

west the bottom temperature was found to be $46^{\circ}2$. Bad weather prohibited dredging, so the course was laid for Reikiavik, but heavy S.W. winds and sea made the progress very slow. July 22, Iceland was made in the morning, but in the afternoon the weather got so wild and thick that shelter was sought at the Westman Islands, a group of small islands off the south coast of Iceland. Here a stay of three days was made; during one of them there was a heavy gale, in which steam was kept up. The visit here proved very interesting. The whole of the islands are volcanic; a large old crater, with perpendicular walls 400 to 500 feet high, is visible; one side is standing, the other has been washed away by the sea. Two miles off is a more recent cone, 770 feet above sea-level, in full preservation, with a hollow 50 feet deep on top. The base of the cone is lava; the cone itself, whose outline is beautifully geometrical, is composed of loose stones. The sea-birds are very numerous, living in the countless hollows in the cliffs, where they were hatching at the time of the visit. Whales, large and small, were about the ship.

Westmaney was left July 26, and Reikiavik reached that evening. On the south coast of Iceland the current was very strong to the eastward, and from Cape Skagi to Reikiavik its violence was fearful.

The Icelanders reported that they have very seldom had so bad a summer as this one—perpetual storm and rain. This has not been favourable to the expedition except as regards meteorology. In this branch hourly observations have been regularly taken when at sea.

The expedition was to stay at Reikiavik five or six days for coaling and for magnetic base observations. Hardly any magnetic observations have been obtained at sea, the weather having been so boisterous. It was intended to give up making the circuit of Iceland (the ice on the north side went away in June), and to take up a line south of Iceland, and then straight across to Norway, about to Namsos. The scientific staff is very well contented with the results gained, in spite of the bad weather.

(From another Correspondent.)

The Atlantic Expedition, under the leadership of Prof. Mohn and Prof. Sars, sent by the Norwegian government for the exploration of the North Atlantic and for making a *tour* round Iceland, give some intelligence as to their proceedings in a letter from Thorshavn (Färöe Islands), dated July 11 and 14, printed in the Christiania newspaper, *Morgenbladet*, of Aug. 2. This letter, the substance of which we reproduce, gives information on the cruise of the expedition in open sea, after its having left Christiansund. On June 27 the steamer left Christiansund and went westward. In the evening soundings were taken at a depth of 87 fathoms, and the temperature of the water proved to be as high as 7° C., between 10 fathoms and the bottom. The following day, the island Storeggen was reached; the temperature of the water was here $7\frac{1}{2}^{\circ}$ C., at a depth of 230 fathoms, and the animal life, belonging all to the "warm region," was of the highest interest. On the 29th, the steamer going further westward, the depth still increased and soon reached 418 fathoms, where the thermometer showed an icy-cold sheet of water, sharply divided from the upper warmer sheet, the temperature at 300 fathoms being $+6^{\circ}$, and -1° at the depth of 418 fathoms. On the 30th the weather was very fine, and the trawl-net was used, an English fishing-net, which brought some remarkable forms (e.g. large *Umbelliferae*) from the depths of the cold sheet of water. On July 1 the thermometer showed -1° C. at the depth of 570 fathoms. In the afternoon the weather changed, the wind began to blow very strongly from S.S.E., the barometer fell, and the steamer took a S.E. direction. On July 2 the wind reached the strength of a storm, the waves had a height of 18 feet, which height diminished afterwards to 12 and 10 feet. The bad weather continued until July 4, and it was not till

the 5th that the steamer could return to her former route, and the soundings and the fishing could be continued. On the 5th soundings were taken at a depth of 1,050 fathoms, temperature at the bottom -1° C. The dredging apparatus was sent to this depth, and dragged for six hours: it brought up a very interesting collection, which proved that even at this depth, and in such cold water, animal life is very variable at different parts of the bottom. But the zoological labours were soon interrupted anew by a gale coming from the south; the height of the waves was measured and found to be 25 feet, and the steamer received some damage, which forced the expedition to go to the Färöe Islands. On the 8th the expedition landed at Thorshavn, and it was not till July 14 that, necessary repairs being made, the steamer could go further. These circumstances, and the reports of much ice round Iceland made it very probable that the expedition will not make, this year, the proposed *tour* round that island.

The scientific results of the expedition—says the writer of the letter—are already considerable. The depths of the sea, and the distribution of temperature with the depth are certainly such as might be supposed, but the animal life exhibits a much greater variety of forms than could ever have been expected, so that the explorations of the summer will give a very general idea as to the organic life of this latitude.

MR. O. C. STONE'S EXPEDITION TO NEW GUINEA

A GOOD deal of speculation has been rife as to the above expedition of Mr. Stone (Cf. *Ibis*, 1876, p. 363) into south-eastern New Guinea, as the collections sent by the Italian traveller, D'Albertis, had by no means answered the expectations of naturalists as regards novelties, and as Mr. Stone was known to have engaged the services of two good *préparateurs* in the persons of Messrs. Petterd and Broadbent, it was confidently expected that a great deal that was new to science would be brought to light. After a cursory examination of the birds obtained during the expedition, it becomes quite evident that the neighbourhood of Port Moresby is a very unproductive one as regards ornithology, when compared with the rich fields in the north-western part of New Guinea, which have lately yielded as many as fifty-two undescribed species of birds to the Italian traveller, Dr. Beccari. At the same time Mr. Stone's collection has taught us some very interesting facts by proving that the Papuan element in the avifauna of south-eastern New Guinea, consists rather of Aru forms than of Salwatti or Dorey species. Many birds are, as might be expected, specifically the same as those of Cape York, but the large number of Aru birds is very striking. I am preparing a full account of the collection for publication, but meanwhile I send a notice of the expedition for the readers of this journal, and add short details of one or two species which appear to be new to science.

Mr. Stone started from Somerset, Australia, on October 21, 1875, and after remaining a few days at Yule Island, where Signor d'Albertis was then collecting, he reached Port Moresby, New Guinea, about sixty miles further to the south-east, on the 29th of the same month. Although his principal object in visiting the island was to gain ethnological and geographical information, he took with him, as mentioned above, two taxidermists. Anuapata, where he erected his tent, is situated upon the shores of Moresby harbour, in long. $147^{\circ} 7' E.$, and lat. $9^{\circ} 28' S.$, and from here several preliminary excursions were made. At first the natives showed some fear, but on seeing that the object of the visitors was peaceable, they soon gained confidence, and the younger members of the community frequently assisted in carrying back the game shot. During the months of December and

January rain fell in considerable quantities, and both the collectors were laid up for many days with fever and ague, which retarded collecting, but altogether about 450 skins of birds were obtained from a radius of about thirty miles inland from Port Moresby. In the immediate neighbourhood of Port Moresby birds were plentiful, but the beautiful Bird of Paradise (*P. raggiana*) is only found in the thick forests on the mountains of the interior. Parrakeets, parrots and cockatoos, pigeons and doves, were numerous among the jungle, and the belts of tall trees along the rivers Laroki and Vutura. The farthest point reached inland was Munikaira, situated about thirty miles to the north-east, the difficulty in procuring natives as carriers preventing Mr. Stone from proceeding further; at this point he made a camp for several days, but the wet season and consequent unhealthiness of the place precluded further exploration.

The following birds appear to be undescribed:—*Eluradus stonii*, Stone's Cat-bird, like *Æ. buscoides*, of N.W. New Guinea, but distinguished by a black head and unspotted abdomen. Hab. Laroki River.

Dicaeum rubro-coronatum (Red-crowned Flower-pecker). Although having a red spot on the breast, like *D. vulneratum*, *D. schistaceiceps*, &c., this species differs from them all in having the back purplish, with a scarlet crown and rump. I cannot find any species agreeing with it. Hab. Port Moresby.

Fantheenas rawlinsoni, closely allied to *F. hypaenochrous*, but differing in its crown being of a ruddy violet, the under tail-coverts being black, and the under-surface also ruddy violet, without the strong chestnut appearance of *F. hypaenochrous*. Hab. Laroki River.

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ABSTRACT REPORT TO "NATURE" ON EXPERIMENTATION ON ANIMALS FOR THE ADVANCE OF PRACTICAL MEDICINE*

VI.

Experimentation with Nitrite of Amyl.

IN the progress of scientific therapeutics no addition to the curative resources of medicine has of late attracted more attention than the nitrite of amyl. This agent is now one of the useful agents in the hands of the physician, and, what is most to the purpose, it is one of the most useful for relieving the cruellest and painfullest diseases. The discovery of the properties it possesses resulted in the purest way from experimental study, the record of which I am entitled to write as the one who introduced the agent into medicine, defined its mode of action, and thereby determined its place in the lists of curative chemical substances.

Nitrite of amyl was discovered by Balard thirty years ago. It was examined afterwards by Rieckher. It was made by the action of nitrous acid on amyl alcohol, and the vapour of it was said to produce headache when it was inhaled. Many years passed before any further observation was made upon the substance, and indeed, Gregory, in his edition of "Organic Chemistry," published in 1852, merely refers, and that incidentally, to the nitrate of amyl. He passes over the nitrite in silence.

The observation that the vapour of nitrite of amyl causes headache, or rather a sense of fulness of the head than headache, rested, I believe, on the observations of Rieckher, and was not improved upon until Prof. Guthrie, of Edinburgh, and now of the School of Mines, London, noticed, while distilling the nitrite, the further facts that the vapour, after being inhaled, induces flushing of the face, rapid action of the heart, a peculiar breathlessness such as occurs from fast running, and disturbance of cerebral action. These facts, published by the learned professor, became known to Mr. Morison, a dentist practising in

Edinburgh. Mr. Morison thought that the vapour of nitrite of amyl might be a powerful stimulant, and might be made use of in cases of syncope and exhaustion. He brought a specimen of the compound to London, and placed it before the College of Dentists, of which he was a member. The Council of that Institution thereupon submitted the specimen to me for investigation and report, with the request that I would fully inquire into its physiological and therapeutical properties by experiment.

The first public record of my researches, commenced in this manner, was read to the physiological section of the British Association for the Advancement of Science at the meeting of the Association held at Newcastle-on-Tyne in 1863. It is unfortunate that by some accident the original paper as it was read at the meeting was not included in the volume of Transactions of the Association. A short and fair abstract of it was, however, published in the *Medical Times and Gazette* (Sept. 26, 1863, pp. 334-5). The first remarkable effect I observed upon the living body from the vapour of the nitrite was the peculiar redness of the skin. On the face a deep blush was excited by inhalation of the vapour, which blush soon became a perfect crimson. With this there was a rapid increase in the motion of the heart, and following upon the same there was quickened respiration and panting. These observations, which resembled those noted by Prof. Guthrie, were taken in a systematic manner from symptoms produced on myself. A piece of paper was rolled into the form of a funnel, the nitrite was dropped into the open mouth of the funnel, and then I inhaled vapour from the funnel until distinct objective and subjective symptoms were recognised. Dr. Gibb, afterwards known as Sir George Duncan Gibb, took notes of these signs as they were developed in me, and then he himself inhaled while I recorded symptoms. Afterwards Mr. Kempton, a member of the Council of the College of Dentists, submitted himself to experiment. The result was the confirmation of certain very extraordinary phenomena induced by the nitrite, but what the nature of those phenomena could be was unknown. One thing was certain, that here was an agent of great potency in its action on the animal economy, and therefore of promise as an agent for cure. The question was what disease would it cure or alleviate? Towards the relief of what class of human maladies could it be applied?

I should have been well content if I could have pursued this inquiry solely by observation on man. But soon I found that the experimental pursuit on the human animal was far too dangerous a risk to be ventured upon. An enthusiastic adventurous experimentalist in my laboratory made a few inhalations too many, and well nigh paid the penalty with his life. The rapid action of his heart was followed by confusion of the senses and by sudden prostration, and extreme pallor and faintness from which there was not a safe recovery for two hours, nor a complete recovery for two days. The only lesson taught by this experience was that the original idea of using nitrite of amyl for the cure of syncope was false. All else was as dark as ever, and if I had had no other means of research at command, I should have laid this now valuable remedy aside as a dangerous substance, a substance not to be added to the armoury of practical medicine.

In this dilemma it seemed to be justifiable to test the action of the agent on animals inferior to man.

The first point to be ascertained was whether this substance acted after the manner of an anæsthetic. Animals therefore of different classes, frogs, guinea pigs, cats, and rabbits, were subjected to its vapour as I had been; but the inhalation in their case was carried further, and they were allowed to pass into insensibility. The insensibility appeared to be death, and in the warm-blooded animals was death. The consciousness of external impressions remained until the moment of collapse, then there was insensibility, but then also in the warm bloods the

* Continued from p. 291.