

Spanish women have made little use of the facilities offered. In Sweden, women appear to be excluded from the theological faculties, but since a Royal decree of 1870 they have been able to take medical degrees, and from 1873 the legal and philosophical faculties have been open to them. The seven universities of Switzerland are, without exception, open to women; the conditions under which they study vary somewhat in different universities.

AMERICA.

All courses and degrees of Canadian universities are, as a rule, open to women on the same terms as men, though in some cases they study for medical degrees in separate medical schools. The colleges of the various universities do not generally possess boarding accommodation for the students, who reside in boarding houses approved by the college authorities.

It is impossible at the end of a general article to do more than give one or two salient facts in reference to the higher education of the women of the United States. The report for 1899 of the Commissioner of Education states: "The barriers to women's higher education seem effectually removed, and to-day eight-tenths of the colleges, universities, and professional schools of the United States are open to women. . . . The obtaining of a collegiate education gives the women more ambition to enter a profession, or if they decide to marry, it is stated that—'The advanced education they have received has added to their natural endowments, wisdom, strength, patience, balance, and self-control . . . and that in addition to a wise discharge of their domestic duties, their homes have become centres of scientific or literary study or of philanthropy in the communities in which they live.'"

The number of women undergraduate and resident graduate students in the colleges of university standing in the United States in the year 1900-1 was very nearly 47,000, and of these about 21,500 studied in colleges side by side with men. During this year 5050 degrees were conferred on women, nearly half as many as were gained by men, viz. 11,463.

Such are, in the barest outline, the leading facts as to the attitude of the more important countries towards the higher education of their women. The reader who desires more detailed knowledge should refer to the following sources of information, upon which the writer has largely based his conclusions:—"Handbook of British, Continental and Canadian Universities, with Special Mention of the Courses Open to Women," "Supplement to ditto, for 1897," by Dr. Isabel Maddison (New York: the Macmillan Co.). "Educational Systems of Great Britain and Ireland," by Graham Balfour (Oxford: Clarendon Press). "Education in the Nineteenth Century," edited by Dr. R. D. Roberts (Cambridge: University Press). "Growth of Educational Ideals during the 19th Century," by Sara A. Burstall (*The School World*, 1902). "Englishwoman's Year-Book, 1903" (Black). "Annual Reports of the Department of the Interior," by the Commissioner of Education (Washington: Government Printing Office).

A. T. SIMMONS.

CAVE EXPLORATION IN IRELAND.¹

HERE is little doubt that the visit, a few years back, of the enthusiastic M. Martel, whose "Irlande et Cavernes anglaises" forms such pleasant reading, did much to rouse new interest in Irish caves. Dr. Forsyth Major soon after examined the Irish fossil Mammalia in the Dublin Museum of Science and Art, where Dr. Scharff was at the same time summarising his researches on the origins of the European fauna; on this question the pre-Glacial and post-Glacial Pleistocene remains naturally throw a considerable light. Mr. R. J. Ussher, already distinguished by his published work on southern caves, was fortunately again willing to devote his time to exploration. Circumstances were thus favourable to the formation of a committee,

¹ "The Exploration of the Caves of Kesh, County Sligo, being the First Report of the Committee, consisting of Dr. R. F. Scharff (chairman), George Coffey, Prof. Grenville A. J. Cole, R. J. Ussher, and R. Lloyd Praeger (secretary), appointed to Explore Irish Caves" (*Trans. Royal Irish Academy*, vol. xxxii. sect. B, part iv.). Pp. 46 and 3 plates. (Dublin, 1903). Price 2s.

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which, aided by grants from the Royal Irish Academy and the British Association, has examined certain caves near Ballymote, in the county of Sligo, and is actively engaged on others near Edenvale, in Clare.

The present report is a well edited quarto paper, with several illustrations. Mr. George Coffey, keeper of the collection of Irish antiquities in the Dublin Museum, deals with the traces of human occupation, and, like most of the contributors, has personal knowledge of the caves. The geological section is greatly strengthened by the visit of Mr. G. W. Lamplugh to Keshcorran, and his association as joint-author in the report. Messrs. A. S. Kennard and B. B. Woodward describe the Mollusca, and are known as specialists in this comparatively unworked branch. Mr. E. T. Newton, F.R.S., has identified the remains of birds, while Prof. D. J. Cunningham, F.R.S., describes the scanty human bones. In work where wide deductions may be founded on a single fragmentary relic, this specialisation among the contributors cannot be too highly praised.

Mr. Ussher's general description provides an interesting introduction to the detailed essays. Messrs. Cole and Lamplugh then show that the caves depend for their form on the joint-planes in the massive limestone, and that they were excavated by solution in pre-Glacial times. Glacial detritus then became banked against the slope, and crept into the caves from their mouths. As the ice melted, characteristic mounds of similar material were deposited in the lowland below Keshcorran.

A good part of the deposit within the caves is derived from the solution of the limestone, and includes characteristic bipyramidal crystals of quartz. A spicular crystalline material, mingled with the calcareous tufa, affecting polarised light, and soluble in acids, has unfortunately so far eluded determination. The possibility of the discovery of pre-Glacial remains in such caves in Ireland is pointed out.

As Mr. Ussher indicates, in commenting on Mr. Newton's list of the bones of birds from the caves, the smew, the grey plover, and the little auk are now rare inland, even in winter; the discovery of their remains has therefore some bearing on the climate during their occupation of Keshcorran. Dr. Scharff, in his account of the mammals, identifies the Arctic lemming, not previously known in Ireland. The remains of horse, obtained, with one exception, from the upper stratum of the principal cave that was examined, show that "horse-flesh probably formed one of the principal articles of diet of the cave-men." The traces of the mountain or Irish hare, the true *Lepus timidus* of Linné, indicate a larger animal than that now prevalent in Ireland. Bear (*Ursus arctos*) is represented by a fine left ramus of a lower jaw and very numerous remains. The distribution of the bones of all these animals is easily realised from the small maps provided, on which those found in the upper stratum are indicated separately from those in the lower.

Mr. George Coffey considers that man's occupation of the caves does not date back to a very remote period. Charcoal is frequent in the upper layers, and its distribution, together with the objects found, suggests a brief occupation of the caves in Neolithic times, and a more prolonged settlement when bronze and iron were both common. This latter occupation seems to have been as recent as the eighth to the eleventh century of our era, and Mr. Coffey ingeniously pictures the bear as responsible for the general avoidance of the locality in earlier times.

Mr. R. Lloyd Praeger, now editor to the Royal Irish Academy, summarises the results, and his detailed plan and the illustrative plates are worthy of the body which has undertaken their publication.

G. A. J. C.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

PROF. A. G. BOURNE, F.R.S., professor of biology at the Presidency College, is to take up the duties of Director of Public Instruction, Madras.

MR. H. J. MACKINDER, lecturer in economic geography at the London School of Economics, has been appointed director of the School in succession to Prof. W. A. S. Hewins, who has resigned the post.

ANNOUNCEMENT is made that Sir J. S. Burdon-Sanderson, F.R.S., regius professor of medicine at Oxford, has placed his resignation of the professorship in the hands of the vice-chancellor of the university.

THE Mysore Durbar has, says the *Pioneer Mail*, established four scholarships of 40 rupees a month each to encourage the study of analytical chemistry in the laboratory of the agricultural department. The scholarships will be tenable for one year, and will be open to candidates who have taken the B.A. degree in physical or any other branch of natural science. Students awarded scholarships will have to give an undertaking to serve the State for one year if required to do so, or to refund the money in case they refuse to serve.

In a recent address at the distribution of prizes to the students of the classes held under the Liverpool School of Science subcommittee, Sir Philip Magnus, referring to the progress made in the provision of technical education in this country during the last few years, said that in 1886 the number of students in technological classes registered by the City Guilds Institute was 7660, and, during the past session, that number has increased to 38,638. Moreover, apart from the sum of more than 1,000,000*l.* which local authorities expended last year on technical instruction as defined by the Technical Instruction Act, the State contributed the sum of 605,143*l.*, as against a total of 107,583*l.* in the year 1886, whilst the total State contribution last year to education generally amounted to more than 9,000,000*l.*, as against little more than 3,000,000*l.* in 1886.

An appeal is being issued by the Senate of the University of London for funds to build and endow an institute of medical sciences under the control of the university. A letter signed by the chancellor of the university, Lord Rosebery, the vice-chancellor, principal and others has been circulated urging the claims of such an institute. Owing to the great changes which have taken place in medical education of late years, due to the increasing attention given to the teaching of the scientific subjects, it has become impossible, the letter states, for each medical school, out of the income derived from the fees of students, to build, equip, and maintain the laboratories, fitted with costly apparatus, which are necessary for modern scientific teaching. The faculty of medicine, a body consisting of 350 recognised teachers of the university, has ascertained the views of the teachers of the medical schools, and has recommended the Senate to establish an institute for the teaching of physics, chemistry, biology, anatomy, and physiology.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Astronomical Society, December 11.—Prof. H. H. Turner, F.R.S., president, in the chair.—Dr. A. A. **Rambaut** read a paper on two drawings of the Mare Serenitatis by John Russell, R.A., which afforded some hitherto unpublished evidence with regard to the appearance of Linné in 1788. Dr. Rambaut showed photographs of the original drawings, on which Linné appeared as a white spot, and not as a crater.—Mr. **Saunders** showed and described a photograph of one of the earliest maps of the moon, made by Langrenus about 1645.—The **Astronomer Royal** showed photographs of Comet Borrelly 1903 and Comet Perrine 1902, and pointed out their great similarity in appearance.—The Astronomer Royal also gave an account of the observations of the recent shower of Leonid meteors on the morning of November 16.—Mr. **Denning's** paper on the same subject was also read. There was complete agreement among the observers as to the maximum being between 17h. 30m. and 18h.—Mr. J. C. W. **Herschel** read a paper on an examination of the relative star density on different parts of the plates forming the Harvard photographic star map, from which it appeared that the maximum density was at about 9° from the centre of the plate, after which it fell off very rapidly.—Mr. **Crommelin** presented his ephemerides for physical observations of Saturn,

1903-4, and gave the different values that had been found for the planet's rotation period.—The secretary read a paper by Prof. G. W. **Hough** on the rotation period of Saturn deduced from his observations of the white spot first observed by Prof. Barnard on June 15.—Mr. **Maunder** read a letter from Mr. Percival **Lowell**, in which the latter affirmed his conviction of the reality of the canals of Mars, and also of the markings on Venus.—Prof. **Turner** described his graphical method for determining the local or Greenwich time of sunset at different places within a given region, and Mr. **Benson** spoke of a somewhat similar method previously devised by him.—The secretary read a paper by Mr. P. H. **Cowell** on the semidiameter, parallactic inequality, and variation of the moon derived from the Greenwich meridian observations from 1847-0 to 1901-5.—Mr. H. C. **Plummer** described and illustrated his paper on oscillating satellites.

Zoological Society, December 1.—Dr. Henry Woodward, F.R.S., vice-president, in the chair.—Prof. E. Ray **Lankester**, F.R.S., exhibited and made remarks upon some specimens of *Medusæ* reported to come from the Victoria Nyanza. Prof. Lankester also exhibited some drawings showing the hair-whorls on the face of two specimens of the okapi.—Mr. F. E. **Beddard**, F.R.S., exhibited and made remarks upon a portion of the large intestine and the cæcum of a boa (*Boa constrictor*) which had died in the Society's Gardens. The walls of the intestine in the neighbourhood of the cæcum and of the cæcum itself were thickened and inflamed. The cæcum was filled with a hard mass consisting of small stones and a number of the snake's own teeth, the presence of which, it was thought, had given rise to the inflammation.—Mr. **Beddard** also exhibited, on behalf of Mr. G. A. Doubleday, a hairless specimen of the common rat (*Mus decumanus*) which agreed in its characters with a so-called variety (*Mus nudo-plicatus*) of the common mouse figured in the Society's *Proceedings* (1856, p. 38, mamm. pl. xli.).—Dr. **Walter Kidd** exhibited a drawing of an *Oryx beisa* showing a reversed area of hair along the median line of the back, a character which was found only in ruminants, but not in all of them.—Mr. **Oldfield Thomas** exhibited an example of the naked rodent which he had in 1885 described as *Heterocephalus phillipsi*, but now thought should form a special genus, proposed to be called Fornamia, as its possession of only two cheek-teeth proved to be constant. The specimen had been presented to the British Museum by Dr. A. G. W. **Bowen**, R.N. A second species of *Heterocephalus*, distinguished by its smaller size and much smaller teeth, was described from British East Africa and named *H. ansorgei*.—Mr. G. A. **Boulenger**, F.R.S., exhibited a young hybrid newt (*Molge marmorata* ♂ × *M. cristata* ♀) obtained by Dr. **Wolterstorff**, of Magdeburg, in his aquarium, as reported in the *Zoologischer Anzeiger*, September 21. This specimen agrees in all external characters with *M. blasii*, de l'Isle, of which one of the original specimens, from near Nantes, S. Brittany, forming part of M. Lataste's collection, was also exhibited.—Mr. F. E. **Beddard**, F.R.S., read a paper on the tongue and windpipe of the American vultures, and remarked upon the inter-relations of the genera *Sarcorhamphus*, *Gypagus*, and *Cathartes*.—A communication from Miss Dorothy M. A. **Bate** contained an account of the species of mammals—fifteen in number—hitherto recorded from Cyprus. One subspecies—*Crocoidura russula cypria*—was described as new to science.—The secretary, on behalf of Dr. R. N. **Salaman**, read a report on the *post-mortem* examination of the polar bear which had recently died in the Gardens. It stated that death was undoubtedly due to an aneurism of the aorta, which was possibly caused by a sharp bone at some previous time penetrating the œsophageal wall and lacerating the aortic wall.—A communication from Sir Charles **Eliot**, K.C.M.G., contained an account of thirty species of cryptobranchiate molluscs of the family *Dorididæ* from the east coast of Africa and Zanzibar. Of these eighteen were described as new.—A communication from Dr. A. G. **Butler** contained evidence in proof of the fact that the cardinal finch known as *Pavoaria cervicalis* was only an immature condition of *P. capitata*.—Dr. P. **Chalmers Mitchell** read a paper on the occasional transformation of Meckel's diverticulum in birds into a gland.