almost necessarily confined to those which are held about once a fortnight during the session, and which, of course, are an important feature in the Society's work. We have occasional afternoon meetings in the map-room, for papers dealing with the more technical aspects of our subject; but these, for obvious reasons, are necessarily restricted. Yet there is ample scope, with so many eager young geographers working at various branches of our science, for an increase in such meetings. Not only so, but we might have occasional short courses of lectures on one aspect or another of our many-sided subject, which I am sure would be appreciated by a large number of our Fellows as well as by others.

Geography, in this country, is not only expanding on the scientific side; its importance in connection with various human activities in several directions—commercial, industrial, colonial, political—is becoming more and more felt. Our Society cannot ignore this aspect of the question, which it is our obvious duty to solve.

Our library and map-collection are capable of considerable expansion, if only space admitted of it.

I feel it to be my duty, without insisting further on the many advantages which would accrue to the Fellows from a new and much enlarged building, to bring the subject before the Fellows of the Society at the present time. For the last ten years, without by any means neglecting other work, we have been more or less absorbed in our efforts to equip a national expedition for the exploration of the one great unknown region on the face of the earth. Our efforts, so far as the equipment and despatch of the expedition is concerned, have been crowned with success. I think it right, therefore, to prepare you for what is bound to come next; and I feel confident that the Fellows will have sufficient pride in their Society, and sufficient ambition that it should continue to maintain the great position which it has held in the empire and the world, to support the Council when it resolves to adopt measures for the erection of a building worthy of the Royal Geographical Society.

NOTES ON A MAP OF "THE GLACIERS OF KANGCHENJUNGA," WITH REMARKS ON SOME OF THE PHYSICAL FEATURES OF THE DISTRICT.*

By Prof. E. J. GARWOOD, M.A., F.G.S.

THE accompanying map has been constructed from a rough plane-table survey made during my journey round Kangchenjunga with Mr. Freshfield in 1899. In this I adopted as a basis over thirty fixed points

* Partly read at the Royal Geographical Society, December 9, 1901, as supplementary to Mr. Freshfield's paper. Map, p. 136.

determined by the officers of the Survey and laid down in the trans-frontier map on the scale of 2 miles to the inch.*

This official map, which is confined to the Sikhim side of the main chain, though sufficiently accurate in its chief features, does not profess to delineate the details of the Kangchenjunga massif, neither (except by marking the Zemu glacier as "moraine") does it take cognizance of the numerous glacier systems which drain the central portion of the range. The native name Kangchenjunga, meaning literally "the five treasuries of greatest snow," given by the inhabitants of Sikhim to the four loftiest summits in which the range culminates, probably refers to the roof-like character of the peaks, and does not necessarily argue any early knowledge of the chief glacier system; the word translated "storehouse" being said to mean primarily the little barns with high-pitched roofs in which the natives store their crops.

My plane-table survey consisted chiefly of bearings to the chief ridges, valleys, and glaciers, the details of these being subsequently filled in during the final construction of the map.

The material used for this purpose was obtained as follows: From each plane-table station a round of photographs was taken, in all upwards of a hundred photographs, from which much of the detail of the map has been derived by a method well known to cartographers as set forth in 'United States Coast and Geodetic Survey Report, 1897,' Appendix No. 10.

In addition to my own photographs, I have derived great assistance from the beautiful panoramic views taken by Signor Vittorio Sella for Mr. Freshfield during the expedition. The positions from which these were taken have been determined with considerable accuracy, the photographs used containing always three or more points already fixed on the map, the focal lengths of the lenses with which they were taken being also known.

Between the plane-table stations numerous observations were made with a prismatic compass, and a quantity of photographs were taken by Signor Sella and myself from positions which were also afterwards determined in a similar manner.

I am further much indebted to various notes and sketches made by Mr. Douglas Freshfield during our journey, and I should like here to acknowledge the great obligation I am under to Mr. Freshfield, not only for inviting me to accompany his expedition, but also for invaluable help and criticism throughout the construction of the map.

My thanks are also due to Mr. Reeves, the head of the map department of this Society, for much kind assistance, especially in the matter of calculating true heights from my aneroid determinations, and to Mr. Batchelor, who has assisted me throughout in the drafting of the map.

* For details of maps bearing on the district, see Freshfield, *Journal*, vol. xix. p. 461.

Since our return I have consulted a copy of the native surveyor Rinsing's original map of the Nepal side of the watershed, and the recent information obtained by Messrs. White and Hoffman, and embodied in one of the small-scale survey-maps. Copies of these maps were kindly given me by Colonel Gore, the Director-General of the Indian Survey. A new edition of the route-map of Sikhim appeared in December, 1900, from which I have extracted further information with regard to the trend of the valleys immediately to the south and west of Lama Anden.

Rinsing's map, though fairly correct in its general bearings, was found to be too vague to afford much assistance in supplementing detail for our map, his strange habit of delineating glaciers as both

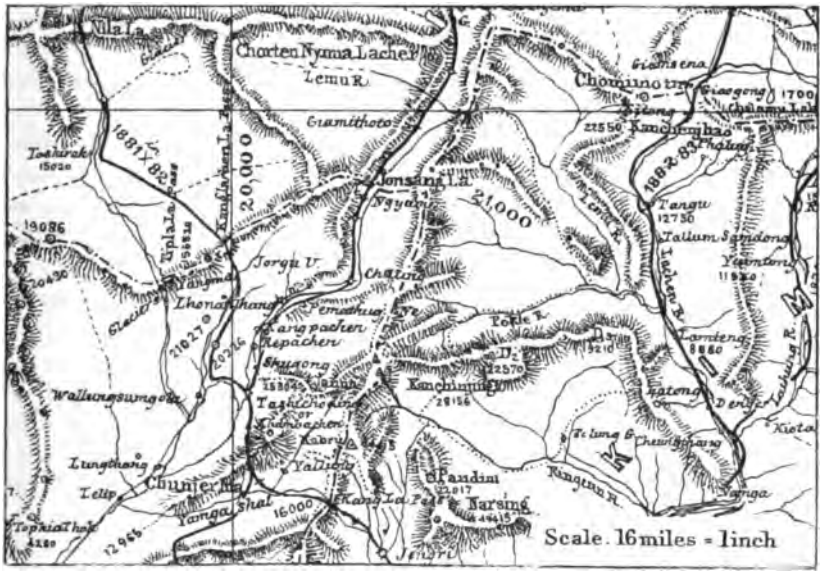

FIG. 1.—REPRODUCTION OF PART OF CHANDRA DAS'S MAP.

originating and terminating in streams, a peculiarity emphasized in the newest editions of the small-scale Government maps, being often highly confusing.

The only other map of this district that calls for mention is that accompanying Sarat Chandra Das's paper, "How I crossed the Jon-Tsang-La (*sic*) Pass," read before a meeting of the Buddhist Text Society of India at Darjeeling, in November, 1899, *after* the return of our expedition.* There can be no doubt that the pass actually crossed on

* This paper is an exact reprint of the writer's narrative of a journey to Tashilunpo in 1879, which appeared in 1881 as an official report, with the important addition of the name Jong Song La to the pass which, in his previous account, he calls the Chortang La.

this occasion was the Chatang La, as there stated; the name Jonsong La being added afterwards, on the supposition that the two names referred to the same pass. That this is not the case is perfectly evident from the account of his route after leaving Ramthang, which he describes as lying between two parallel ranges which, "after a time, changed from north to north-west," the ground traversed consisting of boulders and bogs; whereas the route from Ramthang to the Jonsong La runs at first due east and afterwards east-north-east, and lies entirely over the Kangchenjunga and Jonsong La glaciers and moraines. This confusion of two totally different valleys and passes and the omission of one, has an amusing effect on his map, for it leaves an isolated basin, marked as Chorten Naima Laichen, to drain which he has carried the source of the Zemu river from the east right through the two main watersheds, and brought himself out still to the west of the main north and south watershed instead of to the east (see Fig. 1).

The general differences between the present map and those published by the Indian Survey will be easily visible on comparison. It may, however, be well to indicate a few of the chief structural alterations adopted. In addition to the insertion of the main glaciers and *névés*, some sixty in number, as accurately as the material at my disposal would admit, the following are the principal alterations introduced on the Government map:—

1. In the basin drained by the Zemu Glacier I have inserted the main spurs which buttress the north-eastern wall of Kangchenjunga and the *névés* which lie between, and similarly the ridges and glaciers bounding the southern side of the Zemu Glacier from Si-imvovonchum to Lama Anden. These will, I think, be found to be delineated with sufficient accuracy. The same cannot, however, be said with regard to the north-west feeder of the Zemu and its tributaries, nor the glaciers which cling to the flanks of Lama Anden itself. The latter we did not visit, and only photographed it from afar off. The former we were prevented from exploring by the snowstorm of September 24, and I have only one photograph, taken by Mr. Hoffman, of the ice-fall at the point where it enters the trunk stream. My information is derived chiefly from Messrs. White and Hoffman's sketch, and Mr. Freshfield's notes made before the storm, and such observations as we were able to make on the direction of the watershed. Lastly, the summits of Si-imvovonchum, seen from the Zemu Glacier, have been removed from the main watershed, since bearings taken from the Thé La, the left bank of the Zemu Glacier, and from the ridges above Jongri, all indicate that the triangulated summit is not visible from the north, as formerly supposed.

2. An alteration in the position of the Thé La. This has been moved somewhat to the east as the result of a study of photographs taken both by Signor Sella and myself, from carefully ascertained positions in the

neighbourhood of the pass, and on both sides of it, the bearings from these including all the fixed peaks from Lama Anden to Kangchenjunga.

3. The watershed forming the head of the Langpo valley has been removed further west, though its exact position is uncertain, owing to the absence of any cross-bearings, and the minor ridges and glaciers of

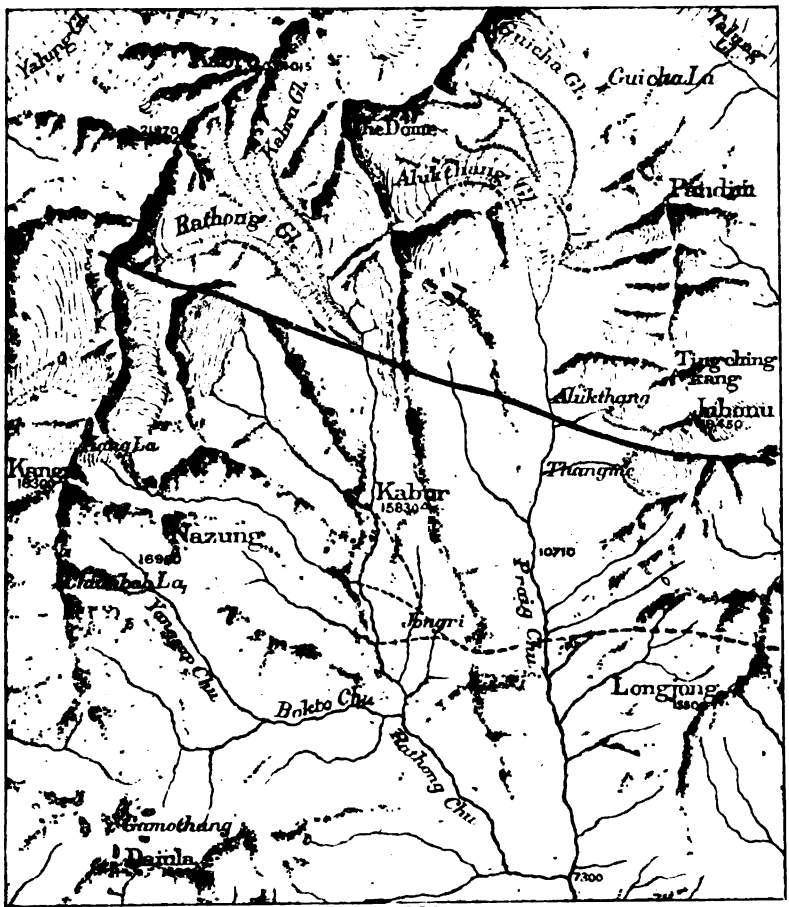

FIG. 2.—PRESENT AND PAST DRAINAGE SYSTEMS OF THE JONGRI DISTRICT.

this basin have been drawn in from bearings taken on the spot. The pass visited by Mr. Freshfield at the head of the north branch of the Langpo Chu is not the Choten Nima La, as was stated by Rinsing at the time, but a gap situated some miles further east, not on the main Tibetan watershed between the Teesta and the Arun, but on a spur

separating the upper Langpo Chu from one of its more northerly tributaries. The general topographical features of the Lhonak district have also been considerably altered. Thus, I have mapped in the glacier at the head of the Tumrachen Chu, which I ascended for some distance. From this glacier I examined a gap in the watershed to the north-west, which appeared practicable for coolies, and which should lead directly to the upper basin of the Langpo Chu; by following this route, instead of crossing the Thé La, a day's march should be saved in traversing from the Zemu Glacier to the foot of the Jonsang La.

4. On the Nepal side most of the detailed information is laid down for the first time. Though made independently, my map agrees fairly well, as far as the general trend of the valley is concerned, with Rinsing's sketch-map of the district. Great difficulty was experienced at the time in obtaining bearings in the Kangbachen valley on account of fogs, and I found it no easy task after a day's march through clouds to identify the summits of the Jannu range from the opposite side. At Khunza I was cautioned by Mr. Freshfield against undertaking survey operations for fear of further rousing the suspicions of the natives, who, besides demanding our rifles, were reported by Rinsing to have sent down to the nearest garrison news of our arrival. Scarcity of food, also, for the coolies made it advisable to push on to Jongri without a halt. I have, therefore, only attempted a general delineation of the Jannu and Yalung Glaciers, the main features of the latter having been inserted from Rinsing's map and from photographs supplied by Major Waddell, taken from the Semo La. The Kang La is indicated where we crossed it, and is not to be confounded with the Kang La Nangma further north, which is not the practicable pass from the Yalung valley to Jongri, but a high glacier basin.

5. In the neighbourhood of Kabru and the Guicha La numerous glaciers were mapped in on the spot, and some slight alterations have been made in the watersheds shown in the survey maps. In this connection there is one identification of Major Waddell's which I should like to correct. The peak marked Kangtsen in the profile on p. 416 of his book * is not the 21,970-feet peak lying immediately to the south-west of Kabru, but another peak situated further to the south on the Kang La watershed. Both of these peaks and their relative positions are well seen in Plate IV. of Dr. A. Boeck's Himalayan Album.†

The details of the Talung Glacier and its *névé* have been inserted from photographs taken by Mr. Hoffman during his passage through the Yalung valley on his way over the Guicha La. For the valley below information has been obtained from a skeleton map corrected in 1894 and 1900, to which Mr. White, the political officer in Sikhim, is said to have been a contributor. Outside our line of route the Government

* Dr. A. Boeck.

† 'Travels in the Sikhim Himalayas.'

map has been followed, the authority for such alterations as have been inserted being derived from distant photographs, or, in the case of heads of the glens under Si-imvovonchum and Siniolchum, from sketches made by Mr. Freshfield from above Gantok. These portions of the map are obviously mere sketches, with no pretension to be more than rough indications of the extent of the snow and glaciers, and it is much to be regretted that neither from Mr. White nor from any other quarter have we been able to obtain more detailed information.

Heights.—The heights for which I am responsible, given on the map, were taken in most cases with a Watkin aneroid barometer. This was constructed in two portions, a high instrument registering from the sea-level to 15,000 feet, and a low instrument registering from 15,000 feet to 30,000 feet. These were tested against a portable mountain barometer, kindly lent me by the Director of the Meteorological Office, to a height of 16,000 feet, and found to work perfectly. They were also kindly tested for me on my return by Colonel Watkin himself, under the conditions under which they were used, viz. by destroying the vacuum between each change of pressure, and taking a reading one minute after the instrument had been put into action. In addition to the readings of the observatory barometer at Darjiling, I have a series of observations kindly taken for me with a portable barometer, which I left with him for the purpose, by a father of St. Joseph's College, and a further series from Gantok, which Captain Le Mesurier arranged should be taken for me twice a day at stated hours.

An observation taken by Signor E. Sella with a short mercurial barometer, also calculated with Calcutta as a lower station, gives the Jonsong La the height of 20,340 feet. This remarkable correspondence with the observation taken with the Watkin aneroid used during our journey is a strong confirmation of the other results obtained with the same instrument, as well as of the value of the Watkin aneroid in the determination of heights.

With regard to nomenclature, a peak without a name is a difficult one to locate or to describe; I have, therefore, inserted several English names suggested for this purpose by Mr. Freshfield or myself; unfortunately, the Tibetian equivalents of these with which Mr. Earle, the late Assistant-Commissioner at Darjeeling, has kindly furnished me, have arrived too late for insertion, but will, I hope, be adopted in lieu of our English names by future cartographers; they are—

Cloud-gap	= Tinseb.	The Twins	= Ishemah.
The Pyramid	= Hoong-Khoong.	The Bridesmaid	= Pag-yok-ma.
The Tent peak	= Guryibri.	Furrowed peak	= Tokpori.
The Dome	= Bāgam.	Limestone range	= Dokarrigû.

The following table shows the readings corrected and the heights determined:—

HEIGHTS CALCULATED FROM OBSERVATIONS TAKEN WITH WATKIN ANEROID, No. 22.

Date.		Corrected aneroid reading.	Barometer at Darjeeling (7300 feet above sea-level).	Observed temperature.	Darjeeling mean temperature.	Height above sea-level.
				°	°	
Sept. 19	Camp in Poki Chu valley	19·80	23·000	50	60·0	11,471
„ 20	Edelweiss first found	19·60	23·000	50	60 0	11,752
„ 20	First camp, Zemu glacier	18·03	22·929	40	61·4	13,910
„ 21	Second camp, Zemu glacier	17·93	23·011	45	62·6	14,208
„ 22	„ „ „	17·93	23·003	45	60 6	14,179
„ 23	Third camp, Zemu glacier	17·31	22·989	45	62·4	15,139
„ 24	„ „ „	17·13	22·937	40	58·6	15,299
„ 27	Second camp, Zemu glacier	17·93	23·079	45	59·9	14,270
„ 28	Jak camp, south side Thangchung La	18·03	23 092	45	60 0	14,101
„ 29	Top of Thangchung La	16·61	23·087	40	60·1	16,333
„ 29	Camp in Tumrachen valley	18·03	23·087	50	60·1	14,204
„ 30	Top of moraine, Tumrachen glacier	17·00	23·083	45	59·9	15,736
„ 30	Camp south side of Thé La ...	17·43	23·083	40	59·9	15,011
Oct. 1	Top of Thé La	16·36	23·097	40	59·1	16,752
„ 1	Lhonak 1st camp	17·85	23·097	50	59·1	14,444
„ 2	„ 2nd camp	16·84	22·971	45	58·1	15,846
„ 3	„ 3rd camp	16·64	23·055	45	59·4	16,290
„ 4	Camp moraine north side Jonsong La	15·94	23·133	40	60·6	17,519
„ 5	Camp rocks foot of Jonsong La, north side	15·16	23·069	35	60·1	18,749
„ 6	Top of Jonsong La	14·34	23·075	32	53·9	20,207
	Calculated from Calcutta	—	—	—	—	20,348
„ 6	Camp below Jonsong La, south side	14·58	23·075	32	58·9	19,767
„ 7	Second Camp, Jonsong La, south side	15·46	23·103	40	58·3	18,290
„ 8	Camp corner Kangchen valley ...	16·09	23·154	40	58·1	17,260
„ 9	Camp in dried moraine lake, Kangchen valley	17·13	23·135	40	58·1	15,531
„ 10	Ramthang	17·22	23·137	45	57·6	15,431
„ 10	Camp Kangbachen	18·00	23·137	40	57·6	14,177
„ 11	End of Jannu glacier	18·21	23·135	45	58·0	13,895
„ 13	Top of Mirgen La	17·53	23·139	35	56·4	14,858
„ 13	„ next pass	17·23	23·139	40	56 4	15,361
„ 15	Top of Kang La	16·60	23·139	32	58·1	16,313

I have entered somewhat into detail in these notes on the construction of the map, not so much to excuse myself for the many shortcomings in the topography, for I am not unmindful of the proverb, "qui s'excuse s'accuse," but in order that those who follow in our footsteps, be they climbers or surveyors, may know which portions of the map they may treat with some degree of confidence while choosing a route, and which they should regard with a prudent scepticism in all matters of detail.

SOME PHYSICAL FEATURES.

A detailed account of geological structure would serve no useful purpose here, as I hope shortly to describe the district from this point of view in another place, but a few remarks on some of the more striking physical features met with during our tour may not be without interest.

The Denudation Curves.—In the forest belt up to about 10,000 feet these show a remarkable divergence from the typical logarithmic curve so characteristic of water denudation; this concave curve being replaced

by a marked convex curve produced by the thick growth of vegetation. As we ascend above 10,000 feet this curve gradually becomes replaced by the normal concave curve, until above 12,000 feet the usual features are dominant.*

When traversing the Sikhim ridges this moel-shaped outline constantly presented itself. That it is due to protection by the dense covering of vegetation is shown by hills like that on which Darjiling is situated. Here on the clearings for tea plantations the original soil is liable to be carried away, and the usual concave curves are rapidly produced. I had an admirable opportunity of studying this phenomenon when, on our return to Darjiling, we traversed the portion of country visited by the great storm of September 24. Many of these gullies showed that the soil and subsoil had collected to a depth of 15 to 20 feet under the protection of the dense primeval forests, and it was in consequence of the lubrication of the rock surfaces beneath this incoherent accumulation that the fatal landslips of that date occurred.

Lakes.—The absence of lakes in other portions of the Himalayan range is a feature which has been commented on by many explorers, and the district we visited formed no exception to this rule. The few tarns we encountered were all situated in morainic hollows, the water being held up either between two moraines or between a moraine and the valley side. What are left of these are insignificant pools, but two much larger sheets of water must once have occupied similar hollows, one in the Langpo valley and the other on the site on which Khunza now stands. The latter, which was dammed by the old lateral moraine from the Jannu Glacier, after the Kangchenjunga Glaciers had begun to retreat, must have been at least a mile long. This entire absence of rock-basins from valleys formerly filled by ice is not without bearing on the supposed origin of lakes by glacial erosion in other alpine districts.

Hanging Valleys.—This is a name suggested by the eminent American geologist Gilbert for the discordant side valleys whose drainage enters the trunk stream at a higher level than the floor of the main valley. On several occasions the presence of these valleys was shown in a greater or less degree, but the district in which I had most leisure to study these interesting phenomena was Jongri, near the southern foot of Kabru. Here we have two main valleys, one carrying off the water of the Praig Chu draining the glaciers about the Guicha La pass, and the other Chakchurong Chu, which drains the western Kabru glacier. Standing on the heights above Jongri, and looking west to the Kang La range, I was struck by a conspicuous pair of large hanging valleys notched out of the eastern slope of the Chackchurong valley (Fig. 2 and Plate, Fig. 1). The history of these valleys is full of interest, and appears to have been as follows:—

* See Marr, "On the Origin of Moels," *Geographical Journal*, 1900.

After the final elevation of the Kangchenjunga range, the drainage on the Sikhim side of the watershed took place by rivers flowing to the east and east-south-east. Relics of this initial drainage, consequent on the uplift, are still found in the Poki Chu, the Langpo Chu, the Zemu Glacier, and the Talung Chu, and the intervening watersheds dividing them. The Talung Chu is bounded on the south by the range between Jubonu (19,450 feet) and Malong (14,500 feet), which was continued westward through the neighbourhood of the east peak of Kabru to the main watershed somewhere north of the Kang La and south of Kabru. To the south of this watershed other parallel ridges and valleys must once have existed, trending at right angles to the Singalela ridge. In like manner we have relics of the original drainage on the Nepal side of the range, where the valleys occupied by the Kangchenjunga and Jannu Glaciers, and the Yalung river form portions of the main consequent streams. The present radial arrangement of the glaciers, which, to some extent, obliterates the initial drainage, is due to the superior resistance of the Kangchenjunga massif, the direct result of which is to force the drainage of the upper glens inwards, and bend it uniformly towards this central dominating ridge. On the other hand, if we examine the country at the outer extremities of these original easterly flowing valleys, we find that its drainage is now determined by the headwaters of the rivers cutting back by the *shortest* routes from the plain level, and therefore having the steepest gradients. These are the rivers occupying the "subsequent" or "strike" valleys running parallel to the main north and south axis of elevation. Those which have established a most commanding lead are those situated furthest from the axis of upheaval where the original east and west ridges were least developed, and therefore most easily cut through. Examples of these are the Lachen, or Zemu.

At the present day, as we have seen, we still have traces of the original drainage on the east side of the range as far south as the Jubonu-Malong range, but to the south of this a different state of things exists. The original subsequent streams draining the southern flanks of the east and west ridges have cut their way back from the plains, capturing one by one the headwaters of the original consequent streams, as ridge after ridge was cut through by the steeper gradient streams. The last of these ridges cut through is the old Kabru-Jubonu-Malong ridge, which has been gradually destroyed by the erosive action of the Praig Chu and the Chakchurong Chu, the former of which is steadily approaching the Talung valley by the Guicha La, and the latter the Yalung by the gap to the south of Kabru, the north and south ridge on which Kabur stands being a new watershed produced in the process. If we now carry our minds back to a time anterior to the destruction of the Kang La range, and imagine a similar parallel ridge still further to the south running from the Kang peak by Nazung

FIG. 1.

HANGING VALLEY AND WATERFALL OF KANG LA FROM ABOVE JONGRI.

Engraved and Printed by John Bale, Sons and Danielsson, Ltd.

FIG. 2.

DISTANT VIEW OF HANGING VALLEYS,
Showing the Jongri gap in Foreground.

to the south-east, we should then have between these another of the original consequent valleys south of, and running parallel to, the Talung Chu. That such a valley once existed follows, I think, from the general scheme of the drainage as described above, and accounts satisfactorily for the hanging valleys of the Kang La district, which therefore represent the truncated upper tributaries of this old consequent valley which trended to the south-east.

An interesting confirmation of this theory appears to be furnished by the Jongri plateau, which occupies a trough-like depression on the Kabur ridge between that peak and some lower elevations to the south. It is a unique feature in the district, and forms a rich grazing ground on which the Rajah of Sikhim maintains his herd of yak (see Plate, Fig. 2). I was much puzzled to account for this notch cut out of a comparatively narrow ridge and truncated at both sides by deep valleys. I think, however, that there can be little doubt that it represents a fragment of the old valley into which the hanging valleys of the Kang La once drained.

It now only remains to account for the more rapid deepening of the subsequent valleys by which the old headwaters of the consequent streams were converted into hanging valleys.

This I would attribute to two causes—in the first place, to the elevation of the north end of the district; and secondly, to the protection of the hanging valleys by ice. This elevation, which has taken place in other glaciated mountain regions, would be most marked where the ice was thickest, *i.e.* in the Kangchenjunga massif, lying due north of Jongri. As a direct consequence of this, the streams draining from north to south would have their velocity, and consequently their erosive power, increased, while those draining east and west would be merely tilted sideways, and would tend to widen rather than deepen their valleys. This supererosion by the subsequent streams probably took place during an interglacial period or periods, and when, after a further cold period, these glaciers retreated, they would linger longer in the high-level hanging valleys than in the deeper valleys below. This indeed is the state of things at the present day where ice still occupies and protects the upper portions of the hanging valleys, while the lower extremities are rapidly cut back into gorges by the water which escapes into the main valley. This superior erosive power of water over ice is noticeable in the other valleys; thus, the glacier at the upper end of the Chakchurong gorge rests on a raised platform, which the ice has obviously protected from the action of the river which replaces it lower down.

In conclusion, then, I would attribute the hanging valleys of Jongri to the erosive action of the "subsequent" north and south streams, which on account of their greater declivity have cut through the watersheds of the original easterly flowing "consequent" streams and

captured their headwaters. The final differences in level between the trunk stream and its new tributaries have been produced by the elevation of the upper end of the trunk stream (probably in interglacial times), assisted by the protection afforded to the tributary valleys by ice.

KIKUYU: NOTES ON THE COUNTRY, PEOPLE, FAUNA, AND FLORA.

By Major RICHARD CRAWSHAY.

THE East Africa Protectorate has not been more fortunate in orthography as regards districts, tribes, and places than Uganda. If you would speak of Kikuyu to people other than natives of the Protectorate, to make yourself intelligible you would have to say the "Kenya district;" if of the headquarters of the district, "Kikuyu;" if of the mighty snow-peaked Kilinyatha, "Kenya" or "Kinya," its Ikamba name, yet even so not quite correct, as the Akamba call it Ke-Nyaa. Mistakes such as these are innumerable. I have no desire to share in perpetuating errors. I propose, therefore, to adopt in this paper only such names as are in use amongst the natives themselves, as far as I have been able to ascertain them.

First I must explain that Kikuyu is the country of the Akikuyu, that is, the belt of primæval highlands in the north-west of the Protectorate, including mountains such as Kilinyatha, 18,600 feet,* and Kiinandarwa, 14,000 feet. It lies practically on the equator, between the parallels of lat. 0° 0′ and 1° 45′ S., and long. 36° 30′ and 37° 45′ E. Its altitude ranges between 4500 feet and 18,600 feet, the height of Kilinyatha. Its climate varies between the extremes of moderate summer heat in Northern Europe and the cold of perpetual snow.

In the 330 miles' march from the sea-coast to Kikuyu, now happily compassed by the Uganda railway in twenty-four hours, various phases of country are apparent to the traveller. First there is the hot steamy coast belt of scrubby bush, thorn, and aloe, 150 miles broad, the major portion a desert, except when awakened to life by the seasonal rains. Then comes the dry park-like mimosa country, extending from a little north-west of Kibwezi to Kilimakiu. Thirdly, there are the open plains of the Masai country. Lastly, the cool dark forests of Kikuyu. All these changes are welcome in their turn to the traveller.

From the suffocating heat of the desert bush, where he cannot see more than a few feet in any direction—where, should he leave the path, his clothes will be torn off him, or he will impale himself on the terrible aloes or lose himself to die of thirst—he emerges into the mimosa park, uttering the heartfelt cry, "Thank Heaven, all East Africa is not like *that!*" He hopes for better country still, and he will not be

* Captain Smith and Mr. Mackinder both estimate the height at about 17,200 feet.