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THE SCOTTISH

GEOGRAPHICAL

MAGAZINE.

THE CAROLINE ISLANDS.

By F. W. CHRISTIAN.

(*Read before the Society in Edinburgh on February 14th.*)

INTRODUCTION.

A GOOD many years ago I took a schoolboy's fancy to visit the islands of the Pacific, one of the pardonable ambitions of youth which it is so rarely given to us to realise. I will tell you first how I came to hear of the Carolines, how I got there, how I fared there, and what I did there, and will then go on to describe the geographical situation of the archipelago and something of its history and products. Then I will give you some views representing the beautiful scenery of these islands, and some types of the folk who inhabit them. I will also bring up on the canvas before you some views of an enchanted region of archæology—views of some massive and wonderful works in stone found in a remote province of a remote island in the Eastern Carolines. This place is known to geographers as Ponape, the Land of the Holy Places. Lastly, I will show you some scenes from the Yap and the Pelew islands, which lie some fourteen hundred miles nearer Manila, on the western edge of this extensive archipelago, which seems bound sooner or later to fall out of the paralysed hands of Spain into the firm grasp of America, or the itching palm of energetic Japan, or into the grip of the Emperor of Germany, whose final answer, to use his own words, to a barbarian enemy is a crushing blow of the mailed fist.

About fourteen years ago, when I was a schoolboy at Eton, I heard first of the Caroline islands and some remarkable ruins in the east of the group. After leaving Oxford in 1889 I was so fortunate as to have an opportunity of visiting Sydney in New South Wales, and the

city of Wellington in New Zealand, which I made alternately the centres of my expeditions into the Pacific. I spent six years exploring in Samoa, Tahiti, and the Marquesas in the South-Western and Central Pacific, during which time I carefully studied the local dialects and fairy tales. In 1892 I witnessed Mataafa's revolt in Samoa. There I met R. L. Stevenson the author, kindliest and most genial of hosts and the best of neighbours, who, when I left the island, bought my plantation. On my return to Sydney, in the middle of 1895, I met Louis Beck, the well-known writer of South Sea Island tales. I heard what Stevenson and Beck alike told me, of acres of unexplored ruins, numbers of strange, unchronicled dialects, and a whole volume of native folklore waiting for a historian. To use the words of Rudyard Kipling, "I heard the east a-calling," and I went. The two first stages of my journey to the Carolines were a month's steaming northward from Sydney to Hong-Kong, and a week's stormy passage from Hong-Kong by way of Amoy to Manila. Thanks to the kind offices of Sir William Robinson, our Governor at Hong-Kong, and Sir Stewart Lockhart, the Colonial Secretary, General Blanco, the Spanish Governor of the Philippines, gave me letters to his subordinates upon Yap and Ponape, the two military stations in the West and East Carolines. This was while the Filipino rebellion lay dormant, and before the red and yellow flag of Spain went down for ever before the stars and stripes on that eventful morning in Manila bay.

From Manila to Yap, the westernmost of the Carolines, was a run of some 1200 miles by the monthly mail steamer. Yap I reached on December the 21st, 1895. On Christmas eve we dropped anchor off the beautiful island of Guam, in the Mariannes, and reached our easternmost goal, Ascension Bay on the island of Ponape, on New Year's day of 1896. In this neighbourhood, thanks to the aid of the Spanish Governor and some of the district chiefs, the Manila photographer whom I had engaged was able to take many photographs of the island scenery and the people. We paid a visit to some remarkable ruins in the Metalanim district on the east coast. Our explorations in this, the most interesting of all the districts, were attended with considerable risk, the natives, thanks to the slack rule of the Spanish, nursing a deep hostility to all white men. A morose district chief finally put an end to our work just as our excavations were bearing good fruit. We carried away, however, a great number of curious relics.

After leaving Metalanim I returned to the Spanish colony, where my Manila photographer left me. He returned to Manila, joined in the rebellion, which had just broken out, and was taken prisoner in a skirmish. A court-martial was held, and one morning the Spaniards shot him on the Water Front with about forty other disturbers of order. For my part I stayed on, grammar and dictionary-making, and collecting marine specimens amongst the Ponapean savages. I found them on the whole pleasant and amiable people. Towards the end of the year I went back in the Spanish mail steamer *Uranus* to Yap, where I took many sketches and notes. I returned to Hong-Kong in a small trading vessel in the New Year of 1897.

I wish I could have introduced to you to-night my Manila man, whose photographs you will see presently on the canvas; but my poor man Friday, like all the other Filipinos, would not take good advice, ran out of safety into danger, and threw his life away. I may here remark, knowing well what manner of men these Filipinos are, that the present native rising in Manila is not a cause of pure patriotism. It is directed by unprincipled men working for their own selfish ends against law and order. It means treacherous assault, the surprise and sacking of small, undefended towns. It means the massacre of peaceful Europeans, and the torture of helpless women and children. It also means firing on the Red Cross of Mercy and the White Flag of Peace. Therefore I cannot ask your sympathy for my Manila man or his compatriots recently slain by the Spanish and by the Americans in the Philippines. I would rather bid you rejoice with me that some law and order is possible in these benighted regions. Law and order the Americans mean to have, and it has got to come, or good-bye to Manila hemp and Manila tobacco. I will now pass on and give you an account of Spain's outlying possessions in the North Pacific, the last remnants of her once magnificent Colonial Empire.

Spanish Micronesia.

Spanish Micronesia, according to the treaty made with Germany in 1885, lies between the Equatorial line on the south and the eleventh northern parallel, and between 139° and 170° E. longitude. The great island of New Guinea lies about 1000 miles to the southward. A long chain of 652 islands lie scattered over this wide stretch of sea, some 1400 miles in length. The inhabitants number some 50,000, a combination of the Black, the Brown, and the Yellow races. The Caroline archipelago contains thirty-six minor groups. We will take the more important of these one by one from west to east.

The Pelew group, lying on the western frontier of the Carolines, contains about two hundred islands, of which Babelthoab is the largest. The population of the Pelews is considerably over 3000. The language is the harshest and most impossible of all the Malayan dialects. The principal products are turtle-shell, copra or dried cocoanut kernel, and bêche-de-mer or dried sea-slugs. In the Chinese markets bêche-de-mer brings as much as £80 sterling per ton. Copra in European markets fetches about £25 per ton. It yields a capital oil, and the crushed residue furnishes a grand cattle-cake and is used as a basis for sweetmeats and confectionery.

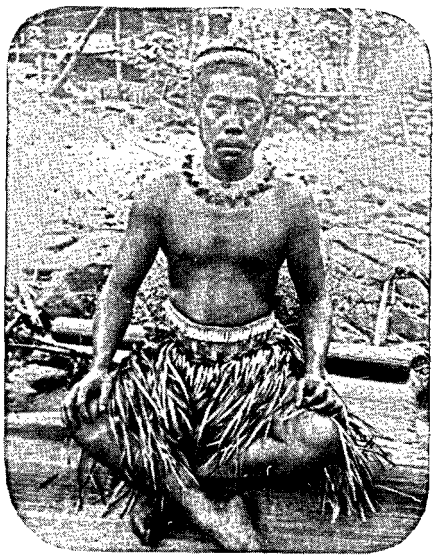
Trouble is always going on between the various tribes, and a firm hand is needed to keep things in order. Captain Butron of the Spanish cruiser *Vellesco*, lost in the late naval battle at Manila, who visited the group in 1885, gives these natives a good name. Captain O'Keefe, of Yap, who knows the Pelews very well, describes the people as regular pirates. In olden time there was great commercial activity in the Western Carolines. The Yap and Pelew natives used to go on long voyages of trading and conquest. The island of Babelthoab is rich in good timber,

and produces all the tropical fruits. On the hill-side are some interesting lines of ancient fortifications, which I hope to explore next winter.

Alligators, called *Gaiutsch* or *Aius*, are found in some of the creeks, and a peculiar kind of horned frog or *Cerastes* in the valleys of the interior; this they call *Thagathaguk*. There are two kinds of snakes, *Bersoiok*, some scorpions and centipedes. On the plateaus there is plenty of good pasture for horses and cattle. Goats are plentiful and very destructive to the breadfruit-trees; they break into a plantation, gnaw the bark away in a circle, and then the tree dies—so does the goat when he is caught! There is no Spanish garrison or mission school or trading station in the Pelews. Nothing is done at all to show that these islands belong to Spain. A fringing reef, fifty-three miles long from north to south, surrounds the Pelews—a menace to navigation which has destroyed many a China-bound vessel. I have lately heard that the Spaniards are now determined to sell the Pelews, the Mariannes, and the Carolines to some foreign Power, but neither America, Great Britain, nor Japan need apply—and these the very nations best of all qualified for colonising these fierce and intractable islanders. In her business relations in Pacific islands, Great Britain would do well to take heed of the saying of Horace, "Tarde venientibus ossa"—"Those who come late to dinner only get bones."

Three hundred miles north-east of the Pelews lies Yap, surrounded by a coral reef thirty-five miles long and five broad. There are hardly any rivulets on the island, but inland are extensive swamps laid out in plantations of a water taro, the *Colocasia* of the Nile valley. The island is full of relics of a vanished civilisation—embankments and terraces, sites of ancient cultivation, and solid roads neatly paved with regular stone blocks, ancient stone platforms and graves and enormous council lodges of quaint design, with high gables and lofty carved pillars. The ruins of ancient stone fish-weirs fill the lagoon between the reef and the shore, making navigation a most difficult matter, and calling forth many most unkind remarks from trading skippers. The fruits of the soil are sweet potatoes, yams, of which there is a great variety, taro, mammee apples or papaw, pineapples, water-melons, custard-apples, bananas, sugar-cane, breadfruit, and the tropical almond. Copra, that is, cocoanut kernel chipped up, sun-dried, and put into sacks, is largely exported, mostly through the German traders, who have spent a great deal of money and labour here for the last thirty years. A varnish nut grows here which should give good results. The principal timber tree is the *Voi*, with a leaf like that of a magnolia and in the wood resembling mahogany. Tomil harbour is the chief port; here is the European settlement and a small garrison of Manila soldiers, and the Spanish governor of the Western Carolines resides here with a few Spanish officers and officials. There are about a dozen European traders, mostly Germans.

Yap has beautiful scenery; the groves of bamboo, croton, cocoanut and areca palms are very fine indeed. Huge green and yellow tree-lizards, called *Galúf*, are found in the bush, and the nights are brilliant with fireflies glittering in and out of the woods like showers of golden



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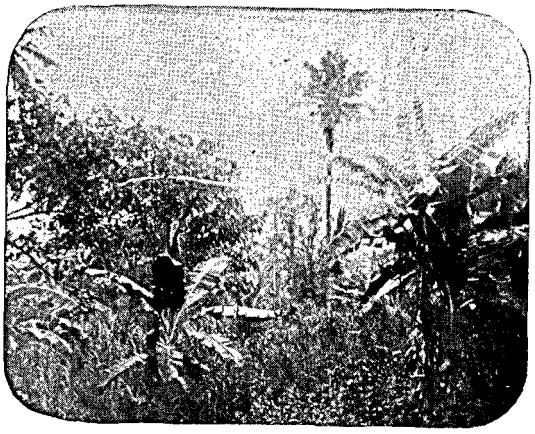

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sparks. There are very few birds, however, very few cattle, and no horses on the island.

The Uluthi or Mackenzie group lies a little to the northward of Yap. Mokmok or Arrowroot island is the chief port and trading place, with a great trade in copra. The natives have from ancient times been subject to Yap, and they come down every February to pay their tribute. They are peaceful and law-abiding, a great contrast to some of the people farther to the eastward. The next island of importance is Uleai. Raur is the trading depôt of this group, exporting great quantities of copra, pearl-shell, and bêche-de-mer. The language contains many traces of later Malayan, probably derived from trading vessels from Java and piratical praus from Borneo and the Sulus. All the central Caroline islanders have very similar traditions, customs, and language. In olden days they were great navigators, guiding their way fearlessly by a most accurate knowledge of the stars and ocean currents. When the Spaniards conquered the Mariannes about three hundred years ago, a great number of the Chamorro or natives of the soil fled to Uleai and Lamotrek to avoid forced conversion and slavery. I will give an instance of the great naval enterprise about the beginning of this century of the natives in this part of the Carolines. The Uleai folk and their neighbours used regularly to assemble at Lamotrek every February with eighteen or twenty great canoes. From thence they sailed to Guam, a distance of some five hundred miles, where they would stay until April or May and then return, fearing the south-west monsoon.

The two next Caroline groups, Hall and Enderby, are only to be visited with great precaution. The islands Pulo-Wat and Pulo-Suk are nothing better than pirate strongholds. It would be well for an English or American man-of-war to visit here, and warn the local chiefs against cutting off peaceful trading vessels in their lagoon. They have no respect at all for the red and yellow flag, for the Spanish have taken little or no notice of several murders committed here of late years. The next group is called Ruk, from the name of the highest basaltic island in the chain. It is also called Hogolu. The group consists of about seventy islands of basalt and coral lying in the middle of a lagoon about 140 miles round. There is a fine depth of water and good anchorage for vessels of large draft. There is a great annual output of copra, mostly carried off to Europe in German or Norwegian barques. Pearl-shell, turtle-shell, and bêche-de-mer are very abundant. Here they make an orange-coloured cosmetic from the grated root of the wild ginger, which they make up into little cones which are readily exchanged all over the Caroline group. There are thirty Japanese traders in Hogolu lagoon, and a Hamburg trading firm sends many vessels every year to fill up with copra. Figures are sometimes better than photographs, so for those interested in statistics I will say that the annual export of copra from the Caroline group averages four million pounds weight, of which Yap and Hogolu between them yield more than half. Hogolu has a population of about 10,000, composed of two distinct races. The hill tribes are dark in colour and the people on the coast light reddish-brown. There is generally some small civil war on hand, and the national game of head-

hunting has interfered a great deal with business, for the Spanish let the islanders do just as they like. The natives of Ruk and of the neighbouring group of the Mortlocks have a curious custom, observed also in the Visayas of the southern Philippines, among the ancient Incas of Peru, and the Polynesians of Easter island, of piercing the lower lobe of the ear, loading it with heavy ornaments and causing it to hang downwards to an enormous size. The Mortlocks consist of three groups, Lukunor, Satoan, and Etal, containing in all ninety-eight islands. The population is about 2000. The Germans take great pains to develop the copra industry here. Of great interest to philologists is the account of a pure Polynesian dialect upon two little island groups named Kap-en-Mailang and Nukuoro. These lie to the south-east of the Mortlocks. The language is an antique form, combining the phonesis of the Samoan and the Maori, spoken about three thousand miles away down in the South Pacific. I collected about 500 words of the Nukuoro dialect, and shall be very happy after the lecture to answer any questions put to me by any one specially interested in this subject.

The island of Ponape occupies some 340 square miles. It is surrounded by an extensive reef, shutting in a wide lagoon studded with many small islands. The interior is occupied by hill-ranges running up to some 3000 feet. The face of the land is seamed by deep valleys and ravines worn by the rivers in their seaward course down through the belt of mangroves and cocoanut-palms that girdle the low-lands like a great green ribbon. The population of the island is about 5000, most of them living on the coast, for the natives have a superstitious dread of the densely wooded interior. As you will see, the island is divided up into five tribal districts, each under hereditary chiefs. The Metalanim tribe along the east coast is hostile to white men; the other tribes are generally friendly. On Ascension Bay in the north lies the little Spanish colony of Santiago, since destroyed in the rising of last October. The principal harbours are four in number. At Mutok, at the mouth of the Kiti river on the south coast, wood and water are easily obtained, provisions are cheap, and the natives honest and well disposed. About fifteen miles up to the westward is Ronkiti harbour, where a powerful district chief, Henry Nanapei, keeps his people well up to the mark. There are plenty of pigs and fowls, and vegetable and tropical fruits may easily be obtained by ships calling at the two western har-bours. On the other hand, vessels should give a wide berth to the two eastern harbours of Metalanim and Ponatik. The water-supply here is poor, provisions ridiculously dear, and the natives of the district notorious rogues and thieves. A little to the south of Metalanim harbour are the famous ruins. In 1890 the Spaniards lost a great number of lives in trying to capture the stockade of Ketam on the river at the head of the bay. Seeing what good results have followed on the west coast from the interest taken by the district chiefs in cultivation, it would seem a good and useful measure to distribute by Government grant packages of useful seeds to the more enlightened chiefs of the tribes. The chief products of Ponape are copra, bêche-de-mer, and ivory nuts, the last the fruit of the sago-palm, which grows some seventy feet in height. The

solid kernels are sent to Germany and made into buttons. The varnish nut is also found, which the Malayan races have known and used for many hundred years. The forests inland and salt marshes below are full of timber trees and wood useful for ornamental work. There are plenty of pigs and dogs, some of the latter tailless, and of an ugly, tawny tinge, much esteemed for food by the folk of Metalanim, greatly to the derision of their mirthful neighbours in the south-west. At Mutok there are goats, and in the Ronkiti valley Nanapei keeps some cattle. The rivers are full of fish like whitebait, and the pools swarm with large freshwater prawns. There are eels of a gigantic size, greatly dreaded by the natives, who will not eat their flesh. Small scorpions are found, and a centipede of which the natives have a holy horror. No frogs or snakes have yet been discovered. There are several sea snakes and sea eels, some with very beautiful rings, stripes, and markings. The sea is full of all manner of quaint, bizarre, and gorgeous forms of marine life. There are many vegetable treasures in the bush possessing valuable medicinal properties. These the old people know, but will not point them out to strangers. Nevertheless, I managed to note some curious facts; but it was very slow work. The pine-apple, mango, sugar-cane, and several sorts of banana and plantain, as well as yams and taro, grow abundantly. Breadfruit grows also in great luxuriance, especially on the upper coast.

Farther east from Ponape are the Mokil (or Duperrey), the Pingelap (or M'Caskill), and the Kusaie groups, the easternmost outpost of the Spanish dominions. In conclusion, I may express my opinion that England may one day have a great deal to do with the islands Kusaie and Ponape, the latter of which really deserves the name of the garden of Micronesia. I may be pardoned for saying that our Government at home has of late years shown itself somewhat indifferent to events in the South Seas. The French and the Germans are pushing their interests in Pacific waters, whilst we stand still. Even the Norwegians are busy there, and we look tamely on and do nothing. Let us wake from this strange torpor like men of business and try what we can do. Surely where French, Germans, and Norwegians can make money, we can make money too!

Now I will try and give you some idea of the beauties of the island of Ponape. Ponape is very rich in landscape effects. In the season of the rains, from the mountain ranges in her centre run down seaward many threads of hill water, which you may see sparkling and flashing far away up on the sides of grim black precipices lowering down upon the lowlands. But Nature is not all bare and rugged here. She has clothed the hill-slopes with a multitude of hanging woods, a perfect labyrinth of climbing fern and creeper barring the way to the untrodden silences within, domed by the shadow of mighty forest trees, waving overhead in the fresh and mighty breath of the trade wind, whilst from below comes up for ever the ceaseless boom of the unsleeping breakers. Through the green underwoods leap the mountain becks, twinkling and dimpling into shallow pools, lively with the silvery arrows of darting fish. There the king-fisher sees reflected for a moment his breast of buff and azure, and

is gone swifter than arrow into the blue of which he seems himself a bit. A waft, a delicate exhalation of fragrance, from the pandanus flower comes down upon the light breezes, sweet as a field of beans in blossom, through the mellow silence, as though some old god of the forest were breathing down a benediction upon the weary sons of men.

The lemon Hibiscus below weaves her tangle of leaf and root-spray, scattering earthwards her starry yellow blossoms with their centres of rich velvet-brown. Shoreward stretches the green ribbon of mangroves and timber trees, masking the salt marshes fed by the tons of alluvium borne down year after year by the mountain streams. Along the sand-spits stretches the belt of cocoanut-palms, their roots at high tide bathed in the rich salt water. Below, the clustering tendrils and the lilac and purple bells of a convolvulus mark the limit of the tidal rise.

To dimly show the beauties of forest, sky, air, and sunlit sea mere words are tedious and ineffectual. They hardly serve even to give a glimpse of nature in her happiest moods. Artists who wish to see what nature can do must quit this island of ours, of cloud, mist, and shadow, and view Nature's clear-cut handiwork in the far-off Tropic seas.

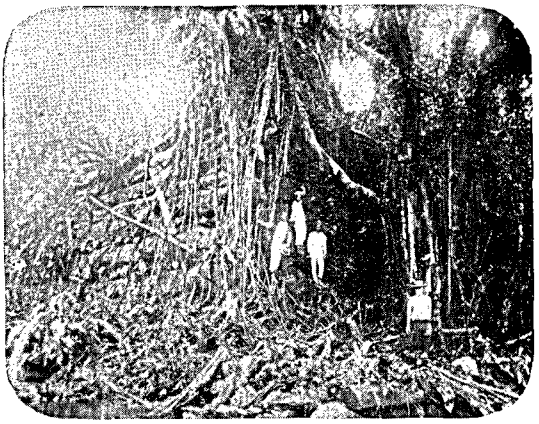
Bêche-de-Mer Fisheries on Ponape.

The bêche-de-mer is known to naturalists as the *Holothuria*. It very much resembles one of our large garden slugs, but is much longer and broader. These creatures are found in great numbers on the outer reef and upon the detached stacks of coral rising up near the surface of the lagoon. Others again are found in the reef pools, and others on the sandflats, or amongst the roots of the mangroves at the edge of the salt marshes. There are many varieties, but all are not of equal value. The kinds mostly valued for exportation are the *Shoe-Fish*, a thick, broad, grey species; the *Tiger-Fish*, which is olive green, with bright orange spots; and the *Teat-Fish*, which is black or greyish brown, and covered all over with odd little knobs and lumps. A fourth species, rather long, and of a dark red colour, is also used for curing.

The process of curing is as follows:—The sea-slugs are taken ashore, cut open, and cleaned. Then they are put into a huge iron pot and boiled for an hour or two. Then they are laid upon a framework of reed grass or fine cane. This is set up in the drying shed in the current of a continuous column of smoke coming up from a fire of drift-wood below, which is kept smouldering away both night and day. When thoroughly cured, they look just like lumps of leather. They are then put up into sacks, and shipped off to the markets of China and Japan. Prepared in a certain way, they form the basis of a splendid soup, much relished alike by Asiatic and European epicures in the East. It is equal to the finest turtle soup.

The Island City of Nan-Matal.

These ruins lie a little south of the entrance to Middle Harbour on the east coast, consisting of some sixty walled islets of rectangular form



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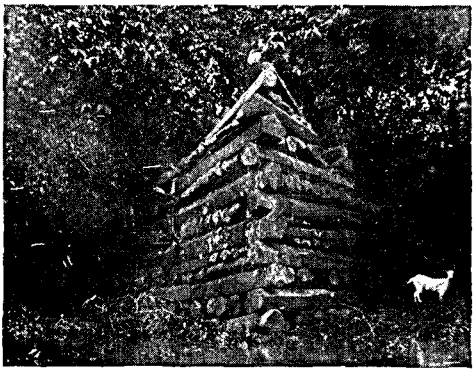

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built up in the waters of a shallow lagoon. A number of canals, greatly choked with salt-water brush, intersect this Micronesian Venice. Hence its name, *Nan-Matal*, the place of the *matal* or waterways. An immensely solid double breakwater, some three miles in length, shuts out the deep waters of the outer lagoon. Upon this barrier in stormy weather beat tremendously heavy breakers. At these times the scene is wonderfully wild and grand. The walled islets and great breakwater are alike built up of massive and weighty blocks and prisms of black basalt. The enormous quantity of materials used by these early builders must weigh many thousands of tons. The stones were all brought down in rafts from the glens below the great cliffs of Chokach and U, and in the north of the main island, where the columnar basalt formation is clearly seen on the face of the precipices. Loosened by the tropical rains, these great natural pillars toppled down into the valleys, where the builders found them lying. No marks of iron tools were found on these mighty masses, which the builders have piled alternately lengthways and crossways one upon another, like the trunks of trees, or like the bits of timber used in building a modern log fence. Masons, I think, call the construction "*headers and stretchers.*" Farmers would call it "*chock and log.*"

A little below Uchentau, our first camping-place, is Nan Tauach, the "*Island of the Lofty Walls*," the most remarkable of the Metalanim ruins. The great outer walls form a parallelogram measuring 115 feet by 85 feet. Their average thickness is 15 feet, and in height they vary from 20 to 40 feet. Within is a second similar parallelogram of wall, enclosing a couple of ancient vaults roofed in with huge basalt columns. There we made some very successful excavations, bringing to light a number of ancient shell-axes and ornaments and pearl-shell shanks of native fish-hooks. All the time the king of Metalanim fancied we were digging for hoards of buried gold and silver, and kept sending over for his share. The precinct was thickly overgrown with all kinds of tropical shrubs and creepers. In many instances cocoanut-palms, breadfruit-trees, and huge banyans, or Indian fig-trees, had sprung up in the inner court-yard. The walls themselves were covered very thickly with masses of fern and climbing vines, which we had great difficulty in clearing away in order to obtain satisfactory photographs of the stonework. In the middle of the inner courtyard was a fine Ixora-tree, a waterfall of scarlet blossom, with which I would not allow my workmen to interfere.

ILLUSTRATIONS.

No. 1.—Nan-Aua, the nephew of Man-Chila, the Rocha, or Rajah, of the Kiti tribe, SW. coast of Ponape.

No. 2.—Wild bananas and sago palm in the Ronkiti valley, SW. coast of Ponape.

No. 3.—Principal gateway to the walled island of Nan-Tauach in the island city of Nan-Matal, Metalanim district, E. coast of Ponape.

No. 4.—Island of Uchentau-Nan-Matal, showing canal below.

No. 5.—SE. angle of great outer wall of Nan-Tauach, with officers of the Spanish cruiser *Quiros*. In the background an enormous *Aio* or banyan-tree firmly rooted in the stonework.

No. 6.—The haunted island of Pan-Katara to the south of the ruins of Nan-Tauach, partially cleared of jungle.

No. 7.—The brother of Paul, the Ichipan, or king, of Metalanim, holding in his hand a carved dancing-paddle of hibiscus, and wearing a *tur* or belt of banana fibre, on which are strung rows of rectangular shell ornaments, pink and white, with a minute heading made of tiny circles of shell.

No. 8.—Three girls from the Paliker district on the NW. coast.

OLKHON AND THE BURIATS.[1]

THE old Olkhon division, now forming the Kutulika and Elantsa departments of the Verkholensk province of the Irkutsk Government, lies at the foot of the north-eastern prolongation of the Saian range, on the so-called Coast range, and includes the island of Olkhon in Lake Baikal. This island, situated in the north-western part of the lake, lies approximately between 52° 58′ and 53° 55′ N. lat., and covers an area of about 290 square miles. Buriat lands lie also on the mainland, extending to their greatest length along the shore of the lake for a distance of more than 130 miles. The central point of this territory is the Olkhon Gate, between the south-western extremity of the island and the mainland, in long. 124° 24′ E. On the north the Kutulika district borders on the lands of the Tunguz nomads, on the west on the domains of the Manzurskaia commune. On the south the lands of the Elantsa Buriats dovetail into those of the Manzurskaia settlers and border on the domain of the Buriats of the Alaguëf family; on the east they are washed by the waters of Lake Baikal.

The surface is covered with mountains running in all directions, and valleys through which flow small streams and brooks. The inhabitants are settled on the banks of Lake Baikal and the sound called the Maloie More and in the valleys, particularly those watered by brooks or springs. A small rainfall, a comparatively low mean summer temperature, consequent on the cooling effect of a large sheet of water, strong winds raging most fiercely when Baikal is not covered with ice, are the characteristics of the climate.

Of the elevations of the country the most important are the north-western mountains of the Baikal valley—the Baikal range of former geographers—consisting of two ranges, the Coast and the Onotski, and the offshoot of the Coast range forming the Olkhon and other smaller islands. The Coast range is a massive chain of broad flat mountains, rising to a height of more than 4000 feet, and skirting almost the whole length of the shore. It forms the watershed between the Angara and Lena basins on the one side and that of Lake Baikal on the other. On the latter side are the rivers Goloustnaia, Great Buguldeik, Anga, and Sarma, of which the last two traverse the Olkhon district. A small part

[1] Brief notes from *Olkhon*, by P. V. Kulakof. *Zapiski* of the Imp. Russian Geogr. Soc. (Statistical Branch), Tom. viii. No. 1.