

300 miles of that splendid river, how after weeks of bacon and tinned meats we feasted royally off bear and moose, how we shot sundry most exciting rapids—these are matters not strictly pertinent to my theme. I only refer to them to suggest that in the Rockies other amusements can be very well fitted in with a climbing expedition. The weather unfortunately remained rainy, but we got sufficient glimpses up side valleys of glaciers and snow peaks to suggest a fine field for exploration. Judging by some slides, kindly lent me by the Grand Trunk Pacific, there should be other opportunities at the extreme western end of their line along the valley of the Skeena.

I am afraid I have kept you very long. All I hope is that I have succeeded in interesting you in a new and practically untouched alpine region, quite distinct in many of its features from the better known region opened up by the Canadian Pacific, and quite as beautiful.

AN ASCENT OF MATAVANU IN SAVAII (German Samoa).

By TEMPEST ANDERSON, D.Sc., F.G.S.

BEFORE leaving England for a year's wandering among the Pacific Islands I had heard rumours of a new volcano in the Samoan Group. In New Zealand I ascertained that the report was well founded, and also that the mountain was still in activity. I changed my plans, left out Japan, and took a passage from Auckland on the steamer 'Atna,' one of the Union Line, which trades once a month to the Island groups of Tonga, Samoa and Fiji. She proved extremely comfortable. At Tonga I had an audience with his Majesty King George Tubau II, the last of the dusky potentates in the Pacific. It was evening as we approached the Samoan Islands, and we could see the light of the volcano reflected on the clouds at a distance of nearly 100 miles. The captain very kindly took the ship somewhat out of her course to give us a view of the lava flowing into the sea, which we saw it do in twelve or thirteen streams of different sizes, with the accompaniment of frequent steam explosions, and in due course we landed at Apia, the capital of German Samoa. I presented my credentials to the Governor, Dr. Solf, lunched with him at Vailima, the former home of Robert Louis Stevenson, and was duly accredited to the Amtmann of Savaii. But here a difficulty presented itself. Savaii, though the largest island of the group, is also one of the most backward, and there is

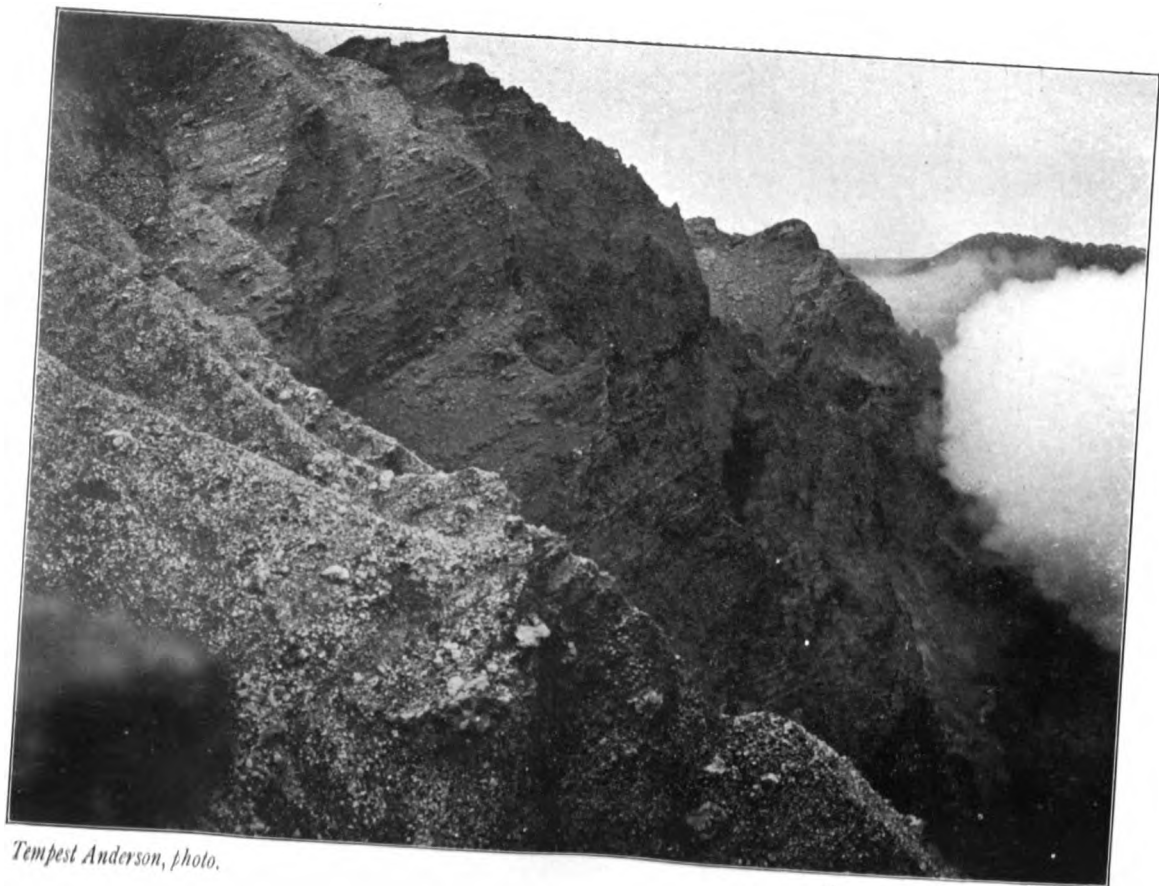
no regular service of steamers or even steam launches to it. I found, however, that a trading schooner was likely to start in a few days and thought myself lucky to get a passage on board her. She was only 20 tons burden, it is true, i.e. about one quarter the size of a good canal barge, but she was said to have a comfortable deck cabin, which was to be at my service. I did not inquire further but made my arrangements.

On the evening appointed I took a boat out to her, but there was no one on board and as there was no wind it seemed probable we should not start that night, and I returned to the hotel. I had scarcely got my baggage back into my former room and was just beginning to undress, when the captain arrived and said the wind was getting up and he was going to start. The boatmen had gone, and the schooner's own boat was too small to take me in addition to the native captain and his mate, who constituted the entire crew. When at last I got on board I found the cabin no larger than the space under an ordinary dining table. It was not high enough to stand in or even to sit up comfortably, and when one had crawled in down two steps, though it was just long enough for a man to lie down it was almost impossible to turn round so as to get out again. The sea was rough outside and in endeavouring to execute this manœuvre my injured leg got strained again.

I was two nights on board and saw the volcano and the lava flowing into the sea more or less distinctly on both. The vapour rising from the crater condensed into a cumulus cloud which at night was lighted up by the melted lava in the crater and recalled the scriptural description 'a pillar of fire by night, a pillar of cloud by day.'

The lava flowed into the sea by several mouths, varying at different times from three or four to a dozen or more, and set up violent explosions of steam, with the discharge of showers of black sand, and great numbers of red-hot fragments of lava, each leaving a trail of white steam. At night the whole was lighted up like the vapours above the crater.

Eventually I landed at Mataatu (otherwise called Fagamalo), the capital of the island, and presented my introduction to Mr. Williams, the Amtmann, who though an Irishman is the chief official of the island. He received me most hospitably, gave me a bedroom in the government buildings, and arranged for me to board at a trader's along with him. My leg, injured a year previously at Taormina, had got an extra sprain on the schooner, so I gave it a week's complete rest. As it did not show any signs of being immediately serviceable, I began to



Tempest Anderson, photo.

Swan Electric Engraving Co., Ltd.

MATAVANU. THE SOUTHERN WALL OF THE CRATER.

fear that I should have to go away without examining the volcano, though it was only six miles distant as the crow flies. Williams, however, suggested that it might be possible to arrange with the men of the village to carry me up; eventually this was done. Twelve men working in three relays were to take me on a deck chair rigged with poles on each side. I communicated with them through the sergeant of police, himself a native chief who spoke English, and who was lent me by Williams.

I drove in a buggy as far as the last ranche or plantation and then mounted my chair of state. Soon the path got narrower and worse; they said that further on it was covered with fresh rough lava and impassable, so they cut a new path through the jungle, to be called Anderson's Road. It seemed a great shame to cut down beautiful hot-house plants, but there was no help for it. Eventually, we got to the lava and as no ascent had previously been made from that direction there was all the excitement of a new expedition. We passed over wide fields of corded lava (here called Pahoehoe), which were comparatively easy to travel on, though not free from numerous pitfalls, and other tracts nearly as extensive of large blocks of cindery lava (locally 'aa'), which were often impassable and were avoided as much as possible. In order to do this, we had to take a zigzag course, which crossed three times over the line of fumaroles which mark the underground course of the lava down to the sea. Eventually we got to the cone just before nightfall, and I was carried to a place whence a further scramble of fifty yards brought me to the lip of the crater. I looked down and obtained a view never to be forgotten. The abyss is at least 200 or 300 feet deep, the sides precipitous or even overhanging, and in the bottom is a lake or rather river of molten lava, visibly white hot even in bright sunlight, and so fluid that it beats in waves on the walls, rises in fountains twenty, thirty, or even more feet high, and runs to one end of the crater whence it rushes with the velocity of a cataract into an abyss or tunnel by which it flows as above mentioned into the sea, a distance of ten miles.

There were some dead trees near, so the men built a shelter, and after supper we went to the crater again, when darkness added to the effect. I ought to have said night, not darkness, for everything round was plainly visible by the light reflected from the clouds of vapour which rose from the crater. Later I tried to sleep, but millions of biting flies and mosquitoes made this impossible. They swarmed outside my veil, and

put their stings through the meshes wherever it touched the skin ; I tried to adjust it but could not do so without taking off my gloves for a moment, when they attacked my hands, which were soon swollen to twice their natural size and remained so more or less for several weeks. As the men were nearly all affected with elephantiasis, due to a minute parasitic worm called filaria, which is supposed to be communicated by flies, this was not pleasant, so I had the chair moved some distance to windward of the men's shelter, and spent the night watching the illuminated clouds of vapours, and the evolutions of a number of frigate birds, which like myself had come to explore the volcano, but unlike myself kept soaring in circles just outside the clouds of vapour. They were of two kinds, black and white, rather larger than ordinary seagulls and with long tail feathers.

Next morning the weather was dull and it rained for some time. When it cleared a little I took the camera and got a few exposures of the crater, which turned out better than could have been expected under the circumstances. I wanted to have examined some of the fumaroles or pit-craters on the line to the sea, but the wind had changed and blew the fumes in our direction. It was also Saturday and the men wanted to be home, so I reluctantly left and we returned by another route, as the men declared it was too dangerous to return by the way we had come.

We halted at Olonono, a deserted plantation, and again at a village on the coast. This proved a long halt, as the chief invited us to drink cava, a proceeding always attended with more or less ceremonial. I got back to Mataatu without further adventure. I had my faithful attendants for several more days during which I visited the lower lava fields, the remains of villages and churches buried in the lava, the outflow of the lava into the sea, and other objects of interest. We parted great friends. They declared there were many other very curious things they would like to show me and that I was going away too soon.

Before leaving I was fortunate in seeing a tololo or official reception by the Governor and Admiral ; the natives appearing in full ceremonial dress, or perhaps I should say that what little dress they wore was of ceremonial character. The Admiral gave me a passage back to Apia in one of the gunboats, on board which I was most courteously treated, and from which I had a last view of the volcano as we passed it at night.*

* For a fuller description see *Q. J. Geol. Soc.* Nov. 1910, vol. lxxvi. p. 621, *et seq.*