

THE ARBUTHNOT MUSEUM, PETERHEAD.

THE visitor to Peterhead in past years may have had his or her attention directed to the Arbuthnot Museum, and may have ventured into the hall which then contained the very interesting but well-mixed collection.

The founder of this museum, Mr. Adam Arbuthnot, was born in September 1773. During his years of business as a merchant in Peterhead, and after he retired, he kept gathering at objects of antiquity and natural history, and amassed an immense and valuable collection, all of which he bequeathed to the town at his death in 1850. Some years later the museum of antiquities, minerals, &c. collected by the members of the Peterhead Institute, was added. This last contained a very fine and extensive collection of local shells by the late Mr. Dawson, who was a schoolmaster in Cruden. Since then many smaller but important donations have been made, notably by whaling captains. The Rev. Mr. Yuill, late Free Church minister of Peterhead, contributed the large majority of the invertebrate fauna.

It had become apparent that better accommodation was required, and a complete revival of the whole collection. There is no necessity here of detailing how this was gradually arrived at. With bazaars, and by means of a handsome contribution made by Mr. Carnegie, Peterhead was enabled to adopt the Free Library Act, and on a site obtained, a very handsome and suitable building was erected, with provision for a free library and reading-room, museum, and art gallery. The two rooms devoted to the museum are large and well-lighted, and the collection has been completely rearranged. The whole building was opened on Wednesday, October 11.

The museum is now in a very different condition. One of the rooms contains the antiquities and ethnographical exhibits, the other the natural history collection. Local and foreign objects have been separated in both rooms as far as was possible. And now the visitor may begin in the antiquities room and see the stone implements, the urns, and the mediæval finds of a local character, and the curiosities from different parts of the world, all placed in a rational order. The rich collection of domestic and other articles from Greenland are all together at the far end of the room. A very valuable collection of coins is also arranged in excellent order in this room. It may be interesting to note that the British coins are so arranged in movable glass panels that the visitor can see both sides by turning the panels round. The ancient swords, African spears, and the like have been grouped on the walls. Not only is the room in the manner of its arrangement worthy a visit, but many of the objects are of considerable value and interest.

The same is true of the larger natural history room. There is a very good collection of minerals, polished granites from many localities, local seaweeds, lichens, mosses, and the invertebrate division of the zoological collection is also rich in many of the orders. These specimens are all arranged in large double-floor cases, a feature in which is the upright middle case. Spirit and branching specimens are thus shown to an immense advantage from both sides. Lightness of effect is secured by using plate-glass shelves.

It may be interesting, moreover, to point out that one or two of the Sertularians and a Ray's bream have been obtained, prepared, and presented by Mr. C. W. Peach.

The fishes are arranged in a wall case, and surmounted by a group of the "saws" of the saw-fish. The amphibia and reptiles are arranged in a corresponding case, which is surmounted by turtle shields. The crocodiles, &c., are arranged on the wall near this, above the very handsome case of birds. In this last case, as in the rest of the museum, all the foreign specimens are made to keep company. The mammals are arranged in one of the old cases, and near them all the Greenland specimens are grouped together. Plate-glass shelves have been used throughout.

Very many valuable objects claim the attention in this section. There is a group, for instance, of deers' horns (mostly red deers') over the door, which have been picked up in the mosses around Peterhead, and which measure more in diameter than the recent ones. Among the fishes are many that could be mentioned as occurring at Peterhead. There are several fetuses of whales, walrus and seals, including a large one of the Greenland whale. Two very nice cases, exhibiting the characteristics of foxes and badgers, are the work of the Aberdeen naturalist Mr. Sim. A similar case of sea birds was made by a local naturalist, Mr. McBoyle, from whom, too, many of the

local birds have been procured. It is to be hoped that some of the groups, such as the Crustacea, will not be lost sight of by the members of the Buchan Field Club, whose interest in the museum should be a direct and helpful one.

This is not the only collection in Aberdeenshire. It has been my pleasure to meet some enthusiasts who have more or less exhaustive collections of antiquities, insects, birds, &c.; but it is to be regretted that there is no good public museum in Aberdeen itself; its situation is one that would be unequalled almost in interesting such collectors in a very large district. Moreover such a museum, if ever formed, would require to provide for a good technical display illustrating agricultural, fishery, and granitic industry.

ALEXANDER MEEK.

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

THIRTY years ago Dr. William Barton Rogers, the then Director of the Geological Survey of Virginia, and a Professor in the University of that State, founded the Massachusetts Institute of Technology, Boston. Dr. Rogers has since died, but the Institute has grown, and is now the largest scientific and technical school in the United States, and one of the largest in the world. By the catalogue of 1892-93, the number of students was 1060, and the number of teachers 125.

An account of the character, equipment, and work of the Institute has recently been published, and from it the following facts have been obtained. The prospectus is illustrated by a number of fine pictures, three of which have been sent to us for publication.

The Institute is remarkable for the great variety of its courses. In it are taught the sciences and their applications to the arts, the studies being divided into thirteen four-year courses, as follows:—(1) Civil engineering, including railroad engineering, highway engineering, bridge building, and hydraulic engineering; (2) mechanical engineering, including steam engineering, mill and locomotive engineering; (3) mining engineering and metallurgy; (4) architecture; (5) chemistry; (6) electrical engineering; (7) biology; (8) physics; (9) general studies; (10) chemical engineering; (11) sanitary engineering; (12) geology; (13) naval architecture. Agriculture is not included in this list, on account of its being provided for in a State College at Amherst.

In the four years required for graduation, it is sought:—

- (1) To make the pupil observant, discriminating, and exact.
- (2) To develop in him a taste for research and experimentation on the one side, and for active exertion on the other.
- (3) To give him the mastery of the fundamental principles of mathematics, chemistry, and physics, which underlie the practice of all the scientific professions.
- (4) To equip him with such an amount of practical and technical knowledge, and to make him so familiar with the special problems of the particular scientific profession at which he individually aims, as to qualify him immediately upon graduation to take a place in the industrial order.

The chief and dominating feature of the Institute, from the material point of view, consists of its numerous large and well-equipped laboratories. The buildings of the Institute, in addition to drawing, recitation, and lecture rooms and libraries, comprise eight laboratories, or groups of laboratories. The Rogers Laboratory of Physics comprises seventeen separate rooms. It includes a laboratory of general physics devoted to instruction in the principles of physical measurement, a laboratory of electrical measurements, devoted chiefly to advanced electrical work; a laboratory of acoustics, one for optical work, and another for photography. In addition to these, there is a dynamo-room and several laboratories of electrical engineering.

The dynamo-room (Fig. 1) is provided with a Westinghouse engine of 75 horse-power, the sole use of which is to furnish the power to drive the plant of dynamos. This plant, besides a number of smaller machines, comprises a 500 light alternating current Thomson-Houston dynamo, with transformers, a 150 light Edison dynamo, a 200 light Thomson-Houston direct current dynamo, a 60 light Weston dynamo, a 3 arc-light Brush dynamo, a United States 300 ampere low voltage dynamo for electrolytic work, and a Siemens' alternating arc-light dynamo. From time to time other large machines are temporarily placed here for purposes of study by the students. The wires from