

Natural History, and consisted of an exploration of the west coast of Mexico. In this connection, the fisheries steamer *Albatross* was used. Dr. J. N. Rose and Dr. Paul Bartsch represented the National Museum, collecting, respectively, the plants and molluscs from the portions of the coast visited. It was through this expedition that the National Zoological Park secured two yearlings of the elephant seal, a very remarkable and interesting animal, which for many years had been supposed to be extinct.

Mr. A. C. Bent, with a small party of ornithologists, made an excursion to the Aleutian Islands in search of further information for incorporation in a work on the life-histories of North American birds, which he is compiling for the institution. The members of this party were accorded many facilities by the Revenue Cutter Service of the Treasury Department, and particularly by the officers of the cutter *Tahoma*. Good series of land birds were obtained from nearly all the islands of the Aleutian chain, and many valuable facts concerning the distribution and habits of the land and water birds were recorded.

Mention is made of the field work in Cambrian geology and palæontology in British Columbia, continued by Dr. Charles D. Walcott, secretary of the institution, and his assistant, Mr. L. D. Burling. A remarkable collection of fossils was taken, and will be described in a future publication of the institution.

This publication on explorations consists of fifty-one pages of text, together with many illustrations from original photographs taken at the scenes of the investigations, and forms publication No. 2087 of the Smithsonian Miscellaneous Collections.

### SECONDARY AND TECHNICAL EDUCATION IN ENGLAND.

THE annual volume of Statistics of Public Education in England and Wales, prepared by the Board of Education, is a valuable record of the position and progress of the various branches of elementary, secondary and technical education receiving State aid or recognition, so far as these may be judged by numerical values. Part i. of the volume of Educational Statistics for 1910-1911, which has just been published as a Blue-book (Cd. 6338, price 2s. 6d.), contains more than five hundred pages of tables and other statistical information relating to education in England and Wales. From this mass of material we have abstracted a few facts as to the position of English secondary schools, technical institutions, evening classes, and so on, in receipt of State grants.

#### Secondary Schools.

A secondary school, in the sense in which the term is used in the Board's regulations, must offer to each of its pupils a progressive course of instruction (with the requisite organisation, curriculum, teaching staff, and equipment) in the subjects necessary to a good general education, upon lines suitable for pupils of an age-range at least as wide as from twelve to sixteen or seventeen. The provision, if any, made for pupils below the age of twelve must be similarly suitable, and in proper relation to the work done in the main portion of the school. The regulations also require that an adequate proportion of the pupils must remain at least four years in the school, and that an adequate proportion must also remain up to and beyond the age of sixteen; but these requirements may be reduced to three years and the age of fifteen respectively in the case of rural areas and small towns, where such a course appears to the Board to be advantageous in view of local circumstances. The great public schools are not connected with the Board under these regula-

tions, but with this exception most of the secondary schools in England are included in the subjoined table:—

*Numbers of Schools and Pupils.*

Number of schools	...	...	...	...	862
Number of full time pupils under 12 years of age	...	...	...	...	36,989
12 and under 16 years of age	...	...	...	...	96,058
16 " 18 "	...	...	...	...	11,555
18 years of age and above	...	...	...	...	1,007
					145,609

It will be seen from this table that more than 90 per cent. of the pupils in our State-aided secondary schools are under sixteen years of age, and one-quarter of the pupils are under twelve years of age. In other words, a large part of the work of these secondary schools is of an elementary grade educationally, and not secondary in the sense of being a continuation of primary education. Of the total number of pupils in the secondary schools, 60 per cent. are from public elementary schools, and 35 per cent. receive free education. When only Council schools are considered, it appears that nearly three-quarters of the pupils are from public elementary schools and 40 per cent. pay no fees.

Any bright boy or girl can proceed from the elementary school to the secondary school by the liberal provision of "free places," and they can often obtain maintenance grants in addition. There are now very few really promising children of working-class parents who fail to secure places in our secondary schools if they wish to do so. In many districts it is difficult to find among the pupils presented from elementary schools a sufficient number to justify their admission to secondary schools under the clause which provides for 25 per cent. free places for pupils from elementary schools, without having a low educational standard. In fact, free secondary education practically exists at present for every capable child of the elementary school class who desires to take advantage of it. The children enter as free-placers or by payment of low fees; but as most of them leave before they are fifteen years of age, they had better have remained in the elementary schools. Free secondary education may be accepted as a general principle, but the privilege should be accompanied by the responsibility of remaining at school until a full course has been completed, whether maintenance grants are provided from public funds or not.

A rough indication of the attainments of pupils as measured by success in certain examinations is given in a table which appears for the first time in the present volume of statistics. The examinations selected are the preliminary examination for the teacher's certificate, university senior locals, university matriculation, university senior school examination, university higher locals, and other examinations of like standard. The results of the inquiry are here summarised:—

#### Attainments of Pupils leaving Secondary Schools.

Number of pupils of 14 years of age and above who left during the year	...	...	...	...	38,672
		Boys	Girls	Combined	
		%	%	%	
Passed one of the above examinations	14'06	21'16	17'16		
Did not pass "	85'94	78'84	82'84		

In the table from which these numbers have been extracted we have for the first time a means of estimating the standard reached by pupils leaving our State secondary schools. It appears that more than four-fifths of the pupils had not passed an examination of senior local or matriculation standard when they left school. This is probably explained by the fact



*Students in Evening Schools.*

Recognised schools or centres ... ..	7,422
Students who attended any time during the year :—	
(i) Age at date of first registration for the session :—	
Under 12 years of age ... ..	735
12 and under 15 years of age ... ..	151,330
15   "    18   "    " ... ..	214,569
18   "    21   "    " ... ..	118,682
21 years of age and over ... ..	222,943
(ii) Sex :—	
Boys and men ... ..	414,417
Girls and women ... ..	293,842
Total ... ..	708,259

In this large number of evening students, nearly one-third of whom are twenty-one years of age or above, and most of whom attend the classes after a day's labour in workshop or office, we have a volunteer army from which many captains of industry and leaders of thought have been selected. It is true that some of the instruction given in these evening schools and classes is not far removed from that of continuation schools, but there is much of a higher standard, and in the combination of practical experience in the works during the day with theoretical knowledge gained at night we have a means of technical education which has proved successful in the past, and from which more may be expected in the future.

R. A. G.

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

DR. ARTHUR I. KENDALL, instructor in preventive medicine and hygiene at the Harvard Medical School, has been appointed to the chair of bacteriology at Northwestern University, Evanston, Ill. This appointment will give him the oversight of the researches in the problem of tuberculosis which have recently been endowed by Mr. James A. Patten at a cost of 50,000l.

THE Calendar of the Royal Technical College, Glasgow, for the one hundred and seventeenth session, 1912-1913, has just been received. It contains much information as to the courses of work prescribed for candidates for the college diploma, as well as other details. We notice that the governors contemplate the extension and modification of the diploma courses in mechanical, electrical, and civil engineering, mining, and naval architecture. The whole building of the college extends over seven acres of floor space, and forms the largest structure in Great Britain devoted to education. With its equipment it has cost about 400,000l.

In the Calendar of the Edinburgh and East of Scotland College of Agriculture for 1912-1913, which has just been issued, full particulars are given of the various courses that may be taken at the Central Institution in the departments of agriculture, horticulture, and forestry. The new arrangements in forestry will come into operation next session, and in this subject a new class will be commenced, the syllabus of which has been laid down with a view to meet the needs of those who desire a general knowledge of forestry from the practical point of view. It is intended that this side will be specially emphasised by work in the forest garden. The calendar contains full details of the large amount of extension work carried on in the counties of the college area. The numerous lecturers and instructresses engaged in this department take to the doors of the rural population teaching in many subjects bearing on country life.

THE Board of Agriculture and Fisheries has awarded the following research scholarships in agricultural science:—A. W. Ashby, Oxford (economics of agriculture); W. Buddin, Cambridge (plant nutrition and soil problems); A. E. Cameron, Aberdeen (agricultural zoology); F. Cook, London (animal nutrition); A. Cunningham, Edinburgh (bacteriology); J. Davidson, Liverpool (agricultural zoology); F. C. Minett, London (animal pathology); P. A. Murphy, Dublin (plant pathology); M. S. Pease, Cambridge (genetics); W. W. P. Pittom, Cambridge (animal nutrition); J. A. Prescott, Manchester (plant nutrition and soil problems); F. Summers, London and Liverpool (plant physiology). The scholarships, which are of the annual value of 150l., and are tenable for three years, have been established in connection with the scheme for the promotion of scientific research in agriculture, for the purposes of which the Treasury has sanctioned a grant to the Board from the Development Fund, and they are designed to provide for the training of promising students under suitable supervision with a view to enable them to contribute to the development of agricultural science.

## SOCIETIES AND ACADEMIES.

## PARIS.

Academy of Sciences, August 19.—M. Bassot in the chair.—A. Lacroix: The gem-bearing pegmatites of Madagascar. These pegmatites fall into two groups: potassium pegmatites and sodium and lithium pegmatites. The first contains beryls, and also rare minerals containing titanium, niobium, tantalum, uranium (radio-active), cerium, and yttrium; the latter is characterised by numerous lithium minerals, tourmalines of various colours, beryls, red triphane (lunzite), and also minerals containing boron and fluorine.—Richard Birkeland: The trajectory of an electrified particle in a magnetic field.—L. Wertenstein: The absorption of radio-active projections and the ionisation which they produce.—S. Ratner: The mobilities of the radio-active atoms in gases. A study of the mobilities of the atoms of radium B, projected by radium A, Rutherford's method of the alternating field being employed in the measurements.—Jean Bielecki and Victor Henri: The quantitative study of the absorption of the ultra-violet rays by alcohols, acids, esters, aldehydes, and ketones of the fatty series. The photometry of the spectrograms has been utilised as the basis of a quantitative study of the absorption in the ultra-violet. The absorption increases as the molecule becomes more complex. The acid group (CO.OH) possesses a very great absorptive capacity. Other groups possess specific absorption characteristics.—M. Portevin: The effect of tempering upon the electrical resistance of bronzes and brasses.—Georges Baume and F. Louis Perrot: The atomic weight of chlorine. Gaseous hydrochloric acid was allowed to come in contact with liquid ammonia, and the weight of gas necessary to form neutral ammonium chloride determined. Taking  $N=14.009$ , the results lead to  $Cl=35.465$ , practically identical with the international value  $35.460$ .—E. C. Teodoresco: The presence of a nuclease in *Algæ*.

## CAPE TOWN.

Royal Society of South Africa, July 17.—J. Medley Wood: Addendum to revised list of the flora of Natal.—J. Hewitt and Hon. P. A. Methuen: Descriptions of some new Batrachia and Lacertilia from South Africa.—Miss L. Currlé: Notes on Namaqualand Bushmen. The account is taken from a gentleman whose early life afforded him ample facilities for obtaining a clear insight into the characteristics of Cape Colony Bushmen. Their wandering life is noted, also their mode