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South of the mountains, not far off, is Tyrkland. There Odin owned a great deal of land."

The energy of the Norsemen was for centuries unbounded. We find them gradually conquering the littoral lands westward of their own. We hear from Eginhard, and other Frankish records, that they considered Frisia their own. Their maritime expeditions or colonies extended to Britain, Ireland, the Orkneys, and the Farøe Islands, to Iceland, to Germany, Belgium, all over the present France, to Portugal and Spain, to Africa, to all the countries of the Mediterranean, to the Black Sea; their vessels ascended the large rivers of Russia; they sailed from the Gulf of Finland to the Black Sea, and even reached the Caspian. In their days Novgrad (Novgorod) was the seat of a great fair, and there they went with their ships. In a word, they went wherever their ships could find an entrance by sea: they conquered their foes and settled in the country. The blue eyes they have left behind them tell the tale. The broad Atlantic was not too wide for them—they sailed even across to Vinland, now called America. The finest colony they founded was Britain: there they transplanted their language, their customs, their laws, and their energy, which has not diminished: for their descendants are now, as they were then, the most daring, the most energetic of the people that go to far-off lands. In their country you find beautiful objects or coins of almost every land with which they made war or traded. I have given in *The Viking Age* the type of many of these, and I could have given a great many more.

RECENT EXPLORATIONS IN PERU AND BOLIVIA.

(*With a Sketch Map.*)

BY H. GUILLAUME, F.R.G.S.,

Consul-General of Peru at Southampton.

THE vast territories which now form the northern part of the State of Bolivia are still but imperfectly known, and many have not yet been visited by civilised men. The first recorded expedition to this country was undertaken by the Inca Yupanqui, for the purpose of conquering the Mojos, when he carried down the Madre de Dios in balsas 10,000 Indians, of whom scarcely 1000 reached the coveted land, the rest having succumbed to disease and wounds. Pedro de Candia was the next to invade the country, having received 300 men from Hernando Pizarro, who were decimated. The third adventurer, Don Diego Aleman, was taken prisoner by the Indians, and became their general. Later on, Juan Alvarez Maldonado, a native of Cuzco, set forth in quest of the fabled El Dorado with 100 horses and mules and 250 soldiers, all of whom save three were killed by the Chunches. The last military expedition, in 1873, was led by Col. D. B. Latorre, Prefect of Cuzco, who was killed by the Sirineyris Indians above the confluence of the Inambari with the Madre de Dios.

This region is clothed with exuberant vegetation, and is drained by many large rivers, all flowing to the mighty Amazon, but at present no

satisfactory channel has been opened by which its products may find an outlet to the Atlantic. It was proposed to form a continuous line of communication with the Amazon by constructing a railway to connect the river Mamoré with the Lower Madeira, the upper course of this latter river being obstructed by a long series of rapids and cataracts; but the scheme was abandoned in consequence of the enormous engineering difficulties to be contended with. Accordingly, Col. Antonio R. P. Labré, a Brazilian, and Padre Nicolas Armentia, a Bolivian, went forth in search of a more practicable route. Their investigations have added considerably to our knowledge of the interior of the vast continent of South America, and I propose in this paper to give a brief account of their expeditions, and the information they have collected.

It is interesting to note that Mr. Chandless visited this country in 1865, with the same objects as Col. Labré, but to the latter traveller was reserved the honour of being the first to cross the region lying between the Madre de Dios and the Purus. Col. Labré had already (between 1872 and 1885) made explorations on the river Ituxy, a tributary of the Purus, and had endeavoured to make his way overland to the Beni, but was stopped near the river Abuna by the density of the forests and the hostility of the Indians. He next resolved to take an overland journey from the Madre de Dios to the Acre or Aquiry, with which object he left San Antonio on the Madeira in May 1887, and, after a tedious journey up that river, reached Villa Bella at the confluence of the Beni. The expedition took no less than 34 days to cover this distance of 161 miles, for it had to pass nine formidable falls, where the canoes had to be unloaded and dragged overland on rollers; the portage at the Ribeirão Falls alone, a distance of only three miles, delayed them for eight days. The cost of transit of goods, owing to these obstructions, is from 35s. 6d. to 52s. 4d. per arroba of 25 lbs. From Villa Bella, Col. Labré continued his journey along the Beni, past the Esperança Fall, to the mouth of the river Orton, where Dr. Vaca Díez has an india-rubber station. Thence he proceeded to Ribeira Alta, and, ascending the Madre de Dios, reached Maravilla, the trading station of Señores Marcaca and Marcier, on August 9th. Here he commenced his overland journey with Araunas Indians as guides, and after passing the Thana, a tributary of the Orton, and Capa, a village near the confluence of this river with the Manuripy, crossed the Abuna or Caramanu (Cara, Caoutchouc, and Manu, River) on the 24th. Six days later he had the satisfaction of reaching Flor do Ouro on the banks of the Acre or Aquiry, the settlement of Señor Manl. Joaquim, by whom he was warmly welcomed. The route between Maravilla and Flor do Ouro, followed by Col. Labré, is 115 miles in length, but by making a direct road the distance would be reduced to 92 miles. The construction of a railway would be attended by no difficulties. Col. Labré suggests that a short road, 37 miles long, should be made from Correnteza on the Beni to Guajara-mirim on the Guapore, to connect the navigable portions of these rivers and open up communication with the Matto Grosso. He also recommends that a road be constructed from Labrea on the Purus to Correnteza, with a branch to Hamayta or San Antonio. The left bank of the Madeira affords greater facilities for the construction of a railway than the right.

The former missionary journeys of Padre Armentia among the Araunas and Pacaguaras had led to such satisfactory results that the Bolivian Government commissioned him to make another expedition. Leaving La Paz on the 29th of May, he reached Tumupasa, on the Beni, on the 18th of the following month, where he waited until, on September 18th, he had collected a crew of eight men, with whom he started in a canoe from San Buenaventura. Though the canoe drew only three feet of water, it grounded several times, owing to the difficulty of finding the main channel of the river. The descent of the river as far as the mouth of the Madidi, where its volume and the speed of its current increase considerably, occupied thirteen and a half days, and from the Madidi to the Madre de Dios six days. Padre Armentia then commenced the ascent of the latter river, on October 16th, and followed it until November 14th, nearly to the thirteenth parallel of S. lat. He visited the Araunas Indians, and was well received by them. In 1883 there was no trade along the river, and the Indians were unprovided with hatchets, knives, and tools of modern design; but now a brisk traffic in india-rubber has sprung up, and the Indians obtain these and other articles from the factories established along the banks.

The Padre now determined to make an overland journey, in spite of the great difficulty of transporting baggage, in which labour he counted on obtaining the services of the Huamapu, Mara, Buda, and Odarry Indians. He reached Cavinass by the Madre de Dios and Beni in eighteen days, arriving on May 2d. On June 12th he returned to the Madre de Dios with four youths, and, accompanied by Antonio Gil and Don Antenor Vasquez, who were desirous to ascertain whether the river which they had discovered the previous November was the Acre, they ascended the Madre de Dios for nine days to the Nuanua, where they left their boats and, after a tedious journey of fifteen hours, came to a river, which they were convinced was no other than the Orton. The distance in a straight line is probably only 27 to 30 miles. Returning to the Madre de Dios, Padre Armentia, still accompanied by Senores Gil and Vasquez, continued the ascent of the river until he entered the territory of the Araunas, where he intended to found a mission. Here he found the wretched survivors of five tribes, which had been almost exterminated by scarlatina. Three of them were attacked by a loathsome disease resembling elephantiasis. The Padre's companions were overcome by fatigue, and returned home; but he himself remained until the following January, and would have endeavoured to reach the Acre, but the heavy rains and floods forced him to return to La Paz.

Below San Buenaventura the Beni runs through a plain about 790 feet above the level of the sea, which skirts the outlying hills of the sierra. The soil through which it flows being composed of alternate layers of sand and clay, frequent changes occur in the bed of the river, especially in its upper course above the mouth of the Madidi. Owing to the loose character of the soil the banks recede to a considerable distance—in some places to as much as 540 yards apart—whereby navigation is rendered difficult, particularly during the

dry season from August to November, when the deep channel is not easily recognisable. As the banks are also low, inundations are of common occurrence, so much so that the roads from Reyes to San Buenaventura and Port Salinas are often impassable the whole year through, being covered with water as high as a horse's chest; in the years 1885 and 1886 it rose as high as $6\frac{1}{2}$ feet. Here and there in the river's bed lie banks which are never covered by water, and on which all kinds of animals take refuge. After receiving the waters of the Madre de Dios, the Beni becomes a majestic stream, and is navigable without interruption down to the Esperanza Falls.

The Madre de Dios has its sources in the Peruvian province of Carabaya, and is formed by the union of the rivers Tono, Piñipini, Cosñipata, Pilcopata, Marcopata, etc. It is remarkable that for 280 miles above its confluence with the Beni it receives no important tributary. Only one small stream enters it on the right bank, the Manuripy, which flows from the neighbourhood of the Madidi, and is only 55 yards wide at the mouth. Padre Armentia believes that the Madre de Dios has a navigable course of 400 miles. While the Beni has a fall of 9840 feet in a course of 850 miles from La Paz to the Mamoré, where its height above the sea does not exceed 490 feet, the Madre de Dios has a fall as great, or perhaps greater, during a course of not more than 500 miles. As the fall in the 300 miles above its junction with the Beni does not exceed 260 feet, the greatest change of level must take place in the upper course of 200 miles, where numerous banks of shingle render navigation difficult, and the waters rise over 30 feet in time of flood. The tributaries, the Genechiquia and Nuanua, are insignificant streams, only sixteen yards across and much encumbered with fallen trunks.

Between Port Maru and Chumu, on the Madre de Dios and the river Manurini, an affluent of the Orton, lies high land five to six leagues in extent and watered by clear-running streams. Between the Genechiquia and the Orton the land lies low for the first two leagues and is subject to inundations, but for the remaining seven or eight leagues it is more elevated.

The Orton, called also the Tahuamanu and Datimanu, or Turtle River, has not yet been explored to its source, which probably lies between 11° and $12^{\circ} 30'$ S. lat. and at about $70^{\circ} 10'$ W. long. It runs in an exceedingly tortuous course parallel to the Madre de Dios at a distance of twenty to twenty-eight miles, and discharges itself into the Beni below the mouth of the Madre de Dios, in $10^{\circ} 48'$ S. lat. The surrounding country as far as fifteen days' journey from its mouth lies very low, and is therefore subject to floods. Its course, much obstructed by fallen trees, extends for a distance of about 385 miles. Its bed is narrow at the mouth, but widens out above to a breadth of from 65 to 130 yards. Not far from the mouth a bank extends across the river which, in the dry season, leaves a passage barely sufficient for canoes of small draught. The Manurini, one of the tributaries of the Orton, abounds in fish, and in August 1885 Padre Armentia's party caught one $1\frac{1}{2}$ yards long, the head of which was armed with a spear ten to twelve inches long and one inch thick at the base. This is the river which Señores

Gil and Vasquez supposed to be the Acre. At S. lat. $11^{\circ} 36'$ they found the river 110 yards wide and 40 feet deep, and discovered two affluents on the northern bank. Its banks are clothed with extensive forests of india-rubber.

The Abuna, called by the natives Uaicomanu, discharges itself into the Madeira near the Araras Falls. It receives on its right bank the Tsipamanu or river of the Marayahu palm, a tree which grows there in great quantities. The Abuna contains a larger volume of water than the Orton. Falls impede its course near the mouth. Its banks are clothed with india-rubber trees.

The Pacaguaras, named also the Chacobos, were formerly much more numerous. They dwell between the Beni and the Madre de Dios, keeping at a distance of three leagues from the latter river, for the low ground on its banks is rendered uninhabitable by insects. There are also one or two tribes of these Indians on the Genesuaya and Ivon, tributaries of the Beni, and three families dwell on the Orton. Considerable numbers also people both banks of the Madeira, Mamoré, and Abuna, and probably the Hypurinas on the Acre and the Purus belong to the same race. The men dress in long purple robes, but the women go about naked. The lower lip and nose are pierced, and in the holes are placed sticks as thick as a penholder, ornamented at both ends with feathers. They hunt during the greater part of the year, but they also cultivate maize, plantains, yucca, pepper, and various kinds of sugar-cane. They carefully conceal from strangers their idols and religious rites, but it is known that they believe in a god called Papaguara, whom they represent by a tiger's head, a pig, or some other animal.

The Araunas and the Cavinass have the same dialect, religion, and customs. The principal group is now settled on the Orton, but they also dwell on the Abuna, and on both banks of the Madre de Dios above the mouth of the Genechiquia, which marks the boundary between them and the Pacaguaras. The Araunas bury their dead in their huts. They do not use canoes, but cross the rivers on rafts of bamboo. The epidemic of scarlatina already referred to carried off about one-third of this people, so that a large number of villages are deserted.

The Toromonas occupy the country between the Madre de Dios and the Madidi, extending from 12° to 13° S. lat. According to the Araunas, some of their tribes are fond of war and others peaceful. It is now believed that it was this people and not the Guarayos who attacked Isiamas and Cavinass in 1884. Their territory may be reached either by ascending the Madre de Dios for 240 miles, or by taking a north-westerly direction from Cavinass across the country.

The Guarayos dwell on the slopes of the mountains round the headwaters of the Madre de Dios and the Madidi, and on the adjacent plain. They are a terror to the Isiamenós and Cavinenós: indeed the Araunas use the word Guarayo as equivalent to "enemy," and also as a verb meaning "to kill." Little is known about this fierce people. They make canoes, 33 to 50 feet long and 15 to 28 inches wide, by burning out tree trunks to make them hollow. Their knives are made of the hard

chonta wood (*Bactris ciliata*). They wear long cloaks, called *masamahi*, on festive occasions; at other times they go about naked. Most of the work falls on the women. The Guarayos believe in a god named Baba-Buada, who they say is identical with the wind (*Utana*), and resides in the air towards the south. He is the creator of all things, and causes the earth to yield its produce, and therefore they hold feasts in his honour, one before seed-time and the other before harvest, at which they dance and sing day and night and drink unfermented *chicha*, a beverage made from the juice of the manioc reserved for those occasions. Drunkenness is unknown among them. Besides Baba-Buada the Guarayos recognise a number of inferior gods: Juti, Mara-Edutzi, gods of time, etc.

Among the trees may be mentioned the cedar, the *Palo Maria* (*Callophilum Braziliense*), the wood of which contains a large proportion of resin, and is used to make canoes; the *tajibo* and *iape*, tall trees used in building; the *acayaco*, or *paquio*, and the *estoraque*, large resinous trees, the hard wood of which is used in sugar-mills, and a species of walnut, the bark of which yields a staining fluid. Of palms there is a great variety, of which the *asahi* (*Euterpe edulis*) bears a fruit tasting like a chestnut. The *patava*, *sayal*, or *majo* (*Enocarpus Batava*), bears a fruit which contains a large quantity of excellent oil, and, eaten with sugar, is agreeable and nutritious. The fruit of the *matacu* and the *cusi* (*Attalea Humboldtiana* and *A. spectabilis*) is very oily, and is made use of by the Indians as a pomade. When dried, it is employed to coagulate india-rubber. Hats are made from the *jipijapa*, called also *bombonaje* (*Carludovica palmata*), and buttons from the ivory palm (*Phytelephas macrocarpa* and *P. microcarpa*). Sarsaparilla, ginger, coca, and vanilla grow also in this region. The *suñuyo* bears a soapy fruit used by the Indians for washing their hair. The *isiga* yields an aromatic resin, and the *quinguino* the balsam of Peru. The tamarind and various kinds of red pepper (*Capsicum annuum*, *frutescens* and *baccatum*), the *copaiva*, the *ceiba*, and other cotton-bearing trees, and the *caré* (a supposed antidote to serpents' bites) grow here. The root of the *yuquilla* mixed with human milk is applied to sore eyes, and the trunk of the *platanillo*, a variety of plantain, yields, when tapped, about a pint and a half of secreted rain-water. A poison is extracted from the root of the *siliman* to stupefy fish, and the *patillo* yields a saffron-coloured dye. The fruits and vegetables comprise bananas, pine-apples, chirimoyas (*Annona cherimolia*), sugar-cane, potatoes, tomatoes, etc.

The principal animals are the tapir, deer, the peccary, the black bear or bee-eater, the spotted cavy, which is very good eating, monkeys, etc. Parrots and birds of gay plumage abound, and also many varieties of partridge. About the waters flock *batos* and other kinds of geese, and kingfishers. The *tapacare*, a large bird armed with a spur on the wing-joint, haunts the lakes. The *leleleke* also has a similar weapon. There is a large variety of herons and of birds of prey.

The *toro* is a large fish with a grey back striped with white, and attains a length of 9 feet and a weight of 345 lbs. The *suche* is similar

in appearance, but has a larger head: it weighs about 100 lbs., and has a rich flavour. Eels and turtles are plentiful.

India-rubber is at present the chief commercial product of the Madre de Dios and the neighbouring rivers. This industry was commenced on the Madre de Dios in 1883, and on the Orton in 1885. Three thousand people are now engaged in collecting the sap and preparing it for exportation. A puncture is made in the trunk of the tree to a depth of one inch, and the sap is allowed to flow into a cup holding one-eighth to one-fourth of a litre. It is then coagulated by pouring it into shallow moulds, and smoking it with the oil of the nut mentioned above. Some trees yield twenty-four gallons a year, others only five—generally more the second year than the first. The collection has to be suspended from August to January, as the sap is not in proper condition during rainy weather.

The following meteorological observations were made by Padre Armentia on the Beni, Madre de Dios, Orton, and their tributaries, during the year 1885:—

1885.	Thermometer Mean.	Barometer Mean.	Wet and Stormy Days.
January,	80·2	29·25	10
February,	80·1	29·27	15
March,	78·6	29·31	19
April,	78·8	29·33	7
May,	75·0	29·29	7
June,	70·9	29·37	1
July,	74·5	29·30	1
August,	75·4	29·27	2
September,	79·2	29·28	7
October,	80·2	29·27	16
November,	80·2	29·32	16
December,	81·0	29·40	22

The storms come chiefly from the south-west. Padre Armentia also determined the latitude of certain points:—

Mouth of the Madre de Dios,	S. Lat. 10° 80'	Mouth of the Orton,	S. Lat. 10° 45'
„ „ Genechiquia,	11° 22'	„ „ Genesuaya,	11° 23'
„ „ Nuanua,	11° 32'	„ „ Jenejoya,	11° 44'
„ „ Manuripi,	11° 45'	„ „ Madidi,	12° 33'
The Vasquez Rapids,	12° 35'	Isiamas,	13° 32'
La Cruz,	12° 56'	Port Salinas de Reyes,	14° 17'
Carmen de Tahuamanu,	11° 36'	San Buenventura,	14° 26'

I will conclude this part of my paper in the words of the Padre. “All these rivers are navigable, but are cut off from the Atlantic by the falls of the Madeira. I look forward, however, to the day when, after roads have been made, these streams will become the busy highways of this region. What riches lie neglected on their banks! Valuable woods,

medicinal plants, aromatic barks and resins, textile plants—in a word, the most luxuriant, the most varied, and perhaps the richest vegetation on the globe. Here are vast tracts of land where all the necessities of life are found in abundance.”

Another part of Peru which would derive incalculable benefit from the roads proposed by Colonel Labré are the gold districts of Carabaya and Sandia. Cut off entirely from the remainder of the Puna department by snow-capped cordilleras, they have been little heard of since 1869, when Clements Markham visited them to collect specimens of the cinchona-tree. The first Spanish adventurers were stimulated by their thirst for gold to surmount the barriers which nature seemed to have interposed, and soon after the conquest some of Pizarro's followers opened a rich mine, which they called San Juan del Oro, and founded a town. In 1808 the Indians rebelled and massacred the Spaniards, and since then the mines have been worked in a very primitive fashion by Indians, who extract about 3250 oz. Av. annually. The mining industry is, however, capable of great development. Messrs. Rosell and Simpson, who surveyed these provinces, stated in a report published at Lima a short time ago that gold exists in these districts to an almost unlimited amount. Mr. Rosell found in picked samples of ore 106 oz., 347 oz., 662 oz., and in one taken at Ananea no less than 2576 oz., of gold per ton. These engineers estimate the quantity of auriferous earth in the district of Sandia alone at 14,415 millions of cubic yards, and the value of the gold it contains at £300,000,000 sterling. The mines are difficult of access, being situated on steep hills, and they are approached by foot-paths only, so that everything must be carried from or to them on men's backs. Considerable deposits of coal, copper, lead, marble, and jasper also exist in these districts. Sandia has an area of 4254 square miles, and a population of only 12,721. Carabaya is also very sparsely populated by some 8000 persons.

I must now refer to the travels of Señor Carlos Fry of Cuzco on the Ucayali and its tributary, the Urubamba. The latter river rises near Lake Titicaca and flows past Cuzco, the ancient capital of Peru, and the ruins of many other native cities. The terraces constructed on the slopes of its valley for the purposes of cultivation, the immense irrigation works, and the utilisation of the smallest strips of ground testify to the existence in former times of a dense and civilised population. Señor Fry's journey was undertaken for the purpose of selecting suitable landing-places on the navigable parts of the river, at which, by means of roads, the produce of the country might be collected for transport along the Amazon, and also to discover what districts were best adapted for colonisation. He left Rosalina in a canoe accompanied by three friends, and on October 30th reached Tonquini, where the river passes through a fissure in the hills resembling a gigantic portal. Here the rapids which impede the navigation of the upper course come to an end, and the lower Urubamba is navigable by steamers. The rapids render the journey down to Tonquini very dangerous. At the last of them Señor Fry's canoe was swamped, and he lost his instruments and clothes, so that he was obliged to adopt the Indian dress. The travellers passed the mouth of the

Lavero River, which descends from the gold district of Paucartambo, and a long range of hills containing coal. The journey to Tonquini occupied three days, the distance, owing to the windings of the river, being 120 miles, but from Rosalina to Tonquini as the crow flies is only 60 miles. On November 8th they left Tonquini, and on the 12th arrived at Providencia, which is situated at the point where the Tambo mingles its waters with those of the Urubamba to form the Ucayali. The country passed through during this journey of 260 miles was beautiful and luxuriant, with lofty hills and sparkling streams. Fish and game were abundant, and the climate was delightful. M. C. Wiener also styles it "one of the most beautiful regions of the world." The next noteworthy point was Unini, an important trading station from which Indian paths lead into the interior. It would be advisable to make roads on the same course so as to reach the capital with as few detours as possible. On the 14th they reached Pachitea, now a very important place containing many large commercial houses, to which large steamers run regularly, though seven or eight years ago hardly a hut was to be seen there. It was here, in 1866, that Lieutenants Tavera and West, of the Peruvian navy, were massacred and eaten by the Cachibos, but now these Indians have been civilised by trade and are as friendly as any other tribe. The remainder of the journey down the Ucayali was performed by steamer. Having passed the Pampas del Sacramento, an immense plain extending over 180,000 square miles and covered with primeval forest, the party arrived at Iquitos on January 20th. This town, the principal Peruvian port on the Amazon, which is here 35 fathoms deep, now contains over 8000 inhabitants, of whom five-sixths are half-castes and civilised Indians, and the remainder South Americans and Europeans, with a fair number of Chinese. There are several commercial houses, each running one or two steamers under the Brazilian flag. The value of the imports and exports amounts to 2,000,000 dollars. The chief article of export is india-rubber. The distance travelled by Señor Fry from Cuzco to Iquitos was about 1710 miles; 130 miles along bridle-paths, 610 in canoes, and 970 by steamer.

The first natives that Señor Fry met with were Campas, who are also called Thampas, Choseosos, Machigangas, and Antis. This race is high-principled and intelligent, and retains the mild and generous disposition of the ancient Peruvians. They dwell on the banks of the Urubamba, Apurimac, Ene, Tambo, in the great chain of the Pichis, and around the rivers which unite to form the Pachitea. The Campas living on the banks of the larger rivers are very friendly to the whites, and have been much changed by the civilising influence of trade, but those in remote places lead a very primitive life, subsisting on wild fruits, and look upon the accounts that reach them about white men as myths.

The Piros are a wandering tribe, occupying the basins of the Lower Urubamba and Upper Ucayali for a distance of 320 miles. They speak of tribes of their race living on a river to the east, with whom they communicate by means of the Camisia and other rivers: this must be the Purus. These Indians are tolerably civilised, are of an inquiring mind, and are

friendly to Europeans: many of them know Quechua and Spanish, and some speak Portuguese. They are skilful in weaving and house-building, and make good weapons and domestic utensils. As canoe-men, they are unrivalled; they often make voyages of 50 to 200 leagues merely for the sake of amusement. They imitate the whites in their manner of receiving visitors. At meals the men eat together, and are waited on by the women, who afterwards take their food apart. Polygamy is practised.

The small tribe of the Amahuacas or Ipitineres live on the right bank of the Ucayali, and some are to be found also on the Urubamba. They are at present in a savage state, wearing no clothes and dwelling on the branches of trees, but they appear eager to obtain articles of European manufacture. The india-rubber collectors who ascend the affluents of Ucayali have established friendly relations with these Indians, have instructed them in the method of collecting the caoutchouc, and given them the necessary implements.

The Conibos and Sipibos are very similar. Like the Piros, they are river Indians, and dwell on the banks of the Ucayali. They wear European clothing, use guns and foreign tools, drink imported liquors, speak a little Portuguese, and travel by steamer. They cannot therefore be called savages, but they still retain two barbarous customs: compressing the head of a new-born child with pieces of wood so as to give it a conical shape, and interring alive crying and fretful infants. Some writers attribute to this practice the rapid diminution in the numbers of this tribe, which is fast approaching extinction. They have arrows, javelins, etc., but their favourite weapon is the blow-pipe, which they use with admirable skill. Their principal raids are made against the Amahuacas, to kidnap their boys. They claim for their race an antiquity going back to the time when the sun and moon were "children." Señor Fry recognises a great similarity in their language and mode of singing to the Chinese: like that people, also, the Indians wear pigtaails. The language of the Conibos is difficult, particularly in the pronunciation. They use the same word to denote several different objects, and, on the other hand, have several ways of expressing the same idea. They are friendly and hospitable to the whites, and have never, like many other tribes, murdered any Europeans. They are simple and frank in their manners. When a Conibo visits a white man, he examines his clothes, pockets, and other belongings, and sits down at the table without waiting for an invitation. They are also very straightforward in speech, not hesitating to tell any one that he disgusts them or that he lies. They are good canoe-men, and weave hats similar to the Chinese hats from coarse strips of a kind of palm. The Conibos cannot count beyond five, the Campas beyond three, or the Piros beyond ten.

The marvellous fertility of this virgin soil produces crops with a minimum of labour, and is a guarantee for the future prosperity of the country. Rice yields two crops annually, the sugar-cane ripens every eight or nine months without being replanted, tobacco yields three crops of fine quality, and plantains, pine-apples, vanilla, and

yucca ripen at every season. Cotton, of a size unknown elsewhere, grows wild in great quantities; coffee and coco produce two excellent crops, and maize may be cut every three months. The most valuable product is india-rubber (*Ficus elastica* and *Siphonia elastica*), which grows in wide-spreading groves, and may be called the vegetable gold of this region. Cinnamon, camphor, balsams, chonta-wood, and many trees suitable for use in various branches of industry, are to be found here: also the ivory palm, the *bambonaje*, the *copaiva*, the bamboo, and other canes. The *huitoc* fruit (*Genipa oblongifolia*) contains more than 50 per cent. of tannic acid, and is used by the Indians for dyeing their bodies; it may prove useful for tanning. Indigo is also a native of this country. There is a large variety of medicinal plants. The cinchona-trees grow up on the slopes of the mountains, away from the rivers, so that the bark is not collected. The coca plant (*Erythroxylon coca*) yields a crop every two months. To these may be added the tamarind, *matico* (*Artanthe elongata*), *hurco* (*Mikania guaco*), *barbasco*, or bracelet-wood (*Jaquinia armillaris*), used to stupefy fish, sarsaparilla, and ipecacuanha. Among other fruits are the plantain (*Musa paradisiaca*), pine-apples, cashew-nut, (*Anacardium occidentale*), grapes, the *palta*, or alligator pear (*Persea gratissima*), oranges, citrons, lemons, etc. The chief vegetables and spices are potatoes, pepper, beans, arnotto, the papaw, and ground-nuts.

This country contains the animals found generally in South America, such as wild hogs, bears, the puma and other varieties of the feline species. In the rivers the manatee, or sea-cow, is caught, which yields eight to ten arrobas of oil used in making soap. The turtles weigh four to five arrobas: they deposit their eggs during the months of August, September, and October. The land-tortoise weighs about one arroba: its flesh is excellent. The *yacu mama* is a kind of boa. The fishes are innumerable.

Señor Fry proposes that three railways should be made to develop the resources of this country: namely, one from Mayniqui to Rosalina, and thence to Cuzco (195 miles), another from Acon, on the Ene, to Huanta and Ayacucho (90 miles), and a third from Unini to Tarma and on to Lima. There are no serious engineering difficulties to be overcome in the construction of these railways. At present goods have to be conveyed to the west coast on the backs of mules and men at the enormous cost of £40 to £80 a ton, according to the season and the nature of the goods. Only the most valuable, therefore, can be exported. Sometimes also a load is lost irretrievably by a mule falling into a ravine. Were these railways made, a new era of prosperity would commence for this country. Besides the vegetable treasures already referred to, the plateau of the eastern cordilleras would furnish alpaca, vicuña, and other wools, gold, silver, copper, diamonds, emeralds, and other precious stones.

The triangle formed by the Tambo and the Urubamba, which contains an area of over 20,000 square miles, is admirably adapted for colonisation. It is intersected by numerous rivers, of which many are navigable and afford means of direct communication with the Atlantic by the Ucayali and Amazon, and, on the completion of the railways, will be within easy reach of Cuzco and of the Pacific coast.

In conclusion, I may state that the Peruvian Government, aiming

solely at the development of the resources of their productive country, throws it open to the whole civilised world. I trust the day is not far distant when the self-sacrificing efforts of those intrepid pioneers of progress, Raimondi Labré, Fry, and others, will succeed in attracting to those lands, now sparsely populated by semi-civilised Indians, British labour and capital. The ever-increasing population of the British Isles renders it necessary to neglect no outlet which appears at all favourable, and I feel sure that, were the advantages which Peru offers fully known to the British people, they would eagerly avail themselves of them.

SIR W. MACGREGOR'S DISCOVERIES IN NEW GUINEA.

SIR W. MACGREGOR, having most successfully carried out the ascent of the principal summits of the Owen Stanley Range and the exploration of the surrounding country, has given a detailed account of the expedition in the *Annual Report on British New Guinea*, Sept. 4th 1888 to June 30th 1889. He heard that a river named the Vanapa (marked *Edith R.* in Mr. H. O. Forbes's map, *Scot. Geog. Mag.*, vol. iv. p. 414) entered the inlet known as Galley Reach, in Redscar Bay, and that probably it would be found to run down from the great mountain ranges of the interior. Accordingly, having at the time (April 1889) no vessel at his disposal but a whale-boat, and being, therefore, precluded from undertaking long sea excursions, he determined to devote some time to the ascent of this river.

"With this object in view," he writes, "I left Port Moresby on the 20th April in my boat manned with a native crew, accompanied by my staff, and proceeded along the coast to Manu-Manu [an island in Galley Reach], which was reached the following day. On the 22d we entered one of the mouths of the Vanapa River, which opens into Galley Reach on its eastern side, about five miles from Manu-Manu. This entrance to the river lies in a bend of the inlet where the coast is covered by mangrove swamps, and escapes observation unless one is searching expressly for it, which no doubt explains its being omitted altogether on many charts of this part of the country. We got some seven or eight miles up the river the first day, having the tidal water for about three or four miles; but beyond that point, in consequence of recent heavy thunderstorms inland, the river was swollen and muddy and the current against us strong. As far as the tide ascends the river mangrove swamps grow on the banks, and the *Nipa* palm in the river's edges; but beyond that the banks become ten or twelve feet high, and are clothed with *Ilimo* and other large trees, the soil being deep and rich, but whether liable to occasional flooding cannot at present be stated. On the 23d we continued our course up the river for about seven miles. During the afternoon we began to approach the first low hills in this river's course, and had to ascend two rapids, the first we had met. Below the rapids the river bottom contained many 'snags,' but not enough to impede the passage of the boat or even to make it dangerous going up against