

THURSDAY, NOVEMBER 12, 1874

SIR JOHN LUBBOCK AT BIRMINGHAM

SIR JOHN LUBBOCK, in his inaugural address as president of the Midland Institute, gave utterance to some wholesome truths which we sincerely hope the Government and people of the country will take to heart. Sir John, as a member of the Schools Commission and of the Science Commission, has had ample opportunities of ascertaining the exact state of our schools and universities as to the teaching of science; and after all that has been said and done, he comes to the unhappy conclusion that, practically, science is ignored in the vast majority of our educational institutions of all classes—elementary schools, endowed schools, and universities. At the same time he is driven to the conclusion that a widespread interest in science already exists in the country. Of this we think anyone can assure himself who looks around and can read the signs of the times. There is undoubtedly a widespread feeling that the present all but universal system of education is inadequate and unsatisfactory and that science must, sooner or later, be allotted a place in all our schools. Notwithstanding this feeling, the fact undoubtedly remains as Sir John Lubbock stated it, that the great fault of our present system of education is the neglect of science; some few years hence it will be deemed incredible that a boy should be allowed to pass through any good school and yet be entirely ignorant of any one branch of natural knowledge.

Here, then, on one side exists a craving, becoming more and more defined, in the country, that science be given a place in our educational system, and on the other hand the fact that scarcely anything definite has yet been done to give science an established place in our schools and universities. In most cases where science has been admitted into our schools, it has been only on sufferance as a kind of interloper for which any odd corner is good enough. In spite of all that has been said recently—again to refer to the address—about the advantage of science, notwithstanding the reports of Royal Commissions and the action of Parliament, though the importance of science is generally admitted, still it is unfortunately the case that, with a few exceptions, it is either entirely ignored in our endowed schools or has allotted to it a space of time ludicrously inadequate, and, indeed, almost nominal. In some cases it is permitted, but only on condition of being taken out of playtime, which is not fair to the boy, and being paid for extra, which naturally does not recommend it to the parent. It is for parents and for the public to say whether this state of things is satisfactory; and Sir John called attention to it because he thought that parents were in general scarcely aware how little their sons were even now learning beyond the old routine. The present state of matters ought not, therefore, to be tolerated, and the only position in our schools and universities, for the teaching of science, is a position of, at least, equality with all the other old-fashioned means of education. The only principle on which a satisfactory course of education can be constructed is, that it is essential for the well-being of every man and woman that he

and she should start in life with a well-trained mind and a fair knowledge of the principles and the main facts of everyday life.

Sir John Lubbock admits the importance of language as a means of education, but he thinks that it has hitherto been given a far too prominent place in our schools, and that the amount of time devoted to linguistic studies is out of all proportion to the results achieved. "We still," he said, "indeed, teach the Latin grammar rather than the Latin language, for a man cannot surely be said to know a language which he cannot speak; and I cannot but believe that if our children were taught Latin and Greek as they are taught French and German, they would learn them in half the time. Mr. Arnold, in his report on German schools, tells us that it is common there for the master to address his boys in Latin, and for the class to speak Latin in reply. The German boys, he adds, have certainly acquired through this practice a surprising command of Latin."

It is well known that scholarship in Germany is far more widespread and accurate than in England, and we see that this scholarship is acquired with a much less expenditure of time. The consequence is, that plenty of time remains in German schools for the teaching of science, which forms so important a part of education throughout that country, and which gives the German a starting-point in life so very much superior to that which the average Englishman has, even when educated at our public schools and universities. No one can deny the increasing importance of a knowledge of science in all departments of human activity, and we fear that if another two generations of boys be allowed to pass through our schools in their present condition, this country will be almost hopelessly behind certain countries on the Continent. This has been recently admitted as a truth by several practical men, whose position as such ought to be of some weight with our trading and manufacturing community. But to this subject we hope to return in an early number.

In the meantime, it is clear to all who have taken pains to inquire into the facts that a radical reform must soon be made in our present system of education, from the elementary schools upwards; that a rearrangement of subjects and a reform in methods must be made, so that science may be allotted a place of equal prominence with other subjects, and that Government must begin the reform by insisting that such a change be made in the programmes of all schools under its control. On this point Sir John said:—

No doubt we had greatly increased the number of our schools and the attendances of the children, but while we had been disputing over the 25th clause and arguing about compulsion, we had somewhat lost sight of the character of the education given; and he was sorry to say that there was abundant evidence, not only that it had not improved, but even that it had fallen off in the last few years. The present system of payment practically confined the instruction given to reading, writing, and arithmetic. No doubt a payment of 3s. per head was nominally offered for any two other subjects, but other grants amounted to 18s.—namely, 5s. for attendance, 1s. for music, and 4s. each for reading, writing, and arithmetic, which were obligatory. Now, as 15s. was the maximum granted, it followed that if three-quarters of the children pass in reading, writing, and arithmetic, the

full grant would be earned, and nothing could be obtained from other subjects. It seemed to him, however, that the passes in reading and writing ought not to be made so difficult, but that three-quarters of the children should pass. No wonder that under those circumstances the Duke of Devonshire's Commission had reported that the present system had "unfortunately narrowed the instruction given in elementary schools, and, together with the lower standard consequently adopted in the training and examination of pupil-teachers, and the curtailment of the syllabus of the training colleges, exercises a prejudicial effect on the education of the country."

As to the question of expense for apparatus, Sir John Lubbock showed that this need be no obstacle; fully recognising that the kind of science to be taught must be no word knowledge, but a practical acquaintance with the actual facts of nature.

Schoolmasters had on more than one occasion said to him that it was impossible for them to teach science, because they had not the funds necessary to purchase apparatus, set up a laboratory, &c. Now, no doubt, much money might be profitably laid out in this way, but it was not necessary to do so. Mr. Tuckwell, who spoke from personal experience, said in a paper read before the British Association in 1871, that "it ought to be more widely known for how very small a sum sufficient apparatus can be obtained to teach natural history and experimental science. A laboratory can be fitted up for twenty boys at a cost of little more than 20*l.*, while each boy's private stock of glass and test solutions need not cost more than 8*s.* per annum. Botanical flower-trays, containing eighteen bottles, may be bought for half-a-crown; electrometers, telescopes, polariscopes, models of pumps, and pulleys, may be made, by a little instruction, by the boys themselves, who will learn in their construction far more of the principles which they involve than could ever be instilled into their minds by the choicest products of the shop."

After quoting the opinions of the late Prof. Faraday, Prof. Henslow, Dr. Hooker, and Prof. Huxley on the importance of early scientific education, Sir John said it was often urged that in science the very methods of teaching were still under discussion. This, however, was an unavoidable incidence of a commencement. It would be remedied by experience, and could be remedied by experience only. Mr. Arnold truly said that "when scientific physics have as recognised a place in public instruction as Latin and Greek, they will be as well taught."

Sir John Lubbock also referred to the miserable pittance which has as yet been allotted to research in science by our Universities; but as we have referred to this point so recently, we need not dwell upon it here. Altogether, we hope that this moderate and wise, but uncompromising address may give one more strong impulse to the already widespread feeling that we cannot with safety delay much longer in giving to science the place which it ought to hold in the educational system of the country.

THE NATURAL HISTORY OF SPITZBERGEN AND NOVA ZEMBLA *

SO much public attention is now directed to the polar regions and their inhabitants, that we do not hesitate to bring before the notice of our readers the important contribution to our knowledge of Spitzbergen and Nova Zembla, recently published by Von Heuglin as

* "Reisen nach dem Nordpolarmeere in den Jahren 1870 und 1871," von M. Th. von Heuglin. In drei theilen. Dritter Theil: Beiträge zur Fauna, Flora, und Geologie. (Braunschweig, 1874.)

the third part of his "travels" in those countries in 1870 and 1871.

In it will be found a complete *résumé* of the present state of our knowledge of the zoology and botany of those distant and inhospitable regions, and a chapter on what is known of their geology.

The mammals of these northern climes are few in number, consisting chiefly of seals and whales. The terrestrial mammal-fauna comprehends only two species of lemming (*Myodes torquatus* and *M. obensis*): the arctic fox, common fox, and wolf and sea-bear among the carnivores, and a single ruminant—the reindeer—seven species in all. The birds are more numerous, though here again the marine species far predominate, the land-birds being only ten in number out of a total of fifty. Amongst the former we are surprised to see recorded as an accidental visitor the Hoopoe, usually considered as rather an inhabitant of the tropics, but of which a single straggler was captured in Southern Spitzbergen by a merchant-vessel in August 1868. Reptiles are conspicuous only by their absence in Spitzbergen and Nova Zembla, but of fishes thirty species are recorded as having been obtained on various parts of the coast, all belonging to known forms either of the Atlantic or of the waters of Northern Asia.

The invertebrates of Spitzbergen are treated of more concisely by Herr v. Heuglin; but lists are given of the species of the different orders, and many references to previously published papers and works bearing upon this subject are added.

The account of the flora of Spitzbergen is mainly founded on Malmgren's paper, published in 1862, in the Proceedings of the Royal Academy of Sciences of Stockholm, to which, however, additions have since been made by Anderson, Fries, and Nyström. The Phanerogams enumerated are 117, the Cryptogams upwards of fifty. The botany of Nova Zembla and Waigatsch Island is separately treated of. Our knowledge of this subject is based upon the excellent researches of Von Baer and Trautvetter, published at St. Petersburg, and a paper of Blytt's, of Christiania. On these islands 146 Phanerogams and 144 Cryptogams have been discovered. Among the latter a certain number of new species are described in the present work by Prof. Ahle, of Stuttgart.

The geological chapter, which concludes the volume, is based upon the well-known researches of the Swedish naturalists Lovén, Torell, Blomstrand, and Nordenskiöld, who have laboured so long and so diligently upon this subject.

We can recommend Herr v. Heuglin's work as a very convenient handbook for the use of future visitors to the Northern Seas, and of explorers of those newly discovered lands of which we are now hearing so much.

HÆCKEL'S DEVELOPMENT OF MAN*

Anthropogenie oder Entwicklungsgeschichte des Menschen; gemeinverständliche wissenschaftliche Vorträge, von Ernst Hæckel. (Leipzig: Engelmann, 1874.)

II.

IN tracing the genealogy of our race, Prof. Hæckel, while availing himself of the gradual changes in the fauna of the earth during geological periods, and of the

* Continued from p. 5.