

IV.—*Travels in Western China and on the Eastern Borders of Tibet.* By Captain W. J. GILL, R.E.

[Read, April 8th, 1878.]

INTRODUCTION.

HAVING recently returned from travels in Western China and the borders of Tibet, I had the honour to be invited by the President of this Society to read a paper on the subject; and although I cannot lay claim to have made any great geographical discoveries, or passed through any thrilling adventures, I gladly accepted the offer; for even if I do not succeed in interesting the Society, I at least have an opportunity of publicly thanking those many friends, to whom I owe a debt of gratitude that can never be repaid.

Before leaving England Col. Yule took the greatest interest in my plans; his crowning thought of kindness was a letter of introduction to Baron von Richthofen, a traveller who has perhaps done more for geographical science than any living man, and whose masterly work of erudition will be handed down to all posterity as a monument of the genius and industry of the German explorer. In his delightful society a week sped by as a few moments, and it is mainly to his counsels that I owe what small measure of success has fallen to my share.

It seems almost presumption on my part to speak of the work of one so immeasurably above me in every way; but perhaps it may be forgiven me, if I say that wherever I had an opportunity of testing his accuracy, it was only equalled by his wide grasp and breadth of view.

I owe much to the French missionaries, who, in whatever towns I met them, spared no effort to assist me, and render my stay agreeable; especially to Monseigneur Chauveau, who, bearing the courtly manners of a nobleman of the old French *régime*, would have made me forget that I was standing on the borders of a wild and barbarous land, if his enthusiasm as a propagator of the faith had not kept it constantly before me.

At Bat'ang the Abbé Desgodins, whose name as a geographer is not unknown, was a genial and pleasant companion. Here also the chief magistrate, Chao-Ta-Laoye, who, contrasted with the generality of Chinese officials, is as "bright metal on a sullen ground," treated the foreigner that had descended upon him, with a generosity that would put to shame our boasted civilisation.

Lastly, I must bestow one word of thanks on my old friend Marco Polo, who never failed either to amuse or instruct me.

Being at Shanghai in January of last year, anxious to see



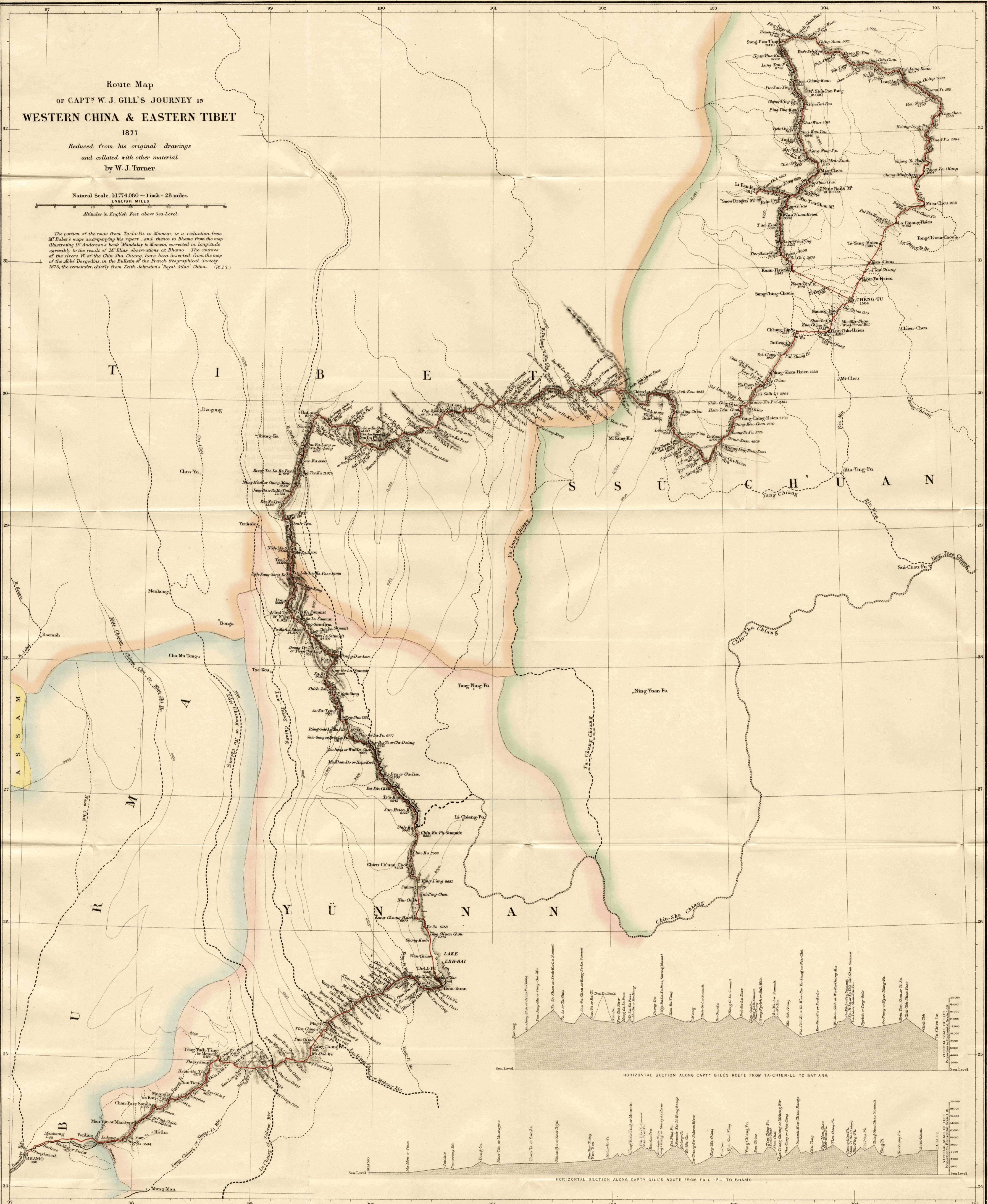
Route Map  
OF CAPT W. J. GILL'S JOURNEY IN  
WESTERN CHINA & EASTERN TIBET

1877

Reduced from his original drawings  
and collated with other material  
by W. J. Turner.

Natural Scale, 1:1774,080 — 1 inch = 28 miles  
ENGLISH MILES  
Altitudes in English Feet above Sea Level.

The portion of the route from Ta-li-fu to Momein, is a reduction from  
M. Baber's maps accompanying his report, and thence to Bhamo from the map  
illustrating D'Anderson's book 'Mandalay to Momein', corrected in Longitude  
agreeably to the results of M. Elias's observations at Bhamo. The courses  
of the rivers W of the Chin-Sha Chiang have been inserted from the map  
of the Abbe Desgodins in the Bulletin of the French Geographical Society  
1875; the remainder chiefly from Keith Johnston's Royal Atlas China. (W. J. T.)





something of the little-known Central China, I was not slow to accept an offer made me by Mr. Consul Baber, whose name is well known in connection with the Grosvenor Expedition, that I should accompany him to Ch'ung-Ch'ing.

Thence I travelled by myself for a couple of months through Tzū-Liu-Ching, Ch'êng-Tu, Li-Fan-Fu, Sung-P'an-T'ing, Lung-An-Fu, and back to Ch'êng-Tu, where I was joined by Mr. Mesny, a gentleman whose long service under the Chinese Government, and intimate knowledge of the language and ways of the people, enabled him to render me the greatest assistance, and to whom I am mainly indebted for the admirable and friendly relations we always maintained with the officials and the people.

With him I travelled to Ta-Chien-Lu, Li'ang, Bat'ang, A-Tun-Tzū, Ta-Li-Fu, Yung-Ch'ang, T'êng-Yüeh-T'ing, and Bhamo, whence an English steamer took us to Rangoon.

Of the journey to Ch'ung-Ch'ing I need say but little, it has been admirably described and the route accurately surveyed by Blakiston; I will therefore pass it over in as few words as possible.

Four days in one of the magnificent steamers that ply on the Yang-tzū bring the traveller to Hankow, 680 miles from Shanghai. Here the river is about  $\frac{3}{4}$  mile broad. This, when I was at Hankow, was the limit reached by steamers; but under one of the clauses of the last convention, steamers now ascend to I-Ch'ang, whence, from all accounts, they return as empty as they go up.

The journey to Ch'ung-Ch'ing occupied two months from Hankow, and was performed in a Chinese boat hired at the latter place. These are somewhat clumsy shallow vessels, about two feet out of the water at the bow, and very high at the stern, on which are built up great houses, much after the fashion shown in pictures of the "Great Harry."

Through the great alluvial plain of the Yang-Tzū for a month we followed the course of the mighty river, until, after winding through many a long reach in this uninteresting and monotonous country, the new port of I-Ch'ang was gained. We only stopped here long enough to see the English Consul and the principal Chinese officials pelted with mud and stones by a foolish mob, and then we plunged into the giant gorges, where walls of rock rise hundreds of feet on either hand; passed many a quiet village or town, lying at the foot of hills, all yellow at this season with great crops of rape, where in the background massive mountains hide their everlasting heads in clouds; ascended rapids almost like waterfalls, where the water, hissing, foaming, and boiling over the half-sunken rocks, is somewhat exciting

even to the most apathetic nerves; made picnic excursions inland, taking long walks through lovely mountain scenery, breakfasting in some little shanty on the very edge of a deep rift in the rocks, where, far below, the brawling of the stream as it dashed over its rocky bed could only be indistinctly heard.

One by one the days sped by, and a month after leaving I-Ch'ang we arrived at Ch'ung-Ch'ing, next to the capital, Ch'êng Tu, the most important town in this great province of Ssü-Ch'uan.

Here we bid adieu to the owner and captain of our noble vessel, a lady, the violence of whose temper was only equalled by the foulness of her tongue.

### THE PROVINCE OF SSÜ-CH'UAN.

We are now fairly in the province of Ssü-Ch'uan, one of the most beautiful, perhaps the richest, and, for foreigners, certainly the most pleasant in the empire; endowed by nature with every charm of variegated scenery—giant mountains in the north, of whose peaks of perpetual snow little more has been known than the wild statements of ancient geographers, that one of them attained a height of 36,000 feet; fertile plains, where in the driest season the rice-crop never fails; and undulating hills, where streams have cut deep channels in the soft sandstone—the hand of man has not been slow to utilise these advantages; everywhere the hills are laid out in terraces for cultivation, irrigation is carried on to an almost inconceivable degree, and, although the inhabitants have not learnt the art of making water run up hill by itself, one of the most remarkable features in a Ssü-Ch'uan landscape is the sight of the countless contrivances and water-wheels by which water is raised.

Riding down a stream, I have seen as many as twenty or thirty wheels, 24 feet in diameter, turned by the current and lifting water at the same time.

Standing on the top of some hill and looking down on a plain, dotted over the landscape a number of mushroom-like objects are observed, which, on close inspection, turn out to be the umbrellas under which coolies sit, and all day long, by a species of little treadmill, lift the water from one field to another.

Nor are the arts neglected by the gentle people of this happy province, and the traveller, as in the evening he nears his journey's end, long before he arrives at the city where he is to sleep, is made aware of its vicinity by the numerous triumphal arches built across the road. These—ornamented with rich carvings, most artistically finished, of household scenes or official duties—have generally been raised by some



widow to the memory of her deceased husband; and in them the design is as elegant, as the workmanship is finished.

The careful way in which everything is roofed here must strike the eye of any traveller; houses, gateways, bridges, triumphal arches, and, indeed, almost wherever it is practicable to put a roof, there one is sure to be; even the walls are often coped with glazed tiles, so that the timber-work, being built in the most solid manner and carefully protected from the weather by an efficient covering, lasts an incredible time, even in a country where rains and snow are regular in their occurrence.

Besides the officials, the people of this province are mostly either merchants or agriculturists, the literati—that generally highly-favoured class in China—being held in light esteem by the men of Ssü-Ch'uan; and to this is probably owing the fact that foreigners are always treated with great politeness, as wherever opposition to foreigners is carried to any great extent, it will generally be found to be owing to the influence of the literati class. This was, I believe, the case at I-Ch'ang, where there was some rioting, to which I have referred; and during my stay at Ch'ung-Ch'ing the literati of that place posted an inflammatory placard in very bad rhyme, which Mr. Baber translated into very good verse. This was, perhaps, not quite so witty as it would have been had he been the author instead of the translator. The placard seemed to be treated by the people there with the contempt it deserved, and throughout my wanderings in Ssü-Ch'uan I never heard an uncivil word. The dominant characteristics of the Chinese race are inquisitiveness and curiosity, and in this the people here are not behind their countrymen of other provinces. In some of the towns, however, their natural politeness seems to overcome even their curiosity, and I have often sat with my door open to the public thoroughfare, engaged in writing—an occupation that always caused the most profound interest—and have been left completely undisturbed.

The little boys, not less mischievous than in Europe, of course are omnipresent. In one of my walks in Ch'êng-Tu, I was one day surrounded by a noisy laughing crowd of children, that somewhat impeded my movements, when an old gentleman in passing rebuked them for their want of manners.

Of course in many places the patience of the traveller is somewhat tried by the eager crowd, who, never before having seen a foreigner, come in hundreds into the yard of the inn, block up the doorway, get gradually pushed on from behind, until the whole room is full; tear the paper from the windows (there is no glass, and the windows are usually paper-covered lattice-work), and even scratch holes in the plaster-walls to get



a peep. Still, it is mere curiosity, which must be excused in a people brought up as they are in the most narrow-minded prejudices, and to whom a foreigner, especially if he be of a fair complexion, appears as hideous and extraordinary as his clothes seem uncouth and ridiculous.

The agriculture of the Chinese has, I think, been somewhat overrated. The chief point in which they are superior to other nations is the exceeding care they take that nothing be wasted. Nevertheless the people is eminently an agricultural one. In their ways, their customs, their buildings and their food, there is a wide distinction between them and the pastoral races that are found on their frontiers. In the habits of these there always remains a trace, and often something more than a trace, of the nomad life; whilst in China proper and amongst the Chinese everything betokens the ancient and high civilisation of a people that have taken root in the soil.

In every city and almost every village in China inns are found, an indication of a people accustomed to live in houses, and who when obliged to travel must have a roof to shelter themselves; the very coolies, poorly as they are paid, never sleeping in the open, but invariably expending some portion of their small earnings for night accommodation. Amongst the Tibetans, and in the Mantzu or barbarian population in the mountains, this is not the case; the people all originally leading a wandering life, the idea of inn accommodation has not penetrated into their habits. A Chinaman will under no circumstances sleep outside if he can help it; in Tibet the master of a good house will as often as not be found passing his night on the flat roof; whilst the hardy people in the winter time can sleep with their clothes half off, and their bare shoulders in the snow. In China no house is complete without its table, chairs, and bedsteads, rough and clumsy though they often are; in Tibet these accessories of life in a fixed habitation are always wanting. Amongst the Chinese, mutton can rarely be obtained at all; they themselves think it very poor food: the love of a Mongol for a fat-tailed sheep is proverbial, and the natives of Tibet are not behind them in this taste. Although not exactly forbidden by their religion, the idea of killing an ox is very repugnant to the agriculturists of China, because—they say—it is ungrateful to take the life of the useful animal that draws the plough, and in the large towns the butchers are nearly always Tatars. The Chinese, as they never were a pastoral people, never kept flocks and herds; milk and butter are therefore practically unknown to them: Tibet may safely be called a land flowing with milk and butter; the enormous quantity of the latter consumed by a Tibetan is something startling—



butter in his oatmeal-porridge and huge lumps of butter in his tea.

The ordinary food of a Tibetan is tsanba, or oatmeal-porridge, and buttered tea. As a rule he does not drink much milk, partly because it is all made into butter, and partly because, owing to the filthy state of the vessels, milk always turns bad in a few hours; but the traveller who makes his tastes known can always obtain an unlimited supply. Tea is often brought to him made altogether of milk without any water at all. The Tibetans also eat sour cream, curds, and cheese; and this brings a Tibetan bill of fare to an end, which, in its constituents and in its simplicity, bears the stamp of the nomad pastoral race.

The Chinaman, on the other hand, loves variety. In every tea-house by the wayside that owes its existence to no more opulent class than the coolies on the road, there are always several little dishes of some sort. Beans simple, beans pickled, bean-curd, chopped vegetables in little pies, macaroni of wheaten flour, macaroni made of rice, these—and in the large towns and cities, dozens of dishes made of ducks, pork, fish, and vegetables, rice-cakes like muffins, wheaten leavened bread, sweetmeats, and sweet cakes—are to be seen at every turn; and of one or perhaps more of these every coolie will, when he can afford it, give himself a treat and vary his food, the main portion of which is rice, where it will grow, and in the high lands bread made from whatever grain the climate will produce.

In the lower part of Ssü-Ch'uan the roads are generally tracks paved with flags, 18 inches wide. This is sufficient for all purposes where the only wheeled conveyances are the barrows, with the inevitable creaking wheel. Even these are entirely confined to the plains, never being used in the hill countries.

Goods are almost entirely carried by coolies, who, with a split bamboo over the shoulder, with a basket at each end, run along, in the hot weather naked to the waist, with huge broad-brimmed straw-hats on their heads, straw sandals on their feet, and generally a fan in their hands.

In the mountains, mules, ponies, and donkeys are much used as beasts of burden; but even in the steepest parts of the road, between Ya-Chou-Fu and Ta-Chien-Lu, long trains of coolies are passed all day, climbing mournfully, and with measured tread, the desperate zigzags on the staircase-like tracks, which here are called roads.

These carry their loads (sometimes as much as 400 lbs.) on their backs; for in these steep mountains the ordinary method of the bamboo over the shoulder has to be abandoned.

It is only when we reach the high plateau that we find



animals the universal means of transport, and here the yak takes precedence of everything else; very slow in his movements, and accomplishing but a few miles a day, this hardy animal is nevertheless the cheapest that can be employed; requiring no attendance, and no food that cannot be picked up on the mountain-side, or in the glorious pastures of the upland plateau, the cost of keeping a yak is absolutely nothing. A caravan of yaks on the road will, when they arrive at a fine pasture, halt for a few days and let their animals feed; after which they will perhaps travel for three or four days more in the wild stony mountains, with scarcely any food until they reach the next grazing-ground.

In the province of Ssü-Ch'uan every traveller who can afford it rides in a sedan-chair, with two or more coolies, according to his wealth or importance; like everything else in China, the number of these is in certain cases fixed by law, the servant of no official being permitted to ride in a chair with more than two coolies.

#### THE GEOGRAPHICAL FEATURES OF SSÜ-CH'UAN.

Ssü-Ch'uan may generally be described as an exceedingly mountainous country; indeed, the only plain of any importance in the province is that in which the capital Ch'êng-Tu is situated.

It is bounded on the north and north-west by mountains forming the buttresses of the great Himalayan plateau, which extends to the north-east across the whole frontier of the province.

On the map I have had drawn two lines that may very roughly, of course, be considered as contours of 8000 and 12,000 feet. There are some who still deny that the mountains of China are connected with the great Himalayan system; but when it is remembered that there is a high plateau commencing westwards of Lassa, and extending (with a sweep to the north) right up to the Chinese province of Kan-Su, and that in all this there is no single point at a less elevation than 12,000 feet above the sea (the Chin-Sha is 13,000 in long. 94°.

*Vide* Prejevalsky's Map), it seems to me that if there is to be any meaning attached to the word "*connection*," the Chinese mountains must be considered as belonging to the Himalayan system; and whilst on this subject I will, as briefly as possible, give the data on which I have, with what will perhaps be considered considerable rashness, drawn the contour of 12,000 feet. Commencing at the north-east extremity, the ridge that divides the Lung-An from the Sung-P'an Valley is crossed



at about the snow-line (June) at an elevation of over 13,000 feet, with peaks to the south somewhat higher, whilst still further south there are other peaks which, from their considerable elevation above the snow-line, cannot be less than 15,000 feet, and where glaciers were reported to me as existing. I have therefore given the contour represented in the map.

To the north of Sung-P'an-T'ing the road that leads to Ko-ko-Nor was described to me as very dreadful; my informant assured me that in the winter the wind cut great gashes in his face and arms, and was much disappointed because I could give him no medicine to protect him.

Sung-P'an itself is about 10,000 feet; behind it can be seen a very considerably elevated chain of mountains, and I have no doubt whatever that the water-parting between the two great rivers, the Huang-Ho and the Yang-Tzū, is in an upland considerably more than 12,000 feet above the sea.

Coming south-west to Li-Fan-Fu, this place, though itself only 5000 feet high, is on a stream that below this city falls 1500 feet in 30 miles, and evidently descends with great rapidity from high lands above. Another sure indication of an elevated plateau is found in the fine good-looking ponies that the natives bring down, as they do to Sung-P'an-T'ing and Ta-Chien-Lu. It is also surrounded by snowy peaks; snow-fields were reported to me as within 20 miles, and glaciers at no great distance.

The region to the south-west of this is a little known mass of mountains. The contour must there take care of itself until we meet it on the day we leave Ta-Chien-Lu, at about 8 miles distant from that place.

Thence to Bat'ang the road lies nearly always at an elevation of above 12,000 feet. A little beyond Bat'ang the Chin-Sha is crossed at an elevation of 8000 feet (Bat'ang is 8500 feet), and the road immediately rises to the water-parting between the Lan-Ts'ang and the Chin-Sha at an altitude of 15,790 feet.

A little further to the south, on the western face of the mountain, lies A-Tun-Tzū, at an altitude of 11,000; and still more to the south the road again crosses back to the Chin-Sha basin over a pass, of which the altitude is about 14,000 feet.

These few details are, I think, sufficient to show that this contour has not been drawn altogether on hypothetical grounds.

#### TSŪ-LIU-CHING.

One of the most remarkable places in the province of Ssü-ch'uan is Tsū-Liu-Ching, where brine is drawn from deep wells



and evaporated by gas, that rises through other wells bored for the purpose to immense depths.

The road from Ch'ung-Ch'ing winds about amongst the low hills that spread over this part of the province; a charming landscape meets the eye at every turn; the slopes well sprinkled with wood, but nearly all the land under rice-cultivation; the valleys being laid out in terraces, as well as the sides of the hills, where these are not steeper than 30°. There is besides the rice a small amount of wheat and poppy. Every now and then the road is sheltered by high hedges of pomegranate, where oranges coming into blossom and clusters of wild roses fill the air with their perfume.

The town of Tsū-Liu-Ching is situated on the left bank of the river, 100 yards wide, which here runs between rounded hills; approaching it, the great number of scaffoldings (some of them 100 feet high) look like the chimneys of a great English manufacturing town; a resemblance carried out by the busy appearance of the people. The place is wretchedly poor, notwithstanding its industry and its great export of salt, which goes to Ch'ung-Ch'ing, I-Ch'ang and Kwei-Yang, but not to Ch'ang-Tu.

The landlord of the remarkably good inn at which I stopped, who was a Christian and part owner of some brine-pits, took me to see his works; here some of his people were engaged in boring one of the holes; this was already 2170 feet deep, the average rate of boring being, if all went well, about 2 feet a day; but they said that they often broke their things, that accidents happened, and that it was 13 years since this well had been commenced.

The jumper for boring is fastened to a bamboo-rope attached to one arm of a lever; the weight of 3 men who step on to the other arm raises the instrument, the men then leap nimbly off the lever on to some wooden bars fixed for the purpose, and the jumper falls.

Another workman stands at the mouth of the bore, and each time the jumper is lifted he gives a slight twist to the rope; the rope untwisting gives a rotatory motion to the jumper.

This operation is continued all day, the coolies employed showing the most extraordinary and untiring activity.

A few yards off was a finished fire-well, somewhat deeper than the one in progress; a bamboo-tube about 3 feet long had been put into the mouth of this boring, and some clay was plastered over the upper end to prevent the bamboo from burning. Up this well and through the bamboo the gas ascends from the bowels of the earth, and is lighted at the top; when the light was extinguished, the odour of the gas was very powerful



of sulphur and very slight of naphtha; the latter smell was imperceptible when the gas was burning.

At no great distance was a brine-pit, which, I was informed, was 2000 and some hundreds of feet in depth, and about 3 inches, or perhaps a little more, in diameter at the top; immediately over the mouth was erected a scaffolding a little over 100 feet high.

To draw the brine from this well, a bamboo-tube 100 feet long, open at the top and closed at the bottom by a valve, serves as a bucket. A rope fastened to the upper end of this passes over a pulley at the top of the scaffolding and round an enormous drum; this drum, turning on a vertical axis, was 8 or 9 feet high and about 20 feet in diameter; 4 buffaloes are yoked to this, and thus the rope is wound up; near the end the rope is marked with bits of straw, like a lead-line on board ship, so that a man watching knows when it is near the end, and warns the drivers. There is a driver to each buffalo. The bamboo being raised from the well, a coolie pushes the end over a receptacle, opens the valve with his finger, and allows the brine to escape. When the water has been let out, the buffaloes are unyoked, and the bamboo and rope descend of themselves. This sends the drum round with a frightful velocity, which, in rotating, of course produces a violent wind.

The "break" for this is simplicity itself; a few strips of bamboo pass horizontally half round the drum, and are made fast at each end; these strips hang quite loose until a coolie, leaning against them, tautens them up, checks the pace of the drum, and stops it in a very few seconds. The brine thus raised is conducted to the evaporating-pans over the fire-wells I had already seen.

In this establishment, by no means the largest in the place, there are employed 40 coolies and 15 buffaloes, the latter in a stable kept beautifully clean (a most remarkable thing in China). They produce here 8000 to 10,000 catties (10,000 to 13,000 lbs. avoirdupois) of salt per month; the proprietor pays no duty, but sells it for 18 to 20 cash a catty ( $\frac{1}{2}d.$  to  $\frac{3}{4}d.$  per lb. avoirdupois); the purchaser then sends it away by coolies, paying duty at the barriers, 300 cash ( $13\frac{1}{2}d.$ ) per coolie-load, whatever that happens to be; it generally runs from about 160 to 200 catties (210 to 260 lbs. avoirdupois).

In some places they have the fire without the brine, and at a place about 5 miles up the river there is brine but no fire; the brine is therefore brought down from here in boats, of which I counted about 100 lying by the bund constructed to keep a sufficiency of water in the river for these vessels.

At the top of the hill, close to the town, there is a fire-well



without any brine; the principle of the pump being unknown, the method of raising the water is the clumsy and laborious one of a row of small buckets passing round two wheels, one at the bottom and the other at the top of a tower, of which there are a good many about in different directions. A blindfold mule going round and round at the top is the motive power; the water is thus raised 20 to 30 feet at a time, a trough leading from the top of one to the bottom of the next tower; in this case the brine was lifted seven stages before it finally reached the fire.

Some years ago some Chinese connected with a European firm attempted to introduce pumps; they only had their heads broken for their pains by the coolies, who declared that their labour was being taken away from them; since this no further innovations have been attempted.

None of the people seemed to know how many brine-pits there were in the neighbourhood; some of them hazarded a guess that there were a thousand, but they must be far more numerous.

#### THE CAPITAL OF SSÜ-CH'UAN.

The city of Ch'ang-Tu is, as old Marco styles it, "*a rich and noble one*," somewhat irregular in shape, and surrounded by a strong wall in a perfect state of repair.

In this there are eight bastions, four of which are gates. It is now  $3\frac{1}{2}$  miles long by about  $2\frac{1}{2}$  miles broad, the longest side lying about E.S.E. and W.N.W., so that its compass in the present day is about 12 miles. A stream, about 30 feet wide, runs through the city from west to east; parts of this are embanked with perpendicular revetments on either side.

The city is well laid out, the streets straight, and at right angles to one another, well and carefully paved; the shops are very good, with handsome fronts; in them every description of goods is sold, and there is especially a very large trade in silk.

In the neighbourhood of this city is a very small valley given up to the cultivation of a plant used for dyeing silk, and which has a reputation all over China for being better than any produced elsewhere.

On the south side runs the main river, about 100 yards wide, which is crossed by many bridges; one of them, 90 yards long, has a roof, and, as is the case on nearly all covered bridges, hucksters sit down under the shelter on both sides, as in the days of the old Venetian traveller, and sell whatever they can to the passers-by. The walls formerly enclosed the temple of Wu-Hou-Tz'u, now a mile or two outside the city to the south-west.

In the early part of the Ming dynasty (1368-1644), the

whole province was overrun by a brigand named Chang-Shien-Chung; he went about ravaging and destroying everything, and is pictured as a devil incarnate; amongst other things he destroyed all the books, so that the ancient written history of the place is lost.

The existing city walls were built only in the time of the second or fourth emperor of the present dynasty (1662-1795), the place having been entirely destroyed about two hundred years ago. Ch'êng-Tu, as it now is, is divided into two parts, the Chinese and the Tatar cities, both enclosed by the main wall. Not quite in the centre of the Chinese city, but rather towards the west, is the Imperial Palace, a rectangular open space enclosed by massive walls about 20 feet thick; this was built towards the end of the fourteenth century by the first or second emperor of the Ming dynasty, the Ming emperor employing one of his family as governor or king of the provinces in this part of China. The buildings inside this are now used as the examination hall.

The city of Ch'êng-Tu bears on its face all the evidences of wealth and prosperity. Some of the temples here are richly endowed, and a detailed description of one may not be out of place.

The monastery now called the Wun-Shoo-Yuen, or literary Book-hall, was built some time during the Sung dynasty (from 600 A.D. to 1000 A.D.). It was then called the Chin-King-Sue; it fell into decay during the Mongol invasion, and was rebuilt by the second emperor of the present dynasty, whose name was Kang-Shi or Kang-Hai, about the year 1660. This emperor richly endowed it with lands; but, notwithstanding its wealth, it seems to have been predestined to misfortune, for it was again neglected until the time of Kia-Ching, the fifth emperor of the present dynasty (1795-1820, A.D.), when it was rebuilt by public subscription with stone instead of wooden pillars. Since that time it has gone on increasing in wealth and magnificence, and is now one of the richest in the country. To have the right of living at this monastery it is necessary to be a priest of a particular sect, but, besides the priests, there are resident here a number of students qualifying themselves for holy orders; altogether there are about 150 inmates.

A remarkable air of refinement and cleanliness pervaded the place; the courtyard was laid with smooth cut flag-stones, not one out of its place, and not a weed or blade of grass is permitted to grow in the interstices; all the buildings were in perfect repair, and a man was walking about the court with a cross-bow; his employment was to shoot stones at the sparrows that infested the roofs, and which if left to their own devices would do serious



damage. Immediately on the right of the entrance was a very clean reception room, and whilst preparations were being made to escort us over the establishment, we were refreshed with the usual cups of tea. We were not kept waiting above a couple of minutes and then we were invited to proceed. The refectory, a long wooden building on the right hand side, opened into the court; here were twenty-five tables, each prepared for six people; for each person was laid one pair of red wooden chopsticks and three porcelain bowls, one for rice, one for vegetables, and one for tea; no meat of any description ever being permitted here; everything, the tables, bowls and chopsticks were beautifully clean; a most surprising thing in this country where usually dirt reigns supreme. Passing this, we entered a chapel, where at the end the repulsive countenances of a number of huge and hideous images were, partially obscured by a kind of throne for the prior, whence he discourses on the religious classics to the students.

On either side of the chapel was a reception-room. The general arrangement of these rooms is almost always the same, and whether a private house, a yamen or a temple, the description of one stands as a representation of all the others; no furniture in the middle of the room, along two sides are arranged in symmetrical though inartistic order the usual heavy, stiff, uncompromising and utterly uncomfortable arm-chairs of China; between each two is a little high and square table, all corners and angularities, like the Chinese character. At the end of the room is the kang or raised dais, 10 feet long, 4 feet broad, and 2 feet high, where in the centre is placed a small table, 6 or 8 inches high, between two cushions of the most brilliant scarlet; these are the seats of honour, and footstools of wood for those seated thereon complete the furniture.

For ornament a few bronzes or the roots of trees carved into representations of impossible dragons are arranged behind the kang, while from the ceiling hang paper lamps, some of them really artistically painted, and arranged just low enough to knock off the hat of a foreigner. In China etiquette rules that in polite society the hat is kept on the head, and at a dinner-party it is amusing, when all the guests are intimate and of the same social standing, to see the alacrity with which permission is always asked and given to exchange the official hat for the little skull-cap which each person's servant has somewhere secreted about the capacious folds of his garment.

A collation of tea and cakes, sweet but nasty, was looked at more than partaken of, while the monks gave us what history of the building I have been able to relate, sitting, as etiquette ordains, with their backs quite stiff on the extreme edges of their

chairs, and with their bodies slightly turned round to their guests.

From here we ascended to the upper story, where the principal room was a magnificent chapel filled with gifts and curiosities—a very fine and richly decorated altar, rubbings from ancient tablets, a great deal of blue and white china, pictures painted on glass from Canton—and amongst other things a present from a young lady of a piece of embroidery entirely worked with her own hair; this represented the Goddess of Mercy sitting under a bamboo, the leaves of which were really most admirably represented.

In this chapel also the contributors to the building, maintenance or decoration of the temple are immortalised, their names being written in gold on black tablets and put under a glass case. Here also is the library, where huge cupboards are filled with the books of the religious classics which form the unique and dreary study of the inhabitants.

We passed on to another chapel set apart for meditations; here the priests and students, in yellow robes and with shaven heads, come at least once a day, and, lighting an incense-stick before one of the images, sit down at the side of the room and meditate, trying to work themselves into a state of religious ecstasy, in which they shall be entirely withdrawn from impressions from the outside.

A few of them appeared to be really in this state of semi-unconsciousness; but the majority, though trying to look as if they did not see us, could not resist a sidelong glance every now and then. They remain in this state about half an hour at a time. The impression formed on my mind by the appearance of those who had succeeded in their extraordinary task was rather a painful one.

Passing through another chapel, where a number of beautiful red and yellow lotus-plants were growing in pots, where a tailor was at work in a corner, and in which were the portraits of all the deceased priors, we again came to the gate, where a number of huge and hideous figures—the guardians of the place—were grinning horribly, and where the monks with exquisite politeness bade adieu to their unwonted guests.

#### THE ASCENT TO SUNG-P'AN-T'ING.

The road from Ch'êng-Tu to Sung-P'an-T'ing is full of interest, both from the natural beauty and magnificence of the scenery, as well as from the numerous historical associations of the country. Here is to be observed the civilised Chinaman in close contact with the mountaineer, who, now driven from the



valleys, takes refuge on the steep hill-side or the wild fastnesses of the mountain gorges.

Most picturesque are the Mantzu villages perched on the summit of the crag, their gloomy stone walls with tiny holes for windows, and one high tower standing sentinel over the country.

Almost every village passed on the road has its tale; some marvels of a Buddhist saint, a thrilling story of battle or gentle song of love.

The road is now at the level of the stream—now scooped out of the solid rock or propped up for a yard or two by rickety-looking stakes from underneath—now winding up the side of a valley where a cascade leaps down to join the foaming torrent below; or rising over a spur from the mountains that bound it, the ground is carpeted with beautiful and variegated wild flowers.

Leaving Ch'ang-Tu by the north-west gate, the road for eight miles is across the beautiful and fertile plain. Here the whole country is a perfect network of canals and watercourses, and, as the plain begins rising at the rate of 10 feet per mile, the streams are all rapid. The number of trees everywhere is very great; all along the sides of the road, and between the fields are long rows of willows and a kind of beech; round all the houses are clusters. Now there is a line of fruit-trees, oranges or apricots; here a temple is enclosed by a wall with a number of fine yews inside; and, looking back from Kuan-Hsien, the plain has all the appearance of being densely wooded.

Kuan-Hsien is a busy place, situated at the embouchure of the river that here escapes from the mountains, and, by a number of ingenious irrigation works, is directed into the artificial channels by which the plain is watered. The dams for this purpose are, like all Chinese contrivances, remarkable for their simplicity; large boulders, about the size of a man's head, are collected and put into long cylindrical baskets of very open bamboo network; these cylindrical baskets are laid nearly horizontal, and thus the bund is formed.

The amount of water dealt with is very considerable; the stream at this season is 200 yards broad, more a torrent than a river, though a few rafts manage to find down it a somewhat perilous passage.

A little above the town it is crossed by one of those suspension-bridges so common all over this part of China, and which, in their principles and construction, are as simple as they are inexpensive. Six ropes are stretched very tightly one above the other, and connected by vertical battens of wood laced in

and out; another similar set of ropes is at the other side of the roadway, which, laid across, follows the curve of the ropes.

Near Kuan-Hsien is a thin seam of coal; and the manufacture of coke is an important item in the industries of Kuan-Hsien. Charcoal is also made in great quantities, and the trees that are planted in the Ch'êng-Tu plain are mainly utilised for this purpose. A great deal of trade is done here with the interior.

Musk, medicines, deer's horns and the skins of animals are brought down from the mountains, in exchange for which, crockery, cotton goods, and little trifles are taken up. The horns of the red deer when they are shed are collected by the mountaineers, and the numbers of coolies that day after day are passed on the road, bringing great loads of them, is really surprising. The horns are used for the manufacture of horn goods, and are sold at the rate of 14 taels (5*l.*) for 100 catties (133 lbs.). The deer are never hunted except when they are in velvet; the head of a deer then becomes exceedingly valuable; for from the horns in this state a medicine is made which is one of the most highly prized in the Chinese pharmacopœia.

Another precious article brought in by the mountaineers is musk. The musk-deer are usually trapped, for they say that unless the animal is killed dead he will tear out the musk-bag and disappoint the hunter. At Sung-P'an-T'ing the musk is sold for three times its weight in silver.

Great quantities of timber also come down to Kuan-Hsien; but, notwithstanding the extensive trade, the place is wretchedly poor, the town dirty, and the shops inferior. The inhabitants have the credit of being a worthless turbulent lot. I certainly found them exceedingly inquisitive. Large crowds spent the day gazing at a bath towel hung out to dry—the only foreign article presented to their view—and even my Chinese servants could not walk about the streets without being surrounded by a multitude, who must have imagined that some mysterious essence emanated from me and pervaded my people.

The road ascends the left bank of the river, between mountains that here rise about 3000 feet above the stream, their sides so steep as to become in places almost precipitous; and now and then there will be on either hand vertical cliffs 400 or 500 feet high; these are of bare rock, and in them the road is often regularly scooped out, sometimes without a parapet and only just wide enough for laden mules; at others 6 or 7 feet broad, with a stone wall at the outer side. Whenever these beetling cliffs give way to slopes, a luxuriant vegetation of grass, brambles, and beautiful flowery creepers, jasmines, and ferns, gets a hold in the crevices of the rocks. Small ashes, beeches,



and other trees grow in profusion, and the mountains are clothed in green to their very summits. Down at the bottom, where the valley opens out and leaves a little level ground, there is sometimes a patch of cultivation; and, growing amongst the big rocks that lie tumbled about, there are quantities of a kind of barberry, just now in blossom, and with a scent like wild thyme. Round every little village are fine clumps of trees, walnuts, peaches, apricots, and a kind of japonica (*Eriobotrya jap.*), the last now bearing fruit that is sold in great quantities, but is very tasteless.

Away in the mountains there are deer, bears, and wild boar; of the last I saw a young one about a foot long, it was striped longitudinally; the people say that these attain a weight of 400 lbs. A little further the road reaches Wei-Mên-Kuan, a little village, but celebrated in the semifabulous history of the early dynasties.

In the time of one of the Sung emperors, who had eight sons, the youngest was sent as a high military official to Wei-Mên-Kuan. The Mongols and Chinese were then at war, and some Mongols, commanded by a queen, came to this village where a battle was fought, and the emperor's son taken prisoner. In accordance with the humane customs of the country, instead of leaving a captive to linger out a miserable existence in a dungeon, the queen was going to cut off the prince's head in a more or less gentle fashion; but her daughter, casting her eyes that way, saw that the man was of goodly proportions and noble face—in fact, altogether a godlike youth. She then and there fell in love with him, and her mother consenting, the wedding was celebrated with the pomps and glories necessary for such an occasion.

Beyond Wên-Ch'uan-Hsien is seen the first village of the Mantzu, or Barbarians, as the Chinese call them. The word Mantzu seems to be a sort of generic term applied by the Chinese generally to all the aborigines of this country, and many will include in it even the pure Tibetans, though the better informed know how to distinguish between the different tribes.

Perched like an eagle's eyrie right on the top of an almost inaccessible hill, or like wild bird's nests on the face of some perpendicular cliff, these curious villages are very remarkable features in the landscape. The houses are of stone—the lower part with narrow slits for windows like the loop-holes of a fort. The roofs are flat, and on part of these is generally erected a kind of shed.

There are altogether eighteen of these tribes spreading over the country from Yun-nan to the extreme north of Ssü-Ch'uan.

Each tribe has its king—one of them a queen, and they live almost entirely by agriculture and cattle keeping. The king usually derives a considerable revenue from his lands, and every family in his kingdom has to send one man for six months to work on his estate. In other cases he receives an annual amount of eggs, flour, or wheat, from each household. He has absolute power over all his land, assigns certain portions of it to certain families, and if they displease him, or he has any reason for doing so, he displaces them at once and puts others in their stead—all the houses and farm-buildings passing to the new-comer.

One of these royalties—that of Mou-Pin—was at this time distracted by disturbances—a civil war, bandits, robbers, soldiers, and evils of every kind. The king died not long ago, leaving a wife with three daughters and a sister-in-law, who set herself up as the protector of an illegitimate infant son. There was at once a disputed succession, for by the law a female could not sit on the throne. The sister-in-law and the wife each wanted the ruling power. The sister-in-law succeeded in stealing the seal of state. She obtained some boy, who was permitted to go and pay his respects to the widow, as sovereign, while making his obeisance he managed to snatch the seal and escape to the sister-in-law. A war then broke out, some people taking part with the queen-widow, and others with the sister-in-law. As usual in such cases, all the bad characters flocked to the place to feed on the booty; both the queen-widow and the sister-in-law were obliged to take refuge in Ch'êng-Tu, and now the whole kingdom is given over to pillage and the villainies always accompanying a civil war.

Intermarriage goes on between the Chinese and the Mantzu women, but not between the Mantzu and Chinese women. This is much the same as in Tibet, where the Chinese officials are never permitted to take their wives with them, even the ambassador at Lassa being no exception to this rule. The officials and soldiers therefore when in Tibet take to themselves Tibetan wives. The children thus become entirely Tibetan, and when the Chinese officials return to China they usually leave their family behind them. The Tibetans in this are wise in their own generation, for if they permitted the Chinese to bring their wives with them, and raise Chinese families, the country would soon become altogether Chinese.

At Li-Fan-Fu I visited a little Mantzu village, to which I had to climb by a path inaccessible to either mules or ponies, to a height of 2000 feet above the valley. I sat down in the village school, and soon collected a few people around me, who were very willing to give me the little information they possessed.



The Mantzu of this place—or Irun, as they call themselves—are in reality semi-Chinese. They wear the plait, their writing is Chinese, and they all talk Chinese, though they have a language of their own.

The tribe to the west of Cha-Chuo have again another language, though the two are very similar. These have also a writing of their own, which appears to be more or less alphabetical and is from left to right.

The Mantzu here are something like Chinese in appearance. Their dress is the same, but they have good teeth; the Chinese, as a rule, have vile teeth, ill-formed and irregular, very yellow, and covered with tartar.

The village I was in was a wretched place. I walked through the streets, which were about 3 feet wide, between the high stone walls of the houses. The interiors of these were about as dirty and as dark as Chinese houses usually are.

It is not more than 18 or 20 years since the Mantzu were driven from these valleys by the Chinese. Every town and village has some tale to tell of the fight with the Mantzu, and the numerous ruins, which from their appearance cannot be very old, prove how recent were the conflicts in which they were destroyed.

Sometimes a Chinese village is to be seen built close to the ruins of an aboriginal one, and the advance of the Chinese is thus presented to the traveller's eye in a striking manner.

Two other tribes—the Su-Mu and the Ju-Kan (or, as the people here call them, the White Mantzu and the Black Mantzu)—live up a river that debouches a little higher up. The Su-Mu are always ruled over by a queen. When the Tatars were conquering the land, this tribe happened at that time to have a queen for a sovereign, who gave the Tatars great assistance, and, as an honorary distinction, it was decreed by the conquerors that in the future the Su-Mu should always be governed by a queen.

The Su-Mu, or White Mantzu, have been pillaged by the Ju-Kan, their houses burnt, and their villages destroyed. The Ju-Kan now want peace, and have offered the indemnity sufficient to rebuild the houses; but the Su-Mu are eaten up with the desire of revenge, and their queen was (at the time of my visit) at Ch'ang-Tu, praying that soldiers might be sent to punish the Ju-Kan. Should she succeed in getting these, she will probably find herself in the position of the horse who, in *Æsop's* fable, invited the assistance of man.

Beyond this the river still winds about in a narrow gorge, and a little further the first sight of a snowy peak is gained as the valley opens out into a little grassy plain, where a

Chinese village of evidently recent date, surrounded by a patch of cultivation, is almost hidden by apricot and peach-trees.

Not far from here the potato is cultivated. This useful root was introduced by the French missionaries some 50 years ago; the Chinese despise it, as food only fit for pigs and foreigners, but it is surely and steadily gaining ground, and is destined at no distant day to take its place amongst the agricultural products of the mountainous districts.

Leaving the main river, the road to Li-Fan-Fu strikes up a tributary, and the scenery changes; instead of the magnificent verdure we had left, the mountains rise up almost precipitously, and, with the exception of a few blades of grass, are almost bare, standing like a long wall, almost unbroken even by a gully; at the bottom, if there should be a little flat ground it is converted into fields of barley, divided by walls of loose stones, where a village, with its flat roofs, only wanted a few tall, straight poplar-trees to be a model of many a Persian hamlet lying in the valleys of the great Elburz; at a little distance the resemblance was remarkable, and at times I almost imagined myself nearer to the Atrek than the Yang-Tzu. The road was very carefully looked after; sometimes it was supported for a few paces on horizontal stakes driven into the face of the cliff, but these were all in good repair, and where it had been necessary to cut steps in the rock, they were often very regular and good. It is somewhat unusual to find any trouble taken over the roads, but in a case of this kind if they were left to themselves for any length of time they would very soon cease to exist.

As far as Li-Fan-Fu the scenery varies but little. Streams come down from the mountains through dim gloomy gorges, tumbling in little cascades between almost vertical walls of rock, the water in them brown, as if it came from peat-fields above. Li-Fan-Fu is enclosed by a wall, in many places broken down; this wall runs between the houses and the river, and then on both sides climbs a long way up a deep ravine that runs up at the back of the town; but as the houses are only built on the flat ground close to the stream, the walls thus enclose a great deal of vacant space.

From the new pagoda, built a few years ago on a rock about 300 feet high, a fine bird's-eye view of the town is obtained. I counted the houses as well as I could, and at a rough calculation put them at about 120. These, unlike the houses in other parts of China, are generally two-storied, built of stone below, with a wooden upper story and a balcony. All the roofs are flat.

There is a small suburb on the eastern side, but none else-



where. A rushing torrent comes down the ravine, flows through the town, and serves to turn numerous water-mills; for as this is a corn, and not a rice-growing country a great deal of grinding has to be done. The wheels are nearly always horizontal, and are enclosed in little low, round, flat-roofed houses, which look like small forts; they have one little door, and are hardly high enough for a man to stand in.

In this place and around it, under the command of the Sieh-T'ai, there are 500 Chinese soldiers and 3000 Mantzu. These latter are scattered about amongst the Mantzu towns and villages. There is another Chinese town, called Cha-Chuo, 20 miles up the river; that is the last Chinese station, and beyond it there are none but Mantzu.

There were some very good-looking ponies in the streets. These are bred in the plateaux beyond, and cost from 3*l.* to 13*l.*

Returning to Hsin-P'u-Kuan, the main river is again ascended to Mao-Chou, very pleasantly situated, where the valley opens out and forms a little basin about two miles wide, enclosed on all sides by high mountains; two pagodas on neighbouring hills dominate it, and bring it good luck.

Very soon after leaving Mao-Chou the mountains again close in on the river, which now runs through a ravine with narrow and precipitous gorges, great bare slopes and precipices running down to the water, and leaving scarcely a yard of level ground, except here and there, where at the end of a projecting point, or up the bottom of a little valley, a few flat acres are found and cultivated. The great mountain-sides are ragged, and torn about in a marvellous manner, and huge masses broken from them lay strewn about.

Now the road is 300 or 400 feet above—now it descends by a regular staircase of sharp and most uncompromising angular rocks to the water's edge, only to rise again perhaps by a gentle slope, terminated by a regular scramble.

A little beyond Ch'a-Erh-Ngai the river receives from the west an affluent (the Lu-Hua-Ho), which leads to the capital of the Su-Mu by a six days' journey, and the Ju-Kan live an indefinite number of days journey beyond.

A little further the road leaves the gloomy gorge through which the river winds. As it ascends, the slopes of the mountain-sides become more gentle, though often at the very tops are again big precipices; the sides of the valleys are either well wooded with fir-trees, or covered with close and thick brambles, barberries, thorns, and all sorts of shrubs, deliciously fresh and green; and all sorts of wild flowers grow luxuriously, numbers of the purple iris in blossom, and acres of a kind of

purple crocus. Many sweet-smelling herbs shoot up amongst the grass, and the whole scene is very fair to look upon.

I breakfasted in a little inn overlooking the valley. On the other side a great mountain ran down in precipices and steep bare slopes to the river; up a gorge to the left a deep-green forest of firs crowned the summit; to the right, on a small plateau, a Mantzu village hung over the stream, with a little terrace-cultivation on the hill-side. In the background, here and there, a patch of snow was lying on the higher mountain-tops; and below could just be heard the murmur of the invisible river, as it tumbled over its rocky bed. The tinkling of the goat-bells sounded pleasantly in the morning-air; and, after being shut in for so many days in the close gorges, the place and all around it was very delightful.

Tieh-Chi-Ying is on a flat plateau, bounded on three sides by precipices or exceedingly steep slopes, which fall down to the river 1500 feet below. On the fourth side apparently inaccessible mountain crags rise abruptly behind it, the roads to and from it being cut out of the face of the mountain, making it a very strong military position. In the early days of the Chinese here, this was a large and flourishing town; the Chinese were at this time carrying on war with the Mantzu, but one fine day the latter, in vast numbers, managed to get over the summit of the mountain, and amongst jagged rocks and crags, where it would have been thought that hardly a goat could get a footing, they surrounded the town and cut off the water, which was led by a conduit from a mountain stream. The Chinese were either overwhelmed by numbers, or forced to surrender for want of water, and the place was burnt to the ground. It has not yet recovered, for inside the extensive walls there are now but a few houses. There is a garrison of 500 soldiers.

Sung-P'an-T'ing is situated in a valley half-a-mile wide; the bed of the river is wide and shallow, the stream being broken up into several small channels. The mountains are now rounded and divided by open level valleys instead of the close narrow gorges which have hitherto been almost universal. The main valley is all cultivated; the hill-sides are cut into terraces, and crops grown all over them,

Sung-P'an-T'ing is on the right bank of the river, with an extensive walled suburb on the left. A hill runs down from the right bank ending in a small cliff, and the wall of the town runs right up to the side of the hill and takes in a great deal of open and cultivated ground, where barley and wheat are grown. The Mongols of the Ko-Ko-Nor district bring down very good ponies for sale between 13 and 14 hands high, for which they

ask about 50 taels (16l.). They also bring down fresh butter, but not in very large quantities.

The second Lama of a Lamassery near paid me a visit, and invited me to go over his Lamassery. When I arrived, Nāwā (for such was his name) was standing at the gate in readiness to receive me. He was a powerful, well-built, upright man, with a haughty look about his eyes, a very firm mouth, and had all the appearance of one who knew how to command.

The Lamassery was a low wooden building, very irregular in shape; about some of the chief rooms there was some coarse embroidery; round the largest of the chapels hung a number of rough pictures of saints, painted on a sort of cotton stuff; in one there was an image of Buddha, who here is known by the name of Khātye-Tābā; in front of him there were a number of lotus-flowers and ten little brass bowls of water. They introduced me into the cell of the Chief Lama, who acknowledged my presence by a slight inclination of the head; he was squatting before an immense pan of ashes, counting beads and muttering prayers.

I did not stop here very long. The Lamas were all excessively dirty and smelt horribly. They were, however, exceedingly polite.

At Sung-P'an-T'ing the Mantzu people have been left behind and we are fairly in the country of the Sifan. These are much more like Chinese, and are very wild-looking people. Some of them wear hats of felt, in shape like the Welsh women's, and high felt riding-boots. They have generally very deep voices, and have not such a trivial look about the face. Their language is peculiar to hear: they roll their "R's" very much, unlike the Chinese, who in many cases cannot pronounce an "R." They have also a great many of the guttural "Kh," and some sounds almost impossible to catch.

Their architecture is almost the same as Chinese, but they do not turn up the ends of their ridges and gables; indeed at a distance the houses look very Swiss. On the hill-sides the roofs are made of planks laid anyhow, with big stones on them to prevent their being blown off—just as in Switzerland.

The plateau between Sung-P'an and Lung-An is scarcely inhabited. Great droves of yaks feed on the rounded hills that here are covered with grass and brushwood, and where hardly a tree is seen. Little traffic passes this way, and the very few inhabitants are altogether Sifan.

Before crossing Hsüeh-Shan (Snow Mountain) I slept in a quaint little shanty that fully justified its name of "Fêng-Tung-Kuan" (wind cave house), and whilst eating my evening meal; fearful stories were told me of the terrors of the pass. I was



warned that, going up, every one must be very quiet. Any one calling out or making a noise would be certain to bring on a terrific wind, a violent snow-storm, hailstones of gigantic dimensions, thunder, lightning, and every evil the elements could shower down. If a man on this mountain should express feelings of hunger, thirst, fatigue, heat, or cold, immediately the symptoms would be intensified to a very great degree. I was told that once upon a time, a long time ago, an official with an army of soldiers came to cross this mountain. He had with him his sedan chair, to which about twenty men were yoked, before and behind, who could not get on without a great deal of shouting. The troops also marching made a great deal of noise. This great functionary was warned that he should not attempt to cross the mountain, for if he did some fearful accident would befall him. He laughed at the warnings, saying that he had the emperor's order, and must go on. So he went: a frightful storm of wind and snow came on; half his army perished, and he himself very nearly lost his life. Such were the tales about Hsüeh-Shan with which I went to bed; and if I did not shiver, it was thanks to the quantity of clothing with which I covered myself.

The plateau as the summit is approached is bare and dreary, especially when viewed in mist and rain. A few patches of snow were lying within 50 feet of the highest point on the western face, and the ridge was crossed at an altitude of 13,000 feet. The characteristics of the eastern slopes of this mountain are very unlike those of the west. Its climate appears much more damp. The growth of trees, flowers, ferns, and grass is so luxuriant as to become in appearance almost tropical. Great pine-forests clothe the northern faces of the mountain sides, while the southern slopes are covered with rich green grass.

The descent is very rapid, and lower down the hills on both sides are densely wooded with trees of the richest green. The ridges from each side every now and then throw out great masses of rock, ending in huge precipices over the valley, and, between these, green grassy slopes, with clumps of trees scattered about as in a park, run right up to the heights above.

The Sifan here live only on the tops of the hills, for the Chinese have driven them from the valleys. Every opening has its tale of war and bloodshed, and the new villages and new houses springing up in the valley show how recent has been the relentless advance of the Chinese.

Further on, azaleas, 15 to 20 feet high, covered with masses of blossom, contrast with the brilliant hue of the wild peony, while the ground is covered with magnificent ferns and mosses,

and the road again plunges into gorges, where cliffs 500 feet high shut out everything but a narrow streak of sky. Still the foliage is luxuriant, trees, shrubs, and flowers clinging in a marvellous way to the almost perpendicular rock. The stream descends 2400 feet in  $12\frac{1}{2}$  miles, so the succession of cascades by which it leaps from rock to rock may well be imagined. In the most gloomy recess of one of these gorges, a long time ago, a hermit took up his residence in a cave; but finding that, even for Chinese eyes, it was exceedingly dark—so dark that he could not even see to boil his rice—he fixed a mirror on the opposite side, which not only reflected the rays of the sun into this sombre dwelling, but (such was the holiness of the man) it had the additional useful property of reflecting the moon also, whether that luminary happened to be above the horizon or not. The hermit has long since been transported to a better sphere, but they say his looking-glass still remains, and the traveller who should have the misfortune to be benighted in this desolate gorge may still see the weird glimmer of the mirror on the darkest and thickest night.

Thirty-four miles from the summit of the snow mountain, and 7000 feet below it, the rice cultivation commences, and thence, the valley being more open, cultivation is universally carried on on the hill-sides. The road, however, does not improve, and here may be seen yet another method of propping it up. Deep holes are cut in the face of the rock, and into these the ends of long stones are placed, which thus projecting from the face of the cliffs, like cantilevers, support the path. Here and there, there was only just room enough for the pony's feet, and in one place, when I was looking at the scenery rather than at my pony, he went so close to the edge of a rotten bank, as to elicit a shout of dismay from my usually phlegmatic horse-keeper. This individual used always to walk behind, and where the descent was a very steep one, over big stones or down a slippery staircase, he would hold the animal's tail to prevent him slipping.

In *Sü-Ch'uan* the Chinese will cultivate the hill-sides wherever the slope is not more steep than  $30^\circ$ . This is about the steepest a man can walk up unaided by his hands. From the opposite side of the river the face of a slope of this kind has all the appearance of being nearly vertical, and the people hoeing on them look like flies on a wall. There are generally ten or twelve together, dressed in a line that would please the eye of a British drill-sergeant; and as they advance from the bottom upwards, seen from this point of view, it seems as if they must slip down, and be precipitated into the river below.

Lung-An-Fu, though presided over by a Fu and a Tu-Ssu,

does not appear to be a place of much importance. The wall that surrounds it is its principal feature, and one of my people remarked, very much to the point, that there was plenty of wall but not much house.

About 26 miles from Lung-An-Fu a road leads to the east into the province of Shen-Si.

Below this the silk manufacture commences; mulberry-trees, spoiled of their leaves, surround the houses. The cocoons are put out in great flat baskets to dry in the sun, and the women sit spinning at the doors of their houses.

Indian corn is the chief crop and food of the inhabitants. This is now planted in the fields, from which one harvest of opium has already been gathered. Round the villages there is a little wheat and tobacco, and the graceful bamboo again shelters the houses. The limit of this seems to be, as in the other valley, about 6000 feet above the sea.

As we advance further into the Chinese civilisation, we find the river often spanned by the graceful iron-chain suspension-bridges so well known in Ssü-Chuan. From five to nine chains are stretched across the river, and on these the roadway is laid; they are wound up and tightened by windlasses in massive piers of masonry or brick; another chain on each side forms a kind of hand-rail, and assists to steady the structure. Across the smaller streams many of the little elegant one-arch stone bridges remind the traveller that he is again in Ssü-Chuan.

About 50 miles above Mien-Chou the river is large enough for navigation, and descending to that city with a rapidity quite unknown in land travel, we were again in the plain country. The quiet mountain villages were left behind, and here instead, the towns were big and full of people, numbers of labourers in the fields, coolies on the roads, and traffic on the river. There was an appearance of wealth and prosperity, of life and activity about the country, that contrasted remarkably with the miserable poverty we had left only a few hours before. Sitting in an inn in a noisy town I could hear all the going to and fro in the streets, itinerant vendors selling their wares and crying them out, and the constant chatter of the coolies and the people in the restaurant close by.

The city of Mien-Chou is a large, well-built and important place, protected from floods by very extensive well-built river-walls—the streets nice and clean and free from smells. In the market great quantities of beautiful vegetables were displayed—cabbages as round as cannon-balls, very fine cucumbers, and splendid turnips and bringalls.

Leaving Mien-Chou, everything showed that we had now



struck a great high road; quantities of coolies going both ways, chairs, ponies and numbers of tea-houses by the road-side enlivened the scene. The crops are chiefly Indian corn, beans and ground-nuts; of the last the Chinese make oil, and they are almost as fond of eating them as they are of water-melon, seeds, and at all the stalls by the road-side are little piles of some twenty or thirty, which can be bought for a cash or two. There is also a good deal of rice; a great number of melons are grown in the gardens, and quantities of vegetables.

The want of rain had been very severely felt here, some of the rice-fields were quite dry, and the Indian corn looked burnt-up. The people were fasting, beating gongs, and burning incense-sticks, and the south gates of the cities were shut in the hopes of propitiating the skies.

On the top of a little hill was a small temple where a great drumming, beating of gongs, shouting and chanting was going on. Inside, a number of little candles and incense-sticks were burning before several gilded images; there were about a dozen men and boys in the place, all more or less officiating; there was no priest, for the temple did not possess one, but an official servant belonging to an adjacent hamlet, who was well acquainted with the prayers and drill of the proceedings, was standing before the principal altar, reciting the formulæ and giving the signals for the others to say their "Amen." This was done by violent shouting and beating drums and gongs. They seemed very well amused, and as I saw that clouds were gathering, I had no doubt their prayers would turn out efficacious.

At Lo-Chiang-Hsien there was more water, and the rice-crops looked well; but in the undulations that divide the river that waters that town from the Ch'êng-Tu basin, the want of rain was again sadly apparent, some of the rice-fields being quite dry and the soil all cracked.

Amongst these undulations is the pass of the "White Horse," so called after an event that took place in the third century, in the reign of Liu-Pi, a monarch who, from the countless stories that associated with his name are interwoven in the annals of this period, appears to have taken the place in Chinese history assigned to King Alfred in our own. After the disastrous battle when Liu-Pi lost his wife, the king was mounted on a remarkable white horse; his enemies knew this, and were scouring the field in search of him, when his prime-minister, Pong-Tung, or Pong-Chou, riding up, prevailed upon his master to change horses, on the plea that his was the faster of the two. The monarch, whose noble nature, if he had known that the white horse was the object of the chase, would never have con-

sented to the exchange, escaped; Pong-Chou was killed, and buried in a temple at Lo-Chiang-Hsien, where his grave is still shown.

As Ch'êng-Tu is approached the country is again entirely given over to rice-cultivation—the Indian corn disappearing; and as we march westwards there is more and more water, until we again come to the streams running by the road-sides. At Ch'êng-Tu itself there was no want of water, but being the capital of the province, a fast was ordered, and all the usual devout ceremonies were gone through whereby it was hoped that rain would be brought. The drought when I was there was becoming very serious, but I have never heard that it eventuated in a serious famine in this province, though, as we know, the neighbouring one of Shan-Si has been the scene of one of the most appalling calamities that were ever inflicted on a nation.

#### THE ROAD FROM CH'ÈNG-TU TO TA-CHIEN-LU AND BAT'ANG.

The road from Ch'êng-Tu to Ta-Chien-Lu traverses, roughly speaking, two sides of an equilateral triangle. There is, or used to be, a direct road, but it passes through a country much disturbed by fighting amongst or with the aborigines, and for centuries the circuitous route has been considered the great high-road to Tibet.

The plain country is soon left, and 50 miles from Ch'êng-Tu the mountains that stretch from here to the Himalayas are first seen.

There was still in many parts a considerable scarcity of water. The south gates of the city were shut, and the fast proclaimed made it somewhat difficult to obtain food. But still there was here no real distress amongst the people. In times of drought, the Chinese houses being all of wood, conflagrations are much dreaded, and it is customary to shut the south gates of the cities, for the people think that fire can only enter on this side; this idea may have originated in the southern position of the sun. The cultivation is chiefly rice, but as Ya-Chou is approached, it gives way to Indian corn.

The main body of the Min River—only known here as the Southern River—is crossed just beyond Ch'iung-Chou by a bridge which bears on its walls a tablet with the somewhat boastful inscription that it is the finest in Ssu-Ch'uan. This bridge is 240 yards long and  $9\frac{1}{2}$  wide, has 15 arches, and is really a very fine work.

Ya-Chou-Fu is on the River Ya, here 200 yards wide, and

crossed by a ferry. The ferries in China are always free, and their expenses paid from the produce of a piece of land set apart by the Government for the purpose. Here Indian corn is almost the only crop to be seen, and with this the hill-sides are clothed to their very summits. Ya-Chou is a place of great importance, as it is the starting-point of all the commerce to Tibet, to which place tea and cotton are the chief exports.

The most remarkable trade of this place is its commerce in tea, vast quantities of which are sent from here through Tibet and up to the very gates of our own tea-gardens in India. The tea for the Tibetans is merely the sweepings that would elsewhere be thrown away, the poor Chinese in Ya-Chou paying seven or eight times the cost of this for what they drink themselves. It is pressed into cakes about 4 feet long  $\times$  1 foot  $\times$  4 inches, each of which is wrapped in straw, is called a pau, and weighs 24 lbs. The average load for a coolie is about ten or eleven of these packets. I have seen some carrying eighteen—that is 432 lbs. Little boys are constantly seen with five or six pau (120 lbs.). These men wear a sort of frame-work on their backs, which, if the load is bulky, often comes right over the head and forms in rainy weather a protection from the wet. Each of them carries a thing like the handle of a spud, with an iron shoe and point at the end, and when they rest themselves the handle is put under the load, the point into the ground, and thus they relieve their backs from the weight. A coolie gets 1.8 taels to carry 6 pau (144 lbs.) from Ya-Chou to Ta-Chien-Lu, 120 miles over an exceedingly mountainous country; a distance usually accomplished in twenty days. The pay would seem barely enough to keep life in them under their tremendous loads. They eat scarcely anything but Indian-corn bread, made up into round cakes nearly an inch thick, and from 6 to 10 inches in diameter. One or two of these is always seen on the top of their loads.

Beyond Ya-Chou the country becomes gradually more mountainous, until just above Ch'ing-Ch'i, a pass 9300 feet above the sea, is crossed. The climate on the north-eastern face is apparently very wet—the growth of trees, grass, and ferns very luxuriant. Directly the summit is gained the scenery changes, the upper slopes being on this side all covered with grass and wild flowers.

This is called the T'ai-Hsiang-Ling-Kuan, or Great Ministers' Range Pass, and below it lies the city of Ch'ing-Ch'i, chiefly celebrated for its violent winds. When we were here it scarcely belied its reputation; and the day we left my chief impressions of the scenery were violent rains, squalls, mist, and fog. The



road was frightful, and, owing to the rains, I think about the worst I ever saw. Crawling through deep clay along the face of a steep slope cut up by ravines, the crossing of these was a matter of much difficulty and some danger; for in many places the track had been completely carried away by the torrents swollen by the rains. A little further on, in one of the valleys, there are a considerable number of the celebrated insect-trees of Ssü-Ch'uan. This is the tree on which is bred the insect that produces the Chinese white wax. These trees are in appearance like an orange, with a smaller leaf. They have a very small white flower that grows in large sprays, now (20th July) covered with masses of blossom, and the strong smell, which was not very sweet, filled the air. This tree is chiefly grown in the Ning-Yuan-Fu neighbourhood, and the eggs are thence transported towards the end of April to Kia-Ting-Fu, where they are placed on the wax-tree, which is something like a willow. Here the insect emerges from his eggs, and the branch of the tree on which he is placed is soon covered with a kind of white wax secreted. It is this white wax that is so celebrated, and is one of the most valuable products of Ssü-Ch'uan. These eggs cannot be exposed to the heat of the sun, and whilst being carried from the breeding to the producing district, the coolies travel only in the night, when the road is said to present a very remarkable appearance, as the coolies all carry lanterns. Ordinarily in China no travel is done at night; and as the gates of all towns and cities are closed at dusk, and are never opened for anybody, no matter who he may be, travelling at night is rendered impossible. But during the time for bringing the eggs to Kia-Ting-Fu all the city-gates are left open night and day; probably the only exception in China to the rule of shutting the gates at dusk.

The next mountain-range is crossed at a pass called Fei-Yüeh-Ling, or Wu-Yai-Ling (the range without a fork). Although almost precisely the same altitude as the T'ai-Hsiang-Ling, the Chinese do not consider this as a mountain of nearly so much importance. Beyond this we enter the country of the aborigines; but they dwell in the mountain-fastnesses, and, until arriving at Ta-Chien-Lu, scarcely anything is seen of them.

From the summit of the Fei-Yüeh-Ling the road descends to the Tung-Ho or Ta-Ho, where again there is a little rice, sago, and bamboo; but soon the main stream is left, and a small tributary ascended, that thunders down a mass of foam from Ta-Chien-Lu, falling 3400 feet in little more than 11 miles.

Ta-Chien-Lu means "Arrow Furnace Forge," and was so

called in the time of the great Liu-Pi. During the third century the barbarians from Tibet invaded China and advanced as far as Ch'iung-Chou. Liu-Pi drove them back; but they made fresh inroads, regaining the country as far as Ta-Chien-Lu. Then Liu-Pi sent against them his redoubtable warrior, Kung-Nung, who coming here forged an arrow-head; he shot this at a rock, and called the place "the arrow furnace forge."

After that the barbarians retreated to Bat'ang, and never since have advanced beyond Ta-Chien-Lu, which may now be considered as the boundary of China, for up to this point the people are directly governed by Chinese; but beyond this there are native chiefs who, subject to China, rule over the people. There is a native king resident here, his territory extends to Ho-K'ou.

Ta-Chien-Lu is situated in a small open valley at the foot of mountains enclosing it on all sides except to the east. The brawling stream that divides the city into two parts is crossed by a wooden bridge, and a good many trees grow about the banks. The streets of the place are narrow and dirty, the shops inferior, and in them are all sorts of strange wild figures, some dressed in a coarse kind of serge or cotton stuff, and wearing high leathern boots, with matted hair or long locks falling over their shoulders; others in greasy skin coats, and the Lamas in red, their heads closely shaved, twisting their prayer-cylinders, and muttering at the same time the universal prayer, "Ho-Ma-ne-Pe-mi-Hoñ."

The women wear a good many ornaments, some are good-looking, and all utterly unlike the Chinese in every way.

Both the women and the men wear great quantities of gold and silver ornaments, heavy earrings and brooches, in which are great lumps of very rubbishy turquoise and coral. They wear round their necks charm-boxes; some of gold, others with very delicate filigree work in silver. These are to contain prayers.

During our stay at Ta-Chien-Lu we visited a Lamassery in the neighbourhood, passing on our way large barn-like buildings full of prayer-cylinders turned by water. The prayer written on these is always the same; but on most of them it is repeated many times, so that each revolution counts as many prayers. They all revolve the same way, with the hands of a watch. The Lamassery we visited is finely situated on the edge of a stream at the foot of a big hill, and is surrounded with many fine trees. Outside, the walls are whitewashed and well kept. There is a slight batter to them, and as they look very

thick and massive, there would be something of the appearance of a fortification, if it were not that the windows are large, and outside many of them flowers growing in pots. We entered a quadrangle, on the eastern side of which is the gate. This and two other sides are occupied by living-rooms in two stories, and the fourth—that opposite the entrance—is taken up with the principal chapel. This was not very gorgeous. There was a gigantic statue of Buddha at the end. The Lamas said it was all of brass, but it looked like clay coated with that metal. On each side of this was the tomb of a very sacred Lama, enclosed with iron-wire netting, on which a few scarves of felicity, called "Khatas," were hung. There were seven copper bowls of water before Buddha. We asked if any meaning attached to the number seven, and they replied that there were so many mysteries in it, it was quite impossible of explanation. On each side of the chief chapel is a corridor leading into other rooms, into one of which they showed us. It was very dark, and, as far as we could gather, seemed to portray the horrors of hell. Outside it, hanging from the roof of the corridor, were skins of dogs, deer, bears, and other animals, roughly stuffed with straw. In many of these the sewing had burst and the straw protruded in a melancholy fashion, the hair had fallen off in patches from all of them. Some of them were provided with glass eyes of awful dimensions, and they were fearful objects to look upon. To these also there was some mysterious meaning, but the Lamas would not tell us what it was. We were treated to a cup of tea each, and entertained by one of the chief Lamas, who, in his dress, did not differ from the others. They all have shaven heads, wear a garment of a kind of very coarse red serge or sackcloth over their shoulders. This appears to have no shape, but to be simply an oblong piece of cloth. They wear another length wound round their waist, which forms a skirt reaching to the ankle. Many of them were barefooted; others had high boots of red cloth, with the lower part made of leather. A few wound a yellow scarf round their waists; nearly all kept one arm and shoulder bare. They were without exception exceedingly dirty and smelt abominably.

At Ta-Chien-Lu and all through Tibet the Indian rupee is the current coin; and only those who have gone through the weary process of cutting up and weighing out lumps of silver, disputing over the scale and asserting the quality of the metal, can appreciate the feelings of satisfaction at again being able to make purchases in coin.

These rupees come in thousands all through Tibet, Lassa, and on to the frontiers of China, where merchants eagerly buy them

up, and by melting them down are able to gain a slight percentage. Curious it is, too, to see the wild-looking fellows as well as Chinamen fastening their coats with buttons on which is the image and superscription of Her Most Gracious Majesty; there is scarcely a regiment in our service whose buttons do not find their way into Tibet; the old clothing in India is, I suppose, sold, the buttons bought by Indian traders and carried across the Himalayas, whence they gradually work their way eastwards; lower down, imitation 4-anna pieces are used; these must be made somewhere in England.

From Ta-Chien-Lu the road at once ascends to the great plateau; the ascent is not a severe one—a gradual rise up a valley amongst granite rocks, capped at the summit with bare crags of limestone.

On the road are great droves of yaks, with enormous horns and heads like bisons, huge bushy tails, and hair under their stomachs reaching to the ground. The Tibetan name for the bull is "yak," and for the cow "Jen-Ma." Europeans apply the word "yak" indiscriminately to both sexes, as do the Chinese their word Mao-Niu (hairy cow).

At the summit of Cheh-Toh-Shan, 14,500 feet, there is a huge pile of stones in which are stuck long poles hung with bits of rag; on these are written prayers and inscriptions; the pious always cast a stone on to the heap, and tie a rag to one of the poles in token of thanks for having escaped the terrors of the road. Along every road of Tibet these piles of stones form a most remarkable and conspicuous feature; at close intervals, sometimes only a few hundred yards apart, they would appear to serve as a means for marking the road, when covered by deep snow-drifts, as well as for some pious purpose—each stone in the heap having on it a prayer or inscription. Very frequently, too, across the streams strings will be stretched, and to these 50 or 100 little bits of rag fastened, on which also are written prayers; these they call Mane strings.

From here to Chiamdo there is a direct road not so difficult as the ordinary route; there are on it no Chinese officials, but it is much frequented by traders, who by it reach Chiamdo in 14 days through a well-populated country.

On passing the crest of Cheh-Toh-Shan the great upland country is at once entered. Standing on the summit of the pass, stretched below us was a fine valley, closed in on both sides by gently-sloping round-topped hills, all covered with splendid grass; the richness of the pasture was something astonishing; the ground was yellow with buttercups, and the air laden with the perfume of wild flowers of every description;



wild currants and gooseberries, barberries, a sort of yew, and many other shrubs, grow in profusion. By the side of a little tent some Tibetans were lying about; their fierce dogs tied up to pegs in the ground, and great herds of sheep and cattle grazing round them. The sheep are taken in great flocks once a year from Lit'ang to Ta-Chien-Lu, and thence to Ch'eng-Tu for sale.

A little further on is a hot spring, where the stones were covered with a saline incrustation of soda or potash; the temperature of the water was 111° Fahrenheit, and it was quite black from sulphur. People come here to cure skin diseases, and they say it is very efficacious.

On the banks of the stream that winds through the valley are a few gloomy Tibetan houses, at a distance looking like strong castles; these are great piles of loose stone with scarcely any mortar, sometimes three or four stories high, with little slits of windows like loop-holes. Barley and oats grow well in the valley, but the people do very little but keep cattle, sheep, and horses, or rather ponies, of which there are great numbers, some exceedingly good-looking, with quite an Arab head.

All this valley is covered with wild flowers, from one of which they make a paper like parchment; and there is another that has the most valuable property of killing lice. Caraway grows wild, and is also cultivated.

The road to Lit'ang is a succession of mountains, valleys, huge pine-forests, and open glades. We must hurry through them.

Just before reaching this city the mountain Shie-Gi-La is crossed at an altitude of 14,400 feet. From here gentle slopes lead down about 700 feet to the plain. This is 8 to 10 miles wide, and stretches out for many miles east and west. Opposite, a range of hills bounds the plain; behind it rises the magnificent range of the Surong Mountains, stretching as far as the eye can see to the east and west; snowy peak rising behind snowy peak—where, even at that great distance, vast fields of snow almost dazzle the eye as the sun shines on them.

A river winds through the centre of the valley, numerous streams run down from the mountains on each side, and at this season of the year, when covered with luxuriant grass and wild flowers, one can hardly regret that the excessive cold prevents anything else from growing. No cereals of any kind nor potatoes can be raised; just round the houses at Lit'ang a few half-starved cabbages and miserable turnips appear to be the only things that can be produced.

Lit'ang is a cheerless place, situated at an altitude of 13,300

feet. The people said that it rained here every afternoon in the summer, but that the mornings were generally fine. Though there are only 1000 families here, there is a Lamassery in the city containing 3000 Lamas, and within 5 miles another not much smaller; this Lamassery is adorned with a gilded roof, which has cost a large sum of money, notwithstanding the miserable poverty of the people. Its chief productions are gold, sheep, horses, and cattle; there are 300 Tibetan and 98 Chinese soldiers scattered about the neighbourhood.

The mountain-country beyond Lit'ang is very desolate, rough, undulating ground, in every direction covered with loose stones and huge rocks of granite; low hills backed by jagged peaks, their tops covered with a sprinkling of snow, but not sufficient to hide the barrenness and nakedness of the rocks beneath. At the dreadful summit of Nga-Ra-La-Ka, the mules were a few hundred yards ahead, and we heard the muleteers set up a shout of joy as they gained the highest point. They say that in foggy weather people often swoon here; one of our people seemed to feel the want of oxygen in the air very much, and could hardly drag himself along. This pass is 15,750 feet above the sea; just at the top there were patches of snow lying on the road, but they were very small. After passing the crest we descended over the same dreary wastes of huge blocks of hard whitish-grey granite; this mountain seems much colder than those of sandstone on the other side of the Lit'ang plain, which are of equal height.

After some miles of granite, the road again suddenly strikes the sandstone, and the scenery changes as if by magic; the rounded grassy hills are again entered; a little lower, descending a stream, the pine-clad valleys appear, and the landscape is exactly as it had been on the other side of Lit'ang. As we advance, scene after scene of loveliness meets the unwearied eye—grassy slopes and level plains covered with wild flowers, and forests of noble pines, where Nature in one of her most lavish moods seems to have compensated by the wonderful beauty of the scenery for the short duration of the summer. Suddenly a valley opening out discloses the vast snow-fields of Nen-Da (20,500 feet), and in the quiet of the little hamlet that shares its name, within 5 miles of a point where no living thing shall ever tread, as the setting sun cast its last ray on the summit, I could well appreciate the solemn beauty of the scene. No words of mine can describe the majestic grandeur of that mighty peak, whose giant mass of eternal snow and ice raises its glorious head 7000 feet above the wondering traveller. He can but gaze with admiration and appreciate the feelings of the Tibetans

that have led them to call it Nen-Da, or the Sacred Mountain. As the night fell, clouds gathered round its noble head; next day my eyes no longer rested on the wondrous sight, but, as I rode slowly onwards, the thoughts of it were ever present in my mind, and it was long before the roughness of the track recalled me from the land of dreams to the stern realities of rain and mist.

A few miles of sandstone, and the granite again appearing, the temperature and scenery became cold and dreary.

The natives said Ta-So, the last mountain-pass between us and Bat'ang, was a very bad medicine-mountain. The inconvenience caused by the rarefaction of, and the want of oxygen in, the air at these great altitudes is attributed by them to subtle exhalations, and they always speak of a high mountain as a medicine-mountain. Near the top we found ourselves in a little circular basin, about 100 yards in diameter, surrounded on all sides, except that by which we had come, by steep and ragged precipices 300 feet high. At the bottom was a little pond of clear water; no opening was anywhere visible in the savage walls of rock, but up one side a desperately steep and rough zigzag led to the top. Just over the crest of the pass (16,600 feet) is a great basin 2 miles in diameter, and such a wild and savage scene I never before looked on—a very abomination of desolation. Great masses of bare rock rising all round; their tops perpendicular, torn and rent into every conceivable shape by the rigour of the climate. Long slopes of débris that had fallen from these were at the bottom; and scattered over the flat of the basin, great blocks of rock lay tumbled about in most awful confusion amongst the masses that cropped out from below the surface. Three or four small ponds formed in the hollows were the sources of the stream that, descending from the basin, plunged into another valley, and, falling rapidly, soon became a roaring torrent, dashing through mile after mile of dense pine-forest. The stillness of this place was very remarkable; the air was so rarefied that I could hardly hear the horse's feet only a few yards off, and when quite out of hearing of these, as I walked on alone, the silence was most impressive.

The plain of Bat'ang, described in such glowing terms by Huc, is sadly disappointing. Narrow and treeless, it covers only an area of a few square miles, producing barley, wheat, and Indian corn. Through it a small river, 25 yards wide, runs down 5 miles to the Chin-Sha, there 170 yards to 200 yards wide. The town stands about half a mile from the left bank of the river; it is quite new, having been destroyed a few

years ago in a frightful series of earthquakes that, lasting over many weeks, devastated the whole neighbourhood; it has hardly yet recovered from this disaster, and there are now only 300 families living in 200 houses. Although at an altitude of 8500 feet above the sea, the climate is very warm, and is a remarkable contrast to that of Ta-Chien-Lu, which is situated at almost the same height; the snowy mountains that surround the latter place making it very cold.

Close to the bank of the stream in the midst of the waving corn fields, like the monks of old, the Lamas of Bat'ang have built their Lamassery, and, sheltered by the golden roof that cost upwards of 1000*l.*, 1300 Lamas live in immorality and idleness, a curse to the country and the people; by usury getting possession of, or establishing a lien on, not only nearly all the property, but even the manhood also of the country; living in communities of thousands, issuing forth only for their own amusements or the indulgence of their profligate tastes, they attract to their body all those who, having committed crimes, can only shelter themselves under the cloak of their assumed sanctity. Such are the Lamas who, holding the country in a grasp of iron, are gradually working its ruin and depopulation.

#### TO TA-LI-FU.

To insure our safety on the road to A-Tun-Tzū the chief magistrate of Bat'ang came with us to that town, accompanied by the native chief and a large retinue, which day by day increased in number, until on the third march we had 300 men with us; then, when we had reached the place where the great Lassa road branches off, on a high plateau in a storm of wind and sleet the somewhat exciting spectacle lay before us of an encampment of 300 Tibetans turned out by the Lamas to bar the road to the centre of Tibet.

This was the boundary of Tibet proper and beyond it the Chinese appear to have a very slender hold on the country. There the Chinese officials do not issue commands to the native chiefs in a peremptory manner, but when they want anything they make requests; the Bat'ang official himself on our arrival eagerly inquired if I had any rifled cannon in my portmanteau; if I could have given him one, he said, he then could have made the Tibetans say "La So." This is a term used by inferiors to superiors. When the coolies or muleteers came in to ask any favour, they would, according to the customs of the country, go down on their knees, put out their tongues and at



the end of each sentence interpreted to them repeat the word "La So." Protruding the tongue as far as possible is the most respectful Tibetan salutation.

The boundary between Yün-Nan and Ba'ang is crossed at the Tsa-Leh mountain 15,800 feet above the sea. This is also the water-parting between the two rivers, the Lan-Ts'ang and Chin-Sha. The country gradually descends from this point, the scenery changes and the climate becomes warmer.

A-Tun-Tzū (11,000 feet), on the western slope of the mountains, is a Chinese town, but the people are still thoroughly Tibetan, even the Chinese talking Tibetan better than their own language. The prevalence of goitre in these districts is something appalling; some attribute it to the water, others to the salt, but, whatever the cause, two-thirds of the population have swellings on their throats, some of enormous size.

All the country between the two rivers is covered with forests in which there were many wild beasts—amongst others, wild oxen and monkeys were reported.

Some of the mountaineers below A-Tun-Tzū were most hospitable, treating us everywhere with the greatest respect, and sparing no pains to render us comfortable; a few of the chiefs live in really good houses, which were always at our disposal.

From A-Tun-Tzū the road again passes over to the Chin-Sha Chiang and follows it for two or three days, after which it crosses another ridge and descends to the city of Ta-Li-Fu.

The country for many miles round this city still bears the traces of the Mahometan rebellion; ruined villages and terraced hill-sides, where now no crops are raised, attest the sparseness of the population. Ssü-Ch'uan is over-populated, and a very little Government assistance would enable the people to emigrate to this province; this, however, they cannot obtain, and it must be a long time before this beautiful and naturally wealthy country can again become a flourishing one.

Ta-Li-Fu itself is now, with its ruined houses, a melancholy place, and its dreariness was not lessened by the pitiless rain that descended in a continuous stream day and night for the few days of our stay; for many days before reaching this city we had been almost always marching in heavy rain, and the valleys were now all flooded—so much so that the rice crop was lost, and in Ta-Li-Fu I saw myself the young rice, on which the ear had hardly formed, being sold in the streets as green fodder for animals.

## TO T'ENG-YUEH.

From Ta-Li we followed in the footsteps of Mr. Margary, and the expedition that was sent to inquire into the circumstances of his death. Wherever we went and whoever it might be that spoke of Mr. Margary, he was always referred to in terms of almost affectionate regard, and, standing at the scene of his cruel murder, I could not but feel what a loss the country had sustained in that brilliant young officer, who, through sickness and the difficulties surrounding a pioneer in new and untravelled districts, had not only carried out with singular tact the delicate duties entrusted to him, but had also known how to portray in striking and vivid colours the many new scenes presented to his view, and to leave a faithful and lasting record of the strange peoples and countries through which he passed as a legacy to his regretful countrymen.

I lifted my hat as the only tribute of respect I could pay to one whose memory will long be dear to the hearts, not only of those who knew him, but of all who value the noble qualities of uprightness, courage and determination.

Perhaps the most remarkable geographical feature between Ta-Li and Bhamo is the deep gorge through which the River Lan-Ts'ang runs, and which is better appreciated from the horizontal section on the map than from explanation. This river is described by Cooper as possessing, higher up, the same characteristics. The ascent to the westward from it is perhaps one of the worst and most severe of all these mountain roads; beyond, in a fine and extensive plain, lies the city of Yung-Ch'ang, the Vochan of Marco Polo.

In the neighbourhood of this city enormous pears are raised. I weighed two of them ( $1\frac{1}{2}$  lb. and 3 lbs.). These were not uncommon. Near here the salt that is made into cakes of many shapes and sizes might still be described in Polo's words as like a twopenny loaf.

The direct road from Yung-Ch'ang was pronounced impracticable, owing to the fact that it passes over a plain entirely depopulated by the plague that appears every year in June or July. In describing the symptoms to me, the people said that a lump like a boil, about the size of half a small walnut, suddenly appeared on almost any part of the body; there was absolutely no attendant pain, and twenty-four hours was the outside that a person could live after the appearance of this lump.

Boccaccio thus describes some of the symptoms of plague at Florence in 1348:—"Here there appeared certain tumours in

the groin or under the arm-pits, some as big as a small apple, others as an egg. But they generally died the third day from the first appearance of the symptoms, without a fever or other bad circumstance attending."

From Defoe, also, may be gathered that the plague of London was somewhat similar; but he was not himself an eye-witness of this terrible calamity, nor does he anywhere give a distinct account of the symptoms.

Near Yung-Ch'ang, my informant said that during July, August, and September, more than 1000 people died of this complaint. A traveller who had passed the stricken districts in July said there were scarcely any inhabitants left, and that the dead bodies were lying about unburied; he added that the disease had moved southwards, and was raging in another district.

Beyond Yung-Ch'ang is the valley of the Lu-Chiang, so unhealthy that no stranger can at any time sleep here (so they say) without getting fever. In the summer months it is quite impassable, even the inhabitants leave it, and ascend to the mountains. The miasma that rises is said to be a reddish mist; the ordinary white mist that I often saw hanging over the valleys in this neighbourhood is said to be harmless.

We were fortunate in the time of our passage, and the sun shone brightly as we crossed the curious suspension-bridge that spans the river. It is in two spans of 73 and 52 yards; but for greater ease in tightening up the chains, the two are not in the same straight line. In construction each span is identical with that I have already described.

In rainy variable weather at no season of the year will any one attempt the passage of this valley; and Marco's words, "So unhealthy that no stranger can pass in the summer-time," were brought strongly to my mind.

At Man-Yün, or, as is usually called, Manwyne, we were delayed for weather. This (end of October) was not the regular rainy season in which no traffic of any kind is ever thought of; but, nevertheless, three consecutive days and nights of heavy rain made the muleteers refuse to attempt the onward journey.

But little traffic was met with on the almost uninhabited country to Bhamo, where Mr. Cooper, himself "one of the most adventurous of travellers," knew well from experience how best to administer the hospitality to which he was prompted by his sympathetic and kindly heart.

Here coolies, mules, and ponies were left behind, and coal

and iron swiftly bore us down the broad bosom of the Irawaddy to home and civilisation.

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EXPLANATION OF THE TABLES.

It will be observed that the altitudes as given in these Tables differ considerably from those published in the 'Proceedings.'\*

This arises from the fact that, when I had the honour of reading my Paper, I had not had time to make the necessary computations.

Immediately on my return to England I sent my hypsometric thermometers to Kew for verification; the errors so obtained were applied to every hypsometric reading taken during my journey, and the correct barometric pressure deduced from each of these observations.

It was then necessary by the assistance of these to correct every aneroid observation taken during a period of eight months.

When halting, the aneroid was noted three times a day; on the march as often as ten or a dozen times during the day's journey.

From these corrected readings the altitudes of 330 places have been finally computed. It will be readily understood that this has been a work of time; and that when I read my Paper it had hardly been commenced.

It was, however, necessary for me to give some idea of the conformation of the ground that I had traversed.

I therefore put the altitudes down from the barometric readings, without any corrections for temperature, and assuming 30 inches as the barometric pressure at the sea-level.

To have done more than this, unless the work had been thoroughly completed, would only have been a waste of time, as it would have been necessary to make all the computations afresh.

In some instances the correction for temperature alone makes a difference of 800 feet in the altitude: the discrepancies between the altitudes, as given in the 'Proceedings' and as they now appear, will therefore be readily understood.

During my journey from Ch'êng-Tu I made thirty-three hypsometric observations, each with two thermometers; and until one was broken I always used three.

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\* 'Proceedings,' Royal Geographical Society, vol. xxii., page 255 *et seq.*  
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TABLE I. gives (a) the boiling-points deduced from these, by the aid of the final corrections from Kew Observatory. I may say that these were so trifling as to be hardly worth the trouble of applying, in consideration of the many much greater sources of error in computing altitudes from barometric observations.

(b). The correct height of the barometer deduced from the corrected boiling-points.

(c). The readings of the aneroids at the times and places of the hypsometric observations.

(d). The errors of the same aneroids at the same times.

By the aid of these errors, corrections have been applied to upwards of 300 aneroid readings.

TABLE II. gives (e) the corrected barometer at every station.

(f). The temperature of that station.

(g). The barometric readings at sea-level, on the dates on which observations were made.

(h). The thermometric readings at sea-level, on the same dates.

(i). The approximate latitudes. As the objects of these latitudes are merely to compute the altitudes, they are only given to the nearest degree.

(l). The altitudes above the level of the sea, in English feet, deduced from these observations.

(m). Mr. Baber's altitudes, as computed by himself, of several places whose altitudes have also been found by me.

(n). Mr. Baber's observations, at the same places, re-computed; using the same datum as I used myself, viz. the mean of Shanghai and Calcutta.

(e). The daily mean of the barometer and thermometer occurs generally at about 9 A.M.; but in travelling, when one hasty reading at any time of the day and in all sorts of weathers is all that can be obtained, it is of course impossible to form any idea as to whether the barometer is above or below the daily mean. No correction for this purpose has been attempted.

At the halting-places several readings were always taken, and the mean of these has been adopted.

At Ch'êng-Tu and at Ta-Chien-Lu the halts were sufficiently long to give some idea of the daily variation. Some more remarks on these places will be found further on.

(f). The temperature. To obtain altitudes with any degree of accuracy, the mean daily temperature is necessary; it is fortunately easier to approximate to this than to the mean daily barometric pressure.

From my own observations I have adopted what would seem to be a fair mean for each place.

(g) and (h). Mr. Coles, the Curator of Maps at the Royal Geographical Society, has been at much trouble to assist me in all this work. He obtained for me the mean barometric and thermometric readings for each month at Calcutta and Shanghai. Between these I have roughly interpolated daily readings.

For my datum I have taken the mean of Calcutta and Shanghai. Both these places lie on latitude  $30^{\circ}$  (approximately), and my route was not far from the same parallel. It would seem therefore safe to assume that this is as good a datum as can be obtained.

Many altitudes have been computed separately by Calcutta and Shanghai. It must be confessed that the large differences are not satisfactory; and it will be observed that Calcutta always gives a less altitude than is given by Shanghai.

I am quite unable to explain the fact.

(l). The altitudes have been deduced by Baily's formula. These have been computed by Lieutenant Selwyn S. Sugden, R.N., to whom I cannot give sufficient thanks for the care and rapidity with which he has carried out the laborious task.

(m). Mr. Baber's altitudes have been taken from his own report.

(n). As Mr. Baber worked entirely from Shanghai as datum, I thought it would be interesting to compute a few of his observations, using the datum that I used myself. The agreement cannot be considered satisfactory; but the weather at the time of my visit was very unsettled, and the great variations no doubt had considerable influence on the barometric pressure.

TABLE III. gives the results of observations at Ch'êng-Tu, Ta-Chien-Lu, Bat'ang, and Bhamo.

At Ch'êng-Tu, from the 10th to 18th May, observations were regularly taken at 9 A.M., 3 P.M., and 9 P.M.

The mean of the 9 A.M. and 9 P.M. observations has been taken as the mean of the period.

The altitudes have been calculated separately, using Shanghai and Calcutta.

From 21st June to 9th July similar observations were taken, and similarly computed.

The mean of the four values thus obtained has been adopted as the altitude of Ch'êng-Tu.

At Ta-Chien-Lu, from 25th July to 7th August, the same operations have been performed.

At Bat'ang I had the pleasure of making the acquaintance of the Abbé Desgodins. He had kept a meteorological register daily during the months of November and December, 1876, and January, February, June, and July, 1877. He most kindly gave me a copy of his observations.

I ascertained the index-error of his barometer, and have applied it to his readings.

His barometric observations were taken at 9 A.M. and 4 P.M. I have used the 9 A.M. observations only, as being the nearest to the mean.

I have worked the observations of every month separately, each with Shanghai as well as Calcutta, thus getting twelve values for the altitude of Bat'ang. The differences are very great, but it may be assumed that the mean is not far from the true altitude.

TABLE IV. This is a comparison of results obtained by using Shanghai and Calcutta as data. In order to make the comparison more complete, several of Mr. Baber's observations have been recalculated and contrasted with my own.

The fact that Calcutta always gives a less altitude than Shanghai is very marked.

The hypsometric observations were made with Mr. Casella's Alpine Hypsometric Apparatus. This instrument proved invaluable. I used it on one occasion at an altitude of upwards of 16,000 feet, and it never gave me any trouble.

TABLE I.

Place.	Date.	a. Corrected Boiling- point.	b. Deducted Barometer.	c. Reading of Baro- meter, 289.	d. Error of Barometer, 289.	e. Reading of Baro- meter, 306.	d. Error of Barometer, 306.
Shan-Tou-Ping ..	March 11	212·65	30·31	30·60	-0·29	30·52	-0·21
On a mountain ..	March 18	208·12	27·69	..	..	27·90	-0·21
Ch'ing-She-Kou ..	March 18	211·78	29·76	29·74	+0·02	29·76	0·00
Lo-Chi .. .. .	April 6	210·82	29·23	29·26	-0·03	29·38	-0·15
Ch'ung-Ch'ing, Mr. Baber's house ..	April 22	210·23	28·89	28·85	+0·04	29·06	-0·17
Ch'eng-Tu .. ..	May 12	208·90	28·128	28·04	+0·088	28·27	-0·142
Ditto .. .. .	May 14	209·12	28·258	28·18	+0·123	28·38	-0·127
Ditto .. .. .	May 17	209·54	28·51	28·39	+0·12	28·69	-0·18
Li-Fan-Fu .. ..	May 25	202·46	24·68	24·50	+0·18	24·78	-0·10
Mao-Chou .. ..	May 29	202·90	24·90	24·60	+0·30	25·02	-0·12
Sha-Wan .. .. .	June 1	199·50	23·21	22·90	+0·31	23·00	+0·21
Sung-P'an-T'ing ..	June 5	195·50	21·35	20·98	+0·37	20·98	+0·37
Ch'eng-Tu .. ..	June 25	208·77	28·06	27·81	+0·25	27·75	+0·31
Ch'ing-Ch'i-Hsien	July 18	202·07	24·48	23·80	+0·68	23·90	+0·58
I-T'ou-Ch'ang ..	July 20	203·03	24·97	24·50	+0·47	24·60	+0·37
Hua-Ling-P'ing ..	July 22	199·47	23·20	22·50	+0·70	22·60	+0·60
Ta-Chien-Lu .. ..	July 31	197·034	22·07	21·52	+0·55	21·52	+0·55
Ditto .. .. .	Aug. 6	197·16	22·10	21·40	+0·70	21·56	+0·54
Cheh-Toh .. .. .	Aug. 7	193·05	20·27	19·55	+0·72	19·70	+0·57
Cheh-Toh-Shan ..	Aug. 8	186·923	17·78	..	..	17·13	+0·65
Le-Ni-Ba .. .. .	Aug. 14	187·227	17·90	..	..	17·10	+0·80
Li'ang .. .. .	Aug. 18	188·613	18·44	17·12	+1·32	17·45	+0·99
Jiom-Bu-T'ang ..	Aug. 19	186·258	17·52	16·24	+1·28	16·60	+0·92
Dzong-Da .. .. .	Aug. 20	186·188	17·48	..	..	16·58	+0·90
San-Pa, or Ra-Ti ..	Aug. 23	187·994	18·19	16·82	+1·37	17·35	+0·84
Ta-So, or Ta-Shiu..	Aug. 24	188·816	18·52	17·10	+1·42	17·64	+0·88
400 feet below the summit of Ta-So- Shan .. .. .	Aug. 24	183·839	16·63	..	..	15·70	+0·93
Bat'ang .. .. .	{Aug. 28 9 A.M.}	196·895	21·99	20·75	+1·24	21·00	+0·99
Ditto .. .. .	{Aug. 28 3 P.M.}	196·48	21·80	20·51	+1·29	20·71	+1·09
Kong-Tze-Ka .. ..	Aug. 31	191·422	19·59	18·42	+1·17	18·72	+0·87
Tsa-Leh .. .. .	Sept. 4	189·970	18·98	17·75	+1·23	18·16	+0·82
A-Tun-Tzu .. .. .	Sept. 8	192·630	20·10	18·78	+1·32	19·12	+0·98
Sha-Lu .. .. .	Sept. 12	195·655	21·42	20·20	+1·22	20·51	+0·91
N'doh-Sung .. ..	Sept. 14	198·693	22·83	21·49	+1·34	21·81	+1·02
Chi-Tien .. .. .	Sept. 19	201·163	24·04	22·85	+1·19	23·22	+0·82
Ta-Li-Fu .. .. .	Oct. 2	200·296	23·603	22·50	+1·103	22·98	+0·623
Yung-Ch'ang-Fu ..	Oct. 13	202·256	24·58	23·50	+1·08	24·10	+0·48
T'eng-Yüeh-T'ing..	Oct. 19	202·316	24·60	23·64	+0·96	24·02	+0·58



TABLE II.

Date.	PLACE.	e.	f.	g.	h.	k.	l.	m.	n.
		Corrected Mean Barometer.	Corrected Mean Temperature.	Corrected Mean Barometer, Sea Level.	Corrected Mean Temperature, Sea Level.	Latitude.	Deduced Altitude.	Mr. Baber's Deduced Altitude.	Mr. Baber's Altitude re-computed, using the mean of Shanghai and Calcutta as Datum.
May 17	Pi-Hsien .. .. .	27·98	66	29·77	77	31° N.	English Ft. 1,766		
„ 19	Ngan-Tê-P'u .. .. .	27·97	66	29·77	77	„	1,776		
„ 19	Kuan-Hsien .. .. . Inn	27·41	66	29·76	77	„	2,347		
„ 21	Yu-Ch'i .. .. .	27·09	65	29·75	78	„	2,670		
„ 21	Summit of Pass .. .. .	25·13	62	29·75	78	„	4,808		
„ 21	Yin-Hsui-Wan .. .. .	26·60	64	29·75	78	„	3,187		
„ 22	Hsin-Wên-P'ing .. .. .	26·55	64	29·75	78	„	3,241		
„ 22	River level, 4½ m. beyond Hsin-Wên-P'ing .. .. .	26·42	64	29·75	78	„	3,382		
„ 22	River level, 8 m. beyond Hsin-Wên-P'ing .. .. .	26·20	64	29·75	78	„	3,619		
„ 23	T'ao-Kuan .. .. .	26·20	64	29·75	78	„	3,623		
„ 23	Wên-Ch'uan .. .. . Inn	25·94	63	29·75	78	„	3,899		
„ 23	Pan-Ch'iao .. .. .	25·60	63	29·75	78	„	4,275		
„ 24	Hsin-P'u-Kuan .. .. . Inn	25·49	63	29·75	78	32°	4,398		
„ 24	Ku-Oh'êng .. .. . Inn	25·05	62	29·75	78	„	4,888		
„ 25	Kan-Ch'i .. .. . Inn	25·11	62	29·74	78	„	4,821		
„ 25	Li-Fan-Fu .. .. . Inn	24·68	62	29·74	78	„	5,312		
„ 26	Ditto .. .. . River level	24·76	62	29·73	78	„	5,200		
„ 26	Mantzu Village .. .. .	22·81	58	29·73	78	„	7,475		
„ 27	Wên-Chêng .. .. .	25·23	63	29·73	78	„	4,670		
„ 28	Pai-Shui-Chai .. .. . River level	25·20	62	29·72	79	„	4,694		
„ 28	Ditto .. .. . Inn	25·18	62	29·72	79	„	4,717		
„ 28	Mao-Chou .. .. . River level	24·877	59	29·72	79	„	4,996		
„ 30	Wei-Mên-Kuan .. .. . Inn	24·80	59	29·71	79	„	5,123		

..	80	Ch'a-Erh-Ngai .. .. .	Inn	24·54	59	29·71	79	..	5,423
..	81	Ditto .. .. .	River level	24·82	59	29·70	79	..	5,091
..	81	Mu-Su-P'u .. .. .	River level	24·78	59	29·70	79	..	5,187
..	81	Ditto .. .. .	Inn	24·65	59	29·70	79	..	5,844
..	81	Ta-Ting .. .. .	Inn	24·15	59	29·70	79	..	5,869
June	1	Ditto .. .. .	Inn	24·21	59	29·70	79	..	5,798
..	1	Ditto .. .. .	River level	24·26	59	29·70	79	..	5,739
..	1	Village, 2½ m. beyond Ta-Ting .. .. .		23·21	58	29·70	79	..	6,988
..	1	Shui-Kou-Tzu .. .. .		23·25	58	29·70	79	..	6,940
..	1	Highest point on road, 2½ m. beyond Shui-Kou-Tzu .. .. .		22·41	57	29·70	79	..	7,975
..	1	Tieh-Chi-Ying .. .. .		22·52	57	29·70	79	..	7,837
..	1	Sha-Wan .. .. .	Inn	23·18	57	29·70	79	..	7,017
..	2	P'ing-Ting-Kuan .. .. .	Inn	22·84	55	29·70	79	..	7,436
..	2	Cheng-P'ing-Kuan .. .. .	Inn	22·53	55	29·70	79	..	7,807
..	3	Chen-Chiang-Kuan .. .. .	Inn	22·25	55	29·70	79	..	8,159
..	3	Lung-Tan-P'u .. .. .	Inn	21·77	50	29·70	79	..	8,729
..	4	Ngan-Hua-Kuan .. .. .	Inn	21·53	50	29·69	79	38°	9,032
..	4	Sung-P'an-T'ing .. .. .	Inn	21·19	50	29·69	79	..	9,470
..	6	Saddle, 2½ m. beyond Sung-P'an-T'ing .. .. .		20·33	50	29·68	79	..	10,636
..	6	At an Inn, 6¼ m. beyond Sung-P'an-T'ing .. .. .		20·48	55	29·68	79	..	10,484
..	6	Hsieh-Lan-Kuan .. .. .		20·17	52	29·68	79	..	10,881
..	6	Feng-Tung-Kuan .. .. .		19·43	48	29·68	79	..	11,884
..	7	Pass Hsieh-Shan .. .. .		18·55	46	29·67	79	..	13,148
..	7	Hung-Ngai-Kuan .. .. .		20·40	50	29·67	79	..	10,529
..	7	Cheng-Yuan .. .. .		21·56	55	29·67	79	..	9,021
..	8	Yueh-Erh-Ngai .. .. .		22·48	59	29·67	79	..	7,874
..	8	On the road, 6¼ m. beyond Yueh-Erh-Ngai .. .. .		23·54	60	29·67	79	..	6,574
..	8	Shih-Chia-P'u .. .. .		24·04	63	29·67	79	..	5,995
..	9	Hsiao-Ho-Ying .. .. .		24·65	65	29·67	79	..	5,297
..	9	Yeh T'ang .. .. .		25·49	67	29·67	79	..	4,339
..	10	Shui-Ching-P'u .. .. .		25·82	68	29·66	80	..	3,962
..	10	Shui-Chin-Chan .. .. .		26·08	68	29·66	80	..	3,675
..	11	Ko-Ta-Pa .. .. .		26·35	68	29·66	80	32°	3,391
..	12	T'i-Tzu-Yi .. .. .		26·45	68	29·66	80	..	3283

TABLE II.—continued.

Date.	PLACE.	e.	f.	g.	A.	k.	l.	m.	n.
		Corrected Mean Barometer.	Corrected Mean Temperature.	Corrected Mean Barometer, Sea Level.	Corrected Mean Temperature, Sea Level.	Latitude.	Deducted Altitude.	Mr. Baber's deduced Altitude.	Mr. Baber's Altitude recalculated, using the Mean of Shanghai and Calcutta as Datum.
June 12	Tieh-Lung-Kuan ..	26.59	68	29.65	80	32°	English Ft. 8150		
" 12	Lung-An-Fu ..	26.63	73	29.65	80	"	3094		
" 13	Ku-Ch'eng ..	26.82	73	29.65	80	"	2890		
" 13	Kuang-Yi ..	26.90	75	29.65	80	"	2811		
" 14	Hei-Shui-Kou ..	27.00	77	29.64	80	"	2700		
" 14	Chiu-Chou ..	27.13	77	29.64	80	"	2560		
" 15	Hsiang-Ngai-Pa ..	27.27	77	29.64	80	"	2412		
" 15	P'ing-I-P'u ..	27.22	77	29.64	80	"	2464		
" 16	Chiang-Yu-Hsien ..	27.46	77	29.64	80	"	2211		
" 16	Chung-Pa-Ch'ang ..	27.59	77	29.64	80	"	2064		
" 17	Chang-Ming-Hsien ..	27.70	77	29.63	80	"	1949		
" 17	In boat ..	27.76	77	29.63	80	"	1887		
" 17	Mien-Chou ..	27.73	77	29.63	80	31°	1918		
" 18	Hsin P'u ..	27.57	77	29.62	81	"	2078		
" 18	Lo-Chiang-Hsien ..	27.61	77	29.62	81	"	2033		
" 19	Té-Yang-Hsien ..	27.66	77	29.62	81	"	1983		
July 10	Ch'eng-Yu ..	27.66	77	29.62	81	"	1504		
" 10	Tsu-Ch'iao ..	28.07	81	29.63	83	"	1575		
" 10	Shuang-Liu-Hsien ..	28.00	81	29.63	83	"	1647		
" 11	Hua-Ch'iao-Tsu ..	28.11	81	29.63	83	"	1532		
" 11	Hsin-Chin-Hsien ..	28.05	81	29.63	83	"	1595		
" 12	Yang-Chin-Ch'ang ..	28.06	81	29.63	83	"	1685		
" 12	Tea House, 8½ m. beyond Yang-Chia-Ch'ang ..	27.91	81	29.63	83	"	1740		

12	Ch'ung-Chou	..	..	..	28-01	81	29-63	83	30°	1687
13	Ta-T'ang-P'u	..	..	..	27-34	75	29-63	83	"	1681
14	Fai-Chang-Yi	..	..	..	27-71	75	29-63	83	"	1920
14	Ming-Shan-Hsien	..	..	..	27-96	75	29-63	83	"	1660
14	Chin-Chi-Kuan or Golden Pheasant Pass	..	..	..	27-60	75	29-63	83	"	2036
14	Ya-Chou-Fu	..	..	..	27-96	75	29-63	83	"	1671
15	Tzu-Shih-Li	..	..	..	27-63	75	29-63	83	"	2004
15	Kuan-Yin-P'u	..	..	..	27-17	74	29-63	88	"	2484
16	Fei-Lung-Kuan	..	..	Summit	26-15	73	29-63	83	"	3588
16	Shih-Chia-Ch'iao	..	..	..	27-45	75	29-63	83	"	2190
16	Yung-Ching-Hsien	..	..	..	27-35	75	29-63	83	"	2299
17	Ching-K'ou-Chan	..	..	..	27-00	74	29-64	84	"	2670
17	Huang-Ni-P'u	..	..	..	26-03	73	29-64	84	"	3725
18	About the last bamboo, 1½ m. beyond Huang-Ni-P'u	..	..	..	25-66	73	29-64	84	"	4132
18	Where stream is left, 1½ m. beyond Huang-Ni-P'u	..	..	..	25-31	73	29-64	84	"	4545
18	Hsiao-Kuan	..	..	..	25-07	73	29-64	84	"	4809
18	Cross river, 1 m. beyond Hsiao-Kuan	..	..	..	24-80	73	29-64	84	"	5123
18	Ta-Kuan	..	..	..	24-25	71	29-64	84	"	5754
18	At a village, 2½ m. beyond Ta-Kuan	..	..	..	23-20	65	29-64	84	"	6973
18	T'ai-Hsiang-Ling-Kuan	..	..	Summit	21-30	60	29-64	84	"	9366
18	Wild Bamboo, Holly, First cultivation of tobacco—at village, 1½ m. beyond T'ai-Hsiang-Ling-Kuan	..	..	..	22-48	60	29-64	84	"	7840
18	First Indian corn—at village, 2½ m. beyond T'ai-Hsiang-Ling-Kuan	..	..	..	22-99	60	29-64	84	"	7187
18	Ch'ing-Ch'i-Hsien	..	..	..	24-48	71	29-64	84	"	5478
18	½ m. beyond Ch'ing-Ch'i-Hsien	..	..	..	24-76	71	29-64	84	"	5156
19	2½ m. beyond Ch'ing-Ch'i-Hsien	..	..	..	24-18	71	29-64	84	"	5842
19	4 m. beyond Ch'ing-Ch'i-Hsien	..	..	..	24-72	71	29-64	84	"	5202
19	Fu-Hsing-Ch'ang	..	..	..	25-90	73	29-64	84	"	3873
20	Pan-Chin-Ngai	..	..	..	25-54	73	29-64	84	"	4279
20	I-T'ou-Ch'ang	..	..	..	24-99	71	29-64	84	"	4882
21	Kao-Ch'iao	..	..	..	24-04	71	29-64	84	"	6002
21	San-Ch'iao-Ch'eng	..	..	..	24-19	71	29-64	84	"	5830
21	Village with bamboo, ¾ m. beyond San-Ch'iao-Ch'eng	..	..	..	24-17	71	29-64	84	"	5858

TABLE II.—continued.

Date.	Place.	e.	f.	g.	h.	i.	m.	n.
		Corrected Mean Barometer.	Corrected Mean Temperature.	Corrected Mean Barometer, Sea Level.	Corrected Mean Temperature, Sea Level.	Deduced Altitude.	Mr. Baber's Deduced Altitude.	Mr. Baber's Altitude re-calculated, using the mean of Shanghai and Calcutta as Datum.
July 21	Village, 24 m. beyond San-Ch'iao-Ch'èng	23.51	68	29.64	84	English Ft. 6629		
" 21	Village, 43 m. beyond San-Ch'iao-Ch'èng	22.50	64	29.64	84	7,850		
" 21	Fei-Yueh-Ling, or Wu-Yai-Ling Pass	21.60	60	29.64	84	9,022		
" 21	3 m. beyond Fei-Yueh-Ling	22.34	64	29.64	84	8,055		
" 21	3 m. beyond Fei-Yueh-Ling	22.60	64	29.64	84	7,750		
" 21	Hua-Lin-P'ing	23.15	68	29.64	84	7,073		
" 22	4 m. beyond Hua-Lin-P'ing	23.59	68	29.64	84	6,805		
" 22	3 m. beyond Hua-Lin-P'ing	23.94	68	29.64	84	6,107		
" 22	1 m. beyond Hua-Lin-P'ing	23.95	68	29.64	84	6,095		
" 22	14 m. beyond Hua-Lin-P'ing	23.92	68	29.64	84	6,132		
" 22	14 m. beyond Hua-Lin-P'ing	24.49	71	29.64	84	5,472		
" 22	2 m. beyond Hua-Lin-P'ing	24.80	71	29.64	84	5,107		
" 22	34 m. beyond Hua-Lin-P'ing—First rice cultivation	24.91	71	29.64	84	4,976		
" 22	Léng-Chi	25.23	73	29.64	84	4,633		
" 23	Lu-Ying-Ch'iao	25.24	74	29.65	84	4,640		
" 24	Hsiao-P'eng-Pa	25.24	76	29.65	84	4,653		
" 24	We-Sai-Kou	25.00	76	29.65	84	4,933		
" 25	L'iu-Yang	23.58	64	29.65	84	6,570		
" 25	Ta-Chien-Lu					8,846		
Aug. 7	Cheh-Toh	20.25	58	29.69	85	10,838		
" 8	Cheh-Toh-Shan	17.78	56	29.69	85	14,516		
" 8	Hsin-T'ien-Chan, or Ti-Zu	18.53	56	29.69	85	13,335		
" 8	14 m. beyond Hsin-T'ien-Chan—First cultivation	18.72	56	29.69	85	13,131		

8	An-Niang	Summit	19·13	55	29·69	85	12,418
9	Ngoloh	Summit	19·44	59	29·70	84	12,027
11	3½ m. beyond Ngoloh—End of cultivation	Summit	19·22	58	29·70	84	12,377
11	4¼ m. beyond Ngoloh	Summit	18·87	56	29·70	84	12,903
11	La-Tza	Summit	18·73	56	29·70	84	13,040
11	Ka-Ji-La	Summit	17·80	54	29·70	84	14,454
11	Do-Kü-La-Tza	Summit	17·71	54	29·70	84	14,597
11	Wu-Rum-Shih	Summit	19·43	60	29·70	84	12,048
12	Ker-Rim-Bu, or Pa-Ko-Lo (octagon tower)	Summit	20·62	65	29·71	84	10,435
12	Nia-Chü-Ka, or Ho-K'ou, the Ya-Lung River	Summit	21·51	65	29·71	84	9,222
13	Ma-Geh-Chung	Summit	19·49	60	29·71	84	11,971
14	2½ m. beyond Ma-Geh-Chung	Summit	18·92	56	29·71	83	12,815
14	4¼ m. beyond Ma-Geh-Chung—Above the pines and oaks	Summit	17·88	55	29·71	83	14,418
14	Ra-Ma-La	Summit	17·52	54	29·71	83	14,915
14	La-Ni-Ba	Summit	17·90	56	29·71	83	14,335
14	Ra-Ma-La	Second summit	17·39	54	29·71	83	15,110
14	Li'ang-Ngoloh	Summit	19·16	59	29·71	83	12,451
16	Niu-Chang	Summit	18·12	50	29·72	83	13,900
16	Tang-Gola	Summit	17·93	45	29·72	83	14,109
16	Zou-Gunda	Summit	18·55	50	29·72	83	13,235
16	Deh-Re-La	Summit	17·63	45	29·72	83	14,584
16	On a spur, 1½ m. beyond Deh-Re-La	Summit	17·86	55	29·72	83	14,455
16	In the valley, 3¼ m. beyond Deh-Re-La	Summit	18·07	50	29·72	83	13,977
16	Wang-Gi-La	Summit	17·03	45	29·72	83	15,558
16	Ho-Chü-Ka	Summit	18·54	50	29·72	83	13,250
17	5½ m. beyond Ho-Chü-Ka	Summit	18·46	50	29·72	83	13,392
17	Shie-Gi-La	Summit	17·73	45	29·72	83	14,425
17	Li'ang	Summit	18·52	50	29·72	83	13,280
19	Jiom-Bu-T'ang	Summit	17·55	45	29·73	83	14,718
20	Nga-Ra-La-Ka	At the Pond	17·07	45	29·73	83	15,499
20	Nga-Ra-La-Ka	Summit	16·91	45	29·73	83	15,753
20	Dzong-Da	Summit	17·49	50	29·73	83	14,896
20	Summit of small ridge	Summit	17·50	50	29·73	83	14,881
20	La-Ma-Ya	Summit	18·88	55	29·73	83	12,826



TABLE II.—continued.

Date.	PLACE.	e.	f.	g.	A.	k.	l.	m.	n.
		Corrected Mean Barometer.	Corrected Mean Temperature.	Corrected Mean Barometer, Sea Level.	Corrected Mean Temperature, Sea Level.	Latitude.	Deduced Altitude.	Mr. Baber's Deduced Altitude.	Mr. Baber's Altitude re-calculated, using the Mean of Shanghai and Calcutta as Datum.
Aug. 21	Ye-La-Ka .. .. . Summit	17·96	51	29·73	83	30°	English Ft. 14,246		
„ 21	Dzeh-Dzang-Chü .. .. . River	18·65	55	29·73	83	„	13,162		
„ 21	Mang-Ga-La .. .. . Summit	18·47	55	29·73	83	„	13,412		
„ 21	Nen-Chü .. .. . River	18·78	55	29·73	83	„	12,811		
„ 21	Nen-Da .. .. . Village	18·67	55	29·73	83	„	13,133		
„ 22	Ra-Ti or San-Pa .. .. .	18·08	50	29·74	83	„	13,794		
„ 23	Rung-Se-La, or San-Pa-Shan .. .. . Summit	16·91	45	29·74	83	„	15,769		
„ 23	Half-way down .. .. .	17·43	50	29·74	83	„	15,087		
„ 23	Bottom of Mount .. .. .	18·74	45·5	29·74	83	„	12,886		
„ 23	Ta-Shiu, or Ta-So .. .. . Village	18·43	45·5	29·74	82	„	13,347		
„ 24	2½ m. beyond Ta-So .. .. .	17·42	44	29·74	82	„	14,902		
„ 24	At Pond, 400 feet below summit .. .. .	16·63	40	29·74	82	„	16,129		
„ 24	Ta-So-Shan, or J'rah-Ka-La .. .. . Summit	16·37	40	29·74	82	„	16,568		
„ 24	¼ m. beyond summit .. .. .	16·53	42	29·74	82	„	16,336		
„ 24	2½ m. beyond summit .. .. .	17·02	44	29·74	82	„	15,555		
„ 24	Pun-Jang-Mu, or Pung-Cha-Mu .. .. .	18·57	47	29·74	82	„	13,158		
„ 25	Ba-Jung-Shih or Hsiao-Pa-Chung .. .. .	20·40	60	29·74	82	„	10,691		
„ 25	Bat'ang .. .. .	..	..	..	..	„	8,546		
„ 29	Ch'a-Shu-Shan, or Cha-Kou Pass .. .. .	21·40	60	29·75	82	„	9,888		
„ 29	Chu-Ba-Lang .. .. .	22·34	65	29·75	82	„	8,165		
„ 30	Gue-Ra .. .. .	22·01	70	29·76	82	„	8,660		
„ 30	8½ m. beyond Gue-Ra—Upper limit of walnuts .. .. .	20·84	50	29·76	82	„	9,971		
„ 30	4 m. beyond Gue-Ra—Lower limit of oak .. .. .	20·53	50	29·76	82	„	10,392		

..	30	4½ m. beyond Gue-Ra—Lower limit of pines .. ..	20·33	50	29·76	82	29°	10,670
..	30	Kong-Tze-La-Ka .. .. . Summit	19·81	40	29·76	82	..	11,972
..	30	Kong-Tze-Ka .. .. . Village	19·51	40	29·76	82	..	11,675
..	31	River level, 2½ m. beyond Kong-Tze-Ka .. ..	19·88	57	29·76	82	..	11,462
..	31	Mûng-M'heh, or Chung-Mong-Li .. .. .	19·36	55	29·76	82	..	12,189
..	31	Jang-Ba, or Pa-Mu-T'ang .. .. .	18·85	50	29·76	82	..	12,798
..	31	Highest Point on road, 4½ m. beyond Jang-Ba ..	17·88	55	29·76	82	..	14,376
..	31	Kia-Ne-Tyin .. .. .	18·68	55	29·76	82	..	13,135
Sept.	1	Dzung-Ngyu, improperly called Dzongun .. ..	20·28	55	29·76	82	..	10,792
..	2	12½ m. beyond Boah-Tsa .. .. .	20·94	55	29·76	81	..	9,885
..	2	13½ m. beyond Boah-Tsa .. .. .	20·63	56	29·76	81	..	10,887
..	2	Nieh-Ma-Sa .. .. .	20·28	60	29·76	81	..	10,868
..	3	Ma-Ra .. .. .	19·77	54	29·77	81	..	11,505
..	3	Tsa-Leh .. .. .	18·883	47	29·77	81	..	12,690
..	4	8½ m. beyond Tsa-Leh—Rhododendrons commence ..	18·09	55	29·77	81	..	14,109
..	4	Zigzag commences, end of oaks and pines .. ..	17·68	48	29·77	81	..	14,651
..	4	Tsa-Leh-La-Ka .. .. . Summit	16·95	45	29·77	81	..	15,788
..	4	End of Zigzag .. .. .	17·50	48	29·77	81	..	14,935
..	4	1½ m. beyond Tsa-Leh-La-Ka—Gooseberries and Currants .. .. .	17·78	50	29·77	81	..	14,523
..	4	Lûng-Zûng-Nang .. .. .	18·92	50	29·77	81	..	12,684
..	5	1 m. beyond Lûng-Zûng-Nang—Bamboos .. ..	19·32	52	29·77	81	..	12,207
..	5	6½ m. beyond Lûng-Zûng-Nang—Passion Flowers ..	20·38	52	29·77	81	..	10,698
..	5	At a bridge, 9 m. beyond Lûng-Zûng-Nang .. ..	21·00	55	29·77	81	..	9,988
..	5	Dong .. .. .	21·60	55	29·77	81	28°	9,000
..	5	Jo-La-Ka .. .. . Summit	19·14	52	29·77	81	..	12,389
..	5	A-Tun-Tzû .. .. .	20·096	52	29·77	81	..	11,029
..	9	Pa-Ma-La .. .. . Summit	17·85	48	29·79	81	..	14,307
..	9	Mien-Chu-La .. .. . Summit	17·90	48	29·79	81	..	14,227
..	9	Shwo-La .. .. . Summit	17·85	48	29·79	81	..	14,307
..	9	Deung-Do-Lin-Sstû .. .. .	21·37	55	29·79	81	..	9,335
..	11	Sha-Lu .. .. .	21·48	62	29·80	80	..	9,287
..	13	4½ m. beyond Sha-Lu—Rhododendrons .. .. .	19·34	51	29·80	80	..	11,445
..	18	At foot of Zigzag—Bamboos noticed .. .. .	19·02	51	29·80	80	..	11,924

TABLE II.—continued.

Date.	PLACE.	c.	f.	g.	A.	h.	i.	m.	n.
		Corrected Mean Barometer.	Corrected Mean Temperature.	Corrected Mean Barometer, Sea Level.	Corrected Mean Temperature, Sea Level.	Latitude.	Deduced Altitude.	Mr. Baber's Deduced Altitude.	Mr. Baber's Altitude re-calculated, using the mean of Shanghai and Ceylon as Datum.
							English Ft.	English Ft.	English Ft.
Sept. 13	Jing-Go-La .. .. .	18.27	50	29.80	80	28°	13,689		
" 13	2½ m. beyond Jing-Go-La—Limit of bamboo .. .. .	19.49	52	29.80	80	"	11,907		
" 13	5½ m. beyond Jing-Go-La—A wood-cutter's hut .. .. .	20.53	54	29.80	80	"	10,475		
" 13	Ka-Ri—Limit of true oak .. .. .	21.19	57	29.80	80	"	9,610		
" 14	3¼ m. beyond Ka-Ri—River level .. .. .	22.28	63	29.80	80	"	8,226		
" 14	7¼ m. beyond Ka-Ri—Passion Flowers .. .. .	22.61	63	29.80	80	"	7,806		
" 14	N'doh-Sung .. .. .	22.92	63	29.80	80	"	7,417		
" 15	Near some houses, 6¼ m. beyond N'doh-Sung .. .. .	23.08	67	29.80	80	"	7,261		
" 15	Se-Ka-Tying .. .. .	23.23	67	29.80	80	"	7,075		
" 15	Ron-Sha .. .. .	23.39	67	29.80	80	"	6,916		
" 16	3¼ m. beyond Ron-Sha .. .. .	23.12	60	29.81	80	"	8,436		
" 16	Village, ¼ m. beyond Ron-Sha .. .. .	21.52	55	29.81	80	"	9,157		
" 16	6 m. beyond Ron-Sha—Road enters dense forest, long pendants of moss—Rhododendrons .. .. .	20.58	52	29.81	80	"	10,381		
" 16	6¼ m. beyond Ron-Sha—Strawberries, currants, small wild bamboo—Zigzag commences .. .. .	19.65	50	29.81	80	"	11,657		
" 16	Ráng-Geh-La-Ka .. .. .	19.32	50	29.81	80	27°	12,134		
" 16	Junction of rivers 100 feet above river .. .. .	23.21	65	29.81	80	"	7,117		
" 16	La-Pu, or Ta-Chio .. .. .	23.41	65	29.81	80	"	6,777		
" 17	Jie-Du-Ti, or Chi-Dráng .. .. .	23.61	65	29.82	80	"	6,621		
" 17	Wai-Ta-Chen, or Lu-Jiong .. .. .	23.59	65	29.82	80	"	6,647		
" 18	At a bridge, 6¼ m. beyond Lu-Jiong .. .. .	23.85	65	29.82	79	"	6,349		
" 18	Summit of spur, 7 m. beyond Lu-Jiong .. .. .	23.55	65	29.82	79	"	6,785		

	18	Summit of another spur, 9 $\frac{1}{2}$ m. beyond Lu-Jiong..	23-42	65	29-82	79		6,862		
	18	Ku-Den, or Chi-Tien .. .. .	23-99	63	29-83	79		6,200		
	20	Tz'u-Kua .. .. .	23-62	67	29-85	79		6,645		
	21	San-Hsien-Ku .. .. .	23-88	67	29-85	79		6,390		
	21	Shih-Ku .. .. .	24-22	67	29-85	79		5,952		
	22	Chin-Ku-P'u .. .. . Summit	22-18	60	29-85	79		8,391		
	22	Water-parting, 2 $\frac{1}{2}$ m. beyond Chin-Ku-P'u .. ..	22-53	60	29-85	79		7,946		
	22	Chiu-Ho .. .. .	22-83	60	29-85	79		7,565		
	23	Chien-Ch'uan-Chou .. .. .	22-95	65	29-87	78	26°	7,489		
	24	I-Yang-T'ang .. .. .	21-92	55	29-87	78		8,681		
	24	Summit, $\frac{1}{2}$ m. beyond I-Yang-T'ang .. .. .	21-79	55	29-87	78		8,849		
	24	Niu-Chieh .. .. .	23-23	62	29-87	78		7,113		
	25	Lang-Ch'ung Hsien .. .. .	23-37	62	29-87	78		6,970		
	26	Yu-So .. .. .	23-53	62	29-88	78		6,758		
	26	T'eng-Ch'uan Chou .. .. .	23-65	58	29-88	78		6,573		
	27	Ta-Li-Fu .. .. .	23-588	57	29-91	77		6,666	7090	7119
Oct.	4	Hsia-Kuan .. .. .	23-71	57	29-94	76		6,544	7020	
	5	Below Waterfall at bridge—Walnuts commence ..	24-40	59	29-94	76		5,750		
	6	Ho-Chiang-P'u .. .. .	24-89	59	29-95	76		5,196	5150	5140
	6	Stone bridge across stream, 1 $\frac{1}{2}$ m. beyond Ho- Chiang-P'u .. .. .	25-30	55	29-95	76		4,757		
	6	Yang-Pi .. .. .	24-80	59	29-95	76		5,299	5200	
	6	Ch'ing-Shui-Shao .. .. . Summit	22-35	55	29-95	76		8,233	8090	
	7	T'ai-P'ing-P'u .. .. .	23-65	57	29-95	76		6,624	6710	
	7	Top of a spur near a village .. .. .	22-89	56	29-95	76		7,539		
	7	Niu-P'ing-P'u .. .. .	24-38	59	29-95	76		5,783		
	7	Shun-Pi-Ho, bridge across .. .. .	24-86	60	29-95	76		5,238	5290	5253
	7	Huang-Lien-P'u .. .. .	24-71	60	29-95	76		5,420	5270	
	8	$\frac{1}{2}$ m. east of T'ien-Ching-P'u .. .. .	22-37	55	29-96	76		8,189		
	8	T'ien-Ching-P'u .. .. .	22-40	55	29-96	76	25°	8,148	8410	8505
	8	A hut $\frac{1}{2}$ m. east of Mei-Hua-P'u .. .. .	23-35	55	29-96	76		6,977		
	8	Half-way between Mei-Hua-P'u and P'ing-Man-Shao	23-44	55	29-96	76		6,868		
	8	Ch'ü-Tung .. .. .	24-63	65	29-96	76		5,555	5520	5480
	9	Summit of spur 3 $\frac{1}{2}$ m. from Ch'ü-Tung .. .. .	23-83	60	29-97	75		6,459		

TABLE II.—continued.

Date.	PLACE.	e. Corrected Mean Barometer.	f. Cor- rected Mean Tempe- rature.	g. Corrected Mean Barometer, Sea Level.	h. Cor- rected Mean Tempe- rature, Sea Level.	k. Latitude.	l. Deduced Altitude.	m. Mr. Baber's Deduced Altitude.	n. Mr. Baber's Altitude re-calculated, using the Mean of Shanghai and Calcutta as Datum.
							English Ft.	English Ft.	English Ft.
Oct. 9	At bottom of spur, half-way between Tieh-Ch'ang and Hsiao-Hua-Ch'iao .. .. .	24·23	60	29·97	75	25°	5986		
„ 9	Summit—Hua-Ch'iao range .. .. .	22·30	50	29·97	75	„	8229		
„ 9	Sha-Yang, or Shia-Yang .. .. .	25·03	70	29·97	75	„	5145	5300	5248
„ 10	Summit of ridge east of the Lan-Ts'ang-Chiang ..	24·75	65	29·98	75	„	5432		
„ 10	Bridge across Lan-Ts'ang-Chiang, or Mekong River .. .. .	26·10	70	29·98	75	„	3953		
„ 10	Temple of Shui-Yin-Ssu, 2 miles from bridge ..	24·01	62	29·98	75	„	6270		
„ 10	Shui-Chai .. .. .	23·75	61	29·98	75	„	6569	6700	
„ 10	1 m. beyond Shui-Chai .. .. .	23·35	60	29·98	75	„	7042		
„ 10	2 m. beyond Shui-Chai .. .. .	23·09	59	29·98	75	„	7349		
„ 10	Ta-Li-Shao .. .. .	23·03	58	29·98	75	„	7412		
„ 11	T'ien-Ching-P'u .. .. . Summit	22·65	50	29·98	75	„	7795	8166	8198
„ 11	Pan-Ch'iao .. .. .	24·54	66	29·98	75	„	5692		
„ 11	Yung-Ch'ang-Fu .. .. .	24·582	66	29·98	75	„	5645	5880	5819
„ 14	Summit, 8 m. beyond Yung-Ch'ang-Fu .. .. .	22·71	50	30·00	74	„	7733		
„ 14	Hun-Shui-T'ang .. .. .	24·36	62	30·00	74	„	5874		
„ 14	P'u-P'iao .. .. .	25·42	68	30·00	74	„	4711	4550	
„ 14	Fang-Ma-Ch'ang .. .. .	25·23	66	30·00	74	„	4910		
„ 15	Lu-Chiang-Pa, village on right bank of the Lu- Chiang or Salwen River .. .. .	27·88	73	30·00	74	„	2620	2670	
„ 15	Ho-Mu-Shu .. .. .	24·73	66	30·00	74	„	5486	5560	
„ 16	1 m. beyond Ho-Mu-Shu .. .. .	23·89	64	30·01	74	„	6453		

16	Summit of spur	23.11	60	30-01	74	7358	
16	On a ridge, at a point where a valley runs down on each side	23.44	62	30-01	74	6972	
16	Hsiang-Po	23.48	62	30-01	74	6924	7280
16	½ mile west of Hsiang-Po, commence ascent	23.26	61	30-01	74	7181	
16	Half-way between Hsiang-Po and highest point of pass	23.30	61	30-01	74	7132	
16	Highest point of pass, Kao-Li-Kung Range	23.45	56	30-01	74	8129	8702
16	End of short descent	23.76	56	30-01	74	7742	
16	½ mile west of last point	22.67	56	30-01	74	7853	
16	Commencement of descent	22.68	56	30-01	74	7904	
16	Tai-P'ing-P'u...	23.96	60	30-01	74	7598	7780
16	Lang-Chiang or Shuay-Li River. Bridge across	25.60	66	30-01	74	4802	4800
17	Kan-Lan-Chan	25.13	66	30-01	74	5029	4810
17	Half-way between Kan-Lan-Chan and Kan-Lu-Ssu	23.66	62	30-01	74	6708	
17	½ mile east of Kan-Lu-Ssu	23.84	63	30-01	74	6501	
17	Half-way between Kan-Lu-Ssu and Ch'in-Ts'ai-P'u	23.26	61	30-01	74	7181	
17	Ch'in-Ts'ai-T'ang, or Ch'in-Ts'ai-P'u	23.35	62	30-01	74	7082	7260
17	Urh-T'ai-P'o	22.99	60	30-01	74	7800	
18	T'eng-Yüeh-T'ing, or Momein	24.714	63	30-01	74	5489	5493
20	7 miles from T'eng-Yüeh-T'ing	24.52	63	30-03	73	5742	
20	Hsiao-Ho-T'i	25.92	65	30-08	73	4178	
20	On the Road, 4 miles East of Nan-Tien	26.19	65	30-03	73	3864	
20	Che-Tao-Ch'eng	26.41	65	30-03	73	3625	
21	Muangla, or Kan-Ngai	27.05	65	30-04	72	2957	
22	Chan-Ya, or Sanda	27.07	65	30-05	72	2945	
23	Man-Yün, or Manwynne	27.40	71	30-07	72	2647	24
29	Pong-Si	26.49	65	30-08	71	3584	
30	On the Taping Chung, or River of T'eng-Yüeh, at confluence of Nampoung River	28.83	65	30-08	70	1198	
31	Ma-Mou or Sicaow	29.60	75	30-09	70	462.5	
31	Bhamo	..	..	..	..	430	

TABLE III.

NAME OF PLACE.	Dates and Interval.	Mean Corrected Barometer.	Mean Thermometer.	Approximate Latitude.	Mean Barometer Shanghai, in same interval.	Mean Thermometer Shanghai, in same interval.	Altitude deduced from Shanghai as Datum.	Mean Barometer Calcutta, in same interval.	Mean Thermometer Calcutta, in same interval.	Altitude deduced from Calcutta as Datum.	Mean of Results.
				N.			Eng. Ft.			Eng. Ft.	Eng. Ft.
Ch'eng-Tu ..	May 10 to 18	28·227	67·43	31°	29·92	69·	1647·	29·67	86·	1386·	} 1504·
Ditto ..	June 21 to July 9	28·078	77·7	,,	29·63	80·5	1554·	29·51	84·	1429·	
Ta-Chien-Lu ..	July 25 to Aug. 7	22·092	59·	30°	29·775	87·	8446·	29·571	83·	8247·	8346·
Bat'ang .. ..	Nov. 1876	21·964	40·	30°	30·86	56·	8754·	29·97	74·8	8519·	} 8546·4
Ditto .. .	Dec. 1876	22·174	29·	,,	30·47	46·	8397·	30·04	68·0	8150·	
Ditto .. ..	Jan. 1877	22·024	31·	,,	30·40	41·	8508·	30·00	67·7	8323·	
Ditto .. ..	Feb. 1877	21·854	33·	,,	30·32	42·	8735·	29·94	73·0	8597·	
Ditto .. ..	June 1877	21·904	66·	,,	29·72	76·	8628·	28·55	85·0	8514·	
Ditto .. ..	July 1877	21·884	69·	,,	29·71	85·	8827·	29·54	83·5	8605·	
Bhamo .. ..	Oct. 2 to Oct 6	29·47	73·5	24°	30·085	70·5	531·9	29·78	82·	277·7	429·8





## ITINERARY.

18th May, 1877.—*Ch'êng-Tu* to *Pi-Hsien*.—*Ch'êng-Tu*, cap. of *Sü-Ch'uan*, altitude 1504 feet. Great many open spaces and gardens near west gate. At 3·8 m., cross stream, 3 yards wide, flowing n.e. Village. Soil, a grey, clayey sandstone. 5·8 m., cross small stream, flowing s.w. 6·4 m., village. 9·1 m., cross stream, 3 yards wide, flowing n.e.; bridge, with pilo\* at each end. 9·6 m., hamlet, with pilo. Stream on left of road, 3 yards wide, flowing s.w. Road on right of stream, flowing s.e., to 10·6 m., suburb of *Pi-Hsien*. 11·2 m., *Pi-Hsien* city; altitude 1766 feet.

19th.—*Pi-Hsien* to *Kuan-Hsien*.—Stone bridge at n.w. gate of *Pi-Hsien*, over river 10 yards wide, flowing n.e. from n.w., on left of road, to 4 m., village. 4·6 m., town, not walled. 6·1 m., town of *Ngan-Tê-P'u*; altitude 1776 feet. 8·1 m., cross stream, flowing n.e. 8·2 m., village. 8·3 m., cross stream flowing n.e. 10·2 m., town, with many pilos. Crops nearly all wheat and hemp, some rice, and a very little oats; also the red flower *Cheauze* or *Cho-Ma*. 12·3 m., river on right of road flowing n.e., from n.w. to 13·4 m., where road crosses river 60 yards wide by wooden bridge of 9 spans on trestles, framework of roof. 13·9 m., town. 14·1 m., river on right of road flowing n.e. from n.w., to 14·8 m., where road crosses it by stone bridge; tea-house built over stream. 17·6 m., stone bridge of 2 arches over stream 10 yards wide, flowing e.n.e. 18·1 m., great gate outside suburb of *Kuan-Hsien*. 18·4 m., cross river flowing n.e. 18·6 m., gate in s.e. wall of *Kuan-Hsien*. Crops, hemp and wheat, not much rice, and very little oats; rape harvest; planting rice. Road from *Ch'êng-Tu* to *Kuan-Hsien*, over a perfectly flat plain the whole way, with rapid watercourses on both sides. Scarcely any paving on road, which is 15 feet wide.

21st.—*Kuan-Hsien* to *Yin-Hsiu-Wan*, ascending *Hsi-Ho* on left (e.) bank.—At *Kuan-Hsien*, alt. 2347 feet, valley of river 1060 yards broad; suspension-bridge across part of channel, only in the dry weather. 3 m., village; road to n.e. 3·4 m., cross stream from n.e. Red sandstone hills on opposite side of river rising 1200 feet above the valley. 4 m., large village. 4·3 m., cross river from n.e. by a ferry. Sandstone mountains to n.e. 5·6 m., stream enters river from w. 6·5 m., seams of coal. 7·3 m., cross stream from n.n.e. by covered bridge. 8·1 m., stream from n. enters river; ascend stream on left (e.) bank to 9·2 m., and cross by roofed bridge. Limestone, strata vertical, striking n. and s. 9·5 m., town of *Yu-Ch'i*; altitude 2670 feet. Ascend right (w.) bank of stream to summit of pass. 11·5 m., summit, altitude 4808 feet; temple and tea-house. Descend stream, flowing w.n.w., on right (n.e.) bank, to near its mouth, 13·9 m., where the *Hsi-Ho* and a large tributary entering from the w. are each crossed by a suspension-bridge. 15·3 m., town of *Yin-Hsiu-Wan*, at mouth of stream from e., crossed by covered bridge; altitude 3187 feet.

22nd.—*Yin-Hsiu-Wan* to *Tao-Kuan*, ascending *Hsi-Ho* on left (e.) bank.—3 m., cross stream from e. 1·5 m., village. Hills on both sides of river rise from 3000 to 4000 feet above valley. 2·3 m., stream enters river from w. 3·3 m., villages on both banks of river. 3·9 m., stream enters river from w.; hill between road and river. 4·1 m., cross stream from s.e. by covered wooden bridge. Villages on both sides of stream. 5·1 m., cross stream from e. 6·3 m., pilo. 7 m., town of *Hsin-Wên-P'ing*; altitude 3241 feet. 7·5 m., stream enters river from w. 8·2 m., cross stream from e. 9 m., stream enters river from w. 9·7 m., cross stream from s.e. 10·4 m., village; cross stream from s.e. 10·6 m., village. 11·7 m., altitude of river 3382 feet. 12·3 m., cross stream from s.e. 13·5 m., stream enters river

\* A "Pilo" is a triumphal arch.

from w.; valley very narrow; hills very steep; no cultivation. 14.5 m., cross stream from s.e. 14.9 m., altitude of river 3619 feet. Bears and boars in the mountains. 15.4 m., town of T'ao-Kuan, altitude 3623 feet. From Yin-Hsiu-Wan to T'ao-Kuan, rocks, all limestone. A green stone very frequent on road, high above river; could not see this stone on the rocks. At one place, low down near the river, there was a deposit of rounded, water-worn pebbles and boulders, in clay and sand, but well above the river-bank. The river was possibly at a higher level in former days.

23rd.—T'ao-Kuan to Pan-Ch'iao, ascending Hsi-Ho, on left (e.) bank.—3 m., cross junction of two streams from n.e. and e.s.e. 1.5 m., a wild gorge, with steep and precipitous slopes on both sides. Road cut out of sides of hills and precipices, and often propped up from below. Suspension-bridge 60 yards span, 5 ropes on each side, vertical battens, 1 yard apart, drop about 10 feet. 1.7 m., very narrow valley; hills very precipitous, running up 3000 feet above river. 2.8 m., village; stream enters river from s.w. Suspension-bridge, 60 yards span, 5 ropes on each side. 4.3 m., stream enters river from n.w. 5.3 m., cross stream from s.e. Cultivated ground in bends of river, where there are a few acres of flat land. 6.3 m., on right bank of river, a former Mantzu village; the first seen. 6.7 m., pagoda; stream enters river from n.w. 7.4 m., cross stream from s.e. 7.9 m., cross stream from s.e.; village  $\frac{1}{2}$  mile on right of road. 9.4 m., pilo. Hill-sides not so steep, and are cultivated. 9.6 m., town of Wên-Ch'uan-Hsien,  $\frac{1}{2}$  mile from left (e.) bank of river; altitude 3899 feet, on a little plateau about 100 feet above river. Stream enters river from n.w. North-east of the pagoda to Wên-Ch'uan-Hsien the valley opens out and the hills are less steep; there is cultivation below and on the hill-sides. In all the bends of the river there is a little flat ground cultivated. The road from Yin-Hsiu-Wan to Wên-Ch'uan-Hsien is very bad indeed. 10.7 m., stream enters river from n.w. Valley again closes in a gorge with precipitous sides. 11.2 m., cross stream from s.e. 11.9 m., cross stream from e. Hills on both sides rise 3000 feet above river. 12.6 m., stream enters river from n.w. 14.1 m., road rises high above river, and descends by a zigzag to Pan-Ch'iao. 14.3 m., Mantzu village  $\frac{1}{2}$  mile from right bank of river; other Mantzu villages on tops of mountains with cultivation round them. 14.4 m., stream enters river from n.w. 15 m., cross stream from s.e.; town of Pan-Ch'iao, altitude 4275 feet. From Wên-Ch'uan-Hsien to Pan-Ch'iao river runs between steep hills, closing in the valley. Road fair.

24th.—Pan-Ch'iao to Hsin-P'u-Kuan, ascending Hsi-Ho, on left (s.e.) bank.—6 m., limestone rocks inclined 60° or 80°, strike n.e., s.w. 1.2 m., village. Valley opens out a little on the e., to 2.4 m., where river widens considerably and encloses a small island. Precipices on western side of river. 2.6 m., village. The road from this place is carried over hills for about  $\frac{1}{2}$  mile. 3.2 m., cross stream from s.e., about  $\frac{1}{2}$  mile from its mouth, where stream enters river from n.w. North of this point very steep hills close in the valley on both sides. 5.2 m., stream enters river from n.w. 6.2 m., town of Hsin-P'u-Kuan, at confluence of the Fu-Ho from n.w.; altitude 4398 feet. This town is also called Ku-Wei-Chou, and Pu-Hsien. Limit of bamboo. Stream enters river from s.e.

24th to 26th.—Hsin-P'u-Kuan to Li-Fan-Fu, ascending right (s.) bank of the Fu-Ho, which runs in a narrow valley, between bare and steep limestone masses, scarcely broken by a gully; the road up the valley is easy all the way. At Hsin-P'u-Kuan crossed the Hsi-Ho, and Fu-Ho to right bank, by suspension-bridges.—1 m., a narrow gorge with precipitous sides. 2.6 m., village on left bank of river where stream enters from n.e. 5 m., bare mountains on both sides, very precipitous, 2000 feet above the river. 5.3 m., cross stream from s.w. 6.1 m., village. 6.5 m., bridge over river. 6.6 m.,

village on north bank of river; stream enters river from N.N.E. 7.5 m., stream enters river from N.N.E. 8 m., town of Ku-Ch'eng, altitude, 4888 feet. From Hsin-P'u-Kuan to Ku-Ch'eng the rocks are of limestone inclined  $60^{\circ}$  to  $80^{\circ}$ . 8.1 m., cross stream from s. 9.6 m., cross stream from s.; village. 10.6 m., stream enters river from n. 12.3 m., bridge over river. 12.7 m., cross stream from s.s.e.; village. 12.8 m., Mantzu village on top of mountain,  $\frac{1}{2}$  m. north of river. The mountain sides are bare and rugged, very little broken by streams or valleys. 13.5 m., village. 14 m., village on left bank of river, nearly deserted. Stream enters from n. 14.4 m., village of Kan-Ch'i; altitude 4821 feet. 14.7 m., cross stream from w.s.w. Looking up the gorge of this stream wooded slopes are seen back amongst the hills. 16.8 m., stream enters river from n.w. 18.7 m., mountain on left bank, rising 3000 feet above the river, with immense precipices at the top. 19.8 m., city of Li-Fan-Fu, with pagoda; altitude, at inn, 5312 feet, river-level 5200 feet. Stream traverses town in n.w. direction; and stream enters river from n.w. "Snow Dragon" Mountain 3 miles s.s.e. Vast snow-fields reported to be in the neighbourhood of Li-Fan-Fu; and glaciers at no great distance. From Ku-Ch'eng to Li-Fan-Fu, the limestone beds are nearly vertical, generally striking e. and w., with veins of quartz. The river is about 30 yards broad in a valley that is from 50 to 300 yards wide. Mountains on both sides, almost precipitous, higher ones behind. The affluent streams all run through deep gorges, with precipices on both sides. The valley of the main stream is cultivated in terraces as long as the sides are not too steep. The crops are chiefly barley. There are a few walnut and other trees near the valley.

27th.—*Hsin-P'u-Kuan* to *Wên-Ch'eng*, ascending left (s.e.) bank of the *Hsi-Ho*.—1.4 m., village;  $2\frac{1}{2}$  miles to s.e. is the *Niu-T'ou-Shan* (Snow Mountain). 1.6 m., cross stream from s.e. 3.2 m., rocks all limestone, in places the strata much twisted. 4.5 m., cross stream from s.e. 4.8 m., village. 5.2 m., tower. 5.6 m., stream enters river from n.w.; a village on each side of its mouth. Here trees and terrace cultivation begin on right bank, and continue with many trees for 2 miles n.e. of this point. There is a narrow strip of not very steep ground on the bank of the river. 6.3 m., ruins. 6.6 m., gate across road. Stream enters river from n.w.; village at its mouth. 7.2 m., cross stream from e. 7.4 m., town of *Wên-Ch'eng*, altitude 4670 feet. From *Hsin-P'u-Kuan* to *Wên-Ch'eng*, the hills are not so precipitous, there is little foliage or green, only a few shrubs. To the east the snowy mountain tops are visible up the valleys.

28th.—*Wên-Ch'eng* to *Mao-Chou*, ascending left (s.e.) bank of the *Hsi-Ho*.—1.3 m., village. 1.6 m., here the valley opens out on the left bank; precipices on the right. Peaks on both sides rising 2000 to 3000 feet above the river. 1.9 m., cross stream from s.e. 2.6 m., village. 3.1 m., stream enters river from w.; village on small plateau close to right bank of river, with many trees. 4.2 m., village; cross stream from s.s.e. Snow Mountain, called "Sacred Temple," seen, bearing e. 5.2 m., gate and fort; road goes through both. Hill-sides very precipitous. Near this is a thin layer of red and green stone, in which are veins of quartz nearly vertical striking n.e. 5.9 m., cross stream from s.e. 6 m., village of *Pai-Shui-Chai*; altitude, at inn, 4717 feet, river level 4694 feet. 6.2 m., stream enters river from n.w. 7.4 m., mountain on right bank of river 2500 feet high. 8 m., stream enters river from n. near village on right bank. River here widens out into a shallow lake through which the road passes at 8.3 m. 8.6 m., village on n.e. bank of lake. "Nine Nails" mountain (snowy) 6 miles to s.e. 9.1 m., stream enters river from w.; village near its mouth. 10.2 m., cross stream from s.s.e. 11.3 m., cross stream from e. 12.4 m., cross stream from s.e.; village. 12.6 m., stream enters river from n.w.; village near its mouth. Mountain 2000 feet high,  $\frac{1}{2}$  mile to w. 13.2 m., river runs through a narrow gorge with steep

or precipitous banks. Peaks on both sides rising to 2000 feet above the river. On the east snowy peaks are seen up the valleys, the tops rising 1500 or 2000 feet above the snow-line. 15.6 m., gate outside Mao-Chou; pagoda on right of road. 16.1 m., city of Mao-Chou; altitude 4996 feet. As Mao-Chou is approached from the south, the river valley opens out to a width of two miles, enclosed on all sides by high hills and mountains. The soil does not look very fertile. From Wên-Chêng to Mao-Chou the crops are mostly Indian corn and barley. In some places south-west of Mao-Chou the river has cut its way to a depth of sometimes as much as 100 feet through a horizontal deposit of clay debris and sharp stone. This deposit forms small flat and perfectly level plains at the foot of the mountains. The river here runs through narrow gorges; these were probably once blocked, and the valleys small lakes, but the sharp stones are difficult to account for.

30th.—*Mao-Chou to Ch'a-Erh-Ngai*, ascending left (E.) bank of the Hsi-Ho.—At Mao-Chou the river is half a mile distant from the town.—1.5 m., cross stream from E. by covered bridge at village. 2 m., stream enters river from S.W. The valley here closes in. The river runs through a narrow gorge, the mountains on both sides running straight down to the water, and often ending in sheer precipices. The sides are nearly bare, and rugged, with great cliffs high up the mountain side. The peaks rise to 2000 feet. Here and there at points of the river, and up valleys, there is an acre or two of level ground cultivated. The close gorge and bare mountains continue all the way to Wei-Mên-Kuan. Looking up the valley of stream to S.W., the tops of the higher mountains are wooded. 4.3 m., cross large stream from N.E. by covered bridge. 4.5 m., village of Wei-Mên-Kuan; altitude 5123 feet. Stream enters river from W.S.W. 5.6 m., stream enters river from S.S.W. 7 m., cross stream from N.E. 8.3 m., cross stream from N.E. 8.4 m., stream enters river from S. 9.3 m., stream enters river from S.W. 11 m., cross stream from N.N.E.; village of Ch'a-Erh-Ngai; altitude 5423 feet; river level 5091 feet. From Mao-Chou to Ch'a-Erh-Ngai, limestone and slaty shales. There are scarcely any crops but a very little barley, a few poplars, and a kind of acacia, from which soap is made. The barberry has disappeared. There are a few very poor bamboo at a village to the S.E. of Ch'a-Erh-Ngai.

31st.—*Ch'a-Erh-Ngai to Ta-Ting*, ascending left (E.) bank of the Hsi-Ho, which is known as the Sung-Fan-Ho above the junction of the Lu-Hua-Ho.—7 m., stream enters river from S. 2.2 m., cross stream from E., which runs through a very precipitous gorge. Village. One mile from right bank, a Mantzu village on summit of mountain 3000 feet above river, wooded at the top. 3.4 m., cross stream from N.E.; village of Ch'ang-Ning-P'u. From Ch'a-Erh-Ngai to Ch'ang-Ning-P'u, both sides extremely steep and precipitous; very rugged mountain masses torn into all sorts of shapes. The tops of the higher mountains to the S. are wooded; otherwise they are very bare. The road is sometimes 400 feet above, sometimes at the level of the stream. There are many precipices both high up and low down. 5 m., the Lu-Hua-Ho enters from S.W., as large as the Sung-Fan-Ho. The white Mantzu live six days up the Lu-Hua-Ho; the black Mantzu are many days further. 6.2 m., village of Mu-Su-P'u; altitude, at inn, 5344 feet, river-level 5137 feet. 6.3 m., cross stream from E. 10 m., cross stream from N.E. Bridge over river. Stream enters from S.W.; this valley is more open, and the sides of the hills well wooded. 11.1 m., stream enters river from S.W. 11.8 m., cross stream from N.E. Town of Ta-Ting; altitude, at inn, 5798 feet, river-level 5739 feet. Snow Mountain, 3 miles E.S.E.

1st June.—*Ta-Ting to Sha-Wan*, along E. side of the Sung-Fan-Ho. From Ta-Ting, the road to the north leaves the river valley, and begins ascending at once.—6 m., stream enters river from W.S.W., running through a wooded valley. The river bounded on both sides by precipices. 1.6 m., wide, open valley on

right of road, with gentle slopes, much cultivated and well wooded. 2.5 m., village on right of road, 1000 feet above the river; altitude 6988 feet; there is here a good deal of level ground. Stream enters river from w. Here begins, on right of river, a snowy ridge of mountains, running n., with a general elevation of 2000 feet above the river. The tops of the hills below the snow-line are well wooded with fir. 3 m., village of Shui-Kou-Tzu; altitude 6940 feet. Behind Shui-Kou-Tzu, the mountain to the e. rises not very precipitously until just the top, when it ends in high crags. 3.6 m., steep slopes to the river below little plateau, and above the road tremendous precipices. On right bank, a great bare mountain, running steep down to the river. Great precipices. 4.9 m., slopes here well wooded, ferns, barberry, small oaks, scrub, thorns, and wild flowers. 5.5 m., altitude 7975 feet. 5.7 m., the road passes above a little plateau; above the road, a gentle slope. Stream enters river from w.; the black Mantzu live up this valley. 7.2 m., stream enters river from e.n.e. 8.2 m., town of Tieh-Chi-Ying; altitude 7837 feet, on a flat plateau, behind which are tremendous and inaccessible crags. There are tremendous precipices below the plateau. 8.8 m., stream enters river from w.; its valley is well wooded. 9 m., a very important affluent enters river from n.w., flowing through a well-wooded valley. 10 m., cross stream from s.e. From here the road descends to the river by a very steep and difficult path cut in the sides of the rocks; in places it zigzags down. 11 m., town of Sha-Wan; altitude 7017 feet; spur from big mountain on right of river. North of Sha-Wan the valley is more open. Precipitous crags on the left bank of river; on the right bank the hills are low, and gently sloping. Northern slopes of hills on both sides of river, well wooded with pines.

2nd.—*Sha-Wan to Chéng-P'ing-Kuan*, ascending left (e.) bank of Sung-Fan-Ho.—1.1 m., cross stream from e.s.e. 2.1 m., hills on left bank of river about 2000 feet high; on right bank, about 1000 feet. 3.5 m., stream enters river from w.s.w., running through an open and wooded valley. Bridge over river. 4 m., wooded slopes on both sides of river. 4.7 m., stream enters river from w.; cross stream from e. 5.8 m., low hills on right bank, gently sloping. 6.2 m., Sung-Pan-Ting district commences here. 6.4 m., stream enters river from w.; open valley. 6.9 m., cross stream from e.s.e. 7.1 m., town of P'ing-Ting-Kuan; altitude 7436 feet. 7.9 m., cross stream from s.e.; stream enters river from n.w. 9.3 m., cross stream from s.e. 9.9 m., stream enters river from w. Hills on right bank about 1000 feet high. 10.3 m., stream enters river from w.n.w. 11 m., village of Chén-Fan-Pao. Cross stream from s.e. Wooded ridge 2 miles to w., about 2000 feet high. Road from Sha-Wan to Chen-Fan-Pao close to the river all the way, and very good. In some places, close to the river's edge, are perfectly horizontal beds of a soft clay, which, between the fingers, turns to impalpable powder, without grit; above this there are horizontal beds of clay and sand, in which are sharp stones. Above this again are the limestone rocks, dip 45°, strike n.w. and s.e. 11.6 m., cross stream from n.e. Mantzu village on right of road. Snowy ridge 1½ m. to e. 12.3 m., cultivated hill-sides on right bank of river; pine-forests at top; gentle slopes covered with grass and shrubs. 12.6 m., village of Chéng-P'ing-Kuan; altitude 7807 feet.

3rd.—*Chéng-P'ing-Kuan to Lung-Tan-P'u*, ascending left (e.) bank of the Sung-Fan-Ho.—1.2 m., cross stream from n.e. Wooded slopes, cultivated at the top, on both sides of river. 1.9 m., stream enters river from s.w. 2 miles to w., pine-forest on mountain 800 feet high. 2.3 m., cross stream from n.e. 3.5 m., stream enters river from s.w. Gentle slopes on both sides 800 feet above river, uncultivated. 4.2 m., village; bridge over river. 4.5 m., stream enters river from s.w. Cross stream from n.e. A valley, wooded with pines, runs up to the e., through which the mountain Shih-Pan-Fang (10 Plank House), is seen, with its summit about 2000 feet above the snow-line.

It forms a Snow Pyramid, 18,000 feet high. 5.2 m., cross stream from N.E.; hills on each side of river about 1500 feet high. 6.1 m., stream enters river from S.W.; extensive snow-fields up the valley. 6.8 m., Pin-Fan-Ying, a new village at the foot of very steep slopes, newly fortified, with 250 soldiers. 7.8 m., an affluent enters from N.W., nearly as large as the main river. 8 m., town of Chên-Chiang-Kuan, on a rocky and precipitous crag 500 feet high; altitude 8159 feet. 8.4 m., cross stream from E. 8.9 m., cross stream from E.; valley leading up to snow-fields. Hills on right of river about 1000 feet high. 10.1 m., on right bank of river, wooded slopes below, and wooded crags above. 10.5 m., a rocky and precipitous crag rises nearly straight up from the river 1000 feet, on right bank. 10.8 m., cross stream from E.N.E. 11.7 m., wooded slopes on right of road. 12 m., cross large stream from E.N.E.; bridge over river. 13.1 m., thickly wooded and steep precipitous slopes, on right bank of river. 14.9 m., cross stream from E.; stream enters river from S.W. 15.8 m., cross stream from N.E.; village; open bridge over river, and covered bridge over stream. There are small islands in the river. 16.4 m., stream enters river from W.; hills to W. not very steep and cultivated at the top. 17.6 m., stream enters river from S.W.; valley runs up to a great pine-forest. 18 m., hills on both sides of river not very steep. 18.2 m., town of Lung-Tan-P'u, altitude 8729 feet. High precipices. On right bank of river, hills about 1500 feet high. From Ch'eng-Ping-Kuan to this point the road follows close to the edge of the river, and scarcely ever rises above it.

4th.—*Lung-Tan-P'u to Sung-P'an-T'ing*, ascending left (E.) bank of the Sung-Fan-Ho.—2 m., stream enters river from S.W., through a cultivated valley, with well-wooded slopes; pine-forests to the W. Bridge over river. 4 m., slopes on both sides of river, covered with brushwood. 1.9 m., precipices commence on both sides of river. 2.3 m., stream enters river from S.W.; valley, with sloping wooded sides runs up to W.; bridge over river. 2.7 m., village. Easy-sloping wooded hills on W.; pines at tops. 3 m., cross stream from E.N.E.; stream enters river from W.S.W. Sloping wooded hills on W. of river. Pine-forests on tops of mountains E. and W. of river. 3.8 m., wooded hills slope down to the river on both sides. 4.5 m., precipices, and brushwood slopes on E. 5.2 m., stream enters river from S.W.; a valley with precipitous sides runs up to the W. 5.5 m., stream enters river from S.W. 5.7 m., bridge over river; village. 5.8 m., cross stream from N.E. A valley, with easy slopes runs up E., to a peak 2000 feet high. 6.4 m., stream enters river from S.W. A valley, with sloping sides, runs up to the W. to a pine-covered ridge 2000 feet high. Village on right bank of river. 7.9 m., spurs run down to left bank of river. 8.1 m., town of Ngan-Hua-Kuan; altitude 9032 feet; inn almost at river-level. Bridge over river. Mountains to E. 2000 feet high. 8.2 m., stream enters river from W. 9.4 m., cross stream from E. 10.4 m., village; cross stream from E.N.E. 12.1 m., cross stream from N.E. 12.8 m., village and bridge; stream enters river from S.W. Ascending the river, the slopes on either side become more easy; the country indicates the proximity of a plateau. The hills are more rounded, valleys more open, slopes easy, and peaks high. 13.4 m., cross stream from N.E. 13.9 m., stream enters river from S.W. 14.1 m., the river-bed opens out into several little channels, valley  $\frac{1}{2}$  mile wide. 14.6 m., village; stream enters river from S.W.; village on N. bank of stream, nearly  $\frac{1}{2}$  mile from river. 15.1 m., stream enters river from S.W.; village. 16.3 m., cross stream from N.E.; village between road and river. 16.5 m., the valley of river is here about  $\frac{1}{2}$  mile wide, and flat. Gently rounded hills on both sides of river, all cultivated in terraces. 17 m., stream enters river from W. 17.2 m., stream enters river from W.N.W. 17.7 m., town of Sung-P'an-T'ing, altitude 9470 feet. Here the hills are of a soft, smooth, clay deposit.



6th.—*Sung-P'an-T'ing to Fêng-Tung-Kuan.*—From Sung-P'an-T'ing, the s.w. valley up to Fêng-Tung-Kuan is very narrow. The hills on both sides are covered with grass and brushwood. Their tops are rounded, and there are no trees. The n.w. side of the valley is a ridge running n.e. and s.w. On the s.e. of the valley is also a ridge running n.e. and s.w. The small valleys running up into these ridges are all uncultivated. From Sung P'an T'ing, the road zigzags up a little gorge. 2.5 m., altitude 10,636 feet. 3.9 m., Lamassery. 4.3 m., hills gently rounded on both sides of the river; all cultivated in terraces. Valley of river  $\frac{1}{2}$  mile wide. 5.9 m., road reaches river, and continues along its right (n.) bank, to its source. Grassy slopes and brushwood to s.; little cultivation. 6.5 m., village, altitude 10,484 feet. Stream enters river from s.e. 8.8 m., Hsieh-Lan-Kuan, altitude 10,881 feet. 9.7 m., stream, 2 to 3 feet wide, enters river from s.w. 10 m., undulating hills on both sides leading up to ridges behind. Grassy slopes and brushwood, no trees, no cultivation. 10.8 m., stream enters river from s.w. 11.1 m., Fêng-Tung-Kuan, altitude 11,884 feet. Rocky and craggy ridge to n.

7th.—*Fêng-Tung-Kuan to Chêng-Yuan.*—4 m., stream enters river from s. .9 m., cross stream from n.e. 1.7 m., hut, at source of river. 1.7 to 3 m., Hsieh-Shan Pass (Snow Mt.); altitude 13,184 feet. Here the hills are very precipitous and rugged. A little snow was lying 50 feet below the summit. The road from Fêng-Tung-Kuan to the summit of Hsieh-Shan runs up a bare valley where there is no wood, or cultivation; only brushwood and grass. East of the summit of Hsieh-Shan, rounded spurs run down to the valley from a rocky, craggy, and very rugged snowy ridge on the s.; these spurs are covered with grass and brushwood. 3 m., source of the Hsiao-Ho; road descends on left (n.) bank. 3.3 m., grass and brushwood on both sides of the river. 4.7 m., house. 5.6 m., cross stream from n.; a deep and precipitous gorge runs up to the n. 5.9 m., the hills on the n. are not so precipitous; the slopes are covered with grass. 6.9 m., cross stream from n.; house, with small patch of cultivation. Wooded valley (pine) to n.; extensive pine-forests to s., covering the spurs right down to the river. 7.2 m., house. 7.8 m., bridge over river. 8.9 m., Hung-Ngai-Kuan or Sung-Ngai-P'u (3 houses), altitude 10,529 feet. Cross stream from n. 9.9 m., cross stream from n. by bridge; stream enters river from s. 10.6 m., cross river by bridge; stream enters river from s. 11.5 m., re-cross river by bridge; stream enters river from s. The valley and hill-sides thickly wooded with pines; very little cultivation; precipices at tops of mountains. 12.2 m., village (8 houses); cross river by bridge. 12.3 m., cross stream from s. 12.5 m., cross stream from s. A precipitous point on the n. bank of river. 12.8 m., on the e. is a great mountain that blocks the way for the river, that here turns n.; it throws out a spur with a huge wall of rock. A wall of rock bounds the river on both sides. Wooded slopes begin here. 14 m., stream enters river from w. 15.1 m., village, very new and unfinished. Cross river to left bank. Two streams enter river from n. and n.n.w. 15.7 m., stream enters river from n.e. 16.3 m., house; stream enters river from n.e. 16.9 m., cross river by bridge; village. Cliffs 80 feet high. 17 m., cross stream from s.w. 17.2 m., cross stream from s.w. 17.4 m., cross large tributary from s.w., without a bridge. A valley runs up to the s.; the sides are covered with an immense forest of dead pine. 17.9 m., stream enters river from n.e. 19 m., town of Chêng-Yuan, altitude 9021 feet; stream enters river from n.e. From Hung-Ngai-Kuan to Chêng-Yuan the sides of hills are steep, and covered with a most luxuriant growth of trees; the road keeps quite close to the stream, and is very good, except at about  $1\frac{1}{2}$  mile above Chêng-Yuan, where it crosses a rather large stream without a bridge.

8th.—*Chêng-Yuan to Shih-Chia-P'u*, descending the Hsiao-Ho.—2 m., cross stream from s.w. .5 m., cross stream from s.w. .7 m., cross stream

from s.s.w. 1.5 m., cross river to left (n.) bank. 2.2 m., cross stream from n. by bridge. 3.2 m., very small bamboo only 3 or 4 feet high, not cultivated, but growing luxuriantly. These are used instead of straw. 4.2 m., cross stream from n.e. 4.7 m., cross stream from e. 5.3 m., cross stream from e. 5.6 m., village of Yueh-Erh-Ngai, altitude 7874 feet. At this point a wall of rock rises up on both banks, 500 feet high, almost vertically. There are few habitations on the road, which is a very bad one; great sharp-pointed rocks lie about everywhere. Cross river by bridge to right (s.) bank. 5.9 m., cross stream from w. 6.2 m., houses; cross stream from s.w. 6.5 m., cross stream from s.w. 6.8 m., house; stream enters river from n.e. Here the gorge closes in narrower everywhere. Almost perpendicular rocks separated by only a few yards. Foliage still luxuriant; cultivation impossible. 7.6 m., cross stream from s.w. 7.8 m., cross stream from s.w. 8 m., cross river by bridge to left bank. 8.3 m., perpendicular wall of rock 500 feet high. 8.9 m., cross river by bridge to right bank. 9.3 m., cross river by bridge to left bank. 9.8 m., two little level spaces in the valley closed by rounded hills, and separated by a low point. 10.4 m., cross stream from n.w. 10.6 m., from this point to the end of the gorge, s.e., the gorge is very narrow. Perpendicular precipices on both banks of the river from 300 to 500 feet high. 11 m., cross river by bridge to right bank. 11.9 m., house beside road, altitude 6574 feet. Stream enters river from n.e. 12 m., cross stream from s.w. 12.4 m., cross river by bridge to left (n.) bank. 12.7 m., from Chêng-Yuan to this point, the river runs through a narrow gorge generally about 100 yards wide, closed by steep and precipitous hills. The bed falls very rapidly, the river making a succession of waterfalls. The steep sides and river-bed are everywhere densely wooded with the richest green, to the water's edge; there is no cultivation whatever. All affluents flow through narrow gorges. This gorge becomes narrower and more narrow, until at Yueh-Erh-Ngai the walls of rock rise up vertically, only separated at the top by a few yards. The gorge ends suddenly at this point. The rocks are all limestone. East of this point the river runs between rounded and cultivated hills. 13.5 m., cross stream from n. 14.2 m., Shih-Chia-P'u, altitude 5995 feet. East of Shih-Chia-P'u the slopes are steep on both sides, but where they are not steeper than 30°, are cultivated. Where they are not cultivated the sides of the valley are covered with grass and brushwood.

9th.—*Shih-Chia-P'u to Yeh-T'ang*, descending the Hsiao-Ho on left (n.) bank.—5 m., cross stream from n. 1.4 m., cross stream from n. A precipitous gorge runs up to n.e.; the road rises 300 feet above the river. 2.4 m., stream enters river from s.s.e. 2.6 m., pomegranates in blossom. 3.1 m., cross stream from n. Village, with the first patch of rice. 4.4 m., cross stream from n., which runs through a precipitous gorge. Village. Stream enters river from s.; a precipitous gorge runs up s.w. 4.8 m., hills rise to 2000 feet above river on both sides, sloping about 45°. 5.2 m., cross stream from n.; village. 5.8 m., cross stream from n. 6.5 m., hills bounding the valley on the s.w. are precipitous. 6.9 m., the hills on the s.w. are less steep, and are cultivated. There is a little open space in the valley here. 7.3 m., cross stream from n.e., which runs through wooded gorge. 8.2 m., pagoda between road and river. Cross stream from n.e. Deep and precipitous gorge. 8.4 m., Hsiao-Ho-Ying, a walled town dominated by hills quite close; altitude 5297 feet. Here is a "Patsung" and twenty-five soldiers. s.s.e. of Hsiao-Ho-Ying, the hills are covered with grass and brushwood, sloping about 45°; there is little cultivation on them. 9.3 m., a precipice bounds the valley on the w. 9.8 m., cross stream from n.e. 10 m., here the river enters a gorge, and is bounded on the e. by precipices. 11.1 m., stream enters river from s.w. 11.8 m., village; cross river by covered bridge to right (s.w.) bank. The gorge opens out here, but the hills that bound the river on the e. are still

very steep. 12 m., stream enters river from E. 12.2 m., a deep and precipitous gorge runs up to the N.E., and separates the precipitous and uncultivated from the sloping and cultivated hills on the left bank of the river. Hills on the S.W. are cultivated. 12.8 m., village; bamboo cultivated here. 13.6 m., a short, but very close gorge; precipices rise up from the river on both sides. 14.1 m., cultivated hills bound the river on both sides. 16.1 m., cross river by iron suspension-bridge to left (N.E.) bank. Cultivated hills 500 feet high, sloping 30° down to river. 16.8 m., town of Yeh-T'ang; altitude 4339 feet. Hills about 500 feet high, sloping 30°, and all cultivated. Here is a ferry across the river, the boat being made fast to a rope stretched from one bank to the other. From Shih-Chia-P'u to Yeh-T'ang the road is very fair, with very little up and down. In some places it is bad and rocky, but these are very short. There was some holly and wild strawberries.

10th.—*Yeh-T'ang to Shui-Chin-Chan*, descending the Hsiao-Ho on left (N.) bank.—.5 m., cross stream from N.E. .9 m., cross stream from N.E. 1.4 m., stream enters river from S.W. 2.3 m., cross stream from N. Mountain on left of road, 3000 feet above the river, throwing down spurs broken by cliffs; all the sloping parts are cultivated with Indian corn. Hills on both sides of river are about 1000 feet above it. 2.7 m., stream enters river from S. Hills on the N.E. steep and precipitous. 4 m., a precipice and cliffs bound the river on right bank. 5.2 m., Shui-Ching-P'u, altitude 3962 feet. Cross stream from N. Low spurs on both sides of river, precipitous in places; the slope cultivated with Indian corn. 5.6 m., mountain on right bank of river 3000 feet high. 6 m., cross stream from N. 6.1 m., stream enters river from S. 6.7 m., cross stream from N.; slopes of hills on both sides precipitous and broken. 7.1 m., hills on right bank about 1000 feet above river, throwing out spurs, ending in cliffs, close down to river; between the spurs the ground is cultivated with Indian corn. 7.6 m., stream enters river from S.E. Hence to 9.7 m., hills on both sides about 1500 feet high; slopes 30°, well cultivated with Indian corn; there are also a good many trees. 7.9 m., stream enters river from S.E. 9.7 m., cross stream from N.W. 10 m., stream enters river from S., in a wooded and precipitous gorge. Gold-washing in bed of river. 10.7 m., village; a few trees in the valley. 10.8 m., stream enters river from S. 11.2 m., cross stream from N. 11.4 m., Shui-Chin-Chan, altitude 3675 feet; spurs cultivated. A peak, 1500 feet high, 1 mile to S. of river, cultivated below and wooded above. From Yeh-T'ang to Shui-Chin-Chan, there is, close to the river where flat ground can be found, a little rice cultivation; the chief crop is still Indian corn; a little wheat and tobacco are also grown. A crop of opium has already (June) been gathered from the fields where the rice is now cultivated. The road from Yeh-T'ang to Shui-Chin-Chan is fair; but bad in places where it rises above the river. Occasionally it is scooped out of the face of precipices; in other parts supported on stakes driven into the face of the cliff.

11th.—*Shui-Chin-Chan to Ko-Ta-Pa*, descending the Hsiao-Ho on left (N.E.) bank.—.2 m., cross stream from N.N.E. About 1½ mile to N.E. begins a steep, precipitous, wooded ridge, 1500 feet above river, throwing off low spurs to river, which are cultivated. This ridge runs in an easterly direction about 3 miles. 1.6 m., hills here become steeper. 1.8 m., cross stream from N. 2.2 m., stream enters river from S. 3.1 m., cross stream from N. 3.3 m., a steep mountain about ¼ mile S. of river, 1500 feet high, a little cultivated. 3.7 m., cross stream from N.E.; village. Wooded hills on left of road 1500 feet above river. 4.2 m., cross stream from N. 4.6 m., hills rise 1500 feet at an angle of 60° on both sides of the river, very little cultivated. 5.7 m., stream enters river from S.W. A peak, 1 mile to S.W., 2000 feet above river. The top is wooded; its slopes are very broken, and it is precipitous at edge of river. 6.2 m., stream enters river from S.W. A low cultivated spur from the

peak; slopes easy and cultivated. Slopes on left bank, steep and wooded. 6.5 m., cross stream from n.e. 6.8 m., slopes on left bank, much broken by rocks and cliffs, run up to a rugged ridge 1500 feet above river. 8.3 m., gold-washing in river. Very steep ridge on right bank 1500 feet high, sloping 30°; cultivated below. 8.8 m., cross large stream from n. by covered bridge. Ko-Ta-Pa, altitude 3391 feet. Steep slopes to n.e. Rice-planting going on.

12th.—*Ko-Ta-Pa to Lung-An-Fu*, descending the Hsiao-Ho on left (n.e.) bank.—8 m., cross stream from n.e. 1.8 m., stream enters river from s.w. Peak 1½ mile s.w. of river, 1500 feet. 1.9 m., stream enters river from s.w. 2.3 m., cross stream from n.e. Peaks 1 mile from left bank, 1500 feet above river; partly cultivated, partly wooded. 2.7 m., mountain on right bank 2000 feet high; wooded and partly cultivated. 3.2 m., a remarkable long rocky point, running out into the river from n.e., flanked on both sides by spurs from the mountain on the opposite (s.w.) side of the river. 3.9 m., a projecting point, from which a zigzag leads to T'i-Tzu-Yi. 4 m., village of T'i-Tzu-Yi, altitude 3283 feet. The hills on left bank are steep and precipitous. From Shui-Chin-Chan to T'i-Tzu-Yi, the road is very fair; at the salient points it is generally far above the river, and cut out of the rock; in some places it is propped up from below. The points that project into the river from its left (n.e.) bank are more precipitous on their n.w. sides. The rocks are of limestone, generally striking e. and w. A ridge, 1500 feet high, extends from Shui-Chin-Chan to T'i-Tzu-Yi, about 1½ mile from left bank of river. 5.1 m., cross stream from n.; village. 6.1 m., cross stream from n. 8.9 m., cross stream from n. 10.1 m., stream enters river from s.w. From T'i-Tzu-Yi to this point, mountains on both sides vary from 1000 to 2000 feet above the river, sloping 30° to 60°. The slopes that are not steeper than 30° are cultivated. The steep slopes are covered with grass, small trees, and brushwood. On the s.w., one long ridge rises straight up from the river, and its crest follows every bend of the stream, which twists and turns about a great deal. Between this point and Lung-An-Fu, the hill-sides on right bank are very steep, and there is scarcely any cultivation. A raft was seen on the river here. 11.6 m., cross stream from n.e. Very precipitous hills rise up from the river on both banks. 11.9 m., a very high precipice on right bank. 12.6 m., town of T'ieh-Lung-Kuan, situated on a long rocky point projecting out into the river; altitude 3150 feet. From this point a zigzag leads down to the e. face of the rocky point, to the large stream that runs in here; and from the bridge to Lung-An-Fu the road is exceedingly bad, for more than half the distance through a niche cut out in the face of a precipice, or supported from beneath. In some places where there have been great landslips, huge blocks of stone lie about, over which it is very difficult for coolies and mules to travel. 12.8 m., cross large stream from n.e. by iron-chain suspension-bridge. 15.2 m., very pretty village, with a great many trees. 15.3 m., cross stream from e.n.e. Here the river is closed in on both sides by steep and precipitous hills, 1500 to 2000 feet above the river, almost everywhere too steep for cultivation; but wherever there is the smallest patch not steeper than 30°, there Indian corn is grown. 17 m., peaks on both sides of river, 3000 feet high. 18 m., city of Lung-An-Fu, situated on a spur that runs down to the river, the wall of the city going, for about a mile, up this spur. Part of the city is called P'ing-Wu-Hsien. Pagoda ¼ mile to s., on opposite side of river, 500 feet high. A little to w. of Lung-An-Fu, the valley opens out a little; the hills are rounded, and all cultivated. There is a little level ground just above the bed of the river. Wherever there is a little flat ground just down by the water's edge, rice is planted, but the space for it is very limited. The crops are chiefly Indian corn. The rocks are of hard black limestone, with veins of quartz and layers of slaty shale striking e. and

w., dipping about 45°. At Lung-An-Fu the valley of the river is  $\frac{1}{2}$  mile to 1 mile wide.

13th.—*Lung-An-Fu* to *Kuang-Yi*, descending the Ta-Ho (as the Hsiao-Ho is now called) on left (N.) bank.—5 m., stream enters river from s. 1 m., cross stream from N.N.E. 2 m., the river here has evidently once been at a higher level, and the valley has been an ancient lake, in which clay and rounded stones were deposited. The river has cut its way through this deposit to a depth of from 30 to 60 feet, so that at the base of the hills there are many small, flat plains, whose surfaces are all on the same level. 4.4 m., mountains, 3000 to 4000 feet high, on both sides of river. Gentle slopes well cultivated in bed of river, and a good deal of wood. 8.5 m., village of Ku-Ch'eng, altitude 2890 feet. From Lung-An-Fu to Ku-Ch'eng, the road is good, only rising a little here and there to cross the spurs, but there are no difficult places. Hills on right bank of river are all cultivated, and slope down to the water. Mountains behind them, to the s.w., 3000 to 4000 feet high, with forests at the top, and well wooded in the ravines. The crops are chiefly Indian corn and beans. The Tung-oil tree appears again, also *Eriobotrya Japonica*, of which great quantities of the fruit are sold. Apricots and cucumbers are also for sale. 8.6 m., cross stream from N.E.; there is a good deal of rice in the valley of this stream. 10.2 m., cross stream from N.E. 10.3 m., the road here is 200 feet above the river, and follows the steep side of a slope much broken with precipices and cliffs. A mountain, s. of river, 3000 feet high, throwing out spurs; these are broken in places with cliffs. 12.1 m., cross stream, from N.E. Slopes on left of road broken with cliffs; little cultivation on them. 13.4 m., a long, low, projecting point from s. bank of river. At the bottom of this point, the limestone rock is seen, and above it, the deposit of clay and rounded stones. This point so nearly joins the left bank, that it is here, in all probability, that the river was blocked. 13.7 m., cross stream from N.E. 14.4 m., the mountain to the N.E. throws out a precipitous rocky spur. 14.8 m., cross stream from E. There is a very good iron-chain bridge across this stream, not yet quite complete, with exceedingly well-built stone piers; the droop in the centre is very slight. Village of Kuang-Yi, altitude 2811 feet. From Ku-Ch'eng to Kuang-Yi the road is fair, but for two or three bad places. There are many mulberry-trees. Cocoons in valleys put out to dry in the sun; people spinning silk.

14th.—*Kuang-Yi* to *Chiu-Chou*, descending the Ta-Ho on left (N.E.) bank.—9 m., precipices on both sides of river. 1.3 m., village, a good deal of mulberry and Tung-oil trees. 2.5 m., cross stream from N. 3 m., cross stream from N.N.E. 3.6 m., cross stream from N.N.E. Hills on left of river less steep, cultivated, and wooded. A low sloping spur on right bank; above the spur is a mountain, precipitous on its N.E. face towards the river, and sloping on its s.e. face towards the stream. 4.3 m., stream enters river from s.w. 5 m., cross stream from N.E. 5.2 m., hills steep and wooded on both sides of river, cultivated, and broken with cliffs, sloping 30° down to water. 6.2 m., cross stream from N.E. 6.5 m., village of Hei-Shui-Kou, altitude 2700 feet. Hills steep and wooded, cultivated, and broken with cliffs. Stream enters river from s.w. From Ku-Ch'eng to Hei-Shui-Kou the valleys on both sides of the river open up to high mountains N.E. and s.w., with easy slopes nearly all cultivated, and patches of wood. Peaks immediately over river rise to 2000 feet, sloping 60° down to water. 7.2 m., easy slopes on right bank. 7.5 m., cross stream from N.N.E. Slopes on left bank cultivated, and broken with cliffs. 9.8 m., precipices on right bank 800 feet high. 10.5 m., cliffs on right bank. 10.9 m., village; road to N.E. leading to Shen-Si. 11 m., wall of rock on right bank. 11.5 m., easy slopes on both sides. 11.8 m., cross stream from N.E. 12.3 m., cross stream from E.S.E. by covered wooden bridge.

12.4 m., village. 13.2 m., cross stream from E. 14.2 m., hills steep and craggy on both sides of river. 14.4 m., cross stream from E. 15.5 m., on both sides of river hills rise to 1000 feet, sloping 15°. 16.6 m., village of Chiu-Chou, altitude 2560 feet. Stream enters river from N. Cross river by ferry to right bank.

15th.—*Chiu-Chou* to *P'ing-I-P'u*, descending the Ta-Ho on right (W.) bank.—1 m., a piece of level ground on right of river all cultivated with Indian corn; no rice. Hills broken. From Chiu-Chou to 3 m., on left bank, hills rise to 400 feet, sloping 30°. The level ground at the base of the hills is cultivated with Indian corn. 2.7 m., hills on right bank broken, sloping 30°. 3.6 m., cross stream from N.W. Hence to 7 m., hills 2000 feet high on both sides of river, sloping 30° down to the water, but much broken with cliffs and precipices. 4.1 m., cross stream from W. 6.7 m., village; cross stream from W. by covered wooden bridge. 7.2 m., precipice over river on right bank. 7.4 m., slopes on left bank 60°, steep and craggy. 7.9 m., slopes on right bank 60°, craggy with ravines. 8.1 m., slopes on left bank 5°; a very open valley, with an isolated rock in the centre. 8.3 m., stream enters river from E. with gentle slopes. 9.6 m., village of Hsiang-Ngai-Pa, altitude 2412 feet. Hills on right bank sloping 15°; on left bank steep and craggy. E. and W. of Hsiang-Ngai-Pa are mountains 2000 feet high, sloping 30°. Here the river is navigated by boats. 10.6 m., cross stream from W.N.W. 11.1 m., cross stream from W.N.W. 12.6 m., village; river-bed wide here. On W. of river, a ridge, 2000 feet high, extends for 4 miles in a N.W.—S.E. direction. From Hsiang-Ngai-Pa to this point are low spurs along left bank, with mountains behind 2000 feet high, sloping 30°, and a good deal of flat ground in the valley. 12.7 m., cross stream from S.W. by stone bridge of one arch. Hills on left bank steep and broken. 14.8 m., hills on left bank 1000 feet above river. 15.6 m., stream enters river from N.E. Mountain to E., 3000 feet high. Undulations on right bank, leading gradually up to mountains from 1000 to 2000 feet high. 16.8 m., village of *P'ing-I-P'u*, altitude 2464 feet.

16th.—*P'ing-I-P'u* to *Chung-Pa-Ch'ang*, descending the Ta-Ho in boat.—.3 m., stream enters river from W. .9 m., stream enters river from N.E. 1.7 m., rapid; village on right bank. 2.2 m., rugged slopes on right bank; peak on left bank, 2000 feet high, with wall of rock at the top. 2.5 m., cliff on left bank, 200 feet high; hills on right bank, 1500 feet high. 2.9 m., walls of rock on both sides of river; cliffs on right bank, 200 feet high. 3.3 m., slopes on right bank, running up to peaks 1500 feet high. 3.7 m., stream enters river from S.W., flowing through a wooded valley. 4.1 m., rapids; very broken slopes on right bank; remarkable peaks, 2 miles to the E. 4.7 m., stream enters river from N.E. 5.1 m., valley, on right bank, leading up to a sloping mountain. 5.7 m., rapid; stream enters river from N.E.; steep wooded slopes up the valley. 6 m., stream enters river from S.W.; wooded slopes on right bank, 700 feet high. 6.3 m., low, flat point on left bank, with wide valley. 6.8 m., stream enters river from E.N.E. 8.3 m., rapid; low, rounded hills on right bank. 8.5 m., rapid. 9 m., on right bank, mountain 1500 feet high, sloping 45°; on left bank, easy, wooded slopes; high mountains to E. 9.2 m., long, low point on left bank. 9.5 m., village on left bank, wooded spur, 200 feet high; cliff, 50 feet high, on right bank. 9.8 m., hills on both sides, 100 feet high, rocky on right bank. 10.3 m., rapid; stream enters river from W.; white cliff, on right bank, 30 feet high. Hence to 14.2 m., river flows through a flat plain. 10.8 m., mountain, 2 miles to E., 1500 feet high, sloping 45°. 11.9 m., town of Chiang-Yu-Hsien, on right bank, altitude 2211 feet. 13.3 m., village on right bank. 14.1 m., village on right bank. 14.3 m., pagoda on hill 200 feet high, near right

bank. 14.6 m., rocky hills 100 to 200 feet high, well wooded, on both sides of river. 15.2 m., rapid; village on left bank. 15.6 m., broken and rocky ground with many trees, on right bank. Hence to 16.7 m., plain  $\frac{1}{2}$  mile broad, with many trees. 16.4 m., village on right bank. 16.7 m., rapid. 16.9 m., wooded slopes on left bank, 100 feet high from river. 17.6 m., village on right bank; plain  $\frac{1}{4}$  mile wide, to w. 18.1 m., rapid; river 70 yards wide. 18.5 m., from this point to near Chang-Ming-Hsien, the country is a flat plain bounded on right bank of river by a long ridge of flat-topped hills 100 feet high; to the west of these are mountains 2000 feet high, at a distance of 5 miles from the river; and on the left bank there are hills 3 or 4 miles to the e. 19.3 m., rapid. 20.7 m., shallow, and rapid. 21 m., shallows. 21.4 m., shallows. 21.6 m., rapid. 22.2 m., village of Chung-Pa-Ch'ang on right bank, altitude 2064 feet.

17th.—*Chung-Pa-Ch'ang* to *Mien-Chou*, descending the Ta-Ho in boat.—4 m., shallows. 1 m., village on right bank. 1.4 m. to 1.8 m., three rapids; many trees on left bank. 2.8 m., rapid; low, red, wooded hills, with little cultivation, on left bank. 3.2 m., rapid. 3.4 m., village of Chang-Ming-Hsien on right bank, altitude 1949 feet; on left bank, low, wooded hills, 300 feet high, sloping 30°, little cultivation. 4.2 m., rapid; river 100 yards wide here; low hills on left bank, retreating from river; pagoda near left bank, on hill 50 feet high. 4.6 m., low hills on right bank, close down to river side. 6.2 m., flat ground on right bank of river; distant mountains to w. 6.7 m., village on right bank; hills on left bank 60 feet high. 7.3 m., rapid. 7.4 m., rapid. 7.6 m., village on right bank; hills to w., 100 feet high. 8.6 m., pagoda on hill, 50 feet high, near left bank. 8.9 m., rapid. 9.8 m., low hills both sides of river. 10.6 m., rapid. 11.8 m., rapid. 16.9 m., rapid; village on left bank; pagoda  $\frac{1}{4}$  mile from right bank. 18.1 m., rapid; village on right bank. 21.3 m., stream enters river from n.n.e. The ground between this point and Mien-Chou is flat. 22.2 m., rapid. 22.5 m., rapid. 23 m., low, rocky point with low pagoda, on left bank. 23.3 m., city of Mien-Chou, altitude 1918 feet.

18th.—*Mien-Chou* to *Lo-Chiang-Hsien*.—Leave Mien-Chou by west gate. .6 m., cross river running s.e.; ascend right bank of river to 6.8 m. The road runs through a flat plain, which is bounded on both sides by low ranges of hills or undulations 50 to 100 feet high, coming down to within 1 mile of the river on the n.w. The crops on this plain are mostly Indian corn, and a good deal of ground-nuts, beans, and rice. 3 m., cross stream from s., village. From this point to 4.8 m. is an amphitheatre of plain between the hills on the s. and the river. To the n.w. of the river is an extensive plain, to beyond Chao-Chiao-P'u. 6 m., town of Chao-Chiao-P'u. 6.8 m., here the road to the s.w. leaves the stream, and enters an undulating country, very dry, and suffering for want of rain. The crops are Indian corn, ground-nuts, and beans, and a very little rice. 9.3 m., village of Hsin-P'u, altitude 2078 feet. From this point to the s.w. the road follows an undulating ridge. 10.9 m., source of stream flowing s.e. 13.5 m., village. From this point to 15.2 m. the road runs through a flat plain. 14.8 m., cross stream flowing s.s.e. 16.5 m., village. 17.1 m., leave the main road, and proceed along a road to the s.w., which is only passable in dry weather; cross two branches of the river by two bridges—these bridges are made by drawing in piles of stone and laying slabs across. 18.4 m., cross the Lo-Chiang-Ta-Ho, by bridge, to right (w.) bank. 19.5 m., suburb of Lo-Chiang-Hsien. 19.8 m., north gate of Lo-Chiang-Hsien. 20.6 m., in town of Lo-Chiang-Hsien, altitude 2033 feet. The regular road crosses the river by a fine bridge, and enters the east gate of the town. The valley of the river is very fertile, and was not suffering from want of water; the crops looked well.



19th.—*Lo-Chiang-Hsien to Han-Chou*.—Leave Lo-Chiang-Hsien by west gate. .7 m., altitude 2047 feet. 1.1 m., cross stream flowing s.e.; altitude 2009 feet. 2.4 m., altitude 2232 feet; the road runs through the Pai-Ma-Kuan, or Pass of the White Horse. 3.5 m., very small village, altitude 2047 feet. 3.7 m., cross stream flowing w.n.w. 4.3 m., village, altitude 2081 feet. 4.6 m., cross dry bed of a stream. 4.9 m., road passes over summit of a hill, on which is a temple. 5.5 m., cross stream flowing s.e., altitude 2033 feet. 5.9 m., cross stream flowing s.e. 6.2 m., cross sandy bed of a river, flowing s., which is  $\frac{1}{2}$  mile wide at this point. There is a bridge  $\frac{1}{2}$  mile below crossing. 6.9 m., town on right bank. 7.5 m., cross stream flowing s.e. 7.8 m., village. 8 m., cross stream flowing s.e. 9.6 m., cross stream flowing e. by bridge 50 yards. 10.5 m., village. 11.2 m., village. 11.7 m., cross stream, which runs into large river on left of road flowing s. past Tê-Yang-Hsien. Hills 3 m. distant on opposite side of river, 200 feet high. 12.5 m., cross stream from w. flowing into river. 13.2 m., suburb of Tê-Yang-Hsien. 13.4 m., n.e. gate of Tê-Yang-Hsien. 13.7 m., city of Tê-Yang-Hsien, altitude 1983 feet; stream runs through n. of city from w. to e. From 5.5 m. to Tê-Yang-Hsien, the road passes over a flat plain. 14.3 m., s.w. gate of Tê-Yang-Hsien. Cross stream flowing e. 14.5 m., suburb of Tê-Yang-Hsien. 14.7 m., cross stream flowing e. 15.1 m., pagoda  $\frac{1}{2}$  m. to left of road. 15.7 m., village. 16.3 m., cross large stream flowing w.; village. 16.8 m., cross very dry, rushy bed of a river, 3 m. wide, with many channels, flowing s.e. 22.8 m., cross stream flowing e. 23 m., cross stream flowing e. 23.4 m., cross river flowing e., by very high stone bridge of 3 arches; village on both sides. 23.8 cross stream flowing e. 24.8 m., suburb of Han-Chou, with 8 pilos. 25.4 m., cross stream flowing e., by stone bridge; pilos with stone across. 25.6 m., cross stream flowing e. by covered wooden bridge of 32 spans of 12 feet each. 25.8 m., n. gate of Han-Chou.

20th.—*Han-Chou to Ch'êng-Tu*.—Leave Han-Chou by west gate. 1 m., cross stream flowing e. 1.2 m., cross stream flowing e. 1.4 m., cross river 90 yards wide, flowing from s.w. to e., by stone bridge. 2.5 m., cross stream flowing e.; village and pilo. 3 m., cross stream flowing e. 3.4 m., village, 3 pilos; cross stream flowing e. by high stone bridge, 2 arches, 65 yards. 3.8 m., cross stream flowing n.e. 4.8 m., village and pilo. 5.2 m., cross stream flowing e. 5.3 m., river on left of road 30 yards, flowing n.e. 5.7 m., cross large stream flowing e.s.e. 5.9 m., cross stream flowing e., by covered wooden bridge, 50 yards. 6 m., cross stream flowing e.s.e., by stone arch bridge, 40 yards. 6.1 m., cross stream flowing e.s.e. 6.2 m., village of P'i-T'iao-Ch'ang. 6.4 m., cross stream flowing e. 6.7 m., cross stream flowing e. 7.4 m., cross stream flowing e.s.e. 8.2 m., cross stream flowing e. 8.4 m., cross stream flowing e. 9 m., village; cross stream flowing e., by bridge, 20 yards. 9.3 m., tea-house. 9.7 m., cross stream flowing e.s.e. 10.2 m., cross stream flowing s.e. 10.6 m., cross stream flowing e.; village, 2 pilos. 10.8 m., cross stream flowing e. 11.2 m., east gate of Hsin-Tu-Hsien. 11.8 m., west gate of Hsin-Tu-Hsien. 12.1 m., cross stream flowing e.; pilo. 12.5 m., cross stream flowing e.s.e. 13.6 m., cross river from n., flowing e.s.e., by stone bridge, 80 yards. 13.8 m., cross stream flowing e. 14.1 m., pilo; cross stream flowing e.s.e., by stone bridge, 50 yards. 14.4 m., cross stream flowing e.s.e. 14.7 m., cross river from s.s.w., flowing e., by stone bridge of 5 arches, 30 yards; road continues on right bank of this river for 2 miles. 16 m., village, 3 pilos. 19 m., cross stream flowing e.s.e. 20.6 m., pilo; cross stream flowing e.s.e.; suburb of Ch'êng-Tu. 22 m., north gate of Ch'êng-Tu, altitude 1504 feet.

July 10th.—*Ch'êng-Tu to Shuang-Liu*.—Starting from the temple—Wu-Ho-Tz'u—where Liu-Pi is buried, outside the s.w. wall of Ch'êng-Tu. .4 m., cross stream flowing e. .6 m., tea-house. .8 m., cross stream 10 yards wide,

flowing s.e. 1.1 m., cross stream flowing s.e.; village. 1.7 m., cross stream flowing s.e. 2.7 m., cross stream 10 yards wide, flowing s.e. 3.1 m., cross stream flowing s.e. 3.4 m., town of Tsu-Ch'iao, altitude 1575 feet. 3.8 m., cross river flowing n.w.; cross it again at 4.6 m., flowing s. 4.8 m., village. 4.9 m., cross river 40 yards wide, flowing s. 5.7 m., village. 6.2 m., cross stream flowing s.e. 6.8 m., cross stream flowing s.e. 7 m., cross stream flowing s.e. 7.1 m., 2 pilos. 7.4 m., enter Shuang-Liu by n.e. gate; altitude 1647 feet.

11th.—*Shuang-Liu to Hsin-Chin-Hsien*.—Leave Shuang-Liu by s. gate. .6 m., cross stream 5 yards wide, flowing s.e.; pilo, and pagoda of 13 stories. 1.7 m., cross stream 10 yards wide, flowing s.e.; village. 3.7 m., cross stream flowing s.e.; village. 3.8 m., cross river 40 yards wide, flowing s.e., by a bridge called Kao-Ch'iao (High Bridge). Hills on left of road, 100 feet high, called Mu-Ma-Shan (Wood-Horse Hill). These hills run parallel to the road almost as far as Hua-Ch'iao-Tsu, increasing in elevation to 200 feet. 5.6 m., cross stream flowing s.e. 5.9 m., Chan-To-P'u, market town. 6.7 m., cross stream flowing s.e. 7 m., cross stream flowing s.e. 7.1 m., huts. 7.9 m., fine grove of firs, bamboos, and trees, with houses amongst them, on right of road. 8.3 m., houses and small cottages with large gardens, separated from one another by about 100 yards. 9.8 m., town of Hua-Ch'iao-Tsu, altitude 1532 feet. The road from Ch'eng-Tu to this town, which is very good and broad throughout, passes over a perfectly flat plain; soil, a grey clay. The country is entirely under rice cultivation, nothing else, except round the houses and in gardens. Many separate farmhouses scattered about, surrounded by trees and bamboos. There are many minor streams on both sides of the road, besides those mentioned. 10.2 m., cross stream 10 yards wide, flowing s.e. 11.8 m., village. 12 m., cross stream flowing s. 12.2 m., cross dry bed of river with many rushes in it; two channels of water flowing s., one, 50 yards wide, 2 miles an hour, the other 30 yards wide; ferry across each. 12.7 m., cross stream flowing s. Pagoda, 150 feet high, on hill 1 mile on left of road. Temple near road on right. 12.8 m., suburb of Hsin-Chin-Hsien; 2 pilos. 13 m., enter Hsin-Chin-Hsien by e. gate, altitude 1595 feet; 2 pilos. Hills of red sandstone, well wooded, 200 feet high, 1 mile to s.

12th.—*Hsin-Chin-Hsien to Ch'ung-Chou*.—Leave Hsin-Chin-Hsien by w. gate. .4 m., cross stream flowing s. into the Hsi-Ho. .9 m., cross stream 10 yards wide, flowing s. into the Hsi-Ho; many pilos. 1 m., village. 1.2 m., cross stream flowing s. into the Hsi-Ho, by covered bridge. Nothing but rice cultivated here; some of the rice-fields looking dry. 2.2 m., cross stream flowing s. into the Hsi-Ho. 2.6 m., cross 2 streams with stone bridges, affluents of the Hsi-Ho. From Hsin-Chin-Hsien to this point, the road is on left (n.) bank of the Hsi-Ho, which flows to the s.e. Its banks are 25 yards wide; there is scarcely any current. 4.6 m., cross stream flowing s.; tea-houses. 4.9 m., cross stream flowing s. 6 m., town of Yang-Chia-Ch'ang, altitude 1585 feet; very good inn. 6.4 m., cross bed of a large river almost dry, bank 12 feet high, reddish clay; two narrow channels of water flowing s.; ferries. 6.9 m., pilo; cross stream flowing s. 8.4 m., cross stream flowing s. 9.9 m., cross stream flowing s.e. 10 m., cross stream 12 yards wide, flowing s.e., by bridge of 3 arches. 10.1 m., village. 12.9 m., cross stream flowing s. 13.2 m., first sight of the mountains from this point. 13.8 m., cross stream flowing s.s.w. 14.2 m., village, altitude 1740 feet. 15.5 m., cross stream flowing s. 15.9 m., cross stream flowing s. 16.3 m., cross stream flowing s.; village with pilo. 17.6 m., pilo. 17.7 m., cross stream flowing s. 17.8 m., pilo being erected. 18 m., 4 pilos. 18.2 m., cross stream flowing s. 18.5 m., city of Ch'ung-Chou, altitude 1637 feet; 2 pilos. Pagoda (unfinished), 2½ miles to s.e. The road from Hsin-Chin-Hsien to this town is very good. Country drier than it was farther east. Nothing but

rice cultivation. Detached houses, amongst trees and bamboos; country thickly-wooded. Soil, yellow-grey clay; village streets sometimes paved with conglomerate. The country round Ch'ung-Chou gets very dry. Scarcely any water. Some of the rice in flower. Road from Ch'ang-Tu over a perfectly flat plain all the way, to this city.

13th.—*Ch'ung-Chou to Pai-Chang-Yi*.—Leave Ch'ung-Chou by e. gate. 1 m., cross the Nan-Ho (bed 100 yards wide), flowing s.e., by bridge of 15 arches, 240 yards long, and  $9\frac{1}{2}$  yards wide, with 3 pilos. 1.1 m., village; pagoda on hill,  $\frac{1}{2}$  mile to left of road. 1.6 m., village. Road on crest of wooded hill, 100 to 150 feet high, for  $1\frac{1}{2}$  m. Reddish-yellow clay, slopes uncultivated, chiefly covered with fir-trees. The flat parts chiefly rice, beans, Indian corn, and a little cotton. Bamboos here are very small. 3 m., cross stream flowing n.w. 3.4 m., cross stream flowing n.w. 3.5 m., pilo. 3.8 m., cross stream flowing e. 4.5 m., village. The road hence to near Pai-Chang-Yi follows crest of an undulating ridge, about 100 feet above the valley, and is exceedingly tortuous; it is very good, but not so good as it is farther east. About half the country is given over to the cultivation of rice, beans, and Indian corn, also a little cotton. The remainder is well wooded with firs, and a small tree with a leaf like a chestnut; there are also a good many poor bamboos. All the country on both sides of the road is undulating, and though there are no large woods, it has all the appearance of being densely wooded, owing to the numbers of large clumps of trees, which also generally limit the view to about 100 yards in any direction. There are a good many detached houses, but not many villages. Soil, reddish-yellow clay. 7.8 m., town of Ta-T'ang-P'u, altitude 1681 feet. 10.7 m., market town. 13.4 m., village. 14.2 m., cross stream flowing e.s.e. 14.5 m., cross the Pai-Chang-Ho, flowing e.s.e., by bridge of 5 arches, called Tung-Ch'iao. 14.6 m., town of Pai-Chang-Yi, altitude 1920 feet.

14th.—*Pai-Chang-Yi to Ya-Chou-Fu*.—2 m., cross stream flowing n.e., into the Pai-Chang-Ho. Hills to s., 150 feet high. 3.7 m., temple and tea-house. 5.1 m., village. 10.4 m., 2 pilos. 10.5 m., cross river flowing e.s.e., by covered bridge 70 yards long. 10.7 m., city of Ming-Shan-Hsien, altitude 1660 feet. Between Pai-Chang-Yi and Ming-Shan-Hsien the country is very undulating, long ridges running n.e. and s.w. The tops of the hills are 200 or 300 feet above the valleys. The tops of the hills and bottoms of the valleys are laid out in terraces for rice; the sides are well cultivated with Indian corn. There are many clumps of trees, chiefly fir, and also 3 sorts of bamboos, some of them very fine. Road along the tops of the ridges. It is paved, but in many places with great round boulders that make travelling very bad. Soil, red and yellow clay, and sand.  $2\frac{1}{2}$  miles to the w. of Ming-Shan-Hsien, a ridge 1500 feet high, runs in a s.w. direction for about 10 miles. 12.4 m., cross stream flowing s.e. Road from Ming-Shan-Hsien to this point, in a flat valley between two ridges of red sandstone. Rice cultivation. 12.9 m., cross stream flowing e.s.e. Road amongst detached hills of red sandstone, strike n. and s., dip  $20^\circ$ . 13 m., cross stream flowing e. Road ascends stream, which flows through a narrow gorge of red clayey sandstone with precipices on the n.w., on right (s.) bank, to near 14.7 m., summit of pass—Chin-Chi-Kuan, altitude 2036 feet; the hills on either side rise 800 feet above the pass. A ridge 700 feet high runs s.w. to Ya-Chou-Fu, about 1 mile on right of the road; valley between it and the higher ridge behind. Road descends slope of hills to 16.5 m., town of Yao-Ch'iao. The Ya-Ho, flowing e.n.e., about 1 mile s.e. of town. This river runs through a flat and fertile valley, bounded by ridges on both sides; the valley is devoted to rice cultivation, the slopes of the hills Indian corn. 18.1 m., village of Tung-Tze-Yuen. From this point the road passes along the left (n.w.) bank of the Ya-Ho, to near Ya-Chou-Fu, when it crosses to the right bank, and shortly after leaves

the river. A ridge 1500 feet high, 1 mile from right bank. 19 m., cross stream from n.w. 20·2 m., cross stream from n.w. by covered wooden bridge of 7 spans, 66 yards long. 20·3 m., cross the Ya-Ho, to right bank, by a ferry; the bed is about 200 yards wide, water 40 yards, and shallow, current 4 miles an hour. 20·6 m., cross large tributary, from s., of the Ya-Ho, by stone bridge 53 yards long. 21·6 m., s. gate of city of Ya-Chou-Fu, altitude 1671 feet.

15th. — *Ya-Chou-Fu to Kuan-Yin-P'u.* —  $\frac{1}{2}$  m. from s. gate of Ya-Chou-Fu to Kuan-Yin-P'u, the road is on left (w.) bank of a river which flows generally n.n.e., turning to e. near Ya-Chou-Fu where it joins the Ya-Ho. 1 m., village; hills to n. 500 feet high, with higher peaks behind. 2·5 m., village; river flows through a gorge, with cliffs 150 feet high on left bank, 200 feet on right bank. Hills on right of river, 500 feet high, very much broken, lower slopes all cultivated. Wide open valley between them and hills behind, 1500 feet high. Hills on left of river, 1500 feet high, cultivated with Indian corn to the tops. Rocks, red sandstone. 3 m., village. 4·5 m., cross stream from w.; hills to w., 500 feet high. A chain of peaks 1500 feet high extends to near Kuan-Yin-P'u, about 1 mile e. of river. 5·4 m., cross stream from n.w.; hills to w., 500 feet high. 5·8 m., cross stream from n.w. 6 m., cross stream from n.w.; hills to w., 500 feet high. 6·4 m., Tzū-Shih-Li, altitude 2004 feet. 6·6 m., cross stream from n.w. 6·9 m., cross stream from n.w., by covered bridge. 7·5 m., cross stream from n.w. 8·2 m., cross stream from n.w.; village. Hills to w. 1500 feet high. 9·4 m., cross stream from n.w. 9·8 m., Kuan-Yin-P'u, altitude 2484 feet. Valley 50 yards wide, entirely cultivated with rice. Stream enters river from w. Hills to s., 150 feet, and to w. 200 feet above river. Slopes of hills all cultivated with Indian-corn. Red sandstone rocks. From Ya-Chou-Fu to Kuan-Yin-P'u, the valley is laid out for rice cultivation; also the slopes of the hills where not too steep; but as Kuan-Yin-P'u is approached the amount of rice diminishes, and at the town itself there is scarcely any. Where the slopes are too steep for cultivation, the country is well-wooded with ash, acacia, fir, a tree called Ch'ing-Mu (dark wood), another called Shui-Kying-Kang (water-oak), the tung-oil tree, and round all the houses and by the roadsides, bamboo of two kinds. The road, which is paved or cut in the rock, is pretty fair, though it rises over one or two of the spurs.

16th. — *Kuan-Yin-P'u to Yung-Ching-Hsien.* — Road ascends small stream on left (n.) bank, to 3 m., cross stream from n. Road ascends hill 200 feet, to 1·7 m., summit of pass, Fei-Lung-Kuan, altitude 3583 feet. 4·4 m., village of Kao-Ch'iao; cross stream from s.e. flowing into the Yung-Ching-Ho, by covered bridge 12 yards long. From summit of pass to this village, the road zigzags above the stream, on slope of hill. All the hills cultivated right up to the top with Indian corn. Bamboos grow close to the top, and there are very small patches of rice in one or two places near the summit; the bottom of the valley is all laid out for rice cultivation. On the hill-sides are many trees, sometimes singly, sometimes in twos and threes, or in small or large clumps; there are many trees along the roadside. The houses all surrounded by trees and bamboos; a few fruit-trees, also water-oak, Ch'ing-Mu, firs, ash, acacia, tung-oil trees, and Japonica. 5·7 m., village. 6·1 m., village of Shih-Chia-Ch'iao, altitude 2190 feet. Hills to s., 500 feet above river, sloping 20°, all cultivated with Indian corn. 6·4 m., confluence of stream from e. with the Yung-Ching-Ho. Road ascends the Yung-Ching-Ho on right (e.) bank. 6·7 m., village; river valley  $\frac{1}{2}$  mile wide, hills both sides 500 feet above river, sloping 20°. 7·8 m., Hsin-Tein-Chan, market town. 8·4 m., flat plain  $\frac{1}{2}$  mile wide on w. of river. 9·3 m., cross stream from e. 10 m., spur on left bank 100 feet above river. 10·7 m., cross stream from e. 11·2 m., valley  $\frac{1}{2}$  mile wide, all occupied with river-bed. Hills on w. 100 feet, on e. 1500

feet above river. 11.3 m., cross stream from e. 11.8 m., river divides into two branches, each branch sweeping one bank; rice, and a little Indian corn, between the branches. Cross branch from s. by ferry. 12.5 m., e. gate of Yung-Ching-Hsien, altitude 2299 feet. A plain to n.,  $\frac{1}{4}$  mile wide between road and river, with rice cultivation. Hills to n. of river 200 feet high, sloping 20°; behind these hills is a range 1500 feet high. Hills to s., 100 feet, sloping 20°. Hills, red sandstone cultivated with Indian corn. Road from Kuan-Yin-P'u to Yung-Ching-Hsien very fair for a mountain road, but rough in places.

17th.—*Yung-Ching-Hsien to Huang-Ni-P'u*, ascending w. branch of the Yung-Ching-Ho, on right (s.) bank; for the first two miles,  $\frac{3}{4}$  m. distant. Leave Yung-Ching-Hsien by w. gate. 1 m. cross stream from s. Hills to n. of river 600 feet; cultivated with Indian corn to the top. 1.4 m., village. Hills to s. 300 feet high, slope 15°. 2 m., river-bed 300 yards wide with two channels. 3.3 m., village. Hills on n. of river 600 feet high, all cultivated with Indian corn up to the top; pagoda near summit. 3.7 m., cross stream from s.e. 4.1 m., road leaves main river and ascends a tributary on its right (e.) bank. 4.4 m., village; valley  $\frac{1}{2}$  mile wide. Ridge 800 feet high on w., sloping 20°. 4.8 m., cross stream from s.e. 4.9 m., village; hills on left of road 800 feet above river, sloping 20°, cultivated with Indian corn. Flat valley 200 yards wide. 5.5 m., stream enters river from w.; cross small stream from s.e. by covered bridge 8 yards long. Village. 6.6 m., cross stream from e. 7.1 m., Ching-K'ou-Chan, altitude 2670 feet. Just n. of the town there is a temple in a very fine clump of trees. 7.4 m., cross stream from e. 7.7 m., a large tributary comes in from the w. bounded on the s. by thickly wooded cliffs, which form a prominent bluff, covered with deep-green trees, overhanging the main river, which here flows through a dark and wooded gorge. The river is bounded on the e. by hills sloping 30°, cultivated at the bottom with Indian corn; on the top are wooded cliffs. 7.8 m., cross river by a stone bridge to left (w.) bank. 7.9 m., stream enters river from e. 8.5 m., cross stream from n.w. by covered wooden bridge; village. Hills 500 feet above river, sloping 20°, cultivated with Indian corn. 8.6 m., stream enters river from s.e. 9.1 m., village. 9.2 m., cross stream from w. 9.4 m., cross stream from w. Hills on w. 400 feet above river, sloping 20°; ridge on e. 200 feet above river, sloping 20°. 10 m., stream enters river from e. Hills on e. 500 feet above the river, sloping 20°; behind are mountains 2000 feet high, wooded and cultivated. 10.2 m., iron-rod suspension-bridge across river. 10.4 cross stream from w. 10.6 m., hills on both sides 500 to 800 feet above river. 10.9 m., stream enters river from s.e. 11 m., iron-rod suspension-bridge across river. 11.1 m., cross stream from n.w.; town of Huang-Ni-P'u, altitude 3725 feet. From Ching-K'ou-Chan to Huang-Ni-P'u, the hills bounding the valley are of red sandstone, much broken and undulating, nowhere more than 500 to 800 feet above the river; they mostly slope gently 15° to 20°, and are cultivated with Indian corn right up to their summits. There are patches of wood in clumps, and many trees. Behind the hills, on both sides of the river, mountains rise 1500 to 2000 feet; they are also well cultivated, and a good deal wooded, nowhere appearing very steep. The bottoms of the valleys are always laid out for rice, and the slopes for Indian corn. The road from Ching-K'ou-Chan to Huang-Ni-P'u is paved all the way with smooth, slippery stones, but it cannot be considered bad for a mountain road.

18th.—*Huang-Ni-P'u to Ch'ing-Ch'i-Hsien*.—At Huang-Ni-P'u hills to s. rise 600 feet, sloping 30°; behind are wooded mountains 2000 feet high. Road ascending river on left (n.) bank. .3 m., cross stream from n.w.; stream enters river from s.e. .9 m., cross stream from n.w. 1.2 m., cross stream

from n.w., by suspension-bridge; altitude 4132 feet. A valley runs up n.w. to a wooded mountain, 2000 feet high. Hill-sides all cultivated with Indian corn. Wooded hill to s., 1500 feet above river, sloping 85° to 40°. A very small bamboo here; this is the limit of bamboo. East of this point, hill-sides cultivated with Indian corn up to their summits; no cultivation westward. 1.5 m., altitude 4545 feet; road crosses river to right (s.) bank by iron-chain suspension-bridge 15 yards long, and ascends a tributary. The main river runs between wooded hills 1500 feet high, sloping 50°. Road crosses a ridge, wooded hills, sloping 30° to 40°, to 2 m., village of Hsiao-Kuan; altitude 4809 feet. Gate across road at summit of pass. 2.2 m., road regains right bank of river; cross stream from s. 2.3 m., stream enters river from n. 2.9 m., cross river to left (n.) bank by bridge of logs laid across; altitude 5123 feet; streams enter river from n. and n.w. 3 m., village. 3.2 m., cross stream from w., by bridge of logs laid across. Road zigzags up hill to 4.4 m., village of Ta-Kuan, at summit of pass; altitude 5754 feet. From Hsiao-Kuan to Ta-Kuan, wooded hills 1000 to 1500 feet above the valley, sloping 45° to 60°. 4.6 m., stream enters river from s. 5.5 m., stream enters river from s.s.e. 5.8 m., cross stream from n.w. 6 m., cross river to right (s.e.) bank. 6.2 m., from this point the rocks are a rotten, red granite, up to summit of T'ai-Hsiang-Ling-Kuan. 6.7 m., cross river by wooden bridge to left bank; a very small patch of cultivation high up. 6.9 m., cross river by wooden bridge to right bank. 7 m., village; altitude 6973 feet. 7.5 m., cross stream from s.s.e. 7.7 m., stream enters river from n. 7.9 m., cross stream from s.s.e. 8.1 m., from Ta-Kuan to this point, mountains, wooded, and very green, 1000 to 2000 feet above the valley, sloping 35° to 50°; no cultivation. 8.4 m., tea-house, altitude 8140 feet; stream enters river from w. Road zigzags up pass. 10 m., source of river; hills to n., 1000 feet high. 10.6 m., summit—T'ai-Hsiang-Ling-Kuan, altitude 9366 feet. There is no more wood after crossing the summit, but very smooth grassy slopes. 10.9 m., tea-house, Ts'ao-Hsüeh-P'ing. Road zigzags down pass on right bank of stream flowing s.w., to 12.2 m., village; altitude 7840 feet. A little tobacco in gardens, first cultivation. Wild bamboo and holly. Stream turns s. 12.8 m., stream enters river from e. First bean cultivation. 13 m., a cross-country road, without inns, leads to the w.; it joins the main road again, a little before I-T'ou-Ch'ang. 13.3 m., village; altitude 7187 feet. First Indian corn. 15 m., n.e. gate of Ch'ing-Ch'i-Hsien; altitude 5478 feet. Road from Huang-Ni-P'u to Ch'ing-Ch'i-Hsien, very bad. Rocks w. of summit to Ch'ing-Ch'i, limestone, and red sandstone; s. of Ch'ing-Ch'i, red clayey sandstone; red sandstone strata nearly horizontal. s. of Ch'ing-Ch'i the hills have no trees, but are all cultivated with Indian corn. Road to s.e. leading to Ning-Yuen-Fu.

19th.—*Ch'ing-Ch'i-Hsien to Fu-Hsing-Ch'ang*.—Leave Ch'ing-Ch'i by s.w. gate. .4 m., cross stream flowing s.e., altitude 5156 feet. 2.5 m., altitude 5842 feet. A road to s.e. 3.4 m., village. Slopes on w., 10°; beans and Indian corn. Slopes to s. 10°, covered with loose rocks; Indian corn. Road from Ch'ing-Ch'i to this village, very bad. Source of stream flowing s.w., on left of road. Road descends stream on right (w.) bank. 4.1 m., altitude 5202 feet. 4.7 m., first rice cultivation. 5.4 m., slopes on e. 30°, cultivated. 5.5 m., village with trees; scarcely any trees above this point. 5.9 m., cross stream from n. Road leaves stream, and crosses over a spur to river flowing s.e. 6.9 m., cross stream from n.n.e. Road ascends river on left (n.) bank. 7.4 m., cross stream from n. 7.5 m., town of Fu-Hsing-Ch'ang, altitude 3873 feet; river-bed  $\frac{1}{4}$  mile wide. To the s.w., steep hills 1000 feet high, sloping 60°; to the n.w., hills 300 feet high, sloping 15° to 30°. Rice and Indian corn. Road between Ch'ing-Ch'i and Fu-Hsing-Ch'ang exceedingly bad; dangerous after rain.

20th.—*Fu-Hsing-Ch'ang* to *I-T'ou-Ch'ang*, ascending river on left (N.E.) bank.—6 m., cross stream from N.; village. Large tributary enters river from S.W. 1 m., hills to W., 600 feet high, sloping 30°, in very straight smooth slopes to the valley; Indian corn on slopes. To the N.E., hills 500 feet high, sloping 15° to 20°, and more broken with loose stones and rocks; Indian corn on slopes of hills; rice in flat river-bed. Soil, red clay. Mountains of red sandstone, striking E. and W.; dip 40° to S. 2.3 m., village. To the S.W., hills 1000 feet high, sloping 30°, in straight smooth slopes. To the N.E., hills 300 feet high, sloping 15°, broken with stones and rocks. 2.4 m., cross stream from N.E. 3.4 m., village; cross stream from E. 3.7 m., stream enters river from S.W.; village on right bank of river. Slopes of hills cultivated with Indian corn. 4.3 m., hills to N.E., more steep and broken; Indian corn cultivated up to the tops. Road in bed of the river, which is  $\frac{1}{2}$  mile broad and quite flat, and cultivated with rice. 4.4 m., hills to N.E., 200 feet high. 4.6 m., road leaves bed of river; village of Pan-Chiu-Ngai, altitude 4279 feet. Hills to N.E., 100 feet high, sloping 10°. Stream enters river from S.W. 5.1 m., cross stream from N.E.; stream enters river from S.W.; 6.2 m., cross stream from N.E.; stream enters river from S.W. Valley running S.W. to a wooded mountain, 4 miles distant. Hills to the W.S.W., 1000 feet high, sloping 30°, cultivated with Indian corn up to the tops. Hills to the N., 300 feet high, sloping 15°, much broken, and cut up by ravines, cultivated with Indian corn; rice in the valley. 6.8 m., a cross-country road, from N.E. of Ch'ing-Ch'i-Hsien, here joins the main road; cross stream from N.E. 7.2 m., village. Mountains to S.W., 1000 feet high, sloping 30°, cultivated with Indian corn to the tops. Hills to N.E., 500 feet high. Hence to *I-T'ou-Chang* the valley is more open, there are a great many trees in clumps, and a large number of the wax-insect tree. 7.3 m., cross stream from N.E. 8 m., stream enters river from W.S.W.; village on right bank of river. Mountain to S.W., 1000 feet high, sloping 20°, cultivated with Indian corn to the top; a good many trees in clumps. Rice in the valley. 8.5 m., hills to N.E., 200 to 300 feet high, sloping 5° to 15°, much broken. 9.5 m., cross stream from N.N.E., by stone bridge of one arch. Spurs, sloping 10°, from the mountain to the N.E., which is 1500 feet high. 10 m., town of *I-T'ou-Ch'ang*; altitude 4882 feet. Stream, enters river from S.S.W. To the N.E., low spurs much broken, sloping 5°; to the N., hills 1000 feet high. Hills to W., 1000 feet high, sloping 30°. Indian corn nearly to the top; more wood than farther E. A wooded mountain 4 miles to S.W. The tops of the mountains are wooded. Road from *Fu-Hsing-Ch'ang* to *I-T'ou-Ch'ang* is very fair, but has one or two bad places. Hills on N.E. of valley generally 300 feet high; on S.W. 1000 feet. The rocks are of red sandstone; in the neighbourhood of *I-T'ou-Ch'ang* they are more yellow. Rocks strike nearly E. and W., dip 40°. A little limestone near *I-T'ou-Ch'ang*.

21st.—*I-T'ou-Chang* to *Hua-Lin-P'ing*, ascending river on left (N.) bank.—1.2 m., river runs through a precipitous gorge for  $1\frac{1}{2}$  m.; road zigzags to the top of the spur above the river, and is continued at 200 feet above it. 1.4 m., cross large tributary from N.N.E. by stone bridge. 2 m., cross stream from N.E. 2.2 m., a mountain to S.W., 1000 feet above the river, sloping 30°, cultivated with Indian corn nearly to the top, which is more steep and wooded. To the N.E., a slope of 5° up to a hill 1000 feet above the river; nearly all Indian corn, a very little oats and buckwheat, and a few patches of wood. Bamboo in the valley below. 2.5 m., cross stream from N.N.E. 2.9 m., cross stream from N.N.E. 3.3 m., road descends to river. 3.6 m., village of Kao-Ch'iao, altitude 6002 feet; cross stream from N.N.E. 4 m., cross stream from N.N.E., by stone bridge. 4.2 m., stream enters river from S.E. Upper slopes of mountains to the S. are all wooded; lower slopes, Indian corn. Hills slope down to river, 20° to 30°. Gentle slope down to river on the N., 10° to

15°; a good deal broken. Road hence to 6 m., on spurs of hills above river. 5 m., stream enters river from N.E. 5.5 m., San-Ch'iao-Ch'eng, altitude 5830 feet; cross stream from N.E. by covered bridge. There is coal in the mountains here. Rocks, red-yellow sandstone. Road from I-T'ou-Ch'ang, very good; red sandstone. 5.9 m., village; large tributary enters river from W.S.W. Road descends to river. 6.2 m., cross stream from N.N.E.; village with bamboo, altitude 5853 feet. River between steep hills 1000 feet high; half cultivated, half low scrub. 6.9 m., village. 7.3 m., cross stream from N. 7.6 m., stream enters river from N. Hills to S.W., 300 feet above river; hills to N.E., 600 feet above river, partly cultivated; a great deal of low jungle, few large trees. Cross river to right bank, and almost immediately recross to left bank. 8 m., village, altitude 6629 feet. Hence to summit of pass—Wu-Yai-Ling—the road is close to the stream, very steep and very bad. Steep hills on both sides, covered with green underwood. Rocks, red sandstone. 8.4 m., cross river to right (S.W.) bank. 8.9 m., cross river to left bank; village. Hills sloping 50°, 300 feet above the stream; little cultivation, dense green jungle. 9.3 m., cross river to right bank; a small patch of buckwheat. 9.8 m., cross river to left bank. 10.3 m., village, near source of river; altitude, 7850 feet. Road zigzags up to 10.9 m., summit of pass, Wu-Yai-Ling, or Fei-Yueh-Ling, altitude 9022 feet. 11.1 m., cross stream, flowing N.E. Road descends river on left (W.) bank, in a valley closed by hills, covered with low green jungle. 11.2 m., stream enters river from E. 11.3 m., altitude 8055 feet. 11.5 m., cross stream from W. 11.7 m., village, altitude 7730 feet; granite pebbles in bed of stream. 11.9 m., stream enters river from S.E. 12.2 m., Hua-Lin-P'ing, altitude 7073 feet. Hills to N. 1000 feet high, sloping 30°, yellow sandstone, dip 40°, cultivated with Indian corn, partly low jungle, very green.

22nd.—*Hua-Lin-Ping* to *Leng-Chi*, descending river on left (S.W.) bank. —2 m., cross stream from S.W. 3 m., cross stream from S.W. by covered wooden bridge; altitude 6805 feet. South of river, limestone rocks, friable and slaty, strike N.E. and S.W. Mountain 1000 feet high, sides covered with Indian corn and low jungle. 4 m., cross stream from S.W. 8 m., cross stream from S.W. by spar bridge, 10 yards long; village, altitude 6107 feet. A few insect-trees. 1 m., cross stream from S.W., altitude 6095 feet. 1.1 m., cross stream from S.W. 1.3 m., altitude 6132 feet; road 500 feet above river. 1.7 m., altitude 5472 feet. 2 m., village at river-level, altitude 5107 feet; stream enters river from E. On the N. are limestone mountains 1500 feet high, slope 30°; Indian corn nearly to the top, no wood, all green. 2.2 m., village at river-level; bed of river narrow. Mountains to S. sloping 50°, little cultivation on them. 2.4 m., cross stream from S.; village. Road 200 feet above river. 2.9 m., houses; first rice cultivation. River separates into two branches. 3.3 m., altitude 4976 feet. 3.8 m., a large village with many trees and bamboos. On the S. are limestone mountains 1500 feet high, sloping 30°; Indian corn nearly to the top. Road, which has been W., suddenly bends to N., and ascends the Tung-Ho or Ta-Ho (that joins the Ya-Ho at Kia-Ting-Fu) on its left (E.) bank. 4 m., cross the two branches of tributary that road has been following by a spar bridge. 5 m., cross stream from E. 5.2 m., *Leng-Chi*, altitude 4633 feet. River is here 40 yards wide. To the S. cultivated hills 1000 feet high, sloping 30°; pine-forests at top. Limestone rock striking E. and W., vertical. To the W., mountains 1500 feet high, wooded at the top.

23rd.—*Leng-Chi* to *Lu-Ting-Ch'iao*, ascending the Tung-Ho on left (E.) bank. —4 m. cross stream from N.E. 1.5 m., stream enters river from S.W. Road 500 feet, above the river. At the mouths of the streams, a small flat plain generally projects into the river. 2.6 m., village. Ridge 2000 feet high, 2 miles from right bank, continues N. about 5 miles. 3.1 m., village between



road and river. To the *e.* are grassy spurs rounded at the top. Cultivation below road, which is 200 feet above river. To the *w.* very little cultivation on slopes; no wood on tops of mountains. 3·7 m., stream enters river from *w.* 4·1 m., village. 4·2 m., cross stream from *e.* 5·2 m., village. Road at foot of spur, with slopes 15° above it. Between road and river a slope of 40°. Road 500 feet above river. Very little cultivation above the road, all cultivated below it. To the *e.*, spurs much broken. To the *w.* cultivation in patches; hills sloping 30°. 5·6 m., stream enters river from *w.* 5·9 m., road 500 feet above river. Rice in the plain below. 6·4 m., village; cross stream flowing *w.*, afterwards *s.w.* 6·6 m., Indian-corn cultivation, a long way above road. 6·8 m., cross stream from *e.* 7·1 m., stream enters river from *w.* 7·5 m., limestone rocks, strike *n.e.-s.w.* 7·8 m., village on right bank of river. 8 m., village. 8·1 m., stream enters river from *w.* 8·3 m., village; a few bamboo and insect-trees. Road at river-level. Cross stream from *e.s.e.* 9 m., village. 11 m., town of Lu-Ting-Ch'iao, on both banks of river; altitude 4640 feet. Cross river to right (*w.*) bank, by iron-chain suspension-bridge 100 yards long. Stream enters river from *e.* Mountains on both sides of river, 2000 to 3000 feet high, those on the *w.* throwing out long spurs, grassy slopes 40°, a little cultivation and a very little wood. Road between Lêng-Chi and this town is very good.

24th.—*Lu-Ting-Ch'iao to Wa-Ssü-Kou*, ascending the Tung-Ho on right (*w.*) bank.—5 m., village on left bank of river. 8 m., village; precipices 80 feet high. 1·1 m., mountains on *w.*, precipitous. 1·4 m., a rocky, precipitous point on *w.* bank of river. 1·8 m., village; a little rice, but very little cultivation to the *w.*, grassy slopes 40°. To the *e.* no cultivation at all. 2·2 m., road rises 400 feet above the river, runs along a smooth slope 50° down to river; no cultivation. Mountain 2000 feet high to *e.*, sloping 40°, wooded at top; no cultivation. 2·5 m., stream enters river from *n.e.* 3·2 m., road passes through a gate, and begins to descend. 3·5 m., cross stream from *s.w.*; villages on both sides of stream, with bamboo. Valley leading *s.w.* to wooded peak 2000 feet high. Road  $\frac{1}{2}$  mile from river, and 200 feet above it. Rice and sago in valley. 4 m., town at foot of spur from a mountain 2000 feet high with smooth sides, and patches of cultivation. 4·2 m., road at rocky point 500 feet above river. Mountain 2000 feet high, to *e.*, wooded at top and throwing out spurs to river. 4·9 m., road 500 feet above river. 5 m., first village of the aborigines, on left bank of river. 5·2 m., stream enters river from *n.e.* Mountain bearing *e.* sloping 50° right down to river. Mountains *w.* of road, 2000 feet high. Road begins to descend to river. 5·7 m., road at river-level. Rocky and precipitous point on *w.* bank. Long, smooth slopes on left bank, from a ridge to the *e.* 2000 feet high. 6 m., Hsiao-P'êng-Pa, altitude 4653 feet. Mountains on both sides, steep and broken. To the *n.* of Hsiao-P'êng-Pa there is a good deal of steep up-and-down road, and sharp corners. 6·4 m., and 6·6 m., precipitous points on *w.* bank of river. 6·8 m., cross stream from *s.w.*; village. 7·3 m., cross stream from *w.* 7·4 m., stream enters river from *n.e.* 8·5 m., village. 8·7 m., mountains to *n.* and *s.* with very regular sides, that to *n.* 2000 feet high, sloping 40°. Road commences to ascend above the river. 9·2 m., road 300 ft. above the river. 9·6 m., cross stream from *s.w.* Road 500 feet above the river; below the road the mountain slopes 40° down to river. 10·2 m., village; precipitous and rugged hills on both sides of river. 10·5 m., cross stream from *s.w.* by covered bridge. Valley to *s.w.* leading up to snow mountain about 8 miles distant. 11 m., slopes to *n.* very precipitous, running straight down to river. Peak, bearing *s.*, 3000 feet high, and wooded. Peak, bearing *e.*, 4000 feet high, well wooded. 11·3 m., flat,  $\frac{1}{2}$  mile wide, *s.e.* of road at foot of slope, between it and the river. Stream enters river from *e.* Road crosses spur of hills to avoid band of river, where a large tributary enters from *n.n.w.* 12·5 m., Wa-Ssü-Kou,

altitude 4933 feet. Very little cultivation, mountain sides steep and precipitous; a little rice.

25th.—*Wa-Sai-Kou to Ta-Chien-Lu*, ascending tributary of Tung-Ho on right (s.) bank.—5 m., mountain sides to s. partly cultivated; the rest, low, green jungle, with pines at the top. 8 m., stream enters river from n. Hills to n., precipitous. 1.4 m., cross stream from s. 2.2 m., cross stream from s. 2.7 m., cross stream from s.s.w. 2.9 m., precipitous mountain to n. 3.7 m., stream enters river from n.e. 4 m., mountain 1000 feet high to s. sloping 60°, wooded at the top, grass sides of low undergrowth. Road 200 feet above river. Precipitous mountain to n., 1000 feet high, wooded at the top. 4.1 m., precipitous hills n. of river, 300 feet high. 4.6 m., tea-house. 4.7 m., cross stream from s. 4.8 m., village. 5.1 m., a precipice, nearly vertical, 300 feet high, n. bank of river. 5.3 m., village; cross stream from s.w. 5.5 m., steep slopes to n., 1500 feet high, broken with precipices; no cultivation. 6 m., stream enters river from n.e. 6.1 m., Liu-Yang, altitude 6570 feet. Mountain to s. 1500 feet high. From *Wa-Sai-Kou* to *Liu-Yang*, the road is rather bad; but in places there are remains of a very old, fine, broad, paved road, with easy gradients. 6.5 m., stream enters river from n. 8.1 m., cross stream from s.e. Grassy slopes, 60° on both sides. Mountain on n. 1500 feet high. 8.5 m., stream enters river from n.w. 9.1 m., cross stream from s. Mountains on n. 1500 feet high; slopes on both sides of river 40°. 9.6 m., stream enters river from n.w. 9.8 m., pilo. 11.2 m., *Ta-Chien-Lu*, altitude 8346 feet. Road from *Liu-Yang* to *Ta-Chien-Lu*, very good.

7th August.—*Ta-Chien-Lu to Cheh-Toh*, ascending river.—Cross river on s. of *Ta-Chien-Lu*, to left (w.) bank by one-arch stone bridge. Stream enters river from n. 4 m., Lamassery. Hills about 1000 feet above river, sloping 45°; few trees, no cultivation. Round Lamassery and in bottom of valley, oats and barley. 7 m., cross stream from w.s.w. Palace of old king. Hills on right bank, 1000 feet above river, sloping 60°. 1.8 m., slopes on both sides 30° down to river, covered with green underwood. 2.2 m., cross stream from w.; hills 1000 feet high on each side; road 200 feet above river. 2.7 m., stream enters river from s. A road to s.e., leading to *Kien-Chang*. Snowy mount (*Ruh-Ching*) to s. 3.1 m., cross stream from n.w. 3.6 m. broken slopes of 45° down to river on both sides, covered with green underwood, but rocky in places. 4.5 m., hills steep and broken on both sides. 4.8 m., precipice on right bank, 100 feet high. 5 m., cross river to right (s.) bank by wooden bridge; hills rocky. 5.3 m., cross stream from s.s.w.; slopes 40° on both sides. 5.8 m., hills on both sides, 200 to 300 feet high, sloping 20° to 30° down to river, higher ones behind covered with green underwood. 6.4 m., cross river to left (n.) bank by wooden bridge. Valley more open and undulating. 6.9 m., stream enters river from s. 7.2 m., *Cheh-Toh*, altitude 10,838 feet. Cultivation in valley. Low hills to n. 200 feet high, sloping 20°, green. Stream enters river from s.w. Road from *Ta-Chien-Lu* to *Cheh-Toh* very fair.

8th.—*Cheh-Toh to An-Niang*, ascending river to *Cheh-Toh-Shan*.—A sharp, bare, craggy ridge, 1500 feet high, sloping 50°, on right bank, commences here and runs w. and w.n.w. It is bare at the top, but green below. 1.6 m., cross stream from n. 2.3 m., cross stream from n.n.e. Brushwood hills to s. 1000 feet high, sloping 30°, bare crags at top. To n., low slopes 15° down to river; rocks and shrubs. 3.1 m., slopes on both sides 25° down to river, bare at top. Those to s. have a few fir-trees half-way up. Lower slopes to n. covered with grass and green brushwood. 4 m., cross stream from n.n.e. Lakes behind the mountains to the s. 5.7 m., cross river by bridge, to right (s.) bank. 6.6 m., cross stream from s.w. A bed of slaty shale crops up here on left bank, striking n.e. and s.w., dip 10° to n.w. 8 m., slopes on both sides, 10° down to river, 500 feet high. 9.2 m., summit of pass—*Cheh-Toh-Shan*

(the "Jeddo" of Cooper), altitude 14,515 feet. Source of river. The crags to s. are about 200 feet higher. To the n. a gentle slope about 100 feet. The rocks are granite below, and limestone above, strike n.e., dip 60° to e. The ridge here forms a basin enclosing a little valley, running up to n.n.e., with steep, bare crags of limestone. Road from Cheh-Toh to this point, very good; and hence to An-Niang, exceedingly good. 9.4 m., source of river; road descends on left (s.) bank. 10.1 m., cross stream from s., flowing through wide open valley. 10.5 m., stream enters river from n.n.e. From this point to 14.4 m., there are hills on both sides, 1000 to 1500 feet high, sloping 30° down to river, but at bottom no more than 10°, with grass. 12.2 m., Ti-Zu or Hain-Tien-Chan; altitude 13,335 feet. Hot springs. 14 m., first cultivation; altitude 13,131 feet. 14.5 m., cross stream from s.s.w. From this stream to beyond An-Niang, on s. of road are rounded grassy hills, about 200 feet high, sloping 15° down to river, without any valley cutting through. 16.8 m., village of Nah-Shi, on right bank of river. 17.2 m., stream enters river from n.e. To the n. are grassy hills with round tops, 700 feet high, sloping 15° down to river, extending to An-Niang. 19.2 m., stream enters river from n. 20.5 m., stream enters river from n.n.w. 21.2 m., stream enters river from n.n.w. 21.6 m., An-Niang, or Ngan-Niang-Pa; altitude 12,413 feet. Very flat valley  $\frac{1}{2}$  of mile wide. The valley the whole way from the summit w. to An-Niang is magnificent. An open valley enclosed by hills, nowhere very steep, but gradually getting more gentle at the bottom. The sides of the hills, and the valley, covered with grass. Magnificent pasture; many wild flowers. From Nah-Shi to An-Niang, there are Tibetan houses on right bank of stream, about  $\frac{1}{2}$  or  $\frac{1}{3}$  mile apart.

9th.—*An-Niang to Ngoloh*, descending river on left (s.e.) bank.—1 m., valley called Goh-Gi on right bank running up to n.; in the distance a snowy mountain called Cho-Ri-Ka, bearing n. A stream flows down this valley, but before entering the river it turns to the s.w., and runs parallel with it for about 2 miles, forming a long, flat spit of land elevated about 20 feet above the river, on which houses are built, 300 or 400 yards apart. 1.4 m., temple near right bank of stream (Goh-Gi), on slope 50 feet above river. Hills to n. 500 feet high, sloping 50° down to river. 1.9 m., cross stream from s.e.; valley with a few fir-trees on top of hill. 2.8 m., stream (Goh-Gi) enters river on n. bank. 3.9 m., cross stream from s.e. House, with a few trees. Hills to n. 300 or 400 feet high, sloping 20°, a little broken. 4.4 m., stream enters river from n.w. Precipice to n., 100 feet high. Wide open valley, with road to n.w. 4.5 m., village of Tung-Che-Ka. Hills to s. 400 feet high, sloping 30°, broken. 4.8 m., grassy hills on right bank, 400 feet high, sloping 20° down to river. 5.2 m., cross river to right (n.w.) bank, by spar bridge, 10 yards long. 6.5 m., village. River turns s.e. down valley leading to snow mountain (Kung-Ka), 15 to 25 miles distant. Road ascends left (n.e.) bank of a tributary which enters river at this point, in a valley 800 yards wide. Hills on both sides, 500 feet high, with grassy slopes 30° down to river. Old fort on point of spur in fork of rivers. 7.6 m., fir-wood on top of hills to s. 8.1 m., cross stream from n. Valley of main stream opens out to 1 mile wide. 8.6 m., stream enters river from s.w. Grassy hills on both sides, 400 to 500 feet high, sloping 20°. 9.1 m., cross river to right (w.) bank by spar bridge 10 yards long. Village of about 12 scattered houses. 9.2 m., cross stream from w. by spar bridge. 9.6 m., hills on right bank, 400 feet high, sloping 30°, with a few broken, rocky crags. 9.9 m., cross stream from w.; along which a road leads to La-Li-Sheh. Hills on left bank rather precipitous at bottom. 10.2 m., cross stream from w. 10.7 m., stream enters river from n.e. Valley of main stream 1 mile wide. Hills on right side, 300 feet high, sloping 30° down to river. Hills on left bank, a little bare in places, sloping 50° down to river. 11 m. stream enters river from n.n.e. 11.4 m., Ngoloh, altitude

12,027 feet; a village nearly all Chinese, and called by them "Tung-Golo." (This is the "Tung-Oola" of Cooper.)

11th.—*Ngoloh to Wu-Rum-Shih*.—1 m., hills on both sides of river, 400 feet high, sloping 20°; all grass. 1.2 m., cross stream from s. 1.5 m., stream enters river from n. 1.8 m., hills on right bank, 300 to 400 ft. high, sloping 30° down to river, commence to be wooded. 2.3 m., cross stream from s. Main valley 100 yards wide. Valley to the s. wooded with firs. Hills to n., 300 to 500 feet high, sloping 30°; all grass. 2.5 m., cross stream from s.; a few houses at its mouth. 3 m., hills to s. sloping 40° down to river. Rocks broken, with shrubs and grass. Valley 50 yards wide. 3.6 m., about the end of cultivation. Slaty rocks crop out, strike n.e. and s.w.; nearly vertical. Hills to n. slope 30° down to river. Valley 20 yards wide. Stream enters river from n.w. 3.8 m., altitude 12,377 feet. 4.1 m., fir-trees, and a great deal of shrub like azalea. 4.4 m., cross stream to left (n.w.) bank, by bridge. 4.6 m., altitude 12,903 feet. Road begins to ascend rapidly to s.w. Valley 20 yards wide. Splendid turf hills sloping 30° down to river. 5.3 m., La-Tza (Tibetan) or Shan-Kên-Tzū (Chinese) (both names mean "Root of the Mountain"), altitude 13,040 feet. Only 1 house. Stream enters river from s.e. Cross stream from w. 5.6 m., road 200 feet above stream. Hills on left of road sloping 40° or 50° down to river, with fir-trees and shrubs; on right of road rounded hills 40° or 50°, covered with shrub like azalea. 5.8 m., source of river. 6.3 m., summit, Ka-Ji-La (Tibetan) or Ko-Urh-Shi-Shan (Chinese), altitude 14,454 feet. Snow pyramid Ja-Ra (King of Mountains) bears 40°. The Ja-Ra ridge appears to run about n.w. or n.n.w. To go to this from Ta-Chien-Lu, the road leaves by the n. or n. (?) gate—1 day's journey. Road from La-Tza to Ka-Ji-La is very steep, rising 1400 feet in 1 mile. 6.6 m., cross stream flowing s.e., altitude 14,400 feet. Road descending 50 feet from summit to this stream. 7.5 m., altitude 14,430 feet. Road ascends 30 feet from stream,  $\frac{1}{4}$  mile e. to this point, then descends again, and ascends to summit Do-Kû-La-Tza. 7.9 m., cross upper part of same stream as at 6.6 m., here flowing n. 8.2 m., summit, Do-Kû-La-Tza, altitude 14,597 feet. From Ka-Ji-La to this point is a beautiful undulating plateau, covered with the richest grass and buttercups. This plateau seems to extend a long way n. and s. In places slaty rocks crop out, striking e. and w. Mount Kung-Ka (seen from between An-Niang and Ngoloh) bears 135° from this place. A tributary of the Ya-Lung-Chiang rises 1 mile to the s.; road descends right (n.) bank. 9.7 m., altitude 13,800 feet. From Do-Kû-La-Tza to this point, the road descends by a steep zigzag over loose sharp stones. Valley of the river enclosed on both sides by hills sloping 50°, covered with firs and laurels; tops all grass. 11.1 m., cross stream from n.w. Mount Chein-Mieh-Goung bears 242°; no snow on it, but round, grassy top. 11.9 m., stream enters river from s.e. 12.1 m., a few firs on hill-side on right of road, nearly covered with a plant like azalea. 12.4 m., cross stream from n.w. 12.9 m., pine-forests begin again, on both sides of river. 13.1 m., first cultivation; altitude 13,327 feet. 13.6 m., stream enters river from e.s.e. Hills on right bank sloping 35° down to river; shrubs, holly, and a few firs. Hills on left bank, sloping 35°; firs, willows, and a tree that looks like birch. 14 m., Wu-Rum-Shih or Wu-Ru-Chung-Ku, altitude 12,048 feet. Hills on both sides 500 feet high; those on left bank sloping 30°, with fir and other trees; those on right bank sloping 35°, broken and rocky, with shrubs like azalea. Valley 100 yards wide.

12th.—*Wu-Rum-Shih to Ho-K'ou or Nia-Chû-Ka*, descending river.—.4 m., cross stream from n.w.; stream enters river from s.e. 1 m., stream enters river from s. 1.2 m., dense pine-forest to s.; rocky, precipitous, broken slopes, with a few pines, walnuts and peaches to n. 1.3 m., cross stream from w. 1.6 m., ruins; cross stream from n.n.w. 2 m., cross stream from n.

2.5 m., stream enters river from s., in a valley sloping 40° both sides down to stream; all fir. Main valley, hills 600 to 700 feet high sloping 35°; all pine-forests. 2.8 m., cross stream from n. Hills 600 to 700 feet high, sloping 35°; fir and low brushwood. 3.2 m., house on left bank of river. 3.4 m., stream enters river from s. 3.7 m., cross river to left (s.) bank by bridge. 3.9 m., hills on left bank sloping 40° down to river, covered with firs and a shrub like azalea. Wild cherries, peaches, a few currants and gooseberries. Trees like birch, 2 kinds of barberries in the valley. Hills on right covered with pine and shrub like azalea. 4 m., cross stream from s.w. 4.4 m., house. 4.9 m., streams enter river from E.N.E. and N.N.E.; cross stream from s.w. Hills on left bank 300 to 400 feet high, sloping 20°; fir, and a shrub like azalea. 5.4 m., Lamassery, Pan-Mu-Re,  $\frac{1}{4}$  mile from right bank of river. Hills on both sides 500 feet high, sloping 20°; those to n. covered with pines and shrubs; on s. all fir. 5.8 m., cross stream from s.w. 6 m., houses; cross stream from s.w. 6.8 m., hills on both sides 500 feet high, those on left bank sloping 25°, with pine, and a shrub like azalea; those on right bank sloping 20° down to river, with pines only. 7 m., cross stream from s.w.; stream enters river from N.E. 7.1 m., house. 7.5 m., cross stream from s.w. 8.6 m., cross stream from s.w.; stream enters river from N.E. Hills to n. sloping 25° to 30° down to river; firs and some shrub like azalea. Hills to s. sloping 15° to 20° down to river; firs and same shrub. 8.9 m., houses. 9.2 m., cross stream from s.w. 9.3 m., cross stream from s.w. 9.4 m., cross stream from s.w. 10 m., Ker-Rim-Bu (The Octagon Tower) or Pa-Ko-Lo, on a spur, altitude 10,435 feet; about 6 houses. 10.2 m., cross stream from s. 11 m., hills on both sides 500 feet high; those to n. sloping 50°, with pines at top, shrub like azalea below, rocky in places; those to s. sloping 30°, with pines and birch. Many walnuts in the valley, also wild peaches, plums, apricots and barberries. 11.1 m., stream enters river from n. 11.6 m., cross stream from s.e. 12 m., stream enters river from n., in a small valley which does not go through the ridge that commences here, and slopes 70° down to river, 500 feet; same shrub. 12.5 m., cross stream from s.e. River enters a gorge where hills slope down almost precipitously to water's edge. 13.3 m., cross river to right (n.) bank by spar bridge (new). 13.5 m., stream enters river from s.e. 14 m., hills on both sides 500 feet high sloping 70° down to river, with rocks and shrubs; and firs on s. bank. Cross large stream from N.E. by a new spar bridge. 15.4 m., stream enters river from s.e. 15.6 m., cross stream from n.w. 15.8 m., cross river to left (s.e.) bank by spar bridge. Hills on both sides about 600 feet high sloping 50° down to river, covered with shrubs and firs on s. bank. 16.2 m., cross river to right (n.) bank. Point of bare rock to n.; hills 500 feet high, rocky and precipitous, covered with low shrub. Hills to s. slope 70°. 16.4 m., stream enters river from s. 17.9 m., hills to s. about 500 feet high, rocky and precipitous; low shrubs and bare rock. 18.2 m., cross river to left (s.) bank by spar bridge with one pilo in the middle; immediately after this, a waterfall close to the road. 18.3 m., cross stream from s.e. 18.8 m., Ho-K'ou or Nia-Chü-Ka, altitude 9222 feet. The tributary we have been descending here discharges itself into the Ya-Lung-Chiang (Chinese) or Nia-Chü (Tibetan) river, which is from 50 to 120 yards broad, and flows s. A precipitous and rocky crag intervenes between the Ya-Lung-Chiang and the tributary, on right (n.) bank of the latter; this crag is 700 feet high; strata e. and w. nearly vertical, limestone and sandstone. South of Ho-K'ou, hills 800 feet high, sloping 70°, with pines at top, shrubs and grass below. West of Ho-K'ou and s. of stream, hills 800 feet high, sloping 70°; pines at top.

13th.—*Ho-K'ou* or *Nia-Chü-Ka* to *Ma-Geh-Chung*.—Cross Ya-Lung-Chiang by ferry to some houses—*Peh-Da-Chung*—on opposite (right) bank, about 100 feet above the level of the water. Ascend hills, 500 feet high, sloping

40°, pines at top, grass and scrub-oak below, on right (s.) bank of a stream which here enters the Ya-Lung-Chiang, by a rocky path 200 feet above it. .5 m., cross river to left (n.) bank. Peaches and barberries in the valley. 1.1 m., cross stream from n. Hills on both sides 500 feet high, sloping 40°; pines everywhere on s. side; on n. side pines at top, grass and scrub-oak with a few pines below. 1.6 m., cross the main stream, which flows from w.n.w., by a spar bridge, and ascend left (w.) bank of a tributary. 2 m., cross stream to right (s.) bank, by spar bridge. 2.9 m., cross stream to left (n.w.) bank by spar bridge. Hills to n. 600 feet high, sloping 60°; dense pine-forest. 4.1 m., cross stream from n.w. Hills on both sides 500 feet high sloping 60°; dense pine-forest. Rocks, sandstone, slaty-rocks, and shale, strata vertical, striking e. and w. From Ho-K'ou up to this point, road over sharp stones and rocks through forest of pine and other trees which completely obstructed the view. Cherries, peaches, and barberries in great quantities. 4.4 m., road gets a little better. 4.7 m., cross stream from n.w. Rocky crags to s., 800 feet high, sloping 60° to 70° down to river, with pines. 5.1 m., cross stream from n.w.; stream enters river from s. A grassy-topped hill to n. 5.4 m., cross stream from n.w.; stream enters river from s. An opening to n.w. called Shin-Ka. Hills on n. 300 to 400 feet high sloping 15° to 20°, nearly all covered with dwarf oak and a few pines. Hills to s. 500 feet high, sloping 60°, with broken crags and rocks showing through; pine-forest. From Ho-K'ou up to this point, the stream has run between hills sloping sheer down to it, leaving no flat ground whatever. The valley now opens out a little; a little wheat and barley. 6.3 m., cross stream from n.w.; hut. 7 m., Ma-Geh-Chung, altitude 11,971 feet; streams enter river from n.w. and s.e. Valley to w., hills 300 feet high, sloping 20°; chiefly oak-scrub. A valley to s.e., sides slope 60°, covered with pines, some at the top quite dead.

14th.—*Ma-Geh-Chung to Lit'ang-Ngoloh*, ascending stream to Ra-Ma-La on left (n.) bank.—.4 m., hills to n., 300 feet high, sloping 30°; grass and shrubs. Hills to s., 300 feet high, sloping 30°; pines. A little cultivation in the valley. .5 m., stream enters river from s. .9 m., cross stream from n. 1.2 m., the road, which is 100 feet above the stream, runs along a grassy plateau 40 yards wide. This plateau extends 1 mile to s.w. On the right, to n.w., hills rise 200 feet above it, with a slope of 35°, covered with oak and grass; rocks crop out. Hills to s. 300 feet high, sloping 20°; pines. 1.3 m., stream enters river from s. Valley to s., with grassy slopes of 20°, 200 feet high; pines. 1.8 m., stream enters river from s.s.w. Hills to n., 200 feet high, sloping 20°; oak. Valley up to n., covered with oak. 2.3 m., altitude 12,815 feet. Road at level of stream through thick woods. 2.7 m., cross stream from n. Hills to s., 300 feet high, sloping 20°; covered with pines. Dense oak jungle to the n. Road from Ma-Geh-Chung to this point, very fair. It now begins to be very stony. 2.9 m., stream enters river from s. Hills to s., 200 feet high, sloping 20°; pines, and grass at top. 3.2 m., cross stream, from n.n.e. Pines and oaks leading up to grassy tops on the s. Dense oak jungle on the n. Road better. 3.6 m., cross stream from n.n.e. Hills on both sides, 150 feet high, sloping 20°; oaks (on n. only), pines below, grass at top. Valley to n., leading up to grassy hill. 4 m., cross stream from n. Hills on both sides, 150 to 200 feet high, sloping 20°; a few pines and oaks below, grass at top. A small valley to n., like a basin. 4.6 m., altitude 14,413 feet. Above the pines and oaks. Source of the stream that road has followed. 5 m., Mt. Ra-Ma-La, first summit, altitude 14,915 feet. 5.6 m., La-Ni-Ba (hollow between mountains), altitude 14,335 feet. Source of stream flowing w.n.w., on right of road, in a valley, with pines in the hollow, grass above. Road w. of La-Ni-Ba passes over an undulating ridge of grass and wild flowers, many rhododendrons,

splendid grazing ground; it ascends for 2 miles to 7.6 m., second summit of Mt. Ra-Ma-La, altitude 15,110 feet. Rocks, quartz and sandstone striking e. and w., also a good deal of slaty shale. Road now goes along a grassy ridge to w., descending gradually. 8.6 m., road to s.w. leading to Lamassery. Source of stream flowing to n.w. 9.6 m., source of stream flowing s., in a valley, with pines in the hollow and grass above. 10.6 m., hill to s., 50 feet high, sloping 5°; grass. 11.1 m., Mu-Lung-Gung or P'u-Lang-Kung (Chinese), 2 huts. Source of stream flowing s., in a valley, with pines in the hollow, grass at top. Shale and slaty rocks striking w.n.w. Road bears 287°, to where it ascends to the w., about 2 miles beyond Lit'ang-Ngoloh. 11.6 m., road descends side of valley through a pine-forest. 12.1 m., altitude 13,838 feet. 12.8 m., steep zigzag over loose rough stones down to bottom; road very bad. 13.6 m., bottom of zigzag, altitude 12,384 feet. Cross stream from n.e., which runs into river on left of road, flowing s.e. and s. Road ascends river on left (n.) bank. 14.2 m., cross stream from n. Hills on left of river, 100 feet, and on right of river, 200 feet high, sloping 20°; grass and pines. Valley, 200 yards broad; nearly all grass, a little cultivation. 14.6 m., Lit'ang-Ngoloh (Shih-Wolo in Chinese), altitude 12,451 feet. Stream flows through it from n. Hills on both sides, 200 feet high, sloping 20°; grass and pines. Fields in valley divided by hedges and fences.

16th.—*Lit'ang-Ngoloh to Ho-Chü-Ka*.—Road ascends left (n.) bank of river. 6 m., stream enters river from s.; cross river to right (s.) bank; vil- lage. Black slaty shale striking e. and w. Sandstone and clay surface; grassy slopes. 9 m., stream enters river from n. 1.1 m., road leaves river, which turns n.w. 1.9 m., source of a stream on right of road flowing e. Source of a stream on left of road flowing s. Park-like undulations, patches of pine, rich grass, oak scrub. (Saw a musk deer.) 2.6 m., source of a stream on left of road, flowing e. and afterwards s. 3 m., Niu-Chang, altitude 13,900 feet. Streams rise on each side of road, and flow, one e.n.e., the other s.s.e. In every direction rounded and grass-topped hills, wooded hollows. 3.5 m., summit—Tang-Gola, altitude 14,109 feet. Mu-Lung-Gung bears 105°. Streams rise on both sides of road, and flow one n.e., the other s. 3.6 m., source of stream on right of road; road descends on left (s.) bank. Undulating, park-like country, with patches of pine, rich grass, and oak scrub. 4.8 m., Zou-Gunda, altitude 13,235 feet, a military post for changing horses. These posts are called "Tang" by the Chinese, and "Ta-Ma" or "Tang-Ma" by the Tibetans. Gold-washing going on in the stream. Black tent of cattle feeders. Hills on both sides, 400 feet high, sloping 20°; grass, oak, and pine. Grassy valley, 100 yards broad. 5.6 m., cross river to right (w.) bank. On right bank, hills 400 feet high, sloping 20° straight down to stream; grass and oak; oaks, currants, and gooseberries below close to stream. 6 m., road leaves river, which turns s.e., and crosses tributary from w.n.w. Road ascends right (s.) bank of tributary. 6.2 m., on left bank of river, rocks and precipices 100 feet high, sloping 20°; pines and oaks. On right bank, hills 150 feet high, sloping 20°; pines. 6.6 m., hills on right bank, sloping 20° down to stream. Firs in patches, with open grass. 7 m., Cha-Ma-Ra-Doü, 2 or 3 huts; barley and vegetables. Streams enter river from n. and w. 7.7 m., cross river to left (n.w.) bank. 8 m., cross river to right bank. On both sides grassy slopes, 150 feet high, sloping 20°. Above the pines. 8.7 m., on left bank of river, hills 100 feet high, sloping 15°; all grass. 9 m., stream enters river from w. 10.3 m., a "Tang." Source of river. 10.5 m., summit—Deh-Re-La, altitude 14,584 feet. Rounded grassy slopes in every direction. Source of stream to s.e., which flows w. and s. into river flowing s.e. 11.7 m., altitude 14,455 feet. From this point to the "Tang," 3 miles to the w.n.w., there is a flat grassy valley without trees,  $\frac{1}{4}$  or  $\frac{1}{2}$  mile broad, bounded on both sides by hills 200 to 300 feet high, undulating, and divided by many small valleys. All the hills slope about 25°,

and are covered with grass; no trees anywhere. On the s.w. side the hills rise higher, and a ridge is crossed at the summit. 13·7 m., altitude 13,977 feet, cross river flowing s.e., and ascend on right (s.) bank. 15 m., a "Tang." Road from Lit'ang-Ngoloh to this point very good. 16·8 m., summit—Wang-Gi-La, altitude 15,558 feet. Source of river. Road zigzags considerably on both sides of summit. From this the road goes down a valley, the descent westward to Ho-Chü-ka being very steep and stony. The hills on either side are 200 to 300 feet high, all covered with grass, sloping 25° to 35° straight down to stream, leaving no flat at the bottom. Not a single tree until close to Ho-Chü-Ka, where there are a very few pines on the slopes. 17·4 m., source of river on right of road, flowing s.w.; road descends on left (s.e.) bank. 20·2 m., stream enters river from n.w. 23 m., Ho-Chü-Ka, altitude 13,250 feet. The stream from Wang-Gi-La runs here into a river 30 yards broad, flowing s. Rocky cliffs 50 feet high, on point between the two streams. Hills 200 feet high, sloping 20°; all grass, a very few pines.

17th.—*Ho-Chü-Ka* to *Lit'ang*.—Road crosses tributary from n.e., and then river to right (s.w.) bank. Road ascends river. 5 m., stream enters river from n. 6 m., stream enters river from n. 7 m., grassy rounded hills 200 feet high, sloping 15° to 20°, on both sides. 1·1 m., stream enters river from n. 1·8 m., stream enters river from n.w. Hills on both sides 200 feet high, sloping 40° on n., and 15° to 20° on s.; all grass. 2 m., cross stream from s.e. 2·4 m., cross stream from s.e. Sandstone strata displayed, bent in all directions from horizontal to vertical. 3 m., cross stream from s.w. 3·4 m., stream enters river from n. 3·8 m., hills on both sides, 200 feet high, sloping 40°; all grass. 5·3 m., hut; altitude 13,392 feet. Road leaves main river, and ascends right bank of a tributary from w., which enters here. 5·8 m., hills on both sides, 150 feet high, sloping 25° to 30°; all grass. 6·8 m., cross river to left (n.w.) bank. 7 m., hills to n., 200 feet high, sloping 30°; hills to s., 100 to 150 feet high, sloping 10°. 7·3 m., stream enters river from e.s.e. 7·5 m., river turns from s. Hills on both sides, 100 feet high, all grass; sloping 20° on right, and 5° on left of road. 8 m., summit—*Shie-Gi-La*, altitude 14,425 feet. From *Shie-Gi-La* the plain of *Lit'ang* is seen. Source of stream; road descends on right (n.) bank. 8·6 m., cross stream from n.w. 9 m., road leaves stream. 9·8 m., cross stream flowing n. It bends sharp round, and road crosses it again at 10 m., flowing s.w. 10·2 m., cross stream flowing s.w. 10·6 m., a good deal of loose sandstone on the road, with patches of gold. 11·5 m., cross stream flowing s.s.w. 12 m., rocks, slaty shale and sandstone striking s.e. and n.w., mixed with quartz. 12·8 m., cross stream flowing s.s.w. 13 m., city of *Lit'ang*, altitude 13,280 feet; in a bay on northern edge of plain. The plain of *Lit'ang* lies in a w.n.w., and e.s.e. direction, and is here about 5 m. in width. It is bounded on the n. by the *Shie-Gi-La* range of beautifully undulating hills, which do not rise more than 200 or 300 feet higher than the pass. Their slopes are gentle, from 15° to 30°, and covered with grass. Its s. limit is a n.w. and s.e. range of hills somewhat higher and much steeper than that on the n., and behind this is the range of the *Surong Mountains*, which also runs about n.w. and s.e., where many of the peaks are covered with perpetual snow, as far as can be seen both e. and w. Road from *Ho-Chü-Ka* to *Lit'ang*, very good indeed; all the country being an undulating plateau of rich pasture. There is not a tree of any description visible the whole way. There are a few trees on the northern slopes of the hills that bound the plain on the s. On the s. side of *Lit'ang* the hills are all granite.

19th.—*Lit'ang* to *Jiom-Bu-T'ang*.—1·8 m., cross stream flowing s.e. 3·4 m., cross good-sized stream flowing s.e. 3·8 m., on the crest of sandstone spur n.w., there are hot sulphur baths; the gas may be seen escaping through the cracks in the rocks. Lamassery, 1 mile to n. Hot springs about 1½ mile



to s.e., at foot of spur. Range runs n.w., bounding the plain of Lit'ang. Road from Lit'ang over undulating country on n. edge of plain; it now descends and crosses the plain; grassy. 5.5 m., road crosses Li-Chü River, flowing s.e., by a bridge—Che-Zom-Ka—40 yards span, in 4 bays; piles of loose stone cased with timber, bars stretched across. Road from Lit'ang to this point is excellent; it now ascends right (s.e.) bank of small stream, between low granite ridges, with granite boulders scattered about, and becomes very bad. Everything is of granite, and very bare; no trees. Three valleys are visible, bearing n.w. by w., n.w. by n., and n. by w., and their embouchures into the Lit'ang Plain are each about 5 miles distant. To-Tang (Tibetan), on left bank of stream. 7.5 m., hills on both sides, 30 feet high. 8.5 m., source of stream. 9.7 m., hill on left of road, 100 feet high, sloping 20°; very stony. On right of road, a slope 3° or 4° down to a stream  $\frac{1}{2}$  mile distant, flowing n.e. n.w. of stream is a stony ridge 100 feet high. 10.7 m., a granite hill on left of road, 150 feet high, sloping 15°, covered with loose stones. On right of road, flat ground extends for 300 yards; very stony. To the n.w. is a stony ridge, 100 feet high; granite. 11 m., road crosses a tributary from s., and ascends right (s.e.) bank of river. A valley runs s. between detached, bare, and pointed granite hills. 12 m., Jiom-Bu-T'ang, altitude 14,718 feet. A plain, 1 mile long, s.w. and n.e., 100 yards wide, with poor grass and flowers. Then a ridge on w. side, 50 to 100 feet high, steep and broken, with loose stones. Bounding plain on the s., a ridge 30 to 100 feet high, sloping 30°, loose stones, poor grass. From Che-Zom-Ka to Jiom-Bu-T'ang the road is rough and stony. There are no trees, but wild flowers, grass, and a few shrubs grow among the stones.

20th.—*Jiom-Bu-T'ang to La-Ma-Ya, or Ra-Nung.*—Road through plain to 1 m., end of plain. Road ascends side of hill bounding valley on w.; path stony. 1.3 m., road crosses river. A valley runs s. about 2 miles, closed at end by snowy hills; on both sides hills 100 to 150 feet high, covered with loose stones, grass, and small plants. 3 m., commencement of pass over the Surong Mountains, which run n.w. and s.e., and are 18,000 to 20,000 feet above the sea. The road passes over a rough, undulating, broken plateau—*Nga-Ra-La-Ka*—covered with loose stones, all granite. Broken jagged peaks like a saw, 2 miles to w. 4 m., altitude 15,499 feet; a very small pond close to road on right; then two sharp rugged peaks, 150 feet high, with a sprinkling of snow. One or two patches of snow on road, only a foot or two long. The plateau is here closed in by broken hills, 50 to 100 feet high, which come down to road; loose granite blocks strewn about. 4.6 m., summit of pass—*Nga-Ra-La-Ka*, altitude 15,753 feet. Hills on both sides of pass, 50 feet above road; all broken granite blocks. 6 m., lake Cho-Din, on left of road; road descends on left (s.) bank of a river. 6.4 m., cross stream flowing n.w., from lake to river. Snowy peak on left of road. Road between ridges 150 feet high, sloping 10°, covered with loose stones, grass, and wild flowers, except at tops of ridges, where there are only loose blocks. 6.8 m., road very good; wild gooseberries. 7.2 m., flat valley 100 yards broad, closed on n. by ridges, 50 feet high, sloping 10°, with grass and stones; and on s. by ridges, 100 feet high, sloping 10°, nearly all loose stones. 7.7 m., road leaves river and turns to s. 8.3 m., Dzong-Da (Dry Sea), altitude 14,896 feet. Marshy valley, 200 yards wide, running e. 1 mile, between hills 100 feet high, sloping 20°, with grass and stones, backed by peaks 1500 feet high, with snow on them. Cross stream in valley, flowing w. A snowy range bearing w., running n. and s. Very high peak due w., 10 or 20 miles off, 17,000 or 18,000 feet high. 9 m., road good. Plain for 400 yards, then a stream, then grassy hills rising gradually up to the snowy mountains. Stony undulations to s. 9.5 m., cross stream flowing n.w. Commence descent into valley alongside of

ridge. Road stony; all granite. 9.8 m., hills on left of road, 1700 feet above valley. 10.5 m., at bottom the valley runs up s.e.  $1\frac{1}{2}$  mile, when it is closed by hills, 1700 feet above valley, sloping  $30^\circ$ ; very stony. On s.w. side of valley, grassy hills 200 feet high, sloping  $20^\circ$ . On n.e. side, the valley is bounded by the ridge that the road has just descended, 100 feet; very stony descent, by zigzag. Valley runs down n.n.w. 5 or 6 miles, closed by hills 800 or 1000 feet high. 10.8 m., cross stream flowing n.w. From Dzong-Da to this point, rocks all granite; hence to La-Ma-Ya, sandstone and slaty shale. 11.4 m., summit of small ridge; altitude 14,881 feet. Road from Dzong-Da to this point, very stony; to La-Ma-Ya, very good, though narrow in places. Road gains crest of a hill, then descends to a grassy valley; no flat at bottom. Hills on both sides, 200 feet high, sloping  $30^\circ$ ; all grass. 12 m., source of Ye-Chü river, on left of road; pines commence. Road descends Ye-Chü on right (n.) bank. 13 m., stream enters river from s.e. Road 100 feet above stream; grass slopes 100 feet above road, sloping  $30^\circ$ . Slaty shale. Hills on left bank, 300 feet high, sloping  $30^\circ$ . Dense pine-forest. 13.4 m., cross stream from n. Road, a narrow path on side of hills. 13.7 m., stream enters river from s.; a few pines. Valley runs up to s.; pines in the hollows; grassy slopes and tops on both sides, 200 feet high, slopes  $30^\circ$ . 14.4 m., cross stream from n.e. 14.8 m., a "Tang"—Ma-Dung-La-Tza. Hills on left side of river, 200 to 300 feet high, sloping  $30^\circ$ ; grass and pines. Road crosses river many times. 15 m., cross stream from n.; stream enters river from s.s.w. Oaks on hills on right bank; cliff covered with oak; willows in river-bed. 15.2 m., cross stream from n.n.w. 15.6 m., slopes on right bank  $50^\circ$ , with oak and fir the first 100 feet; then grassy slope,  $30^\circ$  another 100 feet above stream. On left bank slopes  $45^\circ$ , with pines. 16.2 m., cross good-sized stream from n.w. Large valley running up to n., with pines and grass on each side of it down to level of stream. 17 m., road crosses river to left (s.e.) bank. Stream enters river from n.w. Slopes on right side of river 200 feet high, sloping  $30^\circ$ ; nearly all grass, a few pines. On left side, slopes 300 feet above river,  $30^\circ$ ; all pines. Flat bottom to valley, 100 yards wide; grass; no trees. 17.5 m., cross stream from s.e. Sandstone and quartz, with shale, nearly vertical, striking n. and s. 18.3 m. cross stream from s.e.; stream enters river from n. 18.6 m., stream enters river from n.n.w. 19 m., cross stream from s.e. A large valley runs up n.n.w., in which an important stream enters river. Barley cultivation. 19.5 m., cross river to right (n.w.) bank, by spar bridge (10 yards). Village on right of road. Hills to n., 150 feet high, with grass; much broken. Hills to s., 250 feet high, sloping  $30^\circ$ ; grass and shrubs. 20 m., La-Ma-Ya, or Ra-Nung, altitude 12,826 feet. Rounded hills to s., 150 feet high; sloping; grass. Road now leaves the Ye-Chü, and ascends a tributary, which here enters the river, on right (s.) bank.

21st.—*La-Ma-Ya to Nen-Da*.—6 m., three streams enter river very near each other, from n.w., n., and n.e. Rock sandstone, friable shale crops out striking n. and s., strata vertical. 1.1 m., stream enters river from n.; grassy slopes 100 feet high sloping  $15^\circ$  on both sides. 1.6 m., summit—Ye-La-Ka, altitude 14,246 feet. Source of river. Grassy slopes to n. 150 feet above pass, sloping  $15^\circ$ ; grassy slopes to s. 100 feet above pass, sloping  $10^\circ$ . Road good to this point from La-Ma-Ya. Stony and bad zigzag down to grassy plain w., enclosed by stony hills sloping  $20^\circ$ . The lower slopes of the western face of hills on e. side and the bed of the valley are of granite. 3.2 m., road crosses river Dzeh-Dzang-Chü, flowing s., by spar bridge. Altitude 13,162 feet. Road in plain of river very good. There is a road down valley of this river to Chung-Tien, a 7 days' journey. 3.5 m., hot springs on right of road—Cha-Chü-Ka. 3.7 m., cross tributary of the Dzeh-Dzang-Chü, flowing s.e. 4 m., commence zigzag up sandstone hill. 4.7 m. summit—Mang-Ga-La, altitude 13,412 feet. Rounded, grassy,

sandstone hills, 300 feet above pass on both sides sloping  $20^{\circ}$ . Road very fair from valley of Dzeh-Dzang-Chü to this point. 5 m., cross stream flowing E.S.E. 5.2 m., summit. Road at bottom. 5.4 m., cross stream flowing S.E. between grassy undulations to the Nen-Chü river. 5.9 m., cross stream flowing E.N.E. 6 m., summit of grassy ridge, altitude 13,412 feet. A small pond. Ridge extends 4 m. in a direction bearing  $260^{\circ}$ . Mt. Gombo-Kunga-Ka bears  $270^{\circ}$ ; another peak of same range bears  $290^{\circ}$ ; another,  $305^{\circ}$ ; peaks 17,000 to 20,000 feet high. Road descends from crest of hill by bad, stony zigzag. 6.8 m., cross stream from N.W. Village, La-Ka-Ndo. Road 200 feet above river Nen-Chü. Valley cultivated here. Hills to S., lower slopes  $40^{\circ}$  down to river, black shale and pines; upper slopes  $30^{\circ}$ , small trees. Slopes  $40^{\circ}$  down to river on N., shale and grass, small pines; *Lignum Vitæ*. Road ascends left (N.) bank of Nen-Chü, which at a little below this point bends, and flows to the S. Bad zigzag from summit of Mang-Ga-La to this point; all the rest of road to W. very good. 7.3 m., cross stream from N.W., altitude 12,811 feet. Valley 300 yards wide, all grass, no cultivation. Slopes to S.  $20^{\circ}$ , pines and willows. Slopes to N.  $40^{\circ}$  down to river. Shale and grass, small pines; *Lignum Vitæ*. 8.2 m., ruins on right bank of river. 8.5 m., stream enters river from S.E. A very wide, open, gentle-sloping valley; pines and small ash-trees or willows. Hills to N. sloping  $40^{\circ}$  down to river with rocks breaking through. 8.7 m., cross stream from N.N.W. 9.2 m., cross stream from N.W. Sandstone cliffs to N., 100 feet high. 9.5 m., valley 200 yards wide, grass. Slopes to S.  $20^{\circ}$  down to river from peak 1500 feet high; grass, pines, and small willows. Rounded grassy hills to N., 200 feet high; a few small pines. 9.7 m., cross stream from N.N.W. A small plateau  $\frac{1}{4}$  m. wide, 100 feet above the river on N. side, with low, gentle undulations. 10.5 m., Nen-Da village, altitude 13,133 feet. A peak on right bank, 150 feet high, sloping  $40^{\circ}$  down to river; pines. Village situated on a grassy plateau  $\Delta$  with stream from N.W. side of Nen-Da mountain. S. side of  $\Delta$  bounded by long straight ridge; N. side by undulating ground, 70 or 80 feet, running up to plateau. River 600 yards distant. A peak (A), 1 m. to S.S.E., 2000 feet high, grass and stones at top, then a belt of pines, then gentle grass slopes,  $5^{\circ}$  to  $10^{\circ}$ . From village Nen-Da, angle of elevation to highest point of Nen-Da Peak,  $14^{\circ}$  by altitude, index error  $+1^{\circ} 20'$ ; bearing  $290^{\circ}$ . From Nen-Da, peak (A) bears  $165^{\circ}$ , sloping  $20^{\circ}$ ; grass and stones; terminating in precipices 150 feet high at river's edge, with pines growing in crevices. High snowy peak 6 m. N.N.W. of Nen-Da. Gombo-Kunga-Ka Mt. 6 m. N.W.

22nd.—Nen-Da to Ra-Ti or San-Pa, ascending left (N.) bank of river Nen-Chü.—2 m., cross large tributary from N.W. 1 m., rocky path on side of hill. Below road is a slope  $40^{\circ}$ , with pines; above road, slope  $20^{\circ}$ , with grass. 1.1 m., grassy slopes  $10^{\circ}$  above road; below road, grassy slopes  $20^{\circ}$ . Road very good,  $\frac{1}{4}$  m. from river. Stream enters river from S.E. A flat, grassy spur thrown out from Mt. to S.W. 1.4 m., road 100 feet above river; slopes  $40^{\circ}$  down to river; pines and rocks. 1.7 m., cross stream from N.W., in a valley with pines; black, slaty shale, striking N.E. 2.2 m., road on a smooth, grassy spur from Nen-Da Mt. Grassy slopes to N.,  $5^{\circ}$  to  $15^{\circ}$  down to river. Grassy slopes from Mt. to S.  $5^{\circ}$  to  $15^{\circ}$ , ending in a little, flat plain. 2.4 m., cross stream from N.W. 2.8 m., ground to N. covered by spurs from Nen-Da Mt.; here they slope  $15^{\circ}$  down to river, all grass, 400 feet high. Precipices at top of Mt. to S., then a clump of firs and a cave; grass. 3.2 m., cross stream from N.W. 3.8 m., cross stream from N.W. 4.1 m., the whole ground on N. side covered with spurs from Nen-Da Mt., which end in a flat plateau of grass, 50 to 150 feet above river. Small grassy plateau to S. Road at river level. Pines in bed of river. 4.2 m., stream enters river from S.S.E. 4.5 m., cross stream from N.W. Ruins of Cho-Tsung or San-Ye-Fun (Chinese) on right bank of river. Mountain to S. 1200 feet high, pines and grass, slopes  $20^{\circ}$  to river. W. face of Mt., pine-clad. 4.6 m., stream enters river from S.

A grassy spur to s. with plateau. 4.9 m., Yunnan-Chiao; huts, and a bridge over the river. Road 70 feet above river. Pines on lower slopes, grass and loose stones above, on each side of river. 5.1 m., cross stream from n.w., coloured with iron. 5.4 m., cross stream from n.w. 5.7 m., cross stream from n.w. by bridge; (footprints of horse of Wu-San-Kwel.) 6 m., road at river level. Pines, yews, and shrubs by river. Mountain to s., 1500 feet above river, stony top, slopes 20° down to river. 6.5 m., cross stream from n. Pine-clad hollow to s. 6.8 m., stream enters river from s.s.w., in a valley with pines. 7.2 m., cross stream from n. 7.3 m., stream enters river from s.w. 7.7 m., cross stream from n. Rocks, a rotten kind of granite. From Nen-Da village to this point the rocks are of granite; to w.n.w. they are sandstone. 8.1 m., road 50 feet above river. 8.3 m., cross river from n., in a valley, which appears to be the end of Nen-Da Mt. To w. of this stream, road bad. 9 m., road at river level, then ascend 50 feet. Grassy slopes to n. 20° down to river, running up 200 feet, with a few pines. Slopes to s., 700 to 800 feet, 20° down to river; bare rocks above, pines below. 9.1 m., cross small stream from n. by bridge. 9.3 m., road at river-level. A rocky point on left bank, where road is bad. 9.6 m., cross stream from n. by bridge. Pines end on right bank. Hills to s. 700 feet high, sloping 20°; grass and stones. 9.9 m., grassy and broken spurs to n. 10.4 m., cross Nen-Chü by bridge to right (s.w.) bank. Road diverges from river. 10.8 m., cross tributary of Nen-Chü from n.w., flowing n.e. 11 m., Ra-Ti or San-Pa (Chinese), altitude 13,794 feet. The road from Nen-Da to Ra-Ti is very good; it is generally 50 to 150 feet above river.

23rd.—*Ra-Ti to Ta-Shiu or Ta-So.*—To w. of Ra-Ti, road rises on to a grassy ridge, and continues along the crest between the Nen-Chü and its tributary. 2.2 m., Mt. Kung-Rh, about 1 mile to n. ("Rh" is Tibetan for "Mountain," "Da" means "foot of the mountain"). Road crosses the ridge and ascends left (n.) bank of tributary, in valley bounded on both sides by hills 50 feet high sloping 10°; grass, little yews; stone lying about—granite. 3 m., cross stream from n.w. 3.6 m., source of stream. Road crosses dreary plateau; stony. 4.5 m., road up to this point good. 5.2 m., zigzag up to pass; road not bad. 5.8 m., summit—Rung-Se-La or San-Pa-Shan (Chinese) (3 plains Mt.), altitude 15,769 feet. From Ra-Ti to Rung-Se-La the formation is of granite; below the summit on the w. are shales, striking n.e. and s.w. Road descends between two ridges sloping 45°; grass and stones. Easy ascent coming from the w. 6.3 m., altitude 15,087 feet. Shale; a piece of fossil tree was found here. 6.6 m., source of stream on left of road. 6.8 m., from Rung-Se-La to this point, descent not steep, but over rough, sharp stones. Hills have craggy tops. Beyond this, road descends a bad bit. Road descends stream on right (n.e.) bank. 7 m., end of bad bit. 7.4 m., cross stream from n.e. Water-parting to s. Valley running down s. with pines, 2 miles off. 7.7 m., cross stream from n.e. Hills both sides of road 300 to 400 feet high, sloping 15°; all grass. Road keeps above valley which begins here, and runs along its side, descending gently. Stream below falls very rapidly. Road from 7 m. to this point, level and good. Rhododendrons (called "Ta-Ma" in Tibetan). Shale striking s.w. 8.1 m., cross stream from n.e. River 200 feet below road. Slopes 30° on both sides. 8.5 m., cross stream from n. Steep zigzag road, bad and stony. Slopes 40° down to river; grass and dead pines. Rocks on road, hard, blue stone. 9 m., cross stream from n.e. Road rejoins main valley; a little open glade; on left bank of river hills have rocky, craggy tops. 9.3 m., cross stream from n.n.e. An open glade; pine-clad hills on each side of river. 9.8 m., bottom of Mount., altitude 12,886 feet; stream enters river, which flows to s. through gorges. On left bank, are grassy slopes 30° down to river, with dead pines on lower part; above are torn and craggy precipices. On right bank, at bottom of valley, where stream joins river, is a grassy valley 300 yards wide.

n.w. is a wall of rock 1500 to 1700 feet high, with caves, and pines in the crevices and on lower part of mountain. To e. is a hill with grassy slopes  $30^\circ$  with dead pines. On w. side of river is a dense pine-forest. Valley from Rung-Se-La ends in  $\Delta$  of grass, with a temple. From summit of Rung-Se-La to bottom, road very steep and stony. Road ascends river on left (s.) bank. From this point to Ta-So village the road is exceedingly good. Granite, shale, sandstone, quartz, marble, &c. 10 m., on e. of river, grassy slopes  $30^\circ$  for a height of 700 feet, with ornamental clumps of pines. This forms a range of hills, behind which rise torn and craggy precipices to a height of 1200 to 1500 feet. A huge wall of rock on w. side, 1500 feet above river; bare at top. On lower half, pines in crevices, and a dense forest on lowest slopes  $60^\circ$  down to river. 10.8 m., a belt of pines comes down from mountains on either hand, and runs across the valley. 11.2 m., here the valley is again grassy. 11.9 m., cross stream from e.; stream enters river from w. 13.4 m., cross stream from e. On right bank of river a dense forest of pine. Slopes  $60^\circ$  down to river, above which are bare crags and pinnacles, perpendicular, torn into all sorts of fantastic shapes, 1500 feet above river. On left bank, grassy slopes  $30^\circ$ , with clumps of pines, forming a range 700 feet high; behind these another range of bare crags and pinnacles. Level, grassy bottom, 250 to 300 yards wide. 14.1 m., slopes to e.  $40^\circ$  down to river; oaks and pines. 14.8 m., cross river to right (w.) bank by bridge 10 yards wide. 15.2 m., on left bank, hills 1000 to 1500 feet high, sloping  $30^\circ$  down to river; pines. On right bank, hills 1000 to 1500 feet high, sloping  $40^\circ$  down to river, with cliffs at top; pine and oak. Road diverges from river. 16 m., Ta-Shiu (Tibetan) or Ta-So (Chinese), on a ridge between rivers; altitude 13,347 feet. At Ta-Shiu, on bearing s.w., 300 yards distant, a stream, then grassy, broken slopes  $40^\circ$  down to river; 500 feet above that, cliffs for another 500 feet high, pinnacles, and crags. Pines amongst rocks. On bearing n.e., plateau for 300 yards, then a green, grassy spur 150 feet high, slope  $20^\circ$ , running down to river e.s.e. s.e., grassy plateau  $\frac{1}{4}$  mile down to river, then pine-clad slopes and mountains 1500 feet high, with cliffs at top. n.w., stream 300 yards distant, slope  $40^\circ$  down to river, small brushwood for 500 feet, then cliffs another 500 feet higher. Pinnacles and crags with pines among them.

24th.—*Ta-Shiu to Pun-Jang-Mu or Pung-Cha-Mu.*—River to w., flowing s. 2 m., cross stream from e. 5 m., slopes  $60^\circ$  down to river, much broken, with shrubs for 100 feet, then perpendicular crags of granite and quartz. On right bank, pines at bottom for 100 feet, then perpendicular cliffs 600 feet higher. 1.1 m., road descends to river, which it then ascends on left (n.) bank. 1.7 m., stream enters river from w.s.w. Hills on right bank of river 50 feet high,  $20^\circ$  slope; oak on right bank, and yew-shrubs on left. 2 m., hills on left bank 200 feet high run straight down to river. No shrubs here; great quantities of *Primula*. Slopes  $25^\circ$  down to river, with barberry and yew-shrubs on them. 2.2 m., hills 200 feet high both sides of river, sloping  $15^\circ$  straight down to stream; grass at bottom. 2.3 m., altitude 14,902 feet. Hills on left bank 300 feet high sloping  $15^\circ$  down to river. Rocks cropping out; tops hidden in mist. Road steep but good. 2.6 m., hills 300 feet high on both sides of river sloping  $15^\circ$ ; grass and very low scrub. *Primula* at bottom in large quantities. 2.8 m., cross stream from n.e. 3.3 m., hills on right bank 300 feet above river; grass and low scrub; hills on left bank 400 feet; grassy valley 100 yards wide. 3.6 m. hills on left bank 200 feet high sloping  $20^\circ$  down to river. Road 50 feet above stream. 4 m., on right bank, crags and rocks, with broken grass slopes rising 100 feet above river. Small pond 100 yards s. of river. 4.4 m., source of river. 4.8 m., a pond amongst broken crags and rocks; altitude 16,129 feet. Broken slopes, with debris lying about everywhere. Cliffs 150 feet. The road from Ta-So up to this point is very good, though steep. Here

it ascends an almost perpendicular cliff by steep zigzags for  $\frac{1}{4}$  a mile w. up to J'rah-Ka-La. 5.3 m., summit—J'rah-Ka-La, or Ta-So-Shán (Chinese), altitude 16,568 feet. Road now descends a very steep slope. 5.6 m., altitude 16,336 feet. 6 m., centre of a circular basin 2 miles in diameter, surrounded by bare and rugged cliffs, almost perpendicular, terminating above in pinnacles and jagged peaks. A few small ponds in basin, and huge masses of rock and debris are scattered about. Where cliffs slope slightly, they are covered with loose debris. Pinnacles and crags 300 feet high. 7.6 m., hills 500 feet high, sloping  $25^\circ$  down to river, covered with debris of broken stones. Road improves a little. Source of stream on left of road; road descends on right (N.) bank. 8.1 m., altitude 15,555 feet. Hills to S. 1500 feet high. 8.8 m., cross stream from N.N.E. Hills to N. 1000 feet above river, sloping  $40^\circ$ ; much debris of broken rock with precipices; some grass on the slopes. Slopes to S. covered with shrubs and debris. In bed of stream, stones and scrub. Road bad. 9.4 m., hills to N. 1000 feet high; craggy rocks, with yews amongst them, 900 feet above river. Hills to S. 1500 feet high. 10 m., road on slope, very bad, 50 feet above stream. Crags at tops of hills, with stony slopes below,  $20^\circ$  down to river; yews, pines, and holly oak. 10.2 m., hills to S. 1500 feet high. From this point to Pun-Jang-Mu, lower slopes on both sides of river covered with dense pine-forest, with some oak and yew in valley. 11 m., hills to N. 1000 feet high. 11.8 m., hills to S. 800 feet above river, sloping  $40^\circ$ . 12 m., cross stream from N.N.W. by bridge. 12.8 m., stream enters river from S.E. 13.2 m., cross stream from N. Pun-Jang-Mu (Chinese), Pung-Cha-Mu (Tibetan), altitude 13,158 feet; 200 feet above river. Barley cultivation.

25th.—*Pun-Jang-Mu to Bat'ang*.—Road descends river on right (N.) bank. .4 m., hill to S. 400 feet above river sloping  $30^\circ$ , a little craggy at top; dense pine-forest. To N., slopes  $35^\circ$ ; limestone formation; dense forest of pines and oaks,—Ta-Ma,—gooseberries and currants; big oaks. Shale like fossil wood. 1.4 m., hills to S. 1000 feet high, sloping  $50^\circ$  down to river; remarkable bluff at top. 2.4 m., hill to N. 700 feet above river; rock at top, then a grassy slope, of  $30^\circ$ , down to river, below that, a dense pine-forest. 2.8 m., dense pine-forest to S. 3.2 m., road 600 feet above river. Dense forest nearly all oak, a few pines. 3.9 m., stream enters river from S. 4.4 m., on the bearing  $312^\circ$  is a very distant hill with a remarkable knob, 3 days' journey from Bat'ang. It is called "Tang-Ye." 4.7 m., road and river enter a narrow gorge with cliffs; limestone striking N.N.W. 4.9 m., cross stream from N.E.; forest of oak. 5.5 m., cross stream from N.E.; a good many plum-trees in valley. Hills sloping  $15^\circ$  down to river. 5.7 m., a little cultivation in valley. 5.9 m., Ba-Jung-Shih or Hsiao-Pa-Chung; altitude 10,691 feet. A few houses. Bridge across river. Stream enters river from S.S.W. Hills to N., 500 feet above river, cliffs at top; slopes below,  $30^\circ$ , with debris. Shrubs and briars on slopes. On S. side, forest nearly ends, but oak and pines still on slopes. Much snapdragon and mint in valley. 6.2 m., cross stream from N.E. 6.8 m., hot spring on right of road. Cross river to left (S.) bank by bridge 7 yards wide. Poplars and willows in the valley. Cliffs to S. 20 feet above river, where it has cut its way through deposit. Hill 2 miles to S. 1000 feet high sloping  $35^\circ$ . 7.3 m., cross river by bridge to right bank. Hills to S. 800 feet high sloping  $40^\circ$  down to river; oak; first walnut. Hills to N. 600 feet high sloping  $40^\circ$  down to river; low scrub. 7.7 m., hills on both sides 1000 feet above river, rocky and broken, slopes  $60^\circ$ , with scrub. Stream enters river from S.S.W. 8 m., the river enters a narrow gorge with precipices on both sides. 8.6 m., cross river by bridge to left (S.) bank. 8.8 m., road rocky, narrow and steep, cut out of hill-side. 8.9 m., cross river by bridge to right bank. Hills to N. 1000 feet high, grassy slopes  $30^\circ$  or  $40^\circ$  down to river. 10 m., hill to S. 1000 feet above river, broken slopes  $50^\circ$ ; pines at top. 10.5 m., end of narrow gorge; precipices both sides of river. Road rocky, steep, and bad,

cut out of hill-side. Limestone striking n. and s. Hill to w. 700 feet high, slopes  $20^\circ$ ; grass. 11.5 m., hills on right bank 300 feet high, bare crags, slopes  $70^\circ$  down to river. Hills on left bank 200 feet high. 12.6 m., Bat'ang or Ba (Tibetan); altitude 8546 feet. Plain on bearing  $305^\circ$ , 1 mile wide. Mount bearing  $270^\circ$ , 1000 feet high, slopes  $30^\circ$  to  $40^\circ$  down to river; broken in parts, bare in others; grass on upper slopes and a patch of cultivation high up. Lamassery  $\frac{1}{4}$  mile to w.

29th.—*Bat'ang to Chu-Ba-Lang*.—Cross river by bridge to left (s.) bank. .6 m., large stream enters river from n. Road descends river (25 yards wide) on left (s.e.) bank. 2 m., valley 300 yards wide; no cultivation. 2.5 m., cross stream from e.s.e. 3 m., village; patch of buckwheat. Hills on both sides 1000 feet high, sloping  $60^\circ$  down to river; those on left bank throwing out rugged and broken spurs, with pines at the top, far back; those on right bank rather bare below, grass at top. Hills all sandstone with much iron. 3.3 m., hills run right down to river; no plain at bottom. 3.5 m., house with walnuts and weeping willows. Stream enters river from s.s.e. Road leaves river, which flows on s.w., and afterwards s.e., 3 m. into the Chin-Sha-Chiang, and ascends stream on right bank. 4.3 m., cross stream. 4.5 m., a zigzag commences. 5 m., summit—Ch'a-Shu-Shan (Chinese), Cha-Keu (Tibetan) (Tea Tree Mountain); altitude 9388 feet. Road winds down side of hill; slopes below to river  $40^\circ$ ; slopes above road  $15^\circ$ . 5.4 m., from Bat'ang to this point hills slope about  $45^\circ$ , and are very stony and bare, long slopes of debris lying all over the road. Here they run up to 1000 feet, on left bank of river, with pines at the top, and 700 feet on right bank, with grass, bare in places. The road gradually descends till 6.4 m., when it is 100 feet above the Chin-Sha-Chiang, which is 170 yards wide. Slopes of  $30^\circ$  down to river, very stony; with many briars and yellow jasmine. No plain below. Road descends Chin-Sha-Chiang on left (e.) bank. 7.2 m., cross stream from e. 8 m., Niu-Ku; some gough cultivation. 8.7 m., Leh or Choui-Mao-Kiu, a silent monastery, containing a few Lamas. Stream enters river from w. Hills on both sides, 600 feet high, sloping  $30^\circ$  sheer down to river; bare and stony. Narrow stony path along edge of river. 10.2 m., village on right bank, with cultivation. 11.6 m., cross stream from e. 12.3 m., stream enters river from w. Hills on both sides as far as 15 m., 600 feet high, sloping  $35^\circ$ ; those on right bank very bare and stony; those on left bank with many broken cliffs and precipices; slopes of debris coming down over the road. 13.5 m., stream enters river from w. 15 m., fort. Cross stream from e. 16.2 m., house and walnut-trees on right bank. 17 m., cross stream from e.; a few holly-leaved oaks at top of valley. 18.7 m., Chu-Ba-Lang or Chru-Ba-Long (Chinese), altitude 8165 feet, a village on both sides of river with more than 10 families on each side—about 30 altogether. Streams enter river from e. and w.

30th.—*Chu-Ba-Lang to Kong-Tze-Ka*, descending the Chin-Sha-Chiang. —.5 m., cross stream from e., with waterfall. 1.1 m., road, a rocky path 50 feet above the river, covered with debris. Hills on both sides of river, 1000 feet high, sloping  $35^\circ$ ; very bare and rocky. Stream enters river from w., of a red-brown colour, called Shieh-Chu. 1.8 m., cross stream from e.; its valley leading up to pines and oak. 2.3 m., cross stream from e.; s. of its valley, the rocks are of granite. 2.9 m., cross the Chin-Sha-Chiang, which is 170 yards wide to right (w.) bank by ferry. Road from Bat'ang up to this point very rocky, running along close to water. Hills on both sides very bare, and much broken, with slopes of debris and cliffs. Height generally about 1000 feet, sloping  $35^\circ$  to  $50^\circ$ . 3.5 m., stream enters river from e. 4 m., rapids and shallows in river. 4.2 m., flat point running out into river from right bank, covered with thorns; then cliffs, alternating with slopes of  $60^\circ$ ; precipices 150 feet high at top. Mountains 1000 feet high. Sandstone and much quartz. On left bank are cliffs 60 feet high, rising straight up from river, then steep, bare, broken rocks, with much debris lying

about. Mountains 1000 feet high, sloping 60°; on the top are grass and oaks. 4·7 m., road close to water, running under a cliff 30 feet high, and covered with loose stones and debris. Cliff alternates with slopes of debris. 5·3 m., cliffs on left bank, 500 feet high. Another flat point on right bank, very stony, with thorns. River valley opens out to  $\frac{1}{4}$  mile wide, the flat ground at bottom being covered with stones and thorn-trees. Cross stream from w.; its valley runs up amongst cliffs and very steep slopes. The mountains are much broken. A cliff at top 200 feet high. 6 m., stream enters river from e. 7·6 m., Gue-Ra, altitude 8660 feet; a village of 5 or 6 families, about 50 feet above the river. Cross stream from w. To the e. is a hill 1000 feet high, with slopes of 60°, and precipices; very bare, with slopes of debris; pines and oaks at the top. From here the road gradually rises, and shortly leaves the river. It is bad and stony, very narrow in some places, and running along steep slopes of debris. 8·4 m., stream enters river from s.s.w.; road ascends left (w.) bank of stream. Chin-Sha-Chiang diverges to s.e. 9·2 m., village, with walnuts, weeping willows, buckwheat, and sago. Spurs on right bank, 300 feet high, sloping 20°, from mountains 500 or 600 feet high, bare and craggy, with steep slopes of debris. A good deal of thorn-scrub on them, and in the valley. On left bank, hills 1000 feet high, sloping 30°; their lower parts bare and craggy, with slopes of debris; halfway up are patches of cultivation, and on the top, trees. The road is very stony, in bed of stream. Stream enters river from s.w. 10·8 m., large village near right bank. A good deal of terrace cultivation in bed of stream; sago. Spurs on right bank 400 or 500 feet high, sloping 20° to 60°, with patches of cultivation on least steep parts; long slopes of debris. Hills behind 800 feet above stream, with pines and oak at top. Hills on left bank 800 feet high, sloping 40°; craggy, with scrub and oak at top. Road up to this point is very stony, but not very steep. 11 m., road crosses river to right (e.) bank. 11·3 m., stream enters from s.w. Altitude 9971 feet. The highest and last walnut-tree. 11·7 m., altitude 10,392 feet. First oak, in bed of stream. Hills on both sides 1000 feet high, sloping 30°, much broken; slopes of debris, with shrubs and some oak. Road very stony. 11·9 m., altitude 10,670 feet. First pine, in bed of stream; mint. Cross stream from e. Hills on both sides slope 60°, coming straight down to stream. Road along bottom; ascending very steeply; a very stiff zigzag commences. 12·5 m., end of zigzag. Hills on both sides 400 feet high, sloping 20°, with oaks and thorns; pines on left bank. Road not quite so steep for  $\frac{1}{4}$  mile; it is then very steep again, but hardly so stony. Stream enters river from w. Road now turns to s.e. for  $\frac{1}{4}$  mile, crosses stream from s.e., and then comes back again to stream it has been following. 13·2 m., Ch'a-Shu-Shan, bears 11°. 13·5 m., slopes on right bank of 20°, on left of 30°, both 500 feet high, with poplars, oaks, and pines. Ascent not so steep; blackberries, oaks, poplars, thorns, and briars. Stream enters river from w. 13·7 m., road turns to s.e., crosses stream from s.e., and comes back to right bank. 14·1 m., slopes on both sides of 20°, 150 feet high, with dense forests of pines and oaks. Road 100 feet above stream, and not quite so steep. 14·2 m., stream enters river from w. Ch'a-Shu-Shan bears 12°. 14·8 m., summit—Kong-Tze-La-Ka, altitude 11,972 feet. Small grassy plateau to e. Grassy hills each side, 200 feet high, sloping 15°, with oak. A grassy plain leads to, 15·4 m., village of Kong-Tze-Ka, altitude 11,675 feet; residence of a Tou-Chien-Hou, chief of 1000 families. (We lodged in his house.) 20 houses here and 20 families. To the w. a hill 200 feet high, sloping 20°, with oak; hill to e. 200 feet high, sloping 15°, with oak and a few pines. Plateau between the hills, 200 yards wide. At this village, buckwheat, wheat, barley, peas, gooseberries, and sago were cultivated.

31st.—Kong-Tze-Ka to Kia-Ne-Tyin.—2 m., cross stream from w. 78 m., cross stream from w. This stream flows into a river on left of road, which



turns to e. at this point. Road ascends left (w.) bank of river. 1.1 m., cross stream from w.; road 200 feet above stream. 1.6 m., cross stream from w. 1.8 m., slopes, on each side, of 20°, 300 feet high, with oak. 2.5 m., cross stream from w.; road at river-level, altitude 11,462 feet. 3 m., ridge on right bank 150 feet high, with briars; behind it, slopes of 20°, 1000 feet high, with pines and oaks. Slopes of 35°, 700 feet high on left bank, with briars and oaks. 3.7 m., road a little stony, but still good. Pines and oaks on slopes. Cross stream from w.; its valley is wooded, with cherries, pines, and willows. 4.3 m., valley of river opens; red clay and red sandstone. Grassy slopes 5°. Road very good. 4.7 m., only willows in valley. Hills 100 feet high, sloping 10°. Clay deposit. 5.2 m., mountain on right bank, 3000 feet high, throwing out grassy spurs, 100 to 200 feet high, sloping 10°. It is bare and craggy at the top, with pines in the hollows. On left bank is a grassy plain  $\frac{1}{2}$  mile wide, with broken red clay slopes; oaks and grass. 5.5 m., house on right bank; stream enters river from e. 6.2 m., Mung-M'heh (Tibetan) or Chung-Mong-Li (Chinese), altitude 12,189 feet (the property of the French missionaries.) On right bank, spurs from same mountain as at 5.2 miles; beyond this a range 2000 feet high, sloping 10° to 20°, bounds the valley on the e. Many valleys run up into it, with pines in the hollows; slopes all grass. Grassy spurs thrown out from it. Houses and cultivation at entrance of the valleys running up into the range. On left bank, red clay and sandstone spurs 100 feet high, sloping 5° to 10° much broken by ravines cut up by small watercourses. Valley 200 yards wide; a few clumps of trees in it, and barley. Beyond, the valley is bounded on w. by spurs thrown out from a mountain, 1000 feet high, sloping 15° to 20°; all grass. Spurs of red clay about 100 feet high; grass, with some bare patches. Many yellow flowers in plain, which is here  $\frac{1}{2}$  mile wide. Valley of river 200 to 500 yards wide; flat and cultivated. Lamassery on top of grassy spur, 100 feet high. French missionaries' house at foot. 10 m., Jang-Ba, called by the Chinese Pa-Mu-T'ang, altitude 12,793 feet; residence of an officer called a Ma-Pen in Tibetan (Chinese rank of Chien-Tsung). End of the plain from n.; here commences an undulating plateau. The river runs between grassy slopes of 5° to 10°. The road follows it for a mile, and then ascends a spur between two streams. s.w. of Jang-Ba the hills are of red sandstone and red clay. Road from Kong-Tze-Ka to this point, very good indeed. 11.6 m., an encampment of Tibetans, about 1 mile w. of this point. There were 300 men who had come out to oppose us. Road diverges from river. 12 m., a chain of jagged mountains to s.e.; between the road and these are gentle grassy undulations, which run up to the spurs from them. Road from this point to the s. for 3 m. very good, over an undulating plateau of grassy slopes. 13 m., altitude 13,956 feet. 14.7 m., altitude 14,376 feet. Grassy slopes above road, with patches of pine. Road turns s.e. for about  $\frac{1}{2}$  mile, crosses stream flowing n.w., then turns w. for about  $\frac{1}{2}$  mile, and then to s.w. again. 15 m., altitude at crossing of stream, 13,850 feet. 15.6 m., altitude 14,280 feet. Road runs along side of grassy hill, sloping 30° down to stream on right of road. Grassy slopes above road on left, of 5° to 10°, with clumps of oak and pine, and single ornamental trees like a park. Undulating downy country in every direction. 16 m., to n. and w., gentle sloping hills of red sandstone, rising 500 or 600 feet above the river; they are much cut up by cultivated valleys. Slopes of hills covered with grass, and large pine-woods with some oaks. 16.3 m., cross stream flowing w.; village on right of road. 16.6 m., cross stream flowing n.w. 17 m., road on a level plateau about 200 yards wide, beneath which are grassy slopes down to river 400 feet below. Cultivation on plateau. Slopes above 10°. Pines in patches. 19 m., Kia-Ne-Tyin, altitude 13,135 feet. Road from Jang-Ba to Kia-Ne-Tyin, very good indeed all the way. At Kia-Ne-Tyin is a cultivated plateau between the two rivers (the western is the larger river). To w. of this are grassy slopes 400 feet

high, sloping  $20^{\circ}$ , with firs and oaks. To the *e.* above the stream are grassy slopes of  $5^{\circ}$  to  $10^{\circ}$ , all red clay and red sandstone, much cut up by torrents and watercourses.

*Sept. 1st.—Kia-Ne-Tyin to Dzung-Ngyu.*—2 m., cross stream, flowing s.w., and descend its left (s.e.) bank for nearly a mile. 1.2 m., cross stream from *e.s.e.* 1.6 m., road 50 feet above river, through a wood of small yews and junipers. On the *w.* is a small ridge 50 feet high. Pine hills to *w.* of main stream. To the *e.*, slopes  $30^{\circ}$  of red clay, 100 feet above river, with grass and many yellow flowers. Road diverges from river, which flows s.w. 2.1 m., sandstone ridge to *e.*, 30 feet high, with pines, yews, and junipers. Road through a grassy plain 100 yards wide, with many small yews, junipers, and Chiens-Ragi (a kind of tree). 3.3 m., hills on left of road 100 feet high, of red sandstone, much cut up by ravines and broken; pines and yews. Hills on right of road 300 feet high, sloping  $30^{\circ}$ , with oaks and yews. 4 m., source of river on right of road; road descends left (*n.e.*) bank. 4.8 m., on left of road, sandstone hills 100 feet high, sloping  $60^{\circ}$ , nearly bare; on right of road, hills sloping  $85^{\circ}$ , covered with pine. 5.1 m., cross stream from *n.e.* Village on right bank of river. Ruins on left of road. In valley of stream is deposit of red clay, stones, and sand. Red sandstone slopes; small trees scattered about. 5.8 m., cross stream from *e.n.e.* Red spurs on *w.* of river 100 feet high, from mountain 1000 feet high; pines and oak. 6.8 m., cross river to right (*w.*) bank; ruins on right bank. On left bank spurs ending in cliffs 30 feet high; red deposit. On right bank, spurs from hill 500 feet high, very red; a few pines scattered about. 7.2 m., a cavern and religious tumulus. Strata inclined  $45^{\circ}$ . 8 m., slopes on both sides, much cut up to with ravines; a sprinkling of small trees. Road, from Kia-Ne-Tyin up to this point very good indeed, along red sandstone; it now gets stony. Valley narrow. 9 m., road diverges from river, which flows *s.e.* into the Kiang-Ka, and crosses a low spur. 10.2 m., Dzung-Ngyu (improperly called Dzong-gun), altitude 10,792 feet. On bearing  $120^{\circ}$ , a mountain 1000 feet high sloping  $40^{\circ}$ ; red sandstone showing through grass; pines at top; base of mountain 500 yards distant, close to river Kiang-Ka; at 1 mile distant, on bearing  $73^{\circ}$ , it terminates in white cliffs 50 feet high. On bearing  $35^{\circ}$ , a mountain 1000 feet high, sloping  $35^{\circ}$ , with white sand showing through grass. This is behind low red spurs, and runs down to a point on bearing  $80^{\circ}$ ; 2 miles distant, and on bearing  $360^{\circ}$ , it runs down very low. Two small hills on bearings  $22^{\circ}$  and  $50^{\circ}$ , of red sandstone, 100 feet high, and quite bare. Crops, wheat and barley. Valley 150 to 500 yards wide. The road runs along *n.* side of plain, close to the foot of the hills.

*2nd.—Dzung-Ngyu to Nieh-Ma-Sa,* descending the Kiang-Ka on left (*n.* and *e.*) bank.—6 m., cross stream from *n.* 2 m., cross stream from *n.* by bridge. River here is 15 yards wide. The small plain ends. Rocks of grey sandstone on both sides. 2.3 m., plain 200 yards wide, with thorns, weeping willows, and barley in it. 2.8 m., cross stream from *n.e.* 3 m., stream enters river from s.w.; ruins at its mouth. On left bank, broken slopes of  $40^{\circ}$ , 500 feet high; sandstone; grassy. On right bank, hills 800 feet high sloping  $60^{\circ}$ ; craggy, with broken tops; yews and pines; sandstone. 3.7 m., cross stream from *n.e.*; stream enters river from s.w. House on left, ruins on right, bank of river. 4 m., small island in river. 4.2 m., rocky point of slaty shale and sandstone (not red). Hills as before. 4.3 m., cross stream from *e.n.e.* in a wide, open valley, in which is a village and much cultivation; walnuts. This valley runs up to a mountain behind, 3000 feet high, with precipitous and craggy top; pines. 4.8 m., village on right bank; a little flat cultivated ground at the point. Stream enters river from *w.s.w.*; its valley runs up to a mountain 2000 feet high, with pines. On left bank, friable, rotten shale, striking *s.*, dip  $30^{\circ}$ . Hills 600 feet high, sloping  $45^{\circ}$ ; grass and thorns. 5 m., cross stream from *e.n.e.* Road rises 200 feet above river.

A flat point projects to the w. beyond the spur; cultivated. Hills on right bank 1000 feet high, sloping  $40^\circ$ ; rather bare. 5.3 m., cross stream from e. 5.7 m., village of Boah-Tsa. Stream runs through village from e. Road from Dzung-Ngyu to Boah-Tsa, good. 6.4 m., ruins. 7 m., hills on both sides, 700 feet high, sloping  $50^\circ$ ; craggy, rather bare, no trees. 7.6 m., hills on right bank, 500 feet high, sloping  $60^\circ$ . 7.9 m., precipices on left bank 400 feet high. Rocky point. 8.2 m., stream enters river from s.w.; ruins at its mouth. On right bank, cliffs 1000 feet high. On left bank, broken slopes of  $60^\circ$  to  $70^\circ$ , 700 feet high. Road bad, especially at points; no plains; hills run right down to river. 8.8 m., cross large stream from n.e.; village with walnut-trees. On right bank, cliffs 500 feet high; strata vertical, striking n. and s. 9 m., cliffs on right bank 400 feet high; on left bank, cliffs and slopes of  $70^\circ$ , 700 feet high, with pines at top. 9.4 m., on right bank, a peak 1500 feet high, sloping  $70^\circ$ ; broken. On left bank, rocky, point; hills 1000 feet high, sloping  $50^\circ$ ; broken and all bare. Road very bad. 9.7 m., cross river to right (w.) bank by spar bridge. 9.9 m., cross stream from w. with a sulphury smell. Hills on both sides 1000 feet high, sloping  $50^\circ$ , much broken with cliffs. 11 m., rocky slopes of  $70^\circ$  on both sides; no trees; very bare. Stream enters river from e. 11.6 m., a small patch of buckwheat close to water. 11.7 m., bridge across river; stream enters river from e. House on left bank, with walnuts, weeping willows and buckwheat. On right bank, cliffs, and broken slopes. On left bank, cliffs 400 feet high; above these, slopes for another 400 feet, with a few trees at top. Road very bad. 12.5 m., cross stream from w.; stream enters river from e. House on left bank, with walnut-trees. 12.8 m., small patch of cultivation on right bank. 13 m., a cave in the rock 100 feet above river. Broken slopes  $70^\circ$ , 1000 feet high, craggy at top, on left bank. 13.5 m., on right bank, slopes 1000 feet high,  $80^\circ$ . A mountain 3000 feet high, with pines, bearing s.s.w. 16 m., broken crags on right bank. On left bank, hills 1200 feet high, sloping  $70^\circ$ , broken. 16.1 m., cross large stream from s.w., which runs between precipices; after which a house, with walnuts, peaches, and a little cultivation. 16.3 m., cross stream from s.w. On right bank of river, slopes  $40^\circ$ , with tufts of grass and shrubs. On left bank, slopes  $40^\circ$ , 200 feet high; above this, grass slopes of  $15^\circ$ , 1000 feet high, with crags at top and a few trees. 17 m., on right bank, craggy and broken slopes,  $45^\circ$ , 1500 feet high; a mountain, 3000 feet high, with pines, bears s.s.e. On left bank, craggy and broken slopes,  $45^\circ$ , 1600 feet high. 18 m., village, with walnuts, peaches, and buckwheat; altitude 9885 feet. On right bank, slopes  $60^\circ$ , 200 feet high; very bare. On left bank, spur from mountain 3000 feet high. Rocks, slaty shale and sandstone. Road here leaves river Kiang-Ka, crosses stream from s.s.w., and ascends its right (e.) bank. 18.3 m., on left bank, slopes  $50^\circ$ , 1000 feet high, very rocky. On right bank, slopes 1000 feet high; spur from mountain; crags, and debris. 18.6 m., enter very narrow gorge; walls of rock on both sides, 1000 feet high; bed of stream only a few yards wide. 18.7 m., cross river to left (w.) bank by spar bridge. 19 m., slopes of  $60^\circ$  on left bank. 19.1 m., cross large stream from w., which runs between steep slopes and precipices. 19.2 m., altitude 10,387 feet. On left bank, slopes  $70^\circ$ . Two oaks growing close to water. On right bank, slopes  $70^\circ$  for 100 feet, then cliffs for another 200 feet. 19.5 m., slopes  $40^\circ$ , 800 feet high, on both sides. 19.7 m., cross river to right (e.) bank by spar bridge, and recross almost immediately, to left (w.) bank by spar bridge. 20 m., rocky point on left bank; on right bank slopes  $40^\circ$ , with cliffs at top. Village at point, with walnuts. Road ascends a small stream a little way and crosses a spur running out into river, on which is the village. Road is then 200 feet above stream. Slopes  $40^\circ$  below the road to river; above the road slopes  $30^\circ$ ; all thorns and grass. 20.2 m., cross stream from w. 20.5 m., on right bank, slopes  $40^\circ$ , 1000 feet high, with pines at top. 21.1 m., stream enters river from n.e.

Road still 200 feet above stream. A low wooden pilo. Road commences to descend here. 21·3 m., cross river to right (e.) bank by a spar bridge. 21·4 m., Nieh-Ma-Sa, altitude 10,868 feet; a village of 7 families, in a small plain, 200 yards wide, with barley and walnut-trees. Hills on right side of river, 800 feet high, sloping 35°; bare; behind these, mountain tops are visible. On left bank, slopes 40°, 1000 feet high; bare. Road all the way from Dzung-Ngyu is exceedingly bad, over loose stones, and in many places very narrow, with steep ascents and descents. In two places steps are cut in the side of a precipice. Hills all the way, very bare, with tufts of grass and thorns, but the rock always shows through.

3rd.—*Nieh-Ma-Sa to Tsa-Leh*.—Cross river to left (w.) bank; road rises immediately 50 feet above river. Pines at top of slopes on both sides. ·6 m., ruins on right bank. Hills on right bank 800 feet high, sloping 40°; pines, oaks, briars, thorns, and bare patches. On left bank, a small plateau 500 yards square, 200 feet above river; slopes above road 20°, with cliffs at top, whose summits are 800 feet above stream. ·8 m., ruins on left bank. 1·2 m., stream enters river from e. A patch of cultivation, and a house between road and river. 1·5 m., stream enters river from e.; pines in its valley. Hills on right bank, 1000 feet high, sloping 30°; pines, oaks, thorns, and patches of grass, but rather bare. On left bank, slopes above road 15°, 1000 feet high; pines and oaks at top. Road 200 feet above river; slopes below 30° down to it. 1·7 m., houses on both sides of road. Hills to w., running back, form a sort of basin in which is cultivation. 2 m., road begins to descend to river. Ruins. 2·2 m., small plain begins at level of river on left bank, 200 yards wide. Barley cultivation. 2·4 m., Ma-Ra, altitude 11,505 feet; a village of 3 families. Stream runs through from w.; its valley runs up between cliffs, with pines. Small patch of cultivation. Hills 1000 feet high, sloping 20°, with pines at top, grass and thorns below, rather bare. Hills on right bank 1000 feet high, sloping 35°, broken with cliffs; pines, grass, and thorns, but rather bare. Barley cultivation and gooseberries. 2·6 m., road 50 feet above river, and very good. Bare trees in valley. Plain ends. 3 m., wood of pines, poplars, ferns, oaks, and wild flowers. 3·1 m., stream enters river from e., pines and oaks in its valley. Slopes on right bank of river, 30°, 500 feet high, much broken; behind which are precipitous mountains 1500 feet high. Slopes on left bank, 30°, with oaks and thorns. 3·3 m., precipices rise up from river, on both sides. Road at river-level. Wood of poplars and firewood pines. 3·4 m., cross river to right (e.) bank. 3·6 m., precipices on both sides, 500 feet high. 3·8 m., road passing through the same wood. Precipices on both banks, with pines and oaks in crevices. 4·1 m., slopes 10°, above road on right bank; poplars. On left bank, hills 500 feet high, sloping 70°; very craggy, with oaks and thorns. Road commences to rise above river. 4·6 m., hills on left bank 1500 feet high, sloping 20°; oaks. Lamassery to s.w., 700 feet above river, in a kind of basin, with cultivation. Road 150 feet above river, and out of the wood, which continues below. Oaks and thorns still about the road. 4·8 m., stream enters river from w., its valley runs between precipices, with pines. Slopes 15° above the road, on right bank; grass, oaks, firs, and poplars. Below road, slopes 40°; oak. On left bank, slopes 30°, 1500 feet high, with grass and oaks; dead pines at top. 5·1 m., road at river-level, through poplar wood. 5·3 m., stream enters river from w. 5·5 m., on right bank slopes 30°; grass and oak. On left bank slopes 20°; grass, pines, and oaks. 5·7 m., ruins on right of road; house on left. 5·8 m., on right bank, patch of cultivation. A bare peak 800 feet high, slopes 30° up to it; oaks, pines, poplars, thorns, grass. 6 m., cross river to left (w.) bank. Stream enters river from e. 6·2 m., village with pilo; barley. 6·8 m., road at top of a spur 500 feet above river. Wood of oak, pines and poplars. On right bank, mountains 2000 feet high, bare at top, with cliffs, pines lower down. On left bank,

mountains 2000 feet high, with dense oak wood. 7.3 m., on right bank, same craggy mountain; oaks and grass below; lower slopes 30°. On left bank, hills 600 feet high, sloping 30°, with oaks and pines. Road close to river. A very flat, grassy plain commences, 200 yards wide. 8.2 m., cross river to right (e.) bank. 8.4 m., Tsa-Leh (improperly called Tsa-Li), altitude 12,690 feet. Village situated in a small flat, grassy plain; with hills on w. of river, 600 feet high, sloping 40°; hills to e. and s., 200 to 300 feet, sloping 60°, bare crags at top. Barley cultivation in plain. Streams enter river from e. and w. Road very good all the way from Nieh-Ma-Sa. Rocks on both sides of sandstone, grey and yellow, and friable slaty shale. The bare hills cease at Nieh-Ma-Sa, and all the way beyond are well covered with grass where there are no trees.

4th.—*Tsa-Leh to Lûng-Zûng-Nang*.—1 m., cross river to left (w.) bank. Stream enters river from e. Its valley leads up to a bare mountain 800 feet high. Slopes of 30°, 300 feet high, close to river on both sides, with oaks and pines; pines and briars in valley. 1.2 m., slopes on both sides 20°, 300 feet high, with dead pines and poplars on right bank, oaks on left bank. Cross stream from w. Ruins. 1.8 m., on left bank, a grassy opening in the forest, about 200 yards square; gooseberries and currants. Slopes 40°, with oaks and dead pines. Cross stream from w. 2 m., stream enters river from e. Its valley leads up to a bare peak 1000 feet high. Slopes down to river 80°; pines. 2.5 m., cross stream from w. Hills on right bank 300 feet high, sloping 20°, with pines. On left bank a grassy opening about 200 yards square. Pines and yews in valley. 2.7 m., cross river to right (e.) bank. On left bank, another grassy opening, 200 yards square; hills 200 feet high, sloping 20°, with pines and poplars. Cross stream from e. 3.2 m., altitude 14,109 feet. Cross stream from e. Rhododendrons commence. Road from Tsa-Leh to this point pretty good; it now gets stony. 3.4 m., stream enters river from s.w. 3.7 m., stream enters river from s.e. Its valley, which is open, and bounded by slopes of 15°, runs up to a very remarkable rugged peak. On right bank is a ridge 600 feet high, sloping 15°, bare at top, grassy half-way up, and yews below. On left bank a peak 900 feet high, sloping 25°, with oaks and pines. Road ascends right bank of stream, and at 4.2 m. crosses it. 4.4 m., altitude 14,651 feet. Zigzag commences. 4.6 m., no more oaks and pines; yellow flowers and rhododendron on slopes on both sides of road. Very rugged peaks and pinnacles to w., 400 feet high, rhododendron on slopes below. 5 m., end of zigzag. Road 100 feet above stream. A very bare ridge with rugged top, to left of road, 300 feet above it. Very rugged peaks all around. 5.6 m., road crosses the river (dry), which runs from a very rugged ridge 1 m. distant, 400 feet above. The road has been bad since 3.2 m.; it now ascends by a steep zigzag to 6.4 m., summit—Tsa-Leh-La-Ka, altitude 15,788 feet. A rugged and bare ridge, no higher than the pass, runs s.e. and n.w. Water parting between the Chin-Sha-Chiang and the Lan-Ts'ang-Chiang; and boundary between Bat'ang and Yün-Nan. Road descends by an exceedingly bad and steep zigzag, very rocky, between steep crags on both sides. 7.3 m., altitude 14,935 feet. End of zigzag; road descends stream on left (e.) bank. Slopes 10°, covered with rhododendron, and a shrub like box. The zigzags on both sides of the mountain are on almost bare crags, nothing but a little grass, and a few wild flowers. 8 m., altitude 14,523 feet; gooseberries and currants. 8.3 m., stream enters river from w. A ruined hut, Jieh-Kang-Sung-Doh. On right bank, a spur runs down from rugged peak 800 feet high. A little open, grassy space here; yews on the spur. On left bank, hills 200 feet high, sloping 30°; oaks. 9 m., cross stream from e. A shrub like tamarisk, with small black berries. Road from 8.3 m. very bad indeed. 9.4 m., a little grassy opening on both sides. Stream enters river from s.w. From Jieh-Kang, the stream descends in a valley, with pine-forest on each side, and at the

bottom. The mountains are all about 1000 feet above the stream, they are bare or grassy at the top, and the pine-forest commences about half-way down. The slopes are about  $20^{\circ}$ . 9.7 m. cross stream from N.E. 10.4 m., cross stream from N.E. 11 m., stream enters river from S.W. 11.4 m., stream enters river from S.W. 11.7 m., cross stream from N.E. 11.9 m., stream enters river from S.W. 12.1 m., cliffs on right bank 100 feet high. Road still through dense pine-forest, very bad and rocky; now 200 feet above stream. 12.5 m., a little grassy opening, with a little grass in the bottom of a valley, with a stream from E.N.E.; the same dense pine-forest. Hills on right bank of river 1000 feet high, sloping  $30^{\circ}$ . This place is called Lûng-Zûng-Nang, altitude 12,684 feet; no houses here, or since leaving Tsa-Leh. Road very bad and stony from bottom of zigzag. Rocks, sandstone, friable slaty shale and mica.

5th.—Lûng-Zûng-Nang to A-Tun-Tsû.—Road descending river. 1 m., altitude 12,207 feet; very small bamboo and rhododendron. 1.2 m., hills on both sides 500 feet high, sloping  $60^{\circ}$  to  $70^{\circ}$ . A pine-forest. Road bad. 1.3 m., stream enters river from S.W. A very remarkable bluff marks entrance to gorge. Cliffs on both sides 300 feet high; angle subtended by tops of cliffs on both sides  $15^{\circ}$ . 2 m., cross river to right (W.) bank. Cliffs on both sides 400 feet high, with grass and trees in crevices. 2.3 m., a very small stream enters river from E. Slopes on left bank  $70^{\circ}$ . Cliffs on right bank 400 feet high. 2.6 m., on right bank, cliffs 400 feet high; on left bank, slopes  $80^{\circ}$  with dense foliage. 2.8 m., cross river to left (E.) bank; recross to right bank almost immediately. Cliffs on right bank 500 feet high. 3.4 m., cross stream from W. On left bank, slopes  $70^{\circ}$ , with pines and light foliage. Road up to this point exceedingly bad; better beyond. 3.6 m., slopes  $40^{\circ}$  on both sides. The gorge ends here suddenly. 3.8 m., valley of river 50 yards wide, quite flat, with grass and fine trees. 4.2 m., cross river to left (E.) bank. Slopes on both sides  $60^{\circ}$ , with oaks. Valley closes again. Road is fair and rises above river. 4.6 m., slopes on both sides  $40^{\circ}$ ; a dense oak-forest, with very fine trees on right bank. Road fair. 4.9 m., stream enters river from W. Road 200 feet above river, on top of a spur dividing two streams of equal size, about  $\frac{1}{2}$  mile apart; it then descends right bank of eastern stream. 6 m., on left bank, hills 300 feet above river, sloping  $30^{\circ}$ ; oaks, with grass in patches. 6.2 m., road 200 feet above river; slopes above and below  $40^{\circ}$ ; oak. 6.4 m., altitude 10,898 feet; passion-flowers. 7.1 m., confluence of the two rivers. Road crosses western stream and descends on right (W.) bank. A hut on left bank, with cultivation. Stream enters river from E. 7.6 m., hills on left bank 400 feet high, sloping  $30^{\circ}$ ; very green low jungle, with pines at top. Road 20 feet above river. Ruined shed. 7.8 m., on right bank, slopes  $40^{\circ}$ , with oaks and pines. Road up to this point, fair; it is now along side of steep slope, very narrow, and dangerous in places. 8 m., plum-trees. Road 300 feet above river. Pony slipped off path, rolled down to river, and was killed. 8.2 m., slopes  $60^{\circ}$  on right bank, with grass and scrub, and a few oaks. 8.3 m., cross stream from N.W. Cross spur to another river from N.W., which runs between precipices; descend to it by a steep zigzag. 9 m., cross stream from N.W., by a good bridge to right bank; altitude 9988 feet. Beyond this, road is dangerous in places as before. 9.6 m., the stream joins river on its right bank; stream enters river from S. Road 300 feet above river. The valley now opens; a complete change in scene and climate. Slopes  $40^{\circ}$  on both sides, with cultivation in terraces, in the hollows; slopes covered with grass only; pines at top. Houses among the cultivation. 10 m., stream enters river from S.E. 10.3 m., cross stream from N.W. 10.8 m., cross stream from N.W. 11.3 m., cross stream from N.W. 11.7 m., stream enters river from S.E. 12 m., cross stream from N.W. 12.4 m., stream enters river from S.E. Slopes on both sides 1000 feet high, with grass and shrubs; pines at top. Road still 300 feet above the river, and very fair. 12.7 m., cross stream

from w.n.w. 13 m., granite. Road at river-level. 13·8 m., altitude 9000 feet. Walnut-trees in great quantities. 14·5 m., cross stream from w.; stream enters river from e. 15 m., Dong, altitude 9000 feet. It is situated at end of open valley that commences at 9·6 m. In this valley there is a considerable cultivation of wheat, barley, and buckwheat—a few stalks of Indian corn in a garden—also much sago. Cross stream from w. 15·1 m., stream enters river from e.s.e. 15·5 m., red clay deposit. 16 m., cross river to left (e.) bank. Road leaves river and crosses over a spur to a tributary which it ascends, from 17 m. A gently sloping point between road and river, well cultivated in terraces; with a village in fork of rivers. Above road, rocky and craggy slopes. To n.w. a mountain 1500 feet high, sloping 20°; cultivation in patches on the slopes, but mostly thin grass, with rock showing through. 16·6 m., road from Dong up to this point good, but now rather bad. 17 m., cross stream from e. Hills on right bank covered with juniper. Road rather bad. 17·3 m., on right bank, slopes very steep and craggy; on left bank, precipices 300 feet high with pines at top. A very bad ascent commences, almost a staircase, that lasts about  $\frac{1}{2}$  mile. 17·6 m., on right bank, slopes very broken and craggy; on left bank, cliffs 300 feet high. Road still steep and bad. 17·8 m., cross stream from n.e. 18·1 stream enters river from s. 18·2 m., cross river to left (s.w.) bank. Firs and oaks on slopes on right bank. On left bank, hills 300 feet high, sloping 50°; oaks. 18·5 m., another very bad bit of road—almost a staircase, till 18·8 m., when it improves, but is still bad. 19·1 m., hills on both sides, 400 feet high, sloping 40°. A grassy opening on left bank, and a hut. Road better. 19·5 m., road very good; another grassy opening commences. 19·8 m., precipices on left bank. 20 m., hills on right bank, 400 feet high, sloping 30°; on left bank, hills 200 feet high, sloping 40°; oaks. Cross stream from s.w. Ruined shed on right of road. 20·5 m., grassy opening ends. 20·7 m., cross stream from w.; stream enters river from n.e. 20·9 m., cross stream from w. On left bank, a little, sharp, narrow spur, 100 feet high, projects into the valley; then beyond this is barley and wheat round a house. On right bank, hills 400 feet high, sloping 30°. 21·2 m., source of river. 21·3 m., a water-parting, altitude 12,049 feet. A valley runs down to s.e. 21·5 m., summit—*Jo-La-Ka*, altitude 12,389 feet. Road for last two miles, up to the water-parting, very good indeed; the last bit of the ascent rather steeper, but good. Beyond the summit the road descends very steeply down a slippery slope; there is a little zigzag. 22 m., altitude 11,879 feet. Barley and wheat round a hut. Very rugged crags above the slopes. 22·4 m., *A-Tun-Tzū*, or *N'geu* (Tibetan), altitude 11,029 feet. Hills on both sides 500 feet high, sloping 20°. Green shrubs in valley; wheat, barley, buckwheat. Road from *Lung-Zung-Nang* to *A-Tun-Tzū* very bad nearly all the way except the last few miles.

*Ka-Wa* or *Ka-Bo* is the Tibetan name for a mountain near *A-Tun-Tzū*; the Chinese name is *Pai-Yo-Shan* (White Medicine Mountain). This is a sacred mountain to which pilgrimages are made. A mountain called by the Tibetans *N'geu-La-Ka*, and by the Chinese *Pai-Ma-Shan* (White Horse Mountain) or *Pai-Na-Shan* (the mountain that brings whiteness), has four spurs, called *Jing-Go-La*, *Pa-Ma-La*, *Mien-Chu-La*, and *Shwo-La*. The name of one of the ridges, *Pa-Ma-La*, has probably been interpreted by the Chinese into *Pai-Ma-Shan*, or *Pai-Na-Shan*. The collective name is often applied to the individual spurs, and there is a good deal of confusion about the nomenclature.

9th.—*A-Tun-Tzū* to *Deung-Do-Lin-Ssü*.—Road descends left (n.e.) bank of a small stream. 1 m., stream enters from s.w.; cross stream from n.e. Road leaves river and ascends right (n.e.) bank of a tributary. 2·4 m., oaks, pines, rhododendrons. 3·3 m., summit—*Jing-Go-La*, altitude 12,300 feet. Source of stream. Road good from *A-Tun-Tzū* to this point. It now follows the contour of the hill, and descends to 3·6 m., the source of a stream flowing s.e.

4.5 m., oaks, pines, rhododendrons. Road fair. 4.9 m., cross stream flowing s.w. 5.1 m., cross stream flowing w. 5.4 m., cross stream from e. Road then descends to its confluence with a river, and ascends right (n.e.) bank of the latter. 6.6 m., guard-hut. Grassy opening. Cross stream from n.e. 7.6 m., cross stream from n.e. 9 m., guard-hut called *Pung-Gien-Tiyin* (soldiers were formerly kept here to carry letters and despatches). 9.4 m., cross river to left (w.) bank. Stream enters river from e. Road from *Jing-Go-La* to this point, very good; it here becomes rather stony. 10.6 m., cross river to right bank; streams enter from s.e. and s.w. Very stony road, but not difficult; pines, oaks, and rhododendrons all the way. 11.3 m., source of river. 11.5 m., summit—*Pa-Ma-La*, altitude 14,307 feet. A little zigzag to summit, not at all bad. Snow close. Road now very good. Pine-forest. 11.8 m., source of stream flowing s.e. Road descends on left (n.e.) bank. 12.9 m., cross stream from n.e. 14.6 m., road leaves stream, which flows to s. 15 m., summit—*Mien-Chu-La*, altitude 14,227 feet. From *Pa-Ma-La* to *Mien-Chu-La* the road is good. 16 m., cross stream flowing s. 17.6 m., summit—*Shwo-La*, altitude 14,307 feet. From *Mien-Chu-La* to this point the road is good, through open country. The descent from *Shwo-La* is bad and stony to 19 m., where a pine-forest commences. 18.2 m., source of river flowing s.e.; road descends left bank. 19.7 m., cross stream from n.e. 22 m., house on left of road. Cultivation begins. 23 m., a road runs off to e. 23.5 m., cross river to right (s.w.) bank. 29.5 m., *Deung-Do-Lin-Sü* or *Tung-Chu-Ling*; altitude 9335 feet. This village is 200 feet above the river. Walnuts, peaches, buckwheat, barley, sago, and a few stalks of Indian corn in a garden. Hills about 1000 feet high, with pines at top; rather bare slopes; a few trees and small shrubs on them. Low down a few patches of cultivation, where slopes are not too steep. A cut in the hills, on bearing 38°. Valley runs down on bearing 90°, and is blocked by a high, bare and steep mountain; it is enclosed by slopes of 30°, 2000 feet high, cultivated in patches, with pines at top. Upper valley bears 300°, with pine-clad slopes of 30°, 1000 feet high. Lamassery, on bearing 160°, on crest of spur, with pine slopes on hills above it. Road good from 19 m. to *Deung-Do-Lin-Sü*.

11th.—*Deung-Do-Lin-Sü* to *Sha-Lu*.—Road runs up a valley, nearly following contour of hill by an easy zigzag; very good. .8 m., cross stream from w., nearly at level of main stream. Road then ascends again. Rocks, friable sandstone, quartz, and red clay. .9 m., house. Road now turns e. 1.6 m., Lamassery on right of road, 400 feet above stream. 2.4 m., road 300 feet above river; slopes below 30° down to river, with spurs, flat-topped and cultivated. Hills rise 1700 feet above road, sloping 30°. 2.7 m., road descends very slightly to 3 m., where it crosses a stream from s., and rises again a little on the other side; it is still very good. 3.7 m., point, with ruins; one occupied. 3.9 m., houses; sago, barley, and pears. 5 m., detached houses. Much cultivation on the slopes below the road. Slopes above the road, 1500 feet, rather bare, with yews and shrubs; pines at top. River 1 m. distant, to n. 5.7 m., cross stream from s.s.w. 6.5 m., cross stream from s.s.w. House. 7.4 m., cross stream from s.s.w. Village on right of road. 7.5 m., a water-parting. A very bare mountain to n.e., about 2500 feet above river, which flows to n.e. between very bare sandstone slopes of 60°, leaving no plain at bottom. 7.6 m., source of stream, flowing s.e.; road descends on right (s.w.) bank; road a little rocky. 8.3 m., road leaves valley of stream, which has cut its way here 20 or 30 feet through a deposit of sand and stones. Road now very good, nearly following the contour. 8.8 m., stream joins river from s., and flows to e., in a valley 2 miles long and  $\frac{1}{4}$  mile wide, into the *Chin-Sha-Chiang*. Valley all cultivated; it has five villages in it; a large one on point of spur, near the confluence, some 60 or 100 feet above the river, is called *Poung-Dze-Lan*. The n. side of the valley is a long bare ridge, 150 feet high; a spur from the mountain mentioned at 7.5 m. To the e., beyond the *Chin-*



Sha-Chiang, is another great, bare mountain. Road now ascends the river on left (w.) bank. Bare slopes to w. of 60°, 1000 feet high. 10·2 m., road 150 feet above stream; bare slopes above and below road of 60°. On right bank, slopes of 60°, 500 feet high, nearly bare. Rocks, slaty shale, striking n. and s. 10·7 m., village, with cultivation round it. 11 m., rocky slopes on both sides; a little buckwheat down below. 11·2 m., cross stream from w.s.w. It runs through a short gorge with cliffs 50 feet high, and forms a waterfall. 11·4 m., cross river to right (e.) bank. Slopes on both sides covered with brushwood. Road up to this point very good. 11·6 m., road rather stony, through a jungle of briars. Hills on both sides slope right down to stream, leaving no plain at bottom. 11·8 m., cross stream from e. 11·9 m., cross river to left (w.) bank. 12·3 m., road very good. Cross and re-cross river. 12·6 m., cross river to right (e.) bank. 12·8 m., a short zigzag up to 13 m., village of Sha-Lu, 10 families; altitude, 9287 feet. This village contains the house of a native Tu-Sü, whose name is Wong. His rank is that of a Thuh-Chien-Tsung, and his rule extends over Deung-Do-Lin-Sü, and Pong-Dze-Lan.

13th.—*Sha-Lu to Ka-Ri*.—Road crosses river almost immediately after leaving Sha-Lu, and ascends left (w.) bank. ·3 m., on right bank, slopes 50°, with thorns, holly-leaved oaks and briars; on left bank, broken cliffs, with thorns, holly-leaved oaks, and pines above. ·5 m., thorns in bed of stream; a steep ascent but good. ·7 m., stream enters river from e.s.e.; it flows between cliffs. ·9 m., red clay, and red sandstone. 1 m., stream enters river from e.s.e. Road through a dense wood of briars, poplars and peaches. 1·7 m., slopes 60°, with poplars on both sides. 2·5 m., on right bank, hills 200 feet high, sloping 30°, with holly-leaved oaks and poplars; left bank is steep and craggy, with holly-leaved oaks, poplars and small pines. 2·6 m., road very steep. Stream enters river from s.e. 3 m., road through a very thick wood. 3·1 m., cross large stream from w.s.w. 3·4 m., a grassy opening about 200 yards square. On right bank, hills 300 feet high, sloping 40°, with poplars; on left bank, hills 300 feet high, sloping 20°, with holly-leaved oaks, and pines. Road from Sha-Lu up to this point steep, but good. 3·6 m., cross river to right bank. 3·9 m., cross river to left bank. Another grassy opening 200 yards square; rhododendrons and strawberries. Road stony for a short distance. 4·5 m., altitude 11,445 feet. Road very stony, through a dense forest of pines and rhododendrons 20 feet high. 5 m., altitude 11,924 feet; some bamboo. Road begins to zigzag through a dense forest. 6 m., source of river. Forest less dense. Hills 900 feet high, sloping 20°, with pines and grass at top. 6·5 m., summit—Jing-Go-La, altitude 13,699 feet; the road up to this point has been steep all the way, but generally good, and through a dense forest. The slopes on each side come right down to the stream, leaving no plain anywhere; the river runs through a jungle of hazels, briars, peaches, and small trees. Looking s., a stream runs through another valley, also covered with dense pine-forest. The sides of the valley run right down to the stream at an angle of 30°, leaving no plain at the bottom. To the e. is a ridge of crags and pinnacles; summit grassy, with dwarf rhododendrons. To the w. is a sharp peak. 7 m., source of stream flowing s.e. 7·8 m., red clay and sandstone on left bank; yellow sandstone and shale with quartz on right bank. 9 m., altitude 11,907 feet. First bamboo, very small. 10 m., stream enters river from n.w. 11 m., the slopes end here in a precipitous point. From Jing-Go-La, the road zigzags through a forest so dense that nothing can be seen in any direction, crossing the stream many times, and is very bad, steep and stony. The lower slopes of the valley are apparently very steep, 60° to 70°. 11·7 m., a wood-cutter's hut, altitude 10,475 feet. The road improves here, and is very fair all the rest of the way to Ka-Ri. It still goes through the same dense wood of holly-leaved oaks and pines, with briars, hazels, and blackberries. 12 m., stream enters river from w. 13 m., Ka-Ri, altitude

9610 feet; a village of 4 families only. There is a little buckwheat here in the open valley, and some fine cabbages are grown in the gardens. Hills on both sides 500 feet high, sloping 30°, with holly-leaved oak, true oak, walnuts, hazels, and pines (rather thin). A large stream enters river from N.E.

14th.—*Ka-Ri to N'doh-Sung*.—Road descends river on left (E.) bank. .6 m., cross stream from E.S.E. .9 m., cross stream from S.E. Road, which is 100 feet above stream, very good up to this point. 1.2 m., cross stream from S.E.; house. 1.7 m., village. Road leaves river, which flows into the Chiu-Chü, 1 m. S.; its valley opens out as it approaches the confluence; houses and cultivation at the bottom. 2.3 m., road crosses over a spur, and is still very good; yellow sandstone. 2.8 m., road descends by a zigzag to 3.2 m., where it reaches the Chiu-Chü, on left (N.E.) bank, and is again very good. 3.4 m., altitude 8226 feet. River runs through a gorge; cliffs on both sides 200 feet high, with holly-leaved oak in crevices. In the valley are plums, walnuts, barberries, and briars. River about 30 yards wide. 4 m., on both sides are cliffs and precipices, covered with trees in the crevices. 4.3 m., wooded cliffs on both sides. 4.6 m., cross river (16 yards wide) to right (S.W.) bank, by spar-bridge. 4.8 m., stream enters river from N.E. There are houses at the entrance of its valley; beyond are cliffs 700 feet high. On right bank, slopes 70°, covered with holly-leaved oak. A thick wood of thorns, barberries, and poplars in the valley. 5.2 m., a spur on left bank, 200 feet high, sloping 50°, with holly-leaved oak. On right bank, hills 400 feet high, sloping 40°, with holly-leaved oak. Yellow plums in the valley. 5.4 m., cross stream from S.W., which runs through a narrow, precipitous gorge. The river is now bounded by cliffs on right bank. On left bank, are spurs 200 feet high, sloping 30°, from a mountain 3000 feet high; brushwood. Road begins to rise up side of slope. Valley is flat, 200 yards wide, and cultivated with buckwheat. From Ka-Ri to this point no flat in valley, hills running straight down to water. 6 m., cross stream from S.W.; stream enters river from N.E. On left bank, a hollow, basin-like valley, well cultivated, running up to a peak to N.E. Houses in valley; Indian corn in gardens. 6.4 m., cliffs on left bank. Houses on right bank; sago and Indian corn in gardens, and Hung-Pai (a grain something like rice). Road at river-level. A grassy plain 500 yards long, 100 yards broad, between river and hills. River then runs through a narrow gorge bounded by cliffs. 6.6 m., cross stream from S.W. 7.1 m., crags and steep slopes, 1000 feet high on both sides, covered with grass and trees. 7.4 m., altitude 7806 feet. Stream enters river from N.E. Cliffs and slopes 500 feet high, on both sides. Passion-flowers. 8 m., a small grassy plain on left bank. Slopes 30°, with brushwood and grass. 8.4 m., slopes of 40°, 400 feet high on both sides, with cliffs at the top; brushwood. Yellow sandstone. 8.7 m., stream enters river from E., flowing between cliffs. House at its mouth. 9.2 m., stream enters river from E. Cliffs on right bank. 10 m., stream enters river from E.; holly-leaved oak on slopes in its valley. Village of Shieh-Zong (8 families), on left bank; weeping willows about it. Bridge across river. Hills on both sides 1000 feet high, sloping 50° on left, and 40° on right bank; holly-leaved oak and poplars, with pines at the top. A little plain below, 500 yards long. 10.8 m., cross stream from W. 11.2 m., cross large stream from W. Cliffs bound the river on right bank. On left bank, slopes 40°, covered with holly-leaved oak. A small flat at bottom of slopes; hazel-nuts. 11.8 m., cross stream from S.W. Road passes alongside of cliff, 100 feet above river; it then descends to 12.2 m., by rather steep zigzags to an important stream from S.W., crossed by a bridge. Yellow sandstone. Precipices on right bank. 12.5 m., cross the Chiu-Chü, which is 16 yards wide, to left (E.) bank, by spar bridge. First Indian corn in a field. Stream enters river from N.E. 12.6 m., village of N'doh-Sung, altitude 7417 feet (6 families). House belonged to native officer of district, with rank of Thuh-Pa-Tsung. On right bank, hills 300 feet high, sloping 60°, broken with cliffs, and

densely wooded with holly-leaved oaks and poplars; a flat at bottom 100 yards broad, with buckwheat and Indian corn. On left bank, hills 300 feet high, sloping  $30^\circ$ , with holly-leaved oak; a flat, 100 yards broad, at bottom, close to river, with sago.

15th.—*N'doh-Sung* to *Ron-Sha*, descending the Chiu-Chü on right (w.) bank.—5 m., end of flat ground by river; slopes come right down to water. Road through a wood of oaks, holly-leaved oaks, shrubs, and a few firs. 1.1 m., on both sides, slopes  $60^\circ$ , broken with cliffs and crags; holly-leaved oak growing thickly on them. 2 m., precipitous slopes on both sides, with holly-leaved oak and firs. 2.4 m., on right bank, slopes  $70^\circ$ , broken with crags; holly-leaved oak. On left bank, hills 1000 feet high, sloping  $30^\circ$ ; pines nearly to bottom. Rocks, shale, and sandstone. 3 m., cross stream from s.w. 3.3 m., on right bank, a flat, grassy opening, 200 yards by 60 yards, with pines, rhododendrons, and very large true oaks. Slopes  $40^\circ$  on both sides. 3.9 m., cross stream from s.w. Cliffs on right bank. 4.1 m., cross stream from s.w. 4.3 m., flat ground, 100 yards wide, begins in valley; buckwheat. 4.6 m., stream enters river from n.e. Road 100 feet above river. 5 m., cross stream from s.w.; a little grassy opening in its valley, and many walnuts; buckwheat for  $\frac{1}{2}$  mile up it. 5.3 m., bridge over river. 5.6 m., the slopes for a width of 100 yards, at bottom, cultivated with buckwheat and Indian corn on both banks. House. 6.2 m., cultivation ends; hills slope right down to river. 6.5 m., stream enters river from n.e. 6.7 m., houses. Altitude 7261 feet. A kind of rice (*M'jeh* in Tibetan), sago, and Hung-Pai. 7.2 m., on right bank, a little cultivation on very steep slopes; true rice. On left bank, a flat, cultivated point below the slopes. 7.4 m., a flat, cultivated point on right bank. Great number of walnuts in valley. On left bank, hills 800 feet high, sloping  $30^\circ$ ; crags at top, wooded. Road at river-level. 7.7 m., a flat, cultivated point below the slopes on left bank. Bridge across river. Houses on left bank. 8 m., cross stream from s.w. A flat, cultivated point below the slopes on right bank. House. 8.5 m., cross stream from s.w., flowing between precipices. Stream enters river from n.e. Hills on both sides 1000 feet high, sloping  $30^\circ$ , with crags at top; pines, holly-leaved oak, and small trees; bare rock between the pines; no grass. 9.3 m., cross stream from s.w. 10.5 m., Sa-Ka-Tying, a village of 3 or 4 families; altitude 7075 feet. Stream enters river from e.n.e. Its valley runs up to a peak 1500 feet high, with cliffs on top; pines on slopes. Road from *N'doh-Sung*, everywhere very good. There has generally been a flat space, cultivated, at all the points on each side of the river. Hung-Pai is a grain, of which there is a good deal in this valley; English name unknown. The grain is about the size of sago, and red when ripe; it is ground into flour. 11.5 m., cross stream from w. 12.1 m., flat at bottom, 200 yards wide. 12.3 m., bridge across river. 12.4 m., house. A flat space between road and river for 1 mile. 13.1 m., house. Hills on left bank, 500 feet high; wooded, with cliffs at top. 13.3 m., cross large stream from s.w. House. Pomegranates and persimmons. 13.5 m., houses. 14 m., on right bank, steep and craggy slopes; on left bank, hills 800 feet high, sloping  $30^\circ$ ; pines at top, grass below. 14.6 m., village on left bank, on a flat point projecting into river below the slopes. Bridge across river. 14.8 m., cross river Kung-Chü from s.w. by bridge. Village at entrance of valley, which is  $\frac{1}{2}$  mile wide, and flat. The valley is cultivated; the hills which bound it on the s., end in a long rocky spur. 15.4 m., houses. Slopes  $60^\circ$ , broken with cliffs, on right bank. 15.7 m., rocks and cliffs 800 feet high, on left bank; on right bank, slopes  $50^\circ$ , 800 feet high. No cultivation in valley. Road through a jungle of briars. 16 m., on right bank, slopes of  $70^\circ$ , broken with cliffs, and wooded; high precipices on left bank. Road through a dense jungle of thorns and small trees. 16.2 m., on left bank, slopes of  $60^\circ$ , with cliffs at top. A little cultivated flat at bottom on right bank. 16.4 m., village on left bank, on a flat, culti-

vated point at bottom of slopes; hills sloping 70°, broken with cliffs, and wooded. On right bank precipices and slopes 70°, wooded. River divided into several channels by islands. 17.1 m., a rocky spur runs out 200 yards beyond the road. Slopes on left bank 70°; wooded. Rocks, sandstone and shales. 17.6 m., Ron-Sha, altitude 6916 feet, a village of 12 families. Hills to s. 1000 feet high, sloping 20°, with low thorns and brushwood. Grassy valley 150 yards wide; buckwheat and sago. Road from N'doh-Sung very good.

16th.—*Ron-Sha to La-Pu or Ta-Chio.*—Road leaves the Chiu-Chü, which flows to e., and ascends left (w.) bank of a tributary, in the valley of which rice is cultivated. 4 m., valley closes in, the hills sloping right down to the water, on both sides. 8 m., on right bank, slopes 30°, with a little buckwheat on them, above which is a dense wood of firs and holly-leaved oaks; on left bank, slopes covered with firs, walnuts, and holly-leaved oaks. 1.1 m., road open up to this point. It now enters a dense wood of pines, oaks, holly-leaved oaks, chestnuts, and rhododendrons, and ascends for  $\frac{1}{2}$  mile by a short zigzag. 1.5 m., cross river to right (e.) bank; stream enters from s.w. Slopes 40° on both sides, covered with dense forests of pine and holly-leaved oak. Hills on left bank, slope sharply down to water. Road through dense wood. A small uncultivated bamboo here. 2.4 m., road 60 feet above river. Cross stream from n.e. 3 m., cross stream from n.e. On right bank, hills with bare cliffs at top, from which spurs, sloping 30°, are thrown out to river; on left bank, slopes of 40°, with pines and holly-leaved oak. 3.2 m., cross stream from e.n.e. A house in a little opening in the thick wood. 3.4 m., altitude 8436 feet. On left bank, slopes 10°, cultivated with buckwheat. A house. Green and yellow sandstone, and quartz, striking s. by e. 3.5 m., cross stream from e. Cross river to left (w.) bank. Road from Ron-Sha to this point very good, but steep; steep zigzag now to 4 m. Soil sticky, yellow clay. 4 m., an opening in the wood, with a house. Above the road are slopes 15°, with buckwheat; below, the hills slope 40° to river, and are densely wooded. 4.4 m., village, altitude 9157 feet; on a plateau, cultivated with buckwheat and flax; wooded slopes below 60° down to river; above it are pine-covered hills, sloping 20°. On right bank, slopes 25° up to hills 300 feet above road, which is on left bank. These slopes are covered with pines and holly-leaved oaks, but not very thickly; there are a few patches of cultivation; the lower slopes, 60°, end in precipices just above the river. 5 m., cross stream from w. On right bank of river, hills 400 feet, sloping 30°, with patches of pines and open grass. On left bank a grassy plateau, slopes below 40° down to river; the hills above it slope 20°. They are covered with pine, and have cliffs at the top. 5.5 m., cross stream from s.s.w. 5.6 m., road between two streams, over a grassy plain 200 yards long and 50 yards wide, bounded by densely-wooded hills 200 feet high, sloping 20°. 6.1 m., altitude 10,381 feet. Road, which is getting very steep, enters a dense wood. Trees have long pendants of moss hanging from the branches. Rhododendrons. 6.3 m., cross river to right (e.) bank. 6.7 m., source of river; altitude 11,657 feet. Strawberries, currants, and small bamboo. Road rocky and bad. A very bad steep zigzag commences, which lasts till summit is reached. 7.4 m., summit—*Râng-Geh-La-Ka*, also called *Pîng-Geh-La-Ka*, altitude 12,134 feet. Road now descends to s.s.e. by a steep, rocky, and very difficult zigzag. During the march a thick mist hid everything, and it was pouring with rain, so that little was seen, and note-taking was almost impossible. The road was through a dense forest of pines, holly-leaved oaks, currants, and other bushes, some of the pines being of extraordinary large dimensions; it zigzagged apparently down a spur, but the mist was so thick that it was impossible to say for certain that it did. 9.7 m., source of stream on right of road; road descends left (e.) bank. 10.4 m., hut; first cultivation, buckwheat. Hills on right bank, 300 feet

high, sloping 40°; dense pine-forest. 12.2 m., on both sides, pine-covered hills 1000 feet high, sloping on right bank 40°, and on left bank 50°, broken with rocks and cliffs. A remarkable bluff on right bank. 12.8 m., cross stream to right (w.) bank. A stony valley; the trees in it are covered with mud, and have stones among their branches to a height of 6 or 7 feet, showing that the stream must, at times, become a swollen torrent of very large dimensions. Some fields under water for rice cultivation. Red clay and red sandstone. 13.2 m., village of Shio-Gung (Tibetan), called by the Chinese, Hsia-La-Pu. There are 25 families, and a hereditary chief, whose title is "Mu-Kwa." (This is the "Moquor" of Cooper, but "Mu-Kwa" is not the name of a tribe.) 13.3 m., cross stream to left (E.) bank. Road turns to E., and descends a tributary of the Chin-Sha-Chiang on left (N.) bank. 13.5 m., altitude 7117 feet. Road passes through a wood of large holly-leaved oaks, 100 feet above the river, into which the stream here falls. Rice cultivation in valley below. 14 m., valley  $\frac{1}{2}$  mile wide, and cultivated with rice. On right bank, hills sloping 60°, with pines; on left bank, pine-covered hills, sloping 40°, with cliffs at top. 14.4 m., cross stream from N., with an open valley. A spur on right bank of river, 200 feet high, sloping 40°, covered with small shrubs. Chestnuts, walnuts, and persimmons. 14.7 m., a wooded peak, 1000 feet high, sloping 40°, on right bank. Buckwheat. 15.2 m., village of Ta-Chio, called by the Chinese, La-Pu, altitude 6777 feet; 30 families. There are four native officers called "Mu-Kwa," and a Chinese officer, called "Hsuin-Kwan," whose rank is that of a "Wai-Wai." His district extends from Shio-Gung to Jie-Bu-Ti. River 10 yards wide.

17th.—*Ta-Chio to Lu-Jiong or Wai-Ta-Chen.*—Road returns from Ta-Chio for  $\frac{1}{2}$  mile, then crosses river to right (S.) bank, and descends it on that side to its confluence with the Chin-Sha-Chiang. .6 m., wooded hill to S., 1000 feet high, sloping 30°. Valley of main stream is  $\frac{1}{2}$  mile wide, and flat. A small open valley, laid out in rice terraces, runs up to N. Buckwheat and many walnuts. .8 m., cross stream from S.S.W. On left bank, wooded hills of red clay and sand, 800 feet high, sloping 30°. 1.2 m., valley,  $\frac{1}{2}$  mile wide, quite flat. Hills run sharply down on both sides. 1.5 m., stream enters river from N.E.; an open entrance to its valley, with rice flats in it. In front of this valley a very flat point extends to S.W. Hazels and barberries. All hills here are round-topped. 2.1 m., cross stream from S.W.; valley 200 yards broad. A thick wood of holly-leaved oak. On left bank, round smooth hills, 500 feet high, sloping 20°; pines above. Yellow, friable, shaly sandstone. Village on left bank. 2.3 m., cross stream from S.W.; its valley runs up between hills 800 feet high, sloping 40°; densely wooded, and crags at top. A village; great numbers of very fine walnuts; beans, pomegranates, pumpkins, Indian-corn, vegetables, persimmons, palms, willows, Hung-Pai, and chestnuts. River sweeps to N.E.; its bank running close to foot of hills,  $\frac{1}{2}$  mile from the road; a cultivated flat between them. 3.3 m., village. Road from Ta-Chio to this point exceedingly good; it is very muddy here. 3.7 m., village. Road close to river, which runs close to foot of hills on N., and is crossed by a spar bridge. Slopes on left bank, 40°, with holly-leaved oak. On right bank, a gently sloping cultivated plain, running up to hills 600 yards distant. 4 m., cross stream from S., flowing through an open valley, the mouth of which is 1 mile wide. Hills  $\frac{1}{2}$  mile distant. 4.6 m., village on left bank of river. Cross stream from S. 4.7 m., a perfectly flat point projects into bend of river. 5.3 m., village. On right bank, hills, sloping 20°, run sharply down to a flat plain 100 yards wide, between them and the river. Shrubs. On left bank, at foot of hills which run sharply down, is a flat plain 100 yards wide. A spur, 200 feet high, sloping 30°, runs parallel to river; pines and bare patches. 5.7 m., temple on left bank, at top of end of spur; village at its foot. 5.9 m., village.

Stream enters river from n. Spar bridge across river. From this point to 6.6 m. is a perfectly flat plain, 200 yards wide, extending from the river on each side to foot of hills, which run sharply down to it. 6.6 m., hills on both sides, slope  $50^\circ$  right down to water; pines. Slaty shale, striking e. and w. 7.4 m., hills on both sides, 500 feet high, sloping  $60^\circ$ , with fir. No flat by river; hills run sharply down to water. 7.8 m., village. Tobacco in a garden. 8 m., a little cultivation on slopes, between road and river. 8.2 m., cross stream from s., flowing in a valley, between densely-wooded hills. 8.4 m., stream enters river from n. Its valley, which has a little cultivation on the slopes at its mouth, runs up to a peak 1500 feet high, with craggy top, and wooded sides. 9 m., on right bank, slopes  $20^\circ$ , with dense forest of pines and holly-leaved oaks. On left bank, slopes run sheer down to river, leaving no flat. Trees not very thick; grass between. 9.8 m., cross stream from s.w., which is bounded by steep and densely-wooded slopes and crags. There is no flat ground here, but there are slopes at the mouth of the valley. Rice and sago on terraces. On left bank, a steep and wooded point projects into the river, leaving no flat. 9.7 m., a precipice 300 feet high, on left bank of river, close down to water. 9.9 m., on right bank very steep slopes, with cliffs half-way up. 10.5 m., on right bank, densely-wooded slopes  $50^\circ$ , with cliffs at top; on left bank, a rocky spur 200 feet high, runs out, with cliffs at top. River here joins the Chin-Sha-Chiang or N'jeh (Tibetan); road descends right (s.w.) bank. 11 m., village of Jie-Bu-T'i (wrongly called Jie-Tein), or Chi-Dz'ing (Chinese), altitude 6621 feet; 23 families. It has a Chinese officer called a "Hsui-Kwan," and a native officer called a "Shien-Ngau." Parrots and orange-trees here. The road from Ta-Chio to this place is very good indeed, except 3 or 4 short bits of very stiff mud and clay. The La-Pu district ends at this point. To go to Chung-Tien the Chin-Sha-Chiang is crossed here. 13.4 m., Lu-Jiong-La-Ka (a mountain), altitude about 7000 feet. Road passes over an exceedingly steep and rocky spur, 400 feet high, which ends in a vertical cliff 200 feet, the base of which is washed by the river; and is very bad in wet weather. 13.8 m., cross stream from s.w. Its valley, which runs up to mountains densely-wooded with pines, is wide and open, undulating, with patches of cultivation, grass fields between hedges, shrubs, and small trees. 14.6 m., Lu-Jiong, called by Chinese, Wai-Ta-Chen, altitude 6647 feet; a village of 50 families, within the jurisdiction of Li-Kiang-Fu. There are some of the M'u-S'a people here (called M'h-L'h), who have a language not very analogous to the Tibetan. This village is situated at end of a low gently sloping spur,  $\frac{1}{2}$  mile distant from the river. To the n.e. is a mountain, 1500 feet high, sloping  $30^\circ$ , covered with dense pines. It ends in cliffs, the foot of them being swept by the river. The Kwei-Hua tree is met with on the road between Ta-Chio and Lu-Jiong. There are pumpkins and many vegetables in the gardens.

18th.—*Lu-Jiong to Ku-Deu or Chi-Tien*, descending right (w.) bank of the Chin-Sha-Chiang.—After leaving Lu-Jiong, the road crosses a flat to another small spur, which is partly cultivated and partly covered with trees. 1 m., the broad valley ends here, and is bounded by hills sloping  $20^\circ$ . A flat wooded point thrown out from mountain to n. River 80 yards broad. 2.2 m., stream enters river from n.e.; there is scarcely any plain in its valley. On right bank, a spur, sloping  $30^\circ$  down to road, covered with pines. Between road and river is a cultivated flat,  $\frac{1}{2}$  mile wide. 2.5 m., cross stream from s.w.; its valley runs up between pine-clad hills, sloping  $15^\circ$ . Same flat between road and river as before; it is uncultivated, and has big rocks strewn about. 3 m., on right bank hills slope  $70^\circ$ , and are broken with big rocks and small cliffs; holly-leaved oak and grass. Below the slopes, a flat plain, with loose rocks lying about, and a few small trees. On left

bank, a peak 500 feet high, sloping 30°, densely wooded. Road from Lu-Jiong to this point very bad, through deep sticky clay; would be fair in dry weather. It improves here. 4 m., stream enters river from E.; its valley opens out on to a broad flat point. Village on left bank. On right bank, a rocky point projects into river, which sweeps close to foot of it. Road bad. 4.6 m., on left bank, a peak 1000 feet high, sloping 60°, densely wooded; a wooded flat at the bottom. Road close to river through a dense wood of fir. 5 m., road close to river through a jungle of thorns and trees. A flat, cultivated with rice, commences between road and river. 5.4 m., village. 5.6 m., cross stream from S.W. by a covered bridge (the first one). Road runs along the foot of the hills. Between it and the river is a flat,  $\frac{1}{2}$  mile wide, cultivated with millet. 6 m., on right bank, hills 200 feet high, sloping 20°; pines. Plain below,  $\frac{1}{2}$  mile wide, stony, with thorns. Lower slopes of mountain to N.E., 10°, wooded. 6.4 m., road ascends a stream from W. a little way, and at 6.6 m., crosses it by covered bridge; altitude 6349 feet. It then rises up to the top of a spur from the mountains, which spur ends in a rocky point, with precipitous sides. At the extremity is a cliff running sheer down to river, which washes its base. 7 m., summit of spur, altitude 6735 feet. Road, which is sandy, now descends by an easy gradient along the side of the hill through a thin wood of small pines. On left bank, still part of mountain to N.E., slopes 15°. 7.4 m., road still on hillside, above a flat which commences here between hills and river. 7.9 m., cross stream from S.W. Road at bottom. 8.2 m., village. 8.4 m., stream enters river from N.N.E.; a flat and cultivated plain at mouth of its valley. Village on left bank. Road is here  $\frac{1}{2}$  mile from river, and good. Indian corn, millet, and tobacco. 9.7 m., summit of another spur; altitude 6862 feet. Road good. A wood of pines. Soil, red gravel. 10 m., road at bottom of spur. A flat sandy plain, cultivated with millet, beans, and Indian corn. 10.2 m., road 200 yards from foot of hills; good. 10.5 m., cross stream from W. Village of Mu-Khun-Do, called by Chinese Hsia-Ken-To. 10.8 m., road close to river, and very good. Rocky slopes 20°, with pines and holly-leaved oaks. Hills close to road and river. 11 m., a cultivated flat on left bank, with a village and trees. 11.9 m., stream enters river from N.E.; its valley runs up to a peak 1500 feet high, sloping 30°, with pines; lower slopes cultivated. On right bank, hills 1000 feet high, sloping 15°; pines. Road 300 yards from river, with cultivated flat ground on both sides of it. 12.2 m., road  $\frac{1}{2}$  mile distant from river; a flat between them, with rocks lying about, traversed by a creek. 12.6 m., village. 12.8 m., cross stream from W.S.W. in a wide valley, by covered bridge. On left bank, slopes run right down to river, leaving no plain. 13.3 m., on right bank, a rocky point runs right down to river, and the cultivated flat ends. On left bank, flat ground commences between hills and river. 13.6 m., another cultivated flat, on right bank, by side of river, 200 yards wide, commences; it is separated from road by a creek. 14 m., road  $\frac{1}{2}$  mile from river. 14.5 m., road close to river. Flat ends; hills come right down to river. 15.3 m., stream enters river from N.E., flowing through an open-mouthed and cultivated valley, which is divided into two parts by a pine-clad mountain, 1500 feet high. Road close to river. 15.4 m., hills on right bank, 500 feet high, sloping 20°; pine clad. Indian corn, Hung-Pai. 15.5 m., village. 15.7 m., cross stream from W.S.W.; its valley, which is open and cultivated, runs up between wooded hills. Stream enters river from E.N.E., flowing through a wooded valley which runs up to a densely-wooded, rocky ridge, 1200 feet high. Rocky spur ends, and a flat commences between road and river. Sandy, stony soil; no rice. Road excellent from Hsia-Ken-To to this point. 15.9 m., village. Road 800 yards from river; a flat between them; no rice. 16.1 m., road close to foot of

hills. Sandy, clayey flat,  $\frac{1}{2}$  mile wide, between it and river; cultivated. Hills slope  $20^\circ$ , with holly-leaved oak and pine. 16.3 m., cross stream from w.s.w.; its valley is closed by a wooded mountain 1000 feet high, sloping  $50^\circ$ . Village, with rice. Road close to river. 17 m., on right bank, a rocky point comes down to, and is washed by the river. Road at foot, close to water's edge; after which the hills recede a little, leaving a hollow basin; cultivated. Stream enters river from *E*. Its valley runs up to same ridge as at 15.7 m. There are gentle, cultivated slopes at its mouth, where is the first regular Chinese village, with whitewashed walls, and tiled, gabled roofs. A flat commences here between hills and river. 17.8 m., cross stream from *w*. 18.5 m., cross large stream from w.s.w., flowing through a wide valley. The hills which bound it on *s*. side, end in many small spurs. Chin-Sha-Chiang here  $\frac{1}{2}$  mile broad, but it is evidently now much above its banks. 18.8 m., village, with tile roofs; the first weeping willows. Road crosses a grassy plain, 1 mile wide. 19.8 m., village of Ku-Deu\* or Chi-Tien (Chinese); altitude 6200 feet. A Wai-Wai stationed here as Hsui-Kwan. Hills  $1\frac{1}{2}$  m. distant, all round. Road between Lu-Jiong and Hsia-Ken-To is indifferent, and in some places very bad, though stiff, deep mud, and clay; between Hsia-Ken-To and Chi-Tien it is very good. The rocks between Lu-Jiong and Chi-Tien are grey and yellow sandstone, clay, sand, and gravel.

20th.—*Chi-Tien to Tz'u-Kua*, descending right (*s.w.*) bank of the Chin-Sha-Chiang. The river has overflowed its banks, and here looks like a lake. To the *s.e.* of Chi-Tien the hills on both sides are 1000 feet above the river, sloping  $40^\circ$ .—8 m., village. Stream enters river from *E.N.E.*, flowing through a very open valley. Cross stream from *s.w.*, flowing through a very open, well-wooded valley. 1.2 m., village. Road at foot of hills, and close to river. 2.1 m., stream enters river from *N.E.*, flowing through a small, open, well-cultivated valley. Hills on left bank, slope  $40^\circ$  down to river; they are covered with grass, and have pines at the top. On right bank, a peak 1000 feet high; hill-sides wooded with pines. 2.6 m., a grassy, thorny plain, 200 yards wide, without cultivation, at foot of hills on right bank. From this point to 4.3 m., a plain,  $\frac{1}{2}$  mile wide, on left bank. 2.8 m., river 100 yards broad. 3.1 m., stream enters river from *N.E.* Cultivation commences. 3.4 m., village, with Indian corn. 4 m., a walnut-grove. Marshy ground and rice cultivation. 4.2 m., stream enters river from *N.E.* 4.6 m., cross stream from *s.w.*, flowing between wooded hills. River 150 yards wide. Houses. 4.8 m., a rocky point and precipices on right bank. Slopes covered with holly-leaved oak. 5.2 m., cliffs at edge of river on right bank. 5.5 m., village. Flat ground begins here, between hills and right bank. Hills slope  $40^\circ$ ; pines at top, Indian corn below. On left bank, hills come right down to river. 5.7 m., village on left bank, with walnut-trees and cultivation. Road 150 yards from river. Flat ground,  $\frac{1}{2}$  mile wide. Wooded hills, slope  $30^\circ$ . Houses. Rice, tobacco, and walnuts. Stream enters river from *N.E.* 6.1 m., a wooded flat. An undulating valley runs up to *s*. 6.5 m., cultivated flat between road and river. Above the road are thick woods. 6.6 m., cross stream from *s*. 6.9 m., road over a flat, wooded with oaks, chestnuts, and walnuts. 7.1 m., on right bank, open flat at foot of hills. Indian corn and cultivation on slopes of the very little valley to *s*. On left bank, a spur, sloping  $20^\circ$ , comes down from the ridge above, wooded with pines. 7.5 m., village. Road 200 yards from river. A wooded flat begins on left bank. 7.8 m., cross very small stream from *s.w.* Road close to river. Wooded hills slope  $40^\circ$  right down to stream. Cultivation on slopes on left bank. Stream enters river from *N.E.* 8.2 m., road through a wood, and close to river. 9 m., a rocky and precipitous point on right bank. Road through a wood after passing this point.

\* Can this be "Kutung," referred to by Baber?



On left bank a wooded spur, sloping  $20^{\circ}$ . 9.5 m., cross stream from s. Hills on right bank, 1000 feet high, sloping  $30^{\circ}$ ; pines and walnuts, and Indian corn. Much jungle and wood between road and river. 9.7 m., rice cultivation. 9.9 m., flat ground extends from the river 1 mile beyond the road. Rice and Indian corn. The spur on left bank comes right down to the river. 10.4 m., village of Pai-Fên-Ch'iang. Stream enters river from n.e. The same long ridge on the n.e., with precipices at the top. The road now rises over a rocky spur 100 feet high, then descends to the river-level, and enters a wood. 11.1 m., flat ground on both sides of river. 11.5 m., road close to river; a wooded flat between it and foot of hills. The same long ridge on the e., 1500 feet above the river. Stream enters river from n.e. 11.9 m., village. Hills come down to river, on left bank. 12.6 m., another flat begins on the e., between hills and river. 12.8 m., rocky point on right bank. 13.1 m., road close to river; another rocky point on right bank. 13.4 m., rocky point on right bank. On left bank, flat ground  $\frac{1}{2}$  mile wide, between hills and river. Road turns up a stream from w., whose valley is  $1\frac{1}{2}$  mile wide at this point, and ascends left (n.) bank. Hills on both sides, 800 feet high, sloping  $50^{\circ}$ . Indian corn. 14.8 m., cross the stream to right bank, by a spar bridge. Road turns to e., and descends right (s.) bank. 15.5 m., village. 16.3 m., village of Ch'iao-T'ou. Confluence of stream with the Chin-Sha-Chiang. Flat ground on left bank,  $\frac{1}{2}$  mile wide, between river and foot of hills. 17 m., large village on left bank. On right bank a wooded point, gently sloping  $15^{\circ}$ , covered with jungle, extends  $\frac{1}{2}$  mile beyond road down to river. 17.4 m., a valley runs to n.e., through which is the road to Chung-Tien. A large stream flows down this valley, whose sides rise to about 1000 feet, and are well wooded. A large village on left bank of stream at its mouth. 17.5 m., road through woods, close to river. 17.8 m., a rocky point on right bank. From this point to 19.3 m., a very gently sloping valley between two spurs, which are ridgy at the top, and are 1500 feet high, sloping  $15^{\circ}$ . This valley is  $1\frac{1}{2}$  mile wide, slightly undulating, partly cultivated, and partly wooded. Road close to river, through an oak wood. 18.3 m., a large village on left bank. A very small, cultivated island in the river. 18.6 m., a small, cultivated, triangular valley, on left bank, sloping up  $7^{\circ}$  or  $8^{\circ}$  to a wood of pines; at the top are rugged peaks. 18.8 m., cross stream from s.w. 19.3 m., for 200 yards on each side of road there is flat ground, cultivated with buckwheat and rice. Above this, on the s.w., a spur rises up, sloping  $20^{\circ}$ . Cultivated slopes on left bank. 19.7 m., road  $\frac{1}{2}$  mile from river. Cross stream from s.w., flowing through a small, triangular valley, cultivated with rice. 20.5 m., village of Tz'ü-Kua, altitude 6645 feet; about  $\frac{1}{2}$  mile from river, and a good deal above its level.

21st.—Tz'ü-Kua to Shih-Ku, descending right (w.) bank of the Chin-Sha-Chiang.—1.2 m., from Tz'ü-Kua to this point the road is above the river level, among rice-fields laid out in terraces. These terraces end here, and the road is 200 yards from, and 50 feet above, river. Hills on this side are covered with pines; spurs slope  $20^{\circ}$ ; valleys,  $40^{\circ}$ . Flat ground  $\frac{1}{2}$  mile wide on left bank, between hills and river. 1.5 m., road enters a wood; cultivation ends. 1.8 m., a small cultivated island in river. Road close to water. 2 m., road close to river. Slaty, friable shale, striking n. and s. 2.4 m., road through a sloping wood close to river. 2.6 m., stream enters river from n.; its valley runs up between red hills, 1000 feet high, covered with pines. The sides of the spurs slope  $20^{\circ}$ , and are much broken. A village on left bank, with cultivation and walnut-trees. A peak to the n., about 3 miles distant. 2.8 m., road 300 yards from river; flat ground, cultivated with Indian corn, between them. 3 m., on right bank, rocky, pine-covered slopes run down close to the road at an angle of  $20^{\circ}$ . 3.6 m., village, with chestnuts and walnuts. On left bank, hills 1000 feet high, sloping  $20^{\circ}$ , come close down

to water; pines. Between this point and 4.7 m. there is flat ground between road and river, partly cultivated and partly stony. 4.3 m., village. Road  $\frac{1}{4}$  mile from river; rice-flat between them. 4.5 m., village on left bank of river. 4.7 m., village. Cross stream from s.w., by covered bridge, with stalls. 5.4 m., road close to river, and at foot of wooded hills. 6.2 m., road close to river; hills wooded and broken. 7.4 m., road 100 yards from river; spur comes down to it. 7.6 m., village. 8.1 m., road close to river. Stream enters river from n.e.; a flat plain extends for 2 miles up its valley. 8.9 m., road close to river. 9.4 m., road close to river. Peak to n.e., 1600 feet high, with cliffs at top; slopes running 30° down to river, leaving no flat at all. 9.9 m., a flat triangle, cultivated with rice, between the spurs on the w. 10.2 m., village of San-Hsien-Ku, altitude 6390 feet. Rice-flat, 300 yards broad, between village and river. 11.2 m., flat ground on left bank. Road along edge of a precipice 1000 feet high; sandstone. 11.6 m., large stream enters river from n.e. 11.8 m., village. 12.3 m., cross stream from w. 12.8 m., stream enters river from e. 15 m., cross stream from w. Road,  $\frac{1}{2}$  mile from river, through a rice-plain. 15.2 m., village, with oranges. Same rice-plain. On left bank hills come right down to river. 16 m., a flat begins on left bank. 16.2 m., a rocky point on right bank. Road close to river. 16.5 m., road close to river. 17.8 m., village. Road close to river. 17.6 m., road  $\frac{1}{2}$  mile from river. Flat ground  $\frac{1}{2}$  m. wide between road and foot of hills. On left bank, hills come right down to river. 19 m., a rocky point on right bank. Road close to river, which divides into three channels, forming two large islands. 19.9 m., village. 20.2 m., cross large river from w.s.w., by ferry. 20.4 m., Shih-Ku, altitude 5952 feet. The road from Ts'u-Kua to Shih-Ku is very good indeed.

22nd.—*Shih-Ku to Chiu-Ho.*—Road now leaves the Chin-Sha-Chiang, and after crossing a spur, to .9 m., ascends left (w.) bank of a tributary. .4 m., soil, red clay and sandstone. Road fair, rice cultivation in valley below. .9 m., rice cultivation ends, valley closes in. Hills on both sides, 800 feet high, sloping 20°, wooded with pines and holly-leaved oak, run right down to stream. Road through a thick jungle of thorns. 1.3 m., cross stream from s.w. 1.8 m., cross river to right (e.) bank. 2 m., stream enters river from s.w. 2.6 m., stream enters river from s.w. 3.2 m., cross stream from n.e.; stream enters river from s.w. 4.2 m., road through an open pine-wood. Some potatoes in a field. Road now turns to e., and leaves stream, ascending a hill. 5.4 m., summit—Chin-Ku-P'u, altitude 8391 feet. A good deal of buckwheat cultivated both at the summit and on the slopes. The valley to the e., which has a good many houses and small villages in it, is cultivated with buckwheat and Indian corn. 7.7 m., a water-parting; altitude, 7946 feet. Small pond on left of road. 8 m., north end of a lake, on right of road, 400 yards wide. Hills which bound it on the w. are 500 feet high, sloping 20°, and throw out rounded spurs, 150 feet high, sloping 20° to 30°. They are wooded with pines and holly-leaved oaks, the red clay showing through, and there is cultivation in patches. On e. side, spurs slope 20°. Patches of buckwheat, Indian corn, and pines. Soil, red clay and gravel. Road from Shih-Ku to this point is fair in wet, and very good in dry weather. 9 m., village at s. end of lake, where a stream issues. Road now descends left (e.) side of stream, in a fine valley. 10.3 m., village on right bank. 10.6 m., village. 11.6 m., village on right bank. 12.1 m., village. 12.9 m., village. 13.7 m., road  $\frac{1}{2}$  mile from river. 14.6 m., cross stream from e., by the first arched bridge seen since Ta-Chien-Lu. A temple, the white end of which was visible at 11 m. On the w. side of the valley is a large collection of villages, extending nearly a mile. 15.3 m., village. 15.8 m., Chiu-Ho, altitude 7565 feet;  $\frac{1}{2}$  mile from river. This fine valley is all cultivated with rice, and has pears and walnuts. It is bounded on both sides by red-clay and sandstone hills

sloping 20°, very little cultivated. There are a great many villages and houses at the foot of the hills on both sides, but none in the centre. The road from 11 m. to this point would be good after a long dry season, but the soil is a deep stiff clay, and is exceedingly bad after rain or during wet weather.

23rd.—*Chiu-Ho to Chien-Ch'uan-Chou*.—Road descending valley. .6 m., village. Friable sandstone striking e. and w. 1 m. to the w. is the village of the chief of the district. Road  $1\frac{1}{2}$  mile from river, separated by a ridge of rounded hills 100 feet high, sloping 15°; the plain on e. of ridge is  $\frac{1}{2}$  mile wide. 1 m., cross stream from e. 1.6 m., village. Stream on right of road. 1.8 m., no rice just here, nearly all Indian corn. 2.1 m., road regains river, and crosses to right (w.) bank by arched stone bridge. 2.5 m., pagoda, at end of spur. Rice cultivation in valley. Plain to w. of road is  $\frac{1}{2}$  mile wide. A very large village at foot of hills on w. 3 m., cross river to left (e.) bank by stone arched bridge; village. 3.4 m., road close to hills. Spurs to e., sloping 10° to 20°, covered with small fir. A rice plain, on w. of river,  $\frac{1}{2}$  mile wide, stretches to foot of hills. 3.7 m., cross stream from e. 3.8 m., village. Broken ground on w., between road and river; a rice plain to e., 200 yards wide. 4.1 m., a plain 100 yards wide, to w. of road, beyond which are grassy rounded spurs 100 feet high, then river; on the e. are rounded spurs 100 feet high, thrown out from range behind. A rice plain stretches  $\frac{1}{2}$  mile to e., bounded by grassy spurs 200 to 300 feet high. 4.8 m., cross river to right (w.) bank. 5 m., cross stream from w.n.w. by stone bridge. A rice plain stretches  $\frac{1}{2}$  mile to w., bounded by grassy spurs 200 to 300 feet high. Village on right of road. 5.8 m., village. 6 m., road leaves river, which flows s.e., into a large lake. From Chiu-Ho to this point the road is very bad indeed, through deep, sticky mud and red clay; in places it is paved with very rough small stones. It is now close to hills on w. A plain extends  $\frac{1}{2}$  mile to e., bounded by red, rounded grassy spurs 70 feet high. 6.4 m., village. 6.8 m., village. Road close to hills on w. 7.3 m., plain to e., 3 miles wide, with a curious little hill in the centre, on which is a pagoda. 7.8 m., cross stream flowing s.e. 8 m., n. gate of city of Chien-Ch'uan-Chou, altitude 7489 feet, situate in the middle of a rice plain which drains into the Lan-Ts'ang-Chiang. Potatoes for sale in the city. A large lake to s.e. Road from 6 m. to this place is rather better than the first few miles, but is still indifferent. The road in the plain is rough and badly paved. Soil, red clay. Hills on both sides of road, red sand and clay, covered with grass and pines, the red soil showing through. Houses built of red clay—everything in the whole valley is red.

24th.—*Chien-Ch'uan-Chou to Niu-Chieh*.—Leave city by e. gate, and go round to s. gate. .5 m., cross stream from w. Four villages on right of road. 1.2 m., cross stream flowing e. by arched bridge. 1.6 m., village on right of road. N. end of a large lake  $1\frac{1}{2}$  m. to e., 3 miles long, n. and s., and about 1 mile wide. 1.9 m., village, with detached houses far apart, covering a good deal of ground. Crops, paidza, beans, buckwheat, and chiefly, rice. Cross stream flowing e.n.e. 2.2 m., village on right of road. 2.4 m., cross stream flowing e.n.e.; village. 3.2 m., village on right of road. 3.5 m., village and pilo. 3.9 m., village on left of road; cross stream flowing n.e. by arched bridge. 4.2 m., village. 4.3 m., cross river 108 yards wide, by bridge 136 yards long; this river flows from the lake, s.w., to the Lan-Ts'ang-Chiang. There are extensive aqueducts for irrigation. 4.6 m., village. 4.8 m., village. 5 m., village. 5.3 m., cross stream with wide bed, flowing n.e. into s. end of the lake. 6 m., road over spur between two streams. The road from Chien-Ch'uan-Chou to this point was once paved, but all the stones that are left are out of their places, many are gone, leaving deep holes, and the road is very bad for mules or ponies. It is not very bad for coolies in fine dry weather, but in wet weather it is dreadful for anything; hence to

I-Yang-T'ang the road is bad for everything in wet, but very fair in dry weather. 7 m., road on crest of spur; dark-red and black friable sandstone. 7.4 m., road regains stream crossed at 5.3 m., and ascends right (N.E.) bank. 7.8 m., very broken ground. 8.2 m., village. 8.4 m., broken ground. Valley 1 mile wide. Confluence of streams from s. and s.e.; road crosses that from s.e., and continues between them. 9 m., commence ascent of hill. 10 m., I-Yang-T'ang, altitude 8681 feet. Source of streams on e. and w. From 8.5 m. to this place, the hills on both sides are covered with small firs and holly-leaved oaks. 10.8 m., summit, altitude 8849 feet. The ascent from I-Yang-T'ang to the summit is steep and muddy, and in wet weather exceedingly difficult, but it would not be bad in a dry season. 15.4 m., end of descent. 16.5 m., T'ai-P'ing-Chên, on a plain to left of road; precipices close to the road on the right. Between the summit and this place, the road, in many places, is very steep. It would be very fair in dry weather, but in the wet season the heavy clay and mud are frightful. 19 m., village. 20 m., Niu-Chieh, altitude 7113 feet. From a little north of T'ai-P'ing-Chên to Niu-Chieh, the road is through a plain, and is paved similar to that in the plain of Chien-Ch'uan-Chou. It is very bad for horses at any time, as all the stones are out of their places, and in wet weather the mud is awful. All the hills from Chien-Ch'uan-Chou to Niu-Chieh are of red sandstone, and stiff red clay.

25th.—*Niu-Chieh to Lang-Ch'ung-Hsien.*—Road traverses a plain 2 to 4 miles in width. 1.6 m., village. 1.8 m., cross stream flowing s.w. 2 m., houses. 3.2 m., village. 4.1 m., cross stream flowing w., towards a crack in the hills. A road leads off to s.e. 6 m., village. 6.8 m., cross stream flowing s.s.e. From Niu-Chieh to this point the road is fair, but generally roughly paved. 7.7 m., pagoda on hill, 1½ mile to e. Road from 6.8 m. to this point, unpaved, but good, skirting the foot of a spur about 500 feet high; hence to 8.4 m., it is really well-paved, and very good. 9.6 m., cross river from s. 10 m., Lang-Ch'ung-Hsien; altitude 6970 feet. Between 8.4 m. and this place there is a causeway over a swamp, well paved and good. The river from s. running into this lake or swamp is embanked on both sides, and its level is much above that of the surrounding country.

26th.—*Lang-Ch'ung-Hsien to Têng-Ch'uan-Chou.*—Road for 1½ m. is along river embankment, and very good. 1.2 m., village. 1.5 m., road leaves river and turns to e. 2 m., village. 3.4 m., cross stream flowing e.s.e., from s. end of lake. Road from 1.5 m. to this point is embanked, and over a marsh. 3.6 m., village. Road enters a narrow gorge 2½ miles long, through which the stream rushes between very steep hills, almost precipices, and falls 200 feet in this distance. The road through this gorge is not paved, but is good and hard, even in wet weather. 3.8 m., cross stream from N.E. 4 m., pagoda. 4.6 m., stream enters river from s.; altitude 6850 feet. 6 m., end of gorge. Road now crosses a plain, descending the river. 7.5 m., N. end of a swampy lake on right of road. 9.4 m., Yu-So; altitude 6758 feet. Between 6.5 m. and this place there is a road on both sides of the river, and the embankment is good and firm even in wet weather. The plain of Yu-So appeared to be nearly all a wide swamp; but the rainfall had been excessive, and in ordinary seasons it is not so wet. There are several villages in it, and the crops are nearly all rice. On the lower slopes of the hills there are a good many trees, but there are absolutely none in the plain, except at the edges of the river. Prickly pear is abundant. 10 m., road leaves river. 12 m., city of Têng-Ch'uan-Chou; altitude 6573 feet. The road between 10 m. and this place is over a swamp (except close to city), is badly paved, and in some parts full of holes. The rocks are red and friable yellow sandstone, and the soil a very heavy reddish clay.