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Discovery of Two New Rivers in British New Guinea

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PROCEEDINGS

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ROYAL GEOGRAPHICAL SOCIETY

AND MONTHLY RECORD OF GEOGRAPHY.

Discovery of two new rivers in British New Guinea.

By THEODORE F. BEVAN, F.R.G.S.

Map, p. 658.

THE accompanying map of less than six weeks' exploratory work in British New Guinea will, I trust, be found fairly full and self-explanatory. A private firm (Messrs. Burns, Philp, & Co.) lent their steamer *Victory* (of 90 tons register, 25 horse-power, 100 feet length and 9 feet draught) for the expedition, which was planned, organised, and (so far as related to the specialists) partly found by the leader. To the courtesy of the New South Wales Government we are indebted for the carefully prepared map* which accompanies this short and hurriedly written preliminary account.

The *Victory* left Thursday Island, Torres Straits, on the 17th March last, and entered the Aird river at Cape Blackwood two days later. At Attack Point a hostile body of sixty nude Papuans contested our entrance to the great river. These savages, after some hesitation, bore down upon us, alternately splashing the water into the air and beating time with their paddles against the sides of their canoes, also shooting volleys of arrows at us both before and after coming within range. This attack was decided in our favour, without any bloodshed, by a judicious use of the steam-whistle and a few shots fired wide and high. These harmless measures caused the natives to take as one man to the water, prior to re-embarking and paddling off crestfallen home. They were painted, decorated with feather head-dresses in addition to other ornaments, and wore white groin shells to partly conceal their nudity. They were above the middle height, of great muscular development, and of a dark bronze colour.

From Attack Point deep water (as shown by the figures representing reductions to low-water soundings) was carried in an easterly direction into a broad opening leading to Aird Hills on the one hand, and out into Deception Bay on the other. This estuary was, I believe, unnoticed by Captain Blackwood in 1845, who turned back from the Aird river, when

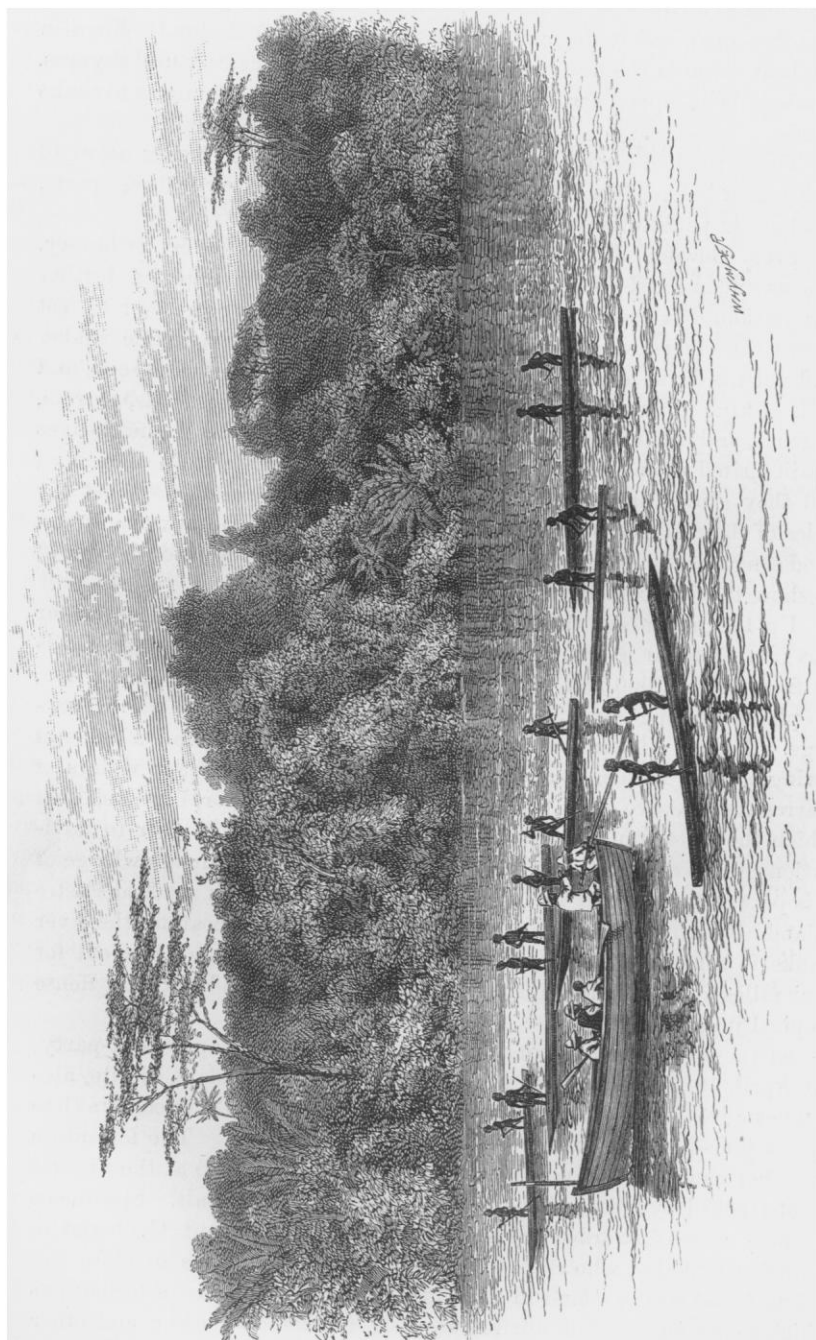
* This map is on a very large scale; the map we give is a reduction of it.—[Ed.]

distant about eight estimated miles south-westerly from Aird Hills, avowedly "owing to the strong body of enemies in his rear." These latter hills were placed by us in longitude $144^{\circ} 11'$, or ten miles west of their location by Blackwood.

From the coast to this point the country was of alluvial formation, intersected in all directions by a labyrinth of waterways. Aird Hills proved to be an isolated range of volcanic tuff resting upon basalt boulders at the water-level. To the north of Aird Hills a second small body of natives was encountered. They came down in their canoes, keeping close in to the river banks until about 400 yards distant, when they landed in the thick scrub, and returned with piles of green branches as a token of peace. By signs, words, and the exercise of patience they were coaxed first to the boat sent out to meet them, and finally alongside the steamer. Amongst them were a few women and children. Males and females possessed but little covering, and in some cases were quite naked. Of the middle height and a light bronze complexion, they reminded me of the Koitapuans of the south-east coast.

A river leading northward was followed up from this point for a distance of 10 miles, when the water shoaled, and a return had to be made to the southward of Aird Hills. Thence a channel was found into a broad stream coming down from a north-westerly direction, up which we proceeded, through swampy alluvial country, as far as Barnett Junction, where the river bifurcated and the tide ceased. This proved to be the head of the delta. From Barnett Junction the river wound round low hills for a distance of four miles, when, at a somewhat abrupt bend, two native houses on the summits of volcanic cones came into view. It was soon evident that the strange apparition of the steamer gliding into these fastnesses was visible from the shore, as the mellow sound of the conch-shell was heard warning the inhabitants of the scattered village of danger. Slowly the steamer approached, and when abreast of the village, and opposite a creek, some canoes full of natives were seen paddling off in abject terror. A mile above this village the river widened, and two important tributaries, coming in from the north-west and north-east, formed Bowden Junction in S. lat. $7^{\circ} 11'$, E. long. 144° .

Seeing that the steamer had stopped, the natives of Tumū (as the hill-village was called) approached in their canoes, but very warily. As they neared the steamer it was perceived that so pronounced were their friendly feelings that they had dressed their own persons with green boughs as well as their canoes. Then ensued a series of dumb motions on our part to express our good intentions, together with the use of words likely to be recognised by the natives. The next step was to bend a slip of turkey-red cloth, a piece of sharpened hoop-iron, and one or two trifles on to a wooden batten, and let it drift with the current down-stream. One native, bolder than the rest, paddled after this parcel and, after cautious inspection, appropriated it, and donned the



MR. BEVAN MAKING FRIENDS WITH THE TUMŪANS. (From a Photograph.)

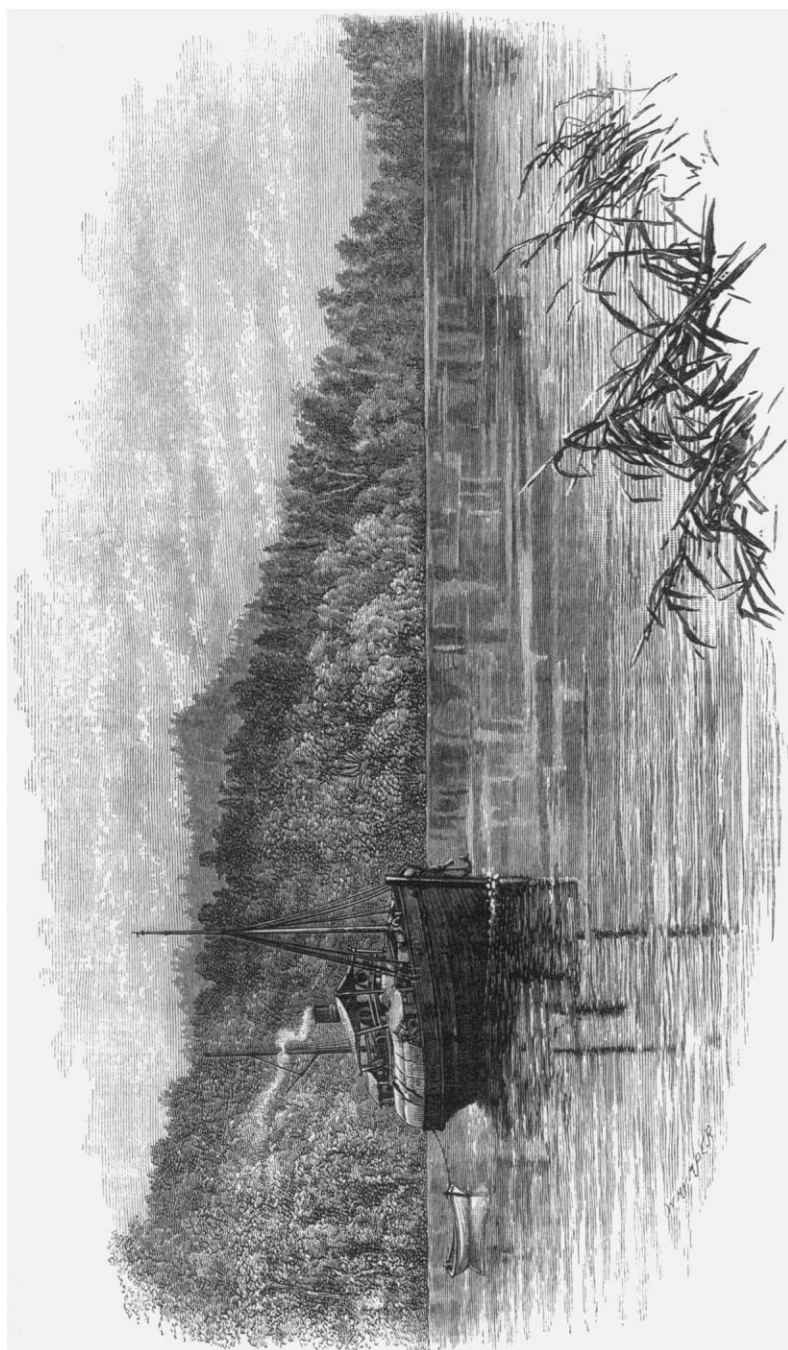
red cloth as a covering for his frizzly hair. By such means confidence was promoted, and taking with me two men, I drifted slowly down in the boat towards the natives, and after overcoming their natural shyness, obtained bone-tipped arrows in barter, and taught the Tumūans to shake hands.

This tribe had certainly never seen and possibly had never heard of white men before, Blackwood, the only previous explorer in these parts, not having penetrated within 30 miles of this place.

From Bowden Junction the Burns river, or north-west tributary, was ascended until a fall in the river-bed of two feet impeded further navigation. It was found on landing that the banks were 8 or 10 feet above the river-level, that the country was studded with fine timber and not too dense an undergrowth. Tracks of wild hogs were seen, and calls of king birds of Paradise and *Paradisea raggiana*, hornbills, parrots, pigeons, and other birds were heard. Up this river the Tumū natives again visited us and had to be attended to. When the shades of evening fell they glided off home, beating time with their paddles against the sides of their canoes, splashing the water high into the air, chanting a loud song, occasionally looking round and crying out "Narmo! Narmo!" to show that their intentions were friendly.

Up the north-east tributary, or Philp river, however, deep water was carried as far as Victory Junction, the river winding round hills of from 300 to 2000 feet in height, of cretaceous limestone formation, in places sloping precipitously and thickly wooded to the water's edge. A short distance above Victory Junction was found a mineral spring, similar in some respects to the sulphuretted hydrogen waters of Harrogate. Above this point, however, rocky bars or barriers, over which the water ran as through a sluice-gate, closed the river to navigation by the steamer. Thirteen miles were added to our knowledge of this part of the country by means of a boat-party, which reached Fastre Island after three days' hard rowing and warping the boat up the river banks, in some cases foot by foot at a time. Thence a track was cut for four miles along the lower spurs of a lofty range, and through dense tropical jungle.

At the alluvial island camping-place (marked, on map, "Boat-party, 1st April, 1887") pebbles of water-worn metamorphic slate, diorite, also magnetic iron sand yielding from every dish washed a few colours (less than a pin's-head in size) of scaly gold, were obtained. The formation on either bank of the river opposite to this island, as also at the highest point reached by means of the track cut, was of dense basalt. Specimens of these were forwarded to Mr. Wilkinson, Government Geologist of New South Wales, who reports as follows:—"The pebbles of slate and quartz found on the island in the Philp river are indicative of formations which sometimes contain auriferous reefs, as well as copper and other metalliferous lodes. These pebbles, though originally derived from



FURTHEST POINT REACHED ON JUBILEE RIVER. (*From a Photograph.*)

palæozoic rocks, may have been washed out of conglomerate beds such as occur in the cretaceous formation on the Strickland river; but from the occurrence of gold in the black sand which is found with them, it is more probable that both they and the gold have been brought down by the river from the primary formation forming the mountains, which may not be more than 20 or 30 miles distant. We may therefore anticipate mineral discoveries being made in these mountains, though not necessarily richer than are found in similar formations forming the ranges in the mining districts of Australia."

In April the wet season is not fairly over. The normal strength of the current on these ridges, combined with the freshets caused by the almost nightly rains, rendered further progress by means of the boat impracticable. The same cause also rendered any hope of getting to the primary rocks in the three weeks which remained of our allotted time, over ranges drenched by the monsoon and swarming with ravenous leeches, quite out of the question. The estimated position of Fastre Island was $6^{\circ} 39' S.$ lat., $144^{\circ} 11' E.$ long., being 80 miles direct from Cape Blackwood, or about 100 miles by the river course. At this point we were within 25 miles of the German boundary.

At 3.30 p.m., on April 3rd, a start was made with the whaleboat on the down-course and return journey. All were found to be well on board the *Victory*.

On the following day the steamer proceeded to return, and in the afternoon anchorage was come to opposite the friendly Tumū village, the inhabitants of which lustily shouted "Narmo," in token of the good feeling that existed between us. An exchange of visits was made; I went ashore in the dingy, and after my return the natives came on board the steamer. A vocabulary of a hundred words was, after some difficulty, obtained from the natives. Men, women, and children examined every niche and cranny open to their inspection on the vessel, and displayed amazement at what they saw. Afterwards another visit was paid to the shore, the boat being taken up a creek skirting the nearest volcanic cone on which rested the chief's house. The gardens of the villagers were soon reached, where sugar-cane, bananas, and tobacco were growing luxuriantly. Off the river bank, opposite to the village, were one or two interesting limestone caves thickly crusted with stalactites and stalagmites.

Next day, April 5th, the natives again came on board and examined everything, one being horrified at seeing salt-beef in a cask, and another terror-struck at seeing his own ugly reflection in a mirror. Several of them now began to exhibit thievish propensities. Finally, the natives when we landed on shore once more began repeating the word "Ootoo," and waving their arms downstream. They had apparently sufficiently satisfied their curiosity, and would be glad to say good-bye to the white men and their vessel. One very old and wrinkled man rubbed his nose

and pinched the tip of it, then pinched and rubbed the pit of his stomach. Another signified by signs the act of cutting off the head and arms, using the words "oorar," and "baddinar."

The mountain ranges to the north they called "Warharagee"; their own hill, houses, and the country to the west, "Tumū"; the country to the east, "Imugū"; and the land to the south, "Kubūee." A peculiarity of the Tumūans was the way in which the men wore their hair, shaving it off from above the forehead, but leaving a tuft on the crown tied with a topknot from behind, while a few matted locks hung down. No known Papuan dialect would have been of use at Tumū.

When leaving the Douglas river, a broad opening unnoticed by Blackwood, leading from Aird Hills out to sea through Deception Bay, was taken, but we first made a stay at the previously unknown village of Mōkō.

While the Tumūans were of average height and size, these coast people were of great stature and muscular development, besides being of a darker bronze colour. Like the other natives of this new district, the Mōkōans were shy and at first difficult of approach. Even when intercourse was had with them they remained suspicious and on the alert, while the slightest hasty action or even discordant sound was sufficient to scare them away.

Deep water was carried out of Deception Bay on 9th April, 1887, into the Gulf of Papua, as will be seen from the soundings on the map, and a visit was then paid to several villages on the coast as far, and including, Motu Motu, where despatches were left for Her Majesty's Special Commissioner for British New Guinea, Hon. John Douglas; so that should any mishap have befallen the expedition on the latter half of its exploratory work, the discovery of the Douglas and Philp rivers would not be lost to the world.

As will be seen by reference to Admiralty chart (Gulf of Papua, sheet 4), five river openings between Orokolo and Bald Head had been reported by natives to lead into one large river, to discover which was our next object. The mouth of each opening, however, proved to be blocked by a sand-bar, washed by heavy surf. The broad estuary bounded by Bald Head on the east and sheltered by a non-shifting sand-bank (seen by Blackwood in 1845) proved to be accessible to navigation, and the *Victory* anchored inside of Bald Head on the night of 14th April, 1887, and broke again on new ground. In a little neighbouring bight a village was discovered, partly hidden and sheltered by a grove of coconut trees. Canoes with natives paddled off, and though shy at first, they afterwards came near. The tribe was called Kīwa Pori. Over two hundred men appeared in thirty canoes. One of their signs was to hide their lowered heads in their hands and then to draw their hands down over cheeks, mouth, chin, neck, breast and abdomen. At dusk they peacefully dispersed; and next morning forty-nine canoes with more

than three hundred natives were counted. The men were of unusually fine stature, equalling those at Motu Motu. They were dark bronze in colour, and almost, some of them entirely, nude. Though with well-nourished and muscular frames, yet their retreating foreheads and heavy eyebrows gave them a sinister expression.

Ten miles from Bald Head in a northerly direction the land was found to traverse the horizon, and broad sheets of water coming in from west and east formed a junction. Taking the westerly opening and passing round the point, after proceeding for a distance of four miles a second (named Beveridge) junction was reached. At this point the river was nearly half a mile wide, and an extensive mud flat was found. Some very fair agricultural land was now passed, with light chocolate-coloured soil, and covered with scrub that could be cleared with ease, and would form a suitable field for the cultivation of rice, sugar-cane, and tobacco. Fresh-water springs were noticed flowing over the banks. Numerous very small deserted huts built on the ground and unsupported by the usual piles, were passed, and a number of crocodiles and flying foxes were seen. The country afterwards steamed through was alluvial swampy land, in which nipa and sago palms flourished amidst a thick scrub. The river subsequently narrowed to 60 yards, and at low tide the water was quite fresh. It was found necessary to anchor here, and some of the party getting into the whale-boat, rowed up the river, which continued to get narrower until it broke up into several deep-water creeks of only a few yards in width, and further navigation was closed. The highest point reached up this (the Stanhope) river was $7^{\circ} 14'$ S. lat. and $144^{\circ} 28'$ E. long., being 34 miles due north from Arai river on the coast, or 40 miles by river courses to Bald Head. Returning to Beveridge Junction the Penrose river was followed up for six miles, when it too shoaled, and a return had to be made to Macleay junction. Thence an easterly branch was explored in the whale-boat and found to lead into a larger river which sent off a subdivision down to the coast. This latter was presumably the Mawau river previously charted.

A few miles further, after passing a small grove of coco-nut trees indicating the proximity of natives, a canoe was almost run into at a sudden bend. The occupants, consisting of a few men, women, and children, set up a shrill cry and paddled off hastily. A few minutes later some twenty savages sprang up from behind bushes on the opposite bank, bows and arrows in hand, while simultaneously several canoes came down from ahead. Rowing back past the shore natives we then stopped, and waited for those on the water to approach, with whom after a natural delay some barter was done, and the foundations were laid for amicable intercourse. On the day following, the steamer was taken up to their village, which lined the river bank under groves of coco-nut and bread-fruit trees, and near gardens of banana and sugar-cane. The houses of this village, or Evorra (as we found it was called),

were supported on piles some six feet from the ground, and were of the hog-backed shape, open in front, with projecting peaks, and the usual verandah. From this tribe (in the Namai district) a vocabulary of one hundred words was obtained after some difficulty. The word for sun, *iperrî*, being given with a whisper, finger pointing upwards, but averted gaze. These Evorra natives, though only some 12 or 15 miles distant in a direct line from the coast, were not of so fine a physique as either the Kiwa Porians or Mokoans, probably owing to their river being less abundant in fish than the ocean. They also seemed to be of a somewhat lighter complexion, and to speak a different dialect. Carved and painted bark waist-belts tightly pinched the abdomens of the males, who also wore white groin shells and pearl-shell breastplates of crescent shape, while the younger men adorned their persons with the brilliant leaves of variegated crotons. Among novelties obtained at this village were flat masks of semi-oval shape, varying in length from one to eight feet. These were constructed of fibre of a sterculiaceous plant with a raised rim down the middle from top to bottom, and at one end a projection shaped like a nose with two eye-apertures alongside. The whole was decorated with an irregular semi-serpentine pattern in black and white, and the rims were edged with cane frilling. Human and cabalistic representations carved on small flat slabs of bark and palm frond were also new to my previous experience of Papuan ethnology. Specimens of both descriptions of these curios were hung up in front of the houses apparently as emblems.

Two miles from Evorra village a second junction was reached, where a river over two hundred yards broad, with a steady current of fresh water, came down and bifurcated, throwing off the side branch which we had steamed up, in addition to a river flowing southerly. Five miles above Llewellyn Junction a few natives were spoken, but from that on to the highest point reached no signs of human life presented themselves, save at different places (as marked on the map) groups of small and seemingly deserted huts, sometimes surrounded by gardens. These little domiciles consisted of one or two stakes and a roof thatched over with palm fronds, and were probably the temporary shelter of coast tribes paying occasional visits up the river to obtain sago and other like produce which abounded in the swampy country on the Stanhope, also in the deltaic portion of the larger rivers. In one deserted hut, exceeding the others in size, was found fixed up in front a "taboo" consisting of a painted mask resting on a large circular wisp of sago-palm fibre and rattan, with pendent streamers of the same fibrous material; while half-way down the floor of the hut were bones of fishes and small deer suspended from streamers.

Up to Bennett Junction the river pursued a remarkably tortuous course, and at that point widened to nearly half a mile. Five miles further, at Woodhouse Junction, the head of the delta of the large river

previously reported by the natives was reached. At an easterly bend about one mile north of Mount Samuel, where the stream expanded to nearly three-quarters of a mile for a short distance before entering the ridges, a magnificent view was obtained of hill and mountain scenery rising tier above tier in the clear morning air, over a foreground of reeds and *Pandanus* scrub. Above this bend the river narrowed to 400 yards, flowing between banks covered with bread-fruit trees. Further north the channel ran through gorges of volcanic rocks clothed with verdant foliage to the water's edge. Here the whirling eddies denoted the presence of sunken rocks underlying the swift current in the bed of the stream. Higher up again a rapid was shot with some difficulty, owing to the velocity of the water. Its discoloration was due in this case, as on the Philp river, to the amount of detritus in suspension brought down from the great mountains. Half a mile above this rapid it was deemed unsafe to proceed further in a vessel drawing nine feet of water. Estimated position, S. lat. $7^{\circ} 18'$, E. long. $144^{\circ} 59\frac{1}{2}'$.

Two miles were added, however, by means of the boat, and thence an uninterrupted view for a like stretch was obtained; but soundings became more and more irregular. There seemed some possibility, however, that beyond this tier of near ranges a valley stretched to the foot of mountains of great altitude over the German boundary. As the six weeks of our allotted time were nearly up, and representations were made to me of the risk of continuing, also that our coal would not suffice for further steaming, it became necessary to return seawards by means of the channels ascended, and consequently known. To have taken any of the untried channels in the delta would have been unsafe in view of the current astern, which might have carried the steamer high and dry on to any hidden shoal. The Gulf of Papua was again entered from Bald Head on 28th April, 1887.

It will appear from the map that as the result of thirty-four days' actual exploration two principal new rivers—namely, the Douglas (with its tributary the Philp) and the Queen's Jubilee—were discovered, and each was followed up for a distance of nearly 100 miles by river courses from the coast. The Aird river, discovered by Blackwood in 1845, proves to be only one of numerous subdivisions in the delta of the main stream. From Barnett Junction, the head of the delta of the Douglas river, 45 miles from the coast, Aird Hills are the solitary exception to the vast expanse of level alluvial land, clothed with jungle, which forms the delta. From Barnett Junction to the highest point reached, the country was scrubby, and of cretaceous limestone formation, giving place to a belt of basalt rocks, while the pebbles of metamorphic slate, diorite, also the magnetic iron sand containing auriferous indications found on the alluvial island in the Philp river, point to the primary rocks as forming the watershed of this river at a distance of probably not exceeding 20 to 30 miles, if so much, from the highest points reached. By the Stanhope

and Penrose rivers the expedition passed through low country similar to that in the deltaic portions of the larger rivers, and formed of fertile alluvium washed down from the main range. Igneous rocks again were found north of Woodhouse Junction, on the Queen's Jubilee river. Both rivers disembody themselves into the Gulf of Papua over an area respectively of probably 40 miles. Above the head of the deltas of the two larger rivers the scenery was found to be picturesque in the extreme. Hills of from a few hundred feet to ranges of one, two, and even three thousand feet, clothed with verdure, came down almost to the water's edge. There were, amongst other trees, cedars, oaks, eucalypti, myristica, fig-trees, acacias, pines, palms, and tree-ferns. Bamboos, ferns, and a varied flora adorned the river bank. Butterflies of gaudy hue and some birds of the brightest plumage fluttered in and out amongst the trees and shrubs. The water was placid, and in the deepest recesses of the gorge-like ranges, was sombre and cold.

On steaming slowly upwards the finely wooded ranges became higher, the river bends more abrupt, and the current swifter. On both rivers the country thus described was of a good useful class, quite uninhabited as far as could be perceived. It also possesses three great advantages—plenty of timber, deep water alongside, and a navigable channel for a deep-draughted vessel for a distance of nearly 100 miles from the coast. Vast areas of unclaimed and uninhabited land on all these new rivers offer the facilities required for the successful cultivation of rice, sugar-cane, and tobacco; or for the production of what are known in India as valuable crops in contradistinction to "dry crops." For the prosecution of these industries coolie labour would have to be imported. In their lower portion there was a tidal rise and fall of 12 to 14 feet; and the rule seemed to apply that the land was making on the convex side while the deepest channel and strongest current were found close in to the concave bank. Thus by studying the tides, and when the tide ceased, following the deepest channels, in addition to taking continuous soundings, no serious difficulties were met with. Though the steamer was several times aground, for hours at a time, as a rule in soft mud, either a freshet in the river, or the tidal rise near the coast (backing up the fresh water for one or two feet for great distances inland) came to our aid, and the vessel floated off without ever sustaining damage. One important feature in connection with the higher waters of the larger rivers was that owing to the almost daily scouring caused by the frequent nightly rains, mosquitoes and malaria were absent, and beyond the fact that one man had a relapse for a few hours of illness caught months previously in Western Australia, fever and ague were unknown.

The days were almost invariably bright, and the sky clear till noon when masses of cumuli appeared on the horizon. While among the ranges on both rivers the thunder at nights was frequently almost deafening and the forked lightning most vivid, both being usually the

precursors of torrential rain. The mean temperature at midday was 86° in the shade, falling as low as 72° at daybreak. During March and April there was occasionally a slight breeze off the land at night-time. The mornings in March frequently set in with a breeze from the north-west, veering round to south-west as the day advanced. At the end of April the south-east monsoon began to fume and bluster off the Queensland coast, causing a heavy swell to wash the opposite Papuan shores. By reference to the map it will be seen that the Gulf of Papua presents a lee shore to the whole force of the south-east monsoon. Making the entrances of these new rivers will therefore not be unattended by dangers to navigation, from May to September inclusive, until this part of the coast has been systematically surveyed by the Admiralty.

The map is based upon a careful compass survey, supported by a few astronomical observations taken as opportunity offered. It should, however, be regarded as a preliminary reconnaissance or flying survey, since it was compiled in thirty-four days, that being the aggregate period spent by the expedition in these new rivers. For the same reason, as also the circumstance of imperfect instruments, the altitude of the mountains and the great slope of the river-beds could not be obtained with any pretensions to absolute accuracy on this occasion. These and kindred observations, together with a register of rainfall, must make a leading feature of the next (and it is to be hoped more extended) expedition.

Hills and ranges varying from a few hundred to considerably over 2000 feet, clothed with verdure, came down almost to the water's edge on the Philp and Jubilee rivers, as previously mentioned, while the serrated forest-clad tops of mountains estimated to be over 6000 feet in altitude, were distant not more than 12 or 15 miles from the highest points reached. Behind these latter again rose blue mountain-peaks, rivalling in elevation Mounts Yule and Owen Stanley.

Fastre Island, on the Philp river, would appear to be not more than 25 miles distant from the German boundary, which comes even nearer to the highest point reached by us on the Jubilee river. It seems therefore probable that the natural boundary or water-parting between the river systems of the two territories may be found to exist a few miles to the north of the present line. In any case there is probably an impenetrable wall of mountains between the two possessions, with no likelihood of any large river on the German side having its source in close proximity to the head-waters of the Philp or Jubilee rivers, so that a compromise or adjustment should if necessary be readily effected between the two powers. This boundary question will, however, be one of the most important problems for any future expedition to definitely determine.

The new regions explored proved but thinly peopled. All the natives met with, except the hostile Papuans at Attack Point, were

readily amenable to humane influence. The two largest tribes, and these were found on the coast, as might have been expected, namely, those of Moko in Deception Bay, and the Kiwa Pori at Bald Head, numbered probably considerably less than one thousand souls, all told; while the small tribe behind Aird Hills and the Tumũans combined were only some two or three hundred strong. Not more than a dozen Pimurũans or Vaimuruans were seen, while the Evorra natives possessed some fifteen houses only, and a population which might be very liberally estimated at two hundred. No natives at all were seen on the Philp river, nor north of 25 miles by river courses from the coast up the Jubilee river. It would therefore appear that the higher waters of these rivers, and even for some considerable distances before they enter the gorges and near the main ranges, are uninhabited. Long rambles into the bush for collecting purposes whenever opportunity offered seemed also to confirm this view.

The natives of the few villages referred to gave indications of Dravidian origin, as well as of both Moluccan and Melanesian characteristics, to judge from dialects, appearances, and customs. From the new tribe behind Aird Hills a long screen of latticework, such as is used in Siam to this day for stretching across the mouths of creeks to ensnare fish, was obtained. It is put by the New Guinea natives to the same use, namely, that of forming a weir; also the war shields of the Kiwa Pori natives resembled, not indistinctly, those until lately in use in New Caledonia. All these new tribes wore nose pencils, and distended the lobes of their ears, also smoked sun-dried tobacco (corresponding to the Manilla leaf) by means of bamboo tubes. The Tumũans especially might be described as almost of an intellectual cast.

The canoes of all these tribes were of a more or less similar type, namely, dug-outs with either a bank of mud or a small boy squatting in the prow and opposing his back as an obstacle to the incoming water. All were without outriggers. Some, however, were of unusual dimensions; one Kiwa Pori canoe holding twenty-nine men, who all stood up to paddle. Not a few were grotesquely carved and painted outside to represent either inverted turtle-shells or crocodile scales. We were not a little amused at the action of one Moko native, who, singly in his fragile canoe, baled the water out by a motion of his left foot, keeping his balance, and paddling vigorously against the choppy sea meanwhile.

In the nomenclature adopted on the map every member of the expedition is represented. The three principal rivers are named respectively to commemorate the leading event in the year of their discovery, namely, the anniversary of the fiftieth year of Her Majesty's reign; also the names of the Hon. John Douglas (Special Commissioner for British New Guinea); and Mr. Robert Philp (to whose intelligent liberality these discoveries are greatly due).

This six weeks' expedition, though primarily planned mainly for

geographical discovery, was by no means barren in collateral results. Fifty photographs, including many of new tribes and scenery, were obtained, and interesting additions to our knowledge of the flora, fauna, and anthropology of New Guinea have been contributed by means of the collections made.

The Raïan Mæris; or storage reservoir of Middle Egypt.

By COPE WHITEHOUSE, M.A.*

Map, p. 658.

It is now generally known, as the result of my researches previously communicated to the scientific world,† that the Raïan basin is a depression to the south and west of the Fayoum, between lat. $28^{\circ} 40'$ and lat. $29^{\circ} 30'$. Its northern extremity is nearly on a line with Beni-Suef, 73 miles south of Cairo. It is connected on the south-east with a narrow valley known as the Wadi Muélah. I have heretofore described how I was led to believe that some such depression must exist, and how, at first alone, and subsequently accompanied by engineers employed by me, or put at my disposal by the Egyptian Government, these observations were verified. It was my opinion that about the eighteenth century before our era, foreign engineers had conceived a gigantic scheme for the draining of the Fayoum, and the redemption of the Delta. They had constructed a dyke at el-Lahun, with a regulator by which the supply of Nile water was reduced to the amount required for the perennial irrigation of a province, which the Jews in the time of St. Jerome identified with Goshen, and in the twelfth century asserted to be Pithom. The dyke still serves its original purpose. They had also availed themselves of a series of drainage channels under the west bank of the Nile valley. By deepening the natural watercourses, diverting the flood waters of the Nile, and protecting the stream at intervals by dykes, they succeeded in making a canal which for over three thousand years—from the Exodus to the present time—has continuously supplied the Fayoum with water. It is 270 miles in length, and with its immense discharge, is far beyond any similar work in the world. Known as the Bahr Jusuf, or Canal of Joseph, it deserves the name, whether it be due to the Hebrew engineer who is said to have designed it, or to the meaning of the word which, in popular parlance, implied that the reproach of barrenness had been taken away by this offspring from the Nile, and a new province added to Egypt.

In order to extend cultivation throughout the entire delta it is necessary to increase the summer supply of water in the river itself. It had been suggested by French engineers that a dam might be built

* Read at the Manchester Meeting of the British Association, September 2nd, 1887.

† Vide 'Proceedings,' 1884, p. 601; 1885, p. 756; 1886, p. 445.



H. Sharbat, R.C.S. del.

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Showing the Discoveries made by the "Victory" Expedition,
under the command of Mr. Theodore Bevan.

Scale of English Miles.

