr. DUNCAN STEWART, Superintendent General of Vaccination.*

NOTE. The Table is compiled from the Bills of Hindoo Mortality kept by the Police authorities at the different ghauts where Hindoo obsequies are performed. The information is derived from the relatives accompanying the body to the ghaut, and is therefore not liable to suspicion, although there may be some little laxity on particular points. The registers thus obtained assign the name, age, sex, caste, occupation, and residence of every individual—the illness whereof he died, and the number of days he was ill—also the names of his father, of his nearest heir, his priest, and the doctor who attended him. Some of the former items I have elsewhere tabulated for the information of the Municipal Committee, in illustration of the localities in Calcutta most favorable

to the generation and concentration of disease, and of the ratio of mortality in each Thannah, as also the influences of age, sex, and season upon the course of disease among the natives.

The present Table has reference chiefly to the comparative prevalence of particular diseases, and to the duration of these in a majority of cases before they *kill*. It must be remembered that none of the subjects here classified enjoyed the benefits of Hospital treatment, and but very few probably of Dispensary aid, or of European skill in any form; yet the Table will be interesting, if on this account alone, by exhibiting in comparison with similar Tables, the results of Hospital or Dispensary practice here and in Europe.

The rapid fatality of tropical diseases in their early stages, is remarkably shown; and with reference particularly to the diseases of child-bed, there is more than sufficient to compel the conviction not only of the existence of many unhappily fatal habits and prejudices on the part of the people, but of most barbarous, perhaps sinful, obstetricy on the part of the practitioners. The mortality in child-bed is *one-tenth* of the whole; that is, equal to one-fifth of all the deaths among females. Of the fatal cases, more than half occur during the three first days, in other words "in the birth," and of the remainder a large majority fall victims to puerperal diseases within 15 days. So frightful a picture is not to be met with in the records of humanity; yet so little has it been known or suspected, that only two years ago the India Company's examining Physician in London actually struck out of the medical indent from this country the entire of the obstetric instruments, stating as a reason, that "the relaxing effects of the climate rendered the use of instruments at all times unnecessary."

The subject has lately attracted attention here in an influential quarter, and such disclosures as the present will, it is hoped, lead to the institution of measures calculated to prevent the fearful waste of life from such causes.



[*Table shewing, &c.*

Table shewing the Duration of particular Diseases in 13,019 fatal Cases among Hindoos.—Calcutta 29th May, 1839.

	Number of Days the disease existed before Death.																													Ditto of Months.											Ditto of years.			Total.																																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	1	2	3	4	5	6	7	8	9	10	11	1	2	3																																		
Cases of Dysentery.	..	2	2	3	3	2	3	1	2	9	4	13	2	4	22	5	4	..	2	11	..	1	..	2	4	77	60	33	11	10	22	4	6	1	10	1	17	7	2	362																															
Simple Fever.	2	..	9	7	13	13	7	21	4	15	9	10	5	2	18	3	2	5	1	4	1	1	1	1	1	73	82	60	34	9	44	10	18	3	2	1	33	22	4	550																															
Typhus Fever.	50	100	239	269	308	258	364	561	299	476	300	356	177	178	236	109	94	90	62	125	105	68	15	12	39	8	10	10	1	153	42	..	2	..	2	5,118																														
Small Pox.	..	4	6	6	12	17	18	19	36	24	30	44	55	69	50	25	17	13	4	11	12	6	..	2	3	3	1	1	488																												
Cholera.	918	2211	900	347	158	74	44	56	11	17	9	15	3	..	7	1	2	4,773																													
Childbed disease.	356	208	146	88	89	49	46	42	29	36	30	32	23	23	58	7	3	2	7	2	19	10	..	2	3	1	1,328																												
																																		14	2	1	13,019

D. STEWART, M. D.
Surgeon to Park Street Dispensary.

We propose to return in our next Number to the consideration of the subject which Dr. Stewart, has laid before us in such an appalling form.—Eds.

ART. VI.—*Summary description of four new species of Otter.* By
B. H. HODGSON, Esq., *Resident at Catmandu, Nepal.*

To the Editor of the Asiatic Journal.

SIR,

One of the most remarkable features of the mammalogy of Nepal is the great number of distinct species of *Otter* characterising it. There are at least seven species, I believe, though not one of them is numerous in individuals, at least not in comparison of the common Otter of commerce, which is produced in the neighbourhood of Dacca and Sylhet. This rarity of species, added to the circumstance of the animals not being regularly hunted for their skins, renders it very difficult to procure live specimens; and without live specimens—which may be slain and their osteological as well as other characters thus accurately examined—the discrimination of specific differences is a work of extreme labour and delay. Many years ago I announced to Mr. Bennett, the late Secretary of the London Zoological Society, the fact that there are several species of *Lutra* in Nepal, and before he died he was nearly convinced of the correctness of the statement, though I could not then, nor can now, give a full exposition of even those with which I am best acquainted.

Waiting, however, for the perfect knowledge when the materials of it are not under command, is, I find, like waiting on the river's side for a dry passage after the waters have flowed past; and I shall therefore offer no apology for briefly characterising those four of the seven Nepalese species of Otter of which I have considerable certainty, leaving the remaining three to some future occasion.

GENUS LUTRA.

1st. *Species*—TARAYENSIS NOBIS.

Size, medial. *Structure*, typical. Skull and head much depressed. Lower incisors ranged nearly in line. Tail equal to two-thirds the length of the animal, and much depressed. Form, robust. Nails compressed, exerted from the finger ends, and acute. Fur short and smooth. *Colour*—above, clear umber; below, and the hands and feet, pure yellowish white; the yellow tint deepest on the limbs; the pale colour on the head and neck extending upwards to the line of the ears—less so on the body; and the distinction of dark and pale hues very decidedly marked. Tail above and below, dark.

2d. *Species*—MONTICOLUS NOBIS.

Size, large. *Structure*, upon the whole, similar to the above. Tail equal to more than two-thirds of the animal, and less depressed. Scull and head less depressed. Intermediate incisors of lower jaw ranged entirely within or behind the line of the rest. *Colour*—above, deeper than the above, or bistre brown; below, sordid hoary, vaguely defined, except on the edge of the lips and chin; limbs nearly as dark as the body. Fur longer and rough, or porrect from the skin in a considerable degree.

3d. *Species*—INDIGITATUS NOBIS.

General form and proportions of *Leptonyx*, to which it is affined. Habit of body more vermiform than in the above. Tail but half the length of the animal. Toes very short, and more than half buried in the palmary mass. Nails short and worn, but not depressed nor truncated, as in *Leptonyx*. *Size*, medial. *Colour*—same as in the last, but deeper still, or dusky bistre; paler and ruddier on the body below, and albescent on the head below; but the colours not well defined, and only really distinct (except in shade) on the inferior surface of the head. Character of the fur as in the last, and indeed in all the mountain species.

4th *Species*—AURO-BRUNNEUS NOBIS.

Size, small. Habit of body still more vermiform. Tail less than two-thirds of the length of the body. Toes and nails fully developed. Fur longish and rough, as before. *Colour*—rich chesnut brown (the fruit) above; and golden red below and on the extremities.

Remarks.—The three last species are confined to the mountains, as is the first species to the plains at their foot. The dimensions in inches, and the weight of the four species are as follow:—

	1	2	3	4
Tip of snout to base of tail . } .	26 to 28	30 to 32	22 to 24	20 to 22
Tail	16	20	10½	12 to 13
Weight	16 to 20 lbs.	20 to 24	11 to 13	9 to 11

I am, Sir,

Your obedient servant,

B. H. HODGSON.

Nepal, May, 1839.

ART. VII.—*On the Geographic Distribution of the Vulturidæ, Falconidæ, and Strigidæ ; being the first of a series of memoirs intended to illustrate the Geographic Distribution of the Ornithological Kingdom.* By WM. JAMESON, ESQ. Assistant Surgeon Bengal Medical Service, &c.

Of all the departments of zoology, there is probably not one which has attracted less the attention of naturalists than that of the geographic distribution of the animal kingdom; although from a study of it many details may be derived of essential importance to several of the other branches of natural history. To elucidate partially the distribution of one division of zoology, viz. ornithology, is the subject of the series of memoirs intended to be presented to the Society.

In entering upon a subject like the present, we do so with the greatest diffidence, from the confusion which has existed, and still reigns in the systematic department of ornithology. The number of synonymous genera—some authors applying a certain suite of characters to a particular genus, others another suite either more or less extensive, and some applying the name, but at the same time ignorant of the characters upon which the genus is based, of which we have many examples, and these too in works published at the present day—have presented to us difficulties of no ordinary nature. To overcome these, we have examined minutely the magnificent collection in the Edinburgh Royal Museum, as well as the principal public and private collections throughout England.

The system of arrangement we have adopted is that of the Baron Cuvier, with certain modifications, which is undoubtedly the best at the present moment. The system of Macleay, when properly followed out, will probably however supersede all others. The attempts which have as yet been made are very unsatisfactory, the best is that of Vigors. Mr. Swainson in trying to find out his analogies, does not on many occasions at all take into consideration the possibility of many groups of birds having disappeared from the surface of our globe. His views, no doubt, are very ingenious, but must be received with due caution. We have adopted several of the new genera lately proposed by Vigors, Lesson, Swainson, &c. these we shall notice in their proper place.

When we take a general view of the ornithology of Asia, Africa, Australia, North and South America, we find that it is in a manner unknown. Of Europe and North America we have no doubt complete lists of the species, but the remarks on their distribution are of a loose, and unsatisfactory nature. The local *Faunas* published are few in

number, and in general they have not been drawn up with that care and precision, and upon the system, now necessary, authors being content in mentioning the mere occurrence of the species. In regard to the birds of Britain, we have some good details in the works of Montague, Yarrel, Fleming, Selby, Jenyns. Again the works of Temminck, Naumann, Buhm, Berger, Gould, &c., afford us some valuable information upon the birds of Europe generally. The ornithology of Asia has not attracted the particular attention of any naturalist, at least we have no complete work. In the writings of Horsfield, Raffles, Sonnerat, Leschenault, Duvaucel, Diard, Sykes, Vigors, Franklin, Gould, Hodgson, Dussumier, Belanger, Boié, Kuhl, Van Hasselt, &c.,—some of whom forfeited their lives in the pursuit of this their favourite study—we have many valuable details.

In regard to the birds of Africa, the works of Le Vaillant stand pre-eminently forward, and which have increased much our knowledge in this department; but his researches are almost entirely confined to the southern part of that continent. To Dr. Smith we are also indebted for much valuable information, and we look forward with much interest to his work, which is soon to issue from the press. Mr. Swainson has added a little to our knowledge in regard to the birds of western Africa, but there is still a vast deal to be done in this quarter. Ruppell has published some excellent observations on the birds of Nubia and Abyssinia, and the ornithology of Egypt has been partially elucidated by Savigny in his great work.

To Australia the same remark applies. We have no complete general work. From the writings of Brown, Lewin, White, Vigors, Horsfield, King, Phillips, Lesson, Quoy, Gaimard, Poren, Lansdorf, Gould, much valuable information may be obtained. The last individual mentioned is at present engaged publishing a work, illustrated with figures of the heads of the birds of New Holland, and we hope soon to have a complete *Fauna* from the same author, who is at present travelling through that country in order to illustrate its zoology.

The northern half of the new world has received much greater attention, and its ornithology is better known than any other continent with the exception of Europe. For this we are indebted to the indefatigable exertions of Wilson, Audubon, Prince Lucien Bonaparte, Nuttall, Ord, Richardson, Swainson, Sabine, Ross, Douglass, Lichtenstein, &c.

With regard to the ornithology of the southern continent of America, we are lamentably deficient in information. From the writings of Spix, Prince D'Neuwied, D'Orbigny, D'Azara, Swainson, some information may be obtained.

From numerous general works much valuable information may be received, to notice all of which would occupy too much space. Among the authors we may mention Temminck, Cuvier, Latham, Shaw, Buffon, Vieillot, Lesson, Wagler, Jardine, Selby, Drahiez, Lichtenstein, Illiger &c. To Illiger, however, we are indebted for having first taken up the particular subject of ornithological distribution, and which he has handled in a masterly manner, in a paper published in the transactions of the Royal Academy of Berlin; nor did he direct his attention to the distribution of the ornithological kingdom alone. In the same transactions we find him discussing mammalia in a similar manner. Illiger, however, in his paper on birds only notices the distribution of about three thousand species, being little more than one-half of what is now known; and, moreover, most of his observations are now inaccurate, our information in this department being much more extensive. Prince Lucien Bonaparte has lately published some observations upon this subject, but probably too general to be of much value; and, lastly, we may state that Mr. Swainson has lately devoted some attention to this subject, with what success, we shall afterwards have occasion to point out; in the mean time we may remark, that most of the observations which he has published seem to be more for the purpose of supporting a favourite theory, than tending to advance ornithological geography.

We cannot omit noticing that several excellent monographs of particular families have been published, among which we would particularly mark out those of Wagler and Kuhl, upon the *Psittacidæ*—Lesson on the *Trochilidæ*—Gould on the *Rhamphastidæ* and *Trogonidæ*—and also Wagler's System a Avium, which may be considered as a series of monographs brought into one focus. A continuation of this work will be found in Oken's Isis. Numerous papers on genera and species have been published in the transactions of various Societies and Periodicals, which however we shall notice when we have occasion to consult them.

Having now given a rapid sketch of the present state of ornithology as far as the distribution of birds is concerned, we shall proceed to the subject of our communication.

Birds, considered geographically, may be divided into four grand divisions, viz. 1st. Those which are universally distributed; that is, found in all the great continents of the world. 2nd. Those which are generally distributed, or found in three or more continents. 3rd. Partially distributed, or those found in two continents. And 4th. Continentally distributed, or those found in but one continent; which last division may be again subdivided with those which are generally distributed throughout the continent, or confined to a part, or island, belonging to that continent.

For these four grand divisions which we have now proposed, and for the purpose of simplification, and to prevent repetition, we have adopted the following terms:—To the first division we apply the term *Katholiko-dianamial*; to the second, *Geniko-dianamial*; to the third, *Adiko-dianamial*; and to the fourth, *Topiko-dianamial*.

In illustration of this arrangement, which we think, in conjunction with a continual tabular view, is well adapted for tracing the distribution of the ornithological kingdom, we may notice a few examples. Belonging to our first, or *Katholiko-dianamial* division, we have the genera *Falco*, *Turdus*, *Anas*, *Columba*, *Fringilla*, *Muscicapa*, *Corvus*, *Hirundo*, *Ardea*, &c. To our second, or *Geniko-dianamial* division, belong the genera *Vultur*, *Picus*, *Mycteria*, *Phœnicopterus*, *Trogon*, *Upupa*, *Oriolus*, *Tetrao nacifraga*, &c. To our third, or *Adiko-dianamial* division, belong the genera, *Bucco*, *Trochilus Ocypterus*, *Accentor*, *Buceros*, &c. And to our fourth, or *Topiko-dianamial* division, belong the genera *Sericulus*, *Buphaga*, *Eurylaimus*, *Memura*, *Alectura*, *Musophaga*, *Calyptomina* &c.

No doubt objections may be thrown out against the system of arrangement now proposed, in particular in regard to the last two divisions; for in nearly all the continents we have tropical, temperate, and arctic climates; and it is seldom that genera extend throughout all these; nor do we mean to infer this; all that we suppose is, that species belonging to any particular genus noticed extend more or less over that continent.

Birds of prey from the most early times have been divided into two grand divisions, viz. the Diurnal and the Nocturnal; the former comprehending the Vultures and Hawks; the latter the Owls. We shall therefore first notice the Vultures.

Vultures taken as a whole belong to our second, or *Geniko-dianamial* division, being found in all the continents of the world, with the exception of New Holland; true Vultures never being found in it, as far as we are aware, their distribution not extending further in that direction than the Indian islands. No doubt Mr. Swainson has described his rasorial type of the Vultures as peculiar to this continent. With all due deference to Mr. Swainson as a naturalist, we cannot but state that we have here a most extraordinary instance of the danger of being misled by a favourite theory, for in this instance Mr. Swainson is as much entitled, in fact more so, to consider the common wild Turkey of North America as his rasorial type of that group; it presenting a greater analogy to the Vultures than the *Alectura*, Latham, which in its habits and manners is a true gallinaceous bird.

But although the Vultures considered as a family present a very

extensive distribution, yet in their subdivisions they are more restricted ; for we find the Vultures, properly so called, entirely in the Old world, their place being supplied in the New by the species of the genus *Sarcoramphus*. Nor do the different divisions of the Vultures stand thus alone in representing each other in the different continents, it being a law extending through many groups of the ornithological system. Thus the *Platyrrhynchi* of the New world are represented in Asia by the *Euryluimedæ*. The *Pardalotidæ* of Australia are represented in Asia by the *Calyptominedæ*, and in the New world by the *Piprina*. The *Buccomidæ* of Asia are represented in Africa by the *Pogonidæ*, and in the new world by the *Tamatiadæ*. The *Rhamphastidæ* of South America are represented in Asia and Africa by the *Buceridæ*, and in Australia by the *Scythropidæ*. The *Oriolidæ* of the Old world are represented by the *Quiscalidæ* in the New, which group, with one exception, as in the *Piprina*, is confined to America. The *Melleagriddæ* of America are represented in Africa by the *Namidæ*, in Asia by the *Phananidæ*, and in Australia by the *Alceturidæ*. And, lastly, the *Struthionidæ* of Africa are represented in America by the *Rheadæ*, in Australia by the *Casuaridæ*, and in Europe and Asia by the *Otidæ*. Numerous other examples could be given, but there are still a great many genera which form as it were isolated examples to individual continents, and for which we cannot find any representations. Thus we have no tribe in New Holland to represent the *Picianæ* ; no tribe in Europe to represent the *Psittacidæ* ; no tribe in Asia, Australia, or America to represent the *Scopidæ* of Africa ; and, in fine, no tribe in any of the other continents to represent the *Musophagidæ* or *Gypogeranidæ* of Africa. Whether there ever existed in the different continents groups representing each other to a greater extent than we have at present, will probably remain a mystery, even although organic remains should be found ; birds not presenting in their osteology, at least in many cases, sufficiently marked characters. Comprehended in the genus Vulture, properly so called, we have eleven species ; of those, three are found in Europe, but none proper to it, being also found in Asia and Africa ; in Asia six, three of which are properly, one of them being also found in the Indian islands ; in Africa eight, five of which are proper ; supplying their place, as already stated, we have in the New world *Sarcoramphi*, of which there are four species common to North and South America, if the opinion of Nuttall is correct in regard to the occurrence of the Condor in the North American continent. It is probable however that it may have been confounded with the *Sarcoramphus Californianus*, a nearly allied species. The *Sarcoramphus papa* seldom goes as far north as the United States ; Bonaparte states that it is occasionally met with in Florida, which is pro-

bably its northern limit. It is described by D'Azara as common in Paraguay, but he states it does not pass the 32° of south latitude; in the intermediate countries it appears to be very abundant. The genus *Cathartes*, consisting of two species, is also confined to North and South America, its place being supplied in the Eastern hemisphere by the genus *Neophron*, represented by the *Neophron perenopterus*, a species common to Europe, Asia and Africa.

Adding together the species belonging to the different divisions of Vultures, we have thus only eighteen known; a small proportion when compared either to the Falcons or Owls, but the numbers in which they occur fully compensate for this. The warmer regions of Africa and Asia must be considered as the metropolis of the Vultures, properly so called.

We now enter upon the second division of the *Falconidæ*, which has been divided by the Baron Cuvier into two grand divisions, viz. the noble and ignoble Birds of Prey; the former comprehending the Falcons, properly so called, the latter the Eagles, *Hierofalco*.

The *Falconidæ* considered as one group, possess very extensive distribution, belonging to our *Katholiko-dianamial* division, occurring from the 80° of north latitude to the equator, and from the equator to the 55° of south latitude, and in all the intermediate spaces; yet when taken generically, many of them, as in the *Vulturidæ*, have a rather restricted distribution.

Of the genus *Falco*, properly so called, we have representatives in all the different continents, but in Europe we meet with the greatest number of typical species; not one of which, however, is confined to it. Thus of the forty-four species contained in the genera *Falco*, *Hierofulco*, *Hierax*, *Harpagus*, *Lophotes*, and *Erythropus*, nine are found in Europe, of which two are proper to it, belonging, one to the genus * * * the other to the genus *Erythropus*; in Asia twelve, five of which are proper, three of these found also in the Indian islands; in Africa eighteen, eleven of which are proper; in Australia five, and four proper; in North America five, and one proper; and in South America twelve, and of these ten proper. Of the other seven species found in Europe, but not proper to it, three are common to Europe and Asia, one common to Europe, Asia, and North America, one common to Europe and North America, one common to Europe and Africa, and one common to Europe, Australia(?), North and South America.

It may be laid down as a well ascertained fact, that birds of temperate, and many birds of arctic, countries—that is, those birds which are known to breed there—possess a much wider distribution than those

* Word illegible in M.S.—EDS.

of tropical countries; for in very few instances do we find birds of tropical countries extending their migrations to temperate countries,—a statement which is applicable to more than a third of the birds of Europe. But although we find these European birds inhabiting regions within the tropics, yet we in general find them in those places whose mean annual temperature is little above that of Europe, caused either by the position or form of the country. To this rule however we have several exceptions, as in the *Sturnus vulgaris*, *Pastor roseus*, *Oriolus galbula*, which inhabit both tropical and temperate regions, although probably more abundant, at least the last two mentioned, in the former. It may also be noticed as a curious fact, the reason for which is yet unexplained, viz. that the European species which are found in tropical countries are in general smaller, although identical in every other character with the same bird found in Europe; in other cases we find them not only smaller, but at the same time undergoing slight modifications, which, however, are permanent, and therefore entitling us to consider them as new species and the representatives, in the particular regions in which they are found, of the European. Such is the case with regard to the Nut-hatch, Blackbird, Goldfinch, Siskin, Nut-cracker, Field-fare, Music Thrush, &c. all of which are found in India.

(*To be continued.*)

ART. VIII.—*On the use of Wells, &c. in foundations; as practised by the natives of the northern Doab.* By Captain CAUTLEY, Superintendent of the Doab Canal.

Piles and caissons being the usual means adopted for foundations in Europe, where the soil and substrata are insufficient, I will venture a few remarks on the system adopted in northern India* for the same purpose, especially in the application of hollow cylinders, or wells of masonry. The plan of undersinking wells does not appear to be totally unknown, although it is not practised in England; in fact the only approach to the method upon which I am now about to occupy the pages of this Journal, is exhibited in the works at the Thames Tunnel, at the descent to which Brunel has sunk masonry cylinders “fifty feet in diameter, strongly clamped with iron, &c.” the process of effecting which I have no means of describing. Our Upper Indian system, however, is so admirably adapted to the purposes for which it is intended, and so much superior to pileing (caissons I put out of the ques-

* The undersinking of wells, and their use in foundations, is not confined to the northern Doab; it is practised in Bengal and other parts of India.

tion) that a few remarks, drawn from practical observation, may perhaps induce others, with more information than myself, to attract the notice of English Civil Engineers to a resource well worthy of their attention. The Hindoo religion in deifying the great rivers, and inculcating on its disciples the necessity of constant ablutions, and the rewards held out to those who multiply the shrines and temples on the banks of the sacred waters, have been the cause, in all probability, of the adoption of this system of foundation. In an alluvium so extensive, and so moveable, piles, were they used, would have been found inefficient; the native engineer, however, has no machinery with which piles of a sufficient length could be driven; timber, moreover, at those places where the greatest demand would have existed, could not have been procured without great difficulty, and very great expense. The means of making bricks, on the contrary, were at hand; the labourers required to build masonry and to sink wells were to be found in the neighbourhood; the solidity of structure was withal more pleasing both to the projectors and to the builders; and the idea once adopted, the use of wells not only on the edges of the river, but in all places where the badness of the soil and the height of spring water rendered excavation impracticable, has been acknowledged as the standing resource in the system of hydraulic architecture of Upper India. At Muttra, Bindrabund, &c. where flights of steps or ghâts sweep the whole line of the Ganges within the limits of the respective towns, wells have been extensively used in foundations. The Mussulman buildings at Agra are largely indebted to wells, where the proximity of the Jumna made a depth of foundation necessary; the Doab Canal works have paid equal homage to this admirable native conception, and it is from these works that I shall collect data to enable the reader not only to comprehend the method which is put into practice when wells are used, but also to draw a comparison between their value as the means of foundation, and that of piles and other methods in use elsewhere.

The Chah-kun (from چاه *a well*, and کى the affix from کندن *to dig*), or well-sinker is a distinct trade scattered throughout the villages of Upper India. Its followers are called into requisition either for sinking new, or for clearing out old wells; in the former case, generally doing their work by contract, at a fixed rate per *hâth* or eighteen inches of depth of sinking, and in the latter by the job, or so much for clearing out the well and rendering it fit for use. The expertness of this class of people depends very much, of course, upon practice, and the depth of wells to which the Chah-kun has been accustomed. In a country where the undersinking does not exceed

ten or twenty feet, the well-sinkers will profess their inability, or decline to contract for greater depths; in fact where cylinders are required of from thirty to fifty feet, the Chah-kuns above mentioned would decline the undertaking altogether; the tools and method of using them in such a case, being quite different from what they have been accustomed to.

The tools in use by the Chah-kun consist of the *Phaora*, or common *Mamooti*,* as it is termed in the Ordnance Magazines, and the *Jham*, a large species of *Phaora*. The size of the *Jham* appears to vary according to the fancy of the well-sinker: in the cases which have come under my own observation, the blade has been usually twenty-seven inches wide by thirty-six inches long. The handle, which is short, but similar to that of the *Phaora*, is tied to the blade by a rod of strong iron wire, providing a support and means of attachment for the rope by which the machine is put into operation. The apparatus is a rough looking and barbarous affair, but well adapted to the use to which it is applied, and to the people by whom it is approved of.

In village well-sinking for the use of irrigation, or to supply the inhabitants with water for drinking and other purposes, where the supersoil is tenacious, and resting upon loose strata, in which the springs are found, it is usual to excavate through the upper soil down until water is reached; a ring of timber adapted to the thickness of the walls of the cylinder is then placed horizontally, upon which the masonry is built to a height of three or four feet above the surface level of the country; as the masonry advances, the outer surface is rubbed over with mortar, and the whole is allowed to obtain a moderate degree of induration by remaining untouched for at least ten days; at this period the Chah-kun, or well-sinker's aid is put in requisition. In the earlier stage of the proceedings, the Chah-kun carries on his work very easily, it is only when the cylinder has reached to a depth beyond that of himself, that the tedious and difficult part of his labours commence. After descending the well, and having in the first instance fixed a string and plummet to the top so as to secure a regularity in the depression, he commences by removing the soil from the centre, and then from the four sides respectively; the soil is brought up to the surface in baskets, and the Chah-kun at the top is in sole charge of the plummet and its movements. For the first three or four feet of sinking there is little fear of accident, and little trouble; in fact, up to this point I have frequently employed common labourers, who, with a little care and superintendence, have done the

* Query.— Whence this word?

work as efficiently as an experienced well-sinker. On the application of the *Jham* (vide supra) the top of the cylinder is loaded with logs of wood and heavy articles that may be at hand; a fork-like prop with a pulley is fixed in the ground, so that the rope which runs over the latter, and to which the *Jham* is fixed, should run centrally over the well; the Chah-kun then descends with the *Jham*, and with his hands and feet (for the natives use both with equal facility,) forces the instrument into the soil until it gets properly loaded, when it is drawn up, the contents removed, and the same operation is continued until the work is completed. After the soil has been removed beyond five or six feet below the surface of the water, the Chah-kun's duty is constant *diving*.* I have known them to remain half a minute and nearly a minute under water without any respiration. Each man is relieved at the end of the hour, and in hot weather the cold that they suffer in their escape from the well is severe to a degree; large fires are kept burning for them to recover themselves at, and a liberality on this point is one of the chief agreements between the well-sinker and his employer. In the cold season the annoyance from change of temperature is infinitely less, and the people themselves have often assured me that they could in this weather do twice the quantity of work, and with one-half of the labour to themselves, that they could do when the weather is hot, and when the evaporation was so rapid.

In describing the process required for the sinking of one well for common village purposes, we have only now to shew how the application of a number of these wells in conjunction can be turned to account for the purposes of securing a good foundation; for this purpose I shall give plans and sections of some of the works on the Doab Canal, explaining the method adopted in these works, and also shew how, under different circumstances, the same plan of foundation has been used with equal effect.

The course of operations depends on whether the wells used in foundation are placed close together, or at a distance. For piers of bridges with extensive waterway and heavy superstructure the former is usually adopted; in other cases, the wells are placed four feet apart, and connected together by masonry arches, upon which the wall, pier, or building is constructed.

In Canal works, however, it is often an object to obtain a running line of wall for foundation unbroken by divisions or points of separation, through which the substrata, when consisting of a loose sandy soil,

* In very deep wells, where the *neemchuck* exceeds twenty-five feet from the water's surface, the *Jham* is worked by long poles fixed to the handle, and the work is most tedious.

might escape, especially where there is a head water with springs opposed to it. In locks or descents, for instance, constructed in sand, where the subsoil in addition to its own natural spring water has that of the Canal to act upon the flooring of the lower chambers, there is a considerable tendency to the removal of the sand under these lower floorings, which seriously affects the stability of a work, and is only to be provided against by enclosing all the subsoil in continuous lines of foundation. I shall hereafter describe a remedy invented by Col. John Colvin, C. B. of the Engineers, formerly Superintendent of the Delhi, and Superintendent General of, Canals; but in the meantime it is evident that where wells or cylinders are used, the continuity of a wall is imperfect under any circumstances; for place them as close together as possible, there is still a separation—the curtain so much desired is wanting. The methods adopted by me in the two cases, first, where wells are sunk *close together*, or leaving a space of six or eight inches, which is the least that can be safely given, and, secondly, when at a greater distance apart, are these—piles, and as the English engineers now term it, *concrete* (an article which, I may observe in passing, has been in use in Hindoostan from time immemorial); the former in the works on the Doab Canal varying from sixteen to five and a half feet in length, and the latter laid in as deeply as possible between the piles, and allowed to stand for some days to settle and indurate. The piles are made of young Saul trees (*Shorea robusta*) cut in the forests in the northern slope of the Sewalik hills, in the Deyra Dhoon; or when only five and a half feet long, of the species of rafter called by the natives *Kurri*, the smaller sort averaging from ten to twelve feet long and three and a half inches square, sawed out of Saul timber in the forest, and imported in immense abundance into the plains swung on the back of bullocks by the Brinjarris, or class of people who lead a roving life, employing their cattle in this species of work. The concrete consists of *kunker*, an alluvial lime rock peculiar to India—of stone boulders from the river broken into fragments—the *gutta* or refuse of lime kilns, mixed with a proportion of cement, consisting of two or three parts of *soorkhee*, or pounded brick, and one part of the best stone lime thrown in and well mixed together with a pole, sharp at one end and blunt at the other; the former to stir up the mixture for a certain time, and the latter to ram it down until it is properly placed in position.

The figures in plates 1 and 2 represent these methods in detail, with the *neemchuck* and tools used by the well-sinkers; and in plate 4, which is a plan and section of falls and locks as constructed on the Doab Canal, the application of both will be easily recognized.

The depth to which a cylinder of six feet in the diameter can be sunk during the day by one party of well-sinkers through a sandy stratum as far as ten feet, varies from two and a half feet to four inches. It is desirable when the well has to be sunk to this depth only, to expedite the depression of the three or four last feet as much as possible, so as to get the cylinder to its full depth, without leaving it during the night, and allowing the loose soil to settle round it, and give it a firm embrace. It is very difficult at times to free the sides of the cylinder from the hold which the sand has in this case upon them, but even with a very heavy weight applied to the top half a day may be expended in this way, without getting the well to move at all—a remark equally applicable in pile-driving through sand, where the advantages of driving the last pile that is driven during the day to its full depth, is well known. I have seen a pile, length twenty feet and diameter eight inches, which has been driven ten feet on the previous evening, resist on the next morning the weight of the pile engine for forty successive strokes—the weight of 250 lbs. falling through a space of ten feet, the head of the pile becoming perfectly shattered and useless. The following table will give an approximation to the expense of sinking cylinders of the above mentioned diameter to a depth of ten feet, and although the difficulties attending the operations from which this table was formed were greater than would be generally experienced, a very tolerable idea of the expense of well-sinking will be exhibited.

Soil, sandy, mixed with clay, but free from stones or kunkur; full of springs, with the canal head water ten feet above the point at which the cylinder commenced sinking; outer diameter of well six feet, and in some instances eight feet, and inner diameter four and six feet respectively; machinery employed night and day in keeping the water down to the level on which the wells were built; windlass used with the *Jham*; period of operation between January and May.

Well Sinkers.	Windlass men.	Labourers.	Carpenters.	Smiths.	Sundries, Rope, Iron, Leather, Oil &c. &c.			Expense in labour.			Total expense.			Length of well or cylinder sunk in running feet.
					RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	
1267	1688	358	30	30	10	10	2	439	5	10	450	0	0	202½

Or average per running foot Rs. 2:0:4

The cost of building a cylinder of the above diameter, viz. 6 feet and 10 feet high, may be thus—

Labourers,	9	0	0
2050 bricks, 12 × 6 × 2 ..	10	4	0
16 maunds stone lime, ..	6	0	0
Neemchuk or curb,	2	12	0

Total cost,.. 28 0 0, or per foot 2 : 12 : 10

giving the average cost of well-sinking, using a cylinder of six feet in diameter and carried to a depth of ten feet at Rs. 4 : 13 : 2 per running foot. In the above table, however, as I before remarked, the items are dependent on difficulties which in well-sinking from a plain surface—from the level of a garden for instance—would not be met with. In wells situated in this way, and of similar dimensions in every respect to those upon which our data are formed, the expense varies at from three rupees six annas to four rupees per running foot, the difference depending on the cost of labourers—the price of materials remaining constant. The masonry of well-building I have generally found to vary from eighteen to twenty rupees per 100 cubic feet.

In wells of from sixteen to twenty feet depth the expense per running foot has been found to vary from Rs. 7-8 to Rs. 8-8, using the cylinder above noted ; to a greater depth, however, they require to be of larger dimensions ; but it would be interesting to discover the progressive advance in expense on each ten feet of well-sinking ; it would possibly advance in a series with a common multiplier of two, leading to the following table as an approximation—the upper line representing depths of cylinder in feet up to fifty, the second the cost per running foot, and the lower the actual cost of well at each depth as noted in the upper line.

*				
10 ft.	20 ft.	30 ft.	40 ft.	50 ft.
4 Rs.	8 Rs.	16 Rs.	....	....
40 Rs.	160 Rs.	480 Rs.	....	....

The two first columns are formed on my own practical observation, and the third is from the cost of village wells, extracted from the statistical notes of the Revenue Surveyors in the upper portion of the Doab, *plus* the expense of undersinking the first sixteen or twenty feet, which in village wells is generally built up. Whether the progression which holds in these may be extended further, as I have proposed in the fourth and fifth columns, may be easily shewn by reference to the Engineer officers who built the bridges on the East Kallee Nuddee, and Hindun rivers ; (to Captain Debude, and Lieutenant Alcock,

* The M.S. is blank in these spaces.—EDS.

these notes are especially addressed); the piers of the Hindun bridge resting on wells up to the limit of the table above proposed.

It must be recollected that the cylinders are supposed to be under-sunk from the commencement through a sandy soil, and with spring water at the surface—as must usually occur in foundations where the application of them for that purpose would be necessary. The cost of village wells, which although thirty or forty feet deep are only under-sunk on reaching the springs, is proportionably less.

With reference to the value of obtaining a connected curtain, or line of running wall in foundation, where the interference of spring water renders undersinking necessary, Colonel Colvin, C. B. of the Bengal Engineers, proposed a plan of sinking square masses or parallelopipeds of masonry, piercing these masses by wells, as represented in Fig. 1. Pl. 3. The plan succeeded in every respect. In those of from ten to fifteen feet long and four feet wide, undersinking to a depth of ten feet in sand mixed with small shingle was carried into execution with perfect success in the foundations of the dam over the Somhe river. Water was, at the point where the dam had to be constructed, immediately on the surface; the object of the dam was to retain the supply of water to a considerable height to throw it into the Delhi Canal, and maintain a supply during the dry months. Circular wells were objectionable for the reasons which I have before explained, and it was a desideratum to get such a foundation, that the head pressure of water should affect the leakage *under* the dam as little as possible. Fig. 1. Pl. 3. will explain the method adopted, the spaces between the boxes on the first row being covered by those in the second line.

The method put into practice in sinking these masses is similar to that in cylinders, but greater care is required in regulating the operation of the well-sinkers, so that the mass may be lowered equally. The curb, or *neemchuk*, is a platform of wood equal in size to the base of the masonry, with round or oval holes cut for the wells, as shewn in Fig. 1. Pl. 3. I have used these masses in lengths of twenty-one, feet, by four feet wide, to a depth of ten feet, with perfect success, giving three wells in each. I should however limit the dimensions to fifteen feet by four feet, with two wells elliptical, five feet by two and a half each, which with proper care will be sunk to a depth of ten feet through sand without any difficulty. There appears no reason why a whole foundation of a work within certain limits might not be sunk in this way. It is often a difficult matter to obtain foundation for a bridge with an arch of twenty feet span where the soil is sand although the drainage is not liable to freshes or any violence of current. A bridge of this sort, with a roadway of fifteen feet, would

require a mass in superficial area equal to twenty-eight feet by eighteen, to a depth say of from six to ten feet, which would be quite sufficient, even if the mass rested on sand. There is no reason why, by piercing this block with cylinders, the whole might not be lowered, and a foundation obtained of infinitely greater security, and certainly not at greater expense, than any of the methods now adopted. The great advantage however of this plan over others, is its simplicity; all the apparatus, machinery, &c. of pileing are thrown aside; a few carpenters procurable at every village, and masons to be had without difficulty, with some Chah-kuns to sink the mass, are all that is required.

Where stone in slabs is to be procured, a method is adopted by the natives of forming what they call *kothis*, that is to say a caisson without a bottom. The stones are clamped together, as shewn in Fig. 3. Pl. 3, by wooden clamps; these boxes are undersunk in the same way as the cylinder, but the form is inconvenient, and the difficulty of sinking them greater than either the cylinder or the block above described. The circular form as regards friction alone, offers a much smaller surface than the square; but the square block of Colonel Colvin has great weight to assist its descent, which the stone *kothi* has not. In the foundations of the bridge over the Caramnassa river, laid down by Nana Farnavis, these *kothis* were extensively used. These foundations when laid bare for the ulterior operations appear to have extended across the bed of the river on a width of sixty feet, the *kothis*, which were fifteen feet square, being placed close together, and sunk through sand to a depth of twenty feet. The reader is however referred to Vol. 3. of the Gleanings in Science, in which Mr. James Prinsep has given a most interesting detail of the Caramnassa bridge operations. I may however remark that the *kothis* in question after being sunk are filled with *grouting*, or a mixture of lime, kunkur, &c. (concrete) forming an artificial conglomerate, upon which the superstructure is raised. Mr. Prinsep uses the word *dhoka*, in this part of India *ghutta* is the term usually applied to this species of material. The *jamvat* corresponds with the *neemchuk* of the northern Doab.

Another species of *kothi*, which is also used not only in foundations but in village wells, consists of frames of wood joined together at the angles, as represented in Fig. 4. Pl. 3; this from the want of weight is still more difficult to sink than the one before described; it is however convenient where wood is plentiful, and the soil to be pierced of a light description; they are undersunk precisely in the same way as the common cylinder. In village wells, when the *kothi* is from four to five feet square and the thickness or scantling of the wood used four or five

inches, it lasts for many years, and merely requires repair in the upper portion, where its exposure to the atmosphere tends to the destruction of the material.

The *Sundook*, or box, is another, and perhaps the most awkward of all methods to obtain a depth of foundation; it is adopted by the natives, but generally where there are no experienced workmen. The plan and form of this box is represented in Fig. 5. Pl. 3; the size generally about ten feet long by five feet wide, and depth not exceeding five feet. The size of the box being lined out on the ground where it has to be sunk, a pointed timber six feet long, or thereabout, and four inches square, is driven into the ground at each corner, two inch planks are then nailed on the uprights, and the whole made as strong as possible, either by additional uprights on the sides or by transoms; the soil is then removed from the inside, and the depression goes on by driving the uprights down with mallets, as fast as the removal of the soil from the inside will admit of it. As may be supposed the frame work is liable to disarrangement in every way; when sunk to its full depth the interior is filled with *grouting* (concrete) and the heads of the corner piles or uprights sawed off. These foundations are allowed to stand for a year at least before the superstructure is commenced.

Piling as the means of foundation, appears, as far as my observation has gone, to be totally unknown throughout Hindusthan. I have never met with it under any form, or under any modification. The fact is, that labour is so cheap in India, that it is less expensive to adopt any means for purposes of this sort with *manual* labor, than with *machinery*! That the value of the latter would in the course of time be most justly appreciated, there can be no doubt; but the philanthropy of the existing generation has not arrived at that point which would lead the builder of a Ghat or of a Musjid to *experimentalize*, when he has before him a secure, and well authenticated method of operation.

To recur to the wells or cylinders, it is usual to fill them with *grouting* of lime, kunkur, and broken brick, so as to make a solid mass of the whole for the superstructure to rest upon. This may be necessary where the wells are sunk to a great depth, and where the superstructure is of great weight, but in other cases the value or necessity of such an arrangement may be doubtful. The wells used by me have never exceeded twenty feet in depth, the greatest number only ten. From their position they are in some instances liable to be undermined by a current setting in upon them when supporting a revetment or line of ghat, or in the case of locks from under-currents, and I have inva-

riably filled the cylinder with large masses of kunkur, or vitrified brick, *without* cement of any description, on the principle, that if the stratum upon which the cylinder rested was at all acted upon or undermined, the masses of loose material would sink and occupy the space caused by the action of the water below ; in fact the hollow cylinders are quite sufficient to support the superstructure placed upon them, the internal space may therefore be well occupied by any means to counteract danger from the vagaries of the stream.

The varieties of lime procurable between the Himalayas and Delhi are peculiarly favourable to hydraulic works. The beds of the rivers which drain the valley of Deyra, situated between the parent mountains and the Siwaliks, are loaded with boulders of lime rock ; the shingle strata of the Siwaliks themselves contain also a plentiful supply ; these, with the main outlets of the Jumna and Ganges provide lime for all the upper portion of this Doab. The boulders are collected and either burnt on the spot, or carried to the works ; in the former instance the cost of the material from the Hills to points between them and the town of Saharunpoor averages as follows :—

	Rs.
Cost ₹ 100 maunds at the Kiln from 8 to 10 Rs. say,	10 0
Carriage of ditto to the works at ₹ mds. 3 to 3½ As. say,	21 14
Custom levied at the Ghats or } passes in the Siwaliks, say, } ½ an anna ₹ bullock load	2 2
Total cost ₹ 100 mds.	34 0

Although this lime is in many cases pure, i. e. crystalline carbonate without admixture—and by selecting the boulders previously to burning may be obtained sufficiently pure for the whitest stucco, or white-wash—the article from the kilns is much adulterated with clays and metallic oxydes, arising from the varieties of lime rock which are thrown into the beds of the rivers. With the use of soorkhee therefore (or pounded brick) this lime makes an admirable water-cement. In wells and foundations I have generally used it in the following proportions :—

2 parts Soorkhee

1 ditto Lime, or

5 maunds, or 400 lbs. of Soorkhee

1¾ maunds, or 140 lbs. of Stone Lime

mixed well together in a mortar mill before it is used. Above the level of the water I have found it advisable to reduce the quantity of soorkhee ; the cement in this case consists of

1½ parts of Soorkhee, or 3¾ maunds

1 ditto of Lime, or 1¾ maunds.

The lime in fact is so good, that where well burnt bricks are used, bad masonry is entirely out of the question; the builder cannot help himself, and for this portion of his duty deserves no sort of credit whatever.

This stone lime is used universally on the Doab Canal from the point where it leaves the Jumna to Rampoor, a town twelve miles south of Saharunpoor; from this the marles and kunkur limes of the districts come into use, although the stone lime is brought into requisition on a smaller scale for arch-work as well as parapets; and in plastering masonry works it is solely used.

The marle, or earth lime as it is usually called, is in much greater abundance on this line than kunkur. When extracted from the quarries or pits, it is perfectly soft and friable, in which state it is kneaded up into round balls about two or three inches in diameter, which are placed in the sun to dry, previously to their being burnt in the kiln. The marles differ very much in quality, but all of them make an admirable water cement. That from Jussool, a village on the Khadir of the Hindun river is the most approved of, and is delivered on the works within a circle of ten and fifteen miles at about twelve Rupees per 100 maunds. These marles are full of fresh water shells of species now existing in all the tanks, jheels, and rivers of the country; those of *Melania*, *Lymncea*, and *Planorbis* being in the greatest abundance.

The kunkur limes are more numerous in the southern districts of the Canal, they also make a good water cement, but contain no remains of fresh water exuvæ.

Near a village called Hursoroo, twenty-five miles to the south-west of Delhi, a very superior kunkur lime is procured—the formation itself is intermediate between kunkur and marle, but the position of the quarries from which it is excavated is similar to that in which all this material is procured, in a low tract of country, the site in all probability of a lake or jheel now filled up.* The same fresh water shells as are found in the marles to the eastward of the Jumna, are very numerous in the Hursoroo lime. It is exported in large blocks, and is sold in Delhi at from twelve to fifteen Rupees per 100 maunds. The cost after burning varies from twenty five to thirty Rupees per 100. This lime for a water cement is very far superior to any lime that I have met with. When calcined it is of a very light color, and

* Hursoroo is situated on a nullah which rises in the small hills near the Kotub Miner, and flows into the southwest end of the Furnuknuggur jheel. The town of Hursoroo, or as it is more commonly called Hursoroo ghurree, is about two miles from the jheel.

might be mistaken for the stone lime of the Northern Division. In the locks and works on the Doab Canal, appended to them at Shukulpoor, Sikrani, and Jaoli, in the southern district opposite Delhi, nothing but Hursoroo in the following proportions has been used in the superstructure,

1 part of Hursoroo,*
1½ ditto of Bujree,

and in the neighbourhood of Delhi the use of pounded brick, or soorkhee, has been almost entirely superseded by that of Bujree.†

The sand stone, which is an attendant upon the great Quartzose formation of the ridge upon which Tughlukabad, the Kotub Minar, and old and new Delhi stand, varies from compact and crystalline, to a loose and friable rock; in this latter case it consists of an agglutination of minute angular fragments of quartz, with, in some cases, a red oxyde of iron in such abundance as to give the strata quite a peculiar character; in other cases the oxyde is wanting, and this friable rock is of a light color. For roads and other purposes these varieties of the sand stone are much in request, and amongst the natives obtain the name of *Bujree*. Nothing could be a better substitute for soorkhee, than the substance in question. The presence of the iron oxyde is in every way favorable to its value in hydraulic works, and the sharpness of the particle of which it is composed renders it an admirable mixture with lime for plaister or stucco. In this form it stands the effect of the climate much better than soorkhee or river sand. In the proportion of one part of Hursoroo lime to one part of bujree, mortar laid on with a float, as is used in sand, may be considered very far superior to it, and with a much better appearance than that practised by the natives, under the tedious process of beating with the *thappa*. This bujree is now universally used on the Doab Canal works, at all points at which it can be delivered under eight rupees per 100 maunds, this being the maximum rate of

* The following is the detail of proportions used in the cement at these works, and as they were built in 1831-35, a sufficient time has elapsed to judge of the durability of the masonry, no repair of any description having taken place up to this period.

Foundations including Floorings, &c.	}	Hursoroo Lime,.....	1	part.
		Earth Lime,.....	2	„
		Bujree,.....	2	„
Superstructure,	}	Hursoroo Lime,.....	1	„
		Bujree,	1½	„
Plaister,.....	}	Hursoroo Lime,.....	1	„
		Bujree,.....	1	„
<i>Sundulla</i> or outer thin coating given to the plaister, as a finish.}	}	Stone Lime,.....	8	„
		Soorkhee,.....	1	„

† This has I believe been the case in the Delhi works for many years.

pounded brick. For water cement the Hursoroo lime with a proper proportion of this red bujree may perhaps be considered as superior to all others attainable in this part of the world.

In conclusion:—the Saul (*Shorea robusta*) which is found in great quantities in the Deyra Dhoon, and especially on the northern slope of the Sewaliks, is the wood chiefly used on the Canal works for piles, rafters, lock gates, sleepers, windlasses, vanes, &c. &c. The Sissoo (*Dalbergia sissoo*), Toon (*Cedrela toona*), Sirr (*Acacia serissa*), are used in doors, door frames, mill machinery, &c. For handles of tools, pickaxes, phaoras, arbors of mill wheels, &c. the *Acacia catechu* (or *Kyr*) the wood from which the *Terra japonica* of commerce is procured, and which grows in great abundance in the forests south of the Sewaliks, and the *Acacia arabica* (or *Keekur*) are chiefly in request. For Neemchuks of wells the natives always select the Dhák or Plass (*Butea frondosa*), and if this is not to be had prefer the wood of the *Ficus Indica*, *F Bengalensis*, *Bombax Malabaricus* (*Semmul*, or cotton tree); the Horse radish tree (the *Hyperanthera morunga* of botanists) is also used:—in fact, all the light woods which are valued as floats for rafting timbers are considered better than others for the curbs of wells. The Neem (*Melia azadirachta*) is a useful wood for small rafters, door frames, &c. from being less liable to the attack of white ants. A variety of Pine (*Pinus longifolia*) which grows in extensive forests in the Sewalik mountains is held in no esteem by the natives; it is good for making light boxes and common furniture, but in attempting to bring it into use on the works I have failed; very capital tar,* however, is procured from it, as well as turpentine.

To Mr. acting Sub-Conductor John Pigott, Overseer of the northern division of the Canal, under whose charge the greater part of the works from which the above data on well-foundations have been formed, I am indebted for much valuable aid; his introduction of the windlass in sinking wells has not only led to a great saving of expense, but added much to the facility of depressing them. His general quickness, moreover, at resources under sudden and unexpected difficulties, which can only be appreciated by those who have seen the effects of the *Roas*, or mountain torrents in the rainy months, is deserving of the best acknowledgment that I can offer him.

Northern Doab, May 8th, 1839.

* Vide vol. 2 page 219, of the Journal. The Editor here uses the word *turpentine* for *tar*. The manufacture of tar, and *not* turpentine is described; the error was not corrected at the time.—*Author's note*.

340A

Tham used in Well Sinking

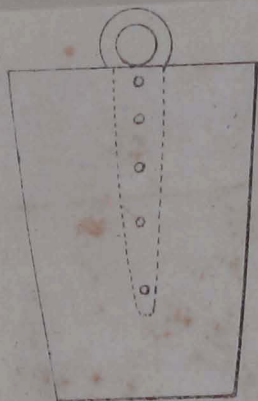


Fig 1

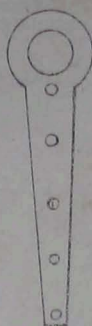
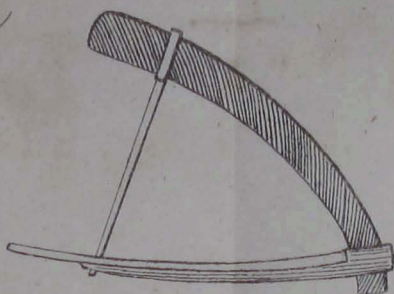
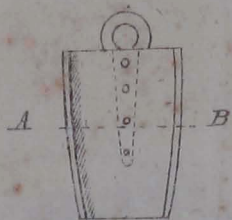
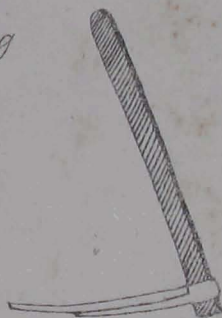
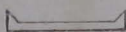


Fig 2. Phaora used in Well Sinking

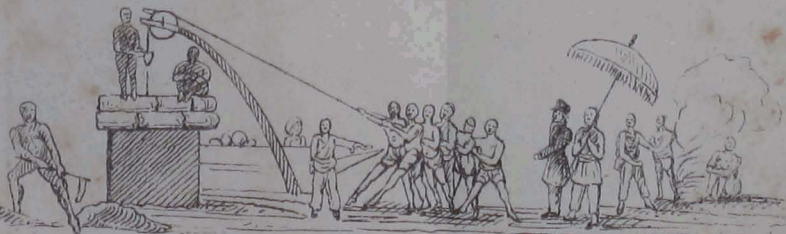


Section on A B



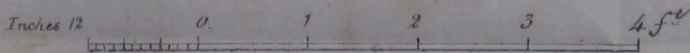
Native method of working the Tham

Fig. 3



Canal method of working the Tham

Fig. 4



Scale $\frac{1}{2}$ an Inch to 1 Foot

340 B
Wells with Intervals

Fig 1

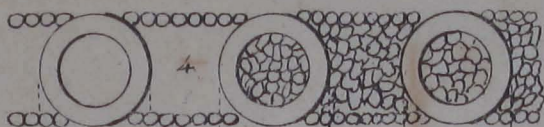


Fig 2

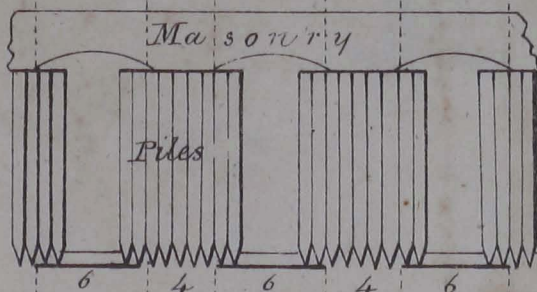
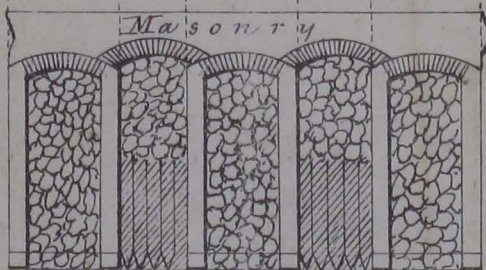


Fig 3



Wells without Intervals

Fig 4

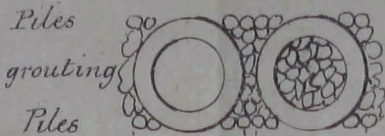


Fig 5

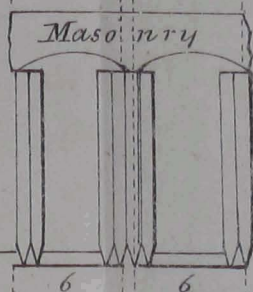
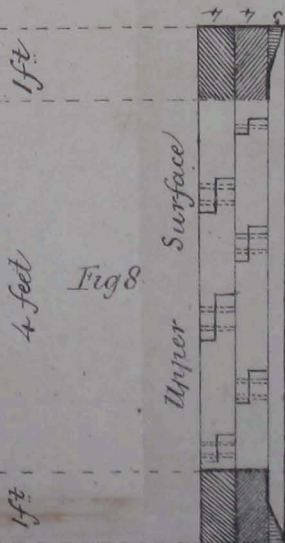
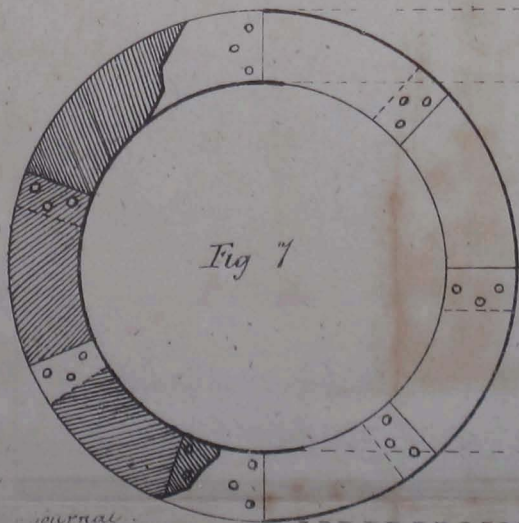


Fig 6



Neem Chuk or Well Curb.



340c

Fig 1

Plan of the Colvinian Box Foundation, as practised in running lines - with a Section of one of the boxes showing the Wells

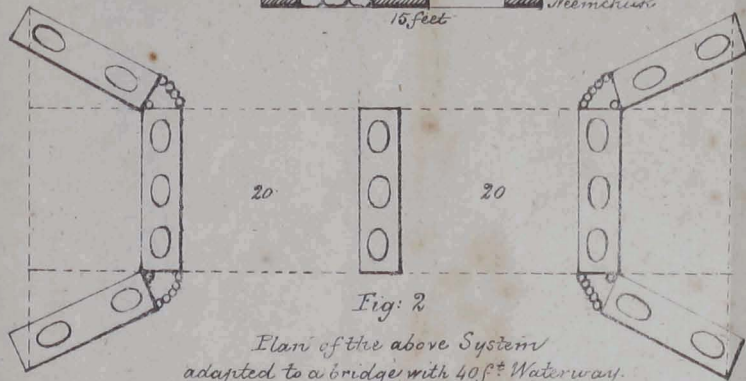
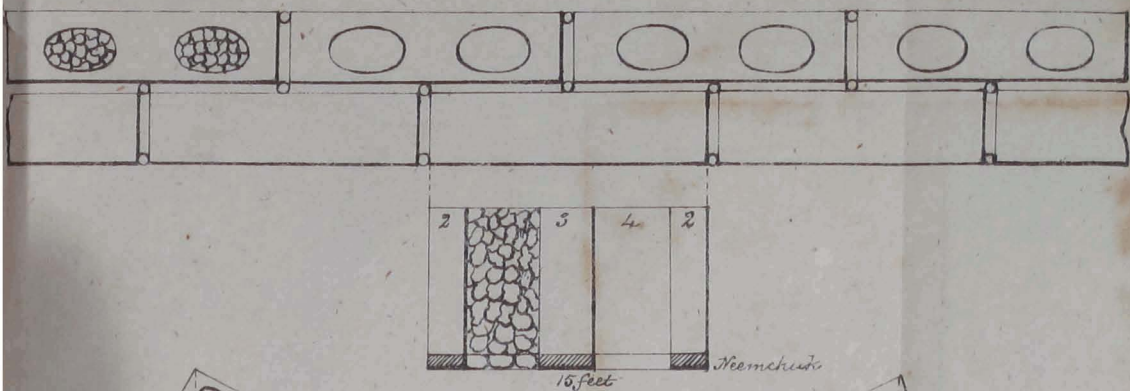


Fig 2

Plan of the above System adapted to a bridge with 40^{ft} Waterway.

Fig 3
Stone Kothi

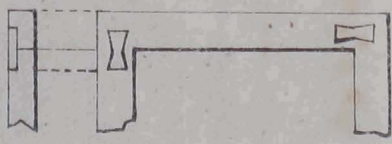


Fig 5
Sundook
or Box

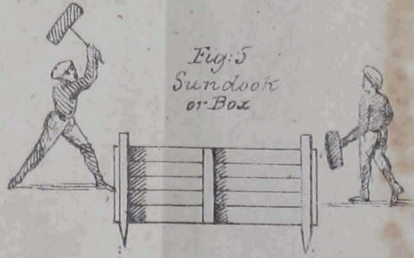
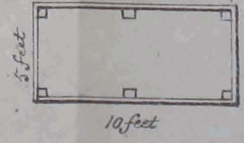
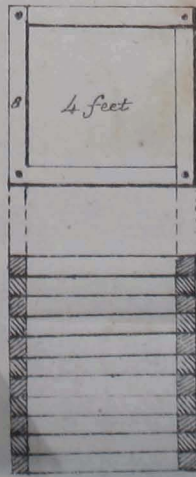


Fig 4
Wooden Kothi

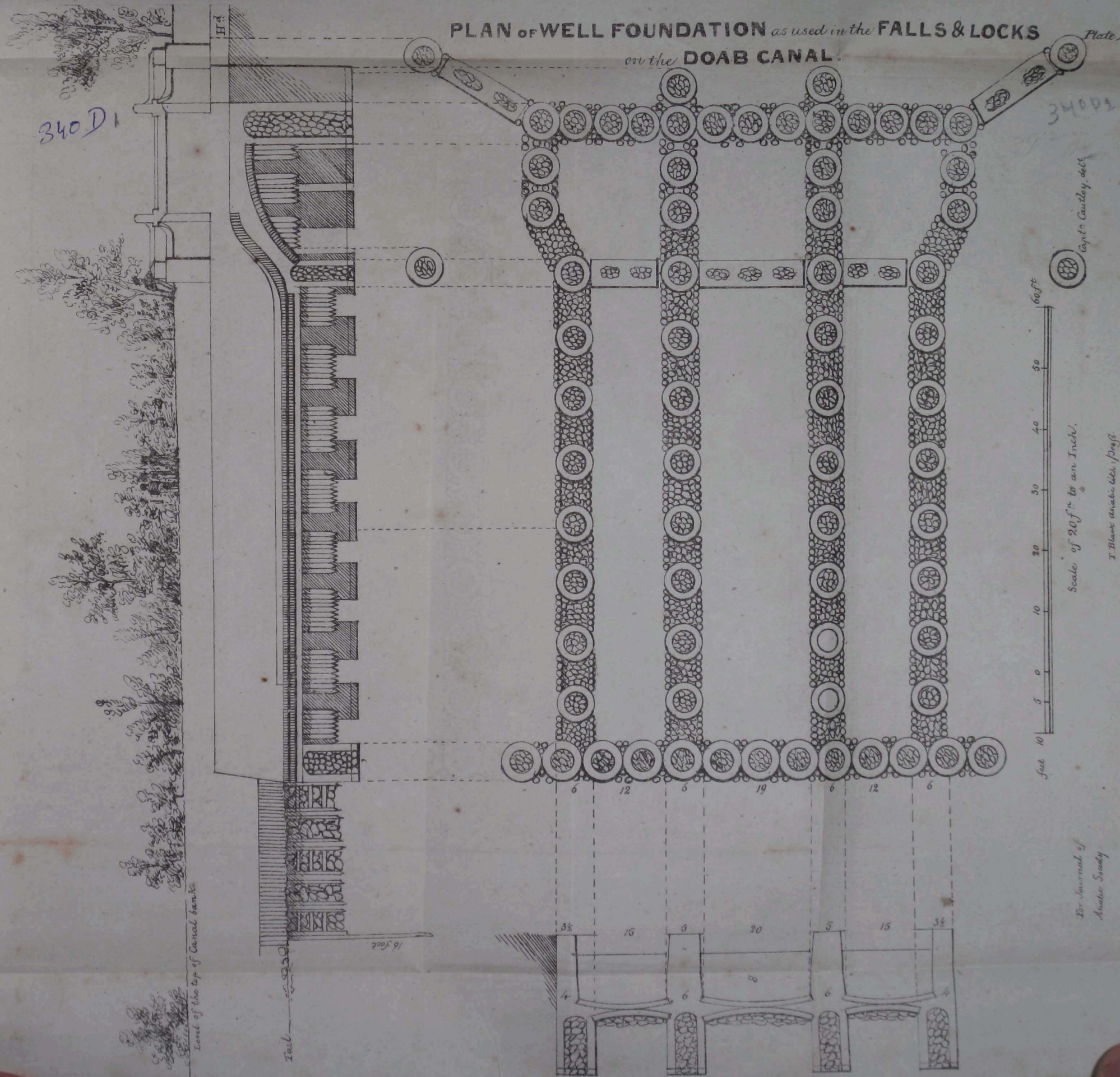


PLAN OF WELL FOUNDATION as used in the FALLS & LOCKS
on the DOAB CANAL.

Plate 4

340 D

340 D



For Journal of
Asiatic Society

ART. IX.—*Proceedings of the Asiatic Society.*

(*Wednesday Evening, 3rd April, 1839.*)

At a Meeting held at the Grand Jury Room of the Supreme Court.

The Honorable Sir E. RYAN, President, in the chair.

The Proceedings of the last Meeting were read.

Read a letter from the Secretary of the American Philosophical Society, acknowledging the receipt of numbers of the Journal of the Asiatic Society.

Read a letter from Professor LASSEN to the address of Mr. JAMES PRINSEP.

(The substance of this letter has been published in the New Series of the Journal for February last.)

Read a letter from M. BURNOUF, Secretary to the Asiatic Society of Paris, acknowledging the receipt of the "*Mahabharata*," vol. 3rd, transmitted for sale in France.

Library.

Read a letter from J. P. GRANT, Esq. Secretary to the Government of India, Revenue Department, forwarding for inspection of the Society a copy of the 6th No. of Dr. R. WIGHT's *Icones Plantarum*.

Illustrations of Ornithology, Nos. 3 and 4,—*purchased by the Society.*

History of British Birds, by W. YARRELL, part 9th—*purchased by the Society.*

Literary and Antiquities.

Read a letter from H. T. PRINSEP, Esq. Secretary to the Government of India, Political Department, forwarding for deposit in the Society's Museum, coins and reliques of M. MASSON's collection, being duplicates selected by Mr. CRACROFT at the time he took charge of the original collection.

Read the subjoined letter from Mons. DE PARAVEY, Royal Engineers (French), to the President. Mons. D. PARAVEY urges the publication, at the expense of the government or of some public institution, of the valuable Chinese work (M. S.) on Geography and History in 70 vols. now in the Royal Library of Paris.

"A Monsieur Le Président de la Société Royale de Calcutta.

"MONSIEUR LE PRESIDENT.—J'ai l'honneur de vous adresser, pour être déposé sur le Bureau de votre Honorable Société trois opuscules, publiés dans le but de faire ordonner pour quelque académie ou quelque gouvernement éclairé la traduction, possible en Europe en ce moment des principaux livres Chinois relatif à l'histoire et à la géographie. Par une fatale disposition aux futilités depuis M. Deguegnier on n'a traduit du Chinois, que des Romans et des pièces de Théâtre, et on ne-nous a donné aussi que des Pièces de Theatre fort ennuyeuses, en tout au plus bornées a nous faire connoître quelques détails de mœurs. Il y a, en Chine, d'autre trésors à puiser; et il appartiendroit à votre Honorable Société d'obtenir de la Société ou de la compagnie des Indes, l'Impression, a ses frais, de la traduction, possible à Paris, en ce moment da Pian-y-tien, immense ouvrage relatif à la géographie des pays qui entourent la Chine, tels quel' Indo-Chine, la petite et la grande Boukharie, la Corée, le Japon, et meme l' Amerique qui y est decrite sur le nom de 扶 FOU' 桑 SANG ou de pays de l'orient extreme. J'ai montre ce bel ouvrage en 70 volumes (envoyé de Peking a Paris par les missionnaires il y a plus d'un an) à Lord Munster, dans un hyver qu'il a passé

ici, et je lui ai fait voir qu'il figuroit les peuples Etrangers de la Chine, et meme ceux de l'Afrique, et donnoit la titre de toutes les productions de leur pays, et des details sur le commerce que lui y pouvoit faire, et je suis surpris qu'a son retour à Londres, Lord Munster n'aie pas engagé la Société des traductions a faire traduire a Paris, par M. STANISLAN JULIEN, cet ouvrage si important, pour la puissance Anglaise dans les Indes et cher les Birmans. Ce livre a été entièrement parcouru par moi, et souvent cité dans la belle Histoire des Hums de M. DE GUEGNER le pere, mais ce qui manque a l'Europe c'est la traduction complete, et possible en ce moment je le répète, encore. J'en ai aussi entretenue M. LE BARON DE HUMBOLDT par écrit; il est actuellement a Paris et je ne doute pas qu' il ne s'en occupe un jour.

“ J'ai voulu, Monsieur le Président, appeler aussi votre attention sur ce livre si important, qui n'existe pas à Londres autant que j'ai pu le verifier. Il seroit non moins utile, d'avoir une traduction complete des kiags et du Son Chon ancienne chronique, et des encyclopedies diverses publiées en Chine et au Japon, aussi bien que du Pentho Penggimon; je suis convaincu de leur haute importance. Je désire en convaincre aussi votre Honorable Assemblée.

“ Je suis avec respect,

“ Monsieur le Président,

“ Votre tres humble et obeissant serviteur,

“ CHEV. DE PARAVEY.

Du Corps royal du génie, &c. &c.

Ce 13th Septembre, 1838.

The Secretaries were directed to acknowledge with thanks Mons. DE PARAVEY's communication, and to state that several works of more local interest must occupy the attention of the Society before they could urge on the government the expediency of undertaking the translation Mons. DE PARAVEY suggests.

Received through the Secretary to Government, General Department, Report on the Statistics of Azimgurh, by Mr. THOMASON, B.C.S.; also Journal of a Tour in Bootan, by Dr. W. GRIFFITHS, Medical Establishment.

Read an application from PREMCHAUND Pundit, offering to make over to the Society the commentary of the 2nd part of the “*Nyeshadha*,” which he has been given to understand the Society is willing to publish; with a request that his labours for such compilation may be taken into the consideration of the Society.

Proposed by the President, seconded by Capt. FORBES, carried nem con, that Mr. SUTHERLAND be requested to report on the subject at the next Meeting.

Daily Observations of the Tides at Singapore for December 1838, and January 1839, were presented by W. SCOTT, Esq.

Museum.

Read a letter from Dr. C. GRIFFITHS, forwarding for presentation to the Museum a locust picked up by him at the Cape of Good Hope in December last.

Read extracts of a private letter to Dr. O'SHAUGHNESSY from Lieut. Col. STACY, communicating drawings of coins discovered on his journey to join the Army of the Indus.

* * * “ You may rest assured, I will keep you informed of any thing which comes to my knowledge, and which I suppose may be interesting to you; but keep in mind, that the natives bury, and remove every thing they can on the approach of an army; and therefore, that I can expect no success in my researches, until we take Cabul. Through

the kindness of Moonshee MOHUN LAL, I have received introductions to the bankers of Kandahar and Cabul: through their agency, I expect to procure coins, gems, and every thing antique, which money and zeal in the cause can procure; and I hope I shall be able to make such arrangements, when on the spot, as may secure to me the result of their future exertions. Not a coin shall pass into other hands, if I can prevent it. At Cabul I shall have some trouble perhaps; but we have this satisfaction, that if I should fail to secure any coins, they will fall into the hands of our countrymen, and they will communicate them to the Society. I had better begin the subject of coins in the order or date of my great good fortune. First, when travelling dâk, I had the pleasure of meeting Dr. FALCONER on his return from Cashmere; he immediately opened his treasures, gave me over almost all he had, desiring I should select such as I required for my cabinet. Although no new coin turned up, still there are three of KADAPHES CHORANUS, which will be very useful, as having the legend on the reverse complete; there are some others also, which will be very useful in completing readings, which, at present, are rather doubtful.

“ My next donation was from Colonel Sir ALEXANDER BURNES: of his modern coins I will speak, when I have more time. In six small packets are Bactrian, Indo-Scythic, &c. which though published, will still be useful, as they assist in forming a comparative table of the various sites where these coins prevail. One coin in these packets deserves notice, viz. a copper coin of AZUS—of capital workmanship and very complete—similar to fig. 2, pl. 22, vol. 4, June 1835, Journal Asiatic Society. Three circular copper coins of a dynasty as yet unknown, complete the valuable present of Col. BURNES: they deserve a more detailed description than I can give of them in Camp, without books of reference. I will describe them as well as I can, and send you sealing wax impressions by the first opportunity, into which you can cast Plaster of Paris.

“ No. 1, *Obv.* Royal bust facing to the left, in high relief; handsome and expressive features; beard; head-dress difficult to describe; has the appearance of two large rosettes, composed the upper of six and lower of seven small circular bunches of flowers or jewels; the royal fillet passes between these, and is tied behind in a very peculiar triangular bow. Dress magnificent; collar round the neck equally so; legend in Greek characters—the three first are indistinct—they appear to me $\Delta C \Delta K O P H C$ BASILEUS, the remaining letters lost. *Reverse.* An angel in outline, facing to the right, holding out a fillet in her right hand; the legend, beautifully executed, is in a character assimilating to, but more ancient, than the writing in the principal deposit of the Manickyala Tope—Monogram \mathcal{L}



“No. 2, is also a copper coin in high relief, and only less beautiful than No. 1. Royal bust facing to the left—evidently of the same dynasty. A less able execution of the medal, and a deteriorated Greek character, stamp it as subsequent to No. 1. Bearded—hair straight on the crown of the head—fillet with the same peculiar triangular bow as No. 1—below the fillet three rows of curls—dress much the same as No. 1—collar richer. It must be regretted that the greater part of the letters of the name are injured—after cleaning the coin with the greatest care, it appears $\Delta \Theta \rho \Theta \Delta \nu \text{HC}$ * *, the remaining letters are lost. *Rev.* An angel facing to the right, in outline, holding out a fillet in her right hand—half of the legend is distinct—approaches nearer to the writing in the principal deposit Manickyala Tope—Monogram J



“No. 3. This coin was in such a ruinous condition, that I had no hopes any exertions would ever enable me even to class it; but I have been more fortunate than I expected. I think it should be placed as first of this series. It is evident it belongs to Nos. 1 and 2; equally so, that it is of some other king, for the Monogram is on the obverse—a star with five points. The head dress is the same—the ends of the fillet are more gracefully disposed. Style of Greek character the same as on No. 1. Only a few letters of **Basileus** remain. *Reverse.* An angel facing to the right—instead of being in outline the angel is filled in, and in a most graceful attitude—the traces of letters only remain, but as far as they allow of an opinion, I should say of a different alphabet from Nos. 1 and 2.

“Nos. 1 and 2 bring to light the names of two kings before unknown. Monsieur **JAQUET**'s corrected *Pehlevi* alphabet will enable you to judge if I have read the Greek legend correctly. To Colonel Sir **ALEXANDER BURNES** are we indebted for this discovery;—he does not allow his numerous and important duties to prevent his collecting ancient coins wherever they are to be had: he has dispatched servants in several directions to purchase them.

“My next good fortune was a donation from **Moonshee MOHUN LAL**; he shewed me all the coins he had, and desired me to select any I wished to possess. I accepted of sixteen—two of these are unique, but I am sorry to say, without legend. One *Obv.* a head in high relief, looking to the left. *Reverse*, a loose horse, trotting to the right—legend lost. The other a bust, badly executed, looking to the right—crown with many points—*Reverse* lost. From the appearance, I doubt if ever it had a reverse. These two coins are both unknown. A square bronze coin of **EUCRATIDES**. *Obv.* very complete, and in wonderfully good preservation, a splendid execution, not the least injured. *Reverse*, the two horsemen. Nothing can surpass the spirit and grace of this medal; I have no coin, nor do I remember seeing a coin of greater beauty. I also received a very pretty small coin of **ERNAIOS** or **ERMÆUS**; the others are coins already published. You may imagine how grateful I feel for these most acceptable donations. I hope on my return, that added to what my own exertions may enable me to collect, we may be able to give several names to the list of kings. I shall write from **Kandahar**.”

Physical.

Read a letter from Lieut. Col. R. LLOYD, Resident at Darjeeling, forwarding a specimen and notice of a supposed Coal found near the Teesta river. On analysis it was found to be *iron* stone mixed with plumbago.

After the conclusion of the business of the Meeting Mr. JAMESON, the officiating Curator, read his report on the specimens of Natural History contained in the Museum of the Society.

The thanks of the Society were voted to Mr. JAMESON for the valuable service he has rendered to the Society, for the short time he has had the management of the Museum.

Meteorological Register, kept at the Assay Office, for the Month of April, 1839.

Day of the Month.	Atmospheric Pressure.			Temperature.			Hygrometry.			Aqueous tension.			Weather.			Atmospheric Pressure.			Temperature.			Hygrometry.			Aqueous tension.			Weather.									
	Old Stand. Barometer.	Height at 32 Fah.	River water.	Well water.	Air.	Dew point.	Depression.	Differential thermometer.	Hair Hygro-meter.	By Dew point.	By Wet bulb.	By Hair Hygrometer.	Aspect of Sky.	Wind.	Barometer.	Height at 32 Fah.	Air.	Dew point.	Depression.	Differential thermometer.	Hair Hygrometer.	By Dew point.	By Wet bulb.	By Hair Hygrometer.	Aspect of Sky.	Wind.	Old Stand. Barometer.	Height at 32 Fah.	Air.	Dew point.	Depression.	Differential thermometer.	Hair Hygrometer.	By Dew point.	By Wet bulb.	By Hair Hygrometer.	Aspect of Sky.
1	29,869	29,874	83,9	79,4	87,5	56,8	8,5	8,5	88	37,65	74	74	cumuli.	S.	29,762	29,754	91,7	45,2	14,3	14,8	77	22,47	54	S.	o. 4	29,762	29,754	91,7	45,2	14,3	14,8	77	22,47	54	S.	o. 4	
2	867	880	83,7	78,8	86,0	59,0	8,7	8,4	88	25,65	74	74	cl.	S.	740	743	92,0	43,0	13,2	13,0	80	32	56	S.	e. 2 1/2	740	743	92,0	43,0	13,2	13,0	80	32	56	S.	e. 2 1/2	
3	820	815	84,0	79,2	86,7	63,0	8,7	8,6	88	28,65	74	74	do.	S.	660	656	96,4	49,0	20,5	21,7	64	23,33	39	S.	w. 1 1/2	660	656	96,4	49,0	20,5	21,7	64	23,33	39	S.	w. 1 1/2	
4	724	738	82,7	79,6	87,3	65,0	7,4	7,4	90	50,70	78	78	do.	S.	592	584	97,0	51,5	16,0	17,2	72	23,45	66	S.	E. 1 1/2	592	584	97,0	51,5	16,0	17,2	72	23,45	66	S.	E. 1 1/2	
5	763	769	84,6	79,6	86,4	63,5	6,9	7,1	90	48,72	78	78	cy.	S.	609	614	93,4	57,5	12,3	13,0	82	31,55	63	S.	e. 1 1/2	609	614	93,4	57,5	12,3	13,0	82	31,55	63	S.	e. 1 1/2	
6	746	745	84,2	79,3	86,7	65,0	9,0	9,0	88	50,65	74	74	cy. cir. str.	S.	629	638	91,6	63,0	13,3	13,2	79	41,51	40	S.	e. 3	629	638	91,6	63,0	13,3	13,2	79	41,51	40	S.	e. 3	
7	739	735	89,3	83,0	89,3	63,0	11,6	12,0	83	44,55	65	65	overct.	S.	612	614	95,5	64,0	13,0	14,3	89	37,55	59	S.	e. 2	612	614	95,5	64,0	13,0	14,3	89	37,55	59	S.	e. 2	
8	756	746	84,3	79,4	88,1	62,0	11,9	11,6	80	43,54	69	69	cy. haze.	S.	631	634	91,3	53,3	16,2	16,1	73	29,41	48	S.	w. 1 1/2	631	634	91,3	53,3	16,2	16,1	73	29,41	48	S.	w. 1 1/2	
9	776	763	84,7	79,8	89,4		10,7	10,7	86	60	70	70	overct.	S.	671	650	97,0	61,5	15,3	14,7	79	32,40	57	S.	e. 1 1/2	671	650	97,0	61,5	15,3	14,7	79	32,40	57	S.	e. 1 1/2	
10	780	771	85,3	80,0	89,5		10,5	9,4	89	60	74	74	cum. sct. few.	S.	681	666	97,8	55,7	16,5	15,0	77	26,45	54	S.	E. 3	681	666	97,8	55,7	16,5	15,0	77	26,45	54	S.	E. 3	
11	786	774	85,7	80,2	89,5	64,7	8,4	8,6	89	45,67	76	76	do. do.	S.	638	624	94,3	55,4	13,9	15,0	78	29,50	56	S.	e. s. e. 1 1/2	638	624	94,3	55,4	13,9	15,0	78	29,50	56	S.	e. s. e. 1 1/2	
12	670	666	85,9	80,3	89,7	65,0	8,0	8,0	89	47,69	76	76	fine.	S.	570	544	94,2	64,5	11,5	11,6	84	39,59	66	S.	w. s. w. 4	570	544	94,2	64,5	11,5	11,6	84	39,59	66	S.	w. s. w. 4	
13	641	627	85,7	79,7	89,1	65,3	8,5	8,0	89	47,67	76	76	cy. haze.	S.	539	511	94,5	64,0	10,3	10,1	87	38,64	72	S.	E. 3 1/2	539	511	94,5	64,0	10,3	10,1	87	38,64	72	S.	E. 3 1/2	
14	639	629	85,3	80,1	91,0	68,7	9,2	8,7	88	49,65	74	74	overct. cl.	S.	565	533	95,9	65,0	12,3	11,9	83	38,57	65	S.	E. 3 1/2	565	533	95,9	65,0	12,3	11,9	83	38,57	65	S.	E. 3 1/2	
15	860	789	86,2	80,3	89,9	69,6	9,2	9,2	87	53,65	72	72	haze.	S.	725	655	93,7	71,0	11,3	11,2	83	50,60	65	S.	E. 3 1/2	725	655	93,7	71,0	11,3	11,2	83	50,60	65	S.	E. 3 1/2	
16	894	840	87,5	80,1	90,1	71,0	9,8	9,5	85	55,62	68	68	cum. str.	S.	779	690	96,1	55,0	16,5	15,9	76	27,45	52	S.	E. 2	779	690	96,1	55,0	16,5	15,9	76	27,45	52	S.	E. 2	
17	842	780	87,4	79,9	89,7	70,0	13,2	14,2	80	55,50	59	59	cy. cum.	S.	743	652	93,8	61,5	14,6	16,0	79	37,50	57	S.	w. 3	743	652	93,8	61,5	14,6	16,0	79	37,50	57	S.	w. 3	
18	776	695	86,6	80,3	89,7	73,5	8,8	10,0	89	66	66	do. do.	S.	537	522	96,0	62,5	13,3	12,0	83	34,55	65	S.	o. 4 1/2	537	522	96,0	62,5	13,3	12,0	83	34,55	65	S.	o. 4 1/2		
19	594	613	81,3	80,1	88,7	74,1	6,7	7,5	92	67,72	82	82	cy. haze.	S.	485	502	94,1	71,9	8,5	8,8	90	54,67	80	S.	W. 2 1/2	485	502	94,1	71,9	8,5	8,8	90	54,67	80	S.	W. 2 1/2	
20	586	584	87,9	80,3	90,9	74,7	7,8	10,1	89	60,70	76	76	do.	S.	484	464	91,0	71,1	8,5	9,0	90	59,67	89	S.	e. 3	484	464	91,0	71,1	8,5	9,0	90	59,67	89	S.	e. 3	
21	580	587	87,2	80,1	88,9	74,0	6,5	7,5	92	63,73	88	88	do. threatg.	S.	486	488	89,9	73,2	5,7	6,7	93	60,77	84	S.	e. 3 1/2	486	488	89,9	73,2	5,7	6,7	93	60,77	84	S.	e. 3 1/2	
22	580	588	85,3	79,5	87,1	76,3	7,3	8,8	89	70,70	59	59	do. do.	S.	449	426	95,5	64,7	15,5	16,8	79	37,47	57	S.	e. 2	449	426	95,5	64,7	15,5	16,8	79	37,47	57	S.	e. 2	
23	575	573	86,2	80,2	90,9	75,7	8,7	9,1	90	70,67	78	78	cum. str.	S.	469	481	92,1	74,0	6,1	6,3	91	57,43	80	S.	e. 2	469	481	92,1	74,0	6,1	6,3	91	57,43	80	S.	e. 2	
24	607	602	86,4	80,5	90,5	76,0	7,2	7,9	91	71,72	80	80	cy. cum. overhd.	S.	509	480	92,2	77,0	8,0	8,7	91	63,70	80	S.	e. 2	509	480	92,2	77,0	8,0	8,7	91	63,70	80	S.	e. 2	
25	729	29,729	29,716	85,6	79,8	88,8	68,0	8,9	9,2	88	51,65	73	73	Showery.	S.	29,608	29,584	94,3	62,2	12,8	13,0	81	38,53	62	S.	2 1/2	29,608	29,584	94,3	62,2	12,8	13,0	81	38,53	62	S.	2 1/2

Forenoon, 10 A. M.

Afternoon, 4 P. M.

Mean.

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JOURNAL

OF

THE ASIATIC SOCIETY.

No. 89.—MAY, 1839.

ART. I.—*Notice of Inscriptions in Behar, communicated by Mr. RAVENSHAW. By the Editors.*

We present our readers with a letter from Mr. RAVENSHAW, with which we received several copies and facsimiles of Inscriptions obtained by that gentleman during his tour in South Behar. We regret to say, that the most important and interesting of these impressions are so imperfect and confused as to baffle the attempts of the Pandit KAMALA KAUNT, who aided Mr. JAMES PRINSEP in his valuable discoveries. We allude particularly to the inscriptions on the inverted column in the fort of Behar. They are in the Sanscrit language, and character. Nos. 1 and 2 are duplicates taken on sized paper. The letters on the one have been inked on the obverse side, and on the other on the reverse. The only word yet deciphered is "*Srenayah*," "orders," "files." From No. 3 of the same pillar these Sanscrit words have been discovered—" *labdhopáya xetropari ku-kriya tyá(jyá)* any "evil act against land obtained by any means, should be avoided."

Nos. 4, 5, 6, and 7, are in the same character and language, taken from the ruins of *Baudhist* statuary at *Barahgaon*. They appear to contain *Baudhist* moral sayings; example—

"*Ye dharma hetu prabhavah teshām hetun Tathágutam avagachchh.*"

"Know BUDI to be the author of those things which proceed from virtue as a cause."

We suspect that the image at this place (so described by Mr. RAVENSHAW) cannot be BHAIRAVA. The terrific SIVA would be certainly misplaced amongst the peace-loving divinities of the *Baudhists*.

No. 8 is in the *Deva Nagri*, and belongs to a class of inscriptions bearing the name of NA'YKA PRATA'PA DHAVALA DEVA RAJA of *Japila*. They are described by Mr. COLEBROOKE in the first volume of the Transactions of the Royal Asiatic Society (page 201), on inspection of the facsimiles taken by Dr. BUCHANAN.

No. 8 is that translated by that distinguished orientalist. "It is (to borrow his words,) "an inscription on a rock, denominated, from an "idol delineated on it, *Táráchándi*, in the vicinity of *Sahusram*, in "South Behar; and contains the protest of a chieftain named PRA- "TA'PA DHAVALA DE'VA, bearing the title of *Náyaca* and that of *Rája* "of *Japila*, against an usurpation of two villages by certain *Bráh-* " *mánas* in his neighborhood, under colour of a grant, surreptitiously "obtained through corruption of his officers, from the *Rájá* of *Gádhi-* " *nagara* or *Cányacubja* (*Canó*), who was the celebrated VEJAYA- "CHANDRA. Its date is 1229 Samvat, corresponding to A. D. 1173."

The obliteration of the first digit has led Mr. RAVENSHAW to impute to these inscriptions an age more remote by one thousand years than the true era.

No. 9 belongs to the same class, but is not described by Mr. COLEBROOKE. The transcriber of No. 8 seems to have been no great scholar; but the transcriber of No. 9 is evidently quite illiterate. He introduces his own *Lala* letters where they differ from the *Deva Nagri*, and is baffled by the conjunct letters. From what is deciphered, this appears to commemorate, by the Raja the construction of a road, "like steps" from the *Pratabali* river to the top of the adjoining hill, on which are impressions of the feet of VISHNU and CHANDI. The seal of BHIKU Pandit, the composer of the inscription, is on the slab, which besides the fact commemorated, records some notice of this redoubtable Raja's family. Parts of the slab are obliterated, but the transcription of what is legible by a scholar, would enable us to give a more correct analysis of its contents.

The impression of No. 10 is as imperfect and confused as those of Nos. 1, 2, and 3; so that we must wait the receipt of a more correct impression before we can hope to arrive at the contents of this stone.

The four Persian inscriptions communicated by Mr. RAVENSHAW, require little comment in addition to the notice by that gentleman. From the first, we learn that in the time of AKBAR "his servants had thousands of powers," and that SAID SURFARAZ KHAN, (one of them perhaps) founded the *Musjid*, "a sublime shrine. He was a pious man, as it were a sacred *parterre* in spring."

From the second we learn, that MUNIR *Raj* built "this tomb of the IMAM of age."—In these verses the Prophet is piously apostrophized.

The third informs us, that in the reign of SHAH JEHAN the Just, HABIB SUR (the *Raj* no doubt) constructed the basin of SHARAF-AD-DIN, and "repaired (*babast*) and made this sublime *Id-gah*, and the brick pavement." Mr. RAVENSHAW informs us, that this saint died in 782. A. H. The dedication of the basin is therefore a posthumous honor.

In the last line of the third couplet of the epitaph on IBRAHIM BAYU we have hazarded a correction,—*Kin-toz* for *Kin-loz*. The first, however unusual as a compound, may mean *zealous* or *fervent*, the second has no sense. This good man it seems "was royal in his disposition, and in religion as fervent as Abraham." He died in the month of Hajj on a Sunday. The line obliterated would have supplied the date. The concluding line prays "that God may make easy his last account."

A correct plate of Mr. RAVENSHAW's sketch of the tower of JARA'SANDHA near *Girik* is annexed. Mr. RAVENSHAW has detailed the *pauranic* legend of this 'Asur,' demon, (*not Assyrian*). The term is given to the foes of KRISHNA. KANSA, the slain son-in-law of JARASANDHA, and the uncle of KRISHNA, is so called, (See WILSON's Dictionary.)

We are much mortified, in being obliged to send forth this Number without an analysis of the inscriptions on the inverted column in the fort and on the stone on the hill near *Sasseram*, now called *Chandan-Shahid*,—of course from some *Moslim* devotee. They may, we think, afford interesting historical facts. We wish Mr. RAVENSHAW, or any other friend to antiquarian research, could find the opportunity of taking more perfect facsimiles. Captain BURNS would render important service if he would describe minutely the best process and fittest materials for taking accurate facsimiles from engraved slabs. In the meantime we suggest that other impressions be taken on damp or sized paper, and that they be sent to us without any attempt to delineate in ink the letters either on the concave or convex faces. If they be sent in duplicate the chance of being deciphered is greater.

The slab to which Mr. RAVENSHAW refers at the close of his valuable letter has been received, and will be noticed in an early Number. We now pass on to that gentleman's letter.

To the Secretary of the Asiatic Society, Calcutta.

SIR,

I have the pleasure to forward for the inspection of the Society, a few inscriptions collected by me in a late tour through the district of Behar, in the hope that some of them may prove to be new, and useful in illustrating the history of the country. No. 1, is an inscription on a stone pillar found among the ruins of the fort of Behar.

The fort is supposed by Buchanan* to have been built by the Maga Rajas, who during the first three centuries after Christ ruled over this part of the country, then called *Magadha*, and indeed still called *Magad* by the lower orders of natives to this day. The shaft of the column is about eleven feet high, being a fragment only of the original pillar. It is situated on the high ground, a little to the west of the northern gate of the fort. Its original position is said to have been in front of the gate; on removing it to its present site, the pillar was erected in a reversed position, with its base in the air, and its summit in the ground.

Various expedients were tried, in order to take off the inscription; but wax, sealing wax, and the ordinary method of inking the pillar, and taking the impression on damp paper, alike failed. At last I had recourse to sized paper, which being pressed while damp carefully into the letters, retained the form of them when dry. In No. 1, the cavities of the letters have been filled with ink. In No. 2, which is another copy of the same inscription, the reverse or embossed side has been inked. The latter appears the best copy, and if the paper be held up to the light the characters can be as distinctly traced as on the other. No. 3, is a copy of an inscription on the upper (really lower) part of the column.

As I have never seen any characters which resemble those on the Behar column, I shall be glad to learn from your Society by what name they are designated, and to what era they belong. It is singular that Buchanan should not have alluded to this pillar in his description of the fort of the Magas while giving an account of the numerous Boodhist images, &c. scattered among the ruins.

There are several ancient Mahomedan buildings in the town and its vicinity, which are likewise unnoticed by Buchanan. The principal one is the tomb or Durgah of a holy saint, styled Huzrat Mukdoom Ool Moolk Shah Shureef Oodeen. There is an inscription in the *Cufic* character over the entrances to the Durgah, which, however, time has rendered illegible, with the exception of the date of the death of the saint, 782 Hijree, (1380 A. D.) and of the erection of the tomb, 977 Hijree (1569 A. D.) The Durgah is held in great veneration by the Mahomedans, who at the *Oors*, or anniversary of the death of the saint assemble from all parts of the country, it is said to the number sometimes of 50,000. This ceremony takes place in December. The tomb, the adjoining mosque, and other buildings, are illuminated, and prayers are offered up for the dead and the living.

* Page 89, in Martin's Eastern India.

Extensive endowments of rent-free lands have been granted at different times by Emperors, Amils, and pious Mahomedans, for the support of the shrine, the administration of which, is entrusted to a *Syjadah Nusheen*, an hereditary officer, to whom great reverence is paid by the Faithful. But a great portion of the lands has been alienated either to relations of the family, or in satisfaction of debts of former incumbents, and a great part has become liable to assessment under the Resumption Laws; so that little now remains for the support of the family, the splendour of religious festivals, or the maintenance of the Moolvees who were wont to teach to the rising generation the doctrines of the law and the tenets of the Prophet.

The following inscription is on the *Joomah Musjid*, date 1004 Hijree, in the reign of Akbar.

در زمان اکبر غازی شه عالم پناه چاکرانش راهزاران اقتدار
 هم بیمن حضرت خان سعید سرفراز مسند عالی بنام مسجد کرد اختیار
 بسکه از فیض مقدس میشود ظاهر درو روضه قدسی است گوی اندر بهار
 سال تاریخش چو از پیر خرد جستم بگفت
 رفت بود از هجرت خیر البشر الف و چهار

The *Imambarah* has the following inscription, dated 1175 Hijree.

سنه ۱۱۷۵ هجری

منیری راج بتوفیق ایزد سبحان بنامه چو این مدفن امام زمان
 هزار و یکصد و هفتاد و پنج گشت شمار ز هجرت نبی ان سرور صغار و کبار
 بکن تو حشرم یارب بسایه حسنین
 بحق احمد مختار شافع کونین

The subjoined is in a tank and *Eid Gah*, date 1065 Hijree, in the reign of Shah Jehan.

بدور شاه جهان باد شاه عدل گزین حبیب سوره بنا کرد حوض شرف الدین
 وعید گامعلاش و قرش خشتی آن به بست و ساخت بعون خدادارین دوران

هزار و پنچ و شش سال هجرت آن سرور
که شد تمام بمه ماه صفر بخیر و ظفر

At the distance of about three miles west of the town is a singular hill called *Peer Puhury*, from the tomb of a *Peer*, or saint, situated on the summit. His name was Huzrat Ibrahim Byjoo, who from the subjoined copy of the inscription over the tomb appears to have died in 753 Hijree, (1352 A. D.,) or nearly five centuries ago, during the reign of the Patan monarch Feroz Sooltan, and about forty or fifty years before the invasion of Tymoor. This inscription is so far important that it verifies the date assigned to Feroz Shah being Slārā Rajab by Ferishta.*

سنه ۷۵۳ هجری

تاریخ وفات حضرت ابراهیم بیو

بعهد دولت شاه جهان گیر که بادا در جهان ملک نوروز
شهنشاه جهان فیروز سلطان که برشاهان گیتی گشت فیروز
ملک سیرت ملک بیو بر ابراهیم که بد در دین چو ابراهیم کین توز
بمہ ذی الحجہ یکشنبہ از روز

(Line illegible.)

به هجرت هفتصد و پنجه سه تاریخ مسافر شد ملک در جنت این روز
خداوندا بفضل خویش بروی کنی آسان حساب آخرین روز

The tomb is a common square building, surmounted by a dome. The hill on which it stands is a very remarkable one. It is composed of cuboidal masses of crystallized sandstone having a fanciful resemblance to horn, and thence called by the learned, "Hornstone." The upper part of many of the rocks is soft sandstone, while the lower is crystallized; this is probably owing to decomposition, but the natives conceive it to be a new accretion, and maintain that the rock grows, "*jeeta*," a not uncommon idea even in England.

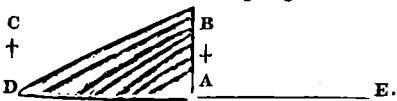
* Vide Prinsep's Useful Tables, page 147.

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cornice enlarged.



The hill is about 300 feet high, composed of stratified masses of the Hornstone. It is quite perpendicular to the east, and sloping down to

the west at an angle of about 40° 

Other hills are generally in the shape of cones, but this seems to have been upheaved by a sudden force in the direction AB or of CD , snapping the subjacent crust, without disturbing the contiguous plain E . This perpendicular rock extends about a mile or more north and south, and there is no other hill within twelve miles. The character of the Behar Hills in general is very peculiar, being unlike that of any other country I have visited. They rise up out of the level plain in small conical isolated peaks from 200 to 300 feet high, apparently unconnected with each other, or any range of mountains. They are composed of a variety of rocks, coarse granite, hornstone, jasper, hornblende, &c. all mixed together without order, and all appearing to have undergone some degree of fusion. They suggest the idea that they existed previous to the plain which surrounds them, for if they had been forced up from below, the adjacent plain would have been upheaved with them in some degree; whereas it is as flat as possible up to their very base. It seems not improbable, therefore, that they originally formed the summits of a range of mountains, the vallies of which were subsequently filled up, forming the bed of some pre-adamite ocean. But I have forgotten the inscriptions in this geological speculation

The inscriptions numbered 4, 5, 6, and 7, were taken from the pedestals of statues of Boodha found at Baragaon, about seven miles west from the town of Behar, which Buchanan conceives to have been the residence of the Maga Rajas. Three or four high mounds composed of ruins of some large brick buildings are all that remain to attest its ancient grandeur. The Boodhist images lying about in all directions are very numerous; that of *Bhyroo* is of colossal dimensions, and made of granite.

Enclosed is a rough sketch* of a very remarkable tower about sixty feet high, and as many in circumference, situated on the summit of a hill 800 feet high, near Girick, about seven or eight miles from Rajgeer (*Rajgiri*) the ancient capital of Jarasanda, an Asur, or Assyrian, the contemporary of Chrishna, and who is supposed to have reigned over the country of Magadha, or Madhyadēs, about 1200 years before Christ.

* See Plate

According to tradition, and the *Mahabharat*, Chrishna murdered the Raja of Mathurah, who was the son-in-law of Jarasanda, in order to obtain his dominions; upon which Jarasanda waged war with the Eastern Apollo, and compelled him to fly with all his milk maids to the west coast of India. Some years after, however, having obtained the aid of the Pandava Princes he returned with an army headed by Bheem and Arjuna. At Girick a pitched battle was fought, and Jarasanda is said to have fallen by the hand of Bheem. A detailed description of the pillar is to be found in Buchanan, page 79. It is called by the natives the *Bythaki*, or seat of Jarasanda; but it is not improbable that it may have been erected either in commemoration of his victory over Chrishna, or of his death in the final battle. It is a solid brick building, without any inscription or image; about two-thirds of the height from the ground there are three projecting cornices about a foot apart, the intervals being decorated with carved ornaments, the principal of which is a *gurha*, or vessel for holding water.

The inscriptions of Nos. 8, 9, and 10, were presented to me at Sasseram by Shah-Kubeerood-Deen, the *Syjjadah Nusheen* of a religious endowment at that place.

No. 8 was taken at Tarachundee, two miles south-west from Sasseram; the date is 3rd Jeyte 229 Sumbut (A. D. 172), and Raja Dowul Pertab is the author.

No. 9 is an inscription on a rock by the same Raja, at a place called Amjur, near Phoolevaria, ten miles south from Sasseram—the date is Bysack 2nd, Sumbut 229, or A. D. 172.

No. 10 is an inscription found on a stone at the summit of a hill near Sasseram, called *Chundun-Shaheed*. It is in the ancient character of the Allahabad and Bettiah Pillars, the decyphering of which has conferred immortal honor on the name of JAMES PRINSEP. The following inscription is taken from the gateway of the palace on the summit of the celebrated hill fortress of Rhotas. From this it appears that the palace was built in 1005 Hijree, (1596, A. D.) by Raja Man Sing, viceroy of Behar and Bengal in the time of Akbar.

آنچه بردروازہ محل قلعہ رھتاس نوشتہ است

دروازہ مقیم بنای چو شد تمام دروازه سپہر زرشکش سقیم شد
سال عمارتش چونمودم بطبع گفت از راجہ مان سکہ بنای مقیم شد
تحریر فی التاریخ بسنت و ہشتم شہر رجب المرجب سنہ ہزار و پنچ

Facsimile of the first sloka of the 1st Plate.

ॐ नमो ब्रह्मणे ॥ इति सततं ननु नमस्तस्मात्तमीमं ननु यतिरुच्यते नमस्तस्मात्तमीमं
 ननु सतिः प्रवृत्त सति सतत्यापत्य सति सतत्सु सतत्सु सतिरुच्यते नमस्तस्मात्तमीमं

The seal, full size.



The alphabet of the above compared with modern Devanagari.

अ	इ	ई	उ	ऊ	ऋ	ॠ	ऌ	ॡ	क	ख	ग	घ	ङ
ब	क्व	ज	झ	ञ	ट	ठ	ड	ड	त	थ	द	ध	न
प	फ	ब	भ	म	य	र	ल	व	श	ष	स	ह	रु
आ	इ	ई	उ	ऊ	ऋ	ॠ	ऌ	ॡ	ऌ	ॡ	ऌ	ॡ	ऌ
आ	इ	ई	उ	ऊ	ऋ	ॠ	ऌ	ॡ	ऌ	ॡ	ऌ	ॡ	ऌ

The Sungskrit inscription at the Kothoutiga gate of the fort, alluded to by Buchanan, page 432, was, I believe, brought to Chuprah by Mr. Walter Ewer, and is at present in the grounds of Mr. Luke's house. I shall endeavour either to forward the original, or a copy to the Asiatic Society.

I have the honor to be,

Sir,

Your most obedient servant,

E. L. RAVENSHAW.

CHUPRAH,
21st April, 1839.

P. S.—Since writing the above Mr. Luke has promised to forward the slab by a boat which is about to start for Calcutta.

ART. II.—*The “Mahimnastava,” or a Hymn to Shiva; with an English translation. By the Rev. KRISHNA MOHANA BANERJI.*

The well-known invocation to SHIVA, of which an English translation is presented to the public, together with the original, in the following lines, is held in high repute among the Hindus. It purports to be written by PUSHPADANTA, chief of the *Gandharvas*, who was in the habit of stealing flowers, for the purpose of worshipping SHIVA with them, from the garden of king VA'HU, unseen by the keepers of the garden. As he was gifted with the power of walking in the air he baffled for a long time all the efforts of the keepers to catch him, who observed every morning large quantities of flowers stolen away, but could not ascertain how the thief got into the garden by night, in spite of all their watchful vigilance. They suspected at last that it was a being capable of flying that committed the robbery night by night, and left in several places some holy flowers sacred to SHIVA, with the hope that the thief might tread upon them in the dark and be deprived of his supernatural powers, in consequence of the curse which such an insult to those sacred mysteries would necessarily bring upon him. The plan had the desired effect. The *Gandharva* trod upon the sacred flowers, and lost his power of riding on the wind. He was accordingly caught and taken into custody, when, through fear of the king whom he had offended by stealing his flowers, he offered the following supplication to SHIVA.

In the translation of this composition I have consulted the *scholia* of a learned commentator, as well a version in the Bengalee language, both of which have been printed with the text. As all classes of the

Hindus are allowed the privilege of worshipping SHIVA, this hymn is distinguished from invocations to other gods by the liberty with which it may be read and repeated even by the *Shudras*, and it is therefore more widely known among the natives than the other prayers and mantras with which the Brahmins alone are familiar, because they alone are allowed to use them.

महिम्नः पारन्ते परमविदुषो यद्यसदृशी
स्तुतिर्ब्रह्मादीनामपि तद्वसन्ना स्त्वयि गिरः ।
अथावाच्यः सर्वः स्वमतिपरिणामावधि गृणन्
ममाप्येष स्तोत्रे हर निरपवादः परिकरः ॥१॥

If the offering of praise by one that does not comprehend the supreme limits of thy glory be unworthy of thee, then the language even of BRAHMA' and the other gods must be deficient. No one therefore that sings according to the measure of his understanding is culpable—and this attempt of mine too, O HARA! to celebrate thy praise, may be excused.

अतीतः पन्थानं तव च महिमा वाङ्मनसयो
रतद्वावृत्या यं चकित मभिधत्ते श्रुतिरपि ।
स कस्य स्तोतव्यः कतिविधगुणः कस्य विषयः
पदे त्वर्वाचीने पतति न मनः कस्य न वचः ॥२॥

Thy glory, incapable as it is of any definition, and described with awe even by the Vedas, surpasses the utmost stretch of thought and expression. Who then can duly set forth its praise? Who can comprehend its nature and properties? And yet as to its figurative illustrations, vouchsafed by thee in condescension to the infirmities of the faithful, who would not set his mind upon them and give expression to them?

मधुस्फीतावाचः परमममृतं निर्मितवतः
स्तव ब्रह्मण् किंवागपि सुरगुरोर्विस्मयपदं ।
मम त्वेतां वाणीं गुणकथनपुण्येन भवतः
पुनामीत्येतस्मिन् पुरमथन बुद्धिर्व्यवसिता ॥३॥

Can the word even of the chief of gods (BRAHMA') be a matter of wonder to thee who art the cause of the nectar-like sweets of language? My mind is thus bent upon this invocation, O thou destroyer of TRIPURA, to the end that I may purify my language by the virtue of recounting thy attributes.

तवैश्वर्यं यत्तज्जगदुदयरक्षाप्रलयकृत्
 त्रयीवस्तु व्यस्तं तिसृषु गुणभिन्नासु तनुषु ।
 अमच्यानामस्मिन् वरद रमणीयामरमणीं
 विहन्तुं व्याक्रोशीं विदधत इहैके जडधियः ॥४॥

Thy godhead, celebrated in the Vedas, and displayed in the three-fold forms of BRAHMA', VISHNU, and SHIVA, distinguished severally by the three properties of *Sattva Rajas*, and *Tamas*, is the cause of the creation, preservation, and annihilation of the universe; and yet there are certain foolish and stupid men in the world who oppose this thy godhead in an abominable way, however acceptable that way may be to the wicked.

किमीहः किं कायः सखलु किमुपाय खिभुवनं
 किमाधारो धाता सृजति किमुपादान इति च ।
 अतर्कैश्वर्ये त्वद्यनवसरदुस्थो हतधियः
 कुतर्कोयं कांश्चिन्मुखरयति मोहाय जगतः ॥५॥

“What is his attempt? What his form? By what means—with what implements—of what materials does the Creator form the universe?” Vain questions like these, unworthy of thy incomprehensible glory, and therefore wicked, pass the lips of some infatuated men for the delusion of the world.

अजन्मानो लोकाः किमवयववन्तोपि जगता
 मधिष्ठातारं किं भवविधिरनादृत्य भवति ।
 अनीशोवा कुर्थाङ्गुवनजनने कः परिकरं
 यतो मन्दा स्त्वां प्रत्यमरवर संशेरत इमे ॥६॥

Can this embodied universe be uncreate? Could its existence proceed from any one except the Creator of the world? Or who else but the

Lord could attempt the production of the world? The wicked, regardless of these considerations, indulge in scepticism concerning thee, O thou supreme of immortals!

त्रयी साङ्ख्यं योगः पशुपतिमतं वैष्णवमिति
 प्रभिन्ने प्रस्थाने परमिदमदः पथ्यमिति च ।
 रुचीणां वैचित्र्याद्दृजुकुटिलनानापथजुषां
 नृणामेको गम्य स्त्वमसि पयसा मर्णवईव ॥७॥

While the Vedas, the Sāṅkhya philosophy, the Yoga śāstra, the system concerning the creature and the creator, the doctrine of the Vaiṣṇavas, &c. involve many conflicting theories and sentiments of which some follow this, some that—and while there are consequently different kinds of men pursuing various paths, straight, as well as crooked, according to the diversity of their opinions—thou art alone the one end of all these sects, as the sea is of different rivulets.

महोक्षः खट्वाङ्गं परशुरजिनं भस्म फणिनः
 कपालञ्चेतीयत्तव वरद तन्त्रोपकरणं ।
 सुरास्ता न्ता मृद्धिं दधति च भवद्भ्रूप्रणिहितां
 नहि स्वात्मारामं विषयमृगतृष्णा भ्रमयति ॥८॥

A large bull, a wooden staff, an axe, a tiger or elephant's hide, ashes, snakes, and a skull—these, O thou dispenser of blessings, are thy principal ornaments and furniture. The other gods are indeed tenacious of this and that enjoyment, all which thou mayest call forth by a mere turn of thy eye—but a feverish thirst after such objects cannot disturb a self-contented being.

ध्रुवं कश्चित् सर्वं सकल मपर स्त्वध्रुवमिदं
 परो ध्रौव्याध्रौवे जगति गदति व्यस्तविषये ।
 समस्ते प्येतस्मिन् पुरमथन तैर्विस्मित इव
 स्तुवन् जिह्रेमि त्वां न खलु ननु धृष्टा मुखरता ॥९॥

One philosopher* says that every thing is eternal; another† says that every thing here is perishable; while a third‡ maintains that in

* KAPILA, the founder of the Sāṅkhya philosophy.

† BUDDHA, the last pretended incarnation of the Deity, from whom originated the sect which goes by his name.

‡ GOUTAMA the founder of the Nyāya philosophy.

this universe, composed of various materials, some things are eternal, others perishable.—Although I am in a manner bewildered by these speculations, I am not still ashamed of setting forth thy praise, for my tongue cannot be held.

तवैश्वर्यं यत्नाद्यदुपरि विरिञ्चिर्हरिरधः

परिच्छेतुं यातावनल मनिलस्कन्दवपुषः ।

ततो भक्तिश्रद्धाभरगुरुगृणञ्चां गिरिश यत्

स्वयं तस्थे ताभ्यां तव किमनुवृत्तिर्न फलति ॥१०॥

In order to estimate thy glory, who art fire and light, BRAHMA attempted in vain to measure its upper and VISHNU its lower part.— But when they sang thy praise with faith and devotion, then thou didst manifest thyself unto them. Can then thy service ever be pronounced futile or fruitless ?

अयत्नादासाद्य त्रिभुवन मवैरथतिकरं

दशास्यो यद्वाङ्मनभृत रणकण्डुपरवशान् ।

शिरः पद्मश्रेणीरचितचरणाम्भोरुहवलेः

स्थिराया स्त्वङ्गक्ते स्त्रिपुरहर विष्णुर्जितमिदं ॥११॥

It was only owing to the unshaken faith with which he worshipped thy lotus-feet with his heads, as with so many rows of lotuses, that, O thou destroyer of TRIPURA, the ten-headed RA'VANA having gained unrivalled and undisturbed possession of the world exerted the strength of his arms, ever itching for war.

अमुष्य त्वत्सेवासमधिगतसारं भुजवनं

वलात् कैलासेपि त्वदधिवसतौ विक्रमयतः ।

अलभ्या पाताले प्यलसचलितङ्गाष्ठशिरसि

प्रतिष्ठा त्वय्यासीत् ध्रुव मुपचितो मुह्यति खलः ॥१२॥

When he (RA'VANA) exerted against *Kailāsha*, even thy dwelling, the power of those very arms which he had got as a reward for his services to thee, (so true it is that the wicked forget themselves in prosperity !) it would have been impossible for him to find any resting place, even in hell, hadst thou only slightly moved the tip of thy toe. [But thy long-suffering remembered his former devotions, and spared him.]

यदृङ्घिं सूत्राम्नो वरद परमोच्चैरपि सती
 मधश्चक्रे वाणः परिजनविधेयत्रिभुवनः ।
 न तच्चित्रं तस्मिन् वरिवसितरि तच्चरणयो
 र्न कस्या उन्नत्यै भवति शिरसस्त्वद्यवन्तिः ॥१३॥

That VA'NA, who had reduced the whole world under his subjection, should pull down the dominion of INDRA, although so high, was not a matter of wonder ; because he worshipped thy feet. What elevation is there which the prostration of the head before thy feet could not procure !

अकाण्डब्रह्माण्डक्षयचकितदेवासुररुपा
 विधेयस्यासीद्य स्त्रिनयन विषं संहृतवतः ।
 सकल्माषः कण्ठे तव नु कुरुते न श्रियमहो
 विकारोपि स्नाद्यो भुवनभयभङ्गव्यसनिनः ॥१४॥

Does not the blue spot which coloured thy throat, when thou drankest the deadly potion in pity to the gods and demons, who were all afraid that the universe should have an untimely dissolution, serve to set forth thy beauty? Surely even a disfigurement becomes graceful in a person who undertakes to relieve the world from fear.

असिद्धार्था नैव क्वचिदपि सदेवासुरनरे
 निवर्त्तन्ते नित्यं जगति जयिनो यस्य विशिखाः ।
 स पश्यन्नीश त्वामितरसुरसाधारण मभूत्
 स्मरः स्मर्त्तव्यात्मा नहि वशिष्ठ पथ्यः परिभवः ॥१५॥

That victor, whose shafts were never discharged in vain in this world consisting of gods, demons, and men, even KANDARPA, met with dissolution when he looked upon thee, O Lord, as if thou wert like any other common god. So impossible is it to despise the self-controlled with impunity !

महीपादाघाताङ्गजति सहसा संशयपदं
 पदं विष्णो र्भ्रांभ्यद्भुजपरिघत्प्रयच्छरणं ।

मुहुर्द्यौं दौस्थ्यं यात्यनिभृतजटाताडिततटा
जगद्रक्षायै त्वन्नटसि ननु वामैव विभुता ॥१६॥

The safety of the earth became doubtful by the stamp of thy feet—the firmament became giddy and unstable, with all its stars and luminaries, shattered by the stroke of thy hand—and the heavens, touched by thy clotted hair fell into a troublous state, when thou dancedst in order to defend the universe from the *Rakshases*. How mysterious and seemingly contradictory must be this thy providence, by which thou didst thus trouble the creation while thou wert in fact effecting its preservation !

वियद्वापी तारागणगुणितफेणोद्गमरूचिः
प्रवाहो वारां यः पृषतलघुदृष्टः शिरसि ते ।
जगद्दीपाकारं जलधिवलयं तेन हतमि—
त्यनेनैवोन्नेयं धृतमहिमदिव्यं तव वपुः ॥१७॥

Those streams of the *Ganga* which extend far in the sky, whose frothy appearance is that of clusters of sparkling stars, which replenished the mighty ocean, forming it like a great ring round the insular earth, looked a small drop when thou didst sustain them on thy head ! What a glorious conception does this give of thy wondrous and majestic body !

रथक्षौणी यन्ता शतधृतिरगेन्द्रो धनुरथो
रथाङ्गे चन्द्राकौ रथचरणपाणिः शर इति ।
दिधक्षो स्ते कोयं त्रिपुरतृणमाडम्बरविधि
र्विधेयैः क्रोडन्त्यो न खलु परतन्त्राः प्रभुधियः ॥१८॥

When thou didst resolve upon consuming *TRIPURA*, the earth was thy chariot, *ब्राह्मा* thy charioteer, the chief of mountains (*Man-dara*) thy bow, the sun and moon thy wheels, and *VISHNU* himself thy arrow ! What was all this preparation against a city that was but as grass before thee ? Not that the will of the lord was dependent upon any instruments, but that thou wert pleased, as it were, to sport with those implements.

हरिस्ते साहस्रं कमलवलिमाधाय पदयो
 र्यदेकोमे तस्मिन् निजमुदहरन्नेत्रकमलं ।
 गतो भक्त्युद्रेकः परिणति मसौ चक्रवपुषा
 त्रयाणं रक्षायै त्रिपुरहर जागर्त्ति जगतां ॥१६॥

When HARI (VISHNÜ), who was daily in the habit of worshipping thy feet with a thousand lotuses, found on a certain occasion that the number was short by one, he plucked one of his lotus-eyes to fill up the want. Then did the fulness of his faith, thus tried and approved, become, by means of his wheeled body, the watchful principle of the world's conservation.

क्रतौ सुप्ते जायन्त्वमसि फलयोगे क्रतुमतां
 क्व कर्म प्रधस्तं फलति पुरुषाराधन मृते ।
 अतस्त्वां सम्प्रेक्ष्य क्रतुषु फलदानप्रतिभुवं
 अतौ अद्वां वध्वा दृढपरिकरः कर्मसु जनः ॥२०॥

The sacrifice being ended, thou alone remainest as the cause of reward to its performers. How can a work that is finished and has ceased, be efficacious afterwards, except because of thy worship? It is accordingly only by looking up to thee as the pledge of reward in sacrifices, and by reposing faith in the *Vedas*, that a person can be said to commence a great work.

क्रियादक्षोदक्षः क्रतुपति रधीशस्तनुभृता—
 मृषीणामात्विर्ज्यं शरणद सदस्याः सुरगणाः ।
 क्रतुभ्रंशस्त्वत्तः क्रतुषु फलदानव्यसनिनी
 ध्रुवं कर्तुः अद्वाविधुर मभिचाराय हिमखाः ॥२१॥

Although DAKSHA* so perfect in works, and lord of all creatures, was the offerer—although *Rishis* were the priests, and gods the assembled partakers of the sacrifice, yet was it interrupted and rejected, and DAKSHA himself destroyed by thee; for such oblations as are made without faith in him, who is the giver of rewards in them, are productive only of evil.

* DAKSHA was the father-in-law of SHIVA.

प्रजानाथं नाथ प्रसभ मभिकं स्वां दुहितरं
 गतं रोहिद्धूतां रिरमयिषु मृष्यस्य वपुषा ।
 धनुष्पाणेर्यातं दिवमपि सपत्राकृत ममुं
 त्रसन्तं तेद्यापि त्यजति न मृगव्याधरभसः ॥२२॥

When BRAHMA* lusting after his own daughter (that had through fear of her father's attempt against her virtue transformed herself into a hind) became a stag, with a view to gratify his passion, thou didst bend thy bow against him; and when he had fled from thy fear, even into heaven, thy hands, like those of a chasing hunter, took him, and have not yet set him at liberty.

स्वलावण्याशंसाधृतधनुषमङ्गाय तृणवत्
 पुरः सुष्णं दृष्ट्वा पुरमथन पुष्पायुध मपि ।
 यदि खैणं देवी यमनिरत देहार्द्धघटना
 दवैति त्वा मद्भा वत वरद मुग्धायुवतयः ॥२३॥

If, O destroyer of TRIPURA, even after seeing the flower-armed† god of love reduced like grass instantly to ashes for audaciously hoping to overcome thee by making‡ PA'RVATI's beauty as his instrument, the goddess still looks upon thee as if thou wert subject to animal passions, because half of thy body is joined with hers, then, O thou self-controlling dispenser of blessings, young women must be deceived.

श्मशानेष्वा क्रोडाः स्मरहर पिशाचाः सहचरा
 श्चिताभस्मालेषः स्रगपि नृकरोटीपरिकरः ।
 अमङ्गल्यं शीलं तव भवतु नामैव मखिलं
 तथापि स्मर्तृणां वरद परमं मङ्गलमसि ॥२४॥

Although owing to thy sports in the cemetery, with the devils as thy followers—the ashes of the burnt pile as thy ointment—and skulls as thy necklaces and drinking cups—thy disposition and very name must appear evil and be awful—yet thou art the cause of supreme felicity to all that call upon thee.

* BRAHMA' is the first person of the Hindu Triad and the creator of the universe.

† KA'MADEVA, the god of love, or animal passions, is supposed to use flowers as his shafts when he strikes lust into the hearts of men.

‡ PA'RVATI was the wife of SHIVA.

मनः प्रत्यक्चित्ते सविधमवधायात्तमरुतः

प्रहृष्यद्रोमानः प्रमदसलिलोत्सङ्गितदृशः ।

यदालोक्याह्लादं हृद इव निमज्ज्यामृतमये

दधत्यन्तस्तत्त्वं किमपि यमिनरतत्किलभवान् ॥२५॥

Thou art verily that incomprehensible truth which the self-controlled devotees contemplate when they put their fingers to their nostrils and fix their thoughts, abstracted from all external impressions, within their minds, and when through joy their hairs stand on end, and they, as if immersed in the sea of delight, feel themselves happy, plunged in the waters of immortality.

त्वमर्कस्त्वं सोमस्त्वमसि पवन स्त्वं ऋतवहः

स्त्वमापस्त्वं व्योम त्वमु धरणि रात्मा त्वमितिच ।

परिच्छिन्नामेवं त्वयि परिणता विभ्रति गिरं

न विद्म स्तत्तत्त्वं वयमिह हि यत्त्वं न भवसि ॥२६॥

Thou art the sun—thou the moon—thou the air—thou thyself fire—thou art water—thou art sky—thou the earth—and thou the spirit. With such expressions did the ancients define thy essence. But as for ourselves, we acknowledge that we know no substance which thou pervadest not.

त्रयींतिस्त्रोवृत्ती स्त्रिभुवनमथो त्रीणपिसुरा-

नकाराद्यैर्वैष्णै स्त्रिभिरभिदधत्तीर्णविह्वति ।

तुरीयन्ते धाम ध्वनिभिरवहन्धानमणुभिः

समस्तं व्यस्तं त्वां शरणद गृणात्योमिति पदं ॥२७॥

The mystical and immutable OM which being composed of the three letters A U M signify successively the three Vedas (*Rich*, *Yájus* and *Saman*)—the three states of life (awaking, dreaming, sleeping)—the three worlds (heaven, earth, and hell)—the three gods (of the triad, BRAHMA', VISHNU, and MAHESHWARA)—and which by its nasal sound is indicative of thy fourth office as supreme lord of all—ever expresses and sets forth thy collective and single forms.

भवः सर्वो रुद्रः पशुपतिरथोयः सहमह्वां

स्तथा भीमेशानाविति यदभिधानाष्टकमिदं ।

अमुष्मिन् प्रत्येकं प्रविचरति देवश्रुतिरपि

प्रियायास्मै नान्मे प्रणिहितनमस्योस्मि भवते ॥२८॥

BHAVA, SARVA, RUDRA, PASHUPATI, UGRA, MAHA'DEVA, BHI'MA, and I'SHA'NA, of these thy eight names, each, O god, is celebrated in the *Vedas* (or each the gods desire to hear.) With a humbled mind I bow and adore to thee who art called by these precious names.

नमो नेदिष्ठाय प्रियद्व द्विष्ठाय च नमो

नमः क्षोदिष्ठाय स्मरहर महिष्ठाय च नमः ।

नमो वर्हिष्ठाय त्रिनयन यविष्ठाय च नमो

नमः सर्वस्मै ते तदिदमतिर्वाय च नमः ॥२९॥

Reverence to thee, O god of meditation and austerity, who art nearest (i. e. to those that serve thee), and who art also farthest (i. e. from them that disregard thee)—Reverence to thee who art the humblest (i. e. to those that are humble), and who art also the greatest (i. e. to those that are high-minded)—Reverence to thee who art old (as the creator of the universe), and yet young, being independent of the decaying effects of age—Reverence to thee who art all, and in whom all things subsist !

बङ्गलरजसे विश्वोत्पत्तौ भवाय नमोनमः

जनसुखकते सत्त्वस्थित्यै मृडाय नमोनमः ।

प्रवलतमसे तत्संहारे हराय नमोनमः

प्रमहसि पदे निस्त्रैगुण्ये शिवाय नमोनमः ॥३०॥

Reverence, O Reverence, to BHAVA, who partakes chiefly of the *Rajas* quality for the creation of the world. Reverence, O Reverence, to MRIDA, who partakes of the *Sattva* quality for the conservation of the world and the happiness of men. Reverence, O Reverence, to HARA, who is principally moved by the quality of *Tamas* in the destruction of the world.

ह्यशपरिणतिचेतः क्लेशवश्यं कचेदं

क्वच तव गुणसीमोल्लङ्घिनी शश्वदृद्धिः ।

इति चकित ममन्दीहृत्य मां भक्ति राधा

इरद चरणयोस्ते वाक्यपुष्पोपहारं ॥३१॥

How vast the difference between my understanding, capable of grasping only little objects and subject to the perturbations of the passions, and between thy everlasting glory, whose properties know no boundary!—Hence my faith having led me, who am fearful of thee, to this profitable exercise, casts me at thy feet with this verbal offering, as with that of flowers.

असितगिरिसमं स्यात् कज्जलं सिन्दुपात्रं
सुरतरुवरशाखालेखनी पत्रमुर्वी ।
लिखति यदि गृहीत्वा सारदा सर्वकालं
तदपि तव गुणानामीश पारं न याति ॥३२॥

O Lord, even if there were a heap of ink like a black mountain, were the ocean itself the inkstand, and did SARASWATI herself continue to write for ever with the twigs of the *Kalpataru** as her pens, having the earth itself for her paper, [even if there were such a writer with such stationery, and to write for so long a time] still would it be impossible to express the limits of thy qualities.

कुशुमदशननामा सर्वगन्धर्वराजः
शिशुशशधरमौलेर्देवदेवस्य दासः ।
स्वगुरुनिजमहिम्नो भ्रष्टएवास्य रोषात्
स्तवनमिदमकाशीर्द्विव्यद्विच्यं महिम्नः ॥३३॥

KUSHUMA DASHANA (PUSHPADANTA, or flower-teethed) the chief of all the *Gandharvas*, and the servant of the god of gods, who bears on his head the crescent of the moon, being in consequence of his wrath deprived of his greatness, composed this excellent hymn of the lord's glory.

सुरवरमभिपूज्य स्वर्गमोक्षैकहेतुं
पठति यदि मनुष्यः प्राञ्जलिर्नान्यचेता ।
व्रजति शिवसमीपं किन्नरैः स्तूयमानः
स्तवनमिदममोघं पुष्पदन्तप्रणोतं ॥३४॥

If a man, having worshipped the chief of gods, read with his hands closed together, and his attention fixed, this hymn, composed by PUSHPADANTA, and of certain efficacy as the one only means of emancipation in heaven, he will join the company of SHIVA, and will be adored by the *Kinnaras*.†

* A fabulous tree of mythological celebrity, which yields any fruits that are desired by any one.

† The *Kinnaras* were a species of celestial beings.

ART. III.—*Account of a Journey from Calcutta viâ Cuttack and Pooree to Sumbulpûr, and from thence to Mednipûr through the Forests of Orissa.* By LIEUT. M. KITTOE.

As the country west-south-west of Mednipûr, for upwards of four hundred miles through which the high road to Nagpûr and Bombay passes, is noted down even in the most improved maps as *terra incognita*, therefore, by most considered as such, a brief account of my recent travels in that direction may not be uninteresting.

I am unable, for many reasons, to give very minute details, first, in consequence of the hurried manner in which I had to travel; next, from the very inclement season during which I did so; and again, owing to the great reluctance which the natives of Orissa have to afford any information, and what is more, to their decided silence; it being (as I have always had occasion to remark) more than the life of an individual is worth were he to be detected by his chief in divulging the scanty resources of his country.

About the middle of April 1838, Captain G. Abbott having fallen an early victim to the deadly climate of the Keunjur and Mohurbhunj jungles, to the distracting knavery of the people he had to deal with, and the annoyance and exposure they caused him to suffer,* I was appointed to succeed him, and directed to proceed immediately to Sumbulpûr to take charge of the survey of the Mednipûr and Raepûr post road.

There then being no possibility of travelling by dawk by the post road with any degree of safety or comparative comfort at such a season, I resolved on proceeding viâ Cuttack and the valley of the Mahanuddî, through the Burmool pass and onwards by Boad and Sohnûr, i. e. following the course of the river, as the surest means of obtaining the first necessary of life, viz. good water.

I left Calcutta for Cuttack by dawk on the evening of the 17th April, where I arrived on the morning of the fifth day. I travelled at night, and halted during the day at Mednipûr, Jullaisûr, Ballaisûr, and Bareepûr successively.

On reaching Cuttack I found so much difficulty in procuring bearers to take me to Burmool (where I expected a relay from Sumbulpûr) that I resolved on going on to Pooree, and from thence across the country to that place; but a set having at last agreed to go for something more than the usual travelling rates, I struck the bargain

* Captain Abbott commenced his travels early in January, 1838, was taken ill on the 22nd March near Keunjurgurh, and died two days after his arrival at Sumbulpûr on the 3d April following.

and sent them on to Badeswur, half way to Burmool. I went on to Pooree, where I remained three days, being completely overcome with the fatigue of so much dawk travelling, for it was but lately I had returned from my tour in Orissa in search of antiquities, coal, and minerals, &c. an account of which tour has already appeared in this Journal.

While at Pooree, I tried again to procure more coins, but having shewn too much anxiety, and paid too much for those I did get, on former occasions, the suspicions of the Brahmans and shroffs were excited, they would give no more, except a few sovereigns, shillings, six-pences, and some Goah coins, which from their inferior standard were unsaleable in such a market.

I did my utmost to procure facsimiles of the inscriptions in Jugernath temple, also of those in the Gondeechagurh, but was, as usual, unsuccessful.

The tide ebbing very low at that season of the year I was enabled to collect a great variety of marine shells, but few however were sufficiently perfect to be of any value, the violence of the surf destroying all the more delicate species.*

I left Pooree on the evening of the 26th, and reached Koordah early on the following morning. I took up my abode in a shady mango grove near the ruins of the old *Noor* or palace, in the vicinity of which are many modern temples all equally inelegant and unworthy of notice.

When at Koordah in the previous month of March, I was unable to visit the cave of PAUNCH PANDEB, therefore I determined to do my best on this occasion. About noon I proceeded on foot for a distance of a mile and a half, having to crawl in many places through the jungle thicket, and reached the foot of the ascent, which is by a broad path, at a spot where under some stately Bur and Peepul trees† I saw a very elegant image of SU'RYA, in his chariot with many horses, driven by ARUNA (his charioteer); I had no time to spare to enable me to make a drawing of it.

After ascending a steep path for a quarter of a mile, I found myself in a beautiful glen, in its centre is a small and rudely built temple through which flows a beautiful spring of fresh water; I was told that there is an idol of PARBUTTI' within, carved in the rock, from the navel of which the water flows, however I did not think it worth the trouble of examining, being more interested in the *Pandeb Gurha*.

* All that were of any use were presented to the Society, and have been placed in the cabinets.

† *Ficus Indicus* and *Ficus Religiosa*.

Having therefore refreshed myself with a copious draught from the crystal stream, I continued the steep ascent until I reached the top of the hill, I had then to descend some way on the steep southern face; when I reached the cave I was sadly disappointed, for it was a mere cleft in the rock, with "*asthans*" or seats for ascetics cut within the cavity; I had hoped to find some valuable inscriptions, but there were none, excepting a few short sentences, and the names of ascetics in various characters, from the old *Kutila* of the 13th century to modern *Ooreya* and *Devanagri*, which I did not think worth transcribing; I deemed it better to take rest in the cool cave, and recover if possible from the effects of my long walk under a burning sun, at the hottest season of the year, so that after admiring the beautiful and extensive view which the spot commanded of the sea and the intervening woody plains, I laid myself down to sleep for a couple of hours, which completely restored me; I then returned to my palkee, and resumed my trip towards Badeswur, passing near the hot springs of Atteiree.

As I left early in the evening I had time enough to see much of the country, which undulates considerably, and is thickly studded with trees and underwood. There is a gradual fall towards the Mahanuddi; from Pooree to the vicinity of the Koorda hills the country is exceedingly low and flat, but it then has a gentle rise, caused by that curious ironstone formation occurring every where at the foot of the hills of Orissa.

The hill of Koorda is a rock which has been pronounced to be sandstone, but I am by no means satisfied of this being correct; it contains large proportions of lithomarge and quartz, it does not occur stratified, but chiefly in irregular and disturbed masses, the interstices are occupied with a coarse red loam resembling brick dust; the stone is variegated and speckled, and in some parts of its texture resembles pumice stone, or brick kiln slag; it is with this that most of the temples of Orissa are built, for from its softness it is easily worked, besides which it possesses a quality rendering it very desirable in the estimation of the natives—their predominant color being red.

From the high ground (before reaching Atteiree) the numerous conical and isolated hills rising abruptly from the vast level plains present a very singular and striking appearance. That of Bankee, called *Mahapurbut*, is the most conspicuous; they would all appear to be of volcanic origin. I reached Badeswur at about 2 A. M., and continued my journey with my Cuttack bearers twenty-three miles further to Bailpara, where I put up in a mango grove during the heat of the day.

other parts of Orissa. The stratum of soil is generally very thin, the gneiss and granite rocks protrude through it in all directions, in some places rising into small hillocks, in others, appearing in continuous and gently undulating pavements (as it were) for considerable extents. I neither saw nor heard bird nor beast, except the shrill and disagreeable note of a large species of *Caprimulgus*, which swarms throughout the forests. I was sadly annoyed during the day time, with the incessant, and distracting noise of an insect called "*jhinkare*," (the *chicādā* ?)

The Mahanuddī at Korasingha was broad, with a sandy bed ; at this place it is divided by numerous small islands, thickly wooded, the bed is rocky throughout ; the navigation during the rains must be very dangerous. The rocks are apparently granite, and present a very curious appearance, for in many places the different kinds of which granite is composed are to be seen in serpentine strata distinct from each other, the talc adhering to the quartz and felspar in large masses—all the rocks are more or less in a decomposed state ; garnet crystals are common, and very beautiful ; garnets of a small size are found in the sand ; of a number I had collected on a former occasion near Cuttack, some were pronounced by a native jeweller to be rubies. I was informed that poor people gain a livelihood by seeking for gems, and that rubies of some weight are occasionally found ; the purchasers prove them by heating them to a red heat, and if when cooled they have retained their color, they are valued accordingly.

The thermometer this day did not rise above 110°, I consequently had some little rest, and continued my journey early in the evening, reaching Boad before sunset. I was detained some time on account of the guides not coming ; this was designed on the part of the Raja, who is very uncourteous to any Europeans from whom he may have no chance of gaining anything ; I had sent to him in the morning to announce my arrival near his capital, but he did not even deign to send an answer or a single Paik to attend upon me ; his conduct was very different when our troops were parading the country the previous year. The impudence and haughtiness of these semi-barbarians is proverbial ; they were treated with much less ceremony by their Marhatta rulers than by the British Government ; forbearance on our part is considered weakness by them, but at the slightest shew of resentment they are ready to cringe at your feet. I had to wait upwards of half an hour, during which period I was pestered with complaints from oppressed ryots and *bunjara* merchants. Among the latter was an old man who had been in camp with us in 1836-37, to beg of the Commissioner to espouse his cause, and make the Raja, and Nuncumkonwur (the Kund

chief) restore his cattle and the value of his merchandize, which had been plundered from him near Gussungurh in 1835.

I made particular inquiries touching the practice of human sacrifice since we had rescued all their *Merriahs* ;* I was assured that there had been no "*Merria pooja*" this year, but I have reason to doubt the truth of the assertion.

On my way out of Boad I remarked several old temples on which, as I have been since informed, are inscriptions ; had I known of this at the time, I should certainly have stopped and transcribed them.

My bearers having informed me that there was a bye-path across country, by which eight or ten miles would be saved, I preferred going by it to following the course of the river viâ Sohnpur to Sumbulpur along the right bank ; therefore upon reaching a large village called Sūgliah, I crossed over, and resting for a couple of hours travelled on till 7 A. M. and encamped in a miserable mango tope by a village called Mirlipullí, the Zemindar of which would neither come to me nor afford supplies, till at last the Dangurs got hold of him and brought him to me, begging I would keep him in durance until his Paiks should have brought what little was required. I had been obliged to leave my escort to follow after me, so that I was nearly helpless, I however followed the advice of the Dangurs and kept the fellow by me till every thing was forthcoming, and subsequently paid for.

This part of the Sohnpur territory appears tolerably fertile, the country is undulating and rocky, but the water is very near the surface ; there are numerous small wells about the villages, the water of which is drained by the *Dhankuli*, or tilt-pole. The soil has a very curious appearance from the great quantities of snow-white quartz and talcite ; I picked up some fine specimens of talc by the mouth of a well ; the people told me that it is to be found in very large pieces at some depth below the surface.

I experienced another hot day. Having to travel over some bad ground, I resumed my march at an early hour, and reached a large village at 10 P. M. I rested several hours, and then went on to Keuntapullí, a short distance before reaching which, I had to cross a tolerably steep ghat over the chain of low hills, which commencing near Sumbulpur, run for many miles nearly due north and south, parallel to the river, and no great distance from it.

I encamped as usual under some fine tamarind trees by the river side. Having reached my ground at an early hour, I had plenty of time to look about me. The river for upwards of a mile is ex-

* Children intended for sacrifice.

ceedingly still and deep, it being confined between a line of rocks the strata of which incline at an angle of 45° and have a most singular appearance. The village is chiefly inhabited by fishermen, as its name implies, "*Keunta*" or "*Kewat*" meaning "fisherman," and "*pulli*" a "village," anglice, the "fisherman's hamlet." The Keunts of this place appear to be a very idle race, they angle all day and cast nets and spear fish at night. This latter operation is performed by the following means—one or more torches are burnt at the stem of a canoe, where a man stands waiting with spear or grange in hand, the canoe is either pushed or paddled along with the least possible noise by a boy at the stern, the fish are attracted by the glare of the torches, swim about near the surface, and become an easy prey to the expertness with which the grange is handled.

During those months in which the river is navigable, the Keunts have ample employment in transporting merchandize to and from Sumbulpúr, Kontillú, and Cuttack.

There is nothing remarkable in the appearance of the country about Keuntapullí; on the right bank there is much low jungle and a few small hills at some distance; on the left, the range of hills before mentioned are about a mile distant, the land intervening having a gradual slope towards the river; there is much more jungle than cultivation, for there are numerous water-courses and ravines intersecting it.

I resumed my march an hour before sunset, and reached Dhama about 9 P. M. I did not stop, having met a relay of bearers who had been sent out from Sumbulpúr, which place I reached at 3 A. M. the next morning, the 4th May, none the better for such constant fatigue and severe exposure, however I considered myself fortunate in having done so well.

I remained at Sumbulpúr until the 23rd of the month, for I was unable to carry on the survey in consequence of the sickly state of the establishment, every follower of the late Capt. Abbott having suffered more or less from the deadly climate of Keunjur; his Bengallee writer, a sepahee, and another servant, died, shortly after their arrival at Sumbulpúr; there were several others in a dangerous state who subsequently died on their way home. From this I learnt a lesson for my future guidance, not to employ more Up-country servants than could possibly be avoided; it is absolutely necessary to have a few trustworthy men to serve as a check upon the Ooreya portion, who, if not closely looked after, would lend themselves to the roguery and schemes of their kindred.

The town Sumbulpúr is thrice the size of any I have seen in any of the other states; it extends for upwards of two miles along the proper

left bank of the river of this space; the fort occupies about three-quarters of a mile. It is fast falling to ruin; the Raja no longer resides in the old *Noor*, (citadel, palace) which is occupied by some of his officers; there is a miserable garrison of a few ragamuffins dressed as sepahees, and some twenty or thirty suwars whose steeds are like Pharaoh's lean kind. The walls are in a very dilapidated state, having suffered much from the effects of the extraordinary flood in 1836. The bamboo thicket, which was cut down during the time the territory was in our possession, used to act as a breakwater, and protected the walls, which are very ill-constructed of unhewn stones. The ditch and swamp which defended the other three faces are in a great measure filled up and overgrown with weeds, and must render that quarter of the town very unhealthy. There are many good dwelling houses of one and two stories, built of stone; there are also many temples, but few of them have any pretensions to elegance, and the generality are covered with most obscene figures badly executed.

There is no appearance of any great trade being carried on, nor is there so much as the sight of such a large and populous place would lead you to suppose. Merchants concentrate here from Cuttack, Budruc, Nagpúr, Bhopal, Chutteesgurh, and Sirgoojah, and barter their goods; those of the lower provinces bringing salt, cocoanuts, cotton cloths, spices, brass utensils, &c. exchange the same with those of the central for wheat, gram, lac, and cotton; gold in small lumps is also taken in payment, and occasionally diamonds. The only produce of the province exported, consists of oil seeds, cotton, and rice, which are taken by bullocks, and (during the rains) sent by water to the Mogulbundí of Orissa.

Sumbulpúr has always been famous for its gold and diamonds; as far back as 1766 a Mr. Motte was sent expressly by Lord Clive to open a trade in them, and to explore the mines, but was unsuccessful on account of the disturbed state of the country, and the inclemency of the season; he having arrived there in the rains; two other Europeans who accompanied him died of fever, and he was himself nigh losing his life. An account of his expedition is to be found in the 1st Vol. of the Asiatic Annual Register, p. 50, published in 1800. The perusal of this narrative would amply repay the reader for his trouble.

The people of the country are too apathetic and indolent to attempt to work the mines, or rather to seek for them; for the diamonds are at present obtained by washing the red earth (their matrix) which is brought down by the Heebe-nuddí, and empties itself into the Mahanuddí, some miles above Sumbulpúr, from the mountains to the north-east,

in which there are most probably inexhaustible mines of gems and precious metals ; gold is found in many of the streams flowing from the gneiss rocks throughout these tracts, the Heebe among the rest.

Touching the state of Sumbulpúr, it was (previous to its dismemberment by the Marhatta hordes and its becoming subject to Berar) subdivided into eighteen "gurhs," or chieftainships, held in fief of the Lord Paramount, who resided at Sumbulpúr, and called therefore "*Authareh gurh Sumbulpúr*"; amongst these were, Boad, Sohnpúr, Gangpúr, Oodeypúr, Phooljur, Sarengurh, Sarinda, Banaie, Baumurra, Lehrapal, Rerhakhól, and seven others, including Sumbulpúr proper ; most of these however have long since thrown off their allegiance and ceased to pay tribute or to furnish their quota of "Paiks" (militia). Some of the smaller "gurhs" used to be held on very curious tenures, which I shall allude to more particularly in a future page.

Sumbulpúr lapsed to the British Government in 1827 by the death of the late Raja, but for some reason (with which I am not acquainted) they sought for an heir-at-law and conferred it on an obscure and aged Zemindar, and a perfect imbecile, who is now entirely in the hands of his crafty ministers. These people and the Brahmins possess the best lands, and obtain his sanction to all kinds of extortion ; as a specimen of which, I am informed that *Zemindari* leases are renewed every year, and on these renewals, or on the occasions of lands being transferred to another, the party favored has to give a "*Salamí*" or fee, and nothing short of gold is accepted ; the farmers in their turn grind their ryots ; the effects of such an unjust and oppressive system are every where apparent.

It is said that the Raja realizes 7,00,000 Rupees per annum, but 4,00,000 is perhaps nearer the mark, including valuable diamonds which are occasionally found ; it is certain that were the province under proper rule, much more could be made of it, therefore it is to be hoped that on the demise of the present Raja, who has no children, the Government will avail itself of the opportunity and resume it ; at present it pays us an annual tribute of 8,000 Rupees, 500 of which has for some years past been remitted in consideration of the dawk road being kept in repair, and the jungle in its immediate vicinity cleared.

I was somewhat surprised one morning while taking my ride to see three human heads stuck on a pole at the junction of two roads near the town ; they were placed there in January, 1838, their owners having forfeited them for treason, though not without a protracted and severe struggle.

There are no antiquities at this place save a few fragments from the ruins of a Buddhist temple, some thirty or forty miles up the river, which were brought some years ago for building purposes. I was told that there was an inscription on a rock in the middle of the river about a mile above the town; I went one morning to examine it, and found merely a few brief sentences and the name of a *Byragí* who had died there some few years ago. The spot is held sacred on account of the evil deity supposed to preside over the river, which is evidently very deep, being confined in a long narrow basin formed by the gneiss rocks which stretch across it in all directions. Some years back the Marhattas in attempting to carry away a heavy brass gun on a raft, it sank and every soul perished; the credulous inhabitants believe that the demon appeared on this occasion, and dragged them all into a fathomless abyss which is said to exist there.

During my stay at Sumbulpúr I endeavoured to collect as much information regarding the country lying between it and Mednipúr as I could; this was no easy matter, for the accounts I received were so contradictory that I determined at all hazards to explore the country, following the direction of Mednipúr as nearly as possible and keeping south of the old road. Every argument and persuasion were made by the Raja and his ministers to dissuade me; all kinds of dangers and difficulties were pictured to me, which failed in their intent, for I could plainly see that there was some object in view. Amongst the persons who exerted themselves most to deceive and dissuade me was an individual whom Major W———— (the Governor General's Agent for the South-western frontier) had sent with a view to his assisting my unfortunate predecessor, which he was capable of doing from his knowledge of the country; his anxiety was perhaps attributable more to a desire to prevent my hearing of the tricks he had been playing in the Baumurra district when awaiting his arrival, than to any other cause.

During my stay here I had searched for a good spot for erecting a bridge over the Mahanuddí, (if such a great work were ever undertaken) which I found very near the present ford and ferry; the river is there 4,500 feet broad in the rains, and there are huge masses of rock at convenient intervals right across, which would afford excellent foundations for either wooden frames or masonry to support a wire or an iron suspension bridge; I found the highest flood water mark to be about 47 feet above the level of the shallow stream flowing during dry seasons in the centre of the bed.

Before taking my final departure from Sumbulpúr, I made an outline sketch of the hills, which are distant at their nearest point fourteen miles, extending from Baumunsassun, about north-west, till they

vanish in the horizon to the south-east in the direction of Ungool ; in this range, (the highest peaks of which are perhaps 1000 feet) there are several ghats, which was readily admitted. That of Baumunsassun, near which the present road passes, is the first, next to it is one called Kurorumma, then Oorsing, all north of the proper direction of Mednipúr, lastly the ghat of Burrorumma about eight or ten miles further south ; it was by this latter (which had been visited by one of Mr. Babington's people) that I determined on proceeding.

My first march from Sumbulpúr was to a large village called Bahum, having many fine mango topes and good cultivation, chiefly sugar cane ; the fields are irrigated from a large nulla called Maltaijoor, which rising in the adjacent hills empties itself into the Mahanuddí at Munesswur, a village about three miles below Sumbulpúr ; its course through the plains (from the foot of the Burrorumma range to the Mahanuddí) is very circuitous, it is navigable during the heavy floods, but dry for the greater part of the year, except that a plentiful supply of excellent water is always to be obtained by digging in the sand.

The distance travelled this stage was eleven miles and three-quarters measured by the Perambulator, but it is certainly no more than eight as the crow flies, for on leaving Sumbulpúr, I was led for upwards of a mile in a direction at right angles to that I had ultimately to reach ; I was then led considerably to the southward ere I gained the proper course. Such an account may excite surprise in the minds of those who have not visited these regions of knaves and savages, but so it is in reality.

Several small villages were passed a little to the right and left of the road ; there is a good portion of arable and clear land in the vicinity of each, particularly of those nearer Sumbulpúr. One small village close to which the road passed, particularly attracted my attention, the huts being built on the bare white granite rocks, which have the appearance of so many terraces ; on one of them I observed veins of quartz about an inch wide crossing each other at right angles, resembling a large cross—close to this was another curiosity in the shape of a Goolur tree (*Ficus glomerata*,) growing on the bare rock, on which the roots were spread and interwoven in a most curious manner ; the main root appears to be sunk in a narrow fissure beneath the trunk : it has a most singular appearance. There is not much jungle except on the rocky and unfavourable spots, and the only large trees I saw were on a small hillock about one-third of the way, beside the village of Durriapullí, from whence to an elevated spot where there are rocks of micaceous schist the country has a perceptible rise, and undulates

considerably ; from thence to Bahum it inclines towards the Multaie ;* the soil is firm, being a stiff sandy clay with much decomposed quartz, granite, and talcite, of which very beautiful specimens occur.

Notwithstanding the sky being overcast, the heat was very great ; the thermometer in a tent exposed to the occasional sunshine, rose to 115°, but with tatties and under a shady tope we managed to keep the temperature down to 98°. I say *we*, for Mr. Babington and his assistant, Mr. Martin, having resolved on accompanying me as far as Burorumma, had sent on tents. My camp equipage consisted simply of a palkee and a couple of settringies,† one to spread, and the other to hang over a bough to serve as an awning for the purpose of screening me from the scorching sun. I had a small pony on which I rode occasionally to relieve myself and the bearers, also one Mussulman servant to cook for me, I had an escort of a havildar's party from the Ramgurh L. I. Batⁿ. which I found of much use, I had also a Naik's party from the 19th N. I. which had accompanied me from Cuttack, and it was well I mustered so strong a party, as will be seen hereafter.

In the evening I sketched a rough outline of the Hills, in which at some distance north of the ghat I was to proceed by ; I perceived a wide gap or break through which I was most positively assured by all the Raja's people that there was no pass. I had taken the bearing of this identical spot on a former occasion when it was pointed out to me as the Burorumma pass, so that I was convinced that further attempts were being made to deceive me ; this made me the more determined to have my own way, which was best to be effected alone, so I took leave of my companions, persuading them to return ; for although I cared but little for the exposure and privations I saw clearly that I should have to undergo, yet I did not wish to subject them to any. The next morning, the 24th May, I marched at an early hour, crossing the Maltai, north, half a mile from camp ; for several miles I travelled through alternate woody and cultivated tracts, by an excellent broad path, in the direction of the gap before mentioned. I began to hope that it was the real ghat, and its appearance warranted the expectation that it was a very trifling one, but I was soon undeceived, the guide stopped short, for there was a tree felled and thrown across the path—the usual hint laid for a guide to lead the traveller from the

* The Multaie-joor "*joor*" is an affix to the proper name *Multaie*, meaning a nulla or torrent ; for instance, Dhoba-joor, Bur-joor, Bramuni-joor, &c. *Khai* and *Naul* are likewise affixes, having the same meaning, such as Khor-khai, Seam-khai, Rama-naul, Kussun-naul, &c. &c.

† Cotton carpets.

direct road. Upon questioning him, I received the usual evasive replies of "that is not a high road, it merely leads into the forest;" and "what do I know; I live at Bahum;" "I have not seen, &c. &c." I took the knave aback by asking him the name of the ghat I was going to, and insisting that that was it, pointing to the gap. Forgetting himself, he replied that that was the Baghloth ghat; he then admitted that the road led direct to it. I was obliged to strike off to the right, and travel for some miles along a narrow and winding path through a heavy Saul forest to the foot of the ghat, which is about a mile from a large village called Kundeswuri, belonging to Chundro Bearer, a Kund chief who holds the adjacent hill lands (more by might than right) from the Baumurra Raja; this man has a few followers, who, united in one interest, set all the neighbouring Zemindars at defiance, and make frequent plundering excursions into the plains; he is much dreaded by all. The Kunds are however industrious, and if treated kindly, peaceable; but such is the dislike the Ooreyas entertain towards them, and the consequent annoyances and tyranny they exercise over them when they perchance fall into their power, that they are obliged to retaliate in self-defence; this is the case throughout the tributary mehaults in which there are Kund villages.

The Kunds of these hills have no turmeric cultivation, nor do they perform the horrid *Merria pooja*, which is in a manner connected with it.

The ascent of the ghat is by a narrow glen between two ridges of hills, those to the right being very lofty quartzose rocks; it is at first very gradual and easy, but higher up becomes very steep, continuing so as far as the summit, the whole distance being a little more than three-quarters of a mile. The road is difficult on account of the loose stones of all sizes which are strewed about; there were remains of fences and other contrivances for defending the pass, which had been constructed the previous year, during some disputes with the Sumbulpúr Raja, who summoned all his vassals to assist him, but the Kunds had the best of it, as is generally the case.

There is a fine view to be had here of the Sumbulpúr plains, but owing to the haziness of the atmosphere I was unable to see any objects distinctly enough to take their bearings, except the high peak at the north-western extremity of the range of hills; following the course of the Mahanuddí, distant six miles south-east of Sumbulpúr, it bears 70° south-west; the soil at the top of the ghat is a hard red loam with much quartz, gneiss, and hornblende. I here remarked two heaps of stones each at the foot of a tree, which reminded me of the tu-

muli the ancient Britons in the north of England used to construct over the graves of fallen warriors, on which each traveller used in olden times to throw a stone on passing by; upon inquiry I found that these were of the same nature, the like practice existing. Those which I allude to, are over the remains of two chiefs who fell in battle on the spot. I had often remarked similar tumuli in the Kund districts, also in other parts of India, for it is in some places customary to heap stones or bricks on spots where persons have been killed by wild beasts.

Two miles and a half beyond the ghat I reached my encamping ground, at the village of Burorumma. There is a gradual fall the whole way; the path is through a thin forest of large Saul and other timber trees with no underwood. Much ground has been lately cleared in the vicinity of the village which is situated at the head of a large valley extending for many miles in a south-easterly direction at the back of the range of hills before described; there are many fine mango, tamarind, jaumun, date, and other trees around the village; it is nearly depopulated owing to the misrule of the chief (Chundro Bearer); the sepahees and peada whom I had sent some days previously to prepare for me, had been nearly starved, the chief having forbidden supplies; a little firewood and some milk were however brought to me. I rigged out a shed with my carpets, palkee, &c. under the trees near the village, and hoped to have passed a tolerably pleasant day, but as soon as the sun got high myriads of small insects (?), descended from the trees and rendered it impossible for me to remain, for in addition to the discomfort their presence occasioned, their bite was painful: I was compelled to seek refuge in a ruined hut in which the thermometer stood at 106° 2'.

Shortly after my arrival I was visited by Chundro Bearer's eldest son, who came with a number of retainers armed with swords, matchlocks, and bows. He is rather a fine young man; he made many apologies for the supplies not being ready, and shortly sent us what was required. The retainers did not seem inclined to be over civil, several of them were intoxicated, one fellow in particular, who came just after the remainder had left, threw himself down close to my carpet and began raving, and from what he said, it was evident that they would have been glad to have found out what persons had recommended me to come by this route, and most likely have taken some means of revenge. To add to the discomfort of my camp followers, the people most effectually concealed the well or spring which supplied the village with excellent water; they were compelled to help themselves from a small well which did not afford more than a lotah full of bad water every four or five minutes.

Being anxious to push on, and get out of this inhospitable track, I packed up and resumed my march at 6 P. M.; as long as it was day-light we got on tolerably well, although the road had been obstructed for miles together with trees felled and thrown across, but as soon as the evening closed, our troubles commenced; the heat was oppressive beyond measure, and not a drop of water was to be found to quench the tormenting thirst my followers were suffering from; we had been led to expect some from the bed of a large torrent two coss distant from our camp, but upon reaching it, the guide and coolies all denied there being any. A poor coolie was taken to task by one of the Kunds for offering to point out where it was. I would have resented this in the most summary manner, but I knew that we were completely at their mercy, for they had taken us off the road, and were leading us over a most rugged path, and whenever chance led us on to the high road, (which was a very excellent one), they halted, and pretended they had lost their way; then after hunting for some time, led us again into the villainous track by which, after five and a half hours' toil we reached Jaumunkeera. This is a large village in the centre of the valley, which is here open and well cultivated; the distance was nine miles and three quarters, and by the better one which the Moonshee followed, only eight and a half. We rested in a paddy field near the village till 4 o'clock the next morning (25th May) at which hour I attempted to move onwards, but the Kunds tried to detain me, refusing to allow the Burorumma coolies to go on with us, or to get others that day in their room. I would not be trifled with, and commenced my march. Their next step was to deny any knowledge of the road; it then became high time to put a stop to this insolence; I brought the ring-leaders to their senses with the help of the "argumentum bacculinum," a road was pointed out, and a relief of coolies arrived forthwith. I had proceeded about two miles, when I discovered that the guides were playing me the same game that those had done on the previous night; I met a Paun* who was just returning from the very place I was proceeding to, so I promised him a reward, and took him with me. He soon led me on to a good, and much frequented road to Burghat, the spot where supplies had been collected for me by the Baumurra people, and which I reached at 11 A. M. much fatigued, having travelled eleven miles. I took shelter in a hut that had been prepared for me by the sepahees, of green boughs, on the edge of the Burghat nulla; in this I passed the day with comparative comfort; some of my people, however, suffered very severely from thirst and exposure to the sun.

* A person of low caste; they make the best guides, for being given to make plundering excursions, they are acquainted with every nook and corner.

The country through which I travelled this day is open, with evident traces of having been in a much more prosperous condition at no distant period. There are extensive pasture lands, and large herds are brought from long distances to graze, the herdsmen living in temporary huts, and having enclosures annexed to protect the cattle from wild beasts. I observed many traces of recent cultivation, and occasionally fields freshly ploughed, although I could not discover a single village the whole way, I was also assured that there were none; I am, however, convinced that there are many at no very great distance, hidden by the intervening jungle, beyond which I could see clumps of mangoes, tamarind, date, and tarri trees, which latter seldom occur except in the vicinity of habitations. I felt moreover convinced that there must be other roads up this fine table land than that by which I came. On inquiring of the Baumurra people, and of some bunjarahs I had met on my way, I found that my surmises were correct, not only in this particular, but as to the Baghloth ghat, which, as I have before stated, had been kept a secret from me. I determined to satisfy myself of these points by directing the guard of regular sepahees to return by the other path and by the ghat; I sent them the next day from Deogurh, and I subsequently received a report from the Naick of the guard who stated that he had passed through many villages with abundance of water, and that the ghat was perfectly easy, with an excellent path; the very reverse of what the knaves of guides had told me. There is no habitation any where near Burghat, which is merely a pass (as the name implies*) leading from the high land before described, down to the less elevated tracts of Baumurra, all inclining towards the Brahmení river, into which all the torrents (that of Burghat among the rest) empty themselves.

My people were too much fatigued to allow of my resuming my march that evening, so we lighted numerous bonfires round the camp to keep off wild beasts, and passed the night where we were.

(*To be continued.*)

* "*Ghat*" or "*Ghatti*" means a pass, they are affixed to proper names, such as "*Kend-ghatti*" the Kend (or ebony tree) pass; "*Sher-ghatti*" the Tiger pass; "*Kussum-ghat*" the Kussum (tree) pass; "*Burghat*" the Bur (tree) pass, &c. &c.

ART. IV.—*Proposed publication of Plates of Hindu Architectural Remains.*

To the Secretary of the Asiatic Society.

SIR,—In the sixth volume of the Journal of the Asiatic Society, page 453, in an article from the able pen of our late Secretary, touching the sculpture at *Sanchi* near *Bhilsa*, he expresses his opinion that it would be of advantage to publish a series of Hindu Architectural Remains,* and I am aware wished to introduce the subject in the Journal, but the difficulty and expense attending the preparation of plates, requiring even little labor, prevented his doing so. Latterly, at his request, I prepared several lithographs representing different pieces of sculpture which I collected during my different tours in Orissa; having many more in my portfolio which might prove interesting to some of your readers, I propose (should you be of this opinion, and it meet with your approval) to publish occasionally one or two plates, with such explanatory notes as I may be able to give.†

In the present number I have given a drawing of an elegant piece of sculpture which I copied at Badeswur, in the valley of the Mahanuddi, and which I have alluded to at page 370.

This image represents the goddess DURGA as PARVATTI', wife of MAHADEVA (SIVA), and daughter of the Hymalya mountain in the *Parvatti Avatar*.

The figure, though mutilated, shews that the different emblems named were originally present. In one of her right hands she holds the *Nag-phans*, or serpent noose; the other (which is broken off) she holds up in assurance of no evil intention, it is called अमय "a-bhai," which means "without fear," or "fear not;" in one of her left hands was the *Unkoos* (elephant goad), part of the staff of which still remains on the arch; in her second she held the *Pudma*, or lotus, by the stem, part of which is destroyed;—I speak positively on this head, having seen many images of the same form in which the different parts wanting in this example were present excepting the a-bhai.

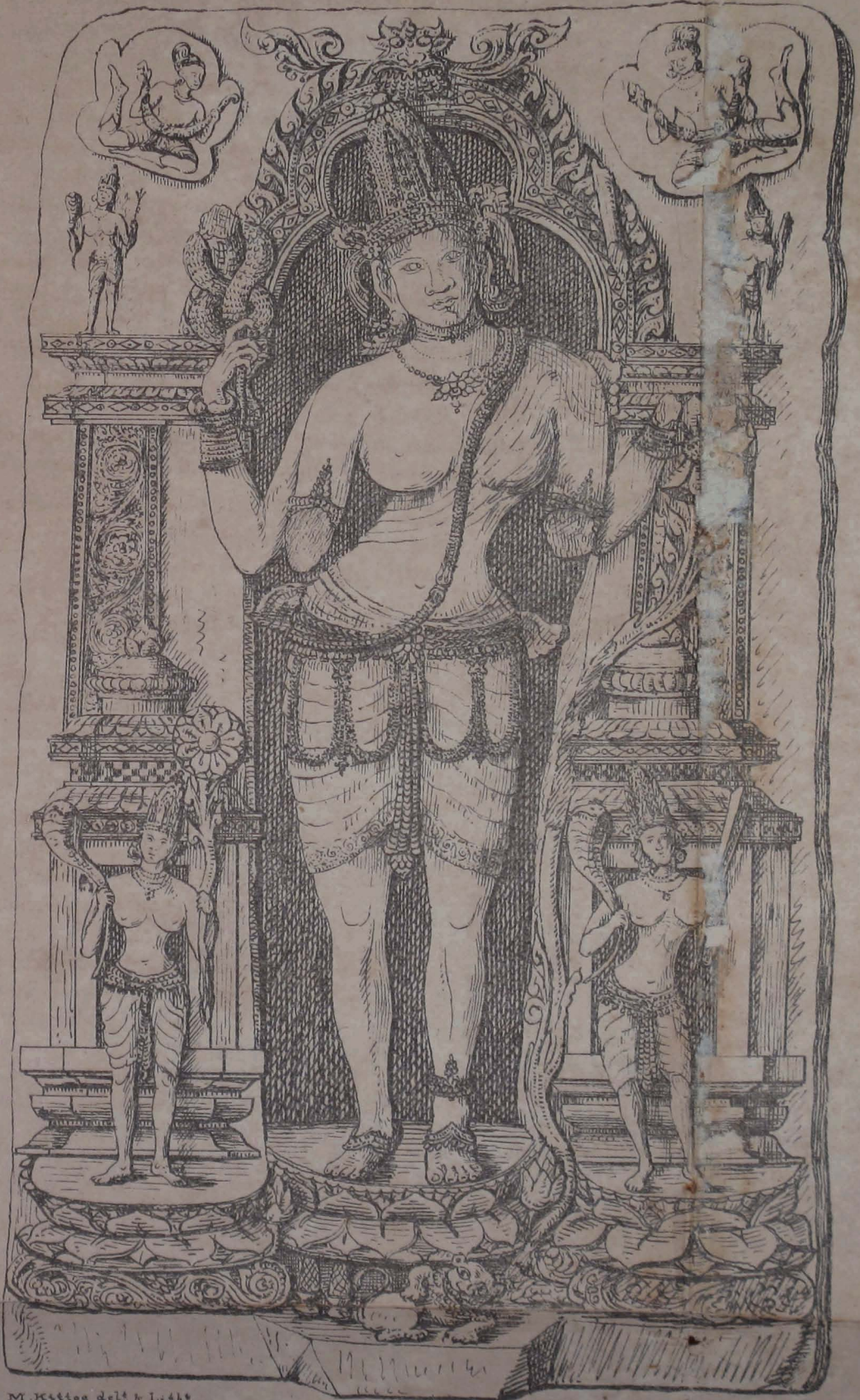
This deity is (like most others) presented as standing on an expanded lotus, with the *Singha*, or lion, and the *Vahun*, or vehicle of SIVA, at her feet.

* "It would be well worthy of the Asiatic Society to publish from time to time in England a volume of Hindu Architectural Remains from the materials in its possession; to this reference could always be made, and those who regarded only the works of Art, would find a volume to their taste, kept distinct (like the Physical Volume,) from the graver subjects of the Society's Researches."

† We most gratefully accept Lieut. Kittoe's proposal.—EDS.

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IMAGE OF PARBUTI AT BADESWUR.



The four female figures holding the emblems of the *Nag* (hooded serpent) the *Pudma* (lotus), the *Gadha* (mace), and the *Trisool*, (trident), represent *Sakhis*, or attendants. The two upper figures represented as flying with cornucopiæ and wreaths in their hands, are probably intended for bearers of offerings, and called *Powri*, but have no other purpose or meaning than for ornament to the entire piece of sculpture; such additions were entirely at the discretion of the sculptor.

The idol is about three by one-half feet (every part inclusive,) and is worked in black chlorite; it is exceedingly well executed, the jewels and the embroidery on the drapery are most exquisitely cut, and the *tout ensemble* may be pronounced a beautiful specimen of Hindú sculpture.

M. KITTOE.

ART. V.—*Papers relative to the New Coal Field of Tenasserim.*

No. 1.—*Report on the Coal Field at Ta-thay-yna, on the Tenasserim river, in Mergui province.* By J. W. HELFER, M. D.

This newly discovered coal field is a part of that great coal deposit

Locality. which occupies a considerable part of the Tenasserim district, in Mergui province, and which beginning from the old town of Tenasserim, to judge from geognostic appearances, extends about forty miles to the north, about fifty towards the south-east, and to an unknown extent towards the north-east.

Face of the country. All this tract of country seems to be a great basin encircled by primitive, but much more transition, formations, which in isolated ranges emerge also in different parts of this basin, but which are easily traced and recognized as the offsets of their more distant relations.

The present coal field lies at the southern skirt of one of these transition ranges, and the country to the south of it is apparently a great plain, densely covered either with tall forests or bamboo jungle; the Tenasserim river winds through this plain in a direction chiefly from north to south.

Geognostic features. In the neighborhood of the present locality no geognostic signs of the existence of a coal bed are to be observed on the river side, save opposite to the village there is a large lump of a formation holding the medium between red sandstone, variegated sandstone, and slate clay—in this country a certain prognostication of the vicinity of coals. The river banks shew besides sandstone, conglomerate, plastic clay, marl, and alluvium; the upper stratum, of a thickness from fifteen to thirty feet, is almost universally tinged

red or ochry, by the abundance of iron oxyde with which it is impregnated.

The coal is visible either in its native locality on the side of a mon-
 Locality of the sec- soon rivulet, or is to be found in pieces in the bed of
 tion lying bare, ex- the same rivulet.
 tent, thickness.

This deposit is neither covered with porphyry, nor red sandstone, nor arenaceous beds belonging to intermediary formations; above it are only placed alternating beds of slate clay, either bluish grey or whitish, either friable or compact, and then carburetted Brand-striefer, and these strata taken altogether are not more than three and a half feet in thickness, above which rest the above mentioned iron-tinged earthy clay and alluvium. At this place the coal may be calculated to be seventeen feet below the surface on an average.

On the sides of this rivulet or channel, dug out by the impetus of the water, a section is exposed of fifty-four feet in length, and the same formation is traceable more than one mile to the north, and six west.

The thickness of this coal stratum is as yet not ascertained, on account of the water accumulating in the rivulet, the rainy season having begun; but it must be considerable, as at a depth of six feet no other alternating formation has been found. In consequence of this the nature of the sub-stratum cannot be yet determined.

This stratum runs nearly in a direct line from north to south, and dips under an angle of 26° east to the horizon. In two places it is contracted, in the rest uniform.

It is difficult to classify exactly this coal, on account of its modi-
 Mineralogical fications in different pieces. It belongs to the sub-genus
 classification. black coal, but there are several species even in the seven
 tons which have hitherto been brought to light.

Some pieces participate greatly of the character of Cannel-coal, these having a resinous lustre and a flat conchoidal fracture; the pieces nearer to the surface have again more of the character of slaty coal, with a slaty fracture, fragments trapezoidal; the greatest number, however, hitherto observed refer it to glance coal, sub-species pitch coal, being massive, in botryoidal loam, with a woody texture, fracture large, perfectly conchoidal, fragments sharp-edged, undetermined angular. The dendritic texture is a peculiar feature of this coal, not observed in any of the other coal species hitherto found in the Tenasserim provinces.

A hundred grains of the coal previously reduced to small pieces were
 Chemical anal- placed upon a platina sheet, and put over a lamp fed
 ysis of the coal. with alcohol; on becoming red hot, they baked slightly
 together, and on being removed from the fire assumed an iron grey co-

hour ; one hour and six minutes elapsed before the hundred grains were totally consumed, the residuum was greyish ashes—from 100 parts 2·8 remained of them. The ashes subjected to chemical analysis were found to consist of *silica* and *alumina*, with scarcely a vestige of iron.

1. Generally speaking the coal is very good ; but one great defect cannot be concealed, and this is, that some parts of it are highly pyritiferous, the pyrites intersecting it in thin laminæ of a silver-white, somewhat yellowish colour. Fortunately only some parts are thus deteriorated, but even these it is to be hoped will not be lost, as the thin layers of pyrites are easily separated ; that part of the coal which cannot be conveniently rendered destitute of this bi-sulphuret of iron ought to be rejected, which necessary selection will have an influence, perhaps materially, upon the price of the coal.

We can at present speak only of the coal near to the surface and exposed partially to atmospheric influence, but it is to be hoped that the coal will be much purer the farther it is from the surface.

2. The pure coal (free from pyrites) burns freely and open ; transformed into coke it bakes a little together. It emits in the beginning copious flames, which are blackish grey, and unmixed with sulphuric vapours.

General results. *a.* That the coke of this coal is well adapted for smithy purposes.

b. That the coal (excepting always the pyritiferous strata, especially near to the surface) is remarkably pure, and fit to burn as fuel in chimneys.

c. That the coal consumes slowly, maintains a considerable degree of heat, and leaves a residuum of only three per cent at the highest, and that it is therefore adapted for steam purposes.

d. That it is inferior to the Cannel coal on the little Tenasserim for the generation of gas, on account of the smaller per centage of bitumen.

The locality for transport is very favourable ; and the greatest advantage consists in the almost total absence of land carriage.*

The present coal field lies on the western side of the Tenasserim, 1712 paces following the road, and probably not more than 400 fathoms in a straight line from the river.

The Tenasserim notwithstanding its long course, continues to be a mountain stream even when already under the influence of the tides. As such it has a rapid current, numerous shallows, annually changing banks, and shifting shoals. During the dry season it is at the place

* Sic in M.S.—Eds.

the nearest for the embarkation of the coals impracticable for boats drawing more than seventeen inches ; in this part of the river the coals will therefore probably be transported upon rafts of bamboos. After the confluence of the higher and lesser Tenasserim the river increases considerably in depth.

Captain R. Lloyd surveying the lower part of the river last year, was of opinion that vessels of 100 tons burthen might go up to Tenasserim town, but thinks it advisable to employ only vessels of a much smaller size.

It is very probable, judging from the formations, that the same field extends some twenty miles lower down the river, and that beds may be found still nearer the banks of the river ; but under present circumstances the transport twenty miles more or less *by water* is scarcely of any consequence ; experimental researches therefore would, besides being very expensive, prove precarious.

The existing formations (as far as they are known) to the west, and those in a parallel line on the sea-coast, preclude the hope of coal being found there.

Last year, in, March, when I first visited the banks of the Tenasserim, I was struck, in coming to its lower part, with the sudden change of the geognostic features of the country. The river instead of running for many miles through a mountainous country, its narrow bed inclosed between piles of granular talcose limestone, graywacke, greenstone, and transition porphyry, burst at once into an open country, the ridges of the above mentioned formations receding on both sides, and I found what I had missed for a long time—secondary formations ; and what I desired the most—formations belonging to the great independent coal deposits. Having given up all hope of finding coal in the parts of the Tenasserim provinces hitherto visited, I was at once animated with strong hope of success at the sight of these promising features.

The consequence proved this time, in a conspicuous manner, the truth and exactness of geognostic principles, and I found successively three localities of coal, mentioned in my last year's report sub : N. A. B. A. C. of which specimens were sent up to Calcutta. However the coal then found was all of indifferent quality, and, besides, not favourably situated ; the excellent coal discovered afterwards on the little Tenasserim belongs to quite a different system.

Convinced however of the existence of coal over a wide extent of that district, in fact expecting that the above mentioned plain through which the Tenasserim runs is a segment of a great coal basin, I

stimulated the Careans, the only inhabitants of that part of the country, to be assiduous in finding coal. I gave them samples of that mineral, which scarcely any one of them had seen before, and taught them to look for it in the beds of mountain torrents, on steep banks of rapid rivers, on parts of mountains or hills detached by the violence of the monsoon, &c., for they had generally imbibed the erroneous opinion that coal is only found on the summits of high mountains which formerly were in a state of combustion, and that coal is a species of cooled lava.

Fearing however that their natural apathy might prevent them from any exertion, I promised a reward of 50 Rs. to be given to any body who found coal of good quality not far from a river.

By a rather extraordinary coincidence, the present coal was found but a thousand yards distant from the place where I made the promise of the reward, and in the same village, the inhabitants of which accompanied me for three days in search after coal in the surrounding jungles.

A Carean of that village of the name of Ka-pho, penetrating two months and a half ago the thick forests in search of good ground for a plantation, came upon a small rivulet, and found coal partly at its bottom, partly protruding from its banks.

My lesson, but much more, undoubtedly, the prospect of the Fifty Rupees' reward, seemed not to have been forgotten. He took some pieces home, and kept them hidden for several weeks, not knowing if they were really coal, for the pieces which I distributed among the Careans were Burdwan coal of a different aspect. He consulted a friend afterwards, who advised him to go to Mergui and show the coal to me, but being apprized that I was absent (examining the Mergui Archipelago) the visit to Mergui was postponed. About a month afterwards a Burmese, of the name of Kho-baik, saw the specimens of coal by accident in a basket; he possessed himself of a piece, and hastened with it to Mergui to claim the reward for himself; he shewed it to the Assistant of the Commissioner in Mergui, and in this way the coal was brought to public notice.

(Signed)

J. W. HELFER, M. D.

MERGUI, 9th May, 1839.

No. 2.—Report on the new Tenasserim Coal Field.—By LIEUT. HUTCHINSON, Madras Artillery.

To E. A. BLUNDELL, ESQ. Commissioner, Tenasserim Provinces.

SIR,—Having visited the coal field lately discovered upon the large branch of the Tenasserim river, I do myself the honor to forward a Chart of the river from the Coal to Mergui, and beg to offer some remarks for your consideration.

The coal is situated in north lat. $12^{\circ} 21' 30''$, and longitude about $99^{\circ} 5'$ east, distant twenty-nine miles, by the course of the river, from Tenasserim, or about sixty-five miles from Mergui; the distance in a direct line from Mergui is about twenty-eight miles in a west by south direction.

A small stream passes through the upper part of the coal bed, exposing part of a thick stratum of coal covered by three feet of clay slate, and from twenty to forty feet of sand.

The sand may be removed easily with any tool, but at the same time is so tenacious as to require no propping where springs do not exist, and the slate being only three feet thick shafts may be sunk with celerity and ease.

Whether the galleries will require propping is doubtful; but if so, abundance of timber for the purpose exists upon the spot.

Springs will certainly be met with at the level of the slate, but this must always be expected in a coal mine.

The Nulla is quite unfit for the conveyance of coal to the river, but, a level line of road may be formed with little expense.

The coal is distant from the river about one mile.

The river may be ascended during the fine weather with an ordinary number of men to each boat, but the water is upwards of twenty feet higher during the rainy season, and it appears doubtful whether proper boats could be got up during that time, at any rate without the assistance of steam, or some adequate power.

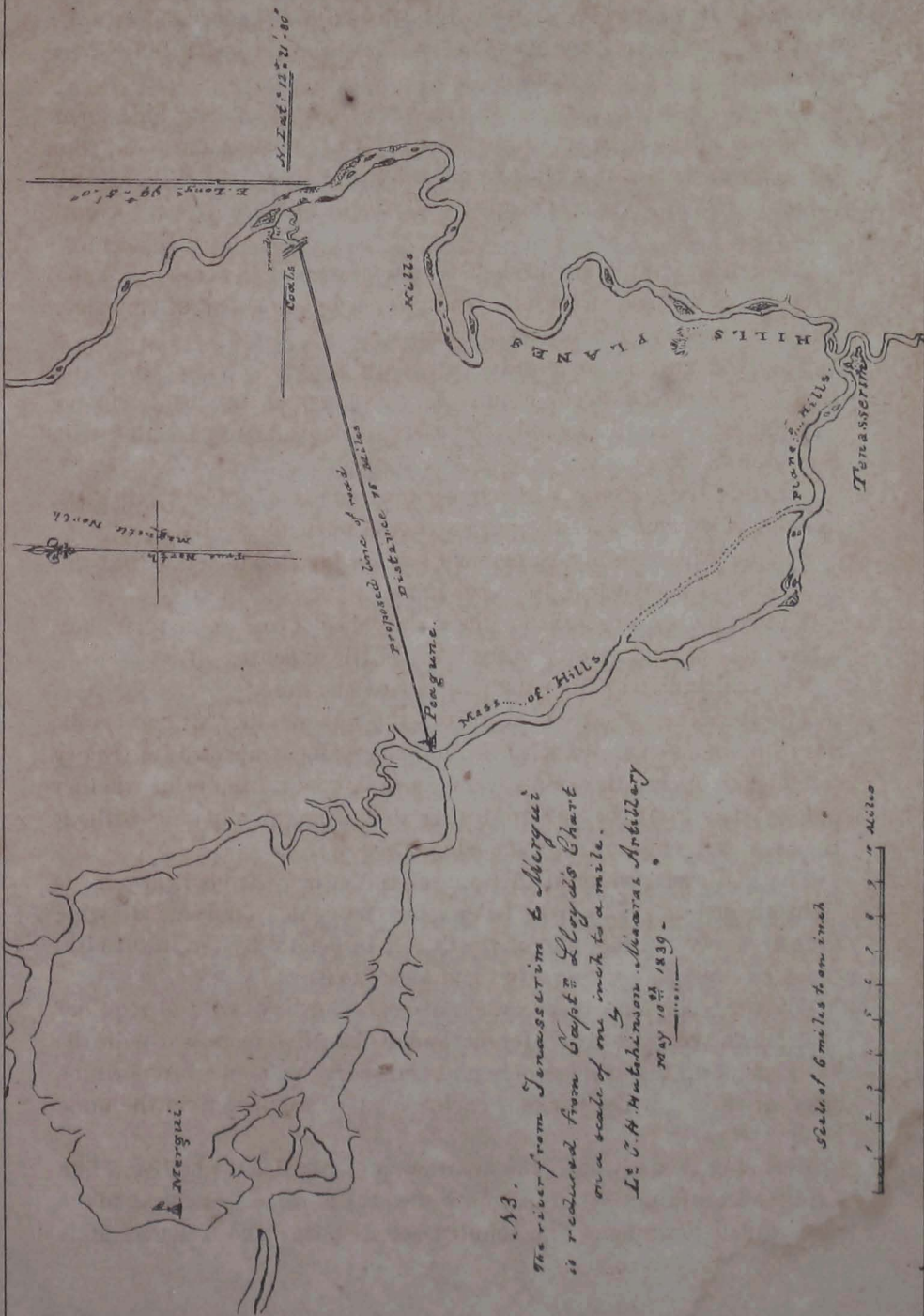
The shallowest water at this time of the year (when it is lowest) is eighteen inches. The river is therefore navigable for boats drawing nine or twelve inches, and of thirty feet in length by ten in breadth, capable of carrying six or seven and a half tons.

Allowing one man to every ton of coal, four days will be required to bring the coal down to Mergui, and at least five to return with the boats; making the expense of actual transport one man's hire for nine days, or three Rupees per ton, exclusive of its carriage from the mine to the river.

Referring to the Chart, the question presents itself whether a line for a road could not be formed from the coal to some point near to the place called Peagunc. The country between this and Tenasserim is

390A

Lieut. N. K. K. K.



13.
 The river from Teasserim to Merguzi
 is reduced from Capt. Lloyd's Chart
 on a scale of one inch to a mile.
 Lt. C. A. Hutchinson. Major's Artillery
 May 10th 1839.

Scale of 6 miles to an inch

Lith. on a scale, half that of the original, by Lieut. N. K. K.

mountainous, but the ridges run in nearly the same direction as would the road, and from the numerous large nullas falling into the river near to Peagune it appears possible that a practicable line might be formed. The distance is only fifteen miles.

A tolerably level railway across this part of the country would reduce the expense of actual transport to Mergui to one man for four days to every one and a half tons of coal, or to nearly one Rupee per ton, supposing the carriage is to be drawn by men; but by employing ponies the price is reduced to less than four annas a ton. Now in case of delay and extra power being required in some parts of the line, take the expense at three times the estimate, or twelve annas per ton, which is still only a quarter of that incurred in the transport by water; thus being a saving of 22,500 Rupees in favor of the road upon the transport of 10,000 tons of coal.

The best description of road for this country appears to be a single suspension rail of timber (as represented by figures 1 to 4 in the enclosed sketch) as being cheapest in construction, uninjured by heavy rain, easily repaired, and (by actual experiment) offering less resistance to the motion of carriages than any other form of road. It consists of a plank of hard wood, three inches broad by ten or twelve deep, supported on posts nine or ten feet apart, and varying in length according to the surface of the country passed over, so as to support the rail in a horizontal line. The rail is let into a notch cut on the top of the posts, and is adjusted by means of wedges driven in opposite directions between the posts and the rail; the resistance is reduced thirty per cent. by the addition of a thin plate of iron upon the top of the rail. A carriage having only two wheels with the load suspended on either side is represented in figures 1, 2, 3.*

A road on this principle has been tried with great success in England. A horse was found capable of dragging fourteen tons, exclusive of the carriage, during a good day's work where the rail was quite level. Figure 4 shews the manner of crossing streams and small ravines.

I have no doubt but these carriages would run upon a cable stretched from point to point should circumstances require it.

Models can be furnished if required. I have, &c.

(Signed) C. H. HUTCHINSON,

MERGUI, 6th May, 1839.

2d Lieut. Madras Artillery.

(A true Copy.) E. A. BLUNDELL,

Commissioner in the Tenasserim Provinces.

* We have not received Lieut. Hutchinson's sketch, but his description is nevertheless sufficiently intelligible. The subject is of so much interest that we deem it ex-

pedient to publish the annexed extracts from the description of Palmer's Railway, given in Hebert's *Engineer's Cyclopaedia*, Vol. 2, pp. 425, &c.

“Instead of two lines of rail laid upon the ground, as heretofore, Mr. Palmer's railway consists of only one, which is elevated upon pillars, and carried in a straight line across the country, however undulating and rugged, over hills, valleys, brooks, and rivers, the pillars being longer or shorter, to suit the height of the rail above the surface of the ground, so as to preserve the line of the rail *always straight*, whether the plane be horizontal or inclined. The waggons, or receptacles for the goods, travel in pairs, one of a pair being suspended on one side of the rail, and the other on the opposite side, like panniers from the back of a horse. By this arrangement only two wheels are employed, instead of eight, to convey a pair of waggons; these two wheels are placed one before the other on the rail, and the axle-trees upon which they revolve are made of sufficient length and strength to form extended arms of support, to which are suspended the waggons or receptacles on each side of the rail, *the centre of gravity being always below the surface of the rail*. The rods by which the waggons are suspended are inflexible; hence, although the weights on each side be not equal, they will, nevertheless, be in equilibrio; as may be observed in a ship, which, being unequally loaded, assumes such an angle with the surface as preserves the equilibrium. Although an equal distribution of the load on both sides is desirable, it is not necessary. A number of carriages are linked together, and towed along the rail by a horse, as barges on a canal. Owing to the undulation of the country, the horse will sometimes be much below the rail, in consequence of which he is provided with a sufficient length of rope to preserve a proper angle of draught.

“Provision is made for trains of carriages that are proceeding in opposite directions, by means of “sidings” or passing places. With respect to loading, if both receptacles be not loaded at the same time, that which is loaded first must be supported until the second is full. Where there is a permanent loading-place, the carriage is brought over a step or block; but when it is loaded promiscuously, it is provided with a support connected to it, which is turned up when not in use. From the small height of the carriage, the loading of those articles usually done by hand becomes less laborious. The unloading may be done in various ways, according to the substance to be discharged, the receptacles being made to open either at the bottom, the ends, or the sides. In some cases it may be desirable to suspend them by their ends, when, turning on their own centres, they are easily discharged sideways.

“Among the advantages contemplated by the patentee of this railway, may be mentioned that of enabling the engineer, in most cases, to construct a railway on that plane which is most effectual, and where the shape of the country would occasion too great an expenditure on former plans—that of being maintained in a perfectly straight line, and in the facility with which it may always be adjusted; in being unencumbered with extraneous substances lying upon it; in receiving no interruption from snow, as the little that may lodge on the rail is cleared off by merely fixing a brush before the first carriage in the train; in the facility with which the loads may be transferred from the railway on to the carriages, by merely unhooking the receptacles, without displacing the goods, or from other carriages to the railway, by the reverse operation; in the preservation of the articles conveyed from being fractured, owing to the more uniform gliding motion of the carriages; in occupying less land

than any other railway ; in requiring no levelling or road-making ; in adapting itself to all situations, as it may be constructed on the side of any public road on the waste and irregular margins, on the beach or shingles of the sea-shore,—indeed, where no other road can be made ; in the original cost being much less, and the impediments and great expense occasioned by repairs in the ordinary mode, being by this method almost avoided.

“ A line of railway on this principle was erected, in 1825, at Cheshunt, in Hertfordshire, chiefly for conveying bricks from that town, across the marshes, for shipment in the river Lea. The posts which support the rails are about ten feet apart, and vary in their height from two to five feet, according to the undulations of the surface, and so as to preserve a continuous horizontal line to the rail. The posts were made of sound pieces of old oak, ship timber, and in *a*, the slot or cleft at the upper ends of the posts, are fixed deal planks twelve inches by three, set in edgeways, and covered with a thin bar of iron, about four inches wide, flat on its under side, and very slightly rounded on its upper side ; the true plane of the rail being regulated or preserved by the action of counter wedges between the bottom of the mortices, and that of the planks. By this rail, on the level, one horse seemed to be capable of drawing at the usual pace about fourteen tons, including the carriages.

“ The late Mr. Tredgold, whose opinion in matters of this nature will ever be entitled to attentive consideration, expressed himself very favourably to this invention in his *Treatise on Railroads and Carriages* :— “ We expect (he observed) that this single railroad will be found far superior to any other for the conveyance of the mails, and those light carriages of which speed is the principal object ; because we are satisfied that a road for such carriages must be raised so as to be free from the interruptions and crossings of an ordinary railway.”

ART. VI.—*Memoria sul Rinascimento e stato attuale della Medicina in Egitto, del D. G. E. MINO.*

Memoir on the Regeneration and actual state of Medicine in Egypt—Translated from the Italian of J. E. MINO, Doctor in Philosophy, Medicine, and Surgery. Leghorn, 1838.

(For the Journal of the Asiatic Society.)

We are indebted to Mr. W. H. CAMERON for a copy of Dr. MINO's pamphlet, which was printed in Europe for private circulation, and contains many details worthy the close attention of all who take interest in the progress of general as well as Medical education.

Dr. MINO's essay affords full evidence of the failure of CLot BEY's system for the introduction of Medical science into Egypt. The causes of the failure are moreover explicitly and palpably exhibited. There was no penury of means, no paucity of teachers ; all that the most princely munificence could place at the BEY's disposal he was permitted to command without controul. Still the tree produced no fruits, and this simply, because it was planted at the wrong end. They commenced where they should have terminated ; namely, by the erection of a School taught in the vernacular language. It is difficult to conceive a more ludicrous attempt than that to teach me-

dicine to Arab pupils through European Dragomans, themselves destitute of Medical knowledge. Far different would the result have been, had the admirable principle of the Normal schools of Prussia and France been adopted in the first instance—had CLOT BEY for the first four years contented himself by educating thoroughly a few clever youths through the medium of *his* language, and had he then employed them to impart, in their own tongue, the knowledge they had themselves acquired.

Such is the system which silently and unprofessedly has been adopted in the CALCUTTA COLLEGE with a success which defies denial. If but few pupils have been educated, the completeness of their education is unquestionable; and each is now ready to be made the means of diffusing his own knowledge among his countrymen in the only dialects they understand.

In September next the Medical College of Calcutta ceases to be *exclusively* an *English* School, and will embrace, with its original Normal section, a secondary vernacular class, receiving instruction, through the Hindoostanee language, from native teachers, and numbering over 150 pupils. Let this class but prosper, as we doubt not it must, and then indeed we may triumph in accomplishing the inappreciable object of placing medical assistance practically within the reach of all classes of the Native population. Similar institutions will then spring up in all the great provincial cities, and thus to every village and hamlet will radiate the light of the most beneficent science within the acquisition of man.—Eps.

Prior to the reform introduced by the Pacha and Viceroy MEHEMET ALY, medicine was in the same state in Egypt as in other parts of the Levant; it was, namely, in a state of absolute infancy, or to speak more accurately, in one still inferior to infancy itself. Not possessing schools or masters, books or dissecting-rooms, nor any other place of public or private instruction, the natives who devoted themselves to the care of the general health, following corrupt traditions, practised a blind empiricism which, mingled with a certain superstitious charlatanism, was more adapted to disseminate death, than to prevent the premature diminution of lives. Foreigners who there practised medicine were generally persons destitute of science and of conscience, and abusing the unfortunate licence given to all of calling themselves *Physicians*, they simulated the character that they possessed not, and thus profaned the sublime priesthood of Hygea, to the incalculable detriment of the wretched. The true and clever physicians, who for merit and legal qualification could be entitled such, in Egypt were very few, and often disregarded and forgotten; as not unfrequently happens in unpolished and illiterate nations, to the truly learned placed in counterposition to the charlatan.

Although the French claim for themselves the work of the regeneration of medicine in Egypt, it is undoubted, nevertheless, that the glory of the enterprise, whatever it may be, is due to the Italians. In truth, since Egypt began to breathe, which was about the year 1811, when MEHEMET ALY completed his sanguinary struggle with the

Mamelukes—a year that signalized the commencement of new military reforms—the first roots, so to speak, of the medical laurel were planted there by Doctors MENDRICI (Genoese), RAFFAELLI (Leghornian), MARTINIL (Pisan), DEL SIGNORE (Piedmontese), CUNHA (ditto), KARACUCCI (Cattarese), MARNECHI (Piedmontese), GENTILI (of Ancona) CERVELLI (Pisan), MORPURGS (of Trieste), DURANDO (Piedmontese), CALUCCI (Neapolitan), LARDONI (Roman), VERNONI (Piedmontese), and several others, all Italians, too numerous to be mentioned ; whereas in that long period the French could reckon no other countryman of their's than a certain M. DUSSAP, Apprentice-Surgeon.

Nor should, on the contrary, all the French professors be cited who followed the memorable expedition of 1798, in as much as those were days of battle, and those personages, albeit highly eminent, had no opportunity of mixing as much as was necessary with the aborigines, of coming in contact with the native physicians, and of diffusing, by word and example, the salutary precepts whereof we intend discussing. In fact, after their departure no vestige remained of their knowledge ; we mean, not a school, not a scholar, no prevailing system, no sensible sign was to be discovered, that denoted any tendency to the destruction of the abominable empire of empiricism and imposture.

The light of true knowledge illuminates in the end even the dimmest and most near-sighted. Hence, notwithstanding their deeply-rooted and numberless prejudices and antipathies, the Arabs finally discovered the difference that existed between European doctors and those quacks who for so long a period had usurped among them the name and attributes of physicians.

MEHEMET ALY above all, who was then devising a bold, political reform of the state which had been placed in his hands by fortune and courage, convinced by experience, and by the dint of warm, benevolent suggestions (among which held the foremost place those of the CHEV. DROVITTI, Piedmontese) perceived the inestimable service that so grand an enterprise could derive from the Art of Healing suitably professed, and delayed not to make the talent of the European physicians contribute to his mighty undertaking.

In the year 1822 Doctors MARTINI, DEL SIGNORE, CINBA, and some others, were charged by him with the erection at Abou-Zabel of an Hospital, modelled and managed after the best European establishments of its kind, and were directed to lay before him a plan of a general systematic arrangement of the Medical Service in the Viceroyalty. This is in reality the era of the regeneration of medicine in Egypt ; and if the foundations of it were laid by Italian hands, we must legitimately conclude that the glory of having re-produced medi-

cal studies, and the practice of medicine in Egypt, exclusively belongs to them.

Nevertheless it is undoubted, that scarcely had the Italians taken the first step in the beneficent restoration (1824,) than the eminent Doctor CLOT, a Frenchman in the Viceroy's service as Physician and Surgeon-General, succeeded, with several other sanitarian officers, countrymen of his, in completing the fabric thus commenced ; and we are far from denying him our meed of well-merited praise, and avow and acknowledge with pleasure the very important services rendered by him to the science and to the country. But he *completed*, and did not *commence*, the work : this is what truth compels us to affirm distinctly. Especially as in all the improvements introduced by him, his designs were never disunited from those of MARTINI, Inspector-General of the Military Medical Service.

Au reste, when we allude to the regeneration of medicine in Egypt, we are very far from understanding that the science is as flourishing and diffused there as the phrase may seem *prima facie* to imply ; for although there exists a remarkable difference for the better between the past and the present, it is undeniable, nevertheless, that the new plant has not yet produced that fruit which might have been expected from it. A mournful fact, but no less authentic, as will evidently appear from the particulars we are about to enumerate.

Having premised these brief observations on the historical part of the subject (for the correctness of which we ourselves carefully vouch, having been not only witnesses, but a party of what we relate) we shall now proceed to lay down, in separate paragraphs, those special points, from the assemblage of which results the actual state of medical knowledge in that country.

The establishment of an Hospital at Abou-Zabel (a village about twelve Italian miles to the north of Cairo, on the borders of the desert of Kanka) was, as we have stated, the first countersign of the regeneration of medical knowledge in Egypt.

Beside the salubrity of the air, and the abundance of water (although the latter is somewhat brackish), and all other conveniences requisite for the erection of such institutions, all wonderfully concurring at Abou-Zabel, this spot was selected especially because being close to the review-field of the new Egyptian troops, it might readily serve for the care of the invalids ; and the Government would thus have before its eyes a practical example of the advantages that its armies might in time derive from that sort of sanitary establishments.

The edifice was erected A. D. 1822 on the ruins of ancient cavalry barracks : it was completed six years after (1827) when Dr. CLOT,

recently charged with the head management of the Sanitary Department, made it the object of his most ardent solicitude.

The Hospital of Abou-Zabel, which surpasses in size, as it does in priority of existence, all similar buildings subsequently erected in Egypt, is a perfect square of 150 metres, every side consisting of a double row of saloons, divided by an intermediate corridor forming their entrance. There are thirty-two halls, each containing fifty beds arranged in a double row. The saloons are exceedingly lightsome and well ventilated, being illuminated each by sixteen large windows, which however does not debar the deplorable effects that result from the reunion of an immense number of sick in a single edifice—a constant proof that smaller Hospitals are preferable to extensive ones in all quarters of the globe.*

The area enclosed within the four sides of the building has been appropriated to the use of a Botanical Garden. In the middle of it is to be found a square house containing the Dispensary, Dissecting Room, Baths, Kitchen, a *Sakia*, or draw-well, and other ordinary complements of an Hospital.

The Botanical Garden is subdivided into two sections, containing an exact repetition of the identical plants. The first is appropriated to the study of Linneus' system, and the other to that of Jussieu's method.

The edifice is surrounded on three sides by a high wall, about a hundred paces distant from the body of the building. A tract of land intervening between the one side and the other is covered with trees and divers other plants, which abundantly supply fruits and other nutritious vegetables; it also offers a commodious promenade to the invalids. This exterior wall answers the purpose of *isolating* the establishment—an inestimable advantage for various reasons, especially in countries like Egypt, frequently infested with contagious maladies.

Although the Hospital of Abou-Zabel is chiefly intended for the

* We recommend this passage to the attention of the Municipal Committee, and of the projectors of certain Hospitals said to be intended for Calcutta. The new Clinical Hospital just completed on the grounds of the Medical College will contain *eighty* patients. It is a square building on arches, 74 feet square, divided into three Wards with two intervening Corridors. The clear length of each Ward is 70 feet, the breadth 20 feet, the height 18 feet, and the Corridors each 70 feet long, 12 feet broad, and 18 feet high. The rooms are fully ventilated by lofty windows, doors, and spiracles. *This building has cost but 8,000 Rs.* In the plans adopted by the Municipal Committee an Hospital for *one hundred and twenty* patients is to cost 97,000 Rs., another plan for an Hospital for *twenty* patients is sanctioned by the Committee at 34,000 Rs. This may excite a smile, but let us not be unreasonable. It is peradventure wise to lodge the perishing pauper with the magnificence of a prince.—EDS.

military, still the indigent sick of all the surrounding villages obtain there gratuitous succour and advice.

The internal government of the Hospital, and in general all its various departments, were scrupulously modelled after the Hospitals of Europe.

The utility of the establishment in question being rapidly understood, with that evidence which is so necessary to influence the indolent spirits of the Easterns, other minor Hospitals began to be gradually instituted in various quarters of the country, there being at present six, beside several Infirmaries; viz. one at Cairo, named *Esbequich*; one at *Kassr-el-ain*, for the alumni of the elementary School-house; a third at *Furrah*; a fourth at *Damietta*; and the fifth and sixth at Alexandria for the army and navy troops.

Prior to the year 1834, there was no Hospital specially intended for non-military patients. The decree issued about that period by his Highness may be considered an interesting piece of novelty, because one of the Alexandria Hospitals, which had been originally destined for the navy, was then thrown open indiscriminately to all, whether Arabians or Christians, or of any other persuasion, as well subjects as foreigners, if destitute of means.

Although that was perhaps the effect of the wise REFORMER'S policy, it was nevertheless a remarkable token of progress, when we reflect on the antipathy that had for the past divided the Mahometans from the professors of every other creed.

With regard to the Hospital of Abou-Zabel, and the two others of Alexandria, especially that denominated *Ras-el-tim*, it can be affirmed, without flattery, that they are in a most satisfactory state at present, and that they might be honorably compared with many similar institutions in Europe. The others, mostly the work of Arabs, and imperfect copies of the former prototypes, still retain the impress of antique barbarism, and to them may be justly applied the words of the divine Poet:

“ Non ragioniam di lor, ma guarda e pass.”*

Following the example of Constantinople, Smyrna, and other cities of the Levant, the European powers that hold commercial intercourse with Egypt established an Hospital in Alexandria for their respective subjects, with this difference however, that while in the above named cities each European nation has its own Hospital apart, in Alexandria, considering the minor number of European strangers, they deemed one Hospital, to be managed with common funds and laws, would

* “ Let us not speak of them, but look and pass on.”—DANTE.

amply suffice promiscuously for all. The election of the Physician and other officials for this institution, is yearly made by the Consular body and other contributors by the majority of votes. Extreme is the neatness and regularity of attendance introduced into this Hospital, and we are gratified in being enabled to bestow our well-merited meed of praise on the directors of it, while we, at the same time, submit our hope, that in the election of the Physician, they may for the future value more than they have heretofore done, the intrinsic merits of the individual, and pay no regard to a spirit of vain nationality, which so often proves fatal to its unfortunate inmates.*

Regarding those infected with the plague, we shall have occasion to allude to them when speaking of the Lazarettos, in the important matter of sanitarial treatment.

The rare advantage of the Abou-Zabel Hospital induced Dr. CLOR, Physician-General, to propose to the Egyptian government the institution of a Medical School for the formation of Native alumni, capable in time of succeeding the European doctors, on whom depended the medical management and attendance both of that head Hospital and of the other Infirmaries, as well as of the army. The body of European physicians then practising in Egypt, fortunately presented the number of Professors requisite to occupy the various chairs of the intended institute, and Dr. CLOR wisely opined that so favourable an opportunity should be availed of to attain with facility and economy the object he had in view. The necessity of such an establishment was too evident for the Egyptian government not to second the proposal of the French Physician-General; but there were mighty and various obstacles yet to be surmounted.

* It would not be here inopportune to make mention of a small Greek Hospital, if it were completed, or worthy of observation. Hence we omit enumerating it among the Hospitals of Alexandria. Nevertheless we cannot refrain from commending the noble efforts of the CHEV. FOSSIZZA towards its erection and support, in which he has not yet relaxed.

Appros of the above mentioned individual, we feel pleasure in giving a brief account of his merits and influence in Egypt.

The CHEV. FOSSIZZA, a wealthy Greek merchant of Mezzovo in Albania (Epirus), and now Consul-General of his Majesty King Otho, is one of the most distinguished personages who are about the illustrious Reformer, MEHEMET ALY, on account of the high degree of confidence he enjoys, in as much as being wholly devoted to his wishes, he succeeded so well both in the administration of the state, and in the most difficult political circumstances of the Government, in comforting him, by seconding all his cogitations and devices, as well as by assisting him with his vast commercial knowledge in his traffic computations, and so by reviving in an extraordinary manner the home as well as the foreign trade; moreover, he is still more commendable on this account, because he uses his interest with the Pacha to forward the distribution of his princely munificence among the meritorious. Hence the CHEV. FOSSIZZA is generally esteemed by the Europeans as well as the foreign Consuls in Egypt.

give a trial of the progress they had made, in the presence of the first authorities, as well in their medical, as in their philological studies.

The result of those examinations proved, what will not surprise any wise judge of such events, viz. that the progress of those classes, notwithstanding the immense effort of the promoters, was not by any means remarkable. In truth, with the exception of a few lads, who succeeded in a middling degree, the mass of the scholars drank very shallow of those new and unusual sources of science. It would be long to enumerate all the causes of such disgusting deficiency individually, but we will note the chief ones: 1. The advanced age of the majority of the students. 2. The privation of those elementary and primary principles, that are a step to higher branches. 3. The fatal intricacy of intermediate explanations. 4. Arabian indolence and listlessness, which every now and then transpire in the character and habits of that race. 5. The secret and powerful influence of prejudices, which although sometimes apparently obviated, never cease by degrees to shoot forth. 6. In fine, the bad selection of some of the teachers; a notorious fact, which we in vain would attempt to conceal.

Dr. CLOR added lately to this College a collection of objects connected with Entomology and Ornithology, aided by the rare abilities of the Turinese naturalist, Signor LOUIS REGEO, who has acquired an honorable reputation both in Egypt and elsewhere, which we are happy to proclaim, for such and other similar collections forwarded abroad.

The nature and brevity of this memoir will not permit us, as we would wish, to give a minute account of the glorious labours of the illustrious young man just alluded to, in congregating the materials of such exquisite collections, as well of the extraordinary perfection for which his works are distinguished, considered even in the light only of mechanical preparation: we will not however for justice sake, and to satisfy a praiseworthy love of country, omit to state, that not only CLOR BEX, but also all the other professional foreigners that have visited Egypt, or examined the works of Sig. REGEO, unanimously avowed, that they had never witnessed things of a similar description more accurately and skilfully conducted; and they readily bestowed on him, even through the medium of the public journals, praise so much the more flattering, as it was less suspicious, being spontaneous and remote. Hence although Sig. REGEO be, like all other men of merit, extremely modest, an enemy of every species of intrigue, and incapable of wishing to advance but through his own fatigue and knowledge, the Egyptian Government nevertheless always held him in due esteem, and after retaining him in divers ways employed

under **CLOT BEY**, it decorated him at length with the title and degree of Professor attached to the Museum of Natural History, an office with which he is still invested, with general satisfaction, uniting as he does to a brilliant genius an excellent heart, that renders him acceptable and dear to all his acquaintance and friends.

Besides the alumni educated (well or ill) in the Abou-Zabel College, the Pacha sent to Europe, especially to France, about one hundred Egyptian lads, with the view of thus diffusing the enlightenment and civilization of this era throughout his dominions, and of acquiring at the same time the reputation of a prince who was a philosopher, a philanthropist, and a munificent patron of the sciences. The result of the second experiment was not much happier than that of the first, as the youths did not take back with them that useful assortment of science that was expected; so that with the exception of a scanty number, the major part of them afforded to the Pacha no great source of congratulation for the trial he had made.

Vaccination was introduced into Egypt about the year 1824, through the beneficent designs of the venerable **CHEV. DROVETTI**, whose continual traits of philanthropy resemble so many globules impregnated with vitality, which animate and give life to whoever receive them. With the approbation of his superiors, he formed a commission consisting of two Italian physicians, **MASSARA** and **CANI**, and of one Frenchman, **M. DUMAS**, for the purpose of propagating in the interior of the country the practice of so precious an invention. This commission, provided by the never-sufficiently commendable **CHEV. DROVETTI** with all the necessaries, encountered in the discharge of their duties immense difficulties and perils, so much so, that in the province of *Menoufic* a general insurrection was very near breaking out, as the Arabs, especially the women,* supposed that the incisions made on the arms of their infants, far from being a salutary antidote, were a political stratagem of the Pacha, whose object was to impress on the persons of his subjects an indelible mark, so as afterwards to be enabled to distinguish and kidnap them with greater facility into the military levies, and other raisings of men for the accomplishment of his vast enterprises; so that after long and fruitless attempts the vaccination emissaries were compelled to desist and give up all hopes of success; and thus among the Arabs became extinct the practice of **JENNER'S** antidote, which is doubtless one of the finest gifts bestowed by Providence on mankind in modern times. This is a great fatality for Egypt, where the small-pox frequently causes mortality in the extreme.

* It is calculated that the proportion of women at present in Egypt, is a third greater than that of men.

H. H. MEHEMET ALY continues however to have his children vaccinated, as also the new born infants belonging to his Harem and household, which is also the practice of the grandees around him.

The first and greatest service that was to be rendered to Egypt by medicine, was to defeat the fatal malady that for ages had taken up its abode there, and which besides the internal havoc that it often creates in the country, threatens also to invade the European shores, and so causes the inhabitants of the latter to live in perpetual dread of such a scourge. We must however unfortunately confess that not even in this point have the medical innovations introduced into Egypt corresponded to the necessities and expectations of the promoters.

The ends to which sanitarial prescriptions should tend in countries which like Egypt contain the germ of the plague, are principally two: the first is, to destroy, if possible, the principle or vital spark of the evil, or to restrict at least as much as possible the consequence of its development: the second, to protect the country from the introduction of external pestilence. Now it is undoubted that neither of those ends has been attained by the local government through the medium of the sanitarial institutions still flourishing in that country; so that if the merit of the design or (as it is termed) of the *good intention* be abstracted, the world and the nation owe little to the promoters of those institutions.

It was only in the beginning of 1833 that the Pacha contemplated the establishment of a Sanitarial Board, the centre of which he made a so-called Consular Committee, consisting, as its name sounds, of the European Consuls accredited by his Government. The representatives of civilized nations were thought to possess an abundant store of knowledge for the utility of so important an institution; but it would have been a wiser plan to seek such knowledge, in itself *particular*, in persons of the trade; and in truth, with one or two exceptions,* the others had not the slightest idea of the topics they undertook to discuss; thus this radical defect soon ruined the work they commenced. So much the more, because to the *relative incapability* of the superiors was soon added the *absolute incapability* of the subalterns selected to fill up the various situations of the new Egyptian sanitarial *iatrarchy*.

But the height of misfortune was, that the physicians specially devoted to the Sanitarial Committee, who with their counsels might

* It is almost superfluous to observe that one of those exceptions is the Chev. and Councillor ACERHI, a man well known for his extraordinary talent and profound knowledge. Let it however be remarked, that as soon as he perceived the impossibility of attaining any useful result, he abstained from taking part in the new Consular Committee, so as to save himself from all responsibility.

have corrected and moderated, at least in a great measure, the lamentable consequences of such primary sources, were in accordance (we grieve to advert to it) with the rest of the ill-compacted edifice, and were absolutely unsuited for the high and important office they undertook.* The provisions therefore that emanated from their Committee, and were executed by their subalterns, were, we regret, seldom useful, and often noxious to the State.

To commence from what we stated to be the first scope of the sanitary discipline with regard to an *endemic* disease, nothing was done to improve the salubrity of the country, if we except the prohibition, often eluded, of interring corpses in the interior, a device undoubtedly beneficial, but insufficient by itself to cut off the intrinsic *fomites* of the evil, as was required. In a recent little work on the *Bubonic plague* of the Levant, we explained the causes to which, in our opinion, Alexandria and Lower Egypt owe their deplorable privilege of having been for ages the chosen nest of that malady, and we will readily avow that many of them are such as to surpass perhaps the limited efficacy of human remedies. Nevertheless it is undeniable, that if by a well understood system of sanitary regulations, constantly acted up to, a part at least of those causes had been obviated, the awful scourge would either have less frequently desolated the country, or its consequences would have been less disastrous. Now what has been done by the Alexandria Committee in order to achieve so beneficial a result? We have already stated, either nothing whatsoever, or too little to produce any fruit? And we might easily demonstrate it with examples, were we not disallowed by brevity from entering into minuter details. But not wishing our assertion to remain totally unproved, we will observe: 1st. That if human corpses be interred by day without the walls, the carcasses of camels, horses, asses, and of that numberless group of minor quadrupeds which at present people Egypt more than the bipeds, are shamefully allowed to rot in the inside streets and squares. 2dly. That dung, rubbish, filthy water, and similar off-scourings of the city always remain in the spot they happened to fall on, without any passage or exit to drain off from the habitations of the living—a most shocking inconvenience, that would alone suffice to render any climate naturally wholesome and pure, murderous to the last degree. 3dly. That neither the education, nor the condition of the people, properly so-called, being improved for reasons superior to the will of the Government, the dwellings or rather the huts of the Arabs continue to be real dens of wild beasts, squalid, filthy,

* Now however Signor GRASSI commences to distinguish himself with repeated observations: he is the chief doctor attached to the above named Committee.

and abominable. 4thly. That the identical groups of beggars now wander through the narrow and crooked lanes of the city, destitute of ventilation, who used to stray through them before, and who are the ordinary receptacles and most fatal propagators of endemic and contagious diseases. 5thly. That the necessary government regulations regarding food are still wanting, while that which is exposed to sale is generally another abundant source of *epidemic* maladies.

Having premised these deplorable truths, passing now to the other object of sanitary regulations, namely, that of protecting the country from *foreign* pestilence, we have to lament on this point also equal, if not greater blunders, quoting as simple instances of proof, 1st. The bad construction of the Lazarettos*, and especially of that of Alexandria, the first of his Highness's, which has nothing in it commendable, whether we speak of its site, or of the minutest particulars of its interior management and medical administration—a truth that we demonstrated in a previous work, addressed to H. E. BOGHO BEY, on the 15th December 1833, and which is gradually confirmed by daily experience. 2dly. The inconsistency of repulsive measures, that are every now and then adopted, such as, for example, to permit a free ingress on the land side to persons arriving from regions actually infected with the plague, and at the same time to use rigour (we know not if more barbarous or ridiculous) with the vessels and persons that arrive on the sea-side, while they reach from the remotest places, even solely *suspected*. 3dly. The little or no exactness wherewith the sanitary orders, whether well or ill decreed, are managed: because in consequence of the deep ignorance of the sanitary officials, especially the subalterns, their indifference and want of conviction, there is scarcely ever a case in which the observance of a salutary precept is not accompanied with a greater or less violation of another equally mighty, which abundantly preponderates the utility that might have been expected from the former: thus, for example, when a disorderly gang of beastly Arab keepers are compelled to insulate an infected object, to cleanse a house, to air tainted cloths, &c., we may affirm, without fear of being deceived, that in such emergencies directed to avoid contact, the latter almost always increases in place of diminishing, as was the intent of the order.

But we should be too prolix, were we to discuss more fully this subject. The sketches we have given will suffice.

* The Lazarettos of Europe are doubtless powerful means to prevent the diffusion of *exotic maladies, originally contagious*, depending on multiplied *contact*: but those of Egypt are little serviceable for its *periodical and endemic* diseases, and much more when the Lazarettos are so shockingly situated, ill-managed, and badly laid out.

Although the collection of facts by us adduced appear to prove that the Egyptian government has recognised in principle the social importance of medicine, we grieve to be obliged to add, that the practice of this science in Egypt is still carried on destitute of any check from Government; so that now-a-days, as in those of the thickest barbarity, any body may there entitle himself *Doctor*, and be reputed such, without the superintendence of any superior authority to impede the deplorable results that may ensue. The only examination that is usually made in such matter regards the verification of the title or patents for those that aspire to any post in the Medico-military department, and this examination itself is extremely mild, much more than justice allows; but with regard to the public practice of the science, it is, we repeat, free of every obstruction. There is no necessity of inculcating how the advantages of humanity and the decorum of the medical body itself demand, that a prompt and peremptory remedy be applied to so dangerous and disgraceful an error.

European physicians actually practising in Egypt (almost all employed in the army) exceed the ordinary necessity of the country, there being about seventy, not including apothecaries, who also abound. If those persons in place of blindly and systematically professing the opinions of their Masters, belonging as they do to so many different nations, had first well studied the country, so as to modify the precepts they had imbibed, according as the variety of the climate, of the prevalent constitutional maladies, and of the dispositions and other local circumstances required, their operations would doubtless have either dissipated or moderated the various scourges that generally afflict those regions; but as all, or almost all, in place of judiciously using their preconceived opinions, through a misunderstood, and we were about adding, a censurable *esprit de corps et de nation*, continue to profess there the maxims and precepts inculcated by their respective teachers for generations,* not only widely differing, but often opposed in circumstances, it grieves us to conclude this memoir by stating, that languid humanity has not yet derived in Egypt from this medical anarchy all that aid that it undoubtedly would have received if reason had spoken in place of pertinacity and self-love. For our part, after having studied at length and with accuracy the atmospheric and physical qualities of the country and its inhabitants, we are convinced that abstinence from food, sedatives, bland refreshing purga-

* The French physicians are fanatically attached to the system of BROUSSAIS; the Italian, to that of TOMASSINI; the English to those of CULLEN and BROWN; the German, to those of SCHILLING and SPRENGEL, whose doctrine consists in magnetic, electric, and chemical processes; all discordant in practice.

tives, and proportionate blood-lettings are in general the chief remedies that are suited for Upper and Middle Egypt, for the cure of sporadic diseases that occur there, and in Lower Egypt, a *compound* method, consisting of purgatives, diaphoretics, warm baths, anthelmintics, emetics, tonics, and antiseptics.

Such are the facts that indicate the actual state of Medical science in Egypt; and we consider that they demonstrate a conclusion, which we repute undoubted, as well relative to this particular subject, as to every other branch of innovation actually attempted in that country, viz. that they are as yet but a *rough sketch*, which cannot perhaps be brought to perfection but after a long period of time, when the REFORMER PRINCE who has commenced the undertaking, and his magnanimous son, IBRAHIM Pacha,* renowned as well for his rare talent for governing as for his military qualities—when both, we say, having laid aside thoughts of war, by which they have been hitherto distracted, will exclusively dedicate their cares to the internal regime of the State, proud one day of having added a family to the illustrious circle of civilized nations.

ART. VII.—*Note on the dissection of the Arctonix Collaris, or Sand Hog.* By GEORGE EVANS, Esq. late Curator to the Asiatic Society.

This curious little animal, for some time a living inmate of the Society's Rooms, having died suddenly on the night of the 20th January, apparently from the effects of cold, the following particulars of its dissection are offered to the notice of the Society.

In the length of the body it measured one foot, the head from the snout to the occiput five inches, and the tail, which is thin, straight, and pendulous, somewhat exceeded five inches.

The animal proved to be a young female, and had barely completed its second dentition. The only peculiarity worthy of notice, beyond what is already known and received, as far as regards its external organization, is a caudal pouch directly under the origin of the tail (something similar to what is found in the Badger,) but quite distinct from, and wholly unconnected with, the anus or genital organs. The sac is formed by duplicate folds of the common integuments, having a lining of naked membrane, secreting a brown unctuous matter, not unlike cerumen, or wax of the ear; the use of this peculiar structure and se-

* Eldest son of the Viceroy, born in Macedon, three miles from Cavella—a son unmatched in his obedience to his father.

cretion would appear to be confined to the generative function solely, and is most probably of an analogous nature to the lachrymal sacs in most of the Deer tribe.

The stomach was large and simple, with a strong muscular pylorus, not unlike in figure and structure that of our common Indian Bear (*U. labiatus*) on which animal I offered a few remarks at our last meeting.

The liver is divided into five distinct lobes, the second on the right side being partially separated at its lower marginal part for the reception of the gall-bladder, which contained some greenish looking bile. The kidneys differed from those of the Bears in not being lobulated. The total length of the alimentary canal from the pylorus to the anus measured eleven feet two inches. The intestines throughout were of delicate structure, and exhibited no distinct division or peculiarity of form by which the larger could be clearly distinguished from the smaller, and consequently there is no *cæcum* in this animal, or any dilatation equivalent thereto, the canal merely becoming a little more capacious in its descent towards the anal opening, where there are two small glandular follicles on its verge.

The uterus and organs of generation were too small and undeveloped to admit of examination.

Tongue large, broad, and with a soft smooth surface.

The system of dentition was as follows :

Incisors.	Canines.	False Molars.	True Molars.
$\frac{6}{6}$	$\frac{2}{2}$	$\frac{4}{4}$	$\frac{4}{4}$ in all 32;

the Incisors, Canines, and false Molars corresponding more to the *Carnivora*, while the true Molars are tuberculous, leading to the inference that the quality of its food must be of a vegetable nature. The last Molar in the upper jaw is very remarkably lengthened, in fact it is more like the two ordinary terminal teeth united into one than a single tooth, but this is not the case with the corresponding tooth in the lower jaw.

The diet of the animal while in captivity consisted entirely of bread, milk, and plantains; the latter being evidently its favorite food, to the total rejection of meat and flesh of all kinds.

There were no morbid appearances observable on opening the body to account for its sudden death; this coupled with the circumstance of the animal having up to the time of its demise been in perfectly good health, and appearing in fine condition on dissection, leads me to conclude it must have perished from exposure to cold.

It has been remarked by some naturalists that this obscure and anomalous animal is closely allied to the Bears and Pigs, forming a

bond of union, or kind of link, connecting the extreme limits of the *Carnivora* with the omnivorous *Pachydermata*, but I do not clearly trace the connection here said to exist. That it shows some very marked affinities to the Bears cannot be denied, and which are prominently displayed in its perfectly plantigrade motion, by the form and structure of the foot, and by some of its habits; but where the connection said to exist between it and the Pigs, beyond a mere accidental resemblance of its head to that animal is to be found, I am at a loss to conceive. If an analogy is to be traced, I should certainly say that in general appearance and physiology it is far more like the Badger than any other animal it has been compared to, and its approximation to it is made apparent by its kindred habits, dentition, and other structural peculiarities, possessing like the Badgers the caudal pouch, and wanting, like them, a true *cæcum*, which its dissection has pointed out. In short, I incline to consider it an aberrant form of Mole leading directly into the Ursine group, rather than taking an intermediate place between the Bears and the *Pachydermatous* family, to which last it appears from the above dissection to have little or no affinity.

The importance of making anatomical organization the basis of systematic arrangement, as promulgated by Cuvier in his great work the *Regne Animal*, cannot be too forcibly insisted on; it is the only sure and safe guide to a correct analysis of genera and species, and where opportunities present themselves for these investigations they should never be lost sight of, while their results, however uninviting they may appear, should be duly noted and recorded as facts for the information of the systematic naturalist and inquirer after nature.

P. S.—Since writing the above I have met with a delineation and description of an animal by Bewick (*Hist. Quad.* 4th edit, Newcastle upon Tyne 1800, page 284) called the “Sand Bear,” in which he notices the name of “*Sow Badger*” as one of its appellations. The specimen from which his drawing was made belonged to the Tower of London Menagerie. He also quotes a white Badger (described by Brisson) as a native of New York, and believed to be of the same species. From the above quoted drawing of Bewick it is clear that the animal was known to English naturalists long before M. Duvaucel’s description had appeared; and I record the fact in order to wipe away a portion of that reproach so frequently cast upon our countrymen, of allowing foreigners the honor of having anticipated us in the wide extended field of Eastern Natural History to which we have such ready access; and which reproach I am convinced (with as much support as is afforded by the Governments of other European Powers to similar objects,) would never have been either deserved or incurred.

ART. VIII.—*On the Cultivation of Roses and the Manufacture of Rose Water and Utur at Ghazeepore.*

We are indebted to Dr. JACKSON, Civil Surgeon at Ghazeepore, for the subjoined very interesting note on the celebrated Rose trade of that district. The information was sought for, for a work now in progress on "Indian Materia Medica"; meanwhile we have much pleasure in giving publicity in this Journal to the curious facts Dr. JACKSON has collected.—EDS.

I have now the pleasure of sending you the information you require on the manufacture and trade of Rose-water in this district. Ghazeepore seems to have been long famed for its Attar and Rose-water, and having got the name, it has done its best to preserve it. The cultivation of the Rose plant is sufficient to supply the demand, and as the average remuneration is not more than enough to compensate for the trouble of its culture, no competition from the adjoining districts has been made.

Around the station of Ghazeepore there are about 300 beegahs, or about 150 acres, of ground laid out in small detached fields as Rose gardens, most carefully protected on all sides by high mud walls and prickly pear fences, to keep out the cattle. These lands, which belong to Zemindars, are planted with Rose trees, and are annually let out at so much per beegah for the ground, and so much additional for the Rose plants—generally five rupees per beegah, and twenty-five rupees for the Rose trees, of which there are 1000 in each beegah. The additional expense for cultivation would be about $\frac{8}{8}$; so that for rupees $\frac{30}{8}$ you have for the season one beegah of 1000 Rose trees.

If the season is good this beegah of 1000 Rose trees should yield one lac of Roses. Purchases for Roses are always made at so much per lac. The price of course varies according to the year, and will average from 40 to 70 rupees. During the past season the latter was the price given for one lac of Roses towards the conclusion.

As soon as the Roses come into flower the Zemindars and cultivators of the Rose gardens, as well as intending purchasers, meet in the city, and according to the demand and expected produce, a *nerick* is established, and purchasers then enter into agreement with the cultivators for so many lacs of Roses at such a price. This agreement is considered binding, and the cultivator is obliged to deliver the quantity at the contract rate; when that is completed another can be made, but this latter is always at a much higher rate.

The Rose trees come into flower at the beginning of March and continue so through April. In the morning early the flowers are plucked

by numbers of men, women, and children, and are conveyed in large bags to the several contracting parties for distillation. The cultivators themselves very rarely manufacture.

The native apparatus for distilling the Rose-water is of the simplest construction ; it consists of a large copper or iron boiler well tinned, capable of holding from eight to twelve gallons, (shaped like the earthen hoondahs in which the Gomastahs send in their Opium) having a large body with a rather narrow neck, and a mouth about eight inches in diameter ; on the top of this is fixed the head of the still, which is nothing more than an old *dekchee*, or cooking vessel, with a hole in the centre to receive the tube or worm.

This tube is composed of two pieces of bamboo, fastened at an acute angle, and it is covered the whole length with a strong binding of corded string, over which is a luting of earth to prevent the vapour from escaping. The small end, about two feet long, is fixed into the hole in the centre of the head, where it is well luted with flour and water. The lower arm or end of the tube is carried down into a long necked vessel or receiver, called a *bhubka*. This is placed in a handee of water which as it gets hot is changed. The head of the still is luted on to the body, and the long arm of the tube in the *bhubka* is also well provided with a cushion of cloth, so as to keep in all vapour. The boiler is let into an earthen furnace, and the whole is ready for operation.

There is such a variety of Rose-water manufactured in the bazar, and so much that bears the name, which is nothing more than a mixture of sandal oil, that it is impossible to lay down the plan which is adopted. The best Rose-water however in the bazar may be computed as bearing the proportion of one thousand Roses to a seer of water ; this perhaps may be considered as the best procurable. From one thousand Roses most generally a seer and a half of Rose-water is distilled, and perhaps from this even the Attar has been removed.

The boiler of the still will hold from eight to twelve or sixteen thousand Roses. On eight thousand Roses from ten to eleven seers of water will be placed, and eight seers of Rose water will be distilled. This after distillation is placed in a carboy of glass, and is exposed to the sun for several days to become *puckah* ; it is then stopped with cotton, and has a covering of moist clay put over it ; this becoming hard effectually prevents the scent from escaping. The price of this will be from twelve to sixteen rupees. This is the best that can be procured.

To procure the Attar, the Roses are put into the still, and the water passes over gradually as in the Rose-water process ; after the whole has come over, the Rose-water is placed in a large metal basin,

which is covered with wetted muslin tied over to prevent insects or dust getting into it; this vessel is let into the ground about two feet, which has been previously wetted with water, and it is allowed to remain quiet during the whole night. The Attar is always made at the beginning of the season when the nights are cool; in the morning early the little film of Attar which is formed upon the surface of the Rose-water during the night is removed by means of a feather, and it is then carefully placed in a small phial; and day after day as the collection is made it is placed for a short period in the sun, and after a sufficient quantity has been procured it is poured off clear, and of the colour of amber, into small phials. Pure Attar when it has been removed only three or four days has a pale greenish hue, by keeping it loses this, and in a few weeks time it becomes of a pale yellow. The first few days' distillation does not produce such fine Attar as comes off afterwards, in consequence of the dust or little particles of dirt in the still and the tube being mixed with it. This is readily separated from its sinking to the bottom of the Attar, which melts at a temperature of 84°. From one lac of Roses it is generally calculated that 180 grains, or one tolah, of Attar can be procured; more than this can be obtained if the Roses are full sized, and the nights cold to allow of the congelation. The Attar purchased in the bazar is generally adulterated, mixed with sandal oil or sweet oil; not even the richest native will give the price at which the purest Attar alone can be obtained, and the purest Attar that is made is sold only to Europeans. During the past year it has been selling from 80 to 90 rupees the tolah; the year before it might have been purchased for 50 rupees. Native stills are let out at so much per day or week, and it frequently occurs that the residents prepare some Rose-water for their own use as a present to their friends, to secure their being provided with that which is the best. The natives never remove the calices of the Rose flowers, but place the whole into the still as it comes from the gardens.

The best plan appears to me to have this removed, as by this means the Rose-water may be preserved a longer time, and is not spoiled by the acid smell occasionally met with in the native Rose-water. It is usual to calculate 100 bottles to one lac of Roses. The Rose-water should always be twice distilled; over ten thousand Roses water may be put to allow of sixteen or twenty bottles coming out; the following day these twenty bottles are placed over eight thousand more Roses, and about eighteen bottles of Rose-water are distilled. This may be considered the best to be met with. The Attar is so much lighter than the Rose-water, that previous to use it is better to expose the Rose-water to the sun for a few days, to allow of its being well mixed,

and Rose-water that has been kept six months is always better than that which has recently been made.

At the commencement of the Rose season, people from all parts come to make their purchases, and very large quantities are prepared and sold. There are about thirty-six places in the city of Ghazee-pore where Rose-water is distilled. These people generally put a large quantity of sandal oil into the receiver, the oil is afterwards carefully removed and sold as Sandal Attar, and the water put into carboys and disposed of as Rose-water. At the time of sale a few drops of sandal oil are placed on the neck of the carboy to give it a fresh scent, and to many of the natives it appears perfectly immaterial whether the scent arises solely from the sandal oil or from the Roses; large quantities of sandal oil are every year brought up from the south and expended in this way.

The chief use the natives appear to make of the Rose-water or the Sandal Attar as they term it, is at the period of their festivals and weddings. It is then distributed largely to the guests as they arrive, and sprinkled in profusion in the apartments. A large quantity of Rose-water is sold at Benares, and many of the native Rajahs send over to Ghazee-pore for its purchase. Most of the Rose-water as soon as distilled is taken away, and after six months from the termination of the manufacture there are not more than four or five places where it is to be met with.

I should consider that the value of the Roses sold for the manufacture of Rose-water may be estimated at 15,000 rupees a year, and from this to 20,000, and from the usual price asked for the Rose-water and for which it is sold, I should consider there is a profit of 40,000 rupees. The natives are very fond of using the Rose-water as medicine or as a vehicle for other mixtures, and they consume a good deal of the petals for the conserve of Roses, or *Goolcund*, as they call it. There are several kinds of essential oils produced from the strong scented flowers in this district, which I will procure and send down to you.

ART. IX.—*Memoranda on the Museum of the Asiatic Society.* By
DR. M'CLELLAND.

A Museum may be considered in the light of a philosophical book, in which language is represented by works of nature and art. If system be important in common undertakings, in a Museum it is every thing; and not only should every object be placed according to the position it occupies in the history of art, or in the system of nature, but the very apartments in which the collections are placed, and the cabinets, and even the glasses in which they are contained, should be conformable to some general plan, as much as possible in imitation of the simplicity of nature. To be able to adopt a plan, requires that we should have something to work upon; and in proposing a plan for the guidance of future operations in the Museum, we cannot be too grateful to those who have by their exertions, within a comparatively short space of time, put us in possession of our present instructive and respectable collections.

To Captain Herbert and Mr. Calder we are not only indebted for extensive geological and mineralogical collections, but as being among the first contributors to the Society's collection of natural objects, which may be said to have commenced in 1828 with the revival of the Physical Committee.

Although a brief space of ten years has only elapsed since our Museum of Natural History was first formed, yet more changes have taken place in that short period among those who have taken an active part in its management, than in any similar European establishment in half a century.

This is one reason why a set of rules should be adopted by which the steady advancement of the Museum may be secured; and another reason for such rules, is the growing importance of the collection itself; which requires on the part of the Society a stricter surveillance over the establishment entrusted with its management than formerly.

Before proposing rules it is necessary to explain the different purposes they are required to answer.

On the subject of Cabinets, it is necessary that they should be chosen with strict attention to the appearance and convenience of the Museum. They should be of two kinds, namely, glass cases for walls, and tables with glazed covers for the centre of the rooms, of the pattern proposed by Mr. Jameson, in imitation of the Edinburgh Museum.

The first description of cases fitted up with shelves will answer for

Papers; a more efficient subordinate establishment might be provided for the Museum; the increased value and extent of the collections seem to me to require more than two native servants, while the carpenters might be exchanged for collectors. If native collectors, on a monthly salary of 6 Rupees each be properly attended to and trained, they would soon put us in possession of most of the insects, fishes, and *crustacea* of Bengal, and all such persons, as well as those employed in the Museum, might be placed under the immediate direction of a well educated youth from one of the public schools. It would be necessary that such a person should be well recommended not only for general acquirements, but also for his taste in Natural History; the latter taste of course we could only expect to find in any youth from a Calcutta Seminary, on the *non fit sed nascetur* principle.

After providing all that is necessary in the way of cabinets, collectors, and efficient establishments for conducting the duties of the Museum, if the funds of the Society should still allow of a specific sum being set apart for the remuneration of a Curator so much the better, although I must confess I should rather see him in circumstances that would render pecuniary remuneration from his colleagues unnecessary. As however it some times happens that science and fortune do not go hand in hand, a nominal salary of 30 Rupees a month might be assigned to the office of Curator. It will be for the Committee of Finance to determine whether after providing for the increased expenses attending our augmented collections, a larger sum can consistently with the receipts of the Society be paid for the object in question.

From the above remarks we may deduce the following rules, which appear to embrace all that is necessary to secure the progressive advancement of the Museum :—

1. The direction of the Museum to be entrusted to the Committee of Papers, and its duties superintended by a scientific individual appointed by the Society on the nomination of the Committee.
2. Although the office of Curator is held to be one of distinction, an allowance of 30 Rupees per mensem is granted by the Society, to be drawn or not according as the Curator may feel inclined.
3. That the subordinate establishments in the Museum shall consist, if possible, of two well educated Europeans* or Natives of India, on a salary of not less than 50 and 12 Rupees per month respectively.
4. That the number and occupation of other servants in the Museum shall vary according to circumstances.

* This is not intended to interfere with the persons already employed in the Museum.

5. That only two descriptions of cabinets are to be admitted into the Museum, namely, glass cases of one uniform pattern for the reception of birds, small quadrupeds and the like, which are to be placed along the walls; and, tables with glass covers of an uniform pattern for the reception of shells, insects, fossils requiring cabinets, geological specimens, and minerals; to be placed along the centre of the apartments.
6. That all objects in the Museum be numbered and entered in Museum books to be provided for the purpose, and that duplicates of birds, shells, insects, and the like, be from time to time transmitted on the part of the Society, with figured lists, names of original donors, &c. to such eminent scientific individuals as may seem most likely to afford correct information regarding them, and who should be requested to return the lists with the names and references inserted opposite each figure or number.
7. That all such communications are to be regularly entered in Museum books, together with such replies as may be received on the subject.

June 4th, 1839.

ART. X.—*Observations on the "Report on the Museum of the Asiatic Society, by DR. WM. JAMESON," published in the Journal for March, 1839. By J. T. PEARSON, Assistant Surgeon, formerly Curator of the Museum of the Asiatic Society.*

To the Secretaries to the Asiatic Society.

GENTLEMEN—A paper by Dr. Wm. Jameson, entitled a "Report on the Museum of the Asiatic Society" having appeared in your Journal for March last, reached me to day; and as it appears to contain reflections upon my conduct while Curator of the Society's Museum; and recommendations, which if I had not made I should have neglected, or been ignorant, of my duty; I request you will do me the favour to lay before the Society the following observations. I perceive you went out of your usual course to give the "earliest publicity" to what you deem Dr. Jameson's "very important" paper; and, therefore, I trust you will do me the justice to publish my reply in the next number of your Journal.

Dr. Jameson begins by stating his disinclination to report upon the state of the Society's Museum, lest he might be considered as "attacking the proceedings of his predecessors." A very proper feeling, but

which, having overcome, he should not have allowed to retain such influence over his report, as to induce him to conceal the names of those, his predecessors, he thought fit to censure. For my part, I wish he had been more explicit, both for his own sake and for mine; for hints and insinuations are difficult for me to deal with; while they leave him open to a suspicion of being one of those who are

“Willing to wound, and yet afraid to strike;”

“Just hint a fault, and hesitate dislike”—

a character, which I should be very sorry did I really think him to merit.

However lest I should be accused of appropriating to myself blame intended for another, conscious of deserving it; I must refer to what was said by Dr. M'Clelland (from whom of all men I least expected an attack) at a late meeting of the Society. Dr. Jameson might easily err from ignorance; Dr. M'Clelland could scarcely do so;—the former possibly never heard much more of me than my name, still less the precise part I took in the management of the Museum; the latter was aware I was one of those predecessors of Dr. Jameson he took precedence to censure*; though, as he did not know the state of the collection of Natural History when I took charge (for I believe he had at that time never seen it) I know not how he can justify his bold comparison.

Dr. Jameson first notices the “*minerals*” and “*rocks*,” and comments in severe terms upon the state in which he found, and left them. With this I have nothing to do. The mineralogical and geological (organic and inorganic) departments were never committed to my care. Mr. James Prinsep kept them in his own hands; and, in justice to him, I beg to say, that although from want of cabinets he could not arrange them; there was, so far as I remember, none of that confusion and damage Dr. Jameson so forcibly bewails. Certainly they were packed in drawers, but they were well known to Mr. Prinsep. I believe most, if not all of consequence, of them, were labelled; and the destruction spoken of is far more likely to have happened in their transmission to the Society, than in their quiet dormitories in the Society's rooms. At all events, as aforesaid, I had nothing to do with the mineralogy, nor geology either.† The zoology was my branch of the

* Sic. in M. S.—Eds.

† I do not know the arrangements made with Mr. Evans; but I believe he had chargè only of the zoological part of the Museum, and consequently was as innocent of the mismanagement (if any) of the “*minerals and rocks*” as myself. I think this due to an absent man. Lieut. Kiltoe's proceedings I know still less of; but he, as well as the Museum Committee, are here to answer for themselves.

Museum ; for this, *as I left it*,* I am answerable, and to Dr. Jameson's notes upon it I shall briefly reply, in the order of his remarks.

Mammalia.—Dr. Jameson states that "many of the specimens of *Mammalia* are exceedingly good ; but others, from their bad condition, require to be replaced as soon as possible." I believe the good specimens are for the most part those procured and set up either by myself or under my superintendence. The bad ones are what were in the Museum before I took charge, and were in a most miserable state, as may be seen from my first annual Report. I left them in the Museum only till better could be procured, on the principle that a bad specimen is better than none.

Birds.—Of the 600 birds mentioned by Dr. Jameson, about 360 were procured and prepared by my exertions—many of them shot by myself ; of the rest I err but little if I say, the greater part would never have reached the Society's Museum, if I had not taken measures, hereafter to be mentioned, for their collection. Of those prepared in my time I have copious notes, and the greater portion of a catalogue made, which is enriched by observations on the manners and habits of the Indian birds by Mr. C. W. Smith. This I did intend to finish, so soon as I could get a little respite from the incessant occupation incidental to the wandering and anxious life I have led since I left Calcutta, would allow ; and I shall be happy to do so as soon as possible, if the Society wish it. In the enumeration of new and rare specimens Dr. Jameson omits the newest and rarest of them all, viz. the *Halcyon amauropterus, mihi*, which I discovered, and the *Eurimynchus griseus*, of which but one other specimen is known.†

* I say *as I left it*, because the Editors of the Journal in a note appended to Dr. Jameson's Report say, that since his departure, short as the time has been, the minerals he arranged have been "swept into chaos by the unguarded hands of *Assistants*." As nearly two years have elapsed since I was Curator, during which the Museum had been in charge of a Committee and two Curators before Dr. Jameson ; surely some allowance might have been made for Dr. Jameson's "predecessors" on the same score ; especially as from the utter failure of the Committee to fulfil the office properly, the whole management was probably left in their time to the "unguarded hands of *Assistants*" only. I think the excuse might have been made for us ; not I trust that I need it, but in common fairness.

† As every one with any pretensions to ornithological knowledge is acquainted with the rareness of this bird, I fear from Dr. Jameson's silence, it has been lost to, or abstracted from, the Museum. I hope the Secretaries will inquire into this ; for it is unquestionably the most valuable ornithological specimen we have. (1)

(1) Dr. Pearson's note.—We have made the suggested inquiry of Dr. McClelland, who replies thus,

"The Museum is at present in such confusion owing to the repairs of the house, that it is impossible to say what is in it, and besides all the tickets have fallen off the birds from damp, as they appear to have been merely fastened with glue."—Eps.

Osteology.—The osteological department is well spoken of by Dr. Jameson. The skeletons he praises were nearly, if not quite, all procured and articulated under my directions. And those who know by actual practice, the trouble of preparing bones of a skeleton; and afterwards the manual labour, and anatomical and mechanical skill requisite to articulate them, will not be disposed to censure me, or withhold their praise from my industrious and willing assistant M. Bouchez; for the value of who's services I am pleased at having another opportunity of recording my thanks.

Ichthyological, Erpetological, Conchological, &c. Departments.—As Dr. Jameson says nothing about these, I shall follow his example, except to observe, that the want of bottles, and means to arrange the specimens, placed them in nearly the same condition as that of the minerals; that I procured most of them; the land and fresh water shells of India in particular were chiefly from my own collection, and so were the insects, except a few presented by Dr. M^cClelland, and one or two other individuals, and some from Chirra Poonjee and Sylhet, which I purchased.

With regard to Dr. Jameson's suggestions—I have to observe, that fitting up the bird-cases with shelves, is doubtless an alteration, but no improvement upon the plan I adopted. Shelves in high cases, like the Society's, obstruct the view of the specimens and darken the cases; and for these reasons I removed them. By my plan the specimens could be systematically arranged, and were so; and in my opinion it admitted of far more being placed in a given space than the shelving system. As to the classification of the birds, I followed that of Vigers, as given in the Zoological Journals, and Stephens' and Shaw's Zoology as being simple, easy of access to common readers, and highly approved of by eminent zoologists. No doubt it has faults, but it is the system (perhaps I should say *method*) best adapted to a Museum where the majority of members are not professed ornithologists; and to change it for that of Cuvier, the chief merit of which is being part of a general systematic work, is I submit, another instance of an alteration being no improvement.

Dr. Jameson next suggests that the cases should be made "air tight by lining the edges of the doors with shamois leather, poisoned with arsenic." I fully agree with him that specimens of Natural History can be preserved here, and I will go further than he does, and say, they can be preserved here not only almost, but quite as well as they can be in Europe; but not by the means he points out. As for making a case air-tight, the thing is impossible; but it may be made tight enough to become continually damp within—a rather curious mode of preserving the specimens. Years

ago I pointed out to the Society, and practised, with complete success, the plan I suggested of keeping the cases open as much as possible, particularly in fine weather. When specimens are well aired, and the pernicious practice of shutting them up in tight cases is abandoned, they can be kept as well in Bengal as in England. I had some in my private collections which I prepared seven years before, and in so perfect a state as not to have lost a feather;* and I venture to assert that no one while the Museum was under my charge ever saw one of the specimens prepared from fresh birds, either in a decayed or damaged state. In fact, nothing will keep in a damp climate unless frequently aired, whether animal or vegetable specimens, stationery or linen, silks or satins, pack them in tin and air-tight boxes how we may,—a fact which will be borne testimony to by every old lady in Bengal.

Again with regard to Dr. Jameson's "*desiderata*;"—I regret that neither he himself, nor any of his friends, consulted the Journal, or inquired what had been done by those predecessors he assumes to be so worthy of censure. Had he done so, he would have found, that I did "get up under the auspices of the Society" the instructions or "memorial" as he terms it, (which forms the first of his list of "*desiderata*") giving brief instructions how to collect, prepare, and pack objects of Natural History; and that it was extensively circulated both by Mr. Prinsep and myself. This memorandum, moreover, was followed by a very long paper of no less than ten closely printed pages in the number of August 1835, of the Journal of the Asiatic Society; in which were detailed the plans followed by the best taxidermists in Europe, and the result of my own experience of eight years in this country. A further experience of four years has given me but little to add; so I think the Society cannot do better than re-print and circulate that paper. I shall be happy to make a few alterations in, and additions to it, and Dr. Jameson will perhaps favour us with his remarks, or some account of such methods as may have been recently brought into notice in Europe; while Dr. McClelland can append a list of specimens required by the Society. When my paper was written every thing was welcome, and consequently no such list appended. These papers were eminently successful; great numbers of specimens having been sent in soon after their having been circulated: probably copies of the shorter one are still in the Secretary's office.

* For this see the *Felis kutas, mihi*, in the Society's Museum, which I mounted in December 1831; and when I left Calcutta in 1837, nearly six years afterwards, its preservation was so perfect, that though a heavy specimen, I lifted it up by the hair of the back without injury. I need scarcely say it had never been shut up in an air-tight case.

I believe I have now replied to the zoological part of Dr. Jameson's observations, and shewn—First, that the censure he bestows does not belong to me; secondly, that those parts of the Museum he praises were especially under my care; and, thirdly, that his suggestions for the improvement of the zoological department of the Museum are either pernicious, or have been anticipated years ago. I shall now proceed to state what I did while I held the office of Curator, so that he, or any body else who feels disposed to the work, may deal out upon me the censure he may consider me to merit; for, as I wish not to usurp credit which does not belong to me, I am not any longer inclined to be under imputations of misconduct and neglect, for the errors and omissions of others.

I think it was so early as the year 1830 that I proposed to Sir E. Ryan, then, as now, the most disinterested lover of science in the Society, the establishment of a Museum of Natural History for the Asiatic Society. I was at that time at Midnapore, and the suggestion, though favoured with his support, was too much in advance of the feelings of the day, almost exclusively confined to the love of Oriental literature. On removing to Calcutta in 1832, I proposed the matter to the Society at large; but nothing could be done till July 1833, when I was appointed, much against my will, honorary Curator of the Museum of Natural History. This I nominally held till March 1835, and it was but nominally, to please Mr. Prinsep, and against my own wishes and judgment; for no assistance was given me. I could but ill afford to keep up additional expenses to convey me to the Museum; and more than all, I felt that my circumstances were then such as not to warrant my so giving up time, which I ought to employ to the benefit of my family; therefore I resigned the situation, and proposed, that a person properly qualified should be sent for from Europe, to fill it. The subject was hereupon referred to the Committee of Papers (as it is reported in the Journal of the Asiatic Society, but as I think, to a Sub-Committee) for the purpose of considering the question. This Committee consulted Baron Hugel, and the majority agreed that for various reasons, stated in their report, it would be better to employ a Curator already in the country, whose services could be procured at less cost, and devote part of the sum proposed, for the contingent expenses. To this the Society agreed, and I was elected Curator in April 1835, as an experiment for one year.

When I took charge of the Museum no order nor arrangement had been observed; specimens of the arts and sciences of India, and the neighboring countries, of their religion and manufactures, antique and modern, were mixed with those of Natural History in abundant

confusion. The cases were dirty, and falling to pieces, with wooden doors ; the rooms damp ; and the specimens decaying. All this was reduced to order. In the words of my first annual report—“ The first step was to divide the Museum into two distinct parts ; one consisting of the works of art ; the other, of the productions of nature. The numerous valuable specimens of the former being lost in the rooms below, were removed into the entrance hall, staircase, and gallery, where they now are, and where they are seen, as we all know, to the greatest advantage ; and their removal allowed of the apartments they occupied being entirely devoted to the Natural History portion of the Museum.

“ On examination, the specimens of Natural History were found, for the most part, in a very neglected state. In Osteology they were numerous, and some of these very valuable ; but many were more or less mutilated, and the teeth of the skulls lost, while no catalogue, nor even memorandum of the greater portion could be found. The first care was to remedy this : the broken specimens were repaired, so far as they could be repaired ; and a catalogue was made which includes every thing concerning them that can be gleaned from the Researches and other quarters, whether as to the specimens themselves, or the names of the donors. In making this catalogue some difficulty was experienced from the want of any notices of the specimens, and from there being no objects of comparison, by which to discover the species of an animal, of which we had perhaps but a horn, or a single bone.

“ While this was going on, attention was also directed to the formation of a cabinet of reference to compare the fossil remains in which the Museum is so rich with the living congeners of the animals to which they belonged. This is in its very nature a tedious and laborious work ; but already there have been articulated, and set up, skeletons of a Monkey, Weasel, Cat, Rat, Musk-deer, Horse, Parrot, and Tortoise. The Rhinoceros, which was before but badly put together, has been made the most of that its condition would allow ; and an Elephant's skeleton,* and those of another Horse and Tortoise are being prepared. As this branch of the Museum is of the greatest importance, I am anxious to render it as complete as possible ; and with this view have written to various individuals likely to further our object, who have promised the bones of the Camel, wild Buffalo, large Deer of various kinds, the large Bullock of Upper India, the Tapir, and the Alligator ; and we may expect soon to receive them.”

But for full information I beg to refer to the report, which was pub-

* This was afterwards found unfit for articulation, and I procured another.

lished in the Journal of the Asiatic Society for April 1836 ; where it will be seen that in one year the Museum put on a different aspect from what it presented when I took charge. The damp was got rid of ; most of the cases were altered and repaired ; the decayed specimens were restored as far as possible ; an Osteological catalogue was made ; that of the Birds began ; nine complete skeletons were articulated ; twelve specimens of *Mammalia*, and 133 birds were mounted, and more than 500 specimens of *Vertebrata* ; 150 *Molusca*, some *Crustacea*, and several hundred insects were added to the Museum ; and the Committee was so well satisfied with my exertions as to resolve—" That the Committee are highly pleased with the arrangements adopted by Dr. Pearson in the Museum, and with the progress it has made under his supervision ; and they have no hesitation in recommending to the Society a continuation of the same system which has proved so beneficial and effective during the experimental year."*

My copy of the Journal for the first months of 1837 was lost in a boat on the Ganges, and I have but a draft copy of my report for that year. But from this I learn that in the second year, the arrangements of the last year were followed out by improving the appearance of the apartments by matting the rooms ; while by free ventilation the damp, from which so much inconvenience was formerly experienced, altogether disappeared. The remainder of the cabinets, save one, were glazed, and made ready for specimens ; and subscriptions were set on foot for adding to them. There were mounted in the Museum, twenty-eight specimens of *Mammalia*, two hundred and thirty birds—ten of large size ; and sixteen reptiles ; and eight skeletons were prepared and articulated. Besides these there were presented twenty-eight osteological specimens. Most of the reptiles, the fishes, and invertebrated animals are not enumerated in my draft of the report ; but I believe they amounted to several hundred specimens.

Thus in two years there were prepared by myself and under my superintendance,

17 Articulated Skeletons,
363 Mounted Birds,
40 Mounted *Mammalia*,

and a large collection was made, principally by myself and my own servants, of other vertebrated and invertebrated animals. The skeletons of all the large *Mammalia* we have were thus procured. Those of the Orang-Outang, Monkey, Weasel, Cat, Rat, Musk-deer, Cow, Horse, Ass, Hog, Rhinoceros, Parrot, Adjutant, Tortoises, &c., were procured

* Journal of the Asiatic Society, April 1836, page 253.

entirely by my exertions. When the Orang-Outang* died its owner directed the skin to be tanned, and the carcass thrown away. As I had long had my eye upon it, I soon found out what had been done, hastened to the owner, and by recovering the greater part of the bones (all save a few of the feet, I think) had the pleasure of setting up in the Museum one of the most valuable skeletons in the world. The carcass of the Rhinoceros was sent to Dr. Grant by Mr. J. H. Barlow, who shot him; Dr. Grant gave it to me, and I presented it, with his consent, to the Society in Mr. Barlow's name. In fact I procured all these specimens by my own exertions (for there was not one in the Museum when I became Curator) as well as the skeleton of the Elephant, which was about being articulated when I gave up the office.

Besides these things I maintained at my own expense an extensive correspondence with various individuals to induce them to send specimens to the Museum; and represented to the members of the Government, with an urgency which I fear was sometimes thought scarcely becoming, the importance of expeditions undertaken into countries but little known, being accompanied by persons qualified to make zoological collections. For instance, I represented to Sir C. Metcalfe, that the attention of the Assam Tea expedition should be directed as much as possible to this object, and I believe it was in consequence of this recommendation, that any zoological collections were made in that expedition. I did the same when Dr. Richardson's expedition into the Shan country was contemplated; and I have reason to believe he would have been accompanied by an officer expressly for this purpose, had he not set out sooner than was expected. In short, I can safely say, I lost no opportunity of acquiring specimens for the Museum, and of advancing zoological knowledge. All this was not done in a corner; but is well known to the President, to some of the Vice-Presidents, and to the Members of the Committee of Papers of the day. And it was done too at a time when an up-hill battle had to be fought. No Government allowance was then given to the Society; and a great number of the members of most influence were opposed to spending their money on a Museum of Natural History. Indeed so begrudgingly were the necessary expenses bestowed, that I had both years to advance money, every month, for contingent expenses, at my own risk, while I paid the salary of young Nicholas, M. Bouchez's nephew, out of my own pocket, and thus brought him up as another valuable Assistant in

* Though here called an Orang-Outang, for want of a name which an English reader can well understand, I believe the specimen to be the female of the *Simia Satyrus*, the Gigantic Ape shot by Capt. Cornefoot in Sumatra, which was described in the Researches, and whose jaw bone is in the Museum.

the Museum. I beg not to be misunderstood as assuming any merit for these things ; it was my duty to do them, and it is to shew I did not neglect my duty, that I venture to mention them.

With regard to catalogues, it was no use to prepare one of the *Invertebrata* till a collection could be made worthy of a catalogue being prepared ; nor of the *Vertebrata*, which could not be displayed. But of the former the shells were all fixed upon ebony boards, and labelled with their names and locality—a measure which obviated the necessity for a catalogue, and rendered the making one an easy matter ; while of the latter, I both labelled and made a catalogue of the osteological specimens, collecting, at no little pains, all the information that could be procured about them, and the names of the donors, from the Researches and Records of the Society. The *Mammalia* and Birds were all labelled in a similar manner, and a catalogue prepared of a portion of the former, and more than 200 of the latter. These catalogues I shall be happy to send to the Society ; the two first immediately, if so required, though I had rather delay doing so till I can copy out and finish the third.

I have now given a fair exposition of my conduct, and furnished any person who may be inclined to comment upon it with ample materials. I hope I have done it in a proper spirit, and avoided any needless asperity of remark : it has been my aim to do so, to defend myself, to offend none ; but if I have unfortunately been too harsh, I am sorry for it, and hope some allowance will be made for the feelings of a man who knows that so far from deserving censure for having neglected his duty as Curator of the Museum, he is fully entitled to the thanks the Society accorded him when his services were fresh before them ; and that but for his exertions there would not at this moment have been a Museum of Natural History at all.

I have only further to remark, that placed in a public situation as a servant of the Society, I had reason to expect my proceedings would be narrowly watched ; and I have no objection to the criticism which by accepting the situation I courted. But I have a right to demand that the criticism should be fair ; and that I should not be censured for the blunders or neglect, (if such there were) of others. I pretend to no profound knowledge of Natural History—a science in which, (as I have pursued it as an amusement, and a relaxation from the more serious, and to me more important, study of my profession) I am probably inferior to Dr. Jameson and many others in the country ; but I yield not to him, nor to any one else, in the faithful performance of any duty I venture to undertake.

In conclusion, I do not apologise to yourselves, Gentlemen, for trespassing so long upon your pages, for it is in the very nature of a defence to take up more room than an attack; and having published the attack, I am sure you will do me the justice to publish my defence; and the same sense of justice will prevent you from prescribing its limits; while I should be wanting in respect to the Society, if I failed to do my utmost to demonstrate that one, whose services they so long thanked, and paid for, did not unworthily receive their favours.

I have the honor to be, Gentlemen,

Your most obedient humble servant,

Darjeeling, 24th June, 1839.

J. T. PEARSON.

ART. XI.—*Proceedings of the Asiatic Society.*

(Wednesday Evening, the 1st May, 1839.)

At a Meeting of the Asiatic Society held in the Grand Jury Room:—

The Honorable Sir E. RYAN, President, in the chair.

Read the Proceedings of the last Meeting.

Dr. MARTIN was proposed by Dr. O'SHAUGHNESSY, seconded by the President.

Dr. BAIN was proposed by the Officiating Secretary, seconded by the BISHOP of Calcutta.

Professor AGASSIZ was proposed as an Honorary Member by the President, seconded by the BISHOP of Calcutta.

The Nomination was referred to the Committee of Papers.

Read a letter from the Secretary of the Royal Asiatic Society, acknowledging the receipt of presentation copies of Oriental publications, forwarded by the Society.

Read a letter from Professor LASSEN to the address of Mr. JAMES PRINSEP, proposing that the Society should establish an agency in Bonn for the sale of Sanscrit publications, and bearing warm testimony to the great importance of Mr. J. PRINSEP's recent discoveries; requesting also information on the subject of specimens of birds which may be procurable here.

Resolved—That the thanks of the Society be presented to Professor LASSEN for his liberal proposal in respect to the agency for the sale of Oriental publications, which appears calculated to be very beneficial to the Society, and that the Officiating Secretary be requested to communicate with him on the subject, stating that the Society has entirely left with him the selection of an agent in Bonn for the sale of Oriental publications.

The Officiating Secretary then read several applications for the situation of Curator, vacated by the departure of Mr. JAMESON, but as the candidates' qualifications had not been considered by the Committee of Papers to reach the standard required by the Society,—

It was proposed by Dr. O'SHAUGHNESSY, seconded by Captain FORNES—That Dr. M'CLELLAND be requested to accept the office of Curator, on the usual allowances.

Dr. M'CLELLAND returned thanks to the Society, and expressed his readiness to forward the views of the Society in any manner that he was able; but

he regretted that in consequence of his official duties he would not be able to devote more than two hours in the morning to the duties of the Museum. He further stated, that if he accepted the situation on the usual allowances he should beg to condition, that as long as he was Curator no subscriptions be received from members for the preservation of the various collections in the Museum—the whole amount of the salary should be devoted to that object.

The President said that though the offer was very liberal, yet the Society he thought ought to meet from its own funds all such expenses as might be recommended by Dr. M'CLELLAND, without sacrifice to his personal allowance. Dr. M'CLELLAND consented that the appointment should stand on this footing.

Read a letter from Dr. G. VANDENBURGH, of Bonn, touching a box of shells sent by the Society. The names having been detached from the shells, he solicited the Society to transmit another supply, correctly labelled and packed. Resolved—That the letter be referred to the Committee of Papers.

Library.

The following Books were presented:—

Proceedings of the Geological Society of London, for 1837, 5th Part, Vol. 2—Part 2, of 1838 and Vol. 2, Part 3, for 1839—*by the Society.*

History, Antiquities, Topography, and Statistics of Eastern India, by Mr. MARTIN, London 1838, royal 8vo. 3 vols.—*by the Government of India.*

Pickering's Remarks on the Indian Languages of North America—*by the American Philosophical Society.*

Ditto Eulogy on Dr. BOWDITCH, Cambridge, 1838,—*By ditto.*

Translation of the Arabian Nights, by Moonshee SHUMSUDEEN AHMUD, in Hindee, Vol. I,—2 copies.

Mathematical Principles of Mechanical Philosophy, by the Rev. J. H. PRATT—*by the author.*

The following received from the Booksellers:—

Lardner's Cabinet Cyclopædia on Probabilities.

History of British Birds by W. YARRELL, Nos. 1 to 9.

Museum.

Various skins and specimens were presented in the name of Mr. JAMES MIDDLETON.

Antiquities.

The Officiating Secretary exhibited to the Meeting drawings of Col. STACY's coins cut on type-metal by HURREEMOHUN, a Native Artist, employed in the Calcutta Mint.

Read a letter from Mr. T. H. SALE, of Sylhet, forwarding a facsimile of an inscription taken by him at Gohatee.

A similar donation was received from Lieut. MCGREGOR, obtained from the ruins of a fort he was taking down. The character in which the inscription was written was clearly legible, but no meaning could be gathered from the sentences.

Captain JAMES LOW forwarded a paper on the Laws of Siam. Referred to the Committee of Papers.

In pursuance of the resolution of the last Meeting, Mr. SUTHERLAND stated that the Commentary compiled by PREMCHUND NYARUTRA was more compendious than the works from which it was taken, but seemed to him calculated to answer all the purposes required. It was a continuation of that printed in the first volume of the work in question,

and had the same merits and defects, but in consequence of some doubt as to whether the Commentary so prepared was likely to be acceptable to Sanscrit students, Mr. JAMES PRINSEP had sent to Benares for the Commentary at length.

It was therefore proposed by Mr. H. T. PRINSEP, seconded by Captain W. N. FORBES—That the best mode of clearing up the difficulty would be to send copies to the Sanscrit Colleges of Benares and Calcutta, and also to Messrs. HODGSON and WILKINSON, requesting them to favor the Society with their opinion on the merits of the work in its present form, and the expediency of continuing its publication.

The proposition was unanimously agreed to.

Read an application from Newab TAHAWUR JUNG, requesting the Society to make a representation to Government on the subject of a subscription for a certain number of copies of the "*Sharaya Islam*," the publication of which had been undertaken by himself in conjunction with the Society, and copies of which might probably be required for the use of the Courts or of the Seminaries of Education supported by Government.

Resolved that the request be complied with.

Col. BENSON handed over to the Officiating Secretary a letter he had received from the vicinity of Amarapoora, dated 23d March, containing an account of an awful earthquake that had occurred in that country.

On the conclusion of the general business of the evening, Mr. H. T. PRINSEP stated that he was happy to have it in his power to inform the Meeting of a very distinguished honor that had been conferred upon a Member of the Society, whose selection for the unsolicited distinction was a compliment paid to the whole body.

It had fallen to him, Mr. P. stated, to be the official channel for transmitting to Mr. HODGSON, of Nipal, the diploma and letter of appointment as Chevalier of the Legion of Honor of France, which the enlightened Government of that nation had conferred upon this gentleman, in acknowledgment of his successful labours in the elucidation of various questions of Budhistical faith and doctrine, and in the discovery and procurement of the volumes "*Kahgyur*" and "*Stagyur*," in which a vast mine of curious literature had been concealed, no less than as a tribute due to his zeal in discovering and making known a great variety of new objects of Natural History and Science.

It was heretofore a rare thing to see the Societies of Europe paying tribute to the worth and services rendered to Science and Literature by the learned, in this distant quarter; but of late years their merits had worked out for them a reputation which was now universally acknowledged. Still admission on the ground of literary and scientific attainment to the distinctions conferred by the Sovereigns of other countries was a compliment that Mr. HODGSON only had yet received; and Mr. PRINSEP added, he felt assured that the Society would be glad to have the circumstance placed upon the Records of its Proceedings. Mr. P. then communicated a copy of the diploma of appointment as Chevalier of the Legion of Honor which had just been received, having been transmitted through the Honorable Court of Directors to the Government, to be forwarded to Mr. HODGSON. Ordered to be deposited.

of locomotion. An explanation of regeneration, and the course of life by which the future birth and condition are affected. By what course of action the mind is to be brought into a state of purity and immunity from worldly passion. What sins are fallen into from association with women and loose companions.

On the measurement and depth of the Ocean.

On mental abstraction and worship. On food. What is proper and what improper to be eaten. On times for worship with reference to phases of the Sun and Moon. On behaviour to Gooroos and persons of sanctity. Ditto in assemblies of Jains. On logical proofs and the means of verification.

On the twelve motives of action in man.

On the *Saméra* mountain, its locality, height, &c. It is described as having day only on one side at a time, the other side being in the shadows of night, and as being always to the north of every other country. This description would make it the north pole.

On the size of the Earth and its seven Dweeps.

On the *Bharut Barta*, that is the civilized world of Hindoostan, and the *Ajyya Barta* from the Himalaya to the Bind mountains in Rajmahal, including Behar, which is described as the site of all excellence and the birth-place of *Bhugwan Sakhya Boodh*, and full of sacred places of pilgrimage, of learned men, and authors of holy books.

The work closes with two slokas in praise of JINESHWAR, the author of the original treatise in the Maghadha language. The commentator describes him as the author of Granthas, and his own Gooroo or spiritual teacher. The Pundit KAMALAKANTHA concludes the meaning to be, that he is the author of this particular work the "*Sama Vaya*;" but the Jain Pundits declare the treatise to be of much greater antiquity than the commentary, and construe the expression "author of Granthas" as merely describing him as an author, not as the author of the particular work.

Ordered that the book be deposited, and that the thanks of the Society be conveyed to Col. ALVES for this valuable addition to its Library.

Physical.

Various specimens of fossils were forwarded for presentation by Dr. G. G. SPILSBURY.

Read a letter from M. A. D. DE CASANOVA, intimating that His Majesty the King of Oude has forwarded through his Minister the Nawab MAHAMED ALI KHAN, for presentation to the Society, skeletons of an Elephant, of a Camel, and of a Tiger, prepared by the writer of the letter.

Read a letter from H. T. PRINSEP, Esq., transmitting copy of a letter from Mr. Assistant Surgeon PEARSON to his address regarding specimens of a fragrant wood, leaves, and bark, found by him in the Darjeeling hills—also of a mineral occurring in the same locality.

The tree in question is doubtless the *Cinnamomum tamala*, common on the lower range of hills, and which affords the *Tezpat* of the bazars. The mineral is identical with the coarse Plumbago discovered by Dr. CHAPMAN in 1837.

To the Officiating Secretary to the Asiatic Society.

Political Dept.

SIR,—I am directed by His Honor the President in Council to transmit to you the enclosed copy of a letter from Mr. Assistant Surgeon PEARSON, under date the

10th ultimo, together with specimens of a fragrant wood and other articles found in the mountains of Darjeeling, and to request the opinion of the Society as to whether the articles are a valuable product.

I have the honor to be, Sir,

Your most obedient humble servant,

Fort William, 12th June, 1839.

H. T. PRINSEP,

Secy. to the Govt. of India.

To H. T. PRINSEP, Esq., *Secretary to the Government of India, &c. &c. &c.*

SIR,—I have the honor to forward for the consideration of the Government, and presentation to the Asiatic Society, should it be deemed fit, a specimen of a fragrant wood found in these mountains, the leaves of the tree of the same, a gummy substance found in the Morung, and a mineral I discovered between Pemkabarry and Idwiseangurry; in the hope that they may be found useful.

The tree from which these specimens were taken was about nine inches in diameter, and twenty-five or thirty feet high. The bark and the wood appear to be equally fragrant, and the odour to be developed by the application of a gentle heat; along with the wood are a few detached pieces of bark.

The leaves of the above tree are called *Tej-Putta*, or *Tez-Path*, or some such name, as I am told; and are used in curry as a *mussala*. If so, the tree is probably well known to others, though new to me; but I doubt if the fragrant quality of the wood is known.

The gum is common in the Morung, and may be collected in large quantities if thought worth the trouble.

The mineral is in a considerable quantity by the road side. I have not the means of analysis, but it appears to me to possess some of the qualities of plumbago. I had neither means nor time to search for purer specimens, but if my conjecture is correct, this mineral promises to be useful for machinery, and some of the purposes of inferior black lead. I have said that it appears to be a sort of plumbago, and I may point out how near some of it looks allied to micaceous schist, from whence, again, the transition is easy to some of the forms of gneiss.

I have, &c.

Darjeeling, 10th May, 1839.

(Signed,) J. T. PEARSON,

Asst. Surgeon.

(True copy,) H. T. PRINSEP,

Secy. to the Govt. of India.

Read extracts from a letter from M. Alphonze BAZIN, Baron du Chanay, &c., with reference to a project of an Electro-Hydraulic Telegraph for effecting correspondence between Calcutta, London, and the rest of the world. An analysis of the memoir was given, specifying construction and expenses. The illustrative drawings and plans were also exhibited.

Proposed by Dr. O'SHAUGHNESSY, seconded by the LORD BISHOP of Calcutta, and carried unanimously—That a Sub-Committee of the Society be appointed to examine and report on the project to the next Meeting, to be held in the first week of August.

M. Alp. BAZIN communicated through the Secretary to the Meeting, that his political engagements, and the unsettled state of European affairs, rendered it absolutely necessary that his plans should be examined and reported on without delay, and he named the 12th July as the longest period he could wait the decision of the Society.

It was thereon explained to M. BAZIN by the Secretary, that the rules of the Society did not permit a reply being given within the period proposed; and that the project was so vast and extensive that it required to be studied with proportionate deliberation. M. De BAZIN still pressing for an early reply, it was proposed by the Honorable Sir Edward RYAN, President, seconded by the Honorable Sir John Peter GRANT, and unanimously agreed to—

That the memoirs, plans, estimates, drawings, &c. communicated by M. BAZIN be returned to that gentleman with the usual acknowledgments.

The Officiating Secretary then read the following Memorandum on the Society's finances, income, and expenditure:—

To the President and Committee of Papers of the Asiatic Society.

GENTLEMEN,

I have to solicit your attentive and immediate consideration of the circumstances I am about to bring to your notice regarding the state of the finances of the Society.

The subject divides itself under two sections—1st, the liabilities of the Society for past causes of expenditure; and, 2d, the current or monthly expenses on the scale at present sanctioned.

Our liabilities under the first head amount to the large sum of Rupees 16,530, and proceed from three items—7348 Rupees due to the Baptist Mission Press for the publication of the "*Mahabharata*" &c.; 1182 Rupees to Bishop's College Press, for the publication of the Volume of the Transactions just issued; and 8000 Rupees to Messrs. Sherriff and Co. due on the completion of the new buildings now in progress.

Our current *Monthly Expense* meanwhile amounts to 1373 Rupees, as specified in the undermentioned items:—

Oriental Publications,	500
Establishment for the custody of Oriental Books transferred from the College of Fort William,	78
"Journal" supplied to 126 members at 1/8 per mensem, ..	207
Secretary's Office,	85
Museum Establishment, including allowance to Curator of 150 Rs.	238
Museum Contingencies,	77
General Contingencies,	25
Library,	163

(*annas and pice not included*) Total, Rs. 1,373

The balance now in hand of our funds in Government Securities amounts to Co's. Rs. 20,800 at 4 and 5 per cent., of which 4730 Rs. have accumulated from the monthly Government allowance of 500 Rs. as shewn in the margin, and are applicable to no other purpose but Oriental publications.

Our *Monthly Income* stands thus:—

Average payments by members, as shewn by experience of four past years,	400
Government grant for Oriental publications,	500
Ditto ditto for custody of Oriental Books,	78
Ditto ditto for Museum and Library charges,	200
Interest on balance, allowing for the full payment of debts,	28

Total, Rs. 1,206

Shewing an excess of expenditure beyond our income of 167 Rupees per mensem.

We have consequently to consider the best mode of discharging our accumulated debt, and of reducing our monthly expenditure so as to bring it clearly and certainly within our monthly income.

With reference to the contract with Messrs. Sherriff and Co. for our new buildings, a resolution of the Society directs our defraying the amount of this item by the sale of the necessary sum from our Government Securities. This will reduce our capital to 12,800 Rupees, yielding a monthly income of 42 : 10 : 8.

The bill to the Baptist Mission Press is so long due, and of such considerable amount, that we must take immediate steps to place it in course of liquidation. The Bishop's College Press demand has been made, moreover, under circumstances which render it a matter of justice to that establishment that the amount should be paid with as little delay as possible.

I have therefore to beg your sanction for a further sale of our Securities to the amount of 1182 Rs. to be paid to Mr. Ridsdale for the part of the "Transactions" now published. This reduces our capital to 11,618 Rupees.

To meet the Baptist Mission Press claim, I propose—1st, that we make over the balance of 4730 Rupees, applicable to Oriental publications, and accumulated from our Government allowance of 500 Rs. per mensem; and, 2dly that for the balance of 2618 Rs. of the same account we pay a monthly instalment of 500 Rupees, applying thereto the allowance we receive from Government for Oriental publications; and that pending the payment of these instalments, we discontinue all Oriental printing, translations, &c. by which a further debt must otherwise be contracted.

Our capital thus freed from all incumbrance will be reduced to the scanty sum of 6888 Rupees.

Should these propositions be agreed to, we will still possess funds to the amount of 6888 Rupees, which it seems expedient to reserve for one object alone, namely the publication of future volumes of Transactions of the Physical Class.

I must here mention two sources of expenditure almost immediately before us, at all events to be met in the course of the year; I allude to the forthcoming volume of Researches of the Physical Class, and the furnishing of the new Museum apartments. For the former, as already shewn, I fear we must have recourse to our "Securities." The means for the latter (which may be estimated at about 1200 Rupees) I would propose to collect by subscription among the members of the Society.

Current Expenditure.

From the items above specified, it is evident that we now expend per mensem 167 Rs. beyond our income. We must accordingly either reduce our establishments within corresponding limits, or devise some means of increasing our permanent pecuniary resources.

I proceed to take up the items of our expenditure *seriatim*, which will enable us to see where the pruning knife may be most advantageously applied.

1. *Oriental Publications*—500 Rupees.

This sum we are bound to expend, whether in new works, or in paying for the old by the instalments, as above suggested.

2. *Journal*,—supplied to 126 members @ 1/8 per No. and 12 Nos. to learned Societies.—207 Rupees

I wish heartily it were in my power to offer the Journal to the Society on more favorable terms, but the bills circulated to the Committee for the first quarter of the periodical, shew that it is only the support of the Society to its present extent that can permit the continuance of the Journal in a respectable shape. The plates alone for No. 4 will cost over two hundred and seventeen rupees.

The question as to this item of expense thus evidently becomes one of the existence or discontinuance of the Journal. I am glad to say we have not lost more than six subscribers since the commencement of the New Series—not quite the average number of secessions in the same period of previous years.

3. *Secretary's Office and Contingencies—Items of expense :—*

Salary to Herambanath Thakoor,	60*
Sirkar,	10
3 Peons,	15
Stationery, Postage, Lighting, Wax-cloth, Cooly hire, &c.	25
Total, Rs.	110

* This Officer's salary was increased from Sa. Rs. 40, (Co's. Rs. 42 : 10 : 8) by a vote of the Society in January of this year.

4. *Museum—Total charge, Rs. 305.*

<i>Items.</i>	
1st Taxidermist,	50
2nd Ditto,	12
2 Carpenters @ 8/	16
2 Farashes @ 5/	10
	88
Curator, on scale paid to Messrs. Pearson, Evans, and Jameson,	150
Contingencies on scale of last year (exceeded in the months of this year)	77
Total, Rs.	305

With reference to this Department, Dr. M'CLELLAND has favored us with a memorandum to the Committee, which I have had the pleasure to circulate in original.*

Dr. M'CLELLAND in this Paper gives a brief History of our Museum—glances at the principles on which it should be arranged—offers suggestions as to the furniture required for our new rooms—and presents a plan (which appears to me an excellent one) for securing a correct nomenclature, by a system of correspondence with acknowledged authorities at home. Dr. M'CLELLAND then notices the expenditure for the past year in this Department, and which exceeded the Government grant of 200 Rupees monthly, by about 100 Rupees per mensem (total 1171 Rupees) from which only 240 Rupees were expended on cabinets or other permanent articles.

Dr. M'CLELLAND observes that the Head Taxidermist cannot write, and therefore cannot be entrusted with any important charge beyond his manual duties. The necessity however of having some well-informed man constantly in attendance to wait on visitors, &c. is justly pointed out, and it is recommended that the Assistant Librarian, Mr. BOUCHEZ, who now receives 30 Rupees, be appointed to the charge on an increased salary, say to 50 or 60 Rupees.

* Inserted in this Number, page 415.

By this arrangement from 70 to 80 Rupees monthly would still be available for petty expenses, without exceeding our Government allowance "exclusive of cabinets and Curator's salary."

Dr. M'CLELLAND then proposes that the office of Curator should be *honorary* and *temporary*;—that instead of permanently employed carpenters, native shekarees and collectors on the same allowances, be maintained; lastly, that some well educated youth, having a taste for Natural History, should, if possible, be selected from one of the public Schools to conduct the duties of the subordinate establishment of the Museum. But this seems to be unnecessary were the Assistant Librarian employed as advised by Dr. M'CLELLAND in the first part of his Paper.

Dr. M'CLELLAND concludes by stating, that he does not object in *principle* to our maintaining a *paid* Curator, and that "should the means exist after defraying *essential* expenses," that some specific sum "a nominal salary of 30 rupees per mensem, for example, be given to the Curator, or a larger sum if consistent with the Society's means."

I have also circulated a copy of the "Rules for our Museum" which Dr. M'CLELLAND suggests, and I now beg leave to propose, that they be adopted, with this modification, that "the Curator be requested to accept the sum of 50 rupees per mensem for his "*conveyance expenses*," the Society at the same time placing on record a public declaration of their obligations to Dr. M'CLELLAND, for the liberality and zeal for the interests of Science he displays on this occasion.

It will be necessary also to allow a Writer and Duftury to enter the correspondence, and keep the books of the Museum.

This arrangement will reduce the Museum Expenditure as follows:—

Reduced Museum Scale:—

Curator's conveyance allowance,	....	50
Head Taxidermist,	....	50
Second Ditto,	....	12
Attendance of Assistant Librarian,	....	20
1 Shekaree,	....	8
2 Farashes @ 5,	....	10
2 Collectors,	....	16
Writer, Duftury, and Contingencies, say,	....	34
		Total, Rs. 200

5. *Library.—Items of expense.*

1 Librarian,	....	100	0	0
1 Assistant Ditto,	....	30	0	0
1 Duftury,	....	8	0	0
2 Derwans,	....	12	0	0
1 Farash,	....	5	0	0
1 Gardener,	....	4	4	0
1 Sweeper,	..	4	4	0
1 Seculgur,	....	2	2	0
Contingencies,	....	5	0	0
		Total, Rs. 170	10	0

At present I do not think it possible or desirable to effect any reduction in this Department. Should any vacancy occur while our funds still demand reduction of ex-

pense, we might promote the present Assistant Librarian on a small advance of salary; this would save about 80 rupees per mensem. But such a contingency it is to be hoped is far distant, as the Society is most fortunate in now possessing in M. *CSOMA DE KOROSI* a Librarian of equal celebrity and erudition.

I now beg leave to recapitulate briefly the measures I would suggest in order to extricate us from our old debt and bring our expenditure nearly within our income.

1st. The immediate payment of 1182 Rupees to Mr. Ridsdale, of Bishop's College Press.

2d. The payment of 4730 Rupees cash, and an instalment of 500 Rupees per mensem to the Baptist Mission Press, and the suspension of Oriental publications until the debt of 8000 Rupees is liquidated.

3d. The arrangement of the Museum on the scale above noted.

4th. The opening of a subscription for 1500 Rupees to provide furniture, cabinets, &c. for the new rooms.

On completing these arrangements our *Expenditure* will be:—

Library,	....	....	....	170
Museum, ..	..	..	....	200
Journal, ....	....	....	....	207
Oriental Publication Debt,	..	..	....	500
Custody of Oriental works, ....	....	....	....	78
Secretary's Office,	....	....	....	110
				Total, Rs. 1,265

And our *Income* :—

Government allowance for Oriental publications,	500
Ditto for the custody of Oriental Books,	78
Ditto for Museum,	200
Average of Subscriptions,	400
Interest on Government Securities ..	28
	Total, Rs. 1,206

shewing, lastly :—

Income, ....	....	....	1,206
Expenditure ....	....	....	1,165
			Excess of expenditure still, Rs. 64

To meet this deficit we must unfortunately draw on our scanty cash balance every month until some opportunity presents itself for bringing our income and outlay on an exact par; meanwhile we must adopt one principle firmly, namely—"to allow no expense under the item of 'Contingencies' to be passed in any Department without the special order of the Committee of Papers."

(Signed) W. B. O'SHAUGHNESSY,
Offg. Joint Sec. Asiatic Society.

19th June, 1839.

The sense of the Meeting having been taken by the President, was declared unanimously favorable to all the above propositions except the 4th. These were accordingly adopted and will be acted on from the first of August. Instead of a subscription it was decided by the Meeting to furnish the new rooms from the cash balance remaining, and that no appeal should be made to the members for extra aid, as long as any funds remained available.

Meteorological Register, kept at the Assay Office, for the Month of May, 1839.

Forenoon, 10 A. M.

Afternoon, 4 P. M.

Day of the Month.	Atmospheric Pressure.			Temperature.			Hygrometry.			Aqueous tension.			Weather.		Weather.		
	Old Stand Barometer.	Height at 32 Fah.	Well Water.	Well Water.	Air.	Dew point.	Differential thermometer.	Hair Hygrometer.	By Dew point.	By Wet bulb.	By Hair Hygrometer.	Depression.	Differential thermometer.	Hair Hygrometer.	Direction.	Force.	Aspect of Sky.
1	29,600	29,595	86,1	80,3	89,8	75,5	5,5	7,1	92	64,78	82	7,7	9,2	91	80	W. 6	nimbi threate fine. cirrus.
2	615	594	86,7	80,1	91,3	75,0	10,6	10,8	87	60,60	76	14,7	15,4	81	47,50	E. 2	nimbi cy. do.
3	649	641	86,5	80,0	89,9	73,6	9,2	9,6	89	60,65	76	12,3	11,6	84	51,55	n. e. 2	do.
4	590	587	86,3	79,8	85,5	73,5	8,7	8,7	89	69,55	76	16,4	16,4	79	42,43	n. e. 2	do.
5	694	690	85,6	79,6	83,2	76,5	7,0	6,8	92	81,70	82	10,2	10,3	87	41,60	n. e. 0 1/2	cum. few.
6	637	633	86,0	79,8	84,5	75,6	7,4	7,6	90	69,69	78	12,1	11,9	85	57,55	s. w. 1	cum. strat.
7	575	573	88,2	80,1	88,1	76,0	7,3	7,1	93	64,70	84	9,0	8,3	89	62,65	n. w. 2	nimbi showy
8	646	651	85,9	79,9	86,1	72,0	9,5	9,6	86	64,62	70	11,8	11,2	85	57,55	n. e. 0 1/2	haz. all day cy haze
9	639	640	87,6	81,2	87,9	75,5	6,7	6,8	92	68,73	82	11,8	12,0	85	55,57	n. e. 0 1/2	do.
10	660	642	88,5	80,1	89,7	75,0	10,0	10,3	93	61,61	74	11,0	11,2	86	59,60	s. w. 1	cloudy
11	674	667	85,9	79,9	86,1	79,3	6,0	5,9	83	81,75	84	8,5	8,9	89	68,66	S. e. 1 1/2	cum. str. ovr.
12	645	629	85,9	79,8	86,7	76,8	7,7	7,6	90	81,69	78	10,9	10,9	85	60,60	n. e. 2 1/2	cm. do. gr. nm.
13	612	592	87,3	80,4	89,4	77,4	9,7	9,0	87	81,62	72	12,8	12,8	83	54,55	n. e. 2 1/2	cy. threate.
14	589	580	87,7	80,2	87,1	75,0	8,7	8,7	89	68,65	76	11,4	11,3	84	57,58	s. e. 1	do. showery.
15	598	590	85,3	78,8	86,3	75,0	10,6	10,2	86	70,57	70	9,1	9,8	88	64,65	s. e. 0 1/2	overct. cum.
16	592	571	85,7	79,8	84,5		4,6	4,9	94	80	87	7,2	6,8	91	68,71	n. w. 0	nimbi
17	574	562	86,1	80,1	88,1	77,6	4,8	5,0	94	80	87	6,1	6,1	92	74,75	n. e. 1 1/2	do.
18	564	552	85,9	80,1	88,7	77,6	4,1	4,3	94	82,32	89	3,3	3,7	95	89,85	n. e. 1 1/2	cy. all day.
19	580	560	86,1	80,4	88,7	79,3	4,0	3,7	95	87,82	89	7,2	7,3	91	71,71	n. w. 2	do. nimbi
20	517	495	87,4	80,5	87,3	74,5	9,1	8,3	87	87,64	72	13,8	12,8	82	54,52	n. e. 2	cirri. cly.
21	561	544		84,1	84,1		5,1	5,0	93	78	84	7,1	7,0	91	70,71	s. e. 2	cy. mist.
22	604	591	88,6	81,6	87,8	79,6	6,3	6,7	91	77,75	80	6,0	6,2	92	71,75	s. e. 2	cum. nimbi
23	615	599	86,6	81,5	86,3	78,0	4,3	4,9	93	78,81	84	4,6	4,7	93	83,80	s. e. 1	cy. cum. haze.
24	636	621		86,7	86,7	75,6	4,8	5,1	93	78,80	84	3,3	3,7	93	85,85	s. e. 1	cy. nimbi
25	581	555	87,7	82,0	87,5	75,0	7,1	7,5	89	67,71	76	9,9	10,1	86	58,64	s. e. 2	cum. cir. haze.
26	566	540	88,1	81,8	88,5	74,8	7,3	7,9	89	65,70	76	9,1	9,3	87	60,65	S. E. 3	nimbi
Mean,	29,608	29,596	86,8	80,3	86,8	76,0	7,1	7,3	90	72,71	79	9,5	9,6	87	62,64	2	Showery.

ART. XV.—Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of June, 1839.

Aspect of the Sky.	Maximum Pressure observed at 9 H. 50 M.					Observations made at Apparent Noon.					Maximum Temperature observed at 2 H. 40 M.					Minimum Pressure observed at 4 P. M.					Observations										
	Barometer.	Temperature.			Wind.	Aspect of the Sky.	Barometer.	Temperature.			Wind.	Aspect of the Sky.	Barometer.	Temperature.			Wind.	Aspect of the Sky.	Barometer.	Temperature.											
		Of the Mercury.	Of the Air.	Of an Evaporating Surface.				Of the Mercury.	Of the Air.	Of an Evaporating Surface.				Of the Mercury.	Of the Air.	Of an Evaporating Surface.				Of the Mercury.	Of the Air.	Of an Evaporating Surface.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.						
Clear,	,536	84.4	90.8	84.4	s. e. ..	cumuli,	,536	87.9	92.7	85.2	N. E.	Cumuli,	,460	85.7	94.0	86.1	E. b. s.	cloudy (Nimbi & cum.,)	,452	85.7	87.5	83.2	S.	cloudy,	,452	83.5	84.4	81.0	S.	cloudy,	
Clear,	,499	83.7	88.8	83.7	s. e. ..	cumuli,	,475	86.6	90.8	84.4	E. b. S.	Cumuli,	,440	85.5	87.5	83.9	E. ..	cum. str.&Nimbi, (gather-	,428	84.9	86.0	82.5	S. E....	nimbi distant thunder,	,430	83.8	85.5	82.0	S.	cloudy,	
Cirro-strati,	,440	86.4	89.0	83.5	n. e. ..	cloudy,	,428	86.7	89.0	85.5	E. b.N.	Cloudy,	,396	85.5	86.5	84.3	E. ..	cloudy (Nimbi,) [ing.]	,380	85.0	85.5	82.9	E.....	cloudy (nimbi,)	,380	82.7	83.5	80.8	S.	cloudy,	
Light Cirro-strati,	,410	84.8	87.9	83.5	e.	cloudy,	,400	87.0	86.7	83.0	E. ..	Cloudy,	,350	84.5	84.0	82.0	E.	cloudy (Nimbi)	,344	83.0	81.5	81.0	E.....	nimbi interspersed,	,340	81.9	80.8	80.8	S.	cloudy,	
Overcast rain,	,403	84.2	87.0	83.0	s. e. ..	nimbi rain, [sionally,)	,377	84.2	84.8	81.6	E. b. S.	nimbi,	,362	83.5	84.0	81.2	S.	cloudy,
Nimbi,	,462	83.4	86.0	83.5	s. b. e.	cldy. (nimbi rain occa-	,457	85.5	87.5	83.9	S. b. E.	Clearing,	,429	85.9	87.0	84.0	s. s. E.	cloudy,	,400	84.9	86.0	83.0	S.	cloudy,	,408	83.0	84.5	81.2	S.	cloudy,	
Cloudy,	,504	84.5	87.0	84.2	s. b. e.	nimbi interspersed,	,483	87.0	88.0	84.0	S. ..	Cloudy,	,450	87.1	90.2	85.5	s. ..	cloudy,	,444	87.0	88.5	85.0	S. E....	cloudy (nimbi,)	,450	82.9	85.0	82.5	S.	cloudy,	
Clear,	,520	84.5	85.2	83.0	s.	cloudy (nimbi,)	,506	85.7	87.2	84.5	S. ..	Nimbi interspersed,	,460	85.5	87.0	84.8	s. ..	cloudy,	,440	85.3	85.9	84.5	S.	cloudy,	,446	83.0	83.5	81.9	S.	cloudy,	
Cirro-strati,	,506	83.4	84.9	82.8	s.	cloudy (sunshine,)	,494	84.6	88.0	84.5	S. ..	Cloudy,	,447	84.6	88.5	84.8	s. ..	cloudy,	,435	84.6	87.9	84.6	S.	cloudy,	,438	82.8	84.7	82.0	S.	cloudy,	
Cloudy,	,474	83.2	85.0	83.0	s.	cloudy,	,474	86.7	90.0	85.5	S. ..	Cloudy,	,422	87.3	91.0	86.2	s. ..	cumuli and haze,	,387	87.2	90.0	86.9	S.	cumuli & haze, [shine,)	,394	83.5	86.0	83.8	S.	cloudy,	
Cldy. (Nbi. on the zenith,)	,462	85.0	87.5	82.3	s. w. ..	hazy,	,462	87.6	90.0	83.5	S. W.	Cldy. & Hazy (sunshine,)	,436	86.6	92.1	85.0	s. w. ..	cloudy & hazy (sunshine,)	,422	86.6	92.0	84.0	S. W.	cldy. & hazy (light sun-	,426	83.0	86.5	83.5	S.	cloudy,	
Cirro-strati,	,500	87.0	91.2	84.5	s. w. ..	A few cirro cumuli,	,500	90.3	93.5	85.0	S. W.	A few scattered Clouds.	,450	88.9	97.0	87.0	s. w. ..	generally clear,	,447	90.0	94.6	86.5	W.b.S.	to the w. light clouds,	,450	83.8	87.7	84.5	S.	cloudy,	
Clear,	,490	87.6	93.0	85.5	s. w. ..	clear,	,480	91.9	96.0	86.5	S. W.	Light haze, (Cum. strati,)	,440	92.0	96.2	88.8	s.w. ..	light haze,	,428	92.2	95.8	88.5	S. W.	light haze,	,436	85.0	88.0	86.2	S.	cloudy,	
Clear,	,564	87.5	91.0	87.0	s. w. ..	clear,	,557	89.9	93.2	86.9	S. ..	Detached Clds. to the N.	,508	90.2	95.7	88.7	s. e. ..	cum. strati to the north,	,478	90.0	93.9	87.5	S. W.	cumulo strati & cumuli,	,484	84.9	86.0	83.5	S.	cloudy,	
Clear,	,670	89.0	89.7	84.0	s.	cumuli,	,650	89.8	90.5	85.5	S. ..	Cumuli,	,580	90.0	95.5	86.0	s. ..	cumulo strati,	,550	89.5	91.2	85.8	S.	cumulo strati,	,557	85.8	85.3	83.2	S.	cloudy,	
Cirro-strati,	,650	86.0	89.5	83.8	s.	cumuli,	,630	87.5	90.0	84.9	S. ..	Cumuli,	,576	88.9	93.4	85.5	s. ..	cumulo strati,	,550	88.8	90.0	84.7	S.	cirro-strati,	,554	84.5	84.8	82.5	S.	cloudy,	
Cloudy,	,592	86.3	93.0	87.2	s. e. ..	cumuli,	,580	88.0	92.6	86.6	Calm,	Cloudy,	,543	85.0	83.5	81.5	s. ..	cloudy nimbi. interspersed,	,540	84.2	83.5	81.5	Calm,	drizzling rain,	,546	84.0	82.8	81.2	S.	cloudy,	
Cloudy,	,600	85.6	91.0	85.0	s. e. ..	cumuli,	,592	88.3	93.2	85.9	E. b. S.	Cumuli,	,550	88.7	95.5	87.0	s. ..	cumulo strati,	,522	85.7	83.9	83.0	S.	nimbi interspersed,	,528	84.5	82.5	82.0	S.	cloudy,	
Light Cirro-strati,	,647	85.6	90.0	84.5	s.	cumuli,	,666	88.0	90.0	84.5	S. E.	Cloudy,	,640	88.5	92.2	84.8	s. e. ..	cloudy,	,618	87.6	91.5	84.5	S.	cloudy,	,624	85.3	85.4	82.8	S.	cloudy,	
Cirro-strati,	,600	87.2	90.0	84.5	s.	light clouds inclining to	,582	89.3	91.0	85.2	S. ..	Cumuli and Haze,	,524	87.6	88.2	84.2	s. ..	cloudy,	,478	86.7	87.0	84.0	S.	cloudy,	,482	85.0	84.0	82.5	S.	cloudy,	
Overcast raining,	,522	82.5	83.0	81.9	s.	overcast drizzling rain,	,510	83.0	83.0	82.1	S. ..	Cloudy Light Drizzling,	,442	83.5	84.3	83.0	s. ..	cloudy and misty,	,427	83.6	85.0	83.0	S.	hazy & misty,	,430	83.0	83.8	82.0	S.	cloudy,	
Cirro-strati,	,532	82.5	84.3	83.0	Calm,	cloudy nimbi thunder,	,520	82.5	81.0	79.8	S. ..	Cloudy,	,470	82.0	82.0	79.0	s. ..	cloudy,	,450	81.0	82.2	81.0	S. E....	cloudy,	,450	80.8	81.5	80.2	S.	cloudy,	
Cloudy,	,560	81.9	81.5	80.9	s.	cloudy,	,542	82.0	81.6	82.0	S. ..	Cloudy Light sunshine,	,489	82.2	82.5	82.3	s. ..	cloudy and hazy,	,456	81.8	81.8	82.0	S. E....	cloudy,	,460	81.5	81.0	81.7	S.	cloudy,	
Cloudy,	,613	81.7	83.5	83.0	s. e. ..	cloudy,	,600	81.8	85.9	83.3	S. E.	Cloudy,	,546	82.0	84.5	83.2	s. ..	to the s. dense nimbi,	,540	81.9	82.2	82.2	S.	nimbi rain,	,544	81.8	81.9	82.0	S.	cloudy,	
Cloudy,	,630	85.0	85.5	84.8	s.	cloudy,	,620	85.7	86.0	83.0	S. ..	Cloudy,	,551	84.0	87.7	84.0	e. ..	cloudy and hazy,	,530	83.7	87.0	84.0	S.	cloudy,	,542	83.5	83.0	81.0	S.	cloudy,	
Cloudy (Cirro-strati,)	,576	83.2	85.0	82.8	s.	cloudy partial haze,	,570	86.6	90.2	85.0	S. ..	Cloudy partially,	,536	86.0	90.2	84.0	s. ..	cloudy partially,	,510	85.5	88.2	83.4	S.	partially cloudy,	,516	83.5	84.5	81.0	S.	cloudy,	
Cirro-strati,	,548	84.4	87.0	83.2	s.	cumuli,	,548	86.3	89.0	84.1	S. ..	Cloudy and Cumuli,	,518	85.5	90.2	83.4	s. ..	haze,	,500	85.3	89.0	84.8	S.	light haze.	,508	83.8	84.7	81.5	S.	cloudy,	
Cirro-strati,	,566	83.1	86.5	83.0	s.	cumuli and haze,	,555	86.3	89.0	84.5	S. ..	Light Haze and Cumuli	,542	86.6	90.0	84.0	s. ..	cloudy and haze,	,528	86.0	88.5	84.0	S.	haze and a few cum.	,530	84.0	85.2	81.3	S.	cloudy,	
Detached Clds. to the W.	,561	84.5	87.0	83.8	s. w. ..	nimbi rain,	,550	87.0	88.3	86.5	S. ..	Cloudy (Nimbi,)	,539	83.0	82.0	80.0	s. ..	cloudy,	,500	84.0	84.1	82.0	S.	cloudy,	,508	83.2	83.5	81.5	S.	cloudy,	
Cirro-strati,	,580	83.7	86.0	82.5	s.	cumuli,	,559	85.5	86.8	83.0	S. ..	Cumuli,	,538	86.0	88.8	84.0	s. ..	cumuli,	,516	85.8	86.5	83.8	S.	cloudy (cumuli,)	,520	84.2	84.8	82.9	S.	cloudy,	
	,541	83.7	87.7	83.7			,536	86.7	89.0	84.4			,492	86.2	89.2	84.4			,469	85.7	87.4	83.8			,474	83.6	84.5	82.2			

JOURNAL

OF

THE ASIATIC SOCIETY.

No. 90.—JUNE, 1839.

ART. I.—*Extracts from the Narrative of an Expedition into the Naga territory of Assam.* By E. R. GRANGE, ESQ. *Sub-Assistant to the Commissioner, Assam.*

On the morning of the 5th January, 1839, I left my encampment below the village of Dikking, or Dhemra, with the detachment of Assam Seebundees at nine o'clock, and crossing the river entered a newly cut road which conducted us to the Dyung again, about half a mile above the village in a southerly direction, where we crossed the river, and found a very good path which brought us to the village of Somboo at 1 P. M., a distance of about nine miles. The first three-quarters of the road was through a flat country covered with forest trees and light underwood; the latter part the ground became undulating, and still covered with forest. Somboogong is a village consisting of about twenty or twenty-five large houses, situated on a low hill on the right bank of the Dyung river; the inhabitants are Cacharees, they cultivate lands on both sides of the river, but chiefly in Cachar, asserting that the soil on the left bank is of a more productive nature than on the east; several families here had formerly come from Semker, having left that place in consequence of the incursions of the Angamee Nagas.

The passage to Somboo from the Dyung-mook by water was said to be two days journey on account of the number of *Silbatahs*, or weirs.

The language of the Cacharees of this and all the other villages I met, was totally different from that of the inhabitants of the plain, though they all go by the same name; the Hill Cacharee is called *Hoje*, and that chiefly spoken on the plains called *Ramsa*.

January 6th. Having received an injury in my feet from the previous day's march, I took a boat from Somboogong to the next march, Patpoah, a tolerable village belonging to Toolaram Sanaputtee, situated on the east side of the river. Starting at 9 A. M. the Sepoys reached the halting place at about 3 P. M. having been fatigued by passing several tolerable sized hills; they told me the path was a good one, and they passed a large village of Mikeers called Hempree, the cultivation of which I saw on the river side. This day's journey was through Toolaram Sanaputtee's country.

The rapids or *Silbatahs* the natives spoke so much of to deter me from going by water, I found only to be of stones piled up for the purpose of fishing and deepening the water to enable the boats laden with cotton (some of which I saw on their way down) to pass the more easily, in other places there is abundance of water. The banks of the river are high, and at most places formed by low hills and some steep rocks; the distance by water is about fifteen miles, and by land eight or ten.

The elephants which had taken the route formerly traversed by Captain Jenkins, which we left two or three miles below Somboogong, joined us here.

January 7th. Starting from Patpoah at 9 A. M., we passed over some cotton grounds, and gradually ascended a range of hills running north and south, and after continuing along the summit of the ridge till 2 P. M., we descended by rather a steep path to the Langti river where, on account of the elephants not having come up, we were obliged to halt for the day; the road throughout was good, through bamboo forest.

The Langti is a rapid clear stream, of about thirty yards width, knee-deep in the cold weather with a pebbly bottom.

January 8th. At 7° 45' A. M. left the Langti river, and ascended a rather steep hill, and an hour afterwards left Captain Jenkins' road which we had met at Patpoah, and took a more easterly direction to Alooong, crossing the Dyung at a *Silbatah*, or weir, where the water rushed with a good deal of velocity. The distance to-day was only about five miles; but our next march being a long one, I was unable to go on further without distressing the men, as we should have found it difficult to have reached Chota-Semker in one day from the Langti river, and no other village or watering place was available. Boats come up to Alooong during the cold season, though they experience much difficulty at the Barrak ford from the rocks in the river, the boats requiring to be unladen and forced up empty. The road continued good to Alooong through bamboo and tree forests. Alooong consists of about twenty or thirty houses of Cacharees.

January 9th. Left Aloocong at 9 A. M. and ascended a ridge of hills running east-south-east; traversed them till they divided into two ridges, when taking the one to the right, in a south-west direction, reached the site of a Cacharee village, which had the appearance of having been burnt; from thence, by an undulating path, we came to a hill of good size at 12 P. M. and in about an hour afterwards reached Chota-Semker, which lay on our right, about 500 yards. It consists of about fifteen or twenty houses of Cacharees and Nagas; the latter had on account of some feuds left Bura-Semker, which is about two days march eastward. We halted about two miles beyond the village on a small stream; the elephants did not come up till late; the path throughout was good.

January 10th. Sending the elephants back from this place we set out at 8^o 15' A. M. and crossing a small stream called Delasapanee, continued by a wavy path till 10 A. M. when we descended to the bed of the Dyung, where we met the Mohurir of the Tossildar of the Cachar Hills. From this our course was about south-south-east and south up the bed of the river, the repeated crossing of which rendered the marching both painful and dangerous, from the difficulty of keeping one's footing over the round slippery stones with which the river in every part abounds. At 1 P. M. we halted a short way beyond the village of Joori, which is a good sized one, and is inhabited by Cacharees and Kookees; it is on the left bank of the river. The road to-day was not so good, the latter part of it being in the course of the river.

January 11th. Started from Joorigong at 8 A. M. our route being the same as the latter part of the previous day—up the bed of the river, and the same difficulties were again experienced, which prevented our reaching the stockade under Goomegogoo till 12 P. M., though the distance is not more than five miles. I found the Shans in the stockade, who had arrived two days previous. Toolaram Sanaputtee had accompanied them. I requested him to send some person of his to Semker to prepare habitations and provisions, but he immediately offered to go himself if I gave him a guard, I therefore detached a Naick and ten Shans to accompany him. Finding that the Thannadar, who had only lately arrived, could give me but little information regarding the incursions of the Angamee Nagas, and finding no instructions waiting my arrival, I resolved, as Captain Burns's head quarters were only four days' journey off, to proceed to Silehar at once, to consult with that officer on the plan of future operations. This journey I commenced on the 13th January, taking with me a guard of one Naick and four Sepoys. Leaving the stockade at 9 A. M. we reached the Naga

village Mysumpa at 10 A. M., passing through which I reached the original site of the Thannah of Hoflong, close to the above village, which had been a short time before removed to its present location, Goomegogoo, to protect from the Angamees the large Naga village of that name, four persons of which had been killed some time previous by them. Beyond the old site of the Thannah of Hoflong is the hill called by the Cacharees and Nagas *Honklong*, which by corruption has become Hoflong; passing over it the road descends to the bed of the Pytinga, a small river here flowing towards the south-west. Down its rocky bed we continued till we reached the Cacharee village of Poorah, on the left bank of the river, consisting of about twenty or twenty-five houses. The first part of the road was good, but became bad on entering the river.

January 14th. Leaving Poorahgong at 7° 45' A. M. we set out down the bed of the river as on the 13th till 9° 20' A. M., when we reached the Hagoosa-Deesa, a small stream running from its source at the summit of the Bura-Ail range in two branches, one falling north and one south. We quitted the Pytinga, and ascended by a very steep path the Bura-Ail range of hills; from the summit, which we reached at 10° 30' A. M. we descended by an easy path to the south side, and found two streams joining at the base, the Hagoosa-Deesa coming from the west, and the Mati-Deesa from the east. The great range is chiefly covered with large trees and light underwood; amongst the former I recognised the *Nageser* tree, of tolerable magnitude; I saw no bamboos on the higher ranges. Proceeding a short distance we encountered the Matura-Deesa, which flows from the eastward. Rising in the great range, the Mati-Deesa empties itself into the Matura here. We continued down the bed of the Matura some short way, and then followed a bad path frequently up by water courses. At 12° 50' P. M. crossed a small mountain torrent called Ballon-Deesa, which runs over a bed of solid rock; at 3 P. M. reached the Goonmara-Deesa (*Deesa* signifies a small river in the Cacharee language) which is the only convenient halting place between the foot of the great range and the plains; we encamped here.

January 15th. Started at 7° 30' A. M. and about a couple of hours afterwards passed the Cacharee village of Longerong, which remained on our right on a ridge of hills separated from those we were traversing by the Dhesema river, which flows into the Matura after receiving the Goonmara river. At 10° 25' ascended to the summit of the last elevated hill of the ridge, from whence a very fine prospect is enjoyed of the extensive level of the entire Cachar plain, with its numerous hamlets and sheets of rice cultivation. The road from hence to the

lower hills was steep. Having descended to them we passed through patches of deserted cultivations of the wandering Cacharees. At 2 P. M. crossed the Hogigugaw river a short way above its junction with the Kuttna, which river terminates in the Matura. At 3 P. M. we passed through the large Cacharee village of Guabari, and here saw evident signs of improvement in the condition of the country. After crossing fine sheets of rice lands belonging to several villages of Bengallís and Muneeporees we arrived at the Bengallí village of Bhogurkonah and encamped. The fields of rice here appeared fine, but the ryots seemed to be less particular in the comfort of their *Khatts*, or farms, than the Assamese. They lived in fewer houses, which however were larger than those in Assam.

The absence of the useful and ornamental jack, tamool, and moon-gah trees made the appearance less rural and comfortable than the generality of the Assam farms.

January 16th. At 8° 30' A. M. crossed the Tecul or Degul river, and passing another swampy nullah, and some jungle, reached a cluster of low hills covered with small bamboos (*Bagul Bans*) over which we passed, and came to another sheet of rice land attached to some widely scattered Muneeporee hamlets.

The road was now south-south-west over the rice fields, till we reached the village of Oodarbund, on the right bank of the Matura river, a place of considerable importance, being the entrepôt to which the Cachar Nagas take down their cotton to barter it for salt, dried fish, conch shell, beads, &c. and I heard also for slaves, who are stolen from the weaker Naga villages; an infamous trade of this kind seems carried on in the hills of Cachar. The Nagas are particularly fond of the conch shells, which they cut up for neck ornaments, and which are valued at one rupee per shell. From Oodarbund we went across a fine plain of rice stubble to Mennabund, and then passed through a strip of jungle and recrossed the Matura; from this our road lay across rice fields of about a league in extent; we then ferried over the Barak river opposite Silchar, which we reached at 3 P. M. The Barak is a considerable river, evidently, from the broken state of its banks, liable to a very great rise of water in the rains.

January 17th. Captain Burns, who was absent on my arrival, returned this morning, and availing myself of his kindness, I remained till the 19th, and obtained much valuable information and assistance from him with regard to my future plans, &c. I recommended that the expedition should start immediately against the Angamees (who were supposed to be located a short way beyond Semker) with the party I had brought over from Assam, as great delay had occurred

in the arrival of arms for the levy, and there was no certainty when they might come, and as the season was fast approaching when troops would be of little service in mountains, like those inhabited by the Angamees. All the arms in Silchar were therefore put under repair, and about thirty muskets with bayonets, furnished weapons to an equal number of the levy, who, under a Jemadar, accompanied me back.

On the 19th I retraced my route of the 16th to Bhogurkonah, where we halted. The next day, the 20th, I followed my former route to Guabari, where the Bengallí coolies were to be relieved by Cacharees. The inhabitants of the village being all away on our arrival a great delay occurred, which obliged me to alter my course and make a circuit to Agoosagong to get good encamping ground, where we remained that day. The village consists of about fifteen or twenty houses inhabited by Cacharees, who cultivate the lower hills under the great range bordering the Cachar plain.

January 21st. Started from Agoosagong at 8 A. M., and ascended a high ridge adjoining the one we came by, and shortly afterwards regained the old road, along which we continued till we reached the Matura river, where we encamped. This route, I fancy, is impassable in the rainy season, as it is frequently up the bed of the river. A good one, however, might easily be made with little trouble, either at the foot of the hills or on their summits.

January 22d. Left at 8 A. M. and ascended the Bura-Ail range half an hour afterwards, by a good path; we reached the top in forty minutes, from whence we quitted our former route from Poorahgong and continued along the summit of the great range by a very good path, leaving Poorahgong on our right, and in the valley beneath. We followed this route about an hour, and then by a long and pretty steep descent crossed the Goomara-Deesa, and shortly afterwards the Longkli-Deesa, both flowing from the great range into the Pytinga, parallel to which we were going. We then entered the bed of the latter river, and followed our former route over the Haflong hill to the stockade.

January 23d. Some provisions that had been left behind the previous day arrived.

January 24th. I visited the Gomegogoo Thannah on an height of about 5000 or 6000 feet elevation, and took some bearings of peaks, sources of rivers, and situations of villages in sight. I sent on the Shan detachment this day with grain to Semker to relieve the coolies, and enable them to return and carry more grain with the Sebundy detachment. Whilst here, I got in several villagers upon whose villages some of the attacks had been made, and took down their depositions. The people

of all except of one village, Longki, accused the Angamees of being the guilty persons in the late murderous attacks on their villages. The people of Longki stated that the inhabitants of Deelong and Kollering were the aggressors in the incursion on their village. The people of those villages, however, most positively denied having done so when summoned at Semker.

On the 26th, having collected a sufficient number of coolies, I set out for Semker from Goomegogoo with the detachment of Sebundees and the part of the levy that came up with me, who were joined here by about twenty more men from the Jumnah, who had come up previously under their commandant, Doogaram Subadar, who had arrived from Doodputtee. We started at 8 A. M. by a good path over a ridge of low hills, in an easterly direction, skirting the Goomegogoo mountain. At 9° 30' A. M. passed the former site of the Naga village called Nerlasso, which was deserted three years ago in consequence of an attack on them by the Boesompoe Nagas, who killed several of them. At 10° 30' A. M. we came to a mineral spring on the banks of the Mootee, a small stream running towards the Dyung, into which it falls. Ascending and gradually winding round some hills, and leaving the village of Hassung-Hagoo to our right, we descended to the Mahoor, a good sized stream flowing north to its junction with the Dyung below Alogong, and forming a good boundary line of Toolaram Sanaputtee's country. We crossed and went down its bank, and halted at 2 P. M. after a march of about thirty miles.

January 27th. Leaving our encampment at 8 A. M., we crossed over some low hills by a good path, and crossing two streams, the Yah and Yhoo, which empty themselves into the Mahoor, passed some more low hills and entered the bed of the river Hah, the banks of which were covered with the foot-prints of wild elephants and deer. Along this stream we continued for an hour, and then ascending a very steep hill reached the large Naga village of Rangai, then completely deserted in consequence, as I was informed, of the Angamees having attacked it, and having, it is stated, killed 107 persons and carried away 30. I however think the number stated to have been killed is exaggerated. A fine view of the country is obtained here, and the hills towards the Assam side appear mere undulations in comparison to the gigantic ranges on our right. From this we had a fine view of the Deoteghur mountain, which hitherto had appeared to be a part of the main range, but now we had a full sight of it, shewing itself independent of any other hills. Large patches of brown clearances for cotton cultivation were visible; the wind was very high and cold on this mountain. We went along its summit, and descended winding round another very

high hill till we came to cultivation, from whence we looked down upon Semker, on the foot of a hill beneath us. By a very steep path we descended to the encamping huts erected by Toolaram Sanaputtee, who had previously arrived with the Shans I had attached to him. He had not been up to Semker for many years, and therefore was ignorant till now where the Angamees were located, which to my astonishment I found to be eight days journey further on. I applied to Toolaram Rajah for a statement of the depredations committed by the Angamees on his people, and found several of his Naga villages had also been sufferers; and on inquiring the reason of these attacks, I was informed that they were merely to extort conch shells, cloths, &c. and that the Angamees seized as many people as they could, to obtain ransom from their relatives, and killed all that attempted to escape, cutting off their heads (with the blade of their spears) which would be ransomed by their relatives also, this being one of the barbarous customs of the Nagas. I also applied for a statement of the sufferers of the village of Rangai, but the Rajah could not furnish one, as the people had all fled into the jungles, he knew not whither. I was told that the people of Semker also were thinking of leaving their village for another place, till they heard that troops were going against the Angamees, for they also were in daily fear of being cut up, which they certainly would be the moment they refused to bribe them with salt, dried fish, &c. The Semker people are not great cultivators, but live chiefly by the produce of their salt springs, and by traffic with the peaceful Nagas around them. They bring dried fish, beads, conch shells, and brass ornaments from Oodarbund Haut, and barter them for cotton, wax, ivory, chillies, &c.; and an extensive and infamous trade is carried on in slaves, who are stolen indiscriminately by all in that quarter, and sold to the Bengalli merchants who go up for cotton. I hear that a slave can be procured for twenty packets of salt, seven of which are to be had for one rupee. I saw many Muneeporees, who had been thus seized whilst young, and sold both amongst Kookees, Cacharees, and Nagas.

There are 140 houses of Cacharees, and five or six of Nagas, but the Semker Cacharees are demi-Nagas, and many of them have married Naga girls. They have lost the good qualities of the Cacharee, and resemble more the meaner and more cowardly Nagas of the lower hills of Cachar. I found here Ohkonah of Umbawlo, or Ing-hong, and Hajootoe, on the part of Equigimpo of Beren, two chiefs of independent villages who had heard of the approach of the troops, and both came to offer submission, and to seek protection from the Angamees. They seemed much afraid lest we should not attack

the Angamees, and return, and leave those who had sought protection, and afforded assistance to us, to the vengeance of their cruel neighbours; they also seemed anxious in regard to their villages, but I assured them we would not go near them, if they could cut a road by which we might avoid them, and that they had not the least cause to fear; on which they appeared much satisfied, and said many other villages would come in after they had heard of the kind treatment they had received. I gave them presents, and dismissed them, and told them to prepare grain for us, which they promised to do. I found here the following friendly chiefs, besides those above alluded to, viz. Kaptao of Kareabong, Kamtao of Galiga, Katalong of Ohong, whose villages were on our right, in the direction of the Angamee mountains. They also agreed to furnish grain as we passed their respective villages, and each received presents. Immediately on arriving at Semker finding that I could only calculate upon 100 Kookees, who were as bad as Nagas themselves for throwing away their burdens and running off, I applied to the Bura Bundaree, who farmed the Cachar hills, to furnish 300 men, which he could easily have done, and which he promised to do. Delay occurred, however, and so I wrote to him again and again informing him that if the expedition was kept much longer from advancing, through his dilatoriness, it might prove of serious consequence. I learnt that he was not collecting the men as he wrote to me to say he was doing, but that he had sent a petition to Captain Burns, Superintendent of Cachar, stating that he found great difficulty in complying with my request. At the same time that I received Captain Burns' letter informing me of the difficulty stated, two Kookee chiefs joined me, and informed me of the injustice the Bura Bundaree exercised towards their tribes, in pressing all the Kookee population and not calling upon Cacharees, on whose account the expedition was undertaken. I was told that many of those excellent ryots the Kookees had left the Hills in consequence of bad treatment, and their being employed and worked on every occasion, whilst the Cacharees were never called on for their service. I ordered the Bundaree to furnish an equal number of men from each tribe, but deeming it imprudent (from the lateness of the season) to remain any longer at Semker, disputing with one who instead of throwing obstacles in the way ought to have been the first to have put his shoulder to the wheel, I resolved not to run the risk of being again put off with his falsehoods, and informed Captain Burns of his misconduct; then collecting all the Naga and Cacharee men I could, I sent off the Shan detachment and Ram Doss Morhuir to Beren, with instructions to collect as much grain as they could get, no coolies having arrived. I left Semker with forty Cacharee

and Naga coolies of that village at 12 P. M. I was obliged to leave Doorgaram Subadar behind with part of the levy, as there were no means of carrying provisions for them. The Subadar had instructions to follow when he could get coolies. Passing over two ravines we crossed the Kondekong river, flowing in a north-west direction towards the Langting. This latter river rises near Semker, and falls into the Dyung. Our route here being up the bed of the Kondekong was very unpleasant; after continuing this for two miles we crossed over a small hill in the middle of the valley, which brought us to the Dikkan river where we encamped, some in huts which the Shans had erected; the distance we travelled was about five or six miles.

February 16th. Started at 7 A. M. and passing a few inconsiderable ravines, formed apparently by mountain torrents, we came to a small hill from which there is an extended view of the valley beneath, and of the great range which runs north-east. From thence we descended to the Sorebackee river; following its course a short distance, we left it to cross over a small plain to the Par river, a stream of about thirty or forty yards broad, flowing northerly. Leaving it we crossed over another plain to a river of similar size called the Aungootee, which is joined here by the Harikondee, a small stream, along the bank of which we continued our course. These streams all flow from the Bura-Ail range, as do indeed all rivers tending from the north to Assam. The ground over which we passed was partly free from very heavy jungle, and appears to have been at one time under cultivation, and of a rich nature. Shortly after leaving the Aungootee we ascended a hill and passed the site of an old Naga village, and then descended to the encampment of the Shans on a tongue of land formed by the junction of the Tomkee and Toolongkee rivers. The distance we travelled to-day was about twelve or thirteen miles. We were obliged to remain to-day, as the torrents of rain prevented our stirring, and we found the inconvenience of the wild plantain-leafed houses, which let in the rain in every direction.

February 17th. The Naga coolies having run away during the heavy rain of the previous day, we were obliged to divide the party, and leave six men in charge of the baggage. Started at 11 A. M. and ascended to the deserted village Ekkenja, which I intended to have reached the day before, but had been deterred from doing so by the accounts of there being no water. This village was said to have been attacked by the Angamees some years ago, and the inhabitants had gone and settled across the valley, under the great range. This new village is called Sergi; the road was tolerably good, excepting in some places where it was impeded by fallen bamboos. After gradually

descending we reached a small winding stream, over which we crossed several times, and which ran through a fine flat country composed of rich reddish clay, and lightly covered with forest and the very large Kakoo bamboos. Passing over the plain we came to the Támákee, or as it is called by the Assamese, Dhunsiree, a good sized river flowing in a northerly direction, but the depth was not very great; indeed none of the rivers I had met with were very deep, and the shallowness of their banks leads one to imagine that no considerable body of water remains in them any length of time. The Dhunsiree was filled with round stones, and an opening in the great range to the south from whence it flows leads one to believe that it originates at some distance within the range. After quitting it we almost immediately ascended a middling sized hill, which we passed over and ascended to a small streamlet. Bordering it we came to the hill on which Kareabonglo is situated; it is of a moderate height. Ascending it we found the village deserted, and the guard who had gone on with grain snugly stowed away in a capacious house; the Semker coolies had dropped their loads and run off one and all. Kareabonglo is a Naga village of about twenty-five houses, on a hill that commands a good view of the surrounding country, as also of the two villages called Galaga and Harapalo, of about equal size. These Nagas, who speak the same language as the Cachar Hill Nagas, are quite distinct from the Angamees, who speak a different language, and would rejoice in the subjugation of the Angamees, who force them to give them conch shells and other things to purchase the preservation of peace. The chief Kaptoa, to whom I had given presents, brought us grain, for which he was duly paid; other chiefs who brought any thing had the money always tendered to them in payment; some however refused it, but when I told them it was our custom, they carelessly took the money as if it was not of the least value to them; some again indignantly refused. The view from the place last described was good, the huge range of mountains one mile to the southward stretching out in a north-east direction, and apparently terminating in large mountains. On the north-east were two hills heavily clothed in dark green, to the west the same, but broken by a plain or two. To the north, the first part was the same description of country, till an opening in a distant ridge of hills brought to view an extensive plain, which is Toolaram Senaputtee's country: a mist generally hung over the land, which was against any distant prospect being obtained. The Cacharee coolies that had accompanied us from Semker, under pretence of going to dine by the stream-side at the bottom of the hill, ran off, and left us with-

out any coolies at all, situated on a mountain, and in a sea of forest and hills; some of the same tribe of men who accompanied the Shan detachment served them the same trick. The Shans therefore left their grain at Kareabonglo and pushed on for Beren.

The chief here promised to give us thirty coolies, which added to those the interpreter had brought up with the baggage, and the guard that had been left behind, enabled me to carry eight days grain.

On the 21st February, left Kareabonglo, having been detained for the want of coolies three days. At 10° 35' A. M. by a good path went over some undulating ground, and then gradually ascended at 1 P. M. to the Dádákee stream, which is about forty yards wide, with fine clear cold water gushing through large round pebbles; it falls into the Támákee or Dhunsiree. Ascending, we went along by an excellent path till we came to the Inchurkee river, another stream of nearly equal size to the Dádákee, discharging itself into the Támákee. Passing it we had alternatively good and steep paths till we had passed over a plain and up the bed of a rocky rivulet. We then ascended and passed over the hill on which Umbolo, or Juckong, is situated; we left this village out of sight on our left, and encamped in very good huts, erected for us by the chief Okonah at 7 P. M. Umbolo consists of about eighty or a hundred houses. The Nagas hereabout are a much finer race than those of the Cachar Hills; and the colour of the eastern Nagas is a much more wholesome brown than of those in the vicinity of Goomegogoo, who are more of an ochre colour. The chief brought down eggs, &c., and relieved those men who had come from Kareabonglo by another band. He seemed quite delighted at the idea of the Angamees, the tyrants of the Hills, being put down; and collected twenty maunds of grain for us, which however we could not take with us as we had no porters. I was informed by a Muniporee (who had been captured whilst young, and sold to a Naga of this village, and had married a Naga girl) that there was a road from this to Assam in five days viâ Sumoogoding. The distance from this to the village we had left (Kareabonglo) is about 12 or 13 miles, and there are a good many hills to go over.

February 22d. We left at 10° 20' A. M. and crossed a small stream, and an hour afterwards ascended the great range to the village of Unggong, from whence a most commanding view is disclosed of the low hills up to and beyond Tooleeram's country, with the course of the Dhunsiree or Támákee. The hill on which stands Sumoogoding is plainly visible, as also the whole of the Angamee valley, and partially grass covered hills. The people of this village treated us civilly, and collected grain (rice) for us of a very good kind. The village consists

of about sixty houses, on the top of a very high hill joining the great range. I went into their village, the people were a little frightened at first, but afterwards they came round to look at the singularity of our dress and difference of colour. They were very much astonished at the whiteness of our cloths, they indeed are in a most primitive state of nature; the road went at the back of their village. We halted about an hour afterwards on the banks of a small stream having passed the Unggrongrow river at the base of the hill the village stands on; it falls in the Támákee, at a distance of one day's journey from the village in question. The distance to-day was only six miles, owing to some of our Semker coolies (who had joined us at Kareabonglo) having run off on the way.

February 23d. Left at 8° 5' A. M. by a tolerable path, and entered the great range which we had hitherto skirted, and went up and down hill till we suddenly diverged from the continued forest to a most noble opening, which disclosed to our view an extensive valley surrounded by partly cleared mountains, with topes of firs, these were in solitary groups and in ravines; the large village of Beren appeared on the summit of a high mountain across the valley. The encampment of the Shans was visible on a knoll below the village. On arriving nearer to what we supposed to be cleared ground, we found extensive wastes of low grass, such as is met with in the Kas-yah hills. Winding over several ravines, and passing a river flowing south, we met the Mohurrir, Ram Doss, and a party of Shans who had come out to meet and warn us to keep together, as the Angamees had the night before attacked them and wounded one man, and were prowling about in parties to catch stragglers.

On further inquiry, I was sorry to find that it was through their own very great neglect, and to their total inattention to the warning I had given them, to keep their bayonets fixed on guard and sentry duties, that one of the party, the Shan sentry, was speared in the leg. I believe there were ten or twelve Angamees about the camp, and two of them crawled up through the grass at 12 P. M., and actually speared the sentry who was sitting down, and most probably asleep. After being speared he attempted to fire his fusil, but the powder being damp it missed fire, whereupon he had time to butt him, but the Naga forced himself away and ran off; the second sentry came up and fired, but missed; had the bayonets been fixed, the fall of the Angamee would have been inevitable. I found the camp built on the remains of an old circular fort, erected formerly by Raja Krishna Chunder of Cachar, who was driven out of the country by famine, after losing one or two men by the spears of the Angamees; he came

up to revenge the attacks made on his subjects by those banditti. He brought up a long ten or twelve pounder to frighten these wild people with, but he found an enemy that made his great gun useless, and was obliged to leave it behind in the jungles. The chief of Beren, Iquijimpo, was most accommodating, and offered to sell the old cylinder for one hundred rupees. On arrival, finding the dried grass around the stockade had not been removed, I set fire to it to save our enemy the trouble of doing it for us, and had the good fortune to drive the fire away from three sides of the stockade, when deeming all danger passed from the fourth side I left some persons to finish what I had begun ; but from carelessness, or a sudden gust of wind, the fire spread, and the cry of houses on fire, soon made me aware of what had happened. I seized first the magazine and placed it out of danger, then the grain was all removed, and just as the last bundle was rolled over the paling the flames devoured the store house. A little cordage was burnt, but no material accident or loss occurred, and all parties behaved very well. The troops were drawn up in line after the removal of the stores, ready to have repelled any attack the enemy might have made. I sent up to the people of Beren, who were all assembled on the height, to come down to re-build the camp, but they would not do so ; I therefore sent up some Shans to fire a few shots to frighten any wandering Angamees from the neighbourhood, when the Beren people came down and re-built our camp on the ground of the circular fort. This fort was a raised knoll of earth, built up with stones to the height of three feet, with a gradual slope all round. I was perfectly astonished at the fine athletic mountaineers we now had to do with, and was much amused at their accounts of the Angamees. The chief of Rassam and Sarralo who had met us at Umbolo came down from the village, and in a most mysterious manner pointed to the stream and said the Angamees had poisoned it ; I replied with a smile, and the gravity of his countenance ceased. I imagine the Angamees had instructed him to try and frighten us out of the country by some such story.

The two chiefs also hinted at the retreat of the Cacharee and Munipooree forces sent against the Angamees, and the absurdity of our attempting it. In fact they tried in every way to talk us over, and boasted of their superior cunning in the most barefaced and at the same time ridiculous manner. The evening we arrived, suspecting the Angamees might favour us with a visit, I remained close to the sentries till 10 o'clock, when the jingle of a shield in the jungle warned us of the vicinity of our enemy. I foolishly fired a couple of shots in the direction of the noise, which drove the Angamees away ; had they not been thus alarmed, and had they approached, we might

have then punished them for their intrusion at such unseasonable hours.

They remained in the neighbourhood all night, but deeming it waste of powder and shot firing at sounds, I directed the sentries to adopt a rather primitive mode of letting them know of our watchfulness, and that was, to pelt stones into the jungle when they heard any thing in it, and only to fire when they saw their enemy ; this order had a very good effect, for the enemy remained at a distance all night, and retired before day-break. Whilst at this place the chief of Gopelo, a larger village than Beren, came to pay his respects in order to prove that he was friendly ; the chiefs of Moolooke, Jalooka, Bá-láka also came. The jealousy existing amongst the different villages is very great, and after the Beren people had built our huts, they said—" There's such a village has done nothing, make them build the railing." On the 26th the brother of Impuisjee, one of the two greatest chiefs of the Angamees, came to the village of Beren, but would not come down to the camp until I had sent Ram Doss Mohurir accompanied by a Naick and five Shans and the interpreter to assure him on oath of his safety, and to receive his oath of amity in return. On seeing the party approach however he ran off into the jungles, notwithstanding the chiefs of Beren and Rassin were with them, and assured him that nothing would be done to him. The Shans were then left behind, and Ram Doss went out to meet him, but he objected to the sword and shield the Mohurir had with him ; these being left behind he came close, and the oath was taken in the following manner—A chicken was produced, the head of which the Mohurir held, and the Angamee the body ; they both pulled till they severed it in two, which was to signify, that if either was treacherous his head would be divided from his body in the same manner. They then held a piece of a spear at the ferule end, which was cut in two, and each retained the bit in his hand ;—this is one of the most sacred oaths amongst these wild men. The chief then came down to the camp, and I assured him that his brother need have no fear for his life, if he would come in, and swear not to molest the Honorable Company's subjects any more. He agreed to every thing proposed, and volunteered on condition of their lives being spared, to pay a tribute of ivory, slaves, &c. He said his brother had gone to fetch the articles referred to. I showed him a watch and a telescope, and told him I could see every thing he did in any villages, and after frightening him by firing at a pumpkin, I gave him some presents and dismissed him. I waited till the 1st March for his brother's coming, as also for grain from Semker, but neither arriving, I got coolies from Beren and started for Bá-láka, a vil-

lage six miles on our route, and to which the Beren people had agreed to take our traps and the little grain we had. The road was good the whole way, with only one or two hills. We encamped on a flat piece of ground near a well below Báláka, which is always built near villages for the cattle to drink out of. The chief of Ungolo came in with eggs, &c. and said his young men had joined Ikkaree in the incursions into the Cachar Hills; that they were forced to go, but should not do so again. The term 'youths' is applied to all able bodied villagers. I deemed it needless to bind the smaller chiefs, who stood at the beck of the greater ones, to oaths they could not keep. The chief of Jykama (or as it is written in Captain Pemberton's map of the North-east frontier, Yueékhe) sent in a person of his village to know whether his coming in would cause the loss of his life; I assured him that we were most desirous for peace, but that his not coming in would be a sign of his enmity, and that in that case I should attack his village; the chief departed quite satisfied.

March 2d. I was unable to move for want of coolies. I this day got intelligence of Doorgaram Subadar and of the levy having come to Beren according to order, with forty Kookees out of one hundred who had arrived at Semker. The chief of Umponglo came in, and said Impuisjee, the greatest chief of the Angamees, who had promised to meet me, had gone to Umbolo, or Sirchong, to ask advice of the chief of that village regarding a meeting with me. This chief is his nephew; he promised to give us grain as we passed his village, he also said the children of his village had gone in Ikkaree's train to the Hills, but that they would not do so again. Ikkaree is the second chief of the Angamees, and the principal leader in the predatory attacks on the Cachar Nagas; he was captured by Doorgaram Subadar in one of his incursions to Goomegogoo, but escaped, as he said himself, by the neglect of a burkundaz. Our grain being all expended, and finding none coming forth from the villagers, I placed the chief of Báláka in arrest, to induce them to exert themselves for us, but my experiment had a very opposite effect, for they all fled from the village and left their chief to his fate. On his taking an oath to bring coolies and grain, if I let him go, I released him, which was another kind of experiment, and proved something like letting go a newly-caught bird, for we never saw him again. Doorgaram Subadar came up to-day.

On the 3d March I was obliged to divide the party, as it was necessary to increase our rate of going onwards, or to return, for every moment reduced our supply of grain. I therefore left the Shan and levy detachments under Doorgaram, with instructions to make the best of his way after me, or otherwise to act according to cir-

cumstances, and return if he was obliged to do so ; as I had determined to push on, and if nothing else could be done, to find the exit from this tract to Assam, of which I had heard from Toolaram Raja and the Munipoorees. Notwithstanding their ignorance of the existence of a road pretended to by the Nagas, with only one day's provisions I started for Malhye, a village six miles off. I had no guide, but trusted to a path which the Báláka people had pointed out before they ran away as the direction to be pursued. I was rather anxious about meeting any villagers at Malhye, imagining that the Báláka people had communicated our having seized their chief. We found the Malhye people assembled and prepared to protect their village had there been any attack from us ; but with a hog and some grain laid at the entrance we pacified them, and got what we wanted. It was rather amusing to see them assembled with their spears, looking very fierce and warlike, whilst we were aware one shot would have sent them flying over hill and dale, and proved to them their weakness. They are however very persevering in their mode of fighting, viz. wandering behind bush and stone, on the look out for an opportunity to spear their enemy when off his guard. Whilst standing making inquiries for a convenient encamping place, Keereebie, chief of Jykama, or Yueekhe, bounded down the hill side and presented a piece of cloth and a spear. A finer specimen of a wild mountaineer was never before me ; he wore the blue kilt, ornamented with cowries, peculiar to the Angamees, which set off his fine, powerful figure very much. I told him to come to camp and receive some presents, which he did ; but he refused to accompany me to Ikkaree's village, as he said he was at enmity with that chief, and if he caught him he would kill him.

March 4th. Lookakee, chief of Unggileo, came to pay us a visit, and left us to get some grain ready. Healuckeng, chief of Ungolo, came and gave a black cloth as an amicable offering, and brought some coolies to relieve our Kookees ; the men he brought were all fine strapping fellows. Left camp at 7° 30' A. M. and ascended to near the Ungolo village, which consists of about 30 or 40 houses situated on the top of a lower hill of the great range. We found two baskets of rice at the path leading to their village ; the path from this was newly cut, and therefore not a good one. We skirted the great range, which from Onggong took an easterly direction. We met with no bamboos, our route being through forest trees with small underwood. We passed the bed of a mountain rivulet, which was now hardly trickling sufficient water to allow of a good draught, but which in the rainy season must discharge a considerable body of water, and going over several low hills reached Unggilee, where the coolies from Ungolo dropped

their loads and ran off. We got a couple of baskets of rice from the people of the village and a small pig, but the total of to-day's supplies was not more than sufficient to allow of half a seer per man, and all the salt had been expended, which made the privation greater.

March 5th. Sent the Mohurir Ram Doss to the village with ten Shans who had accompanied me, to get some rice; but the people assembled with spears, and said our intention was to burn their village; but on being assured that we only wanted rice they gave some, though a small quantity, and we marched off. At 9° 50' A. M. went over a hill and ascended to Umponglo, the chief of which seemed very friendly, and offered to accompany us and bring Ikkaree to terms, which offer I gladly accepted. We had some difficulty in getting sufficient rice to admit of each man's getting his half seer; we succeeded only by hard pressing, and remaining under the village for some time. We descended thence and passed a good sized river, flowing in a northern direction towards the Támáke into which it falls; it is called here the Unnuruce; passing it we ascended and came to a fine flat space of clear rice land, on the top of a hill; winding over several heights we descended to a small stream, on which we encamped in rather stony ground.

March 6th. Broke ground at 5° 45' A. M. and went a short way through the forest, when we came to a wide rocky space with scattered jungle, apparently the course of a considerable body of water in another season, but now confined to a clear stream of little magnitude; on its right bank there is fine encamping ground amidst topes of the large Kakoo bamboos. We passed no less than four or five streams in the course of our journey this day, and ascended a very high hill on which were the remains of an old village. The great range became more broken in its regularity here, and we ascended over several hills and reached the valley beneath Tukquogenam, a village of about sixty or seventy houses, written in Captain Pemberton's map, Takojunomnee. We encamped in a triangular-shaped rice cultivation, which was raised by steps (the highest about thirty feet) above the level of the valley, for the purpose of retaining the water to nourish the rice crops. Through the centre ran a clear rocky stream of about twenty or thirty yards broad, with which they could irrigate at pleasure. On our arrival we found Bahoota, a lad who called himself Impaisjee's nephew, but who was merely an adopted son of that chief, and who had promised to bring in Impaisjee and Ikkaree at Beren, but broke his promises as easily as he made them. I had fortunately taken the precaution to send the interpreter with the chief of Umponglo before us to calm any fears the villagers might have had, and lucky it was I did

so, for they found them all ready to fly at the first signal of our approach. The chief and his two sons came and brought eggs and grain, not more however than would allow of the old allowance of half a seer. They informed me that the head man of Ikkaree's village was up in their village and would come down if I would not molest him, which being guaranteed he came down and offered a spear, and said Ikkaree was most anxious to come to terms, but feared coming to camp from dread of being seized again, which I assured him would not be the case, and that he might depend upon our word, as it was our custom to act as we spoke, which appeared to satisfy him, and he departed with a promise to bring Ikkaree the next day.

March 7th. Sent our Cachar Naga interpreter with the Tukquogenam Angamee interpreter to Chereme to fetch grain, which he succeeded in getting, to the delight of the coolies, who had had none the day before. He informed me that at the village he had met with two men from Sumoogoding, whom he wanted to come and see me; but they replied, that a body of troops were on their way from Dhejna, and that they must return to their village to get grain ready for them. This fable served my purpose most admirably, and I told them to tell Ikkaree that if he did not come in soon, I should give him no terms, but advance and burn his village directly the Dhejna troops arrived. This threat brought him to the village of Tukquogenam, and a promise to come down and accept terms next morning. The people of this village had the insolence to say they could drive us out of the country, but they feared the other troops that were coming from all directions to attack them.

March 8th. Ikkaree sent word to say he feared coming into camp, on which I sent the Mohurir Ram Doss and the chief of Umponglo, who had been trying to allay his fears. They returned after about an hour's absence, and said they could not persuade him to come down to camp, but that he would meet me half way between the village and the camp. Seeing that we had no grain for that day's consumption, and fearing that if I should be obliged to attack any of their villages I should only be put in possession of an empty place, as all the grain had been previously secreted in the jungles (as indeed it had been in those we had passed, for they had long been aware of our coming) I determined on going to meet him in his own den. Placing a pistol in my pocket and a sword by my side, and giving a pistol to the Mohurir, I sallied forth with an Assamese Mohurir to take down the questions and answers; a quarter of an hour brought us through an open vale to five or six men watching on a slightly rising ground, beyond them were more men scattered about in an open plain or dale of

about five hundred or six hundred yards wide ; in our front stood the village on a hill, behind which were the high peaks of the great range ; on our left were more low hills, and on our right, a wood with a river behind ; in the centre of the plain there was a stone Chubootar to which I advanced and sat down. I then perceived Ikkaree, whom I knew immediately by the red collar round his neck edged with human hair. I had heard that this was the distinguishing marks of these chiefs, from their villagers. Ikkaree was sitting on a heap of stones ready to fly up the hill, if there was occasion ; he did not however come till after many calls from his people and my threatening to return, when he came up rather sulkily, with a red spear in his hand, which I commanded him to leave behind. This being done, he came along cautiously and sat on the Chubootar, continually looking behind for a clear coast for a bolt, and had I given but a single halloo, he would have been off like a shot ; his own men even abused his timidity. On getting a little confidence he commenced boasting of his cunning, &c. which I soon stopped, by telling him that if I chose at that moment I could walk him off to the camp, but that I had promised him safety, and that he need have no fear ; on this he seemed very anxious to depart, but I made him take oath not to molest in future the Honorable Company's subjects, which ceremony was administered in the most simple and the rudest manner, for it merely consisted in his holding one end of a spear and I the other whilst it was cut in two, each retaining his bit. Ikkaree was wanting to be off before it took place, but I made him remain, and thrust the bit of iron into his hand when half cut, and made him hold it till it was cut through, so that he might have the full benefit of the sanctity of the oath ;—it is considered one of the greatest oaths amongst these savages. He promised to send rice next day, and departed much like a jackall, looking round every second step. He is a fine specimen of a brigand, tall and slight, and made for activity, of a brown colour ; he has small black eyes, in one of which there is a cast, black whiskers and mustaches, and a savage sneer always playing on his lips. He is at variance with many of his own tribe, and is a most cold-blooded murderer ; he wore on his neck a collar made of red coloured goat hair, and ornamented with conch shells and tufts of the hair of the persons he had killed on his expeditions. I returned to camp, and the Tukquogenam people brought us rice, but said they could not afford any more.

March 9th. Bahoota came down, and said something about Inipaisjee having arrived, which proved false. On the Mohurir Ram Doss going up, he reported that he had met the interpreter on the road, who feared to go up to the village as there was a body of men

on the road who threatened him; Ram Doss however went on with Bahoota and the interpreter, and met 200 men armed with spears, who attempted to obstruct the passage, but Ram Doss pushed on, and they retired. Ram Doss said they belonged to Ikkaree, and that that chief had sent word to say, he would give us grain if we went to his village, but that he would not, or could not, send it, (as he had promised to do) if I did not move forward. My chief object being accomplished, viz. that of settling affairs amicably, and discovering the locality of these brigands, moreover having found the exit to Assam, viâ Sumoogoding, and deeming it a rather dangerous experiment remaining any longer in a country where the roads ran chiefly in the beds of rivers sure to be stopped up in the rains, which had already commenced on the upper parts; doubting also the word of Ikkaree to supply us with grain, and the consequent likelihood of a quarrel had we gone to his village, I determined to return.

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We had not a grain of rice for that day, so I marched off towards Sumoogoding, where it was most likely we should get provisions, that village being in communication with Toolaram's Cacharee subjects at Dheghna, leaving a message to the two chiefs Impaisjee and Ikkaree to the effect that, as they had taken oaths not to molest the Honorable Company's subjects I should not trouble their villages, and hoped they would attend to their oaths. We left camp at 9 A. M. and by a very good path reached Cheremee at 11 A. M. it being about five miles from Tukquogenam. It is a small village of about fifteen houses, situated upon a middling sized hill; the silly people assembled to prevent our going into their village, armed with spears, little imagining that one volley as they stood would have blown them off their hill. We pacified them, and got a little rice, but it not being enough, I threatened them if they did not bring more to camp, to return. From the hill several other villages were pointed out to the east, but I did not observe them, Papamee, and Jingpen were among their names. The great range seemed to take a turn to the south of east from beyond Tukquogenam. The directions of Moongjo and Sookamjo were also shown, the former a village of Ikkaree's, consisting of five hundred houses, and the latter belonging to Impaisjee of eight hundred houses.

Leaving Cheremee we descended to a small river bearing the Naga name of Ompoa; we continued down its bed for about a mile, and then encamped on its left bank in a newly burnt jungle, opposite the village of the same name, which stood about a mile off on a hill, and was hid by the tree jungle. In the valley we were in the huts had

just been erected, when a lad belonging to the Shans came running in breathless and said he had seen two Nagas with spears and shields. I immediately took a couple of Shans and went out in the direction, but only met a couple of sepoy and coolies cutting wood. Returning and recalling all stragglers, I found the chief of Umpoa with grain, which greatly relieved the spirits of the party, as there was a good chance before that of their going without their usual allowance. I gave him some presents, and he returned to his village. About an hour afterwards, it being evening, the men were all cooking in the bed of the river, when two Nagas sneaked up through the jungle from the opposite bank and threw two spears at the right flank men, one of which lodged in the thigh of the dhobee and the other grazed the skin of a sepoy; the Nagas instantly fled, and several shots were fired in the direction they had gone, which was all that could be done, as evening was too far advanced to pursue them. Our Tukquogenam guide, who had promised to show us the road to Sumoogoding, said that it was the people of the village of Pepamee and Cheremee that had attacked us, but I very much suspect that Ikkaree was at the bottom of it, and fearing for his own village he had ordered these two small villages to annoy our return; but it is very difficult to speak with any degree of certainty, as the Angamees are all in clans, and each village is its own master as long as its doings do not affect the great chiefs. As far as I can learn in regard to the two great chiefs, Impaisjee, who is the greatest, is wishing for peace, but his more adventurous countryman, Ikkaree, is unwilling to give up his predatory habits and his attacks on the Cacharees, who yield him much plunder in cloths, conch shells, &c. besides what he forces them to give to release any of their relatives who may have been captured in an inroad, and also to ransom any skulls of their relatives;—for leaving the latter in the hands of the enemy is considered amongst the Nagas a very dishonorable thing.

March 10th. The chief of Ompoa came down, and said the Nagas that had attacked us were of the villages of Papamee and Cheremee, but I suspect the people of Cheremee, the village we had left behind, were the parties concerned. The night was extremely stormy, it rained heavily and thundered and lightened, but our leafed roofs luckily did not leak. We heard the Nagas around us the whole night trying to sneak up, but a shot drove them off in a great hurry. They are very much frightened at the report of fire-arms; they follow their enemy with great perseverance till they wound or kill one or two, when they run away. We left this early, and followed the course of the river for about eight or nine miles, and then ascended the high ridge on the

summit of which Sumoogoding is situated. The stream was joined by another river called Omporo, which increased its width towards the end of the journey. Some Nagas were observed to follow, but on several men detaching themselves to go after them, they fled in all directions. The chief of Ompoa accompanied us, as also Bahoota, as far as the Sumorginding ridge, where they left us. The weather was very threatening, and as we ascended the ridge the clouds lowered and rolled through the opposite high range we had left, and we expected to have been deluged before we reached the top; however it cleared off and we ascended, but met a fierce looking foe in the shape of the villagers of Sumoogoding drawn up in battle array to resist our ingress into their village. We found many who could speak the Cacharee language; these were informed of our only wishing for rice and a convenient locality for our camp, and on this they showed us the road across the range, and from it, a most extended view is laid open of a vast plain to the north, (which greatly pleased our inhabitants of the plains, who were sick of mountain life) and on the south, of the whole Angamee valley and mountains; we then descended to a small nullah under the north side of this range called Narrow, and encamped on its bank. We got enough grain for the party to allow of half a seer for each person, the chief however did not seem much inclined to give us the quantity we required to take us to the end of our journey, viz. three days. Next day he brought only one maund, and said he could give no more, on which I sent the Mohurir Ram Doss with ten men and a Naick up to the village with the men who brought down the grain, one of whom however I took the precaution to retain, as the Cacharee interpreters had not made their appearance, according to promise, and in case we should require to force grain out of them and have a dispute, and thus obtain no guide. The party returned and said they could not get any more grain, and that the Nagas who had followed had come into the village, and were only prevented from attacking us by the villagers, who were afraid of our burning their village. Taking twenty-five men under the Jemadar, and the Kookee coolies, and leaving the same number under the Subadar, who had been ill since our leaving Semker, to protect the baggage, I proceeded up to the village, which I found empty, but saw parties of Nagas scattered about on the neighbouring hills, and the villagers in a small stockade on the crown of a hill beyond the village. Finding plenty of grain, I set the Kookees to work to clean it whilst I attempted to get the villagers down from their citadel, but to no effect. After some grain had been beaten out we observed some Nagas attempting to sneak through the jungle up to us, but as I was unwilling to injure

any of them, as they traffic peaceably with the Dhegun Cacharees, I made the Kookees take each a bundle of Dhan and a threshing board and left the village, and beat our grain out in camp.

March 12th. We left camp and followed the narrow nullah for about an hour, and then went across the plain in a north-westerly direction to the Dhunsiree or Támákæ river, fifteen miles from the first range of mountains on which Sumoogoding is situated. We reached it after crossing a good sized stream, which I imagine to be the Ungrow river that flows beneath Ungong. At 2 P. M. we went up several reaches of the Dhunsiree and encamped, as the Naga we had brought with us persisted in denying any knowledge whatever of any road leading further than the Dhema, or Dhimsire, as it is called by the Sumoogoding and Dhejna people. *Dhema* literally signifies a river in the Cacharee language. Parties were sent out from this in all directions to search for traces of a path, and one of them that returned late brought in some men left by Tooleeram to show us the route in case we should return that way. The Rajah had returned from Semker viâ Kareabonglo down the Dhunsiree. His fires had given rise to the report of the troops coming from Dhejna. It was most fortunate he had left these men, as had the Naga not been aware of the road, as he pretended he was not, we should have found very great difficulty in forcing our way through the forest to Dhejna.

March 14th. Left encampment at 7 A. M. and went through the forest. At 7° 45', passed through a reedy country; at 8° 30' came to a small river, crossing which we went over some undulating ground, and at 11 A. M. met Toolaram Senaputtee, who was going to look after us with grain. At 12° 30' reached Dhejna, where we encamped, having come a distance of about sixteen miles.

March 15th. Left Dhejna, 8° 45' and went over undulating ground till 11° 20', when we came to Mohong Dhejna on the banks of the Joomoonah river, in Zillah Nowgong, where I halted to allow the Subadar to come up in a doolee, as he was very ill.

I here heard that Doorgaram with his men had followed me, and had arrived at Dhejna, having experienced the same difficulties from want of supplies that I had. I made arrangements to have the Shan detachment left at this post.

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Toolaram Rajah kindly offered to cut a road to Sumoogoding, passable in the rains, which offer I gladly accepted, and have been informed that it is nearly accomplished. The levy under Doorgaram returned from Dhejna to the Goomegogoo Thanna to await further orders, and the Sebundee detachment was ordered to Gowahatty, as there

was no further use for them. From the difficulty of understanding the Angamees, and from my requiring interpretations through the Cacharee-Hindoostanee, Cachar-Hill, Naga, and Angamee, dialects I found it no easy matter to get information regarding the Angamee customs; besides, the impatience of the wild Angamee to remain any time in one place or attitude is a great obstacle to obtaining such information. The Angamees, or as they are termed by the Assamese the Cachar Nagas, are a very different race from the Nagas of the Cachar hills; they are a much finer and independent set, and have for some time exacted tribute from their pusillanimous neighbours of the lower hills, and collect from Mahye to Gumeoogoo, obliging the Semker Cacharees even to give them salt, &c. to preserve peace.

The young men in particular are fine, sleek, tall, well made youths, and many are very good looking; they pride themselves much upon their cunning. The formation of their joints struck me as being singular, they are not bony or angular, but smooth and round, particularly those of the knees and elbows. They are continually at war with each other. Their dress is that peculiar to most other eastern highlanders, but of a more tasteful make than most others. It is a blue kilt, prettily ornamented with cowrie shells, and either a coarse grey or blue coloured cloth thrown over their shoulders, which in war time is tied up in such a manner as to allow of a bamboo being inserted to carry the person away, should he be wounded. Their defensive weapon is a shield, of an oblong shape, made of bamboo mat work, with a board behind to prevent any weapon from piercing it; their offensive weapon is a spear of seven or eight feet long, which they throw or retain in their hand in attacking. Their villages are generally good sized ones, built on the high hills below the great range, which appear most difficult of access, and are usually in two parallel lines, with the gable end of the houses towards the front, in a diagonal position to the street. Their houses are commodious, being one large roof raised from the ground, with mat walls inside; the interior is divided into two apartments—a cooking apartment and a hall, in which all assemble. In this last every thing they possess is kept, and equally serves for a sleeping apartment, sitting room, or store room, large baskets of grain being generally the furniture of one side. There are always two large fires, round which are benches of planks forming a square seat for all the gentlemen and ladies of the family; one fire is set apart expressly for the youths and children, who are not allowed to mix with the sage old people. In front of their houses are either round or square stone pigsties, on which, of a morning and evening, the villagers sit sipping with a wooden ladle from a gourd bowl a kind of spirit

made from rice flour and Bajara seed. Their main street is a receptacle for all the filth and dirt in the place, and is most offensive. In front of the houses of the greater folks are strung up the bones of the animals with which they have feasted the villagers, whether tigers, elephants, cows, hogs, dogs, or monkeys, or ought else, for it signifies little what comes to their net. They have very fine large straight backed cows and buffaloes; they have also goats, hogs, and fowls, but no ducks or geese. On each side of their villages are stockades and a ditch, which is filled with *Pangees*, or pointed bamboos, and on the sloping sides of the ridge the earth is cut away and a wall built up; these fortified villages would make a formidable resistance to any force without fire-arms, but they are generally overlooked by neighbouring heights, which disclose the whole interior economy of the place. They cultivate rice in the valleys between mountains, and several other kinds of grain (names unknown) also a very fine flavoured kind of purple vetch. I was informed that cotton did not grow in the higher mountains, and that they got what is procured from the lower hill Nagas. The peach tree grows in a most luxurious state round the different villages, I also saw an apple tree off which we got great abundance of fine large wild apples, which were greedily devoured by the whole party. The Angamees get all their iron instruments from the Munipore Nagas; they are great wanderers, and make incursions into Munipore itself, and carry away children, who are sold up in the Hills. I met several who had been seized in that manner, and who had adopted the wild Naga customs, and were unwilling to return; Semker is a great mart for this kind of trade. The Angamees have no idea of ploughing or agriculture, or of preparing the ground, and sowing crops, in the way civilized nations do. The poorer classes make their cloths from the pith of a nettle which is procurable in great abundance, and which makes a very fine fibred hemp. The bay leaf is a native of the higher mountains, as also a small species of wild orange. The country between the Sumoogoding ridge and Dhejna is remarkably fine, particularly so on the banks of the Dhunsiree, which much resembles the species of forest scenery found in America, and remains uncultivated only from the fear that is entertained by all the ryots, &c. of these wild Angamees. The Dhunsiree, I should think, would be navigable for canoes at parts of the year up to the point I crossed it.

ART. II.—*Report by Lieut. JOHN GLASFURD, Executive Engineer Kumaon division, on the progress made up to the 1st May, 1839, in opening the experimental Copper Mine in Kumaon.*

The ground selected for the experiment is at Pokri in the Pergunnah of Nagpoor in Gurhwal, where mines of Copper have long been worked.

The mines, or rather excavations, are numerous, and are situated on the western side of a steep hill in talcose schist and clay slate. The soil is extremely soft and decayed, and has defied all the efforts of the present race of native miners, according to whose accounts the workings do not extend beyond 120 feet from the entrance in any of the excavations, which are constantly liable to accidents, and of which a new one is generally commenced after every rainy season. It is however universally admitted that the Pokri mines have been very productive, and it is said that the one known by the name of the Rajah Kān, yielded one year upwards of 50,000 rupees. Judging from the ruins of the houses, workshops, &c., and the accumulation of slag, the working must have been carried on, on an extensive scale.

The village of Pokri is situated about 6,100 feet above the level of the sea, and 3,800 above the Alukmenda river, from which it is distant nearly nine miles; the distance from Almora is eighty-six, and from Sreenuggur little more than thirty miles, and to both of these places there are good roads. The climate is good but changeable, owing to the vicinity of the Snowy range; and the temperature is from the same cause as cold as that generally found at elevations from 7,000 to 7,500 feet. The vegetation, as might be expected, is European in its character, and the forests of oak, rhododendron, and the common long-leaved pine are almost inexhaustible in the immediate neighbourhood of the mines. During the greater part of the year there is water sufficient for washing the ores in the immediate vicinity, and at a distance of about two miles, there is enough for the purposes of machinery throughout the year. The village consists of eighteen to twenty-two houses, and from sixty to eighty inhabitants, who are chiefly of the Chowdry and Mining castes. The right of mining was rented by them from Government on a quinquennial lease of 100 rupees per annum, which expired about a year ago; but the people are so poor, and their resources so limited, that they have been unable to undertake any new lease, and indeed before the present experiment was commenced they hardly attempted more than the re-smelting portions of the slag from the old working.

The mining ground lies in two ravines, both on the western face of the hill, and about 500 yards apart, separated by a low ridge, the direction of the ravines being nearly east and west. The most northern of the two, and in which the village is situated, is where the old mine called the Rajah Kān was. The right, or northern side of the ravine is of dolomite, the left being talcose schist, which forms the ridge separating the two. The southern ravine is known by the name of Chumittee, and is full of old excavations; the formation is talc, bounded on the south by a dolomite limestone, and on the north by the low ridge of talcose schist through which in one or two places granite protrudes. Besides these, there are several other localities on the same hill where copper has been extracted; one very promising situation is an old mine known by the name of the Dandu Kān, or hill mine, about four miles from Pokri, and there are also many other places in the Pergunnah of Nagpoor, where copper is known to exist.

The experimental works now in progress were commenced in January last, and consist of two adits, or galleries, one in each ravine; that in the northern, or Rajah Kān ravine, has been driven and secured with timber to a distance of $149\frac{1}{2}$ feet from the entrance; the gallery is six feet high by three feet wide, and the frames, which are oak branches of three and a half to four inches diameter, are placed from two to two and a half feet asunder; the top and side sheeting are also of oak branches, the diameter of which is about two and a half inches. The gallery is being carried in with a slope of one inch per foot nearly on the ruins of an old working, which has been roughly secured with timber, but has long fallen in. The soil is an alluvial deposit filled with masses of rock, chiefly of dolomite, and the water proceeding from the gallery is slightly impregnated with sulphate of copper. When about sixty-three feet from the entrance the superincumbent soil gave way, and fell in on the head of the gallery; this breach has been cleared and converted into a rough shaft, which at present answers for the purpose of ventilation, but as it is directly in the line down which the water runs in the rainy season, it will probably be necessary to close it.

In the Chumittee ravine a gallery has been driven and secured with timber to a distance of 111 feet from the entrance; it is in size and mode of timbering exactly similar to the other, the slope averaging only half an inch per foot. The first seventy-five feet were driven through talc slate, with occasional beds of quartz, in which were small quantities of copper pyrites; the next six feet passed through an old working which apparently went down obliquely, and had been regularly timbered with deal; on reaching this working, traces of copper were found, but were lost on entering it. The next twenty-four feet went

through firm talc slate in which copper ores, in trickling strings, and also disseminated, were found. The ores were of various kinds, but vitreous copper ore predominated. From these twenty-four feet fifty-eight or sixty seers of rich ores, worth about twenty per cent. of copper were obtained, one-half of which reverted to the miners, according to previous agreement, also a quantity of stuff supposed to contain about forty maunds, which would probably produce twelve to fifteen per cent. of copper. The last six feet of the gallery passed through another old working exactly similar to the former, and which also appears to have gone down obliquely. A perpendicular shaft has been commenced 150 feet from the entrance of the gallery, for the purpose of ventilation; it has been sunk to a depth of thirty feet, and it is expected that by the time this shaft has attained the requisite depth, the gallery will have advanced far enough to join it. The dimensions of shaft are 6×3, the frames are of oak, and the sheeting fir; the first three feet were through alluvial deposit, the next ten through talc slate, and the next five through what appears to have been an horizontal adit filled with deal timber and blue talcose mud, ten pounds of which on being washed, left four ounces of ore, worth probably ten per cent. The remaining twelve feet went through alternate talc and dolomite, or rather having talc on the north side and dolomite on the south. The water oozing from the old working has much impeded the shaft, the quantity discharged by wooden buckets averaging daily about 500 gallons.

The supply of iron required for the works is obtained from the mines of that metal in the Khutsaree valley, about forty miles from Pokri, on the road to Almora. In this valley there are large repositories of compact red iron ore in clay slate, containing beds of limestone. The manufacture of iron is carried on here more extensively than at any other place in the province, and the metal produced is considered superior to any other here manufactured. There is no want of iron ore in the district, and it exists in many places nearer to the Pokri mine than Khutsaree. At Dewalpurh, half way between Pokri and Sreenuggur, good iron is worked, and about two miles south of the village of Pokri there is an old deserted mine, the specimens from which are specular iron ore, which might probably be worked with advantage.

The present race of native miners have been at Pokri for three generations, and have no recollection or tradition of fir timber having been used in the mines; and until it was found on the old workings, they strongly protested against the use of it. The timber found in the Chumittee gallery appears to have been put together with considerable

care, and where firmly bedded in the mud is perfectly sound, but where at all exposed it is much decayed.

The natives of the place are well satisfied with the experiment as far as it has gone, and the applications for employment are more than required; they are also very willing to adopt any improvement on their own rude system, and readily falling into and becoming expert in the use of the tools, &c. The work in the galleries has been performed partly by contract and partly by hired labour; in the former mode the rate paid is about one rupee per foot with half the ores found, and in the latter two annas per day. In the Chumittee gallery the people prefer contracting, in the hope of obtaining profit from the ores found; whereas in the Rajah Kān gallery, as no copper can be expected while passing through the alluvial deposit, they are not at present willing to contract.

The result of the experiment so far may be considered satisfactory, and it is quite certain that copper in considerable abundance has existed in the ground through which we are now passing in the Chumittee ravine, assuming that this ground has been more or less disturbed to a depth of 120 feet—the greatest the native miners say has ever been attained by them, although I question if ever they got so far. We may reasonably hope that by the time the gallery has reached to a distance of about 280 feet we will enter upon ground hitherto untouched, and until this is reached no fair criterion of its capabilities can be formed. I do not expect to make much progress during the rains, owing to the very loose nature of the soil; wherever we have passed through old workings considerable delay has been experienced from the constant falling in of the soil.

(True Copy,)

H. T. PRINSEP,

4th July, 1839.

Secy. to the Govt. of India.

ART. III.—*Account of a Journey from Sumbulpūr to Mednipūr, through the Forests of Orissa.* By LIEUT. M. KITTOE.

(Continued from page 383.)

I resumed my march towards Mednipūr at 3 A. M. the following day, and reached Deogurh, the capital of the Baumurra district, at 8 o'clock; on leaving, it was too dark to see any distance, this was of no consequence, as there were high hills close on either side. I had to descend a slight ghát, at the foot of which I crossed the Burghat torrent; were the dawk road to pass this way it would be necessary to have a suspension bridge over it, likewise on most of these hill torrents. For the first

six miles the path is very circuitous, winding round the bases of several hills, there are many water courses, and the number of loose stones of all sizes strewed about, render it very painful to travel over. The Saul forest is very dense, and there are some very fine timbers, it continues so for five and a half miles. Our course thus far had upon the whole been north-easterly, we here turned to the southward, in which direction we continued for a short distance, and crossed a shallow running stream called Jurrítóora, flowing to the right; we then came upon an open spot in the centre of a beautiful plain, with fine mango topes around it; this is a Bunjara halting place; there was formerly a small hamlet close by, but during the disturbances between the Raja and the Sumbulpúr people, some years ago, it was destroyed. Half a mile further forward the same rivulet is recrossed, the road then turns to the eastward, and together with the stream passes through an exceedingly narrow defile, called Juraikilla, into the valley of Deogurh; the hills are exceedingly high on either side, those to the left (or north) have faces nearly perpendicular. There are the remains of a stone wall and of a stockade, by means of which the Deogurh people are said to have often successfully defended themselves against their invading enemies.

On passing the defile the valley appears in all its beauty, extending west to east as far as the eye can reach, widening with a perceptible fall in that direction which is towards the valley of the Brahmení river, into which the Jurrítóora rivulet empties itself, after winding along the valley at the foot of the hills skirting its southern boundary. The view from the pass, looking east, is exceedingly beautiful, indeed nothing could be more grand. About two miles in advance, I came to a large village called Kainsur, between which and the pass I had thrice to cross a large nullah and several smaller water-courses, over all of which it would be necessary to have bridges. After resting a little, I continued my journey, and passing several large villages, including old Deogurh, reached the modern town of that name, distant $13\frac{1}{2}$ miles from last ground. I found a large red and white tent ready pitched for me by the Raja's orders, and an abundance of supplies had been collected; this civility was quite unexpected, but there was probably a reason for it.

Deogurh is a large straggling village, distant one mile from the hills on the northern side of the valley, which may here be about two and a half miles wide. The Raja's *Noor*, or palace, together with some small temples are the only pucca buildings; there are small water-

courses or aqueducts passing through every street and garden, the water being conducted from the famous cataracts which is in the hill just above the town ; the fields for several miles are irrigated from these falls. I was too much fatigued on my arrival to look about me, added to which it was late in the day.

Although the apparent comfort of a tolerable good tent was thus provided, I had more reason for anger than pleasure, for I had sent on part of my guard and the Political Agent's Muktar (an Ooriya)—who had been so officious in attempting to prevent my coming by this route—to have a bower prepared in some shady spot, distant at least two miles from hence, and had given most positive orders on this head ; for in the first place, I wished to avoid an interview with the Raja, travelling in the uncomfortable manner I was forced to do ; secondly, I wished to put it out of the power of my followers to extort money, "*Salamí,*" from him, a regular practice with native servants of political establishments, particularly with the worthies of Cuttack, two of whom accompanied me* on the present occasion. This kind of systematic plunder is perhaps one of the chief causes of aversion the inhabitants have to our making a thoroughfare in their different states.

I suffered more from the heat this, than on any of the previous days of my journey, but towards 3 P. M. a severe north-wester came on, followed by a heavy shower of rain, which cooled the atmosphere for the time being, but the steam from the wetted ground rendered the heat at night nearly suffocating.

The Raja paid me a visit at 5 P. M. he is a fine handsome lad, of about eighteen years of age, but rather effeminate ; he does not appear to be very wise. He expressed great anxiety about the new road, and begged I would not bring it through Deogurh, as there were (of course) other much better paths, but that if I did do so, that Lehragurh and

* When I went on my tour to the Coal Mines of Talcher last year, I was informed, on credible authority, that a Chuprassie of the Commissioner's establishment who accompanied me, had declared that the trip was worth fifty Rupees to him, and that he wagered that he would not make less before he returned to Cuttack. This man subsequently gave me much trouble by his unceasing attempts to lead me by a round-about route through Dhenkernalgurh, Hindolegurh, Ungoolgurh, that he might secure the usual nuzzers which the Raja's offer on paying their first visit ; and when he found that I was not to be led, he prevailed upon me to allow him to go to Dhenkernal with the Commissioner's Purwanah, assuring me that unless he did so I should get no supplies or aid ; he again attempted the same trick in Ungool, but I prevented him, and suffered no small inconvenience in consequence ; yet this man was the most active and best informed person on the establishment.

Keunjurgurh must have the road through them likewise, for it to be at all a straight line; there was more in this sapient remark than meets the eye; part of the meaning is this,—that if he were to have the nuisance imposed on him, he thought that the Lehra and Keunjur Rajas should share it likewise. I was subsequently informed that he had paid a good deal of money to some of Mr. Babington's people and to my own, to ensure their good services in dissuading me from adopting this line.

The Raja when about to leave, let me know through the medium of his "*Spreach sprucher*" that he had a very urgent request to make. I requested him to speak out, when he told me a long story about some Mussulman Saudagurs from Cuttack who were sitting *Dhurna** at his gate, wishing to insist on his paying them some debts of old standing, with compound interest thereon, and that he wished me to interfere in his behalf, as he was about to proceed himself Cuttack to wed a daughter of the old ex-Rani of Sumbulpur; having no power to interfere I declined doing so, further than recommending the merchants to have patience; I accordingly directed their attendance in the evening, took leave of the Raja, and proceeded immediately to see the falls, where I was told that there were many "*Assura ka hār*" or giant's bones, a denomination generally applied to fossils; so that I proceeded with all haste, expecting a fine harvest. It was becoming dark just as I reached the lowermost basin of the falls, in a beautiful woody recess, the rocks towering several hundred feet above. I never saw a more enchanting spot, the mango and other trees growing to an incredible height. There are five falls and as many basins formed by them; the height of each may be about seventy or eighty feet; the volume of water is considerable. I climbed to the second basin, and there waited till torches were procured to enable me to see the "giant's bones," but, lo! what was my disappointment when I found that these said bones were nothing more than large masses of stalactite in which were fantastic caves. The inhabitants make lime with it, as an ingredient for their paun and betel nut, and their method of burning it is rather singular; some hold a slab of stone with a heap of lighted charcoal against the roofs of the caves; the parts affected by the heat drop off into the fire, which is then extinguished, and the particles of lime separated from the coal. Another

* Sitting *Dhurna* is a common practice with natives who wish to attain any particular object; the custom is, to sit at the door or gate of a person without taking food or drink until the party entreated yields, and should the petitioner die, the curse of his blood is supposed to rest on the latter.

method is this, a few small pieces of the rock are put into a wisp of damp rice straw along with some lighted charcoal, the wisp is then wound up into a ball as tight as possible and tied to a string, by which it is kept swung smartly round until the lime is ready, this the burners know by the state in which the wisp appears. This practice I have observed elsewhere in use in burning the limestone nodules (Kunkur) for the same purpose. But to return to the falls—I could not see much by torch-light though I had several, the glare of which added to the magical appearance of this truly romantic spot; a cold breeze blows down from the upper falls, which the guides assured me never ceased all the year round. There are several fabulous stories connected with the spot, and a large serpent is said to inhabit one of the caverns, which is not however improbable.*

I felt very much inclined to halt and pass a day here, but the rains having commenced, it would have been dangerous to prolong my stay in jungles, I therefore returned to camp where I found the merchants in attendance together with the Raja's people; the former seemed little inclined to listen to any terms short of payment in full of their exorbitant demands; the latter urged the inability of their master to pay more than 250 Rupees out of 3,000 with an I. O. U. for the balance when he should return from Cuttack with his bride, and, what to him was perhaps more valuable, her dowry.

I should here observe that there are many Mussulman and other merchants who come from Benares and Cuttack with indifferent horses and inferior merchandize of kinds, which they pawn upon the ignorant grandees of these outlandish places; they give long credit on promise of interest, and consider themselves lucky if some few years afterwards they realize the amount of purchase money, which from its exorbitant nature, renders ample remuneration for the trouble and delay they are subjected to, sometimes having to wait for several months together, being put off with repeated promises of payment, and as many plausible excuses for non-payment, till at last an order is given them upon the farmers of one or more villages who may be in arrears to their lord; from these the merchants screw as much as they can, the amount of which, of course, very much depends on their power and temper, and

* Mr. Motte in his Narrative describes an enormous serpent called *Nagbunse*, which is worshipped some where near Sumbulpur, see p. 82, Asiatic Annual Register, Vol. 1. I have been told that this reptile is still in existence, and that the diamond washers make offerings, if they neglect which, they suppose their search will be fruitless.

serious frays are not uncommonly the consequence. Formerly the commissioners and political officers used to interfere and enforce payment to the merchants, but I believe this bad practice has been discontinued, I think that if a few merchants were licensed to proceed into the Gurhjat, previously manifesting their goods, and paying a light tax to cover the expense of a registry of them, and of their fair market value, upon an understanding that the settlement of any unadjusted claims on any Zemindar would be insisted on to the extent of a reasonable profit, much good might accrue, and a great deal more merchandize, both European and country, would find a ready sale with advantage to both parties.

The merchants seemed to agree to the terms proposed, when the motley group retired and left me to enjoy as much rest as the steaming heat and stunning noise of frogs and *chicadas* would allow of.

27th May. I rose at a very early hour, when having dismissed half the guard of the Ramgurh Battalion and that of the 19th N. I. and the Political Agent's Mooktar, whom I had yesterday directed to return to their stations viâ Sumbulpûr by the Baghlot ghat and the road which had been hidden from me, I proceeded on my journey. I walked several miles through a thick but low jungle, along a very good road, to a place called Sonamoonda, where I rested a little to allow the stragglers to come up; thus far my course was a little to the northward of west, having the hills at a short distance to the left, the path then began to wind considerably more than any obstacles rendered it necessary, and upon the whole in a southerly direction. The forest is very thin, with no underwood, and the ground undulates considerably; there are several large nullahs and a great many small water-courses, almost all of which would require bridging. The next place I reached was a large village of *Guallas*, called Korapeeta, situated on an elevated spot in the centre of an extensive plain, on to which the Deogurh valley opens; from hence the ground (still undulating) has a perceptible fall towards the Brahmenî river, on the banks of which, at a place called Barsing, I encamped for the day. I took up my quarters in one of several large huts which Major W——'s Mooktar and the guard of the Ramgurh Battalion had had constructed while awaiting the arrival of my predecessor. I have learnt sufficient regarding the oppressive conduct of these knaves to satisfactorily account for the Mooktar's anxiety to prevent my travelling by this route; it appeared that he had passed himself off with the credulous Zemindars here, as the Political Agent's assistant and friend!!—and used to have *dállis*, &c. &c. sent

him daily. I felt the better pleased at having dismissed this worthy at Deogurh, for he was more a hindrance than otherwise to my operations.

Barsing has been a large place, but famine, misrule, and cholera have reduced the number of inhabitants to one-half, so that many of the huts are in ruins. The river flows under the village; though its span here is very great the water is shallow, and wends its way in small rills between numerous rocks and islets which every where stretch across the bed; the banks are not more than eighteen or twenty feet high, and are seldom overflowed, so that the river can never rise sufficiently to admit of boats navigating it with safety; this alone would be a sufficient reason to seek for a more favorable spot for the road to pass, which might be found five or six miles either above or below this point, where the banks are steep and rocky, and the water confined to deep and narrow channels, equally well adapted for ferries or suspension bridges; the latter would, for many reasons, be very desirable both on this and other rivers.

I passed this day with more comfort than usual; the hut I occupied was under a cluster of noble mango and tamarind trees, and facing a beautiful shady tope; it was a paradise contrasted with what I had hitherto met with; I could not help reflecting on the truth of an admirable saying of Demetrius, quoted by Addison in the chapter treating of the Providence of God, that "nothing would be more unhappy than a man who had never known affliction;"—a truth deeply impressed on my mind, to which I would add, a similar maxim which called it to mind, "that he who has never experienced discomfort and privation, cannot appreciate real comfort, or know the virtue of contentment." I cannot here refrain from acknowledging the consolation I felt, and the hope of conquering all my difficulties, the frequent perusal of the beautiful chapter above mentioned inspired me with during the severe trials I had lately suffered; many were the times when nearly driven to distraction and despair, its perusal made me happy in my misfortune. Reader, pardon this digression. To return to my narrative. About 4 P. M. a very severe north-wester came on, followed by a very heavy fall of rain and hail, which lasted until 6 P. M.; it cleared before sunset, so that I was able to observe and sketch the features of the country, but could not resume my march, for there was every indication of bad weather. I began to feel uneasy at the prospect of the evil effects of the rain, and I resolved passing the night here, and to push on at all hazards at day-break.

(*To be continued.*)

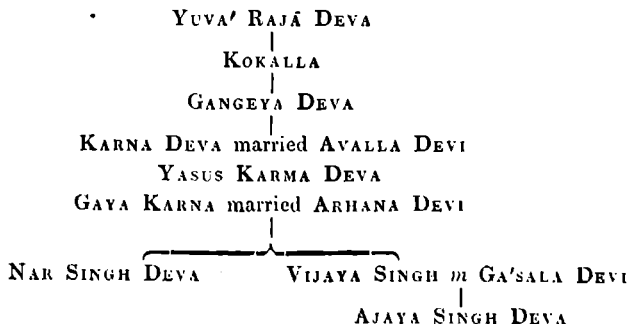
ART. IV.—*Notice of a Grant engraved on Copper, found at Kumbhi in the Saugor Territory.—By the Editors.*

We present our readers with another *Tumba Patra* in the original, and with a translation which we have made. DR. SPILSBURY has obligingly presented this valuable relic of antiquity to the *Asiatic Society*. He writes, that “the two Copper plates joined by a ring seal were “dug up at *Kumbhi*, on the right bank of the *Herun* river, thirty-five “miles north-east of *Jabalpoor*, and were forwarded by Major Low, “Magistrate of this district. The letters engraved on the plates are “in great preservation, and from their date upwards of 900 years old, “corresponding nearly with inscriptions in stone in the same character (facsimiles of which were forwarded by the late Major FRANKLIN to the Society). “Something may be gleaned of the period when a large “city existed, only six miles west of *Jabalpoor*, now to be traced by “little more than mounds of bricks and cut stones.”

The skill and kindness of Lieut. KITTOE, has enabled us to prepare a plate exhibiting facsimiles of the seal and specimen of the letters, together with a table which shews the alphabet of the plates in juxtaposition with the modern Nagri alphabet. The character of the plates approaches that of the *Rajgarh* slab, of which we published the inscription in our *March* number by oversight.

Lieut. KITTOE's neat engraving was published in our *May* number; to which we refer our readers. The Seal is that of SRI-MAT VIJAYA SINGHA DEVA. The Legend is DURGA in her form MAHA LAXMI supported by two Elephants. At the foot is the Bull of SIVA.

The grant gives us eight generations of the *Kula-Churi* dynasty, beginning with YUVA RAJA DEVA, who was a descendant of the renowned KARTTA VIRYYA of the race of BHARAT.



AJAYA SINGH DEVA, VIJAYA SINGH, as heir apparent, by order of his mother GA'SALA makes the grant to the Brahmin SITHA SARMA, in the year Sambut 932, or A. D. 876. It is more ancient by 87 years than the *Rajgarh* inscription communicated by Captain BURT.

This grant does not give us any important information. We obtain from it however for eight generations a line of Rajas who ruled in those parts, and it will be observed that a remote ancestor of the grantor married a *Hun*. Unless this be a poetic fiction, it may imply that Hindu princes in remote times assumed some latitude in the selection of wives,—more perhaps than is allowed by the strict law. We presume that the *Huns* were not true Hindus. We have also the designation of the highest officers of Church and State. The high priest,—the chief Confessor—the Prime Minister—the Chief Councillor—the Principal Secretary for foreign affairs—the Chief Justice—the incorruptible Superintendent of Police—and the Chamberlain. The titles given to the ruling prince are most elaborate. Amongst his dependent chieftains are enumerated the *Gaja-pati*, *Aswa-pati*, and *Nara-pati*—titles peculiar probably to particular chieftains. The grant, for redundancy, might be envied by an English conveyancer. The quaintness of some of the old Hindu names may be also observed from this grant. Several of the names are quite obsolete.

The initial verses of the grant are not devoid of merit, but are not so elaborate as the poem on the *Rajgarh* slab.* The perorations of grants of this class have always many verses in common, of which some seem to be *puranik* quotations. These deprecatory and imprecatory verses occur with various readings. We have copied, with alterations suitable to our text, Mr. Colebrooke's versions of a few; one,—the forty second verse—is of peculiar beauty and dignity, and in the translation the classical pen of that distinguished orientalist may be recognized. The imprecations against the resumer are terrific: perhaps they were prophetic. "That rascal who by delusion of avarice, &c."

The inscription was composed by BATSA RAJA *Dasa-Mulika*, or *Dasa-MULI*, the chief Justice who witnessed the gift. We have been much puzzled by this unusual term. It seems to be a title denoting the capacity of the dignitary for business. There are a few orthographical errors in the plate, which we have noticed. They seem due to the ignorance of the engraver, the "smith LEMA."

* See our March No. Art. I.

It may be observed that in this and other grants the grantor gives the property in the soil, and says nothing of holding tax-free. May it be inferred from this, that the Raja was under the old *Hindu* system considered as the owner of all the lands in his dominions, and that where he granted in proprietary right, the tax-free tenure or exemption from rent to the state, was implied as a matter of course?

TRANSLATION.

OM *glory to BRAHMA.*

1. That deity (1) whose navel is a lotus prevails; and so does the lotus his navel. Excellent too is the lotus-born god (2) produced therefrom; excellent is his offspring, that *ATRI*; and after them excels that luminary beloved by the ocean, who received his birth in the cavity of his eye.

2. That luminary which glides in the ærial expanse, like as it were a swan on a lake, begat as his son, *BODHANA* (3), the first prince, a son-in-law domiciled in the mansion of the lotus-loved luminary (4).

3. The son of the god, who rules the waters, obtained as his son *PURURAVAS*,—him whose concubine was *URVASI* (5), endowed with numerous incomparable qualities and whose wife was *URVARA'*.

4. In that race was born *BHARATA* (6). He was enamoured of the earth (*Viswambhara*), lovely by her ornament, the ocean, encircling her as a girdle, and whose pure glory rivetted as it were on the pillars of more than a hundred *Aswamedhas* is proclaimed by the *YAMUNA*.

5. In his race, excellent is that *KARTTA-VIRYYA*, that warrior wielding without effort every weapon, as if by second nature. Then he supplied the name of *Raja* (7) to the Hare-spotted luminary, the progenitor of his race.

6. That monarch, the lord of kings (firm as the snowy mount), begat the *Kulachuri* race, distinguished by sovereigns spotless in their conduct like pure pearls.

7. In his line was the king *YUVA-RAJA-DEVA*, foremost of the virtuous, who had purified his capital like the city of *Purandara* (8),—a youthful lion in quelling of kings the pride, which resembles some vast elephant blind with rage.

(1) *BRAHMA*. (2) *VISHNU*. (3) *Alias* *BUDHA*, the regent of Mercury, or the Planet itself. (4) The Sun. Mercury is said to be domiciled in the mansion of his father-in-law the Sun, from his approach to that luminary in parts of its orbit. (5) The celestial courtesan. (6) *BHARAT* is the king, by whose name *INDIA* is yet designated, *Bhárata Varsha*. (7) Shining. (8) *INDRA*.

8. Of that lord of the world, the principal ministers placed on the throne his son KOKALLA, whose expanded armies (consisting of four arms (9)) were stopt by conflict with the four seas ;—

9. Of whom going forth afar, the glory shewed like a forsaken woman, far surpassing white sandal wood ; it reprov'd the lustre of the moon, and eclipsed a string of pearls.

10. Whose son was GANGEYA-DEVA, the lord of the fortune of the bold,—a falling thunder-bolt on the heads of his enemies,—by his arm, surpassing the length of a city bar. He whose face was decked with smiles, and whose broad chest shewed like an emerald tablet.

11. To whom was dear the abode at the root of the holy fig tree at *Prayag*. When he had obtained emancipation in a better world with his hundred wives, his son KAMA-DEVA revered the various quarters by pearls extracted from the frontal orbs of elephants, rent by his sword.

12. By whom was created a pillar in honor of BRAHMA, called *Kurnavati*, as if the mansion of that divinity in this nether world,—the foremost abode of the virtuous,—the root as it were of the twining plant of theology, and the diadem of the stream flowing from heaven.

13. By that lord of the *Kuluchuri* race, on his wife AVALLA DEVI, another LAXMI produced from the ocean of the race of *Huna*, was begot YASASKARMA DEVA, adorned with glory co-extensive with the billows of the ocean, swelling as they did in the doubt of the rise of the luminary who cherishes the hare.⁽¹⁰⁾

14. Of whose enemies, for an instant, the condition was as if they had repaired to the banks of some lake in the cavity of some great hill, and there perceiving their images in the water like a confronting enemy, they hear the echo of the words “he is come,” interchanged in their terror. What beyond this?

15. His son was GAYA-KARNA, of great renown ; whose mistress was the earth stained⁽¹¹⁾ as if replete with the blood, from the throats of his powerful enemies wounded in war.

16. Eager to expand the canopy of his glory in all quarters, adorned with virtue and robed in majesty,—by whom planted, the thorn of grief rankles in the hearts of the beloved of his enemies.

17. On his Rani, ARHANA DEVI, he begat a son, NARA SINGHA, lord of men ;—as if a sentient effort on volition.

(9) The four *angas* or arms of an army are elephants' cavalry, cars, and infantry.

(10) The play on the words is lost in the translation. The damsel separated from her lover in Hindu Poetry reproaches the moon. This is a strong hyperbole.

(11) A pun is lost.

18. By largesses of gold (*hiranya*) and clothes (*kasipa*) did he shew great love to the learned (*vibudha* (12)) and robbed of his pride the god of love, by eclipsing his beauty.

19. Who in the hands of Brahmins placed five or six gifts, in the form of drops of water—and they with these, quenching their thirst, abashed the ocean which abounds in gems.(13)

20. That sagacious king, who extended his popularity, gratified suppliants with presents commensurable with his weight and other gifts.

21. Who not less than PARAS RAM (14) produces envy,—making the world the dominion of *Brahmins* by destruction of the *Kshatrayas*.

22. His younger brother was the king JAYA SINGH DEVA, served by valiant kings; by whose liberality its glory eclipsed,—RAJA BALI, another heavenly tree, withered beneath the surface of the earth.(15)

23. On hearing of the coronation of JAYA SINGH DEVA, the king of *Gúrjara* deserted his weak kingdom, so also the TURUSHKA; while the chieftain of *Kuntala* neglected amorous dalliance; other kings too daffing the world aside, fled beyond the ocean.

24. Of the moon, of whose glory by the light the atmosphere being rendered brilliant, the descending flocks of birds hardly appeared white.

25. Excellent is his son, the king VIJAYA SINGH, a lion amidst his defeated enemies—a ray reposing on the firmament—a sun on earth, adorned by wide extending glories, the abode of amiable qualities, and the shrine of auspiciousness.

26. May she be honored, the illustrious GA'SALA DEVI, of whom,—the sight is as a shower of nectar,—proximity a pure treasure,—and the voice like the rare gem *Chintamani* (16)

Prose.

The chief object of homage—the INDRA of the world—the divinity of dependent kings—foremost of the devout in the contemplation of the feet of VA'MA-DEVA(17)—a god amongst principal and inferior kings—the chief of the devotees of SIVA—lord of *Trikalinga*—lord of the three principalities of the *Gaja-pati*, *Aswa-pati*, and *Nara-pati*—of the victorious VIJAYA SINGH DEVA, the heir apparent prince AJAYA

(12) A double sense pervading this is lost. (13) A preliminary rite preceding gift is pouring some drops of water on the palms of the donee. (14) VISHNU assumed the form of PARUS-RAM to quell the pride of the XATRIYAS. (15) RAJA BALI is celebrated for his liberality. VISHNU, as the dwarf, asked him for three feet of soil which were granted. But the god's expanded feet embraced the whole world. Unable to keep his promise, the king was condemned to hell. (16) *Chintamani* is a fabulous gem, supposed to yield its possessor whatever may be required—(WILSON).

(17) SIVA.

SINGH DEVA, son of the great Rani convened the following persons,—
 SAIVA ACHA'RJYA BHATTARAKA, the great minister,—VIDYA DAIVA,
 the *Raj-Guru*,—the *Pandit* YAJNADHARA the chief *Porohit*,—the lord
 SRIKIKI, the great councillor, pre-eminent in faith,—the Lord DASA
 MŪLIKA, BATSA-RAJA, the chief judge (18) and reporter of state
 affairs(19),—the lord PURUSHOTTAMA, the principal secretary for foreign
 affairs(20),—the great chamberlain(21),—the incorruptible superintendent
 of the police (22),—the treasurer (23),—the master of the horse and ele-
 phants,—also other persons resident of the village about to be given. After
 this, as becometh, he addresses, explains, and orders thus: “Be it known
 “to you, Sumbut 932, on the anniversary of the age, at *Srimantipurī*
 “with my assent, by my mother GA'SALA DEVI, who had according to
 “ordinance bathed in the *Narmada*, and worshipped MAHADEVA for the
 “sake of augmenting the merit and glory of her parents and self, to the
 “Brahman SITHA SARMA (the son of CHHITU *Pandit*, grandson of
 “SULHANA *Pandit*, and great-grandson of JANARDANA *Pandit*, follower
 “of the metrical veda(24) of the *Sāvarna Gotra*, and devoted to the five
 “*Pravaras*(25)—BHARGAVA CHYAVANA APNAVAN AURVA JAMA
 “DAGN) was given, under a grant, the village *Choralaga*, in the
 “*Patala* of *Sambala*, limited by four boundaries, but exclusive of such
 “four limits,—together with pasture for kine, water and land, mango
 “trees and honey, salt-mines, salt-pits,—with right of ingress and egress,
 “with wilds and marshes, with trees and grass, and so forth rising
 “spontaneously, (*part obliterated*,) together with woods and forests,
 “without any let or hindrance. This is the prayer of the giver.”

27. RA'MABHADRA again and again exhorts all those future rulers
 of the earth: this universal bridge of virtue for princes, is to be pre-
 served by you from time to time.

28. And it is said. By many kings, SAGARA as well as others, the
 earth has been possessed. Whose-so-ever has been the land, his has then
 been the fruit.

29. He who takes a single *tolah* of gold, a cow, a finger even of land,
 abides in hell until the general annihilation.

30. The resumer of land is not expiated by one thousand pools, by a
 hundred sacrifices of horses, by the gift of ten million of kine.

31. He who resumes land, whether given by himself or by another,
 is born an insect, in ordure, and sinks with his forefathers.

(18) Mahāxa patālika. (19) Maha pradhanartha lekhi. (20) Maha sādhi-
 vigrahika. (21) Maha pratihāra. (22) Dushta sadhya charā dhyaxa.

(23) Bhānda garika. (24) *Sama Veda*. (25) Each *Gotra* has its tutelary
 or Patriarchal *Rishi*. The *Pravaras* are the companions of the *Rishi*.

32. Furrowed by the plough, together with seed,—in proportion as he gives culturable land acquired by himself, does he abide in heaven.

33. The giver of land dwells sixty thousand years in heaven. The resumer and the abetter live so many years in hell.

34. They who seize property dedicated to the gods or Brahmins are born black snakes, residing in dry caves, in woods destitute of water.

35. Wrongly taken, or caused to be taken, of the taker or causer, the race until the seventh degree burns.

36. Those of our lineage say—This gift is to be respected. The fortune of men is fickle, like bubbles of water ; gift is the fruit of another, and therefore to be preserved.

37. For the benefit of the subject, the wise should regard fixed ordinances. That rascal who by delusion of avarice resumes, suffers a miserable existence.

38. The gifts, which have been here granted by former princes, producing virtue, wealth, and fame, resemble orts and vomited food. What pure man would resume them ?

39. He who receives lands, and he who gives, both are virtuous doers, and certainly go to heaven.

40. A conch, a coach, a parasol, lands, a horse, a good elephant, are the indications of land-giving. This is the fruit, Oh PURANDARA.

41. In this race and in another race whoever may be king, of him a suppliant, I beg with clasped hands—Let him not resume this grant.

42. This sovereignty of the earth totters with the stormy blast ; the enjoyment of a realm is sweet but for an instant ; the breath of man is like a drop of water on the lip of a blade of grass ;—virtue is the greatest friend in the journey to the other world.

43. Born in my race or in the race of other kings, those stern monarchs of futurity who may preserve the lands of gods and priests, in honor of them do I place my clasped hands to my forehead.

Prose.

Written by BATSARAJA, son of SRI DHARMA removing wounds, a stranger, and capable of ten works. The Pundit SRI KESAVA caused to be written, and the smith named LEMA engraved. Be there auspiciousness.

अजनि कुलचुरीणां स्वामिना तेन ऋणा
 न्वयजलनिधिलक्ष्म्यां श्रीमदावल्लदेव्यां ।

शशभृदुदयशंकाक्षुब्धदुग्धाब्धिबीची
 सहचरितयशःश्रीः श्रीयशःकर्मदेवः ॥१३॥

अत्युत्तुङ्गगिरीन्द्रकन्दरसरस्तीरं कथञ्चिद्गतै
 रोषन्निर्वृतिमङ्गिरागतमिति त्रस्तैर्वदङ्गिर्मिथः ।
 आकर्ण्य प्रतिशब्दमम्बुनि निजं विम्बं मिलद्वैरिवत्
 संवीक्ष्य क्षणमासितं किमपरं यस्यारिभिस्तं तथा ॥१४॥

तस्यात्मजो भूदतुलप्रतापः श्रीमद्गयाकर्ण इति प्रतीतः ।
 यस्याह्वेष्वद्भुतवैरिकण्ठकेदासपूर्णैव धरानुरक्ता ॥१५॥

तितांसुना दिक्षु यशोवितानमुन्नम्बवेशेन गुणान्वितेन ।
 येनारिकान्ता हृदयेषु गाढमारोपितः सज्जति शोकशंकुः ॥१६॥

असावर्हणदेव्यां श्रीनरसिंहनरेश्वरं ।
 सवेदनमिवेच्छायां प्रयत्नं सुषुवे सुतं ॥१७॥

उच्चैर्हिरण्यकशिपुप्रतिपादनेन
 प्रीतिं परां विबुधसंहतिषु प्रकुर्वन् ।
 सौन्दर्यमारविनिवारितमारगर्वं
 श्चित्रं तथाप्ययमहो नरसिंहदेवः ॥१८॥

यो ब्रह्मणां पाणिषु पञ्चषाणि
 दानानि धत्ते पयसां पृषन्ति ।
 तरव तृष्णामवधूय ते च
 रत्नाकरेपि प्रथयन्त्यवज्ञां ॥१९॥

महीभर्ता महादानैस्तैस्तुलापुरुषादिभिः ।
 मतिमानेकरत्यर्थं कृतार्थयति योऽर्थिनः ॥२०॥

कुर्वन् महीं ब्राह्मणसादरिच्छत्रनिवर्हणः ।

सार्द्धं परशुरामेण यः स्पर्द्धामधिरोहति ॥२१॥

तस्थानुजो नरपतिर्जयसिंहदेवः

शौटर्थोज्ज्वलैरपिनृपैः क्रियमाणसेवः ।

यद्दानलुप्तयज्ञसेव सुरद्रुमेण

व्यद्रावि भूतलतलेबलिना प्रलीनं ॥२२॥

राष्ट्रं^(c) गूर्जरभूभुजा तु कुबलं मुक्तं तुरुष्केण च

त्यक्तः कुन्तलनायकेन सहसा कंदर्पकेलिक्रमः ।

श्रुत्वा^(d) श्रीजयसिंहदेवनृपतेराज्याभिषेकं नृपाः

सन्त्रासादपरे ष्यपास्य जगतीं पारं यथुर्वारिधेः ॥२३॥

कथञ्चिद्यद्यशश्चन्द्रचन्द्रिकाधवलीकृते ।

बलक्षा लक्ष्यते व्योम्नि^(e) पतन्ती खगसंहतिः ॥२४॥

रमणगुणनिकेतः केतनं मङ्गलानां

प्रचुरतरयशोभिः शोभितस्तत्तनूजः ।

नृपतिरवनिभानुर्विश्वविश्रान्तभानु

र्जयति विजयसिंहः संहतारातिसिंहः ॥२५॥

दृष्टिर्यस्याः सुधावृष्टिः सन्निधिश्चापि सन्निधिः ।

वाणी चिन्तामणिः श्रीमद्जीयाङ्गासलदेव्यसौ ॥२६॥

स च परमभट्टारकमहेशक्राधिराजपरमेश्वरश्रीवामदेवपादा
नुध्यातपरमभट्टारकमहाराजाधिराजपरमेश्वर परममाहेश्वर चि
कलिङ्गाधिपतिनिजभुजोपार्ज्जिताश्वपतिगजपतिनरपतिराजत्रया

(c) Obscure in the original ; supplied by conjecture.

(d) An orthographical error is corrected.

(e) Inserted by conjecture.

धिपति श्रीमद्विजयसिंहदेवपतेर्विजयिनः महाराज्ञी श्रीमहाकुमारः
 श्रीत्रयसिंहदेवः महामंत्रिशैवाचार्यभट्टारकश्रीमद्राजगुरुविद्या
 दैवमहापुरोहितपण्डितयज्ञधरधर्मप्रधानमहामात्यठकुरश्रीकीकी
 महाक्षपटलिक महाप्रधानार्थलेखिठकुर श्रीदशमूलिकवत्सराज
 महासान्धिविग्रहिकठकुर पुरुषीत्तम महाप्रतीहारदुष्टसाध्यचरा
 ध्यक्षभाण्डागारिकप्रभत्तवारणाश्वस्वाधीनका इत्येतान्ग्यांश्च प्र
 दास्यमानग्रामनिवासिजनपदांश्चाह्वययथार्हं मानयति बोधयति
 समाज्ञापयति च । यथाविदितमस्तुभवतां । संवत् १३२ । श्रीमन्ति
 पुर्थं युगादौ नर्मदायां विधिवत्स्नात्वा श्रीमन्महादेवं समभ्यर्च्य
 मातापित्रोरात्मनश्च पुण्य यशोतिवृद्धये सम्बलपत्तलायां चोरलयो
 ग्रामश्चतुःसीमापथ्यन्तश्चतुराघाटविसर्गः सगोप्रचारः सजलस्थलः
 साम्नमधूकः सलवणाकरः सगर्तोषरः सनिर्गमप्रवेशः सजांगलानूपो
 वृक्षारामोद्भिदोद्यातृणादिसहितः

अर्द्धपुरुषारिकादायादिसमन्वितः सवनपर्वतः सर्व वाधाविव
 जिर्जतः ग्रामोद्यं सावर्णगोत्राय भार्गव च्यवन् आप्रुवाम् और्वं जाम
 दग्न्यति पञ्चप्रबराय कन्दोगशाखिने पण्डितश्रीजनार्दनप्रपौत्राय
 पण्डितश्रीसूक्ष्णपौत्राय पण्डितश्रीक्षित्युत्राय पण्डितश्रीसीढ
 शर्मणे ब्राह्मणायोदकपूर्वकथनं शासनीहत्यास्मदभ्यनुज्ञया मातृ
 श्रीमद्गासलदेव्या प्रदत्तः ।

अत्रचाभ्यर्थनादातुर्भवति यथा ॥

सर्वानेतान् भाविनः पार्थिवेन्द्रान्

भूयोभूयो याचते रामभद्रः ।

सामान्योऽथं धर्मसेतुर्नृपाणां

कालिकाले पालनीयो भवद्भिः ॥२७॥

(f) Correction.

(g) Sic in original.

(h) Here a line is obliterated.

वज्रभिर्वसुधा भुक्ता राजभिः सगरादिभिः ।

यस्य यस्य यदा भूमिस्तस्य तस्य तदा फलं ॥२८॥

सुवर्णमेकं गामेकां भूमेरप्येकमङ्गुलं ।

हरन्नरकमाप्नोति यावदाभूतसंज्ञवं ॥२९॥

तडागानां सहस्रेण अश्वमेधशतेनच ।

गवां कोटिप्रदानेन भूसिहर्ता न शुध्यति ॥३०॥

स्वदत्तां परदत्तां वा यौ हरेत वसुन्धरां ।

स विष्ठायां ह्यभिभूत्वा पितृभिः सह मज्जति ॥३१॥

फालवृष्टां महीं दद्यात् सवीजां सस्यशालीनीं ।

यावत् स्वयं ह्यतां लोकस्तावत् स्वर्गे महीयते ॥३२॥

षष्टिवर्षसहस्राणि स्वर्गे वसति भूमिदः

आच्छेत्ता चानुमन्ता च तान्येवनरके वसेत् ॥३३॥

वारिहीनेष्वरण्येषु शुष्ककोटरवासिनः ।

वृष्णसर्पास्तु जायन्ते देवब्रह्मस्वहारिणः ॥३४॥

अन्यायेन हृता भूमिरन्यायेन तु हारिता ।

हरतो हारयतश्च दहत्या सप्तमंकुलं ॥३५॥

अस्मत्कुलक्रमगताः समुदाहरन्ति

अन्यैश्च दानमिदमभ्युपमोदनीयं ।

लक्ष्मीश्चला सलिलबुद्बुदवन्नराणां

(i)

दानं फलं परमतः परिपालनीयं ॥३६॥

प्रजाहितार्थं स्थितयः प्रणीता
 धर्मेषु विद्वान् परिपालयेत् ।
 यो लोभमोहाद्वरते दुरात्मा
 सोधो ब्रजेद्दुर्गतिमाशु कष्टां ॥३७॥

यानीह दत्तानि पुरा न रेन्द्रे
 दानानि धर्मार्थयज्ञस्कराणि ।
 निर्माल्यवान्तप्रतिमानि तानि
 को नाम साधुः पुनराददीत् ॥३८॥

भूमिं यः प्रतिगृह्णाति यश्च भूमिं प्रयच्छति ।
 उभौ तौ पुण्यकर्माणौ नियतं स्वर्गगामिनौ ॥३९॥

शंखो भद्रासनं क्वचं धराशवावरवारणाः ।
 भूमिदानस्य चिह्नानि फलमेतत् पुरन्दर ॥४०॥

अस्मिन् वंशेऽन्यवंशे च यः कश्चिन्नृपतिर्भवेत् ।
 तस्याहं हस्तलग्नोस्मि शासनं न यत्तिक्रमेत् ॥४१॥

वाताभ्रविभ्रममिदं वसुधाधिपत्य
 मापातमात्र मधुरो विषयोपभोगः ।
 प्राणास्तृणायजलविन्दुसमा नराणां
 धर्मः सखा परमहोपरलोकयानि ॥४२॥

मदंशजाः परमहोपतिवंशजा वा
 (j)
 पाषाणदण्डमनसो भुविचारिभूषाः ।
 ये पालयन्त्यमरविप्रभुवः स्वराज्ये
 तेषां मया विरचितोऽञ्जलिरेषमूर्द्धि ॥४३॥

अभ्युद्घरणत्रय श्रीधर्मसूनुना

लिखितं वत्सराजेन वैदेश दशमूलिना ॥

पण्डित श्रीकेशव लेखितं ।

(k)

सूत्रधारनामलेमोत्कीर्णम् ॥ शुभं भवतु ।

श्रीहरचन्द्रपण्डितेन श्रीरामगीविन्दपण्डितेन च

तान्त्रशासनादुद्धृतं ॥

ART. V.—*Mr. MIDDLETON on the Meteors of August 10th, 1839.*

To the Editor of the Asiatic Journal.

SIR,—I beg to send you an account of several meteors, commonly called *aerolites*, which appeared at Calcutta on the evening of Saturday the 10th instant, and trust that simultaneous observations in other parts of India, may confer upon it scientific value. It is particularly desirable, that if the same phenomena were witnessed by others, they should publish the particulars, since by numerous and varied observations alone can any hope of ultimate acquaintance with those yet mysterious bodies be entertained.

At 11 P. M. the atmosphere being particularly clear, my attention was attracted by a meteor of comparatively small size, and of a reddish colour, like that of the planet Mars, and unaccompanied by any train. It first appeared at a point in or near the prime vertical, and having about 40° of zenith distance, and it disappeared about 30° above the horizon. This was, about thirty minutes after, followed by another of far greater brilliancy and magnitude, which appeared in nearly the same place and followed the same path, projecting behind it a luminous train, stretching from the place of its appearance to that of the disappearance of the body, and vanishing simultaneously with it. The train while it lasted most distinctly marked the path of the *aerolite*, which appeared to be a curve of small curvature; while the height and direction of the body, as indicated by it, was such as to have carried it far beyond my horizon. The velocity of this meteor, like that of the others, was amazing, carrying it through between 50° and 60° in as near as I could guess, about $1\frac{1}{3}$ second. At five minutes past eleven another appeared in the zenith, and swept along, in apparently a straight line, vanishing at about the same elevation above

(†) In original स

the horizon as the former ones. The magnitude and brilliancy of this body was nearly like that of the planet Venus, as seen at present; its bright train being thickly strewed with sparkling points without progressive motion. Between this time and half-past eleven six others appeared, some to the westward and others to the eastward of the meridian, but much less conspicuous for magnitude and brilliancy than the two last described, and only one of them which appeared about 20° to the west having a train.

The general facts observable regarding them were these,—First, they all appeared at points in or near the prime vertical. Secondly, their common vanishing limit was about 30° above the horizon. Thirdly, their paths appeared to be parallel and lying from north to south. Fourthly, their velocities appeared to be equal.

I may mention, in conclusion, that no sound was observable either on their appearance, progress, or disappearance.

I am, Sir, yours truly,

CALCUTTA,
16th August, 1839.

J. MIDDLETON,
Hindu College.

ART. VI.—*Note to the Editors on the Native mode of preparing the perfumed Oils of Jasmine and Bela.* By DR. JACKSON, Ghazee-pore.

In my last communication on the subject of Rose-water, I informed you that the natives here were in the habit of extracting the scent from some of the highly smelling flowers, such as the Jasmine, &c., and that I would procure you a sample, and give you some account of the manner in which it is obtained. By the present Steamer I have dispatched two small phials containing some of the Oil procured from the Jasmine and the Bela flower. For this purpose the natives never make use of distillation, but extract the essence by causing it to be absorbed by some of the purest oleaginous seeds, and then expressing these in a common mill, when the oil given out has all the scent of the flower which has been made use of. The plan adopted, is to place on the ground a layer of the flower, about four inches thick and two feet square; over this they put some of the Tel or Sesamum seed wetted, about two inches thick, and two feet square; on this again is placed another layer of flowers, about four inches thick, as in the first instance; the whole is then covered with a sheet, which is held down by weights at the ends and sides. In this state it is allowed to remain from twelve to eighteen hours; after this the flowers are removed, and other layers placed in the

same way; this also is a third time repeated, if it is desired to have the scent very strong. After the last process, the seeds are taken in their swollen state and placed in a mill; the oil is then expressed, and possesses most fully the scent of the flower.* The oil is kept in prepared skins called *dubbers*, and is sold at so much per seer. The *Jasmine* and *Bela*† are the two flowers from which the natives in this district chiefly produce their scented oil, the *Chumbul*‡ is another; but I have been unable to procure any of this. The season for manufacture is coming on. The present oils were manufactured a year ago, and do not possess the powerful scent of that which has been recently prepared. Distillation is never made use of for this purpose as it is with the roses, the extreme heat, (from its being in the middle of the rains, when the trees come into flower) would most likely carry off all the scent. The *Jasmine*, or *Chymbele* as it is called, is used very largely amongst the women, the hair of the head, and the body, being daily smeared with some of it. The specimen I send you costs at the rate of two Rupees per seer.

July 10, 1839.

ART. VII.—*Report on the manufacture of Tea, and on the extent and produce of the Tea Plantations in Assam.* By C. A. BRUCE, Superintendent of Tea Culture.

(Presented by the Tea Committee, August 16th, 1839.)

I submit this report on our Assam Tea with much diffidence, on account of the troubles in which this frontier has been unfortunately involved. I have had something more than Tea to occupy my mind, and have consequently not been able to commit all my thoughts to paper at one time; this I hope will account for the rambling manner in which I have treated the subject. Such as my report is, I trust it will be found acceptable, as throwing some new light on a subject of no little importance to British India, and the British public generally. In drawing out this report, it gives me much pleasure to say, that our information and knowledge respecting Tea and Tea tracts are far more extensive than when I last wrote on this subject;—the number of tracts now known amounting to 120, some of them very extensive, both on the hills and in the plains. A reference to the accompanying map will

* A closely similar plan is followed in Europe in the preparation of the *Jasmine*, and several other very fugitive perfumes. The fixed oil employed is usually that of the *Ben* or *Moringa* nut, with which cotton is soaked. The cotton and flowers are then placed in alternate layers, as in the Indian process.—Eds.

† *Jasminum zambac.*

‡ *Jasminum grandiflorum.*

shew that a sufficiency of seeds and seedlings might be collected from these tracts in the course of a few years to plant off the whole of Assam ; and I feel convinced, from my different journeys over the country, that but a very small portion of the localities are as yet known.

Last year in going over one of the hills behind *Jaipore*, about 300 feet high, I came upon a Tea tract, which must have been two or three miles in length, in fact I did not see the end of it ; the trees were in most parts as thick as they could grow, and the Tea seeds (smaller than what I had seen before) fine and fresh, literally covered the ground ; this was in the middle of November, and the trees had abundance of fruit and flower on them. One of the largest trees I found to be two cubits in circumference, and full forty cubits in height. At the foot of the hill I found another tract, and had time permitted me to explore those parts, there is no doubt but I should have found many of the Naga Hills covered with Tea. I have since been informed of two more tracts near this. In going along the foot of the Hills to the westward, I was informed that there was Tea at *Teweack*, or near it : this information came too late, for I had passed it just a little to the east of the *Dacca* river, at a place called *Cheriedoo*, a small hill projecting out more than the rest on the plain to the northward, with the ruins of a brick temple on it ; here I found Tea, and no doubt if there had been time to examine, I should have found many more tracts. I crossed the *Dacca* river at the old fort of *Ghergong*, and walked towards the Hills, and almost immediately came upon Tea. The place is called *Hauthoweak*. Here I remained a couple of days, going about the country, and came upon no fewer than thirteen tracts. A Dewaniah who assisted me to hunt out these tracts, and who was well acquainted with the leaf, as he had been in the habit of drinking tea during his residence with the Singphoes, informed me that he had seen a large tract of Tea plants on the Naga mountains, a day's journey west of *Chiridoo*. I have no reason to doubt the veracity of this man ; he offered to point out the place to me, or any of my men, if they would accompany him ; but as the country belonged to Raja Poorunda Sing, I could not examine it. I feel convinced the whole of the country is full of Tea.

Again, in going further to the south-west, just before I came to *Gabren* hill, I found the small hills adjoining it, to the eastward, covered with Tea plants. The flowers of the Tea on these hills are of a pleasant delicate fragrance, unlike the smell of our other Tea-plants ; but the leaves and fruit appear the same. This would be a delightful place for the manufacture of Tea, as the country is well populated, has abundance of grain, and labour is cheap. There is a small stream called the

Jhagy river, at a distance of two hours walk ; it is navigable, I am informed, all the year round for small canoes, which could carry down the Tea ; and the place is only one and a half day's journey from *Jorehaut*, the capital of Upper Assam. South-west of *Gabrew Purbut* (about two days journey) there is a village at the foot of the hill, inhabited by a race called *Norahs* ; they are *Shans*, I believe, as they came from the eastward, where Tea abounds. I had long conversations with them, and the oldest man of the village, who was also the head of it, informed me, that when his father was a young man, he had emigrated with many others, and settled at *Tipum*, opposite *Jaipore*, on account of the constant disturbances at *Munkum* ; that they brought the Tea plant with them and planted it on the *Tipum* hill, where it exists to this day ; and that when he was about sixteen years of age, he was obliged to leave *Tipum*, on account of the wars and disturbances at that place, and take shelter at the village where he now resides. This man said he was now eighty years of age, and that his father died a very old man. How true this story is, I cannot say, and do not see what good it would do the old man to fabricate it. This was the only man I met with in my journeys about the country who could give any account of the Tea plant, with the exception of an *Ahum*, who declared to me that it was *Sooka*, or the first *Kacharry Rajah* of Assam, who brought the Tea plant from *Munkum* ; he said it was written in his *Putty*, or history. The *Ahum-Putty* I have never been able to get hold of ; but this I know, that the information about the Tea plant pointed out by the old *Norah* man, as being on the *Tipum* hill, is true ; for I have cleared the tract where it grew thickest, about 300 yards by 300, running from the foot of the hill to the top. The old man told me his father cut the plant down every third year, that he might get the young leaves.

To the west of *Gabrew* I did not find any Tea ; but to the westward of the *Dhunseeree* river I found a species, though not the same as that we use. If the people on the west side of the *Dhunseeree* river were acquainted with the true leaf, I think Tea would be found. I planted it all along the route I went, which may lead to its eventual discovery ; but people should be sent to search for the plant who are really acquainted with it. I think a vast quantity of Tea would be brought to light if this were done. A reference to the map will shew how our tracts are distributed all over the country. How much Tea they would all produce if fully worked, I will not pretend to say ; but in the course of this subject, I will mention such matters relative to the tracts and the plants on them, that every one may make his own calculation. Until lately we had only two Chinese Black-Tea makers. These men have

twelve native assistants; each Chinaman with six assistants can only superintend one locality, and the Tea leaves from the various other tracts, widely separated, must be brought to these two places for manufacture. The consequence is, that an additional number of labourers must always be employed to bring the leaves from so great a distance. The leaves suffer when brought in large quantities from a distance, as they soon begin to ferment, and the labour of only preparing them so far in process that they may not spoil by the morning, is excessive. The men have often to work until very late to accomplish this. When labour falls so very heavy, and on so very few, it cannot be expected that it can be equally well executed, as if more had been employed. The leaves last gathered are also much larger than they ought to be, for want of being collected and manufactured earlier; consequently the Tea is inferior in quality. I mention this, to shew the inconvenience and expense of having so few Tea makers.

The samples of Black-Tea made by the twelve assistants having been approved of by the Tea Committee in Calcutta, it was my intention to have distributed the men amongst the different tracts, but the late disturbances on our frontier have prevented this arrangement; and I have been obliged to employ ten men in Assam (two others having gone to Calcutta in charge of Tea) at the tract called *Kahung*, which is becoming a very extensive and important Tea locality—so many others being near it, which can all be thrown into one. When we have a sufficient number of manufacturers, so that we can afford to have some at each tract, or garden, as they have in China, then we may hope to compete with that nation in cheapness of produce; nay, we might, and ought, to undersell them; for if each tract, or garden, had its own Tea maker and labourers, the collecting of the leaves would not perhaps occupy more than twelve days in each crop; after which the men might be discharged, or profitably employed on the Tea grounds. But now, for the want of a sufficient number of labourers and Tea makers, there is a constant gathering of leaves throughout the month; and as I said before, those gathered last can only make inferior Teas; besides the great loss by the leaves getting too old, and hereby unfit for being made into any Tea; and all this entirely for want of hands to pluck the leaves. It is true we have gained twelve Black-Tea makers this year, in addition to the last; and twelve more native assistants have been appointed, who may be available next year to manufacture Tea independently, as they were learning the art all last year. We have also had an addition to our establishment of two Chinese Green-Tea manufacturers, and twelve native assistants have been placed under them as learners; but what are these compared

to the vast quantity of Tea, or the ground the Tea plants cover, or might be made to cover in three years, but a drop of water in the ocean? We must go on at a much faster pace in the two great essentials—Tea manufacturers, and labourers,—in order to have them available at each garden, when the leaves come into season.

If I were asked, when will this Tea experiment be in a sufficient state of forwardness, so as to be transferable to speculators? I would answer, when a sufficient number of native Tea manufacturers have been taught to prepare both the Black and the Green sort; and that under one hundred available Tea manufacturers, it would not be worth while for private speculators to take up the scheme on a large scale; on a small one it would be a different thing. In the course of two or three years we ought to have that number. Labourers must be introduced, in the first instance, to give a tone to the Assam Opium-eaters; but the great fear is, that these latter would corrupt the new comers. If the cultivation of Tea were encouraged, and the Poppy put a stop to in Assam, the Assamese would make a splendid set of Tea manufacturers and Tea cultivators.

In giving a statement of the number of Tea tracts, when I say that *Tingri*, or any other tract is so long and so broad, it must be understood, that space to that extent only has been cleared, being found to contain all the plants which grew thickly together; as it was not thought worth while at the commencement of these experiments to go to the expense of clearing any more of the forest for the sake of a few straggling plants. If these straggling plants were followed up, they would in all probability be found gradually becoming more numerous, until you found yourself in another tract as thick and as numerous as the one you left; and if the straggling plants of this new tract were traced, they would by degrees disappear until not one was to be seen. But if you only proceeded on through the jungles, it is ten to one that you would come upon a solitary Tea plant, a little further on you would meet with another; until you gradually found yourself in another new tract, as full of plants as the one you had left, growing absolutely so thick as to impede each others growth. Thus I am convinced one might go on for miles from one tract into another. All my Tea tracts about *Tingri* and *Kahung* are formed in this manner, with only a patch of jungle between them, which is not greater than what could be conveniently filled up by thinning those parts that have too many plants. At *Kahung* I have lately knocked three tracts into one, and I shall most probably have to continue doing the same until one tract shall be made of what now consists of a dozen. I have never seen the end of *Juggundoo's* Tea tract.

nor yet *Kujudoo's* or *Ningren's*. I feel confident that the two former run over the hills and join, or nearly join, some of our tracts in the *Muttuck* country. Nor have I seen the end of *Kahung* tract, all about that part of the country being one vast succession of Tea from *Rungagurra* on the *Debrew*, to *Jaipore* on the *Buri Dehing*. It may be seen on inspecting the map how thickly the Tea localities are scattered—those that are known ; and they are but a small portion compared to those that are unknown. There is the *Namsong* tract on the *Naga* hills, the largest that has yet been seen, and the extent of which is not ascertained. The tracts on the *Gubind* hills are unknown ; and this is likewise the case with *Haut Holah* and *Cheridoo* ; so that there is a large field for improvement throughout, to say nothing of the *Singho* tracts, which may be found to be one unbounded link to *Hookum* ; and who knows but it crosses the *Irrawaddy* to China? Many Tea tracts I know have been cut down in ignorance by the natives, to make room for the rice field, for firewood, and fences, but many of these tracts have sprung up again, more vigorous than before. Witness that at *Ningren*, where the natives say that every thing was cut down, and the land planted with rice, except on the high ground.

With respect to the Tea plant being most productive on high or low ground, I cannot well say, as all our tracts are on the plains ; but from what little I have seen of the hill tracts, I should suppose they were not more productive. In China the hill tracts produce the *best* Teas, and they may do the same here. Almost all my tracts on the plains are nearly on the same level, I should think. *Nudwa* perhaps is a little higher than *Tingri*, and *Tingri* a little higher than *Kahung*, but I believe they are equally productive ; although if I leaned towards any side, with my limited experience, I should say that the low land, such as at *Kahung*, which is not so low as ever to be inundated by the strongest rise in the river, is the best. The plants seem to love and court moisture, not from stagnant pools, but running streams. The *Kahung* tracts have the water in and around them ; they are all in heavy tree-jungles, which makes it very expensive to clear them. An extent of 300 by 300 will cost from 200 to 300 rupees ; i. e. according to the manner in which the miserable Opium-smoking Assamese work. This alone ought to point out the utility of introducing a superior race of labourers, who would not only work themselves, but encourage their women and children to do the same ;—in plucking and sorting leaves they might be profitably turned to account for both parties. This I have not been able to instil into the heads of the Assamese, who will not permit their women to come into the Tea gardens. Indeed unless more labourers can be furnished, a larger amount

of Tea must not be looked for at present. Last season it was with the greatest difficulty that I could get a sufficient number of hands to gather the leaves. The plucking of the leaves may appear to many a very easy and light employment, but there are not a few of our coolies who would much rather be employed on any other job; the standing in one position so many hours occasions swellings in the legs, as our plants are not like those of China, only three feet high, but double that size, so that one must stand upright to gather the leaves. The Chinese pluck theirs squatting down. We lie under a great disadvantage in not having regular men to pluck the leaves; those that have been taught to do so, can pluck twice as many as those that have not, and we can seldom get hold of the same men two seasons running. I am of opinion that our trees will become of a smaller and more convenient size after a few years cultivation; because, trimming of the plants, and taking all the young leaves almost as soon as they appear, month after month and year after year, and the plants being deprived of the rich soil they had been living on from time unknown, must soon tell upon them. Transplanting also helps to stunt and shorten the growth of these plants. The Chinese declared to me, that the China plants now at *Deenjoy* would never have attained to half the perfection they now have, under ten years in their own country.

I may here observe, that the sun has a material effect on the leaves; for as soon as the trees that shade the plants are removed, the leaf, from a fine deep green, begins to turn into a yellowish colour, which it retains for some months, and then again gradually changes to a healthy green, but now becomes thicker, and the plant throws out far more numerous leaves than when in the shade. The more the leaves are plucked, the greater number of them are produced; if the leaves of the first crop were not gathered, you might look in vain for the leaves of the second crop. The Tea made from the leaves in the shade is not near so good as that from leaves exposed to the sun; the leaves of plants in the sun are much earlier in season than of those in the shade; the leaves from the shady tract give out a more watery liquid when rolled, and those from the sunny a more glutinous substance. When the leaves of either are rolled on a sunny day, they emit less of this liquid than on a rainy day. This juice decreases as the season advances. The plants in the sun have flowers and fruit much earlier than those in the shade, and are far more numerous; they have flowers and seeds in July, and fruit in November. Numerous plants are to be seen that by some accident, either cold or rain, have lost all their flowers, and commence throwing out fresh

flower-buds more abundantly than ever. Thus it is not unfrequent to see some plants in flower so late as March (some of the China plants were in flower in April) bearing at once the old and the new seeds, flower-buds, and full-blown flowers—all at one and the same time. The rain also greatly affects the leaves; for some sorts of Tea cannot be made on a rainy day; for instance the *Pouchong* and *Mingehew*. The leaves for these ought to be collected about 10 A. M. on a sunny morning, when the dew has evaporated. The *Pouchong* can only be manufactured from the leaves of the first crop; but the *Mingehew*, although it requires the same care in making as the other, can yet be made from any crop, provided it is made on a sunny morning. The Chinese dislike gathering leaves on a rainy day for any description of Tea, and never will do so, unless necessity requires it. Some pretend to distinguish the Teas made on a rainy and on a sunny day, much in the same manner as they can distinguish the shady from the sunny Teas—by their inferiority. If the large leaves for the Black-Tea were collected on a rainy day, about seven seers, or fourteen pounds, of green leaves would be required to make one seer, or two pounds, of Tea; but if collected on a sunny day, about four seers, or eight pounds, of green leaves, would make one seer, or two pounds, of Tea;—so the Chinamen say. I tried the experiment, and found it to be correct. Our season for Tea making generally commences about the middle of March; the second crop in the middle of May; the third crop about the first of July; but the time varies according to the rains setting in sooner or later. As the manufacture of the *Sychee* and the *Mingehew* Black-Teas has never been described, I will here attempt to give some idea how it is performed.

Sychee Black-Tea. The leaves of this are the *Souchong* and *Pouchong*. After they have been gathered and dried in the sun in the usual way (see my former account of Black-Tea) they are beaten and put away four different times; they are then put into baskets, pressed down, and a cloth put over them. When the leaves become of a brownish colour by the heat, they throw out and have a peculiar smell, and are then ready for the pan, the bottom of which is made red hot. This pan is fixed in masonry breast high, and in a sloping position, forming an angle of forty degrees. Thus the pan being placed on an inclined plane, the leaves, when tossed about in it cannot escape behind, or on the sides, as it is built high up, but fall out near the edge close to the manufacturer, and always into his hands, so as to be swept out easily. When the bottom of this pan has been made red hot by a wood fire, the operator puts a cloth to his mouth to prevent inhaling any of the hot vapour. A man on the left of him stands ready with a basket

of prepared leaves ; one or two men stand on his right with dollahs, or shallow baskets, to receive the leaves from the pan, and another keeps lifting the hot leaves thrown out of the pan into the dollah, that they may quickly cool. At a given signal from the Chinaman, the person with the basket of prepared leaves seizes a handful and dashes it as quick as thought, into the red hot pan. The Chinaman tosses and turns the crackling leaves in the pan for half a minute, then draws them all out by seizing a few leaves in each hand, using them by way of a brush, not one being left behind. They are all caught by the man with the dollah or basket, who with his disengaged hand continues lifting the leaves, and letting them fall again, that they may quickly cool. Should a leaf be left behind in the pan by any accident, the cloth that is held ready in the mouth is applied to brush it out ; but all this is done as quick as lightning. The man that holds the basket of leaves watches the process sharply ; for no sooner is the last leaf out of the pan, than he dashes in another handful, so that to an observer at a little distance, it appears as if one man was dashing the leaves in, and the other as fast dashing them out again—so quickly and dexterously is this managed. As soon as one basket has received about four handfuls of the hot leaves from the pan, it is removed, and another basket placed to receive the leaves ; and so on, until all is finished. A roaring wood fire is kept up under the pan to keep the bottom red hot, as the succession of fresh leaves tends greatly to cool the pan, which ought always to be scrubbed and washed out after the process is over. In China these pans are made of cast iron, and if great care is not taken they will crack in the cooling ; to prevent which, one man keeps tapping the inside of the edge of the pan briskly with a wet broom, used in the cleaning of the vessel, while another pours cold water in gently ; thus it cools in a few seconds, and is ready for another batch of Tea. The leaves are rolled and tatched the same as the other Teas, and put into the drying basket for about ten minutes. When a little dry, people are employed to work and press the leaves in the hands in small quantities, of about one and a half to two rupees weight at a time, for about half a minute ; they are then put into small square pieces of paper and rolled up ; after this they are put into the drying basket, and permitted to dry slowly over a gentle fire for some hours, until the whole is thoroughly dry. This Tea is not sold in the China market, it is used principally as offerings to the priests, or kept for high days and holidays. It is said to be a very fine Tea, and there is not one man in a hundred who can make it properly. The *Pouchong* Tea is made in the same way as the *Sychee*, with this exception, that it is not formed into balls.

Mingehew Black-Tea. The leaves (*Pouchong*) are plucked and dried in the sun, and are then beaten and dried in the shade for half an hour; this is done three successive times, and the leaves are very much shaken by a circular motion given to them in a sieve, so as to keep them rolling and tumbling about in the centre of it. This treatment continues until they are very soft; they are then allowed to remain for a short time; the contents of the first sieve are then placed in the centre of a close worked bamboo basket with a narrow edge, and the leaves are divided into four equal parts. The contents of the second sieve are placed in another bamboo basket like the former, and this basket is placed on the top of the first, and so on, piling one basket upon another until all is finished;—there may be about two pounds of leaves in each basket. The red hot pan is used the same as in *Sy-chee*, only now the men cast in one division of the leaves into the basket, and this is tumbled and tossed about in the red hot pan, like a plaything, for about thirty seconds, and then swept out; another division is cast in, and so on, until all the prepared baskets have been emptied. The contents of each basket are still kept separate, by placing the leaves when they come out of the pan in separate baskets. The whole is a brisk and a lively scene, and quite methodical, every one knowing his station, and the part he has to perform. The baskets are then arranged on shelves to air; the contents are afterwards tatched the same as our Black-Teas, and fired in the drying baskets, but with this difference, that each division is placed on paper and dried. When it is half dry (the same as our Teas) it is put away for the night, and the next morning it is picked, and put into the drying baskets over gentle deadened fires, and gradually dried there; it is then packed hot. This Tea is a difficult sort to make.

Shung Paho Black-Tea. Pluck the young (*Paho*) leaf that has not yet blown or expanded, and has the down on it; and the next one that has blown with a part of the stalk; put it into the sun for half an hour, then into the shade; tatch over a gentle fire, and in tatching roll the leaves occasionally in the pan, and spread them all round the sides of the same; again roll them until they begin to have a withered and soft appearance; then spread them on large sieves, and put them in the shade to air for the night; next morning pick, and then fire them well. Some Tea makers do not keep them all night, but manufacture and pack the Tea the same day. This Tea is valued in China, as it is very scarce; but the Chinamen acknowledge that it is not a good sort. They prefer the Teas, the leaves of which have come to maturity.

The China Black-Tea plants which were brought into *Muttuck* in 1837, amounted in all to 1609—healthy and sickly. A few of the lat-

ter died, but the remainder are healthy, and flourish as well, as if they had been reared in China. The leaves of these plants were plucked in the beginning of March, and weighed sixteen seers, or thirty-two pounds. Many of the plants were then in flower, and had small seeds. They are about three feet high, and were loaded with fruit last year, but the greater part of it decayed when it had come to maturity, as was the case with the Assam Tea-seeds, and almost every seed of these wilds, in the past year. The seeds should, I think, be plucked from the plant when thought ripe, and not be permitted to drop or fall to the ground. I collected about twenty-four pounds of the China seeds, and sowed some on the little hill of *Tipum* in my Tea garden, and some in the Nursery-ground at *Jaipore*; above three thousand of which have come up, are looking beautiful, and doing very well. I have since found out that all the China seedlings on *Tipum* hill have been destroyed by some insect.

The Assam and China seedlings are near each other; the latter have a much darker appearance. I have made but few nurseries, or raised plants from seed, as abundance of young plants can be procured, of any age or size, from our Tea tracts. There may be about 6,000 young seedlings at *Chubwa*; at *Deenjoy* about 2,000; at *Tingri* a few; and some at *Paundooah*. In June and July, 1837, 17,000 young plants were brought from *Muttuck*, and planted at a place called *Toongroong Patar*, amongst the thick tree jungles of *Sadiya*.

In March of the same year six or eight thousand were brought from *Muttuck*, and planted in different thick jungles at *Sadiya*; many of these died in consequence of the buffaloes constantly breaking in amongst them; the rest are doing well, but I am afraid will be killed from the above cause; and now that I have removed to *Jaipore*, they are too far off for my personal superintendence.

In 1838, 52,000 young Tea plants were brought from the *Nem-song Naga* hill tracts, about ten miles from *Jaipore*; a great portion of these have been lately sent to Calcutta, to be forwarded to Madras; should they thrive there, it is my opinion that they will never attain any height, at least not like ours, but be dwarfish like the China plants. *Deenjoy*, *Chubwa*, *Tingri*, and *Geela-Jhan* tracts have been filled up or enlarged with plants from the jungle tracts. In transplanting from one sunny tract to another, when done in the rains, very few, if any, die; if the plants be removed from a deep shade to a sunny tract, the risk is greater, but still, if there is plenty of rain, few only will die. If from a deep shade to a piece of ground not a Tea tract, and exposed to the sun—for instance from the *Naga* hills to *Jaipore*—if there be plenty of rain, and the soil congenial, as it is at this place.

weather be rainy, and there is no hope of its clearing, all this drying is done over the fire in a small drying basket, the same as with Black-Tea. The Green-Tea makers have as great an aversion to drying their Tea over the fire, as the Black-Tea makers. The third time it has been rolled and dried, there is very little moisture left in the Tea ; it is now put into a hot pan, and gently turned over and over, and opened out occasionally, until all has become well heated ; it is then tossed out into a basket, and while hot put into a very strong bag, previously prepared for it, about four feet long, and four spans in circumference. Into this bag the Tea is pressed with great force with the hands and feet ; from fourteen to twenty pounds being put in at one time, and forced into as small a compass as possible. With his left hand the man firmly closes the mouth of the bag immediately above the leaves, while with the right hand he pommels and beats the bag, every now and then giving it a turn ; thus he beats and turns and works at it, tightening it by every turn with one hand, and holding on with the other, until he has squeezed the leaves into as small a compass as possible at the end of the bag. He now makes it fast by turns of the cloth where he held on, so that it may not open ; and then draws the cloth of the bag over the ball of leaves, thus doubling the bag, the mouth of which is twisted and made fast. The man then stands up, holding on by a post or some such thing, and works this ball of leaves under his feet, at the same time alternately pressing with all his weight, first with one foot and then the other, turning the ball over and over, and occasionally opening the bag to tighten it more firmly. When he has made it almost as hard as a stone, he secures the mouth well and puts the bag away for that day. Next morning it is opened out and the leaves gently separated and placed on dollahs, then fired and dried until they are crisp, the same as the Black-Tea, after which they are packed in boxes or baskets. In China the baskets are made of double bamboo, with leaves between. The Tea may then remain on the spot for two or three months, or be sent to any other place to receive the final process. This first part of the Green-Tea process is so simple, that the natives of this country readily pick it up in a month or two.

The second process now commences by opening the boxes or baskets, and exposing the Tea on large shallow bamboo baskets or dollahs (see former account, fig. 1) until it has become soft enough to roll ; it is then put into cast iron pans, set in brick fire-places, the same as described in making the *Sychee* Black-Tea. The pan is made very hot by a wood-fire, and seven pounds of the leaves are thrown into it and rubbed against the pan, with the right hand until tired, and then with the left, so as not to make the process fatiguing. The pan being placed on

an inclined plane the leaves always come tumbling back towards and near the operator, as he pushes them up from him, moving his hand backwards and forwards and pressing on the leaves with some force with the palms, keeping the ends of the fingers up, to prevent their coming in contact with the hot pan. After one hour's good rubbing the leaves are taken out and thrown into a large coarse bamboo-sieve, from this into a finer one, and again a still finer one, until three sorts of Tea have been separated. The first, or largest sort, is put into the funnel of the winnowing machine, which has three divisions of small traps below, to let the Tea out. A man turns the wheel with his right hand, and with the left regulates the quantity of Tea that shall fall through the wooden funnel above, by a wooden slide at the bottom of it. The Tea being thrown from the sieves into the funnel, the man turns the crank of the wheel, and moves the slide of the funnel gradually, so as to let the Tea fall through gently, and in small quantities. The blast from the fan blows the smaller particles of Tea to the end of the machine, where it is intercepted by a circular moveable board placed there. The dust and smaller particles are blown against this board, and fall out at an opening at the bottom into a basket placed there to receive it. The next highest Tea is blown nearly to the end of the machine, and falls down through a trough on the side into a basket; this Tea is called *Young Hyson*. The next being a little heavier, is not blown quite so far; it falls through the same trough, which has a division in the middle; this of course is nearer the centre of the machine. A basket is placed beneath to receive the Tea, which is called *Hyson*. The next, which is still heavier, falls very near to the end of the fan, this is called *Gunpowder* Tea; it is in small balls. The heaviest Tea falls still closer to the fan, and is called *Big Gunpowder*; it is twice or three times the size of *Gunpowder* Tea, and composed of several young leaves that adhere firmly together. This sort is afterwards put into a box and cut with a sharp iron instrument, then sifted and put among the *Gunpowder*, which it now resembles. The different sorts of Tea are now put into shallow bamboo baskets, and men, women, and children are employed to pick out the sticks and bad leaves; this is a most tedious process, as the greatest care is taken not to leave the slightest particle of any thing but good Tea. But to assist and quicken this tiresome process beautiful bamboo sieves, very little inferior to our wire ones, and of various sizes, are employed. The different Teas are thrown into sieves of different sizes, from large *Gunpowder* to *Dust Tea*; they are shaken and tossed, and thrown from one person to another in

quick succession, making the scene very animating; in this way a great portion of the stalks are got rid of. After the Tea has been well sifted and picked, it is again put into the hot pans and rubbed and rolled as before, for about one hour; it is then put into shallow bamboo baskets, and once more examined, to separate the different Teas that may still remain intermixed, and again put into the hot pan. Now a mixture of sulphate of lime and indigo, very finely pulverized and sifted through fine muslin, in the proportion of three of the former to one of the latter, is added; to a pan of Tea containing about seven pounds, about half a tea-spoonful of this mixture is put and rubbed and rolled along with the Tea in the pan for about one hour, as before described. The Tea is then taken hot from the pan and packed firmly in boxes, both hands and feet being used to press it down. The above mixture is not put to the Tea to improve its flavour, but merely to give it a uniform color and appearance, as without it some of the Tea would be light and some dark. The indigo gives it the colour, and the sulphate of lime fixes it. The Chinese call the former *Youngtin*, the latter *Acco*. Large Gunpowder Tea they call *Tychen*; little Gunpowder *Cheocheu*; Hyson, *Chingcha*; Young Hyson, *Uchin*; Skin-Tea, or old leaves in small bits, *Poocha*; the fine Dust, or Powder-Tea, *Chamoot*.

The leaves of the Green-Tea are not plucked the same as the Black, although the tree or plant is one and the same, which has been proved beyond a shadow of doubt; for I am now plucking leaves for both Green and Black from the same tract and from the same plants; the difference lies in the manufacture, and nothing else. The Green-Tea gatherers are accommodated with a small basket, each having a strap passed round the neck so as to let the basket hang on the breast. With one hand the man holds the branch, and with the other plucks the leaf, one at a time, taking as high as the *Souchong* leaf; a little bit of the lower end of the leaf is left for the young leaf to shoot up close to it; not a bit of stalk must be gathered. This is a very slow and tedious way of gathering. The Black-Tea maker plucks the leaves with great rapidity with both hands, using only the forefinger and thumb, and collects them in the hollow of the hand; when his hand is full he throws the leaves into a basket under the shade of the tree; and so quickly does he ply his hands that the eye of a learner cannot follow them, nor see the proper kind of leaf to be plucked; all that he sees, is the Chinaman's hands going right and left, his hands fast filling, and the leaves disappearing. Our coolies, like the Green-Tea Chinamen, hold the branch with one hand, and deliberately pluck off the

leaf required, then the next, and so on, by which process much time is lost, and a greater number of hands are wanted. Not having a regular set of pluckers is a very great drawback to us; for the men whom we teach this year we see nothing of the next; thus every year we have to instruct fresh men. This difficulty will be removed when we get regular people attached to the Tea plantations; or when the natives of these parts become more fixed and settled in their habitations, and do not move off by whole villages from one place to another, as they have of late years been doing; and when the aversion they have throughout Assam to taking service for payment, has been overcome. They seem to hold this as mean and servile; preferring to cultivate a small patch of ground which barely yields a subsistence. I can perceive, however, that there is a gradual change taking place in the minds of the labouring class of people, or coolies; for occasionally some good able-bodied men come forward for employment. The generality of those that have hitherto offered themselves, has been from the very poorest and the most worthless in the country. In the cold season, when the men have nothing to sow or reap, two or three hundred can be collected; but as soon as the rains set in, all but those that have not bonds, or are not involved in debt, go off to their cultivations, at the very time when our Tea operations commence. As long as things continue in this state, the price of Tea will be high; but if this drawback were removed, there is nothing to prevent our underselling the Chinese, except the experience of a few more years.

But let us return to our Teas, and take a comparative view of the qualities of the Black and Green-Teas, which may nearly be as follows: *Paho* Black-Tea leaf would make Green-Tea, some Gunpowder, and some Young Hyson. *Pouchong*, although classed as a second Black-Tea, on account of the price it fetches in the market, is a third-rate leaf, for it is rather larger than the *Souchong*. Some of it would make Young Hyson, and some Skin-Tea. *Souchong* would make Hyson and Young Hyson. *Toy-chong* would make Skin-Tea.—I will here mention the different kinds of Black-Teas, to make the matter more clear to those who take an interest in the subject. *Thowung-Paho* (the *Sung fa* is the same leaf as this) is the downy little leaf not expanded, and the one next to it that has just unfolded a little. This Tea when made appears full of small white leaves, which are the little downy leaves just mentioned. *Twazee-Paho* is from the second crop, and nearly the same kind of Tea, only a little older; the leaf next the small downy one (being a little more expanded) and the small leaf below this, are taken, making three in all; this has also numerous white leaves, but not so many as the former.

Souchong is the next largest leaf; this is well grown, but embraces all the leaves above it. When the upper leaves have grown out of season for *Thowung-Paho* and *Twazee-Paho*, they are all plucked for the *Souchong* from the third and fourth of the upper leaves. From *Souchong* leaves, the *Minchong* and *Sychee* Teas are made in the first crop, and no other. *Pouchong* is the next largest leaf; it is a little older and larger than the *Souchong*. From this leaf the *Sychee* and *Minchong* Teas can be made in the first crop only. The *Pouchong* is never made in the second crop, on account of its not having a good flavour: many of the *Souchong* leaves are mixed up in this Tea. The *Toychong* leaves are those that are rejected from the *Souchong* and *Pouchong*, as being too large and not taking the roll. When the Teas are picked, these leaves are put on one side. The Chinese often put them into a bag, and give them a twist, something in the Green-Tea way, and then mix them up with the *Souchong* to add to the weight. This leaf (*Toychong*) becomes worse in the second and third crops;—it is a cheap Tea and sold to the poor. All the Black-Teas that are damaged have the flower of what the Chinese call *Qui fa*, and another called *Son fa*, mixed up with them. One pound of the flowers is put to each box of damaged Tea. After the Teas have been well tatched and mixed up with other sorts, these leaves give them a pleasant fragrance. The *Son fa* plant is about two feet high, and kept in flower pots; it is propagated from the roots. The *Qui fa* plant is from three to four feet high; one pound of the flowers is put to a box of Tea. This plant was seen in the Botanical Gardens at Calcutta by our Chinese interpreter. The flowers of this plant are considered finer than those of the *Son fa*. I annex a rough drawing of each of them, as given to me by the interpreter; the dots in the drawings are intended for small flowers.*

The Black-Tea makers appear to me to be very arbitrary in their mode of manufacture; sometimes they will take the leaves of the *Thowung-Paho*, or perhaps *Twazee-Paho*; but if it has been raining, or there is any want of coolies to pluck the leaves quickly, or from any other cause, they will let the leaves grow

* These two sketches are not deemed sufficiently instructive to be added here. One of them is entitled *Qui fa*, which is the name of the *Olea fragrans*, or Sweet-scented Olive, the flowers of which are said to be used for perfuming Teas. But it is more like the *Aglaia adorata*, a very different plant, which is also supposed to be applied in China for a similar purpose. This last, however, is called *Tsjiulang* by the Chinese, according to Rumpf, and *Samyeiplan* according to Roxburgh. The other sketch, entitled *Lan fa*, seems to be intended for a liliaceous, or at any rate an endogenous plant. I am unable to offer any conjecture about it.—N. W.

a few days longer, and turn all into *Souchong*; which it must be remembered, takes all the small leaves above it. If it is the first crop, the *Souchong* and *Pouchong* leaves may all be turned into *Souchong* Tea; but even if it is the second crop, when the *Pouchong* leaves ought not to be gathered, they are nevertheless plucked and mixed up with the *Souchong* leaves. Almost all our Black- and all the Green-Teas have just been made from one garden. When the Green-Tea makers complained that the leaves were beginning to get too large for them—that is, they were fast growing out of *Souchong* and running into *Pouchong*—the Black-Tea makers took up the manufacture, plucked all the leaves, and made excellent *Pouchong*; so that between the two, there is not a leaf lost. When the Black-Tea makers have a garden to themselves they are cruel pluckers, for they almost strip the tree of leaves for the *Souchong*, and are not at all nice in the plucking; the third and even the fourth leaf on a tender twig is nipped off in the twinkling of an eye; they then look about for more young leaves, and away go the *Pouchong*, and *Toychong* too, which is the largest leaf of all. But the Green-Tea men pluck quietly, one by one, down to *Souchong*. The Black-Tea men separate all their Teas into first, second, third, and fourth crop; but the Green-Tea manufacturers make no distinction; they prepare all the Tea they can, throughout the season, box or basket it up, and when the season is over, they set off for Canton with their produce; at least all those who do not wish to sell their Tea on the spot. The different merchants go in quest of it there. It now indiscriminately undergoes the second process; that is, the different crops are all mixed up together. No old leaves can be mixed in the Green, as in the Black-Teas; for the long rolling in the pan crushes them, and the fan blows them away, so that only the young leaves are left.

We shall now take a comparative view of the number of men required by the Black and the Green-Tea makers for one pair of pans.

For the Black-Tea makers there will be required,

to tatch,	..	..	..	..	..	2 men
— roll,	..	..	..	..	..	4 „
— attend to the fire,	..	.	..	..	..	1 „
— dry,	..	..	..	.	..	1 „
— beat and put in the sun,	..	..	..	..	..	2 „
						—
Total number of men	..	..	..	..	..	10

To keep these men fully at work, from twenty-five to thirty coolies will be required to pluck leaves, and they will turn out about two

boxes of Tea per day, (weighing one maund, or 80 pounds) if the weather be fine and sunny; but scarcely half that quantity if it be rainy, on account of the coolies not plucking so much on a rainy, as they would on a fair sunny day. As the people of the country become acquainted with the gathering and manufacturing, three boxes, of forty pounds each, may be expected in fine weather, adding perhaps a few men to the number of coolies.

A pair of pans for the Green-Tea makers would require during the first process,

to tatch,	...	..	..	..	..	2 men
— receive the Tea from the pans,	..	..	..	..	..	1 „
— roll,	..	..	..	..	..	8 „
— attend to the fire,	..	..	..	..	..	1 „
— put the leaves in the sun and turn them,	..	..	..	..	..	4 „
						—			
Total number of men,						16

Thirty coolies would be required to keep these men in full play, and they would turn out two boxes of twenty-three seers, or forty-six pounds each, per day; in all ninety-two pounds of Tea. If the weather be rainy, of course the produce is much less; as the gatherers then do only half work. Thus the difference between the Black and Green is, that the former requires six manufacturers less; and that when the Black-Tea is finished, boxed, and ready for exportation, the Green has only undergone the first process, and is but half finished; although it is ready for exportation to any appointed place to receive the final and troublesome, as well as most expensive part of the process. Nevertheless the first part of the Green-Tea preparation is easily learnt by the natives of this place in about two or three months. In speaking of the trouble and expense attending the second process of the Green-Tea making, I beg to observe that it appears to me, from what little I have seen of it, that machinery might easily be brought to bear; and as Assam is about to become a great Tea country, it behoves us to look to this. The Tea half made, as above described, I am informed by the Green-Tea Chinamen now with me, is put either into boxes or baskets, with bamboo leaves between; it has to make in this state a long journey by land and water, and then to go one or more months in a boat by sea, before it reaches Canton, where it is laid aside for one or two months more, before it undergoes the second process; making in all about five months from the time it was first prepared. All that is required is to keep it dry. Now if all this be true, which I have no doubt it is, I see no reason why we could not send it to England, and have it made up there. I rather see every thing in favor of such a plan,

and nothing against it. After a year's instruction under Chinamen, it might be left to the ingenuity of Englishmen to roll, sift, and clean the Tea by machinery, and, in fact, reduce the price of the Green-Tea nearly one-half, and thus enable the poor to drink good unadulterated Green-Tea, by throwing the indigo and sulphate of lime overboard. At all events the experiment is worthy of a fair trial, and the first step towards it would be to manufacture the Tea at Calcutta; or perhaps it would be better to let the China Green-Tea makers go direct to England along with it, and have it manufactured there at once.

Now for a word about the Lead-canister maker, who is a very important man in our establishment; for without him, we could not pack our Teas.—On two tiles about an inch thick and sixteen inches square, is pasted, on one side, a sheet of very fine thick paper, said to have been made in Cochin-China, over this another sheet is pasted only at the edges. The paper must be very smooth, and without any kind of hole, knob, or blemish. To make it answer the purpose better, fine chalk is rubbed over it. The tiles thus prepared are laid one over the other and moved backwards and forwards, to ascertain if they work smoothly. The lower tile rests on two pieces of wood, about four inches in thickness, and the exact length of the tile. The room where the sheets of lead are made must be very smooth and level, as the tiles are apt to break when there is any unequal pressure on them. In the corner of the room there is a sunken brick fire-place, the upper part of which rises just a little above the floor; into this fire-place is inserted one of the cast iron pans used for making Tea, and in one corner of the masonry is a vent hole on which in general a Tea-kettle stands. The pan is heated by a wood fire; an iron ladle with a handle, about six or eight inches long, answers the purpose of taking the lead out of the pan when required. The pan may hold about twenty pounds. There is also another ladle with a long handle, and holes at the bottom, to take the dross off. When lead for the sides of the boxes is required, the proportion of one maund of lead to five seers of tin is put into the pan. When well melted and freed from dross, the two tiles above mentioned are placed on the two pieces of wood, one piece being nearly under the centre, and the other at the edge of the lower tile; the upper tile is placed on the lower tile even and square, projecting perhaps a little backward towards the operator. The tiles being thus placed near the melted lead, the Chinaman squats down on them, placing his heels near the edge, with his toes towards the centre; while with his left hand he lays hold of the corner tile, and with the right holds the short ladle, which he dips into the boiler, and takes out

about half a ladleful of the molten metal, tipping up the upper tile with the left hand about three inches, at the same time assisting this operation by pressing on his heels and gently lifting his toes. The upper tile being thus raised he dashes in the contents of the ladle between both, lets go with the left hand, and presses on with his toes, which brings the upper tile with some force to its former position over the lower one, and occasions the superfluous lead to gush out right and left and in front. The upper tile is then raised like the lid of a box, while the lower one rests on the piece of projecting wood underneath, and a fine thin sheet of lead, nearly the size of the tiles, is taken out, and thrown on one side; the upper tile is then gently lowered down, another ladle of hot lead dashed in, and so on in quick succession, about four sheets of lead being made in one minute. The lower tile projecting a little beyond the upper one assists the man to lay the ladle on, and pour in the metal firmly and quickly. To vary the operation, the man sometimes stands up and places one foot on the upper tile, working with his heel and toes, the same as if both feet were on, and just as quickly. Many interruptions take place, such as examining the papers on the tiles, rubbing them with chalk, turning them round, and reversing them. Sometimes half a split bamboo is placed in front and under the tiles, with a piece of paper on it, to receive the lead that falls down, so that it may not come in contact with the ground. This lead is every now and then taken up and put back into the boiler. A maund of lead may make about twelve or thirteen boxes, which will hold forty pounds. There are also two other tiles, about a cubit square; these are used for making the tops of the canisters, which are generally of tin only, but can also be made from the above mixture. It is necessary in making this sheet-lead, to hold the sheets up and examine them; for if not properly prepared, there are sometimes a number of very fine holes in them, which are not perceptible when lying on the ground or table. On this account the first twenty sheets of lead are thrown aside and rejected, even without any examination. When the tiles have become nice and warm, it is then the fine and even sheets, without holes, are obtained. Before a sheet-lead canister can be made, it is necessary to have a model box made to fit into the wooden box, that is to hold the sheet-lead canister; on this box or shell the sheet-lead canister is made. It has a hole at the bottom to prevent any suction in putting it in, or drawing it out of the box or canister; and instead of a top it has a bar of wood across, by which it is drawn out. For soldering, tin, with the eighth or twelfth part of quicksilver, and some rosin are used. The wood part of some of the boxes is covered with paper pasted on and dried in the sun. To give the paper on the boxes a yellow colour, a mixture of paste with

pulverized and sifted saffron is laid on and dried. The paper on the corners of the boxes is ornamented by means of a wooden block with flowers carved on it; on this bit of wood very thin paper, cut to its size, is placed, and a mixture, consisting of pulverized saffron, indigo, and water, having a deep green color, is laid singly on each bit of paper with a brush made of cocoanut fibres. These slips of paper are put one above the other, twenty thick, or as long as the paper takes the impression of the carved wood below. When the corners of the boxes have been ornamented with this paper and dried, another mixture, about the proportion of four seers of oil to three seers of rosin, boiled together, is applied with a cocoanut brush over all the boxes as a finish; after these are dry they are ready for the Tea.

The following table will shew the size and produce of the Tea tracts now worked, and the probable amount of Tea for this and the next season.

Names of Tea tracts fully worked in 1838.	Length and breadth of Tea tracts.	Number of plants in each Tea tract.	Average produce of single Tea plants.	Produce in 1838.	Remarks.
No. 1 Tringri,	267 by 90	5,000	4 Sa. Weight,	260 Seers	The plants are small in this tract including China plants.
No. 2 Tringri,	155 by 70	2,340	3-12 Sa. Wt.,	160 "	
No. 1 Kahung,	480 by 210	1,36,000	4 Sa. Weight,	680 "	
No. 1 Chubwa,	200 by 160	8,200	4 Sa. Weight,	410 "	
Deenjoy,.....	223 by 171	8,400	2 Sa. Weight,	210 "	
From Shady Tracts, .. .. .	.. .. .	.. .. .	.. .. .	1,720
				390	
				2,110	
The probable increase of the above Tracts for 1839.				527	
Probable produce of 1839.				2,637 Seers		5,274 lbs.

Names of the tracts to be worked in 1840.	Length and breadth of Tea tracts.	Number of plants in each Tea tract.	Probable produce of one Tea plant.	Probable produce in 1840.	Remarks.
No. 2 Kahung,	192 by 114	4,720	3 Sa. Weight,	177	The plants in these tracts now small will not yield a good crop for two years.
No. 3 Do,	215 by 70	3,440	3 Sa. Weight,	129	
No. 2 Chubwa,	160 by 70	2,420	3 Sa. Weight,	90	
Nowholea,	476 by 160	16,480	3 Sa. Weight,	618	
Tipun,	344 by 331	24,620	3 Sa. Weight,	922	
Jugundoo,	400 by 200	17,300	3 Sa. Weight,	648	
Ningrew,	300 by 189	12,260	3 Sa. Weight,	459	
The probable produce of the above 7 tracts.				2,943	
Add the probable produce of the other 5 tracts.				2,637	
Probable produce of all the tracts in 1840.				5,580	11,160 lbs.

It should be borne in mind that this is a rough calculation, and I can only give the probable amount. Most of these plants are very young, or have been recently cut down; a few years hence the plants may yield twice the above quantity. The first table exhibits the absolute produce of 1838. Now let us suppose a new settler were to take land in these parts; what would be his expenses if he were only to cultivate Tea, and had to clear forest land (in the vicinity of the Tea) ten times the size of *Nonholeah*, which is, say 400 by 200 yards, and which would cost him 200 Rupees to clear. Ten such tracts would cover 8,00,000 square yards. Now, to cover this surface of ground with Tea plants, and the plants six feet apart each way, 3,55,555 plants would be required; but if two plants were to be placed together, as I would recommend, then 7,11,110 plants would be required. The cost would probably be at the rate of five annas for 300 plants; thus:

The clearing of 10 tracts, each 400 by 200 yards,	..	2,000	0	0
7,11,110 Tea plants, at 5 annas for 300,	.. ..	740	11	8
Planting the above,	.. .. .	474	0	0
Weeding each tract 3 times each year, at 30 Rs. each tract,		900	0	0
5 Tea houses, at 50 Rs. each,	.. .. .	250	0	0
200 Hoes at 1 Rupee each,	.. .. .	200	0	0
100 Axes at 1 Rupee each,	.. .. .	100	0	0
100 Daws at 1 Rupee each,	.. .. .	100	0	0
Dollahs, Challonis, &c., bamboo apparatus,	.. ..	200	0	0
8 Saws at 5 Rs. each,	.. .. .	40	0	0
Charcoal and firewood for baking the Tea,	.. ..	200	0	0
40 Cast-iron pans, at 4 Rs. each,	.. .. .	160	0	0
Paper for Tea boxes,	.. .. .	100	0	0
Chalk and Indigo,	.. .. .	50	0	0
3 Maunds of Nails of sizes, at 10 Rs. per maund,	.. ..	30	0	0
2 Elephants at 150 Rs. each	.. .. .	300	0	0
2 Elephant mahoots at 6 Rs. each per month,	.. ..	144	0	0
2 Elephant mates at 4 Rs. each per month,	.. ..	96	0	0
Rice for 2 Elephants,	.. .. .	96	0	0
Lead for 888 boxes, at 3 seers per box containing 20 seers, at 8 Rs. per maund,	.. .. .	532	12	9
A Cooly sirdar at 10 Rs. per month,	.. .. .	120	0	0
10 Duffadars, or Overseers of coolies at 3 Rs. per month		360	0	0
Coolies to collect leaves, 30 to each tract, 20 days to each crop; for 3 crops, or 60 days, at 3 Rs. for each man per month,	.. .. .	1,800	0	0

Carried over,.. 8,993 8 5

	Brought over,..	8,993	8	5
4 Native carpenters, at 12 Rs. ditto,		576	0	0
8 Sawyers, at 4 Rs. ditto,		384	0	0
2 Native Lead-canister makers, at 12 Rs. ditto, ..		288	0	0
Coolies to bring in timber for Sawyers,		150	0	0
5 Chinamen at 30 Rs. each per month,		1,800	0	0
120 Native Tea makers at 5 Rs. each, for 5 months, or one season,		3,000	0	0
Freight to Calcutta,		400	0	0
Ditto to England,		1,000	0	0

Total outlay for 10 tracts, Co's. Rs. 16,591 8 5

Deduct charges that are not annual, viz.—

Clearing of tracts,	2,000	0	0	
Purchase of Tea plants,	740	0	0	
Planting ditto,	474	0	0	
Building Tea houses,	150	0	0	
Purchase of Hoes,	200	0	0	
Do. Axes,.. .. .	100	0	0	
Do. Daws,	100	0	0	
Do. Saws,	40	0	0	
Do. Bamboo apparatus,	200	0	0	
Do. Elephants,	300	0	0	4,304 0 0

Total annual outlay on 10 tracts, 12,287 8 5

Average produce of 3,55,555 tea plants at 4 Sa. } Wt. each plant, is 444 Mds. or 17,777 Srs., } or 35,554 lbs. at 2s., or 1 rupee, per pound, } would be, }	..	35,554	0	0
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Annual profit on 10 tracts, Co's. Rs. 23,266 7 7

<i>Annual outlay</i>	Co's. Rs.	<i>Annual profits</i>	Co's. Rs.
For 10 tracts,	12,287	On 10 tracts,	23,266
For 100 tracts,	1,22,870	On 100 tracts,	2,32,660
For 1000 tracts,	12,28,700	On 1000 tracts,.. .. .	23,26,600

N. B.—The deduction of 4304 Rs. not being annual outlay is not included in this calculation above 10 Tracts.

	Tea tract.	Duffadars.	Takelah.	Coolies.
Required for	1	1	10	30
„ for	10	10	100	300
„ for	100	100	1000	3000

It must be remembered that this calculation has been made on 3,55,555 plants, not on double that number as I proposed, viz. to plant them in pairs, which would certainly, on the lowest calculation, increase the profits thirty per cent. It should be borne in mind also, that 4 sicca weight is not the full produce of each plant ; when full grown it will yield double that, or 8 sicca weight, and some even as high as 10 to 12 sicca weight. I have calculated at the rate of 4 sicca, which was absolutely produced in 1838. The plant will, I should think, produce 25 per cent more this year, and go on increasing to what I have above mentioned. But then, on the other hand, the items which I have set down, are not all that will be required to carry on this trade on an extensive scale. The superintendence, numerous additional artizans that will be required, and a thousand little wants which cannot be set down now, but which must necessarily arise from the nature of the cultivation and manufacture, will go far to diminish the profits, and swell the outlay ; but this of course will last but a few years, until the natives of the country have been taught to compete with Chinamen. It should also be remembered, that the calculation I have made on ten tracts is on a supposition that we have a sufficient number of native Tea-makers and Canister-makers, which will not be the case for two or three years to come. It is on this point alone that we are deficient, for the Tea plants and lands are before us. Yes, there is another very great drawback to the cultivation of Tea in this country, and which I believe I before noticed, namely the want of population and labourers. They will have to be imported and settled on the soil, which will be a heavy tax on the first outlay ; but this, too, will rectify itself in a few years ; for, after the importation of some thousands, others will come of themselves, and the redundant population of Bengal, will pour into Assam, as soon as the people know that they will get a certain rate of pay, as well as lands, for the support of their families. If this should be the case, the Assamese language will in a few years be extinct.

I might here observe, that the British Government would confer a lasting blessing on the Assamese and the new settlers, if immediate and active measures were taken to put down the cultivation of Opium in Assam, and afterwards to stop its importation, by levying high duties on Opium land. If something of this kind is not done, and done quickly too, the thousands that are about to emigrate from the plains into Assam, will soon be infected with the Opium-mania,—that dreadful *plague*, which has depopulated this beautiful country, turned it into a land of wild beasts, with which it is overrun, and has degenerated the Assamese, from a fine race of people, to the most abject,

servile, crafty, and demoralized race in India. This vile drug has kept, and does now keep, down the population; the women have fewer children compared with those of other countries, and the children seldom live to become old men, but in general die at manhood; very few old men being seen in this unfortunate country, in comparison with others. Few but those who have resided long in this unhappy land know the dreadful and immoral effects, which the use of Opium produces on the native. He will steal, sell his property, his children, the mother of his children, and finally even commit murder for it. Would it not be the highest of blessings, if our humane and enlightened Government would stop these evils by a single dash of the pen, and save Assam, and all those who are about to emigrate into it as Tea cultivators, from the dreadful results attendant on the habitual use of Opium? We should in the end be richly rewarded, by having a fine, healthy race of men growing up for our plantations, to fell our forests, to clear the land from jungle and wild beasts, and to plant and cultivate the luxury of the world. This can never be effected by the enfeebled Opium-eaters of Assam, who are more effeminate than women. I have dwelt thus long on the subject, thinking it one of great importance, as it will affect our future prospects in regard to Tea; also from a wish to benefit this people, and save those who are coming here, from catching the plague, by our using timely measures of prevention.

Monthly outlay of the present standing Establishment.

					<i>Co's. Rs.</i>		
Superintendent,	..	..	..	..	500	0	0
1st Assistant to Do.	..	..	..	..	100	0	0
2nd Do. Do.	..	..	..	..	70	0	0
1 Chinese Black-Tea maker,	..	..	..	..	55	11	6
1 Ditto Assistant to Ditto	..	..	..	..	11	1	6
1 Ditto Tea-box maker,	..	..	..	..	45	0	0
1 Ditto Interpreter,	..	..	..	..	45	0	0
1 Ditto Tea-box maker,	..	..	..	..	15	8	6
2 Ditto Green-Tea makers, at 15 : 8 : 6 each,	..	..	..	..	31	1	0
1 Ditto Tea-box maker,	..	..	..	..	33	4	6
1 Ditto Lead-canister maker,	..	..	..	..	22	3	0
24 Native Black-Tea makers, at 5 each ,	..	..	..	..	120	0	0
12 Native Green-Tea makers, at 5 each,	..	..	..	..	60	0	0
1 Native Carpenter,	..	..	..	..	4	0	0
1 Coolie Sirdar,	..	..	..	..	10	0	0

Carried over,.... 1.122 14 0

	Brought over,..	1,122	14	0
4 Mahouts, at 6 each,	.. .. .	24	0	0
4 Ditto Mates, at 4 each,	.. .. .	16	0	0
Rice for 4 Elephants per month,	.. .. .	18	0	0
4 Sawyers, at 4 each,	.. .. .	16	0	0
2 Dâk runners, at 3 : 8 : 0 each,	.. .. .	7	0	0
4 Duffadars, at 3 each,	.. .. .	12	0	0
Fixed monthly expenditure in Assam,	.. ..	1,215	14	0
Cash paid to Chinese families in China,	. ..	131	2	6
Total monthly expenditure,		1,347	0	6

or 16,000 a year, not including coolies and other items. It should be remembered that this establishment has been confined to a few tracts as an experiment, and has never been fully worked. The Chinese Green-Tea makers, Canister-makers and Interpreter, have lately been added to the establishment; their services have not as yet been brought into account. We are just now availing ourselves of them by making Green-Tea; and as the natives at present placed under them become available, large quantities of excellent Green-Tea will be manufactured. I suppose two Chinamen might qualify twenty-four natives for the first process; the second, as I have already recommended, might be performed in England, which in my humble opinion would effect a great saving, by getting machinery to do the greater part of the work. At all events, it never could be manufactured in Assam without a great expense, and this for want of labourers. However, it is gratifying to see how fast the Chinese acquire the Assamese language; for, after they have been a year in the country, they begin to speak sufficiently well for all ordinary purposes, so that an interpreter can very well be dispensed with. Our Chinamen can speak the Assamese language much better than the interpreter can the English language. They are a violent, headstrong, and passionate people, more especially as they are aware we are so much in their power. If the many behave as do the few, a Thannah would be necessary to keep them cool.

With respect to what are called the *Singpho* Tea tracts, I am sorry to say we have not been able this year to get a leaf from them, on account of the disturbances that have lately occurred there; nor do I believe we shall get any next year, unless we establish a post at *Ningrew*, which I think is the only effectual way to keep the country quiet, and secure our Tea. The Tea from these tracts is said by the Chinamen to be very fine. Some of the tracts are very extensive, and

many may run for miles into the jungles for what we know; the whole of the country is capable of being turned into a vast Tea garden, the soil being excellent, and well adapted for the growth of Tea. On both sides of the Buri-Dehing river, as will be seen by the map, the Tea grows indigenous; it may be traced from tract to tract to *Hookum*, thus forming a chain of Tea tracts from the Irrawaddy to the borders of China, east of Assam. Ever since my residence at Sudiya this has been confirmed year after year by many of my Kamtee, Singpho, and Dewaneah acquaintances, who have traversed this route. It is therefore important for us to look well to our Eastern frontier, on account of our capability to extend our Tea cultivation in that direction. England alone consumes 31,829,620 lbs. nearly four laks of maunds, annually. To supply so vast a quantity of Tea, it will be necessary to cultivate all the hills and vallies of Assam; and on this very account a post at *Ningrew* becomes doubly necessary. A few years hence, it may be found expedient to advance this frontier post to the top of the *Patkai* hill, the boundary line of our eastern frontier. Any rupture with Burmah would add to our Tea trade, by taking from them *Hookum* and *Munkoom*, and having the Irrawaddy as our boundary line. These countries are nominally under the Burmese, as they pay a small annual tribute; but this can never be collected without sending an armed force. They are said to be thinly inhabited, the population being kept down by the constant broils and wars, which one petty place makes upon another for the sake of plunder. All the inhabitants drink Tea, but it is not manufactured in our way; few, it is said, cultivate the plant. I have for years been trying to get some seeds or plants from them, but have never succeeded, on account of the disturbed state in which they live. The leaves of their Tea plants have always been represented to me as being much smaller than ours.

Muttuck is a country that abounds in Tea, and it might be made one extensive, beautiful Tea garden. We have many cultivated experimental tracts in it; we know of numerous extensive uncultivated tracts, and it appears to me that we are only in the infancy of our discoveries as yet. Our Tea, however, is insecure here. It was but a month or two ago that so great an alarm was created, that my people had to retire from our Tea gardens and manufacture at Deenjoy and Chubwa, which will account for the deficiency of this year's crop. Things must continue in this state until the government of the country is finally settled; for we are at present obliged, in order to follow a peaceful occupation, to have the means of defending ourselves from a sudden attack, ever since the unfortunate affair at Sudiya. Before the transfer of the Tea tracts in this country can be made, it will be

necessary, in justice to all parties, to know if *Muttuck* is, or is to become, ours or not. The natives at present are permitted to cultivate as much land as they please, on paying a poll-tax of two rupees per year; so that if the country is not ours, every man employed on the Tea will be subject to be called on for two rupees per annum, to be paid to the old Bura Senaputy's son, as governor of the country. This point is of vital importance to our Tea prospects up here. Many individuals might be induced to take Tea grounds, were they sure, that the soil was ours, and that they would be protected and permitted to cultivate it in security.

In looking forward to the unbounded benefit the discovery of this plant will produce to England, to India,—to Millions, I cannot but thank God for so great a blessing to our country. When I first discovered it, some 14 years ago, I little thought that I should have been spared long enough to see it become likely eventually to rival that of China, and that I should have to take a prominent part in bringing it to so successful an issue. Should what I have written on this new and interesting subject be of any benefit to the country, and the community at large, and help a little to impel the Tea forward to enrich our own dominions, and pull down the haughty pride of China, I shall feel myself richly repaid for all the perils and dangers and fatigues, that I have undergone in the cause of British India Tea.

JAIPORE,
10th June, 1839.

ART. VIII.—*Proceedings of the Asiatic Society.*

(Wednesday Evening, the 7th August, 1839.)

The Honorable Sir E. RYAN, President, in the chair.

Read the Proceedings of the last Meeting.

Read the following letter from Professor WILSON:—

Library, East India House, London, 12th April, 1839.

DEAR SIR,—The continued serious illness of Mr. J. PRINSEP, and the uncertainty of its termination, render it impossible to communicate with him on the affairs of the Asiatic Society, and I must therefore trouble you on a subject on which he wrote to me on the Society's behalf sometime ago. Under the authority I then received, I applied to Sir F. CHANTREY to furnish the Society with a copy of his bust of Mr. COLEBROOKE, and of one of Sir W. JONES, from the head of the statue in St. Paul's Cathedral. Both have been prepared under his superintendance by a sculptor of great merit, his pupil Mr. WEEKES, and are nearly completed. The cost is severally sixty

and seventy guineas, (136*l.* 10*s.*) and it should be paid as soon as the busts are removed. I am not aware however if any arrangement has been made to remit the above sums, although I apprised Mr. PRINSEP of the amount. His lamented indisposition, and hurried departure from India, will probably have prevented him from taking any steps on the occasion. If the remittance has been made, I shall be obliged to you to inform me in what manner; if not, as is most likely, I shall be obliged to you to obtain the authority of the Society to the money being sent me without delay.

It is very probable that a similar omission may have occurred in regard to the amount of Dr. MILL's bust, which you will therefore be kind enough to correct by forwarding the amount either to him or to me. The plaster model of his bust is completed, and is most excellent, both as to its general character and individual resemblance. It and the other two will form most admirable, as well as appropriate decorations of the Society's apartments.

Yours very truly,
H. H. WILSON.

The Secretary informed the Meeting that the draft for 136*l.* 10*s.* has been remitted to Dr. WILSON by the last Overland; and that subsequent inquiry had shewn that Mr. PRINSEP had a larger sum than that required at the credit of the Society in the hands of his London Agents.

Read a letter from J. FORSHALL, Esq., Secretary to the British Museum, acknowledging receipt of No. 80 of the Journal Asiatic Society.

The Secretary brought to the notice of the Meeting that the present Pundit, RAMGOVIND GOSSAMEE, has been found incompetent to decypher the Inscriptions to which the Society are most desirous to give publicity, either in their monthly publication, or in their Transactions, he therefore proposed that the celebrated KAMALAKANTHA VIDYALANKA be appointed for that office, and also as the Librarian for the Oriental Books.

The proposition was unanimously carried.

Library.

The Secretary informed the Meeting of the arrival of several books selected by Professor WILSON and Dr. CANTOR, amounting in cost to 63*l.* 4*s.* 6*d.*, as per list forwarded by the booksellers, Messrs. ALLEN and Co.

Lindley's Fossil Flora, 3 vols. 8vo. boards.

Agassiz' Fossil Fishes, Parts 1 to 9 and 11, folio and 4to.

Russell's Fishes of the Coromandel Coast, 2 vols. folio.

Russell's continuation of the Coromandel Serpents, 2 vols. folio.

Cuvier and Valenciennes Histoire Naturelle des Poissons, vols. 8, 9, 10, 11, and 12.

Do. additional plates, to vol. 11, 8vo.

Crouch's Introduction to Lamarck's Conchology, coloured 4to. boards.

Gould's Himalayan Birds, 1 vol. imperial folio.

Lardner's Cabinet Cyclopædia—*from the Booksellers.*

Literary and Antiquities.

Read the following reply from Government to the request of the Society for a subscription for a certain number of copies of the "*Sharya-ul-Islam*," which the Society has undertaken to print in conjunction with the Nawab JADAWUR JUNG.

To the Officiating Secretary to the Asiatic Society.

General Dept.

SIR,—I am directed to acknowledge the receipt of your letter dated the 2d May last, and in reply to inform you, that the Honorable the President in Council will take 25 copies of the *Sharya-ul-Islam* at 20 Co's Rs. per copy, for the use of the Seminaries of education which give instruction in Arabic Law. On the receipt of the copies the necessary orders will be issued to discharge your bill on presentation at the General Treasury.

I am, Sir,

Your obedient servant,

Council Chamber, 24th July, 1839.

H. T. PRINSEP,

Secy. to Govt. of India.

Read a letter from Captain P. GERARD, forwarding two boxes of stone Idols discovered by his late brother, Dr. J. G. GERARD, and Lieut. Col. Sir Alexander BURNES, near *Manikayala*, on their route to India, 1833 and 1834.

'I take this opportunity of acquainting you for the information of the Asiatic Society, of having despatched by water two boxes to your address, to the care of my agents Messrs. COCKERELL and Co., who shall be apprized of the same. One is a large square box containing a Stone Idol in excellent preservation and beautifully executed, and complete excepting the face of one of the female figures, which is wanting. The face of the other female figure was accidentally broken off, but it has been carefully packed up in paper, and with a little cement it can easily be united, and appear as if nothing had occurred to it.

'The other is a small square box containing fragments of Idols. The whole were dug for at considerable expense in Afghanistan, at or somewhere near *Manikayala* by my brother, the late Dr. J. G. GERARD, while he was on his return route to India, during 1833 and 1834, from *Meshid* in Persia, where he separated from his companion and fellow-traveller, Lieutenant (now Lieutenant Colonel) Sir Alexander BURNES, Kt. May I therefore request that you will do me the favour of presenting the contents of both boxes on their arrival, to the Asiatic Society on my part, as having been the discoveries of my brother, the late Dr. J. G. GERARD.

'I regret to say that no particulars of their locality were found amongst my late brother's voluminous MS. papers, relating to his interesting journey, owing unfortunately to the circumstance of two-thirds of the whole having unaccountably disappeared, or been lost, which is much to be regretted, as they contained valuable information respecting *Heerat* and *Kandahar*, and the countries between *Meshid* and *Cabul*, especially about the resources of these parts, their trade, manufactures, and productions. What remained of his papers (with the exception of his meteorological observations during his absence from the end of 1831 and beginning of 1832, till March 1834, which I shall take an early opportunity of transmitting to the Society for publication at this interesting period,) were forwarded to Europe in 1836.

‘ Last year I was promised the necessary information respecting the Idols from Moonshf MOHUN LAL, but not having received it, I was unwilling to delay their dispatch any longer. Should he favour me with any particulars on the subject, I shall have great pleasure in communicating the same to the Society.

‘ P. GERARD, *Captain.*’

The boxes and contents were safely received. The thanks of the Society were voted to Capt. GERARD for this acceptable donation.

A stone Pillar of exquisite beauty and genuine Hindu style, considered to belong to the 13th century, was presented by Mr. W. S. ALLEN, by whom it was discovered with several fragments of a ruined temple, &c., on one of the shallows near *Pubna*. Lieut. KITTOE has undertaken to prepare an account and drawing of this Pillar for the next number of this Journal.

Translation of a play exemplifying the popular tone of the Burmese Drama was presented by Mr. BLUNDELL.

Physical.

Daily Observations of the Tide at Singapore for February, March, and April, 1839.

With reference to the resolution of the Meeting held on the 2nd January last, the Secretary apprised the Meeting that he had received a letter from Messrs. TAYLOR and WALTON, stating that they will supply such impressions of their Anatomical Wood-cuts as the Society may require.

Upper Gower Street, May 7th, 1839.

SIR,—Your letter of the 10th of February to DR. QUAIN on the subject of the Illustrations in his *Elements of Anatomy* has been handed to us. In reply, we beg to inform you that we shall be happy to forward the views of the Society by supplying whatever number of impressions from our engravings the Society may require. As much of the work in the Wood-cuts is very delicate, we should run a great risk of seriously injuring the blocks, by attempting to take casts from them. On this account we are prevented furnishing the metal casts, but the former plan we shall be happy to carry out in any way the Society may desire. We think your work would be much improved by the engravings being worked in this country, as the appearance of a wood-cut depends quite as much upon the printing as upon the engraving, and of course wood-cut printing has as yet been but little attended to in India. If you determine upon having the impressions, perhaps you will have the kindness to send us the following particulars :—

- 1st. The size of the volume for which the Plates are required.
- 2nd. The Number of Copies required.
- 3rd. The arrangement you would wish of the subject ; how many on each plate ; and in what order ?
- 4th. Whether you would require the same number of the steel plates of the Brain, &c.

We remain, Sir,

Your obedient servants,

TAYLOR AND WALTON.

P.S. Presuming your work to be in demy 8vo. we would supply you with Impressions from our cuts upon the following terms:—

For 500 Sets, supposing each set occupied 5 sheets demy 8vo. printed on one side only (in all 40 pages of cuts,) 37*l.* 10*s.* which sum would include the use of the Blocks, Presswork, and Paper. £ s. d.

For 1,000 ditto ditto ditto, 67 10 0

The four steel plates of the Brain would cost you, including Paper,

Presswork, & use of Plates for 500 impressions 4 plates demy 8vo. 8 8 0

1,000 ditto ditto ditto, 16 16 0

To W. B. O'SHAUGHNESSY, Esq.

Resolved—That MESSRS. TAYLOR and WALTON be requested to send 1000 copies of each set of plates.

[It will be remembered that these plates have been requested for the illustration of the "*Shanra Vidya*," or Sanscrit translation of "Hooper's Anatomist's Vade Mecum." The thanks of the Society were directed to be proffered to Professor QUAIN for his liberal aid in acceding to their request.]

Read a letter from Dr. J. T. PEARSON, forwarding an account of the *Bora chung*.

Read a letter from Dr. G. G. SPILSBURY, forwarding a specimen of a vein of Coal found close to the surface, about nine miles from Jubbulpore.

To the Secretary to the Asiatic Society.

SIR,—Herewith I beg to transmit specimen of a vein of Coal found close to the surface, about nine miles from this station.

It was first brought to notice by Mr. C. FRASER, the Agent of the Governor-General for these territories, who received his information from a *Faquir*, by whom he was informed that at a place a few hundred yards above *Lametur Ghat*, on the Nerbudda river, when the stream was at its lowest, (Charcoal stone, as he phrased it) was to be found, and that on applying fire it ignited.

Mr. FRASER and self visited the spot, situated near the middle of the river, and some 30 or 40 square yards, apparently the vein has also been traced on both sides of the river. Several of the residents have had hackery loads brought in, and find it answer well for domestic and culinary purposes. The blacksmiths are very unwilling to use it, and declare there is not sufficient heat from it to smelt iron.

I have no doubt that were a proper shaft sunk, Coal of good quality would be found, and equal to that discovered by Major Ouseley near *Garrahwarrah*, and on which such a good report was lately made in comparative trials at Bombay.

I have the honor to request you will present the specimen to the Society, and shall be glad to learn the result of its analysis. I remain, &c.,

GEORGE G. SPILSBURY.

Jubulpoor, 29th June, 1839.

The analysis of this Coal has been duly made, and the results will be published, with several similar analyses in an early number of the *Journal*.

Read a letter from Dr. H. H. SPRY, forwarding on behalf of Captain F. JENKINS, Political Agent of Assam, for presentation to the Society, specimens of rocks and minerals of the county of Cornwall, as well as other parts of England.

GENTLEMEN,

Calcutta, August 6th, 1839.

I do myself the pleasure of forwarding for presentation, at the approaching Meeting of the Asiatic Society, the accompanying specimens of the geology of the county of Cornwall, as well as other parts of England, on behalf of Captain JENKINS, the Political Agent of Assam; and for him I have to solicit, in return, any duplicate geological specimens the Society may possess for presentation to the Royal Institution of Cornwall. In this request I beg to join with Captain JENKINS, as we both feel assured that the rich stores which the Cornish Museum contains will be readily made available to the improvement of the Asiatic one, and an interchange thus be effected which will prove of mutual benefit.

I beg further to add, that should the Society be pleased to accede to this proposal, that I shall be happy to be the medium of communication between the two institutions, so far as assisting in facilitating the transmission of the specimens.

HENRY H. SPRY,

The Joint Secretaries of the Asiatic Society of Bengal.

The thanks of the Society were voted to Captain JENKINS, and the Curator was requested to form a suitable series of the Museum duplicates for presentation to that officer. With reference to this and some similar communications, the President observed that he was very desirous of recording his opinion that the correspondence of the Society, should on all occasions pass through the Secretaries, the regular and usual channels. Direct correspondence emanating from other officers of the Society he considered informal. He thought, for example, that all correspondence relative to the Museum should pass through the Secretaries, and he proposed a resolution to that effect, which was seconded by Mr. H. T. PRINSEP, and carried unanimously.

Dr. M'CLELLAND presented some specimens of Mineral Ore with the following note:—

SIR,—I did myself the pleasure, some time last month, of forwarding to your address, a small package containing two or three specimens of Jasper and Asbestos, and one of Iron ore, entrusted to my care, when at Ferozepore, by Mr. C. MASSON, who told me that he had almost forgotten they were amongst his baggage, not having paid much attention to what was packed up by his servants when leaving Kabul. I had mislaid his ticket for the specimen of the ore, which I now enclose, lest I should have made any mistake in my own label, as to the place from whence the ore was obtained.

I beg to add that the ore is nearly similar, but not quite so pure or rich looking, as that obtained from the mines in the southern portion of the Busahir state.

GEORGE JEPHSON.

Meerut, July 27th, 1839.

Mr. H. T. PRINSEP recalled the attention of the Society to the proceedings of the Meeting of the Society held on the 6th September, 1837. Mr. JAMES PRINSEP had appropriated the sum of 1500 francs (equivalent to Co's. Rs. 625) remitted by the Minister of Public Instruction in France, in procuring from Benares

copies of the *Vedas* which were sent to France, as prepared, through Capt. A. TROYER, agent of the Society in Paris. Since Mr. JAMES PRINSEP's departure for England several further *Pothis* have been sent down, and are now ready for transmission. The sum advanced has been exceeded by the charges for copying, and the balance has been paid from Mr. JAMES PRINSEP's private funds, not from those of the Society. The copies in sheets were ready to be sent to Europe, and the account prepared from Mr. JAMES PRINSEP's private books of sums remitted by him to JUDDOONATH PUNDIT at Benares, shews an amount of Rs. 233 : 7 : 9, as the balance due by the Government of France; part of this amount however, viz. Rs. 196 : 3 : 6, was advanced at Benares from funds realised there by sale of the Society's Oriental publications, as shewn in the account of Messrs. TUTTLE and CHARLES, Mr. JAMES PRINSEP's Agents. It remains for the Society now to declare whether the copying for the French Government shall be considered as a private transaction between Mr. JAMES PRINSEP and the French Government, or as executed by him as Secretary to the Society. In the former case, the balance 196 : 3 : 6, will be paid into the Society's Treasurer's hand, and the copies of the *Vedas* now ready, will be sent on Mr. JAMES PRINSEP's private account, with a claim for the balance from that Government; but if the Meeting consider the transaction as their own, then the Society will have to pay the difference between Rs. 196 : 3 : 6 and 233 : 7 : 9, viz., 37 : 4 : 3, to Mr. JAMES PRINSEP's agents, and to forward copies of *Vedas* officially through their Secretary to the Agent in Paris.

Resolved unanimously—That the transaction is one which appertains to the Society; that the copies of the *Vedas* be taken over, and the account closed.

The Honble. Mr. BIRD exhibited to the Meeting a sketch of the Camel carriage in which Mr. BIRD, of Allahabad, had recently made an official tour of 2000 miles in Upper India.

This sketch, with some papers on the subject, will appear in our next number.

Read extracts from a letter from Baron HUGEL to the address of Mr. JAMES PRINSEP.

Kritzling, near Vienna, Dec. 25, 1838.

'I have received a few days ago, the four numbers of your Journal, Nos. 72 to 75, and I cannot find words to express the interest I took in following from the beginning to the end, your extraordinary discoveries. It is really worthy of your spirit, of your genius, to come to a fact of such immense consequences for history, but I think it proves more than any thing else, of no direct intercourse between what is called the *Peninsula* of India and Egypt—I mean of no trading vessels from Berenice to any port of the Malabar coast. I don't believe in long voyages without sails in those days, and the knowledge the Greeks and Egyptians possessed of India is much better explained in the tablets of Gîrnar, than by the idea of savants travelling for information without the vanity of telling it in their works. But when really Mission-

aries went to Egypt and Greece it is astonishing that nothing of this truly interesting fact should have been mentioned in any work of a Greek author. But this may be as it is, I am sure that you are only at the beginning of your work, and that we may look for real Indian history, from the time of Alexander the Great, at least, to the invasion of the Mohamedans.

'It is a considerable time I did not write to you, my dear Sir, but I was afraid to take away from your valuable time, which you employed even beyond my expectations: but if I did hesitate any longer to send you a few lines, I am afraid I could be entirely escape your memory. I take the liberty at the same time to send you for the Society (if you think it worthy) "the Fishes of Kashmir," found by myself in the valley, and brought home with me. I am sorry that it is in German, but as it is my *native tongue*, I think it my duty to publish in it. There is another work now printing, which I hope will prove a good one: it is "Kashmir and the Sihks" in four volumes.

'I beg your being good enough to send for the subscription money for the Journal to Gillanders and Arbuthnot: it happened once (just one year ago) that I was obliged to pay 9*l.* 17*s.* for four numbers of your Journal, *postage* from Calcutta to London: it was sent me from thence to Vienna by an Austrian Courier: I made all kind of remonstrances, but without success. "*Pamphlets only*" not having been written on the address, the Post Master General would not hear of a reclamation.'

'C. H. HUGEL.'

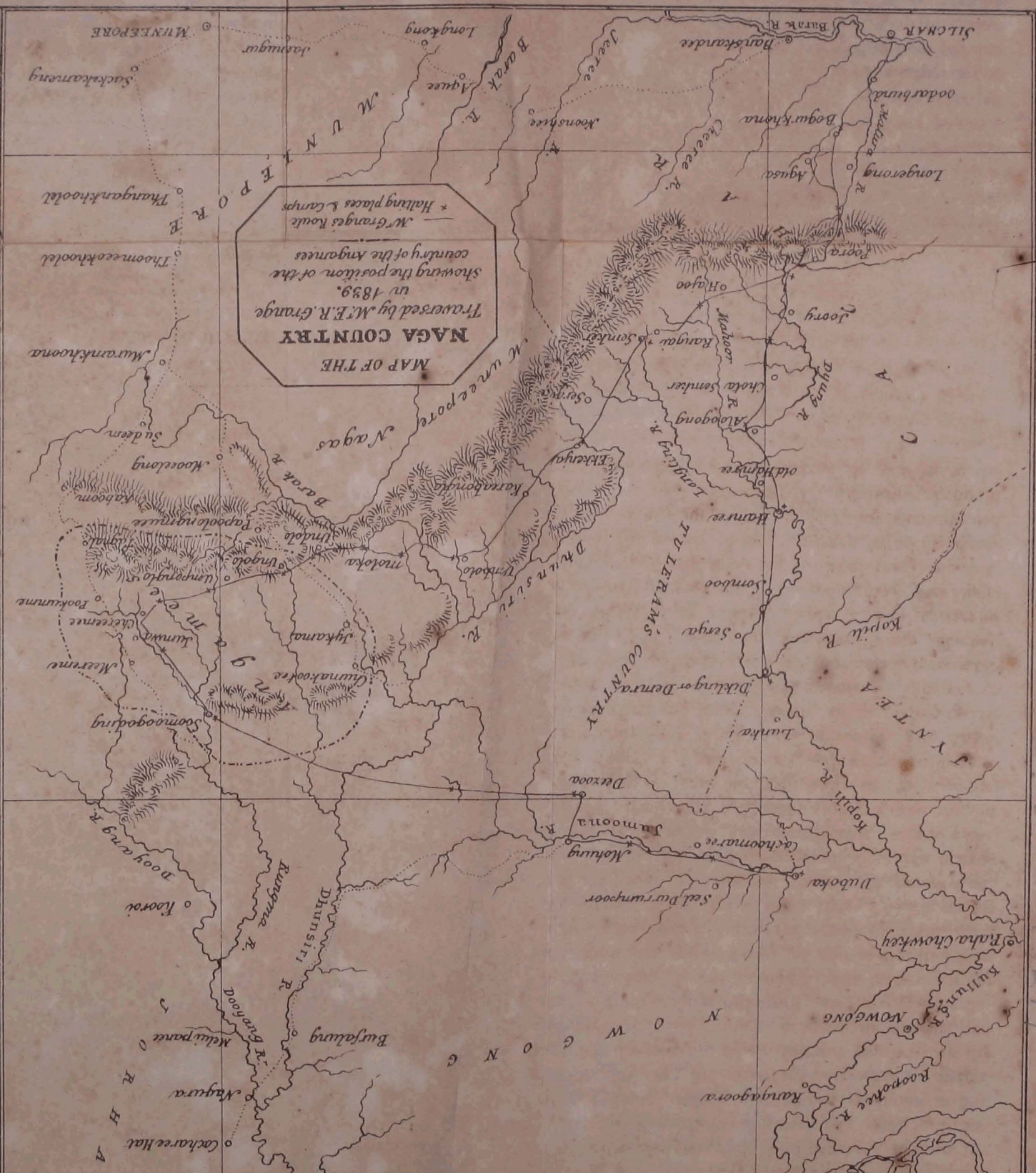
[Some desultory conversation took place before the Meeting separated, as to the interruption of the Meteorological Register so long published in the Society's Journal. It has been kept chiefly by Mr. GREENWAY, an assistant in the Calcutta Assay Office, who was trained by Mr. PRINSEP to the use of his unrivalled instruments, and to the correction of their indications by special tables now in Mr. GREENWAY's possession, Mr. PRINSEP had, moreover, as a parting request, urged Mr. GREENWAY not to discontinue observations which had acquired standard value in the estimation of all Meteorologists. Mr. CURNIN, the acting Assay-Master, has however deemed it necessary to prohibit Mr. GREENWAY's devoting any portion of his time to this employment, and Mr. CURNIN is further unwilling to allow Mr. PRINSEP's instruments to be removed from the Mint to any other establishment. Under these circumstances, Mr. REES, of the Surveyor-General's Office, has most liberally permitted his Registers to be made use of by the Society. We have already published that for July. The Barometrical observations are made with a first rate Troughton.

We have taken measures for having the instrument accurately compared with others which have been adjusted by the Royal Society's standard, and the reductions to 32° will be duly calculated for quarterly periods. We propose too to add to the Register a daily double observation of the boiling point of water, taken with an excellent Thermometer, recently sent out to Mr. JAMES PRINSEP's order. This seems to us a desideratum of much importance.

It is but justice, nevertheless, to Mr. CURNIN to add, that that gentleman considers the continuance of the observations to interfere with the duties of the Assay Office, and that he has offered to permit any competent person to attend at the Mint for the purpose. This arrangement, however, would be attended with so much expense and inconvenience, that it becomes absolutely impracticable.—Eds.]

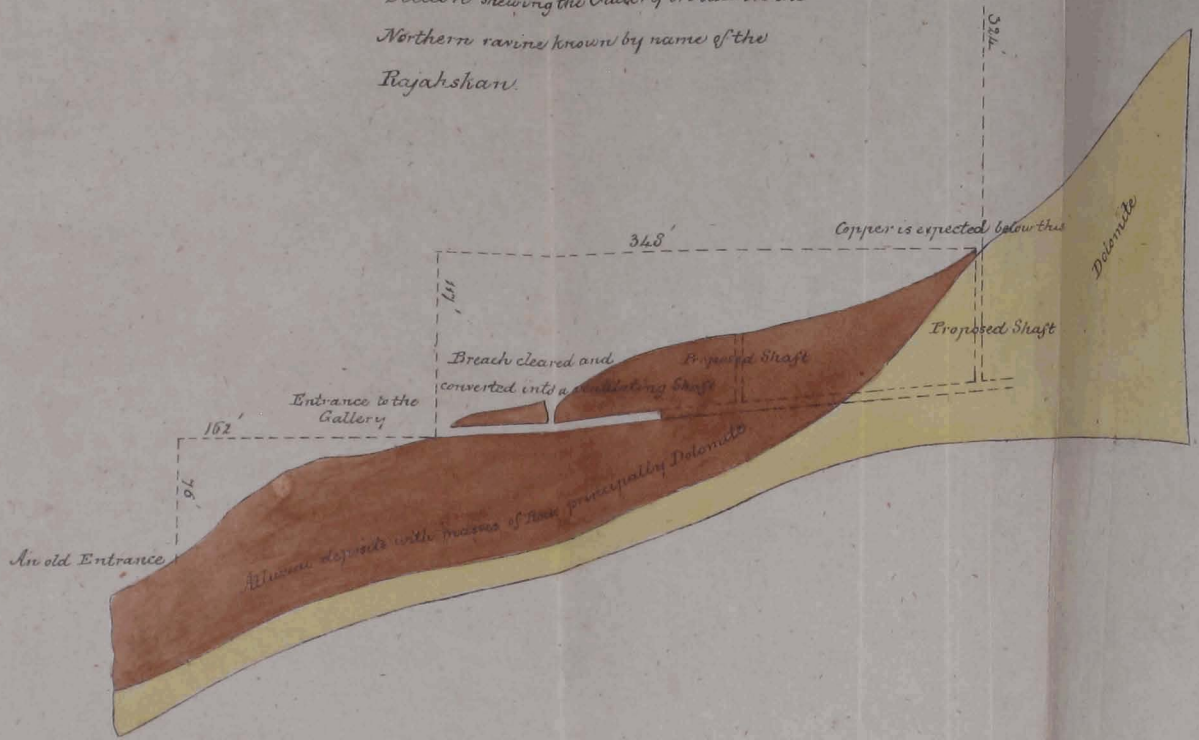


**MAP OF THE
NAGA COUNTRY**
 Traversed by M.F.R. Grange
 in 1839.
 Showing the position of the
 country of the Angames
 * Halting places & Camps

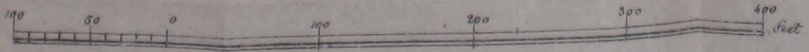
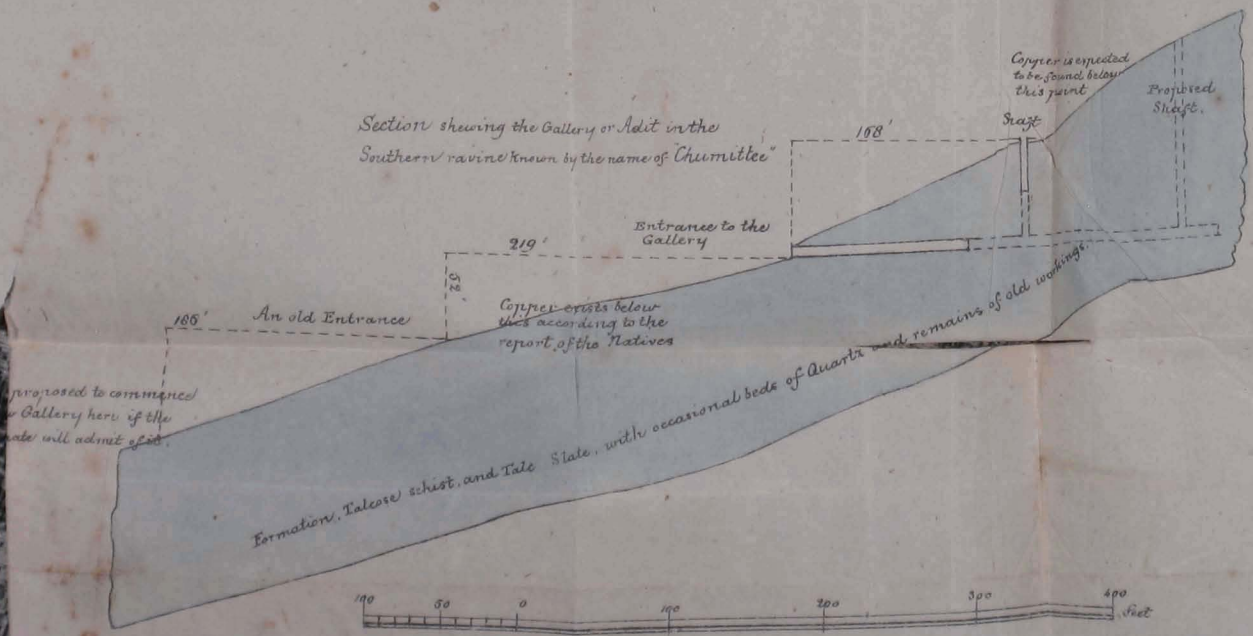


Book no. 4279

Section showing the Gallery or Adit in the Northern ravine known by name of the Rajahshan.



Section showing the Gallery or Adit in the Southern ravine known by the name of "Chumillee"



Almorah }
5th July 1839

For Journal of the Asiatic Socy

John Glasford Ince

Esq. Eng. & Mason D^o

APPENDIX (A.)
Sugar cultivation in the District of Azimgurh.

B.C.A.3

Name of Pergunnah.	No. of Beegahs of Cultivated land in the Pergunnahs.		Of these are Beegahs of Sugar-cane.		Average produce of Goor about 12 Ghazepore maunds per Beegah.	First boiling of Goor gives an average 25 per cent. 1st quality Sugar.	Second boiling of Goor and Molasses gives about 10 per cent. of 2nd quality Sugar.	About 45 per cent. of Molasses remains.	The prices vary with the Season and Markets.												Profit and Loss.				
	Beegahs.	B. D.	Beegahs.	B. D.					Maunds P. C.	Maunds P. C.	Maunds P. C.	Maunds S. C.	Cost of Goor at 2-12 per maund.			Goor being 2-12 per maund the 1st quality Sugar should fetch 10 Rs per Ghazepore maund.			Second quality of Sugar should fetch 7-8 per Ghazepore maund.			Value of Molasses about 7 Rupees per maund.*			
													Rs.	As.	Gs.	Rs.	As.	Gs.	Rs.	As.		Gs.	Rs.	As.	Gs.
Nizamabad,	2,12,366	7 0	21,236	12 15	2,54,839 26 0	63,709 36 8	25,183 38 10	1,14,677 33 12	7,00,809 0 12	6,37,099 2 0	1,91,129 11 17	1,14,677 13 10	Cost of Goor,	7,00,809 0 12 0	Interest on this at 12 per cent. for 6 months,	42,048 8 16 1	85,371 4 9 1								
Mahomedabad,	1,36,327	0 0	17,604	10 10	2,11,254 12 0	5,21,813 23 0	21,125 17 3	95,064 17 7	5,80,919 5 4	5,28,135 12 0	1,58,440 11 13	95,064 6 19	Price of 1st quality Sugar,	6,37,099 2 0 0	Ditto 2d ditto,	1,91,129 11 17 2		8,28,288 13 17 2							
Mownat Bhunjun,	8,663	13 0	866	7 10	10,396 20 0	2,599 5 0	1,039 26 0	4,678 17 0	28,590 6 0	25,991 4 0	7,797 6 0	4,678 6 16	Net profit Co's. Rs.	5,80,919 5 4 0	Cost of Goor,	5,28,135 12 0 0		6,15,806 4 7 2							
Mahole,	1,69,118	0 0	13,088	16 0	1,57,065 24 0	39,266 16 0	15,706 22 6	70,679 20 13	4,31,930 6 8	3,92,661 0 0	1,17,799 3 1	70,679 8 6	Interest on this at 12 per cent. for 6 months,	5,28,135 12 0 0	Price of 1st quality Sugar,	1,58,440 11 13 13	6,86,576 7 13 1								
Suggree,	1,07,135	8 0	10,018	3 5	1,20,217 38 0	30,054 19 8	12,021 31 13	54,098 3 2	3,30,599 5 16	3,00,544 14 0	90,163 7 8	54,098 1 5	Net profit Co's. Rs.	3,30,599 5 16 0	Cost of Goor,	3,00,544 14 0 0	3,30,599 5 16 0								
Deogaon,	95,645	2 0	4,655	14 0	55,868 16 0	13,967 4 0	5,586 33 10	25,140 31 4	1,53,638 1 12	1,39,671 0 0	41,901 4 17	25,140 12 10	Interest on this at 12 per cent. for 6 months,	3,00,544 14 0 0	Price of 1st quality Sugar,	90,163 7 8 3	3,90,708 5 8 3								
Cheriakote,	38,377	0 0	3,873	6 0	46,479 24 0	11,619 36 0	4,647 38 6	20,915 32 13	1,27,818 14 8	1,16,199 0 0	31,859 11 4	20,915 13 2	Net profit Co's. Rs.	1,53,638 1 12 0	Cost of Goor,	1,39,671 0 0 0	1,62,856 6 4 0								
Kurriat Mittoo,	16,221	12 0	1,622	3 0	79,465 32 0	4,866 18 0	1,946 23 3	8,759 24 6	53,530 15 4	48,664 8 0	14,599 5 11	8,759 9 15	Interest on this at 12 per cent. for 6 months,	1,27,818 14 8 0	Price of 1st quality Sugar,	41,901 4 17 2	1,81,572 4 17 2								
Belhabans,	35,210	10 15	3,521	1 0	42,252 24 0	10,563 6 0	4,225 10 6	19,013 26 13	1,16,191 10 8	1,05,631 8 0	31,689 7 4	19,013 10 14	Net profit Co's. Rs.	53,530 15 4 0	Cost of Goor,	48,664 8 0 0	56,742 13 2 2								
Ghosee,	75,843	13 0	5,701	7 0	1,68,416 8 0	17,104 2 0	6,841 24 12	30,787 11 9	1,88,144 8 16	1,71,040 8 0	51,312 2 7	30,787 4 12	Interest on this at 12 per cent. for 6 months,	1,16,199 0 0 0	Price of 1st quality Sugar,	31,689 7 4 1	1,37,320 15 4 1								
Nuthoopoor,	24,981	8 8	2,247	10 0	26,970 0 0	6,742 20 0	2,697 0 0	12,136 20 0	74,167 8 0	67,425 0 0	20,227 8 0	12,136 8 0	Net profit Co's. Rs.	1,05,631 8 0 0	Ditto 2d ditto,	1,05,631 8 0 0	1,23,166 5 5 1								
Tilhennee,	72,475	3 0	3,699	5 0	44,391 0 0	11,097 30 0	4,139 4 0	19,975 38 0	1,22,075 4 0	1,10,977 8 0	33,293 1 0	19,975 15 4	Cost of Goor,	1,88,144 8 16 0	Price of 1st quality Sugar,	1,05,631 8 0 0	1,88,144 8 16 0								
Kowra,	31,631	15 0	3,954	16 0	47,457 24 0	11,864 16 0	4,745 30 6	21,355 36 12	1,30,508 6 8	1,18,641 0 0	35,593 3 2	21,355 14 14	Interest on this at 12 per cent. for 6 months,	1,16,199 0 0 0	Ditto 2d ditto,	31,689 7 4 1	1,51,058 11 4 1								
Gopalpoor,	26,949	7 0	2,917	5 10	35,007 12 0	8,791 33 0	3,500 29 3	15,753 11 6	96,270 1 4	87,518 4 0	26,255 7 11	15,753 4 11	Net profit Co's. Rs.	1,88,144 8 16 0	Price of 1st quality Sugar,	1,05,631 8 0 0	1,88,144 8 16 0								
Atrowla,	(Included in Tilhennee)	7,718	15 15	92,625	18 0	23,156	14 8	9,262	21 12	41,601	18 1	2,54,719	15 16	Cost of Goor,	1,71,040 8 0 0	Ditto 2d ditto,	51,312 2 7 0	2,22,352 10 7 0							
Total,	10,51,391	19 3	1,02,725	13 5	12,32,707	39 0	3,08,176	39 8	1,23,270	31 13	5,54,718	23 2	33,89,946	13 6	30,81,769	11 0	9,21,530	15 8	5,54,718	9 5	31,029	8 5 2			

* The price obtained for the Molasses is sufficient to meet all the expenses of the manufacture, and to cover the Interest on stock and its wear and tear.

Total, 4,12,957 2 11 1



Bactriane

Kaféris

Indou Kouch
Caucase ou soit
Caucase Indien des Grecs

Paropamisus des Grecs

PROVINCE DES HAZARÉS

Banguichs

Véziris

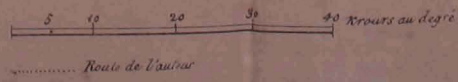
Itinéraire dans l'Afghanistan

fait dans le courant de l'année 1826

PAR

A. Court

Ancien Elève de l'Ecole Militaire de St. Cyr.



Lieux de passage de Bamian à Balkh

Balk
Mazar Chahi merdan
Khoulm
Hezbak
Derré Zentan
Korrem
Dowab
Kalfarshe
Col Dendan Chiken
Sighan
Akerchal

Lieux de passage de Herat à Caboul par la route directe

Herat
Osh
Kopyrad
Kajiristan
Koud Koure
Dabu
Tchikaree Talawashan
Cherck Kala
Lakseng
Tasserkis a torali
Chine Tchiristan
Kala Alaluk
Doh Zoghlu
Sor boubak
Tallak
Arband
Serchekhemph
Kousamboul
Caboul

Lieux de passage d'Anyou à Caboul

Kaboul
Koché
Daudkoul
Pouer
Chilozan
nonjinnamsh
Kilhaman
Boudak Khab
Dobdamend

Lieux de passage de Bakhéer Kala à Dere Ismael Khan

Mougonmel doumendé
Kroude Kaze
Dousmend Kounbour
Korzar
Pouelkate
Kouskan
Sermago
Mandjgane
Cham Koul
Zerkani
Derabend
Dere Ismael Khan

Route directe de Candahar à Chekarpour

M. T. eli medionoun
R. Dori
Kharis
Mil
Khalidja
Kahle
Fénoekhu
Bek koutchek
Kainade
Hernam
Nedrovi
Schal mamend
Koul Nassir Khan
Deshé mamend
Poné Kadjoure
Senani
Dere Paulani
Duter
Cher hadji
Veli hadji
Mekan Bile
Djakend
Chekarpour