APPENDIX.

CONVERSAZIONE.

JAN. 20, 7 P. M., 1873.

A Conversazione was held in the Provincial Museum, and other apartments, and halls, of the New Provincial Building. At 8 o'clock about two hundred persons assembled in the spacious hall of the second floor, where a platform was erected and seats arranged.

At 8.15 His Excellency the Lieutenant Governor SIR HASTINGS DOYLE, the Patron of the Institute, took the Chair.

The Rev. Dr. WARREN then read an interesting paper, "On Atmospheric Air, Physically considered." The paper was illustrated by a series of beautiful and successful experiments.

Dr. A. P. REID then made instructive observations, "On Coal and its Products." This subject was well illustrated by appropriate and striking experiments.

The Rev. Dr. HONEYMAN read a paper "On Preadamite Life." The paper was illustrated by numerous specimens and diagrams.

Professor LAWSON, L. L. D., gave a short Lecture "On the Development of the Cellular tissue in Plants." The subject was well illustrated by a large series of beautiful diagrams.

His Excellency the Chairman concluded with a few felicitous observations.

The audience then proceeded to the Museum, which was brilliantly lighted.

After examining the interesting collections, His Excellency and the ladies and gentlemen adjourned to a refreshment room, where a table was spread with an ample supply of refreshments.

Having enjoyed this feast the company separated, and the Conversazione terminated about 10.30 P. M.

The Council unanimously passed a vote of thanks to the Rev. Dr. WARREN, Mrs. WARREN, and Miss CLARKE, for the admirable manner in which they had furnished the refreshment table and otherwise ministered to the enjoyment of the members of the Institute, and their friends.

D. HONEYMAN,
Secretary.

THE "CHALLENGER" SCIENTIFIC EXPEDITION. VISIT TO HALIFAX.

H. M. S. *Challenger*, Capt. Nares, arrived at Halifax on the ninth day of May last, from Bermudas. The *Challenger* is fitted out for a scientific expedition round the world, more especially with reference to an exploration of the ocean in various latitudes, and to ascertain the best situation for successful observations of the transit of Venus in 1874. She has on board Professor Wyville Thompson, of Edinburgh, Chief of the Scientists; J. Y. Buchanan, M. A.; H. M. Mosely, M. A.; John Murray, Esq.; Dr. Willemoes Von Suhm, and J. T. Wild, Esq., all distinguished in their several professions. By the kindness of the first named gentleman, who has several warm personal friends* in Halifax, formerly connected with him in scientific pursuits, and perhaps as an incentive or provocative to the study of Natural Science, every facility was afforded to the ladies and gentlemen of the City for an inspection of the ship, and a view of the submarine wonders that had up to that time been collected. These had been dredged at depths varying from 150 to 3500 fathoms—from the coasts of Portugal and Spain, the Azores, Madeira and the Canary Isles, across to the West Indies and Bermudas, and thence to Halifax, Nova Scotia. Very many took advantage of the permission to visit a ship furnished with every appliance for the great work in which she is engaged.

The magnitude of the expedition may be best estimated by the fact, that, exclusive of outfit, the annual outlay by the British Government during the time employed. is estimated at £60,000 sterling. It is to be hoped that the results will be commensurate with this lavish expenditure in the cause of science; but to say the least, the large amount of experience realized, the many points of interest settled, the correct soundings of the ocean arrived at, will be of vast national importance. The object of the expedition, it is expected, will have been completed by the autumn of 1874.

Apparata of the most perfect description that human invention has yet attained to, have been employed to promote the success of the expedition. The sounding gear is admirably efficient, both for ascertaining the extreme depth and the temperature of the ocean. Bottom has been reached at between three and four thousand fathoms, over four miles.†

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*Professor Lawson, Dalhousie College; and Rev. Dr. Honeyman, Provincial Geologist,—both Members of the Halifax Institute of Natural Science.

†At the greatest depth (3,875 fathoms) "the bottom brought up was reddish mud, containing however a considerable quantity of carbonate of lime;" at lesser depths this red mud was of a deeper colour, and extensively diffused, composing the whole matter of the collected soundings. These extreme depths were found to be not inconsistent with the existence of animal life, but not favorable to its development. The red clay is described in Dr. Thompson's notes published in "Nature," as a large and important phenomena. "In the section of the Atlantic from the Canaries to the West Indies, it occupies about 1900 miles." It is probably identical with the fertile red earth of the Bermudas, and the brick earth of Jamiaca and other West India Islands, characterized by various authors as of exceptional fertility.

The temperature at various depths is correctly ascertained by a very clever thermometrical contrivance, which is difficult to be explained without the presence of the instrument itself, or a diagram in illustration thereof. Strange to say at the greatest depth the water is found to be intensely cold, which is supposed to be owing to an under stratum of cold water, perhaps a condensed polar current. May not the extreme condensation of the liquid element at such a depth be alone accountable for this degree of cold. The pressure must be enormous. Sometimes the thermometers in spite of the strong enclosure and the equable bearing of the water, are shivered into fragments. A strong metal tube was shown which had enclosed a thermometer, that in consequence of an unobserved defect when put overboard, on coming again to the surface was found to have suffered a complete collapse, the thermometer entirely destroyed. Accidents like these are inseparable from all such services, and operate as cautions to prevent their recurrence. The sinker, about 400 lbs. weight, attached to the sounding line, and calculated to carry it to any depth, resembles an Armstrong shell, bored lengthwise. It is fitted with a mechanical contrivance projecting from it about eighteen inches, a tube, which on reaching the bottom, having collected a portion of its material, is forced upward through the sinker, which then immediately becomes detached, and is left behind. Every time that deep soundings are taken the *Challenger* drops one of these as a memento of her visit. The line is recovered by the aid of a donkey engine of considerable power, which yet has sometimes to be assisted by urging the ship backward or forward, as may be expedient.

The dredging apparata is larger or smaller according to the depths. It is a strong net with an iron frame and open mouth, and drags along a trail composed of a broad swab of loose ropes, which Professor Thompson informed the party was very useful in collecting material which had been passed or loosened by the dredge itself. Every mechanical facility is taken advantage of in paying out the line, both in sounding and dredging. The reels are fastened to the waists of the ship, and the large quantity of rope wound on them attested to the great depth already reached, and to the provision for finding at the "lowest depth" "a lower deep."

It is remarkable that at the deepest soundings, animal organisms are found; zoophytes, and sponges, but nothing of a vegetable nature. At depths of four to five hundred fathoms, crustaceans of remarkable form have been dredged, new in type, without eyes, but with processes extending from the head which may make the sense of feeling very acute. Some of these of a pale pink colour when captured, were changed by the light to a yellowish white—and alcohol absorbed all colour.

After the sounding and dredging gear had been looked over, the divisions of the ship set apart for the labours of the Scientists of the exhibition, were visited—the chemical department, the photographic and natural history departments. Several of the Professors were absent in Canada; but the interest was well sustained by the kindness of Professor Wyville Thompson, who opened up the wonders of the great deep to the observation of all who chose to take pleasure in them. The blind crus-

taceans, zoophytes of new and remarkable species, corals, sponges, echinoderms, of varieties unknown before, were presented to the gaze of the visiters. All the forms were recent. Admirable drawings of these, taken while recently captured, were exhibited, of great interest to naturalists. The observers could only see and admire. Geology was represented by a large boulder* dredged at 300 miles south of the coast of Nova Scotia, which Dr. Honeyman, our Provincial Geologist, and Secretary of the Institute, after careful examination, recognized as a piece of Shelburne granite, carted off to sea in long past ages on an iceberg detached from the coast glacier of Nova Scotia, and deposited where it was found, to be recovered as a curiosity in the nineteenth century of the Christian era, and to help the solution of the glacial theory. There were also specimens of ocean deposits, and cretaceous collections from great depths.

To mere scientists, these rare specimens were the most interesting objects on board, and what they had especially come to see; but there were others which judging from the admiration they excited were equally attractive. Each officer of the ship is entitled to a copy of every photograph taken in connection with the expedition.† On adjourning for a brief space to the ward-room, or as it may be styled in steamship parlance, the saloon, which is tastefully fitted up, several books of photographs, of all the remarkable scenes in the countries visited, and of the costumes and customs of the people, from the rock of Gibraltar, Lisbon, the Azores, Madeira, the Canary Isles and Bermudas, to Halifax, were politely exhibited and eagerly scanned by the ladies, and explanations afforded by the gentlemen connected with the ship, to the manifest pleasure and gratification of both parties. This concluded the visit, which had extended from 10 a. m. to between half past twelve and 1 p. m., when the party left the ship highly gratified with all they had seen and heard, and the courtesy extended to them,—and with an earnest hope that all the objects of the Expedition might be successfully accomplished, bidding God speed to the voyagers, and a happy return to their native country and friends.

W. G.

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*By some mistake this boulder, which was to have been left as a present to the Halifax Museum, as illustrating the glacial action which at one time had involved Nova Scotia in a close embrace, as it now involves Greenland, was carried away in the ship, and reposes somewhere at the entrance of the harbour—where like the Irishman's "tay-kettle," it is safe because we know where it is.

† During the stay in Halifax, the Scientists, accompanied by Dr. Honeyman, took several interesting photographs of the glacial striæ, and other geological phenomena, at Point Pleasant, and on the shore of the Tower Road.