

also for Danes not officially connected with Greenland, to obtain permission from the Danish Government to go there. British applicants should submit recommendations through the Foreign Office and specify the purpose of their visit. There is at present no fee for working at the station, and for board and lodging the charge is at present only 8 kronen a day. The North Greenland district is accessible to ships from the latter part of May to the end of September, but during that time there are usually only two opportunities of direct connection with Copenhagen.

The director is an ideal man for the position; he is generally acknowledged to be the leading authority not only on the natural history of West Greenland, but on the history of Eskimo culture, and he is always willing unreservedly to place his knowledge and the results of his wide experience at the disposal of fellow-workers.

It was my privilege this summer, in company with Mr. R. E. Holtum, of St. John's College, Cambridge, to spend some weeks at the Arctic station, and I cannot speak too highly of the hospitality and scientific assistance which we received. Unfortunately for the cause of research, the director has no paid assistant to relieve him of much of the routine work of the station which makes serious inroads into the time available for investigations in his own special fields. One of the director's sons, Mr. Erling Porsild, who is not only a keen naturalist, but also is able to speak the Eskimo's language with ease, took us for a week's trip in the station's motor-boat to some localities where we wished to collect fossil plants. Our intention was to return to Godhavn in time for the King's visit before visiting more remote places, but the breaking of the boat's shaft and a spell of bad weather rendered this impossible, and threatened seriously to interfere with our subsequent plans. Mr.

Porsild at once approached the Director for Greenland who accompanied the Royal party, and he very kindly placed at our disposal for a month's trip his official motor-boat—an act of generosity for which it is difficult adequately to express my gratitude.

The particularly favourable climatic conditions in the Godhavn district have produced an exceptionally rich and varied flora, including several southern types not found elsewhere in North Greenland. There is a legend that Disco Island once lay much further south, and as it was an obstacle to navigation a hunter towed it behind his kayak to its present position.

Mr. Porsild has taken steps to protect the vegetation in the immediate neighbourhood of the station and at Englishman's Harbour, near the warm springs, of which there are several on the south coast of Disco, by putting up notices in the Eskimo language asking the natives to abstain from gathering fuel or collecting plants for food within certain protected areas—a request which is almost invariably respected.

The Danish Government by officially adopting the Arctic station showed its appreciation of the foresight and determination of Mr. Porsild, and set an example to other nations possessing territory within the Arctic Circle. One may venture to express the hope that the State will see its way to increase the value of this pioneer station by augmenting the annual grant sufficiently to provide an adequate stipend for the director and for a trained assistant, by the provision of an additional and larger motor-boat, and by expending the comparatively small sum required to make certain much-needed extensions of the building to relieve the present congestion in the rapidly growing library, and to accommodate the very valuable collection of Eskimo implements and weapons obtained by the director in the course of excavations made by him during several years on the mainland.

### Psychological Tests for Vocational Guidance.<sup>1</sup>

THE newly-formed section of Psychology had, at its first meeting in Edinburgh, a large and enthusiastic attendance. It opened its sittings on the morning of Thursday, September 8, being joined by the sections of Education and Economics, under the chairmanship of Sir Henry Hadow (president of the Education Section), with a discussion upon "Vocational Tests and Vocational Training." It appeared in the course of the several speeches, that economists, educationists, and psychologists alike were agreed upon one general and practical conclusion, namely, the feasibility and the importance of diagnosing during early childhood, whether by tests or other means, each individual's special vocational aptitudes.

Sir William Beveridge (director of the London School of Economics), who spoke late in the discussion, summed up the arguments for this conclusion most clearly. With other speakers he welcomed cordially the progress of industrial psychology, and maintained that if boys could be selected with greater care for the vocations they had to take up, three distinct economic consequences might be predicted. In the first place, unemployment would be appreciably diminished; although it was impossible to expect that lack of work would be altogether abolished simply by right vocational selection, it would beyond question be very much reduced. Secondly, the tenure of employment would be more nearly permanent: one of the chief causes that prevented people from sticking

to the jobs they had obtained would be largely eliminated. Lastly, productivity would be greatly increased. Besides these more limited effects, economic in their special nature, there would be a wider benefit to the public at large—a general decrease in human misery, and a general increase in human welfare.

He proceeded with some severity to criticise the method, or lack of method, now obtaining among employers in their choice of persons for different kinds of occupation. There were few things, he said, which employers handled more inefficiently than the selection of their employees. It is true that the president of the Economics Section later on disagreed with these criticisms of the employers' method of choice. Mr. Hitchens considered that employers exercised an extraordinary amount of care in choosing workers, both for higher and for lower positions. Indeed, they showed some advance upon the methods hitherto adopted by educationists. Instead of setting examination papers in which candidates were asked to name the kings of Israel, they asked questions and used trial tasks which had a definite bearing upon the trade process concerned.

In face of this slight disagreement among the economists, the psychologists replied that, even if the employers' methods were superior to the old-fashioned methods of the educationists, they were still highly unscientific and quite unstandardised. As an instance of the work possible and necessary in this direction, Dr. C. S. Myers (director of the Cambridge Psychological Laboratories) described the work of the new

<sup>1</sup> Discussion at a joint meeting of the Sections of Psychology, Education and Economics of the British Association at Edinburgh on September 8

National Institute of Industrial Psychology in London. Here attempts were being made at the request of large firms not only to improve the psychological conditions in their industries, but also to send scientifically trained psychologists to test applicants for particular kinds of work. Other psychologists, who spoke later, emphasised the value of the vocational testing already carried out in America, and dwelt especially upon the success of recent tests for general ability or intelligence.

There seemed a general feeling, announced particularly by the educationists, that the process of vocational guidance and testing should begin while the child was still at school; and it was even suggested that the general kind of education imparted at school should be very largely determined by the results of such tests.

This, indeed, was the position taken up in the opening speech by Dr. C. W. Kimmins (Chief Inspector of the Education Department of the London County Council). London, he claimed, offered the finest field for psychological research in the whole world. Here, under one authority, were accumulated 800,000 children and 20,000 teachers. He pointed out that the London County Council had, just before the outbreak of the war, added to the officers of the education department a psychologist, whose business it was to investigate both individual cases and general problems in the schools; and he described in detail certain aspects of the psychological work under the Council, work (he added) that only the recent demand for economy had prevented from rapid expansion. Since psychology had taken an important and an official part in investigations among school children, there had been, in London at any rate, large changes. In days gone by the children sent to special schools for the mentally deficient were often merely backward; and, thus stigmatised as mentally defective, their vocational future was often seriously prejudiced. But it was now possible by means of psychological tests to ascertain at the outset whether a child was genuinely and innately defective in native ability, or whether he was merely retarded through accidental causes in his educational attainments alone. His own experience of special schools now was that the children sent to them at the present day were really mentally deficient; and here, in schools of this type, the elder boys receive special industrial training suited to their capacities and future prospects. At the other end of the scale intelligence tests were now also being used in connection with the transference of brighter children to the secondary schools. Certain children, he said, might, up to a certain stage, do well in routine school work, and even pass their scholarship examinations, and yet it might prove that they had not sufficient inborn intelligence to profit by the higher instruction.

Dr. Kimmins, however, urged not merely the employment of the better known tests of intelligence, but also the elaboration of tests specifically devised for different occupations. In this reference he stated that some time ago he had made an investigation into the after-employment of children in the London district. He described the state of affairs that he found as tragic. In their first appointments an enormous proportion of the children gained unsuitable jobs; when they found themselves unsuitable they threw them up and drifted from one position to another. In many cases he found that boys of the greatest promise had eventually become mere van boys. And, generally, he concluded, although we spend an enormous amount of money upon education, we fail to give sufficient attention to the marketing of our products. He, therefore, advocated the adoption of a system by which the child, upon leaving school, would receive a carefully

drawn up statement, based upon psychological tests and prolonged observation, showing the line of employment for which he or she was best fitted. If this were done, he argued, the number of misfits would be much fewer than that observable to-day.

Mr. D. Kennedy Fraser (lecturer in education at the University of Edinburgh) spoke upon similar lines. He described from personal experience the use of intelligence tests in America. The result of these had been to show that an appreciable proportion of the population, something like one in forty, did not even during adult life attain a mental level beyond that of the average ten-year-old child. He strongly urged the execution of similar researches in this country. He concluded that, as a result of the newer discoveries made by the application of psychological methods to school children, the use of intelligence tests would eliminate—and was, indeed, the only possible way to eliminate—an enormous waste of time and effort on the part of teachers. Thus vocational testing and vocational training were now needed as an essential part of a system of general education.

Mr. Frank Watts, formerly lecturer on psychology in the University of Manchester, agreed with the foregoing speakers upon the importance of vocational testing, but he emphasised the fact that the tests were as yet still somewhat imperfect. The problem was usually stated too simply. It was depicted purely as a question of fitting pegs, round or square, into holes of an appropriate shape. He pointed out that the pegs were plastic and malleable, and the holes were constantly changing their shape; and both, as a rule, were neither absolutely square nor absolutely round. Further psychological investigation was, therefore, needed not only into the capabilities of the applicant, but also upon the requirements of the different kinds of job for which he might apply. Just as Sir William Beveridge had urged that firms should take a more intelligent interest in testing and training, so Mr. Watts urged that educationists must bring the schools into more vital contact with the industrial firms. One of the chief difficulties was that not only did the employer know nothing about the applicant, but the applicant when he left school knew nothing about industry.

This latter point was also emphasised in the speech of Dr. Myers, who made the very valuable suggestion that the kinematograph should be used to show the responsibilities, the prospects, the advantages, and the dangers of various occupations. Dr. Myers insisted that the choice of the occupation must be made by the individual himself; but the boy needed advice; and, helpful as they might be, neither teachers nor parents were entirely adequate to supply that advice because they themselves were without detailed knowledge of industrial requirements. Expert advice, therefore, was essential. Here once more was evident the need for a national institute of vocational psychology, though, even in the work of such an institute, the co-operation of the teacher and of the education authority still remained indispensable.

Miss L. Grier (principal-elect of Lady Margaret Hall, Oxford) was one of the few speakers who explicitly urged the importance of direct vocational training in addition to general vocational testing. It was apparently her view that, after we had discovered what the boy was suitable for, we should attempt to teach him and train him somewhat more specifically upon those lines. In giving this training, the question as between the factory and the school, she believed, was no longer confused by the old distinction between useful and useless knowledge. The idea that knowledge that was useful ceased to be educational was now exploded. The special institu-

tions that existed for giving training in particular subjects should now be able to supply excellent apparatus and specialised teachers for the purpose. Unfortunately, however, too often these institutions were crippled in their finances.

Prof. Reid, of Aberdeen, urged that the responsibility of training was at present thrown too exclusively upon the schools. Speakers had argued for industrialising education. He wished to argue for educationalising industry. And he thought that a hopeful change in this direction might be anticipated if the spirit of the older and smaller industries could be got into the big industrial concerns to-day. Other speeches, following somewhat upon these lines, seemed to indicate that the general opinion of the three united sections had reached this interesting, and, on the surface, somewhat paradoxical, conclusion: at present the industries left training to the school, and kept vocational selection to themselves; it was urged the industries should take upon themselves more and more of the responsibilities of training, and the schools should take on more and more of the work of the testing and selecting with a view to ultimate vocational guidance. But it seemed universally agreed that, whether in the matter of training or in that of selection, neither school nor industry could shift the responsibilities entirely on to the shoulders of the other.

### Mechanical Engineering Education in Bengal.

SOME months ago a committee was appointed by the Government of Bengal to investigate the training of mechanical engineers in the Province, with special reference to the improvement of the education of apprentices in the State railway workshops at Kancharapara. The committee consists of Sir Rajendra Nath Mookerjee, Mr. A. T. Weston (Director of Industries), Mr. B. Heaton (principal, Bengal Engineering College), Prof. R. Wolfenden (professor of mechanical engineering, Bengal Engineering College), Mr. W. H. Everett (Director of Technical Education, Bengal), Mr. A. Cochran, Mr. H. Spalding, Mr. S. A. Skinner, Mr. Miller King, Mr. H. S. Strachey (representing the railway workshops and various well-known engineering firms in Calcutta), and Dutt Subrawardy, of the Bengal Legislative Council.

This committee is to be known as the "Board of Control for Apprenticeship Training in Bengal." It has had several meetings and has drawn up a scheme of apprenticeship training which, it is hoped, will greatly improve mechanical engineering education in Bengal. The scheme, which will be put into operation at Kancharapara immediately, consists of an admission examination (similar to the graduate examination of the Institution of Mechanical Engineers), followed by four years' training in workshops with compulsory attendance at a technical school to be built at Kancharapara. All the apprentices will live in barracks to be provided by the railway. It is hoped that by the end of the four years of training the brighter students will have reached such a standard of proficiency in mechanical engineering subjects as will enable them to proceed to a two years' course in the mechanical engineering department of the Bengal Engineering College. Those who are not sufficiently well qualified to be admitted to the college will remain at the works for a further two years of training. The course will, therefore, in all cases be a six years' course. The scheme, at present,

NO. 2714, VOL. 108.]

will be compulsory only in the workshops of the East Bengal Railway at Kancharapara, but it is hoped that other State workshops—such as the ordnance factories and the large engineering firms in Calcutta—will join in the scheme.

The new Board of Control is also supervising the courses and examinations in mechanical engineering at the Bengal Engineering College. These courses have to provide, at present, for students admitted directly to the college after having passed the matriculation, or the intermediate science examinations of Calcutta University. They comprise (a) a three years' course at the college, together with three years' practical training in approved workshops, leading to a college diploma; and (b) a four years' course at the college followed by two years' practical training in workshops leading to the associateship of the college. Course (b) is for the exceptionally good men who, in the opinion of the examiners and of the professor of mechanical engineering, would profit by a year of more advanced training.

The courses are arranged to suit the conditions prevailing in India, and will include training in modern workshop methods and measurements, and in workshop management and accounts. It is hoped that these courses will succeed in producing a regular supply of thoroughly trained mechanical engineers for service in the Province.

### University and Educational Intelligence.

EDINBURGH.—There comes into operation this year the new Science Ordinance, under which a student may study either for a pass or for an honours B.Sc. degree. Four years is the minimum time in which either degree may be completed. The main difference between the two classes of degree is that a student aiming at the honours degree in any science devotes in general the third and fourth years to a specialised study of the subject he is professing, cognate sciences being studied up to a somewhat lower standard. In the pass degree several branches of science are carried forward simultaneously to an intermediate standard. With the exception of the first year chemistry the lectures and laboratory work are now being conducted in the new King's Buildings on the southern margin of greater Edinburgh. Next year all the work will be transferred there.

The University Court has approved generally of a draft Ordinance founding an independent professorship in the department of natural philosophy, to be called the Tait chair of natural philosophy.

The following new courses have been instituted:—(1) A course in Indian geology for forestry students who have been selected as probationers for the Indian Forest Service, and (2) two half courses in economic geology, the first to deal with ore deposits.

In terms of an Act of Parliament recently passed the income of the John Newland Endowment (capital 22,500*l.*) will in future be applied in bursaries, the award to be determined on the results of the University examination for entrance bursaries.

Negotiations have been completed for the purchase of about ten acres of ground for the extension of the University athletic field.

MANCHESTER.—Prof. F. E. Weiss has been appointed Pro-Vice-Chancellor.

The resignation of Mr. P. A. Cooper, assistant lecturer in physics, is announced.

Mr. C. G. Core and Miss Lucy Higginbotham have been re-appointed Schunk research assistants.