

Arctic Regions again, I would sooner build a hut on the shore, and live there than on the ship. I think that Mr. Jackson's expedition proves that. The crew had more or less signs of scurvy before leaving the land; two succumbed on the voyage home; one died during the winter. I am glad that Mr. Leigh Smith's plans have been followed up, and in a year or two we shall be able to congratulate Mr. Harmsworth on seeing Mr. Jackson return. I don't believe he will do it in one winter, and should not be a bit surprised if he finds he is obliged to give up his present route and work along the edge of the land to the north-west past Cape Lofley. He is getting into a mass of islands and open water, which will give him no end of difficulties, instead of keeping near the edge of the land, which I expect, during the summer, he will find himself obliged to do. I have much pleasure in thanking Mr. Harmsworth for some relics Mr. Jackson has sent home. I have got my old stethoscope and camera, which have been frozen up for thirteen years, and are in perfect condition.

The **PRESIDENT**: Our gallant countrymen, now in Franz Josef Land, are about to enter on their second winter, I am sure with the same enthusiasm and the same determination to do their work well as when they left these shores. We cannot but all feel very strong sympathy for them, and I only wish that our sympathetic feelings could be conveyed to them as a Christmas greeting, but this is not possible. I am sure, however, that the meeting will desire me very warmly to congratulate Mr. Harmsworth, and to tender your most hearty thanks to Mr. Montefiore for his most interesting paper.

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## NOTES ON A JOURNEY TO SOME OF THE SOUTH-WESTERN PROVINCES OF SIAM.\*

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### III.—WEST COAST PEARL FISHERIES.

Pearling in the Mergui archipelago has been carried on for a long time by the Selungs, a primitive people very like the Orang Lauts further south, who cruise about among the islands in their boats, and have no more fixed abode than the snug anchorage they moor in during the south-west monsoon. As a result of their fishing, most of the banks down to 6 fathoms, the deepest to which they dived, have been well cleared of shell. The fishery could only be carried on for one or two hours at low water springs, some five or six days in the month, while for six months during the prevalence of the south-westerly winds all fishing stops, owing to the thickness of the water. The discovery of the Pawe bank in 1891 gave a great stimulus to the fishery, and the output of pearls rose in value to half a lakh. Most of them were small, the larger fetching Rs.50 to 100 in Mergui, and some

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\* Paper read at the Royal Geographical Society, January 28, 1895. Map, p. 496. Continued from p. 421.

20,000 mother-of-pearl shells were exported to Penang, valued at Rs.40,000 to 50,000.

The coast-line was subsequently divided into five geographical zones or blocks, and the blocks were put up to auction for a term of three years, with right to collect pearls, pearl shells (or mother-of-pearl) over 6 inches from heel to tip, and *bêche de mer*.

No. 1 extended from the north end of the district to south of Tavoy Island and Great Canister to Mergui, south of King Island, and north of Merghi, Lloyds, and Chester Islands.

No. 2. South of the above line to Whale Bay, south of Kissairing, Domel, and Maria Islands.

No. 3. Thence down to Forest Strait, and south of Collins and Forbes Islands.

No. 4. To south end of Sullivan Island.

No. 5. South to the St. Andrews group.

Pumps, diving-dresses, and Manilla and Japanese divers were introduced with success, and the first season, November, 1891, to August, 1892, was so successful that a number of pearlers from the North Australian banks visited the fishery, and a dozen of them remained to work on the banks, with the result that there are now sixty pumps at work, of which thirty are in Block No. 3, in which the Pawe bank occurs, and which has so far proved the richer. Small schooner-rigged or native Burmese boats are used for the pumps, and for moving about from place to place, a larger vessel acting as *dépôt*.

The block lease system has given rise to a number of difficult questions, and has not proved very satisfactory in actual practice, and when the present leases are up the Australian plan of a fixed licence per boat and pump will probably be introduced both in Mergui and Tavoy waters, a fee of Rs.500, with a reasonable royalty of about Rs.25 per ton of shells, being probably charged.

Pearling expenses are heavy, as may be seen from the following list:—

Pump from England	...	...	...	...	...	...	£140
Crew pumping, each man per day	...	...	...	...	...	...	Rs.1
Diver, wages per month (advanced)	...	...	...	...	...	...	Rs.42-45
„ per ton of shells	...	...	...	...	...	...	£20
„ food per month about	...	...	...	...	...	...	Rs.25
Tender, all found, and per month	...	...	...	...	...	...	Rs. 70-80

Two dresses last about a season (six months), and four lengths of pipe are in Mergui waters an absolute necessity. Shell last season (1893-1894) averaged £70 per ton, and each boat averaged one ton per month of fourteen days' work, and 520 shells averaged one ton. The real profit is made only on the pearls, and among these in one season very few real gems are found. The best last season were

three of 49, 42, and 35 grs., of which the second, being round, was the most valuable, and the smallest, being button-shaped, the next. It has been calculated that a pearl is found to every fifteen pairs of shells, and that the average value is Rs.6 per pearl. Many of them are, however, the so-called "golden pearls," with a yellow amber tint, for which there is no European market, although the Chinese and Burmese prefer them to the white.

Diving with dresses now goes on as deep as 18 to 20 fathoms, but they all say that 22 fathoms in Mergui waters is harder to stand than 25 in North Australian water, and a number of deaths and cases of paralysis due to the excessive air-pressure on the brain have occurred from this depth being exceeded. The sickness comes on with drowsiness after the man has been up some ten minutes or so; sometimes it passes off, but a repetition of a deep dive is always dangerous. It is a rule to take nothing before going down unless it be a cup of tea. The intemperance of the Manilla men helps the sickness, and is one reason why Japanese are preferred. The Burman is much too lazy and too fond of stealing. We met one Siamese diver who delighted in spinning yarns of his under-water adventures, and evidently enjoyed the life immensely.

Divers are often accused of opening shell to look for pearls under water, but it is very doubtful if they do so. Delivery of shell has to be taken from the boats at least twice a day, however, for if the shells remain long in the boat, the men put them in the sun until they open, and then run a stick round in search of pearls, the best of which are generally on the rim; they then give the fish a drink of water, and he closes up again. As it is, the divers make plenty of money, and spend it, as a rule, as recklessly as such a class usually does. The pearl oysters (*Avicula (meleagrina) margaritifera*) are usually packed and piled in sharp rough ridges on the rocks, and lie in places where they get some protection from the stir of the south-west monsoon, always with an island to the westward of them. Another shell, called by the Siamese "sabula," is very thin and transparent, like mica, and grows on mud flats at about the level of low springs. The average life of the former is four years, and when two years old they are in best condition.

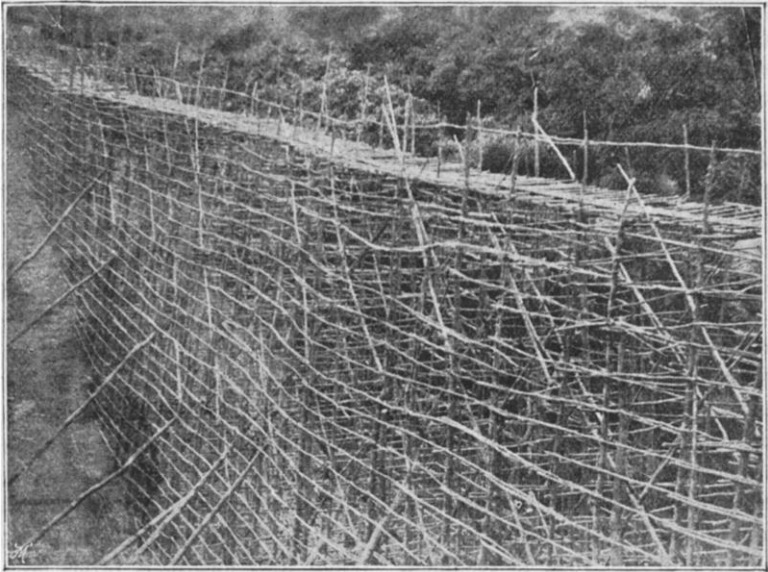
The successes on the Mergui banks encouraged search in other parts of the Bay of Bengal, and shell has been found in the Andamans, Cocos, and in Siamese waters in the Kopa inlet. This, however, is the only place on the Siamese coast where a margaritifera has been found, although likely spots abound. There was a small output last year of 3000 pairs of shells, but the pearls have been mostly seed pearls, and of these only fifty were found. The bank is a shallow one, with 6 to 9 fathoms of water. These shallow-bank shells are found to be pitted and patchy and full of holes, the only market for them being among the Chinese.

## IV. TIN PROVINCES ON THE WEST COAST.

Puket, or Tongka, as the Chinese call it, which we reached in April, is the chief of the Siamese western provinces, and is almost exclusively inhabited by the Chinese, who are attracted by its tin, and who have settled all over the peninsula wherever tin is to be worked or pepper and pigs can be reared. Their methods of working the alluvial deposits have been so often described, that I shall only refer to the hill workings, to which they resort more and more now, as the gravels and clays of the valleys get worked out. The granite in certain places, more especially where it comes in contact with the red micaceous sand-rock generally found lying over it, contains the small black tin crystals disseminated through its mass as one of its essential ingredients. In the north and western Naitu hills rich patches occur, as a rule, close to the junction of the two, especially where the granite sends its veins and strings ramifying through the older rock. These veins are often followed by the miners to some distance, and the gashes in the hill-sides which are the result of their work are often 15 fathoms deep, and are visible for miles. The further from the contact, the poorer as a rule will be found the granite. Further east, although the red rock is present, giving to the streams a colour deep as that draining from the Cornish mines of the St. Just district, the best tin is not by any means always found close to the junction, and it often lies in soft quartzose veins running through the harder surrounding granite. The overlying rock is often very much altered near the junction. In places it becomes a grey micaceous schist, in others it is metamorphosed out of recognition; some has been included by and almost transformed into the granite, while a few feet higher up the normal condition of the rock is resumed. When first cut it is often fairly hard, but a season's weathering reduces it to a sticky clay.

There seems to be no great thickness of this capping over the granite, owing to the amount of denudation which has taken place; and, indeed, by this agency it would seem that enormous deposits have been obliterated all through these provinces. In some localities, as above Sitam, there are veins, with a fairly defined foot-wall running through the granite in a north and south direction, with a steep westerly underlie, composed of very kindly looking "gossan," and carrying dark crystals of tin. These veins, however, do not seem "strong," and soon pinch out, while a foot or two away, east or west, another vein will come into existence, and in turn will split up into small strings, or give out in a short distance. The ground is thus very confused; the whole mass is soft, and to a great extent decomposed, with hard zones running through it. The Chinamen work it down with their cross-bars, and knock out the tin leisurely with their hammers, with true Celestial indifference to the flight of time. In working most of these deposits, they show

even more than their usual ingenuity and perseverance. Water is collected at suitable heights miles away, and led in leats winding along the hillsides to the points required, and in aqueducts of primitive but efficient construction across the chasms and gullies. At one place, known as Taw Sun, such an aqueduct leads the water, at a height of 65 feet from the floor of the gully, for a length of 200 feet. It is built entirely of hard woods from the jungle around. They are in short pieces, which are spliced together, and lateral stays of giant bamboos are used at the sides. It represents an enormous amount of



TAW SUN AQUEDUCT, PUKET.

labour, first in cutting and transporting of the wood, and subsequently in lashing and fitting *in situ*; and every season before the rains it has a thorough overhaul, a gang of men living on the spot some weeks to effect the work.

Walking along these for 6 miles at a time, one goes through dense forest, or among the huge gashes of old workings, now covered with a thick homelike growth of bracken fern. Below, down the hillside, a stream of water will be seen playing on a great white mass of decomposed granite, which is rapidly crumbling before it and the strokes of two or three men, perched like Welsh quarrymen on some insecure footing, and plying their long iron-shod pikes on its face. The stuff as it goes down is carried into a leat, sometimes of wood, sometimes cut in the solid rock for 100 yards, with a gentle gradient in which

more men are raking over the running water and helping the tin to settle. Some of these are 10 feet deep, and when it is chock-a-block the water is turned off, and 10 feet of black tin is shovelled out! As may be imagined, the amount of the tailings is enormous. At the mouth of every little stream, where it emerges into the valley below, a wide fan of detritus is deposited, spreading its glistening surface of mica quartz, schorl, and hornblende particles further and wider with every season's work. The finer stuff still goes on down the valleys, and has in twenty years changed the inner harbour at Tongka from a snug port for craft of several hundred tons into a series of shallow banks, which nothing larger than boats can cross, and which extend for a mile out into the bay.

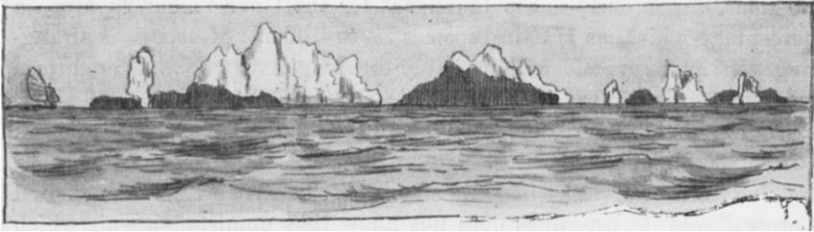
The smelting is mostly done in Tongka, the tin going down by buffalo-carts, and when ready for export to Penang each slab averages a little less than 90 lbs. From these slabs, as they are weighed out at the Customs, one in every six is taken out for the Government royalty—a percentage which, as the tin becomes more difficult of access, is strangling the industry, and will probably ere long have to be altered to a more moderate figure. The total export for 1893-94 was 63,978 slabs, or 42,783 picul (over 2540 tons), which sold for an average price of \$34 to \$35 a picul in Penang.

The town of Tongka literally smells of tin. Who that has visited Cornwall and its tin-mines does not know that unmistakable air which comes off granite, and especially decomposed granite, rocks, or off the dressing-floors of a tin stream work? It greets you when you land at Tongka, at Renong, at Takuapa, at Ponga, or at Maliwun; but any visions which arise in the mind of a colder clime are quickly dispelled by the tall groves of cocoanut palms which flourish on the heaps, or, less pleasant, by the vicious charge of a loose buffalo. Circumstances kept us among these sights on and off for the best part of a month, and I often wondered what an inspector of mines at home would say to see the Chinamen working pits 30 feet deep under the roads, or engaged in breaking heads over some question of water-rights.

In the province of Gerbi (or Bi, as it is locally known) areas have been taken up for the purpose of exploiting the outcrops of lignite which occur in several places, and in our visits to these localities we had opportunities of seeing something of the wonderful series of inland waterways, which extend from the Muang, or township of Gerbi, on the north, right away to Trang, and beyond, on the south. The whole coast-line inside the outer islands consists of mangrove swamps. Here and there a low hill rises above the rest, and at its foot a Malay village lies, and the people come off in their long canoes, arrayed in sarong and kriss, to pilot you to your destination, or have a yarn and some tobacco. The mouths of the rivers are often flanked by spotless stretches of sand, where the wind sighs through the Casuarinas, which

love to cluster near the foam of the surf, and add their gentle moan to its dull roar. What struck one most, coming from Siamese scenery, were the open spaces upon the hillsides covered only with Lallang grass, and otherwise open to the sky—the remains of the industry of former times. Similar in their effect are the bleak cliffs of the westernmost points of Junk Ceylon Island and the coast northward, swept by the driving gales of the monsoon, bare of vegetation, and backed by a stunted growth of gnarled underwood—so natural and homelike to the northern eye.

To reach Trang, we went along the coast outside in preference to the intricate inland waterways, and met a fine western sea rolling in on the beam. The monsoon had burst with a gale of wind, which kept our little craft riding for a couple of days in Paklao river, with two anchors and 15-fathom chain ahead, and it had now hardened down into a



IN GERBI BAY.

topgallant breeze. We got into Trang river at night, but, with the aid of the marks lately put down by the Rajah, we were able to go right up, with the long musical Malay calls of the leadsman echoing back to us off the trees. Trang's great industry is pepper, of which it exports some 60,000 picul a year, at a value of some \$485,600; and Palean to the south, which is also under the Rajah of Trang, exports about 3700 picul. But the growers are complaining bitterly of the present poor prices, and find that with pepper at \$8 a picul instead of \$25, with roads to maintain, and a royalty of \$0.60 a picul, profits are looking small, and labour has been reduced one-half on all estates. There are now only some 10,000 Chinese in the Taping district. This means a large coolie emigration, which takes place chiefly to Perak and other protected states, where every form of inducement is held out to industrious immigrants, and the proximity of which is a menace to the future prosperity of Trang, Puket, and all the western Siamese provinces, where Chinese labour has been the developing power. What they want still is population, and the state that holds out the most liberal inducements will go ahead. That the Chinese coolie is tolerated anywhere, and even sought after, shows how the money-making spirit will distort men's notions. I confess to great sympathy

with that quiet gentleman, the Malay, who sees his fair lands invaded by hordes of these pork-breeding barbarians.

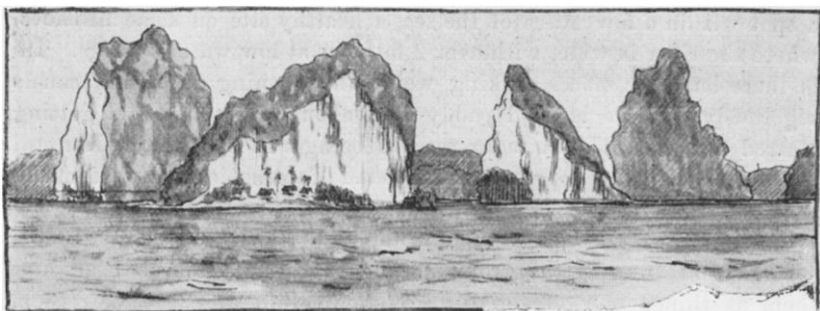
The Trang exports include 6000 to 7000 squealing pigs, 70 to 80 tons of tin, and some 3,132,000 attaps, which are made all down this coast from the dunny palm for roofing purposes, and largely sold in Puket, Penang, etc. They pile them high in the small junks, till they look like hay-barges on the Thames. The Rajah, Phya Rasadah, who is well known in the straits for his enlightened views, is striving hard, by making roads, instituting police-courts, and introducing something akin to the village system he has seen working so successfully in Burma, to fight the counter-attractions which are held out by the protected states to the southward of him. He did a bold thing two years ago in moving his capital from the old town of Kontani, down river to Kantan, a spot within a few miles of the sea, a healthy site on some hillsides, where the river is wide, with over 2 fathoms at low water springs. He is there building offices, sinking wells, and opening roads and canals vigorously. There is good paddy land about, and this he is getting cleared and drained. A main road is being run through to Kontani to connect with the pepper district round Tapting, and the tin-mines inland. As a reserve, he is encouraging the planting of nutmeg by twenty and thirty trees at a time in the plantations, and there are now some 10,000 trees in the ground. They take six years to bear, and then, as things now are, give an average profit of \$20 a year each. If he can continue this policy, Trang will yet vie in material prosperity with its southern rivals. The country is not lacking in all that is counted wealth in Malaya, and it has more than its share of fertile plain-land. As the map shows, the great axial range is at this point much less important, and its lateral spurs are insignificant.

It was our fortune early in May to begin our return journey, by way of Ponga, in the top of Junk Ceylon bight, very heavy weather preventing our going to Takuapa, for which we were bound, by sea. The people here are essentially Siamese, there being much less of the Malay or Chinese elements; but they still have the nasal accent, which is noticeable in the Siamese-speaking people of the peninsula, and which reminds one of nothing so much as what is termed the Yankee twang. Our eyes were again gladdened by the yellow Buddhist robes and the gleam-points of the white prachadees (or pagodas), and Master Cheerful's spirits rose as he contemplated the beautiful black teeth of the damsels, which I, poor Philistine, was apt to consider atrociously hideous.

The uniqueness of Ponga depends upon its limestone peaks, which form the characteristic of the northern end of the bight, and stand in sharp points and steep precipices out of its waters, some more than 1500 feet in height. They have a perceptible dip to the southward off the



sharp granite ridge of the Khao Dau Mawk Lek range, which forms the frontier between Ponga and Takuapa. Beneath them nestles the little town, its homesteads scattered among the areca palms, the elephants musing among the bamboo shoots. Above, while we were there, roared the south-westerly gale about their summits, and the wild whips of low cloud clung upon their shoulders. The Rajah, who is now an invalid, has been long known as a courteous and efficient ruler in his little state, which, quite cut off from the outside world, enjoys a certain wealth in elephants, rice, betel, and attap, and has an air of peaceful prosperity and content. The trail across to Takuapa goes up the Ponga river almost to its source in the northern granite range already mentioned. A few small hill workings contribute some ten



THE ENTRANCE, PONGA RIVER.

tons of tin a year, and an enormous quantity of tailings, which have played havoc with the stream.

The first night we stopped our elephants at Ka Ngawk, a dirty Chinese village, and next day, crossing the hills, we descended by a rough trail among huge granite boulders and old tin-workings to Kapong, a dirtier Chinese village. This is fairly in the province of Takuapa, and did not impress us favourably. There was no monastery near by and no sala to stay in. The house in which we were accommodated was one of the usual mud-floored, low-walled erections in which the Chinamen usually store themselves and their pigs. Some of us were fain to sleep in the roof, but even there did not evade the smells; those below had to contend, *inter alia*, with the advancing water of the neighbouring stream.

The Siamese style of building on piles is without doubt far more cleanly and efficient for these countries, and the large raised floor outside the houses gives dry resting-place for men and baggage in the highest flood. A Chinese street, too, choked with every man's and his neighbours' offal, is absolutely impassable in rainy weather. The Siamese, on the other hand, live scattered among their gardens, and if the ground is underwater, it is at least navigable, and the canoe is not in danger

of running on the sunken shoals of the neighbours' ever-increasing dust-heaps.

From Kapong we reached Takuapa in dug-outs next evening. The river is a mere stream, but, being in flood, the boats could float. The forest is very dense all the way. The tin nearly all goes down into the town on elephants, often 30 or 40 miles on very rough tracks. Next to Puket, Takuapa is the largest tin-producer along the coast, but its total does not much exceed 600 to 700 tons a year.

The mines are known under three separate heads:—Mueng Karar, worked for six months in the year, being dependent on the rains for water; usually small, with only two, four, or six men. Mueng Len, hill open cast workings, not dependent on the rains, where washing is done every fifteen days or so, as sufficient stuff is cut down. Mueng Karsa, the usual large open workings in the alluvial, where the washing is done from day to day, and large numbers of men are employed. Water-sources and waterways, rights of way, and boundaries are in a grand state of confusion for the most part, and claims and counter-claims result in lengthy and unsatisfactory lawsuits, of which the most tangible result is generally a row and some broken limbs.

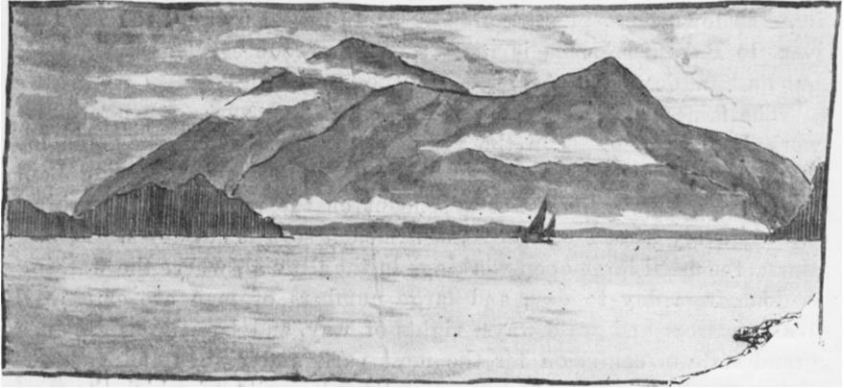
At the town the tin is smelted, stamped, and weighed, and the royalty deducted ready for the monthly steamer. It then goes down to the estuary where the steamer lies, in long badly shaped boats, which carry one big China lug. In the floods they are often two days returning to the town, a distance of some 14 miles.

We witnessed a remarkable sight one evening in the estuary—hundreds of huge bats (*Pteropus*) passing overhead for some twenty minutes, going east towards the gardens of Takuapa for their nightly raids upon the fruit. They flew very high, apparently 600 feet up, and very slow; and were scattered at intervals of some hundred yards all over the sky as far as the eye could see. They evidently came from the outlying hills on the coast-line.

The estuary has a lot of sandbanks and sunken rocks which are unmarked, and make an awkward place for strange craft; the southern entrance has only two fathoms on it, and is flanked by long banks extending many miles out to sea. The strong tides and heavy sea always running on these banks, the roar of which will travel 6 miles up the estuary, together with the absence of well-defined landmarks or buoys, make it a dangerous entrance at best. Its only advantage is to save three hours' steaming for vessels bound in from the southward, which would else go round by Kopa Head on the north. A clearing has been made, and machinery is out for a lighthouse on that head, and it will be a great advantage to the port.

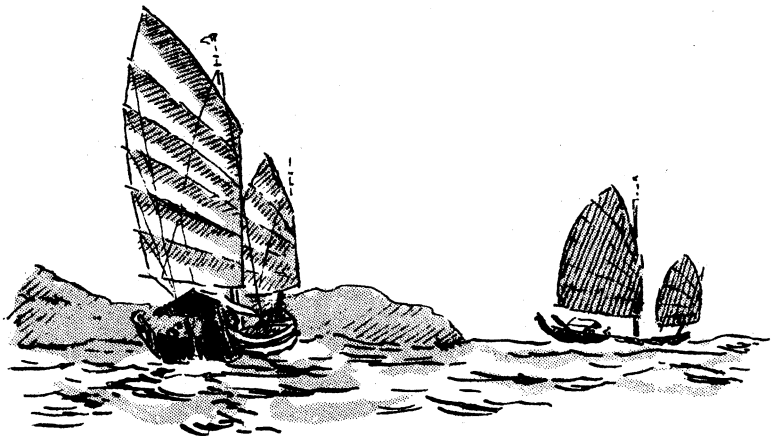
It is curious how comparatively few craft one sees along this west coast even in fine weather. A few Penang junks, whose remarkable feature is the clumsiness of the sterns, some two-masted Burman boats,

an occasional double-tailed sampan, with her foremast raking like a bowsprit, or an Orang Laut boat, with her horizontally seamed dipping lug. The sail of these boats is of matting, as usual, the tack brought to the weather-bow, and the luff set taut by a spar from the deck set in



MORNING : KOPA ESTUARY.

a cringle halfway up. The mast is strongly stayed on the weather side. I was astonished at their weatherly qualities, and, close hauled, they will make an exhibition of an average ship's boat. The hull is



SAMPANS.

similar to that of the Selungs of the Mergui Archipelago, the gunwale and topsides being of neatly lashed cane.

Nearly the whole of the rice of Takuapa is imported, there being only sufficient grown for the Siamese population. When we arrived, both rice and opium were running short, as the steamer due from Rangoon with large consignments of these necessaries had been lost off

the Moscoes in the recent heavy weather. The consternation among the Chinese Towkays, when we brought this news, was great, for the Chinese miner without his rice or opium is inclined to clamour. Messages were sent overland to Puket to represent the state of things, and meanwhile a series of gales set in which kept us prisoners.

The elephants I had ordered in for the march to Renong were unable to reach the town, owing to the swollen state of the streams, and at the end of a sufficiently dull week a few arrived, staggering like drunken men through the current of the river. While waiting for their brethren, they played havoc among the gardens, and we were besieged by irate husbandmen and their wives crying for compensation. I set Master Cheerful to tell them stories, and Master Star was turned on to warble his falsetto trills, which, though they used to make me only irritable, seemed to have a calming effect on them. We were thus able to send them away softened and appeased, with a tical or two as a price for our elephants' dinners. The elephants were brought in by their mahouts for punishment, and though they looked, on their arrival, highly satisfied with themselves, after being two hours tied up standing absolutely still, they became penitent enough.

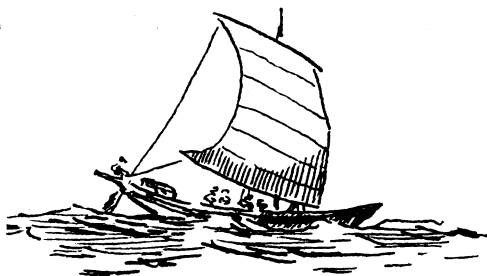


FIG. 1.

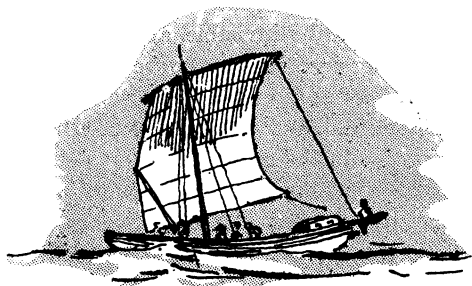


FIG. 2.

ORANG LAUT BOAT (FIG. 1) FROM LEE SIDE,  
(FIG. 2) AND WEATHER SIDE.

There was one dry space in the vicinity of the town on the small pagoda hill overlooking the turbid yellow river. Here the boys of the place played a game exactly akin to our "hide and seek" all the time it didn't rain—the first time I have seen the Siamese youth so exert himself. In the evenings we had concerts, which were well attended by our neighbours, our orchestra consisting of two accordions, a piccolo, a tin pot and two sticks, and we gave an enthusiastic betel-chewing audience selections from the Siamese Ma Yong, Soi Son, and Plaeng Lo, and some English songs like "Nancy Lee;" the chief advantage of the Siamese airs being that they can go on without ever stopping, thus providing that monotony dear to the Eastern heart. Our only

interruptions were the occasional removal of part of our roof by the gale, and the inrush of the waters. The weather moderating and a steamer calling in, we were able to accomplish the journey to Renong in ten hours instead of ten days, which we should have taken going overland.

The alluvial tin of this province has been almost entirely worked out, and the mining is now all going on in the hills, up the lovely granite gorge through which the Hat Sompen stream has cut its way, and is centred round the village of that name about  $7\frac{1}{2}$  miles from Renong. The valley is here wide and open, the stream a wide sandy track of tailings, and the hillsides are gashed and dyked just as in Tongka. These hill-miners are miners in the true sense of the term—unlike the coolies, who dig and carry the alluvial as if they were making a railway embankment. Here the miner is a skilled hand at hollowing a tree-trunk, or slicing off the bark for his water-launders; in selecting, cutting, and splicing the hard woods for his aqueduct, or cutting his mile-long trenches along the contour of the hills—which are alone, many of them, quite feats of engineering. He knows wolfram and hornblende, which he calls “dead tin,” and he follows with unerring scent the tin which “un do know sure noff.”

The granite is peculiarly white, soft, and decomposed, and the tin runs all through it. Unlike what I saw in Puket, it is often in such fine particles as to be invisible, and some places looking quite poor proved, on washing in a dugong, to be rich in tin. Some large hard veins of quartz I saw running east and west, and dipping about  $60^\circ$  south, were unmineralized, and carried no tin, although there was often a rich dissemination in the granite in their neighbourhood. Some of the granite pinnacles left standing in the workings some 200 feet above the stream looked like grotesque ruins. Looking down from them upon the valley where the driving rain-mists blurred the outlines, one saw the sloping cottage roofs, winding watercourses, piles of tailings, timber, sluices, and water-gates, with a few men moving industriously about, stirring with the chonkuls in the boxes, strengthening weak banks, plying their crowbars on the rock faces, and generally helping the thundering streams, and making the most of the rain-time, which, if bad for fevers and the like, is yet, say they, “good for tin.” On all, the red and yellow stains contrast with the heavy green of the surrounding forest, climbing far into the clouds upon the western hills.

The mines are worked on a licence system introduced by the late Rajah, the average size of a grant being 10 olong ( $1 \text{ olong} = 1\frac{1}{3} \text{ acre}$ ). The licence lasts a year; trespassers on a particular “kongsie” (whose name is always written up on the coolie houses, or somewhere on the “sett”) are subject to fines, and all complaints go before the Rajah. Water sources and rights are defined on the grants, and order is consequently preserved. The smelting is done in Renong principally by the Rajah. The charcoal is all made in the surrounding country,

licences being granted for felling the necessary timber. The furnaces are of the usual clay pattern, and smelt 280 bags of 20 to 22 caities each in three days and four nights; six men working change at the bellows, with two overmen, who superintend the charging, tapping, etc. The slag is usually recharged four times, and then stamped fine in a small battery of four heads and treated once more. Renong is famed for its roads and the hospitality of the Rajah, who is the brother of Phya Rasadah, and not behind him in clear-sightedness.

On our way up the Pakchan I had subsequently an opportunity of seeing with Messrs. Kenny and Clunis, who were at the British station at Victoria Point, some of the remarkable lodes of the Maliwun district on the west. The tin occurs in light grey crystals often  $1\frac{1}{2}$  inch long, in well-defined and highly mineralized east and west lodes, and is quite different to anything I had seen on the coast. It struck me as a grand country, but the population is astonishingly small, and it seems a century behind the Siamese side. From here to the Lenya river and to Tenasserim extend nothing but dense forests full of elephant, rhino, pig, buffalo, tiger, and deer, but hardly a trace of man. We found the people all along the Pakchan river suffering from an epidemic of dysentery, which the continuous chilly rains no doubt aided, and which they seemed to have no ideas of combating. The old Muang Kra is now more generally known as Pakchan (Pæchan, "the forest of sandalwood," and *not* Pakchan, "the mouth of the trap," as has been suggested), and the valley is a pretty little paddy-growing plain—in decent weather.

#### V. UP THE EAST COAST.

We all showed signs of sickness when we left Kra for Chumpon with ten elephants, four of them accompanied by their babies. It is an easy march, and has often been described and visited by persons interested in the canal scheme. There is tin lying in the main range away to the northward, but it has been but little worked. We slept at Tarsarn, and next night at the governor's house at Chumpon, and it was curious to find ourselves under an almost cloudless sky, with a dry air about us, and a baking soil beneath, and the change from the damp of the west coast to the warmer temperature soon set us up again. It was still blowing hard, but the climate was a different one, while not 20 miles away to the westward we saw the heavy clouds lying low upon the watershed. This phenomenon is seen all down the peninsula, and the rains may be on with all their force on the west while the east is still athirst.

The training of the elephants struck us as being here more superficial than in most parts of Siam, and we witnessed some wonderful differences of opinion between elephants and their masters. One of ours made off in the night; he was followed up next morning by two men, and when

we were on the march later in the day we met him being brought in by them. One sat in the usual place upon the neck, the other just behind; and as he rushed and plunged wildly about, they clung to him with knees and toes, belabouring him with their sharp-pointed spikes till he was covered with blood. He was a huge beast, but he had to give in, and the men seemed glued to him. The babies, as usual, were most amusing, and led my dog Rover a terrible life. Whenever he was helpless, swimming to cross some deep pool, they would rush upon him, and how he escaped being killed was a mystery to himself as well as us. Along the trail any elephant he approached would kick out sharply, swing the bristles of his tail on to his head, or make a shot at him with the end of his trunk. On the whole, Rover, who is particularly fond of stalking, and playing the tiger with a herd of buffaloes, found elephants less amusing.

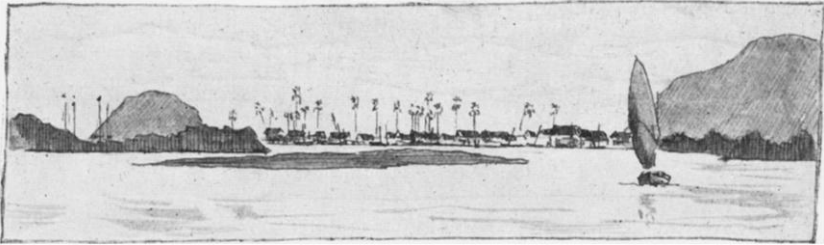
The Chumpon plain is typical of Siam, with the gaunt sugar-palms along the streams, the large herds of cattle and tracts of paddy-land. The people, too, have much less accent, and in their houses, boats, and appearance conform to regular Siamese custom. We took up our quarters in the large Chinese and Siamese fishing village at the mouth of the river, expecting daily that a steamer would be in to call for us. A number of fine junks were lying in the roads outside the bar. There is no greater mistake than to talk of these craft as "crazy little vessels of cumbrous, antiquated shape, mat sails, and decayed rigging." On the contrary, the moment they are in port the running rigging is all unrove and stowed away, the sails are carefully covered up. When hoisted, they generally show a shape and flatness of set, which makes them the patterns for ship-boats' sails all over the East. Their varnished hulls and smart little touches of paint vie with those of the famed Thames barges. As it was the height of the "pla too" fishing season, the bay was alive with craft.

The village is entirely devoted to fishing. All along the river are high bamboo stages for fish-curing, net-drying, and fish-trap plaiting, these operations being carried on principally by the women while their husbands are afloat or taking a watch below. The place smells strong, but what matter when you are living on fresh fried pla too, calamary, oysters, eggs, bananas, pineapples, and mangosteens? In every way the contrast to the other coast was delightful; for there is no doubt that one can have quite enough of uninhabited country, and that in reality no scenery can be complete without some trace of the child of man upon its face.

The coast trade is somewhat extensive. Large quantities of fish are salted and sent to Bangkok, Kalantan, and Singapore. At Bangkok they pay import duty of one salung ( $\frac{1}{4}$  tical) per picul, and prices vary from three salung to five ticals a picul, according to the time of year. June and July are the months in which, finding smoother water, the fish, like

the vessels navigating the gulf, approach the western shores to windward. In the north-east monsoon, on the contrary, the fish harvest and the navigation all goes on on the north and eastern coasts under the lee of the land. Edible birds' nests from the steep islands of the coast are also a considerable article of export to Bangkok; the islands are farmed by the Governor of Chaya. Rattans and jungle produce, horns and skins, all add to the local trade.

After a few days' waiting and finding no steam craft turn up, I arranged with a young Siamese, who owned a "rua pet," to take us to Bangkok. He was bound to Pechaburi with rattans; and his crew consisted of a crumpled, weather-worn old Lukchin\* as sailing master, two quiet Siamese as ordinary seamen, and a young brother known as Dek, or the boy. With our party of eleven there was not much room left. The boat was 36 feet long with 11 feet beam and 6 feet



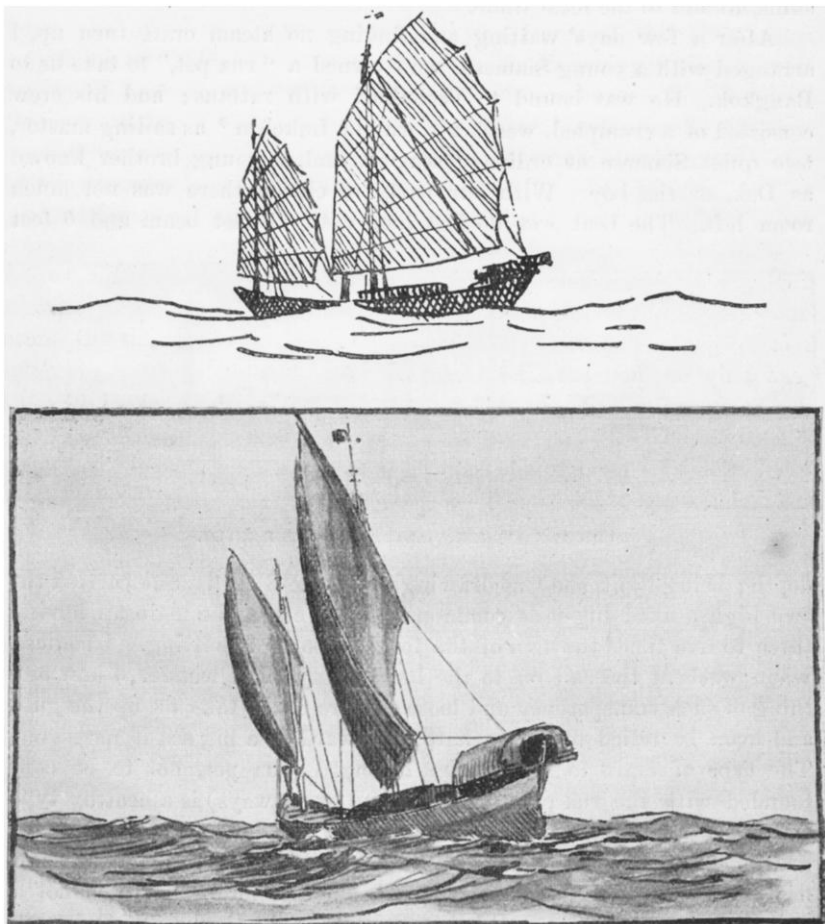
CHUMPON FISHING VILLAGE, FROM THE RIVER.

depth; being light, she was drawing not quite 3 feet. She carried the two high-peaked lug-sails common to these craft, the mainsail having three to five times the area of the foresail, both of matting. I confess, when we bent the sail on to the long mainyard, I wondered how any thing of such transparency and loose texture could take us up the gulf, and even be relied on to reach to windward in a big sea if necessary. The type of craft to which she belonged (rua pet, not to be confounded with the rua pets of the inland waterways) is a healthy type common to the Siamese of the coast. They are double-ended, and with great beam carried well aft; the floor is rockered up fore and aft, and flat enough to ensure their sitting up when ashore. There is not a nail in their construction, all being wood-pegged; the best of them are invariably built of "mai takien" in preference to teak, and will last thirty years' knocking about without substantial repair. Such a boat, 50 feet long, 15 feet beam, and 7 feet deep, will cost new about \$900. There is no keel, and the rudder is shipped on a spindle aft on the round stern. The masts have a great rake aft, and the yard is peaked by a separate peak halyard, and a downhaul at the fore end. They would be

\* Lukchin, name applied to sons of Chinamen by Siamese mothers. They generally have the good qualities of both races.



much handier for a tackle on main halyard and sheet, and at present the chief difficulty in handling one is the want of such contrivances. To hoist the yard up, four men have to swing their whole weight on; and the only way of getting the sheet in is to luff and take the strain quite off. Reefing is done by rolling the sail up round and round the boom as the yard is lowered, and in furling the whole sail is rolled up in this



LOCAL TRADERS IN THE GULF.

manner to the yard until it looks like a lateen. The yard is controlled by a brace to the stern-post, which is usually kept pretty taut even when free. It is true this furl gets the sail out of the way, but the weight aloft makes them roll at anchor, and a strong squall getting them on the beam has been known to capsize them when light. The foresail is seldom trimmed much, or reefed; it is more a steering sail.

The boats bear a very heavy weather-helm, and have to be trimmed very much by the stern. Rayong and Chantabun on the East are the great birth-places of these boats.

The sea-going Chinese and Lukchins of the gulf usually prefer a type of longer, narrower, and much shallower craft known as rua chalom, which are easily distinguishable by their high peaked stern and stern-post. The larger trading craft carry the two lug-sail rig already referred to, though sometimes they use the battened China lugs. The small fishing craft, on the other hand, adopt one big standing lug, cut square-headed like a coble's, and set on a mast stepped amidships, and raked well aft. Their main peculiarity is the two rudders shipped one on each quarter; the helmsman uses the one on the lee side, though before the wind he often uses both. When down they draw several feet more than the boat, and when up one may often be seen set up on end to act as a mizen and keep the boat's head to sea. As far as my experience goes, this type, having less hold in the water than the rua pet, and being even rounder in the bottom, is, size for size, less efficient to windward, and a one-rater of my own which has no chance with them off the wind, has, beating to windward in a moderate sea, put them 4 to 5 miles under her lee in a few hours. In most of them there is a plaited "kadjang," or shelter amidships, and some of the big rua chaloms have a quaint little steering-house up aft.

It is curious to note the small local peculiarities of the different sea-side places in their boats and fittings, so well adapted to their own localities. Their smartness in handling, and their appreciation of the qualities of their craft, make the seafaring class of the gulf one of which any coast might be proud. In their language, their ways, and the nameless something there is always about seamen, they are very distinct from the shore-going Siamese. They are hardy, eat little and simply, and face all weathers in a pair of short loose white or blue trousers coming halfway down the thigh; they are as much at home in the water as out, and their hard skins seem impervious, and glisten like an oilskin coat. I have seen a man spring overboard in a heavy sea on a lee shore to pick up the tiller, which got unshipped and washed away, and then swim away with it dead to windward, fetching the boat as she came by on the other tack—a feat which called for nerve and judgment of no ordinary kind.

Their names for the winds do not go, I may here remark, according to the points of the compass, except in the case of due east or west winds, which are comparatively rare.

Eng. Point.	Siam. Point.	Wind.
N.	Nua.	Lom Wow.
N.E.	Nua Tawan ok	„ Ut Kra.
E.	Tawan ok (sunrise).	„ Tawan ok.
S.E.	Tai Tawan ok.	„ Hua Kao.

Eng. Point.	Siam. Point.	Wind.
S.	Tai.	Lom Tapow.
S.W.	Tai Fawan tok.	„ Salartan.
W.	Tawan tok (sunset).	„ Tawantok.
N.W.	Nua Tawan tok.	„ Yego.

A squall is known as Lom Fon, or the rain-wind.

We hove up at evening on June 12, to get the night flood up the coast, and by morning were off the limestone bluff of Lem Chong Pra, the wind freshening merrily on our quarter. We passed during the day a number of rua pets beating down the coast, like ourselves with mainsail reefed, making lovely pictures as they plunged through the head sea. At sunset Kao Luang lay abeam, lost in clouds and rain, and we had another reef down. Wind S.W. 5. A number of large open grass spaces visible to-day along the hills.

The morning came calm, and we rolled about off Muang Kuwi, to the discomfiture of the cooking operations. The Siamese say eating something nice brings wind. It is questionable how far half-done curry and quarter-boiled tea is nice; but the wind certainly came up in the middle of breakfast and lay us down to a pretty angle, and sent us roaring up past the shoal-water patch and the fishing-stakes below Sam roiyat. We passed lovely little villages clustered in sandy bays, and lots of rua pla (small four-oared rua chaloms) out fishing at their stakes, or going up deeply laden to their villages. The time was enlivened by the yarns of Dek, who talked and chaffed incessantly when his elder brother and the Luk Chin were having a caulk after their watch. He was a lusty specimen of the well-to-do Siamese; he wore a clean, tidy panung and white jacket, which he did not disdain to disregard when a reef had to be taken down or the yard set up; he was one of those people to whom everything healthy comes as enjoyment, and his conversation was less coarse than is often the case with the more idle of his class. His elder brother was one of nature's gentlemen—a quiet, refined, and thoughtful-looking fellow, with the manners of a courtier and the heart of a sailor.

Passing Muang Pran, with a breaking sea running astern, we were off Chulai Peak before sunset; and from here our sailing master hauled off the shore, and headed away for the bar of the Meinam river. He brought up his prayer-papers with great solemnity, and, selecting a couple, lit them on the lee gunwale and hove them overboard, and a joss-stick was put burning on the stem-head. The only apparent result of this was the collection of a heavy bank of clouds in the north-west, which covered the sky very fast, and, as the sun set, rushed over the moon. We reefed down in the darkness and got supper stowed, and soon after the south-west wind was dead, and the water darkened in the north-west. The clouds aloft suddenly ceased tearing across the sky, and then the lower current of wind came sweeping down. All night we flung close hauled through a short, rough sea, the men

crouched to windward, and the spray flying far alee. Next morning we were 5 miles off the Tachin river in a roaring calm, with sixteen men and one dog bursting their lungs with whistling. I had a bathe, to the great horror of the Siamese, who all exclaimed, "Why, it's salt!" I told them how in Europe people travel hundreds of miles (by train, not on elephants) to bathe in this same salt water, and they classed this with the yarns of the sailing master, which were prodigious.

The western hills lay far astern, and on the eastern horizon, beneath the round red sun, lay the Bangplasoï mountain. To the northward, suspended in the heavens, lay groups of trees and boats' sails, and far beyond the smoke of the rice-mills of Bangkok. By three o'clock, with a roaring flood and a smart south-west breeze, we were in Paknam, and that night we bade farewell to our shipmates. There is nothing like the sea for bringing men together, and making good-byes loth.

Our return to Bangkok was the signal for every one of the men who went with me to get laid up with fever; they did it with a promptitude and unanimity which exceeded what they had ever before shown. However, one or two were really very ill, and have now been so for months. Bangkok seems to have a way of its own in this respect, and successfully invalids hundreds of men who have gone through long jungle marches without any sickness. What the cause is it would be hard to say, especially as it generally happens within a day or two of the return.

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Before the reading of the paper, the PRESIDENT said: The meeting will remember that a year ago we had a very interesting and very able paper from Mr. Warrington Smyth, describing his journey to the sapphire mines on the northern frontier of Siam, and his return by the Mekong valley. The paper was considered so important that the Council resolved it should be published separately as a volume, and with capital drawings to illustrate it. The volume is now ready, and I would urge upon Fellows, as many as possible, to send for it, for I am sure they will be well repaid. It is a most interesting little volume; moreover, the experiment of publishing has not yet been settled, and it will rather depend on the success of this first undertaking whether the Council of the Society will be able to make it the first volume of a series, or only an exceptional publication.

We are assembled this evening to hear a second paper from the same author, Mr. Warrington Smyth, which I think you will find equally interesting. It is a journey from Bangkok to Tenasserim and down the river; afterwards he visited the Mergui pearl fisheries and tin workings of the Kra Isthmus, and other points of great general and geographical interest. I regret very much that he is not present this evening, for he is still doing useful work at Bangkok; but I am glad to say his friend Mr. Probyn will again, as he did last year, have the kindness to read Mr. Warrington Smyth's paper.

After the paper was read, the following discussion took place:—

The PRESIDENT: I regret very much that Mr. Curzon is unable to be present this evening. I have seen him this afternoon, and am happy to be able to tell you that our Vice-President has returned from his perilous and most interesting journey,