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ART. I.—*Sketch of a Journey from Canton to Hankow, through China;* by ALBERT S. BICKMORE, A.M.

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ON the 7th of August, 1866, I left Canton, in company with Mr. C. L. Weed, photographer at Hongkong, and Rev. Mr. Nevin of Canton, on a journey through the province of Kwangtung and the eastern part of Kwangsi. Our course, at first, was westward, for about sixty miles, when we reached the head of the great Delta of the Sikiang, whose low, fertile fields spread out widely along the river banks, and support a most dense population. Along the borders of these low lands, rise serrated mountains—some peaks attaining an elevation of fifteen hundred to two thousand feet—their sharp ridges and projecting spurs coming out in strong relief, on account of the scanty vegetation on their sides. To one who has been journeying in tropical lands, and especially among the luxuriant forests of Sumatra, these mountains appear surprisingly bare, and only the more so, when he considers that he is but on the verge of the temperate zone.

This nakedness appears to be a universal characteristic of the mountain scenery in China, but it is not the fault of the soil or the climate, for wherever the little pines have been suffered to rise, they show a vigorous growth. The cause of this universal devastation is the frequent rebellions that have swept back and forth over the whole empire, like a desolating flood.

In a few days the Chinese can rebuild their low mud houses; but Nature requires years to cover her mountains with forests; and rebellion has followed rebellion too quickly for her to accomplish the ever recurring task; and besides, the people do not care to labor much, when there is every probability that outlaws or robbers from a neighboring province will profit by their industry. Yet it is true they do raise some trees in a few places; but over all the wide area that I have traveled, not a tenth part of the soil is thus improved that might be; and then the trees are generally cut down before they attain any considerable size; and this, in districts where the population is numbered by the hundred thousand. The grand old trees which are occasionally seen around the Buddhist temples, owe their preservation only to the superstitions of the destroyers, and these show well what splendid timber thousands of hill-sides in China might yield.

But in regard to the low lands, it scarcely seems possible that they could be made to produce more than is already raised—two full crops being obtained in nearly every part of the empire. The continued fertility of these lands has long been a wonder to the world. It is due no doubt chiefly to two causes; first, the Chinese are careful to save everything that can possibly serve for manure—in some places even to the hair they shave from their heads; and secondly, their low lands (where all their rice and most other sustenance is obtained) are all, or very nearly all, subject to floods at least once a year, and a rich deposit of fine mud is thus spread over them, just as in the valley of the Nile.

Following up the Sikiang, through a deep pass in the first mountain range, we came to the city of Shauking, where the Viceroy of the provinces of Kwangtung and Kwangsi resided when the Portuguese first appeared off the coast. About two miles behind it rise the famous "Marble Rocks," or "Seven Stars," like dark, sharp needles, out of the low, green plain. Mr. Nevin and I measured them with an aneroid barometer, and found them to range from one hundred and fifty to three hundred feet high, though they had been previously estimated at twice that height. The rock of which they are composed is a highly crystalline limestone, of a dark blue color on the weathered surfaces, and a rusty iron tinge where large fragments have been lately detached, the whole traversed in every direction with milk-white veins, and completely fissured through and through, in every direction, by joints and seams. Over the whole exterior they are extremely rough and jagged, and furrowed by perpendicular grooves, worn by the small streams that course down their sides during every slight shower.

They form such striking objects in the surrounding plain as the "Little Orphan" does in the waters of the Yangtse, and, like it, abound in groups of little temples placed in the natural niches in their sides. Larger temples are ranged at their feet, and one which we entered contained in the principal hall three images in bronze six or seven feet in height. In another room I noticed an idol with six arms. The whole building was going rapidly to decay, and it was only after much searching that we succeeded in finding two poor old monks, preparing a scanty meal in the refectory,—the last place they were willing to desert in the whole temple.

Climbing up a steep, narrow stair-way, that rises diagonally across the face of the precipice, we reached a second temple perched high in a little rock. Along a part of this stair-way, a rude heavy chain was fastened to the mountain side, that the timid and weary might help themselves on to the temples above; and many must have been the pilgrims that ascended this difficult way, if we could judge from the depth of the places their feet had worn in the steps of the solid rock. The entrance to the temple was through a crazy gate-way or portal of loosened bricks, that leans over the precipice, and threatens to fall with the first person who sets foot within it and immolate him to a heathen god. This temple we were informed was built some two hundred years ago when Shauking was a great and flourishing city, but now the monks can scarcely beg enough from their poor neighbors to answer their immediate necessities, and their once splendid temples are rapidly becoming only unsightly heaps of ruins.

Here, as is frequently the case in masses of limestone, are several caves. We entered one of a bell shape. Its floor was mostly covered with water, and a bridge led us to a platform at the farther end. As we were crossing this Stygian stream, we were saluted with a fierce barking, and certainly we did seem to be approaching the regions over which Cerberus presides, but no other charm was needed for us to safely pass these canine guardians than a threatening show of our canes. Many tablets have been cut in the rocky sides and along a stair-way that led up to where the cave opens out to the sky at the opposite side.

During these excursions in the vicinity of Shauking, both of my companions became quite ill, and at my earnest solicitation finally consented to return and let me continue on alone.

On the second day from Shauking, I came to "Cock's Comb Rock," a huge wall or dike, of black or crystalline marble, with a crest so jagged that the name the Chinese have given it exactly describes it. Northwest of this, in a small plain, is

a conical hill of limestone, whose whole interior has been washed away, forming a much grander cave than the one we had previously visited in one of the "Seven Stars."

All the mountains in these regions are composed of fine, hard siliceous grits, which in some places are compact and flinty, becoming true quartzite or quartz rock, and in others are soft as sandstone; and besides these, of slates that are interstratified with these grits and are sometimes soft clay slates, and at others as hard as shales. Half a mile below the village of Kok-hau, on the left bank of the Sikiang, just before I reached the boundary of the province of Kwangsi, I found these grits and slates resting *immediately on granite.* Two miles below Kok-hau rises "Ornamental Monumental" Rock. It belongs to the lower part of this series of grits and slates, but is composed of a coarse conglomerate, and perhaps represents the conglomerates that are found near granite, in other parts of the empire.

Crossing the river from Cock's Comb Rock, we came to a small village, and anchored for the night astern of a small gunboat. On consulting my chart I found these words written around the next bend, about half a mile up the stream,—"*a favorite resort for robbers!*" But I believed we must be safe with a gunboat so near, and taking care that my revolver was in prime order, and that a heavy sword was within my grasp—a provision that was constantly repeated every night of my long journey—I laid down determined to sleep, despite a continual din of tam-tams, and the most extravagant shrieking and groaning of some women on the bank, who were lamenting the decease of a friend.

Late in the night the watch began calling out loudly, then my servant and my boatmen joined in. A strange boat was stealing along toward us, and although it was already so near that I could hear the noise of its approaching oars there was no reply. At the next instant the gunner on the watch-boat fired his cannon and at once the men in the suspicious boat all answered in the meekest and most humble tones. Our would-be robbers had that time mistaken their prey. This is but a fair example of the noises and alarms that were constantly recurring by night all the way to Hankow.

As we slowly ascended the river by poling, tracking and sailing, we stopped several times a day, that I might collect specimens of the rocks and ascertain the dip and strike of the strata. In this way, in a week we came to Wuchau, the last missionary outpost in this direction. Here I met the Rev. Mr. Graves, and induced him to accompany me up the Kweikong, or Cassia river, as far as Kweilin, the capital of the province of Kwangsi.

It is so dangerous ascending this river, on account of robbers, that boats leave Wuchau only when several are ready to go and can keep together and afford each other mutual assistance in case of an attack. As an additional protection, the Mandarin offered to send a small gunboat along with us, but when we were ready to go, only one policeman appeared and he carried no arms.

The boats used on this river are quite different from those seen at Canton. They have flat bottoms and curve up high at the bow and stern, that the helmsman and a man on lookout forward may see some distance ahead and avoid the rocks, as they come down with the rapid current.

The principal article carried up the river by these boats is salt, which is a government monopoly; and, notwithstanding our boatmen all agreed not to bring a particle on board, they did buy a considerable quantity, and tried to hide most of it in our part of the boat. We very plainly informed them they had not kept their agreement, and if they left it there it would instantly go overboard. They finally, as near as I could ascertain, bought a permit for a part of it and smuggled through the rest. This smuggling is so common, that I was repeatedly informed that the Mandarin boats, which are not liable to be searched by the custom-house officers because they carry high officials, never fail to improve every opportunity to avoid paying the regular tax.

As we passed along these rivers, every day or two we came to a small house with two poles in front, each bearing a large triangular flag. There we were obliged to stop, and allow our boat to be searched by fierce looking fellows, each armed with a long stick pointed with iron. Ascending this Cassia river is little better than dragging a boat up one continued series of rapids; and though ours drew but five or six inches, it seemed sometimes as if our boatmen would be quite unable to get her along any farther. This fact indicates the shallowness of the stream, and also the unfavorable fact, that steamers can never be used on this river. The boatmen at Wuchau calculate to reach Kweilin in fourteen days, but to go all the way back in four.

For the first hundred miles we passed only small, scattered villages, each having on the top of the highest hill near it a fort, where they keep all their extra rice and clothing—every thing they use from day to day—for every village pillages on every other village, and on all the boats that pass, whenever they dare. These fortified hill-tops reminded us of the pictures drawn by historians, of the middle ages; but these people observe even less law and order than those of those early times.

As an illustration of the complete state of anarchy that obtains throughout all this region, I may mention that on our third day from Wuchau we passed a large *Mandarin* boat that had been robbed of everything the very first night after leaving Kweilin, the officials even not being able to protect themselves from these desperate thieves.

All along our route the Mandarins were very kind to us, but kept asking how we could dare to come there, where only one foreigner had ever been before, and who, though he had escaped the people of Kwangsi, was murdered by the people of Hunan. They referred to an eccentric genius, who did succeed in reaching Hankow, but was completely stripped of all his clothing. His difficulty with this people was certainly one cause of their hostility to us.

Beyond the hien city of Chauping, the country becomes somewhat more cultivated, yet even here it is very sparsely peopled, and there is no need that a single man should leave China to find plenty of good land to cultivate. The river here flows through deep passes, and we entered one called "Forest Pass," as the bright day was darkening into twilight. The rock was a hard siliceous grit, and sharp peaks in the range rose up to a height of 1600 or 1700 feet. Like the famous Shauking Pass, this is also a cleft in a mountain range; but while that is about 600 yards wide, this is only from 50 to 150, and as we sailed between the high, almost overhanging precipices, the effect was far grander than anything I have ever enjoyed in China.

As night overtook us while in the pass, we moored our boat to some huge rocks by the steep bank, and then climbed to the edge of a neighboring ridge and waited for the full moon, whose soft light was just then brightening the eastern sky; and when her silver disk rose over the jagged edge of the high peaks above us and threw long pointed shadows down the steep-sided pass, we had before us such a view as a lover of crayon sketches might well roam the whole world over to enjoy.

As we approached Pingloh, a high range of needle-shaped peaks stretched across the river from east to west. They were composed of the same dark blue, highly crystalline limestone traversed with white veins, that had been previously noticed in the Seven Stars at Shauking and Cock's Comb Rock on the Sikiang. Here the pass gave a section showing this limestone resting on the previously mentioned grits. In the muddy places were large quantities of a beautiful blue *Convolvulus* in full bloom, of the same species as specimens Mr. Graves had frequently found in the limestone caves near Shauking.

Our daily routine was to walk in the forenoon until the sun got high, and again in the afternoon until the boat reached a safe anchorage, Mr. Graves collecting plants and sketching a map of the river, and I gathering geological specimens, ascertaining the dip of the strata and the direction of the elevations, details too numerous to be given in full in this hasty sketch.

On the evening after leaving Pingloh we were following the river as it bent around a high bluff, when we suddenly found ourselves on the edge of a valley, ten or twelve miles broad, and extending farther than we could see to the right and left. In every direction this whole valley was perfectly *bristling* with sharp peaks of limestone. The strata of this limestone were nearly horizontal and once the whole valley was filled with solid rock, which, in the course of ages, had been worn into deep channels that have been kept widening until only sharp peaks are left of what were originally continuous sheets of rock. From a single position on the low river bank I counted *one hundred and ninety-two* separate peaks. The highest I judge rose 1200 feet above the plain,* but even this did not represent the original depth of the deposit. These dark rocks, rising abruptly up from the low, level lands at their feet, contrasted most strikingly with the bright light green of the fertile plain and made this view the most picturesque and remarkable seen on this journey. A similar view is to be enjoyed among the contorted and fractured Devonian rocks on the banks of the Tchussovaya, on the western flanks of the Ural; and it is probably to this same Devonian period that these limestones, and those previously mentioned, belong.

On passing out of this limestone region, a section was obtained a little above the market-place, Hingping, where these limestones were seen resting (*conformably* as near as I could ascertain) on the grits that at Kokhau were in them found resting on granite.

About Kweilin, the capital of the province, the valleys are much broader and better cultivated; and large water-wheels, twenty or thirty feet in diameter, are common along the river banks where the rapids are strong enough to keep them moving. Pieces of bamboo are fastened to the rim at a slight angle, and bring up the water and pour it into a trough as they reach the highest point and begin to descend on the revolving wheel.

A small pagoda, perched on the top of a ragged rock, and a

* As we could not learn that this peak was known by any particular name, I propose to name it Longfellow's Peak. This and all the surrounding limestone needles appear like high columns that once supported the roof of one immense temple.

high wall of limestone, through which had been chiseled a large hole, were pointed out by our boatmen as indications that we were nearing the capital of the province of Kwangsi. Instead of being situated on the west side of a lake, as represented on the best maps, we found it on the west side of the Kweikong river, which in the rainy season probably overflows its banks. The walls of the city are of limestone blocks neatly cut, with a parapet of bricks.

We carefully closed our boat and in the evening rowed up to the city. I at once dispatched my servant to the Yamun—as the Chinese call the place where their officials reside—to ask for chairs and policemen to protect me as far as the next city, but all arrangements could not be completed till the next day. Meantime we were careful not to let any one see us, but in some way they found we had come, and early the next morning all the streets and boats near us were perfectly packed with people anxious to get a sight at the foreigners. At first we tried to escape by ordering our boatmen to move, first to one place and then to another, and thus we darted hither and thither like a bird trying to escape from a hawk, but everywhere we found a greater and greater throng, and finally we concluded it was best to try to partially gratify their insatiable curiosity by going out on to the forepart of the boat and exhibiting ourselves by turns.

When one crowd had satisfied their desire to see "the barbarians," they generally left us but they were immediately replaced by one still larger, until it seemed as if all the Chinamen south of the Great Wall had come out to gaze at us. Meanwhile my servant arrived from the Yamun, saying that all was ready, and the Mandarin begged if I was going to Hankow that I would depart at once, for the whole city was so much excited by a proclamation issued by the gentry, that he feared we would be attacked and he would not be able to defend us.

Mr. Graves kindly translated the proclamation for me. It ran as follows :

"It has already been determined, by common consent, that if any one has anything to do with the Imps, or rents them a house or any other dwelling place, his house and his family dwelling shall be immediately burnt to the ground, and his whole family, male and female, old and young, shall be at once put to death.

"By Order of the whole Provincial City."

Despite this formidable threat, I determined to continue to push my way through to Hankow, or perish in the attempt.

A great crowd gathered on the shore where I landed and the boys hooted and shouted, but I could not understand what they said and only hurried on my chair bearers through the suburbs, which were everywhere perfectly thronged. Two or three times

I feared they would block up the street in front of me and stop me completely, but they seemed to have a suspicious regard for the barbarian and concluded to allow me to pass on.

When we came to the chief gate and were entering the city, some officials stopped my chair and drew me up into their office out of the press of the crowd, while they were instructing my coolies to go *round* the city and not *through* it. One of my chair bearers took this opportunity to run away and it seemed an age before another could be found; but finally I continued on between the city wall and the river until we came to a great rock, round which we were carried in a boat, and thus we were at last freed from our tormentors. It gave me a most delightful sensation to find myself once more able to walk, so that I might hurry on my chair bearers to the top of their speed and thus, with all possible haste, distance this City of Destruction! Night, however, overtook us when we were five miles away and the two policemen guarding us selected an inn in a little village, where we lodged for the night.

After such a frightful tumult, it seemed so safe and so sweetly quiet that I was tempted out a little way into an adjoining field to note, by aid of my azimuth compass, the direction of the valley we were to travel in on the morrow and the form of the mountains that bordered it. While I was thus absorbed in the beautiful view before me a villager chanced to pass by and notice my open compass, so I shut it up and went back to rest for fear he might think I was like some of their own people—a geomancer. Later in the evening the whole neighborhood began to resound with a heavy beating of gongs, and soon a large crowd gathered in front of the inn, shouting out in the most fiendish tones, "*Kill him! Kill him! Kill the white devil!!*" I plainly saw that they had come with the determination to rob me and then kill me. I realized the danger of my position and I feared the worst, for how could one man defend himself against such an infuriated mob.

But my policemen proved firm, and at once showed the ringleaders my pass from their own Mandarin and assured them that if they injured me in the least their Mandarin would take every one of their heads off and completely destroy their village. Then their wrath took another channel and they cursed the Mandarin, and finally, after much angry disputing, they offered to go away on the condition that I should leave their village as soon as daylight appeared. My servant assured them that they need have no fear that I should remain *there* long, and that I certainly should not have stopped short of the next village if my coolies and policemen had not refused to travel any farther that night. The only crime alleged against

me was, that one of their number had seen me with a mysterious instrument observing the mountains and valleys, and that they were all satisfied that I had come to take away the treasures which they believed their land possessed. Almost everywhere over the whole empire, wherever they saw me breaking the rocks or observing the dip of the strata, they at once concluded I was searching for gold or silver or precious stones. Another common belief is that a foreigner who has blue eyes certainly has the clairvoyant power of looking three feet into solid rock!

The next day at early dawn we started up the valley to the north-east, the general direction of the Kweikong above Kweilin. The road, or more properly path, was three or four feet wide and paved with blocks of limestone and small rounded boulders from the bed of the neighboring river. Large numbers of coolies were passing to and fro, this being one of the four great highways between the southern part of the empire and the valley of the Yangtse. The others are that from the province of Kwangtung over the Great Meiling Pass into the province of Kiangsi and down the Kan river to Poyang Lake; another from Shauchau to Lohchiung and over the Lesser Meiling Pass; and the fourth from Yunnan, the capital of the province of that name, to Kweiyang the capital of Kweichau and thence down the Wu river to the Yangtse.

At 10 A. M. the road came to a small tributary of the Kweikong coming in from the northwest. On each side of this stream there had once been a large flight of marble steps nicely cut and carefully laid up, but when I passed they were all falling apart and the whole work going to decay, the amount of travel at present not being sufficient even to keep them in repair.

On one bank was a small square pagoda-like tower, and near it two great iron pillars surmounted by a large ornamental cap. Around each pillar was an iron ring and to this was attached a series of huge chains large enough to anchor a sea junk. The people said they were to fasten robbers to, probably the Miautse who live in the neighboring mountains to the north and northwest and who are said to come down frequently and plunder the smaller villages. Notwithstanding this formidable array of iron pillars and great chains, these Miautse have maintained an uninterrupted independence, a proof of the continued weakness of the Chinese government in every dynasty.

At 2 P. M. we stopped to lunch at a small inn. The policemen insisted on my going into a small room and remaining there out of sight till we were ready to start again, and after that all the way to Hankow, a distance of some 800 miles, I was so

strictly guarded and attended that I found myself really a prisoner. I could not make detours to the right and left as I pleased when we were passing some object of special interest. My compass I was compelled to secrete under my waistcoat, and I dared to use it only when we were far away from any village, and the road clear of coolies, and even then my policemen generally manifested a belief that I was little better than a spy, and my servant always felt it his duty to remind me how nearly my using it before had come to costing both of us our lives.

2 P. M. we came to Lingsun a hien city, 60 li by the way we came from Kweilin. I must confess that a sickening sensation closely akin to fear crept over me as I entered the gate of this city and thought of the danger I had passed through the day before at Kweilin.

The Yamun was near the gate we entered, and the officials that quickly gathered round all seemed to regard me with pity rather than hate. I tried to show my appreciation of the kind feelings they manifested by naming the places I had passed and marking out a rude map on the wall, but my policemen were afraid another mob might gather and therefore led me away to a little dirty inn where every room was full but one, and on one of the two beds in that an old opium smoker lay stretched out nearly stupefied with the intoxicating drug. Our room was more properly a dungeon than a guest chamber. A single fragment of glass in the roof, which was little higher than our heads, admitted all the light we were permitted to enjoy. But my companion, at least, was blissfully indifferent to the inconveniences of our prison and no doubt was imagining himself floating on clouds in the high air or in some richly gilded barge quietly gliding down Lethe's stream, whose waters he had certainly drank to satiety.

Small boys climbed up the partitions to peep over and steal a sight at me, but I was then quite accustomed to such slight annoyances. Meanwhile numbers of the curious of both sexes gathered in an outer room, and as a cloud of dust rose from the dry matting on the *kang* whenever I moved, it soon irritated my nostrils, and the whole party outside set up a loud laugh to think that such a strange animal could *sneeze!*

After three hours in these uncomfortable quarters, we continued on through the city and passed out the eastern gate. The whole city is merely one heap of ruins and there are scarcely houses enough left to line the main street, so complete is the destruction made by the Taiping rebels. In fact all the way from Chauping I had come almost exactly in the track of these rebels, and their hordes were composed of just such rob-

bers and desperadoes as I had found there. Their leader was undoubtedly stimulated to his undertaking by chagrin at not being able to pass the government examinations, almost the only way open to the subjects of that empire to obtain honor and wealth. It would be strange indeed if, as some people suppose, a man whose prime motive was to take revenge on his government should care much about elevating his countrymen. It is true he and his confederates invited foreigners to participate with them in overthrowing the dynasty of the Manchus, but I believe that they did this only because they needed assistance, and that if they had once gained the supreme authority they would have been as hostile to foreigners as the present dynasty; and a partial proof of this appears in the reserved manner in which their chief conducted himself as soon as he had secured Nanking and believed the whole empire within his grasp. This territory where the "Great Peace" rebellion began, and the territory too that they held the longest, is the most despoiled, the most dangerous and the most unpromising of any I have seen in my long journeys over China. Revolution has followed revolution throughout the whole length and breadth of China until her soil has been reddened with the blood of tens, even hundreds of millions of her people, and yet she remains just where she was two thousand years ago; and simply because all these movements have been originated by those whose only desire was to get the throne, to plunder or to avenge personal wrongs; and not by high-minded, generous men, having in view the good of their fellow countrymen.

A walk of 35 li brought us to Tai-ung-gong, a small village on the Kweilin or Cassia river, for the water still flows toward Kweilin. Before we reached it we crossed a small stream flowing into the Kweikong from the north. In its bed I noticed pebbles of granite and porphyry, but all the rocks seen *in situ* were the common siliceous grits. Here were many rafts of bamboos to be floated down to Kweilin and Wuchau. The valley here is filled with small hills, but in this place only. Among them I gathered a beautiful blue bell quite like that found on our own hillsides in New England. A kind of blackberry that grew in the old ruins by the way side was just ripening, and the opening of the asters also heralded the coming of autumn, as at home. I had chosen the best season of the year for this journey, for there is far less danger from the people when it is harvest time and they are not suffering from want of food. The next day we traveled 55 li to Hingan, a hien city. The water here flows to the north and the water-shed is a few li to the southwest. It is not natural but artificial, and what were originally small streams have been changed into canals and

these extended to head waters of the Siang. The water is kept for a time in these rivers and canals by building dams across them whenever a rapid would occur and allowing the water to escape only over a small gap deep enough for a single boat to pass over. Hingan is in the same ruinous condition as Lingsun. It is 150 li in a northeasterly direction from Kweilin. The Siang here was so low that I had to go 17 li farther to the village of Tankatse to take a boat for Sinchau, 140 li down the river. All along this route the water was so low that we were continually thumping and bumping and grating over the rocks and coarse shingle, especially in the dams which we met every one or two li. They are made with a gap for the boat to pass over near one bank and near the other a sluice-way, where as many as ten great water wheels were sometimes seen, one behind the other. It seemed as if there were more rapids in the 14 leagues from Tankatse to Sinchau than in the 16 leagues from Kweilin to Wuchau on the other side of the water-shed. Sinchau is the chief city in this region and appeared nearly as large as Wuchau. It is not in the province of Hunan but in Kwangsi. At the boundary of these provinces dark shales appear apparently resting on the limestones over which we had been passing on our way down the Siang.

At Sinchau my servant and boatmen purchased some fossils, which all agreed in saying came from a waterfall 93 li distant among the hills. Small boys gather them at the foot of the fall and bring them to market to sell for curiosities. They were Brachiopoda, probably of the Devonian period, and from the curved parts near the hinge the Chinese call them "hawks." A Mandarin afterward gave me the same account of them. They come from the limestones already described as resting on grits and slates.

The boundary between the provinces of Kwangsi and Hunan is about 100 li down the Siang from Sinchau. There only low hills border the river, and the valley of the Siang really begins. All the way from Shauking near Canton to this point, the whole country is one mass of hills.

All through the province of Kwangsi I was attended by one or two policemen, who carried a large paper from their Mandarin saying to all his people that I was traveling through their country with the permission of the Imperial Government at Peking, and forbidding any one to oppose or annoy me. When we came to the next city this paper was countersigned by the Mandarin of that place to show that I had reached his city in safety and that those policemen were absolved from any farther responsibility. But all through the province of Hunan I was constantly guarded by one civil Mandarin and one policeman,

and one military Mandarin and from two to four soldiers besides.

In eight days from Sinchau we reached Kiyang, which is situated on the left bank of the river and not some distance back from it as placed on the maps. Below this city the whole country becomes thickly populated and well cultivated, and the temples outside of the cities, which were nearly all destroyed by the Taipings, appear everywhere newly built, contrasting most favorably with the ruinous condition of such buildings in every other part of the empire, and indicating how well the people were prospering by whose contributions they were built. They are so numerous and form such a conspicuous part of every view along the Siang, that Hunan may well be styled the province of temples and the strong hold of Buddhism.

Eight or ten li below Kiyang, on the right bank, strata of limestone were seen resting very unconformably on other limestone strata as if the upper layers belong to an entirely different formation. Nothing of this kind had been seen before. The lower limestones had the jointed and fissured appearance of that previously noticed. Eighty-four li below Kiyang, at the village of Pin-cha-bu, we passed a hill of limestone *interstratified with coal.* They were quarrying the lime rock and using the coal obtained at the same time to burn it to lime. The dip of these strata is 40° to the north. A little farther in that direction came red sandstone with a similar dip of 15° to 20°.

Sept. 16th, stopped for the night in a little village 165 li above Hangchau. As we arrived after dark no one saw me and I was left unmolested. All the evening there was even more loud talking than I had been accustomed to hear, as if most of the village had been indulging rather freely in samshoo. At night we always anchored in the stream, and that evening my servant asked one of the Mandarins if he would like to take a walk along the front street. But he only shrugged his shoulders, shook his head in an ominous manner and said, "they are all the worst of ruffians there!"

About ten o'clock a loud talking and disputing began on the bank near us and soon one man commenced screaming and groaning as if had received his death blow. Immediately his murderers brought him down the bank, put him in a small boat and paddled out by us into the middle of the stream, their victim all this time groaning more and more feebly and evidently dying. My servant who was on the watch then informed me that this man was a merchant and belonged to another village and was taking some money to Hangchau, and when the people there robbed him and he shouted out for the police, they stabbed him and were finishing their work by sinking him in the

river. By this time, after the evil was done, the Mandarins at Yamun began firing small cannon every ten or fifteen minutes; and this they kept up regularly for some two hours, showing plainly to us all that they expected to be attacked next themselves.

I found we had thus unwittingly ran directly into a nest of those assassins who prowl in bands over the whole country. I trusted however that no one had seen me, for that was my only hope of saving my life.

Nothing remained for me to do but keep as quiet as possible and leave the place at the earliest dawn. I therefore sat down quietly, opened the lid of my revolver box—for I believe it is a duty every one owes to his Creator to save his life at any cost until he is convicted of some crime—and coolly determined when the event came to sell my life as dearly as possible. But after listening with the keenest solicitude for many long, lonely hours, I finally fell asleep, and when I awoke again our boat was floating down the stream and this village of assassins was far out of view behind us.

We soon came to Lichang the principal coal mine on the Siang. It is situated on the left bank of the river some 50 miles above Hangchau. The coal beds here were seen resting on limestone, and this is also the case in Sz'chuen, at the coal mines near Peking, and probably in every part of the empire where both occur. On the coal strata rests a red sandstone, which originally covered all these coal deposits, at least, in this region; and the coal appears at the surface only where it has been thrust up through the overlying strata of red sandstone or where this sandstone has suffered very considerable denudation. As we were but six miles from the village where the murder occurred, the Mandarin sent to protect me declared he would not let me go on shore and inspect the mines on any condition, and therefore I could note only what was to be seen from the river as we passed. All the so-called "mines" that thus came in view were nothing more than deep pits in the sides of hills and consequently only "surface coals" have been obtained.

It is probable that the best coal occurs only below the water level, and the Chinese are obliged to stop when they come to that for want of proper pumping apparatus. In support of this view I may add that the engineers on the steamers at Hankow informed me that this coal had improved considerably since they first began to use it. The best coal in China therefore remains undisturbed, but there is much reason, in my opinion, to doubt whether it will ever equal the best coal in England and America. Hangchau is the great coal depot for the pro-

vince of Hunan, and the military Mandarin that accompanied me from that city to Changsha, the capital, stated that it is mined at Kweiyang and Laiyang (see Dr. Williams's map of China) and also at Sinhwa on the Tsz'kiang. It probably occurs almost everywhere beneath the red sandstone that covers the wide plains in the whole province, but it is only mined where it crops out along the borders of those plains.

From Lichang in Hunan to Moukden the capital of Manchuria, there is an almost continued series of coal mines on the flanks of the elevations that form the western border of the Great Plain. This wide distribution of coal promises much for the future development of this land.

The most important place for trade in Hunan is Siangtan, 90 li south of Changsha. All the boats that come down the numerous branches of the Siang make this their point of rendezvous, and there is water enough for small steamers from Hankow, unless a shallow bar occurs where this river empties into Tungting Lake. That place I crossed by night and therefore had no means of satisfying myself on that point. When I reached the lake a heavy northerly wind had been blowing for six or seven days and few or no boats had crossed it during that time. A southerly breeze then set in and all the boats that had been in the many creeks and bays came out on the lake, and at sunrise I enjoyed a view only to be witnessed in this land whose population is numbered by the hundred million. As far as the eye could see before us, behind us and for several miles on either side, the surface of the lake was perfectly feathered with white sails, some in sunshine, some in shadow and some in the dim distance, gliding on a thin film of air over the water. Twice during the day I counted nearly *four hundred and forty* in sight at one time; and with the aid of my field glass fully one hundred more could be distinguished. Many were loaded with tea, many with coal, and many were just swimming along under huge deck loads of round timber. This shows the amount of the carrying trade between Siangtan with Changsha; and Yohchau, and Hankow and other cities down the Yangtse. It also indicates that Siangtan is the most important place up the Yangtse that is not yet open to trade.

Below Yohchau a number of lakes occur, which Père Huc describes as abounding in floating islands, but I did not see *one*, and others who had passed to and fro over most of this area informed me they had never heard of such a thing.

Oct. 5th. After sixty three days of continued traveling I at last reached Hankow—the distance by the route taken being about 1200 miles. For thirty-five days I had lived just as a common coolie, and frequently when we were waiting at the

cities for the Mandarins, I have laid in the bottom of my boat among the cargo with a straw mat over me without daring to stir for nearly half a day, for fear of a repetition of what occurred at Kweilin.

Once I had a severe attack of fever and ague, which seemed to set my brain on fire, and for fear I should lose command of my mind I gave my passport and money to my servant and ordered him to be sure to take care of me if I should become delirious, and to take me along with him to Hankow where my friends would reward him with an ample present. Fortunately, after suffering severely for a few days, I shook off the disease, encouraged by the idea that every hour was bringing me nearer the end of my weary journey. For the last fifteen days I did not once have an opportunity of leaving my boat and walking along the bank, the country was so completely submerged by a flood. The fever again began to burn in my veins but the exciting thought that soon I should be free from my persecutors sustained me until I found myself once more in the house of some American friends. All cause for solicitude was then over and for a week the doctor ordered me to keep my chamber.

This journey was undertaken with the hope of ascertaining the kinds of the rocks in the region traversed and the order of their superposition. The time chosen was the dry season, and admitted by all to be a *very* dry season. In such a coun try where no artificial sections can be seen, perhaps the river channels and the gorges in the mountains offer as good facilities as can be found, to ascertain the geological structure of a country. I therefore made my journey mostly in boats, which over a large portion of the area were the only means of traveling from place to place. It was only necessary to keep the boat near the bank and the strata could be seen and followed continously mile after mile, and when that series disappeared, those above it or below it could be studied in the same manner. In this way, from actual observation, the series was found to be: *First* and *lowest, granite;* on which rests the *second* formation composed of *grits and slates.* I am not aware that any fossils have ever been discovered in these rocks. These grits and slates are covered by the *third formation of old limestones,* which the fossils obtained at Sinchau lead us to regard as probably belonging to the Devonian age. On these rest, *fourthly,* another series of limestone strata of the same geological age as the coal beds. A rare collection of fossil plants of these rocks in the neighborhood of Peking was given me by l'Abbé David. They probably belong to the same geological age as the fossil plants sent by Mr. Pumpelly to Dr. Newberry, who regards them as later than the Carboniferous

period and probably Triassic. My journey through the great coal fields of Hunan also gave me an opportunity of more narrowly defining its limits. The route herein described was the one chosen for a railroad between Canton and the southern parts of the empire, and Hankow and the central parts of the country. But no one had been through the mountainous regions and ascertained whether there was a break in the Meiling Range or whether great tunneling would be necessary. Having passed over the whole area, I am prepared to say that there is no physical feature that would render the construction of such a road a work of any greater difficulty there than in a very hilly land. The great obstacles to such work in every part of China are, first, their bitter hostility to foreigners, and secondly, their superstitious fears that any such work "will affect the winds and rain and deluge their crops with floods or parch them with heat." The prevalence of this belief, and the extent to which it influences all their actions, are most surprising.

All over the empire are seen from place to place, deserted quarries of limestone and sandstone, and lead and other mines excepting coal. On inquiring why they do not continue to work in these places, the invariable reply has been "because it is forbidden by the Emperor." But in pressing this question farther I have found in every case except one that the Imperial edict has been made in this way. When a man commences an excavation, the neighboring community draw up a petition that this man be compelled to stop forthwith, that they may not lose their crops. This petition is handed to the Emperor, who not daring to oppose the will of the majority, in a most condescending manner says let the petition be granted. The work is then ended and thus the Emperor, while he plays the part of an absolute monarch, is really a supple slave. These facts therefore show that there is little or no inducement for either native or foreign capitalists to commence a railroad or any other such work in China until the government will not only give its consent, but also *can* and *will* guarantee to protect such property or fully make up any damage the people may do. When this can be done, it is as certain that railroads will pay there as that native and foreign merchants find it profitable now to use steamers on the Yangtse and Canton rivers and along the sea coast. Then, and not till then, will these great improvements be begun in China, and her future promise to be something more than a mere repetition of the past.

Up to the date of this journey it had been a matter of speculation whether there was a water communication between the river system of the Sikiang and that of the Yangtse. This

query is at once answered by the fact, that if the gentry of Kweilin and the people in the adjoining country had allowed me to proceed at my leisure and had not forced me to fly for my life, I could, even in that remarkably dry season, have performed the whole journey in boats except *nine* miles; and I am confident that if I had left Canton in the rainy season I could have made the whole distance of *two thousand miles*, through the interior of China, and come out to the sea coast again at Shanghai *in one and the same boat.*

This enables us to realize that the next wonder in regard to China, after the density of her population, is the completeness of her internal water communication.