Two Journeys to Ta-tsien-lu on the Eastern Borders of Tibet

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Po there is a shrine there now dedicated to some saint, which I have no doubt represents an old form of river worship. There is still a very curious shrine, about 11,000 feet above sea-level on a peak near Mont Cenis, erected by a crusader who fell into the hands of the Saracens and vowed a shrine if he escaped from them; the summit is now called the Rochemal.

Mr. BAKER: I have brought for the inspection of the members a bronze bowl, purchased in Daghestan, which has been used in the ordeal by fire. Mr. Abercrombie speaks of these caldrons being used by the natives of Daghestan. The idea was that they contained molten lead, and that the trial consisted in the hand being plunged in to prove the innocence or guilt of the party. It bears an inscription which, from the translation we have been able to obtain, appears to make it belong to the time of Abu Bekr. I beg to return sincere thanks for the kind way in which you have mentioned my name, and your kind attention while I was reading the paper.

The PRESIDENT: As I have no doubt you will be anxious to go and see the photographs which are in the next room, I will merely say that it is very creditable to Mr. Baker to have been able to form so interesting a geographical paper upon an expedition, as I understand from himself, undertaken chiefly for amusement, and secondarily for botany. I make no doubt that you will wish me to convey to him the expression of your thanks. As for Mr. Freshfield, he always, when he addresses us, either amuses us or instructs us, or does both; and to-night I think no one will be inclined to deny that his dragon has been the great success of this meeting. You will, I am quite certain, include him in the expression of your gratitude.

*Two Journeys to Ta-tsien-lu on the Eastern Borders of Tibet.**

By A. E. PRATT.

(Read at the Evening Meeting, April 13th, 1891.)

TA-TSIEN-LU is a mountain village about 8400 feet above the level of the sea, in the province of Sz-chuen in West China—five days' journey from the borders of Tibet, and ten days' journey south-west from the Roman Catholic missionary station of Mou-pin, where Père David lived for some years, sending thence to Europe the valuable collections of mammals and birds which have made his name famous throughout the world. In the year 1889 I spent three months in this district with Mr. Kricheldorff, making collections in natural history, and revisited it again in 1890 for about the same time. The first stage of our journey to this remote district was from Shanghai to I-chang. The river Yang-tze is navigated for this distance of 1200 miles by steamers built especially in Britain for the river service, and commanded by English or American captains. Passengers change steamers at Hankow, and the whole journey occupies from ten days to three weeks, according to the state of the river and the time lost in waiting at Hankow for the next boat.

The journey from I-chang to Chung-king is generally made in Chinese houseboats, but these were not suitable for my purpose, as the smaller ones would not have been large enough to hold the collections I hoped

* For map of the route through Sz-chuen consult Baber's, in 'Supplementary Papers R.G.S.', vol. i. p. 202.

to bring back with me, and the larger ones were too slow and unwieldy, requiring a crew of at least thirty men; they are moreover badly constructed, and afford but little protection against the weather. I therefore had a boat built for me at I-chang, much after the Chinese style as regards the hull, but with an improved type of cabin filled with lockers to hold my collections and other things. The crew consisted of sixteen men, half this number being "trackers," whose business it is to pull the boat up-stream, the other eight being engaged in steering, managing the towing rope, etc. At many places where rapids occur extra trackers have to be hired, sometimes as many as fifty or sixty. Accidents frequently happen in these rapids, and as the wrecking of the boat would involve the loss of the whole season, the voyage is anything but a pleasure trip; coming down it is still worse, for then one is in constant danger of losing, perhaps through a moment's carelessness on the part of the skipper, the fruits of months of hardship and toil.

My first journey from I-chang to Chung-king was made in April, before the water had fully risen, and was performed in twenty-six days. Later on it would not have been accomplished so quickly; in June, July, and August, it is practically impossible to ascend the river at all. For one-third of the distance between I-chang and Chung-king the scenery is most impressive; the river winds its way through gloomy gorges, between cliffs rising sheer out of the water to a height of over 2000 feet in parts. The current is so strong that the boat must be towed the whole of the way up-stream, and as the only possible towing-path is sometimes on one side of the river and sometimes on the other, a great deal of time is lost by the trackers crossing and re-crossing; a favourable breeze occasionally allows us to sail a few miles. The Chinese boatmen, like sailors all over the world, believe in the practice of whistling for wind. While they are at work they chant songs, which at night has a very weird and melancholy effect. At dusk, at certain seasons, thousands of tiny lights, stretching for miles, are visible floating down the stream. They are small bamboo cups containing a little oil and a wick, and are supposed to be an offering to the souls of the drowned. Kwei-chau-fu is a large Chinese custom station, situated in Sz-chuen, close to the frontier of the province of Hupeh, where boats are delayed for examination before entering the latter province from Sz-chuen or *vice versa*. After passing this place the scenery becomes less rugged, and the country gradually assumes the fertile and well-cultivated appearance which it for the most part retains until we approach the confines of Tibet. At many points along the river gold is found in the pebbly sand which is uncovered at low water.

We arrived at Chung-king on the 21st of April, and were most hospitably received by Mr. Cockburn, the British Resident, who has spent three years in this humid and enervating place, where the sun rarely shines. The river at this part (1600 miles from Shanghai), at

high water, is considerably over a mile in width. Here we had to change some of our boatmen, as the I-chang men were not acquainted with the upper river, and did not care to go further from home. We left Chung-king on the 24th; the weather was then very hot, the shade temperature being sometimes up to about 100° Fahr. It is astonishing how much opium is grown in this district. We passed for days through fields of red, white, and purple poppies; they are planted in rows with great regularity, about a foot between each. In May the seed-pod is formed and the petals drop off. At this stage perpendicular incisions are made in the pod, and after an interval the juice is seen issuing through the incisions, having the appearance of burnt sugar; it is then gathered by means of a small bamboo spatula, until the supply is exhausted. Tobacco of two kinds is also largely cultivated. The country is not well wooded, but I noticed occasionally cedars, chestnuts, graceful clumps of bamboo, and the beautiful tree called in Chinese Lan-mu.

At Sui-fu, the great centre of trade for Yunnan, we left the Yang-tze and entered the Min, one of its largest tributaries. I should estimate the mouth of the Min river to be half to three-quarters of a mile in width. The great industry of this thickly-populated district on the banks of the Min is the manufacture of salt. On May 14th we anchored for the night at a place some fifteen miles below Kia-ting-fu, reaching the city in the course of the afternoon. Hardly had we moored our boat when we were greeted with a shower of stones, some of a considerable size. This was our first intimation of the presence in the town of several thousand students attending the triennial literary and military examinations. We lost no time in casting off again, a work of some danger under a hot fire of stones from the shore. The crowd followed us for some time as we drifted down the river. We anchored again about two miles below the city, and shortly afterwards received a message from the governor of the district asking us on no account to return until the examinations were over, as it would not be safe, owing to the excitement prevailing in the town during these examinations. The principal industries of Kia-ting-fu are the manufacture of silk and embroidery.

The French and English missionaries whom we had hoped to meet here had gone inland. During our stay the magistrate of the district paid us a visit of inspection, as it had been reported to him that our boat contained an infernal machine which we had brought for the purpose of blowing up the town. Having satisfied himself that we had no such intentions, he was very civil and friendly. Before leaving Kia-ting-fu we had our heads shaved, and got into Chinese dress, which we found a great convenience. The dress itself, being looser and lighter than European clothes, is sufficiently comfortable in summer; but the chief advantage of adopting it was that we attracted much less

attention from the inhabitants of the villages through which we passed.

As we had to leave the boat at Kia-ting-fu and travel overland to Mount Wa-shan, we were obliged to hire about thirty coolies to carry our baggage, consisting of collecting apparatus, etc., and we had considerable difficulty in dividing and arranging the loads among them. This is one of the great inconveniences of overland travel where coolies are the only carriers.

We left Kia-ting-fu on the 19th of May, and were not sorry to say good-bye to a place where we had met with such an inhospitable reception. After a very wet day's journey we reached Su-chi, a small market town of no particular interest. Next day our way lay through a really lovely country, beautifully watered by innumerable streams, reminding me very much of Hampshire. Here, for the first time, I saw that beautiful orchid, *Dendrobium nobile*, growing wild—a mass of pink bloom. Bamboo water-wheels for irrigation purposes were very common all along the road. Eight hours' travelling brought us to the town of Omei-hsien, seven miles from Mount Omei, the celebrated sacred hill so well described by Mr. Colborne Baber, which I had not then time to visit; I shall have much to say about it when I come to my second journey. We left Omei-hsien on the 21st, and on our way met many coolies carrying the eggs of the celebrated wax insect down from the mountains. These eggs hatch out if exposed to the sun, so they are generally carried by night. The method of production of this wax has been so fully described by Mr. Hosie and others that I need not dwell upon it.

After travelling through a very wild region, we reached an elevation of 5,000 feet, where I gathered, for our botanical collection, a lovely fragrant honeysuckle and a fine mauve-coloured primula, and saw some feathers of the famous Amherst pheasant. The road here was in many places a narrow footpath along the face of a precipice, not wide enough to allow two coolies to pass each other. At Lu-lu-ping the landlord of the inn where we slept handed me a fragment of the weekly edition of the *Times* of November 23rd, 1877, which had been left here by Mr. Baber on his way to Wa-shan eleven years previously. No European had passed this way since.

On May 24th we struck the main stream of the Tung river, which appears to divide the territory of the independent Lolos from that of the portion of this interesting people subject to the Chinese. We saw some of their dwellings, two-storied square stone houses with flat roofs, sometimes furnished with a look-out tower. The Chinese houses on the frontier are generally surrounded by a high stone wall, each house, except those of the very poor, standing in its own inclosure. This is meant for a protection against Lolo raiders.

We descended to Ching-ka-ho, which lies in a valley, and spent the night at a neighbouring village. From my bedroom window I observed

three or four antelopes passing along a ledge on the face of the precipice, about 40 yards from me. I went for my rifle, which was with my baggage in another house, and shot one of them. It fell right to the bottom of the cliff, a distance of 100 feet, where one of my coolies found him dead, amidst great excitement on the part of the Chinese. The Lolos hunt a good deal, with large packs of miserable-looking hounds. They hunt chiefly the wild ox, of the species which occur on Mount Wa-shan. My antelope supplied us with fresh meat for two days, and was a welcome addition to our larder. The traveller in these regions suffers considerably from having to do hard work without proper food. During our expedition we had to live chiefly on rice and Indian corn cakes, getting eggs and chicken occasionally. At Ta-chien-lu we were able to obtain yak beef, but the yaks which are killed for food are only those which are past work as beasts of burden. The meat is as tough as leather, and not, therefore, very valuable as an article of food. Three or four months of this vegetable diet tries the strongest constitution.

Passing by the side of a range of mountains we followed an affluent of the Tung river, and on the 26th May, thirty-two days after leaving Chung-king, reached Ta-t sien-chih, a long straggling village of detached clusters of houses. It stands at an elevation of 5,980 feet above the sea. Here we had the good fortune to meet a French missionary, Father Joseph Martin, who was visiting his converts, and who very kindly offered us a house formerly occupied as a mission station. He had spent twelve years in this remote region, and had no intention of ever returning to Europe. Most of the people here are Roman Catholics, and for the first time I saw Chinese joss-houses abandoned and in ruins. The house was a one-storied building, with a tiled roof, containing three rooms and a kitchen, and was a very pleasant change from the quarters we had been occupying, being clean and in fairly good repair. It stood on the hill-side, and just opposite the curiously shaped peak Wa-shan, towered into the sky 6000 feet above us. The mountain ends in a series of fourteen precipices, each some 200 feet high, the highest being only accessible by ladders. We soon found we had arrived too early in the season for the main purpose of our journey, the weather being so cold and wet that we were unable to do any collecting for a fortnight. The climate is very much like that of England—cold, rainy, and changeable; the roses were very pretty, but single, and strawberries were plentiful; and there is good shooting—wild ox, two species of antelope, two species of bear, and five of pheasant.

A few days after our arrival we ascended the lowest spur of the mountain and found the farther side covered with virgin forest. From the summit we had a magnificent view of the Ta-t sien-lu range, rising peak on peak away into Tibet.

After a month's stay at Washan I decided to move on to Ta-t sien-lu,

and started on the 26th June. The road leads over a pass some 10,000 feet in height, and then winds down into a steep ravine. We found travelling on foot along the mountain roads very laborious, and were glad to be able to procure horses at a small place near Fu-lin.

Fu-lin lies in a valley, altitude 2150 feet, surrounded by high bare mountains. Owing to its position in a valley into which a number of rivers run, the district is subject to frequent inundations. It is a great centre of cereals, Indian corn, barley, rice, and two species of wheat. I am told at Ta-tsien-lu there is a species of wheat grown in Tibet without a husk, and that it has been sent to Europe by the missionaries. A great deal of fruit is also grown at Fu-lin, pears and peaches. The pears are especially fine, some weighing as much as $1\frac{1}{2}$ lb., but they are only suitable for cooking. The Fu-lin flour is very good, equal to that obtained in Europe. A hard day's walk of 21 miles over bad roads brought us, on July 1st, to Lêng-chi. In the course of the day we crossed the Fei-yu-ling Pass, elevation 9020 feet. After crossing the pass we descended the Lêng-chi, a town near the banks of the Tung, not more than 3070 feet above the sea; it was very hot, and we spent a miserable night. Insect torments—mosquitoes, fleas, bugs, and a yet more objectionable insect—kept us from sleeping at all, and at 4.30 a.m. we made our escape from one of the filthiest dens I ever lodged in, even in China.

We reached Lu-ting-chau in ten hours, and crossed the suspension bridge over the Tung to Cha-pa, the French mission station. This bridge is a most curious structure; it is formed of loose boards laid upon a framework of iron which is suspended from two iron chains. The length, at a rough guess, is 150 yards, and the height above the river 150 feet.

Lu-ting-chau lies on both sides of the river; immediately after crossing you turn to the left and pass round the corner of a prominent spur of the mountains which run up to perpetual snow. The road for 150 yards round the spur is narrow and extremely dangerous; the path is of soft shale, and holes have to be made in which to place each foot-step; a false step would precipitate the traveller into the Tung river, which rushes directly below.

At Cha-pa we were glad to find two French missionaries, who, as usual, showed us all possible hospitality and kindness. Shortly after our arrival we had ocular demonstration of one of the dangers to which the inhabitants of this country are exposed. We were sitting in the mission-house, smoking and talking, when a storm with heavy rain broke over the place, and presently we heard a rumbling noise like thunder; going to the back of the house, and looking up at the mountains, we saw a torrent of liquid mud hurrying headlong down the ravine that descends into the Tung, carrying with it great masses of rock, and making in one place a leap of 200 feet. Crossing to the side of the

garden, close to which the ravine passes, we saw a sight I shall not readily forget. The ravine had been converted into a river of mud, sweeping along with it enormous fragments of rock, many of them certainly over a ton in weight; and where we were standing the ground trembled with the concussion of these great boulders striking the sides of the water-course as they were swept along. I can only suggest these floods are caused by the melting of the snow on the higher ranges, carrying with it rocks and soil, until, by the time it reaches Lu-ting-chau it is converted into liquid mud. Whole villages are often destroyed by them, but are invariably rebuilt on the same spot.

We left Cha-pa the next morning, and found much of the road carried away by the storm, and the Tung a roaring flood. After seeing the immense volume of water which at certain seasons this tributary pours into the Yang-tze, there is little cause to wonder at the sudden rises of the latter.

I noticed much tea, tobacco, and salt being carried to Ta-tsien-lu, and coming from Ta-tsien-lu for export to the east, hides, musk, and deer-horns. The bricks of tea, weighing about from 7 to 10 lbs. each, are wrapped in matting, and piled up on a bamboo frame on the coolies' backs; one man will carry about twenty bricks. The tobacco is packed in bamboo baskets. The coolies travel in gangs of fifty or sixty men. We reached Wa-ssü-kow in eleven hours from Cha-pa, and leaving it next morning, passed through a fine gorge, along which one of the affluents of the Tung rushes. Ascending a steep winding road, and turning a corner, we came suddenly in sight of Ta-tsien-lu, eight days' journey from Wa-shan, and forty from Chung-king. Here we were very hospitably received by Monseigneur Biet, the French missionary bishop of Eastern Tibet. We were surprised to find here Mr. Rockhill, an American explorer, who had just arrived, after a most perilous but brilliantly-successful journey, from Mongolia through north-eastern Tibet, by a route never before travelled except by Tibetans, and the very existence of which was doubted. As Mr. Rockhill's account of this journey is now appearing in the 'Century Magazine,' I need not repeat what he told me of it. We took up our abode in the house where Mr. Baber and Captain Gill formerly stayed.

Ta-tsien-lu is a most interesting town. All sorts of Asiatics may be met in its streets, and Europeans therefore attract less attention here than in other places where strangers are seldom seen. The natives of the place are the wildest looking people, invariably armed to the teeth; some of fine physique, tall and handsome, with long matted hair hanging over their faces. Women do all the work; they go out early in morning to collect firewood on the mountain slopes, and return in the afternoon, chanting a rather melodious song. They wear massive gold and silver ornaments. According to Monseigneur Biet, once a year a very large caravan arrives from Shi-ga-tze, near the frontier of Sikkim, about 1500

miles west of Ta-tsien-lu. The caravan, which is six months on the road, comes through Southern Tibet, where feed for the large number of horses they bring with them is more readily obtained. They spend a month trading in the town, their chief articles of merchandise being narrow striped woollen cloth, and woollen rugs used for saddle cloths, which they exchange for Ya-chau-fu tea. Very good Tibetan sealing-wax, made from the residue of a Tibetan dye, and which does not melt in the heat, may be purchased in Ta-tsien-lu. The costume of these Tibetans is different from that of the natives of this locality. They wear brown blankets thrown round the shoulders and draped into a sort of skirt, and brown hoods with a red patch in the centre hanging at the back of the head like a monk's cowl. Polygamy and polyandry exist.

Indian rupees have always come into Ta-tsien-lu in great quantities and form the current coin, and of late years the number of Russian roubles has considerably increased.

The mail system is decidedly curious. Official despatches are carried from Lhassa to Peking by a mounted courier who rides day and night; he is tied on to his horse at starting, and at each station he reaches he is untied, lifted off, given a raw egg, and then mounted on another horse which is ready waiting for him. The two soldiers who accompany him are changed at every station. Many of these couriers die on the road. Ta-tsien-lu swarms with Lamas; with their shaven heads and long red cloaks, they look rather picturesque at a distance. A curious description was given me of the burial, if I may so call it, of a very high Lama who died at Batang. The body was carried to a lofty plateau, and there the flesh was cut off the bones and the bones crushed and mixed with a sort of flour, and both were given to the vultures; the whole corpse being thus satisfactorily disposed of.

The Chinese mandarin here was not well disposed towards Europeans, and did not return our visit. On the 26th of July we made a short excursion to a Tibetan village called Chet-tu, about 14 miles west of Ta-tsien-lu, where we slept in a native hut, sharing our room with a happy family of cows, cats, dogs, and pigs. In the beginning of August we camped out in a Tibetan tent, on the mountain, for four days. These tents are made of Chinese cloth embroidered with blue. They are used by the Tibetans in the summer when they go into the mountains, and for a week at a time beside one of the mineral springs in which they bathe. These waters are believed to have wonderful healing properties. Tibetans travelling with brick tea take tents with them. They cover the tea with the tent, tie their dogs up near, and lie down on the ground wrapped in their blankets. During our four days on the mountain we saw quite one hundred *Crossoptilon tibetanum*.

On August 15th we left Ta-tsien-lu, and set out on our return journey to Hankow. We struck the river at Kia Ting on the 29th. The missionaries told us that three weeks before the river had risen 50 feet in one night, inundating the town; and that the loss of life and property had been appalling. A little lower down we anchored at a spot where in May we had passed a populous village; not a vestige of it was left. We heard also from the missionaries that there had been a good deal of talk about our expedition. As an instance of the rumours that are set on foot about Europeans, I may mention that we were accused of catching and eating children; we were also reported to catch snakes so large as to require five men apiece to carry them. Even at I-chang, where Europeans are well known, the wildest stories were circulated about us. Our boat was said to be laden with lions, leopards, and elephants, which we intended to let loose upon the unoffending inhabitants. We reached Hankow on the 29th of September 1889.

The following year, 1890, we made a second expedition to Ta-tsien-lu, to increase our collections. This time we carried out the intention we had formed on our previous journey, of ascending Mount Omei. This mountain is 11,100 feet high, and is regarded throughout the neighbouring countries as a spot of peculiar sanctity. There are between sixty and eighty temples on it, and about two thousand priests, and it is continually visited by many thousands of pilgrims. The mountain rises abruptly like a promontary, and can only be ascended from one side. The others are extremely steep, one of them being a precipice nearly a mile and a third high, the highest sheer declivity, perhaps, in the world.

We left Kia Ting on the 10th of April, slept that night at the town of Omei Hsien, and began the ascent next morning. As we approached the mountain, we passed many fine trees, of the species allied to the banyan. One particularly fine specimen, with a magnificent spread of foliage, I measured and found it to be 30 feet in circumference. The path led us at first through a wide fertile valley of rice fields, with clumps of trees scattered here and there as in a park. The mountain is covered from head to foot with undergrowth and forest, pines, hollies, and other evergreens predominating. On ascending the lowest spurs of the hills, we passed a beautiful pool of clear water (very blue) well stocked with fish. Flowers were very abundant, wild roses, anemones, asters, yellow violets, and two species of hydrangea. Here I noticed *Paxia begonia*, which I believe has no representative in Europe, but which, I believe is represented in America.

Near the top I found a primula and a dwarf azalea with fragrant foliage, the latter, so far as I know, a unique specimen. On our way up we met a Tibetan whom we had known at Ta-tsien-lu the year before; he had travelled all that way, with his wife and two little children, to worship Buddha in a temple half way up the mountain. The

priests, however, in common with all the Chinese, regard the Tibetans as barbarians, and will not allow them to enter the temple, or give them any accommodation; so they had encamped below it and were cooking their food at a fire they had lighted. Wan-nien-ssu, where we spent our first night on Omei, is a delightful spot; the vegetation is particularly fine and semi-tropical in character. The variety of species of large trees here seen is surprising. The mountain is crowned by a temple which stands close to the edge of the great precipice. The present structure is of wood, but the original was of bronze, and tons of bronze slabs with the image of Buddha are still lying on the ground. They appear to be Indian work, and were originally covered with gilt. Some of them have been let into the walls of the wooden building and on those that have been protected from the weather, the gilding still remains. Some of these slabs appear in the photograph. At one of the lower temples we saw a life-size brass elephant. It looked like Indian work, and had probably been cast in sections.

During this visit I more than once witnessed the curious phenomena known as the glory of Buddha. Standing on the edge of the precipice and looking down into the sea of mist which generally fills the valley below, I saw, about 150 feet beneath me, the golden disk surrounded by rainbow-coloured rings of light, which is the chief marvel of Mount Omei, and the clearest evidence of its sanctity. Every year many pilgrims commit suicide by throwing themselves down from this cliff.

Early the following morning I saw the most beautiful sight I ever beheld. The sun was shining brightly, and the atmosphere on the mountain top was perfectly clear; below us lay a level sea of cloud, and perhaps a hundred miles away, as the crow flies, we could see the mountains around Ta-tsien-lu, and the great snowy range of Tibet, rising out of the mist with the brilliant sunshine gleaming on their white peaks.

Leaving Omei-shan we passed through a flat uninteresting rice plain to a market town called Kiah-kiang, where I met the coolies who had been sent on to wait for me there.

We were three days travelling through the Ya valley, crossing the Ya river six times. We passed through Ya-chau-fu, altitude 2570 feet, where the road begins to enter the mountainous river, and reached T'ai-Hsiang-Ling-Kuan pass on the 22nd of April, altitude 9270 feet. Five days more of hard climbing brought us to Ta-tsien-lu.

I arranged that Mr. Kricheldorf should go to Moupin, while I had settled to spend some time at Mou-si-mien. For a few days I was very busy despatching my collectors to their different stations, paying off coolies, and arranging boxes and apparatus. On the 1st of May, accompanied by Father Soulié, I made an excursion from Ta-tsien-lu to the snow-capped mountains, and pitched my tent in a forest of rhododendrons just coming into bloom, about two hours below the region of

perpetual snow. By way of summary of the vegetation I may divide the country here briefly into four regions or zones:—

1. Above 16,000 feet we have perpetual snow.
2. Between 16,000 feet and 10,000 feet, rhododendrons, anemones, primulas, rhubarb, many lilies, a few asters, grass, and wild onions; of birds, *Crossoptilon thibetanum*, *Lophophorus Lhuysii*, and Père David's small blue bird.
3. From 10,000 feet to 5000 feet—Rhododendrons, coniferous trees, gooseberries, several species of currant (including one very large black currant with bunches of fruit a foot in length), undergrowth, and several species of birds.

4. Below 5000 feet there is cultivation on a few farms, and pasturage.

In the daytime, during our stay on the mountain, it was warm; but the nights were intensely cold, and we kept up a large fire made of the trunks of the rhododendron trees, some of which were quite a foot in diameter. Climbing some 3000 feet above the place where my tent was pitched, we discovered a lovely lake of clear deep-blue water, with a quantity of sulphur lying on its shores. It took us an hour and a half to circumnavigate it. It is walled in by high precipices, and above them is a glacier of solid green ice crowned with snow. It is, no doubt, one of the supply sources of the streamlet which flows through Ta-tsien-lu, and empties its waters into the Tung-ho at Wa-ssü-kow.

While I was here there was a rebellion of the peasants in a district a few days distant from Ta-tsien-lu. Their crops are taxed so heavily by the Lamas that they cannot scrape together enough to live on, and are periodically driven to these desperate attempts to improve their condition. When I went back to Ta-tsien-lu, after two days' camping out, the first things I saw were the heads of the three ringleaders exposed in bamboo cages. I left the town again on the 7th May, and encamped on the south side of the mountain. After conveying all my baggage to an altitude of 14,800 feet, I was not very well pleased to receive a message from the local Tibetan king forbidding me to remain on the mountain, as it is a sacred reservation. I was obliged to return to Ta-tsien-lu, intending to make my way thence to Mou-si-nüen, which is beyond the king's territory.

The road to Mou-si-nüen passes by the king's palace about four miles from Ta-tsien-lu, and here I met the king returning from a bath in one of the hot natural springs which abound in this locality. He is an old man, in bad health, suffering from cancer. He was dressed in the usual costume of Tibetans of the better class, and was walking under a huge scarlet umbrella, held by one of his numerous attendants, with a pack of hounds at his heels. On seeing me he stopped and entered into conversation with me, my cook acting as interpreter. He was much interested in my gun, and wanted to know how far it would kill. He told me he had never heard of my arrival. I do not know if he was telling

a falsehood, or if my men had invented the message I had received while camping on the mountain. He is very fond of sport, and the forest near his palace is strictly preserved. He has a herd of eight or ten large elk in domestication. He seemed an intelligent, well-informed man, and has visited Peking.

This king is a practically independent chieftain, but sends tribute once in two years to Peking. He is often at loggerheads over questions of jurisdiction with the Chinese official in Ta-tsien-lu. He restricts the Chinese cultivators to certain limits, and will not allow firewood to be gathered in his forest.

He is a wealthy man, his riches consisting chiefly of land, cattle, and horses, and owns several hundred of the last. Once a year he gets up a horse race, which causes a great deal of excitement. The races begin early in the morning, about five or six o'clock. The riders are boys, gaily dressed for the occasion in coloured costumes; they start perhaps a thousand feet or more above Ta-tsien-lu, and race down the steep descent and through the town, tearing down the steep mountain side at a great pace. All the inhabitants turn out and see the sight; the races being one of the great local events of the year. The king gives three prizes. When I was present there were about 100 horses running. The palace is like a Chinese house with a tiled roof. It is built over a natural hot spring, which can be seen issuing from the foundations, and which supplies him with water for his bath.

Two miles farther on I reached a small Tibetan group of hamlets, where I slept in a house owned by his Majesty; it was in fact his dairy farm, and the milk and butter I got were delicious. Like all Tibetan houses it was built of stones, but roofed with split pine shingle, large stones being placed on each piece of shingle to keep it in its place when the wind is high. There are three hot springs issuing from the tops of three yellowish brown conical rocks. These rocks seem to have been formed by the continued incrustations of the minerals contained in the water; they have the appearance of a soft pumice stone. The water is very hot and has a very obnoxious smell, like that of decomposed sea-weed. There is a black slime on the edges of the stream, which flows through the valley, and green aquatic plants grow in the warm water. The king has a wooden bath surrounded by stones, which is filled from one of the springs (issuing from the top of one of the conical rocks) by a bamboo tube.

May 17th, I reached the summit of Mou-si-mien pass, 13,000 feet. There was a little snow and it was bitterly cold, and I saw a good many flowers in bloom. Two were most conspicuous, one an annual bearing a blue blossom; the other a creeping plant covered with small crimson flowers. Every winter lives are lost in this pass, in spite of the poles which are placed at short distances to mark the road; coolies lose their way in what they call the cup or crater. On descending the

other side of the pass, one obtains a delightful panoramic view of the valley, stretching away as far as the eye can reach to the south, towards the village of Mou-si-mien, two days' journey from the summit. At this season the forest of rhododendrons and azaleas was a glorious sight, resembling a sea of bloom; and as one continues to descend the narrow dark forest path, pines of immense growth, oak-trees, several species of beech, larch, limes, walnuts, stunted bamboo, and many evergreens are met with. Most of the vegetation is draped with a kind of lichen of a pea-green colour, which hangs in graceful festoons from the branches of the trees. A quantity of those famous medicines, viz. rhubarb, wolf's-bane (that poisonous plant from which aconite is obtained), Tchöng-Tsão, Péyòu (*Sphaeria Sinensis*) and Woularia (*Cirrhusa Streptopus*) is gathered in this locality. The first is a most curious plant, its root exactly resembling a caterpillar, each segment being perceptible. There are also many beautiful flowering annuals. On the mountain side I met about fifty coolies in a hut, most of them Chinese medicine collectors.

I found a path through this primæval forest which clothes the upper part of the pass, and after ascending some distance through the forest it brought me to an abandoned clearing, just the spot for my tent, with a lake close at hand. The climate at this elevation was so damp that I was obliged to build a log cabin to prevent my collections from being impaired. There was a peculiar species of woodpecker bird in this forest and on the lake I saw three large yellow ducks of a kind I have seen on the Yang-tze. I found a very fine onion growing in moist soil at 15,000 feet. After five days on the mountain I heard that my two Wa-ssü-kau collectors had come back to Ta-tsien-lu, and wanted more boxes and a larger cyanide bottle, and I was, therefore, obliged to return to the town. As I descended the pass I noticed a very high conical-shaped mountain standing out conspicuously on the left hand. Going down one constantly comes upon small plateaux covered with rich grass and buttercups. Soon after my return to the log hut the weather became intensely cold, snow fell heavily and the rhododendron blooms were cut off by the frost. It was the beginning of June, but the temperature was like that of a Canadian winter. It was impossible to do any collecting. I had meant to spend a great part of the summer on the mountain, but the superstition of the natives prematurely ended my stay. The unusual severity of the weather was attributed to the fact that a stranger was living in the forest, and a paper signed by all the inhabitants of the village, lying two days below me, was sent by the native chief of Mou-si-mien to the civil mandarin of Ta-tsien-lu, declaring that I had caused the snow and blocked the road, and the hail was destroying their crops; and threatening all sorts of disturbances if I remained. Under these circumstances there was nothing for it but to go. Collecting in this country is not an easy matter. On June 24th, Prince Henri d'Orléans arrived at Ta-tsien-lu with two other Europeans

and an escort. The attitude of the civil mandarin towards the expedition was by no means friendly, and for a few days all the Europeans in the place were anxious how things would go. When I left, about a month later, however, the people seemed more peaceably inclined. Prince Henri was desirous of continuing his journey overland through Yunnan into Tong-king, which he has since accomplished. On July 21st, I left Ta-t sien-lu, arriving at Kia-ting-fu (where I had left my boat) on August 2nd. After revisiting Omie Shan I left Kia-ting on September 4th, arriving in Chung-king on the 8th September, where I was again cordially received by Mr. Cockburn. The journey from Chung-king to I-chang was accomplished in 53 working hours, a distance of 400 miles. Here I was met by kind friends, and considered my journey at an end.

After the reading of the above,

Dr. HENRY (of the Imperial Chinese Customs) made some observations concerning the flora of Western China, where he had himself travelled. He said that on ascending the Yang-tsze, for the first 1000 miles we had the great alluvial plain; then a point is reached where a vast mountainous country begins, which extends westward to the Tibetan-Chinese frontier, and constitutes, in Dr. Henry's opinion, a well-marked botanical region. Indeed, the region might be extended further westward to Khasia and Sikkim; and so far as the nature of the flora is concerned, the Himalayas may be considered to end on the east at the town of I-chang on the Yang-tsze. Our knowledge of the plants of this part of the world has nearly all been acquired within the last few years. Père David was the first to give us any idea of the rich treasures to be met with, by his collections from the Tibetan state of Moupin. Père Delavay for some years has been sending to M. Franchet, of Paris, admirable collections from the mountainous parts of the province of Yun-nan. He (Dr. Henry) was stationed for some years at I-chang, and during the years 1885 to 1888 made excursions into the mountains of Western Hu-peh and Eastern Sz-chuen; and his collections, which were all forwarded to Kew, include several hundred new species and a good many new generic types, besides establishing the fact of the existence in the eastward part of the region of most of the interesting plants that were formerly known from the Himalayas only. Dr. Ernst Faber, of Shanghai, made in 1887 an interesting trip to Mount Omei, and brought back several hundred species of plants, many of them new. These are likewise deposited in the herbarium at Kew. Now we have Mr. Pratt's fine collection, made chiefly in the mountains around Ta-t sien-lu; it contains about 700 species, which are being worked out by Mr. Hemsley, of the Kew Herbarium. The flora of the region in question is perhaps mainly Himalayan in character; but in addition there are very few Japanese plants which do not find a home also in these mountains. We have also, of course, at high elevations, alpine plants; and the flora which is known to extend from Britain eastward through Germany, Russia, and Siberia to Korea, sends southwards to our region many species. For example, the black currant and the gooseberry are common wild shrubs in the mountains of western Hu-peh. Furthermore, there are many local forms, each ravine having almost a little special flora of its own. It has long been known that the flora of Japan exhibits a singular connection with that which prevails in the eastern part of the United States of America. Our region also shows as markedly the same character. The American tulip-tree (*Liriodendron tulipifera*) is quite common in the mountains of Hu-peh. Again, for example, we have such a case as this:

the genus *Decumaria*, a close ally of *Hydrangea*, was formerly constituted by a single species from Carolina. He (Dr. Henry) found a second species growing in the I-chang gorge. There are hundreds of facts of a similar nature; so that when the flora is more thoroughly studied, there will be much light thrown on the important subject of the geographical distribution of plants.

Dr. Henry further spoke of the great beauty of the vegetation of the ravines and mountains of this region. He drew attention to the fact that a great many of the hardy shrubs and plants in cultivation at home are originally from China; and pointed out that there is a great field for enterprising florists in those mountainous provinces of China, for the introduction of many more beautiful and useful plants. Some of these cultivated plants Dr. Henry observed (almost the first time by any one) in the wild state, e.g. the Chinese *Primula*, the Banksia rose, *Rosa indica*, *Rheum officinale*, &c.

The PRESIDENT in conclusion said:—I am certain that you will desire me before the meeting breaks up, to give your very best thanks to Mr. Pratt for his exceptionally interesting paper, and you will include in the expression of your gratitude Dr. Henry, who has made some very interesting observations upon the botany of these regions; but as you know that there is in the next room a very large and valuable collection, such as none of us have, I think, seen before, of objects of interest from these countries, you will wish, I rather think, to adjourn there as soon as possible.

Central Australia.

By CHARLES CHEWINGS.

THE prediction of Sir Roderick Murchison, in 1844, "that a thorough exploration of the interior of Australia will never be effected until we import thither camels, from our eastern possessions, and thus at once get rid of the vast difficulties attending the want of water," has proved true to the letter. From that time to the present the exploration of Australia has been going on, and the receipt of a letter from that great patron of exploration, Sir Thomas Elder, G.C.M.G., while on a visit to his native Scotland, has once again sent the blood tingling through the veins of those whose hearts respond to the calls of science and discovery. Here is the letter:—

"KNOCK CASTLE, AYRSHIRE, *July 2nd*, 1890.

"My dear Baron VON MUELLER,—I was delighted to receive, and have had much pleasure in carefully perusing your inaugural address to the Australian Association for the Advancement of Science in Melbourne. The paragraph in your address referring to geography has revived the interest which I have always taken in Australian exploration, and as you say, that 'talent, enthusiasm, and experience, are available at present,' I cannot but agree with you that it would almost be a reproach to permit the opportunity to pass for completing what you properly describe as the main work of Australia—land exploration.

"You say that this work in the past has devolved on nine travellers only, and that space seems left now for only one more great explorer to rank with the nine. This being the case, I would like to furnish the tenth exploring expedition; and if you will take up the matter energetically, as you have done on former