The Yorkshire Naturalists' Union is fortunate in enlisting the services of specialists to assist in the compilation of county records, both botanical and zoological. Several series representing different branches of natural history have been, and are being, published in its *Transactions*. One part, lately issued, completes the county list of fresh-water algæ, which has appeared in four instalments, and for which Mr. W. West and Mr. G. S. West are responsible. Another volume, which is produced under the joint authority of Mr. G. Massee and Mr. C. Crossland, constitutes the first instalment of the "Fungus Flora of Yorkshire," and enumerates the Gasteromycetes and Agaricineæ. Although only a small portion of the county has been thoroughly explored, the list will summarise the results obtained during several successive annual forays, and will also include the records noted by independent collectors.

At the meeting of the American Association held in Washington last December, Prof. Douglas Campbell selected as the subject of his address "The Origin of Terrestrial Plants." The subject is one to which the writer has contributed many valuable suggestions and arguments, but on the present occasion no new ideas are presented. It may be noted that although Prof. Campbell alluded to the possibility of the leaf arising by mutation as a sudden outgrowth on the sporophyte, he looks upon the apophysis of the moss capsule as an early form of such emergence. With regard to the origin of the root, the view is expressed that this arises as a modification of the foot.

A list of fresh-water algæ, collected in Java by Dr. Raciborski, and named by Mr. M. R. Gutwiński, appears in the *Bulletin International de l'Academie des Sciences de Cracovie*. Sixteen new species are recorded under the genera Closterium, Penium, Xanthidium, Cosmarium, Staurastrum and Spirulina.

A small brochure, published by the University College of Wales Scientific Society, furnishes a list of flowering plants and ferns which have been found in the neighbourhood of Aberystwyth. The compilation of such records is to be strongly commended, since it furnishes a definite objective, and is therefore certain to provide an extra stimulus for the excursions of local societies. The list now produced may, with advantage, be amplified by inserting notes on habitats, dates and descriptions of peculiar forms.

The first specimen-part of the "Prodromus Floræ Britannicæ" was issued by the author, Mr. F. N. Williams, in June, 1901, and since that date two more numbers have been published, the last bearing the date November, 1902. The orders Cucurbitaceæ, Lobeliaceæ and Campanulaceæ appeared in the first portion, while the remainder of the work, so far as it goes, is devoted to the Compositæ, under the disguised name of the Asteraceæ, and the last part is given up to and contains the whole of the genus Hieracium.

The presidential address on the "Rise and Progress of Ecology," delivered by Prof. V. M. Spalding before the Society for Plant Morphology and Physiology at the Washington meeting, appears in *Science*. The writer indicates two phases of the subject, the compilation of facts and the subsequent incorporation of these into conclusions, and refers to a recent paper, by Mr. Paul Jacquard, on alpine plants.

The Annual report of the Board of Agriculture and Department of Public Gardens in Jamaica, for the year 1901-2, also an authorised Guide to Hope Gardens, have been received. In the former certain changes in the disposition of the staff are recorded, and also the approval of the legislative council for the purchase of land on St. Jagos estate, part of which may possibly be utilised for experimental work. A survey is given of horticultural experiments and educational work. The Guide includes a description of the botanic gardens by Mr. W. Jekyll.

In the current number of the Trinidad *Botanical Bulletin* there appears an instructive article on the care of pastures. It is pointed out that native grasses are likely to be more successful than those grown from imported seed, or if imported they may with advantage be introduced from countries which possess a similar climate. For the destruction of parasol ants, carbon bisulphide, used with due precaution, is recommended. In connection with this and other uses, such as a seed fumigator, an article giving American experience is reprinted.

THE PREVENTION OF DEW DEPOSITS ON LANTERN SLIDES.[1]

LANTERN slides are so commonly used in lecture illustrations that the following hints may prove to be useful:—

The deposit of dew which frequently takes place is very annoying, but its cause is easily traced, and, I believe, can easily be removed. Dew means that the surface on which it is deposited is colder than some other surface with which the air must have previously been in contact, and at which it has become saturated with moisture; hence the problem consists in discovering that surface, and in preventing its becoming hotter than the glass slide.

There is a kind of tradition amongst makers of lanterns and their accessories that every surface should be black. There is no reason at all for this practice, which is probably in all cases the cause of the trouble I am dealing with. My attention was called to the subject by a lantern used for the projection of objects much larger than the ordinary slides. When these were used, they were put in a wooden frame which presented a large carefully blackened surface to the condenser. The condenser always became quickly covered with dew. On pasting a sheet of white paper over the blackened wood of the frame which held the slides, the trouble was at once removed. What had happened was that the black wood became heated, and gave up a large amount of moisture. When covered with a white reflecting surface, on the other hand, the heating was sufficiently reduced to prevent the distillation of moisture. The deposit of dew on the condenser lenses may therefore easily be avoided.

More troublesome is the dew which forms in the space between the photographic picture and the glass cover of the slide. I have not personally been troubled with this, and therefore I have not had any experience as to how to get rid of it, but I feel sure that a great deal could be done by removing the blackened paper frame which is generally inserted between the two glasses, and replacing it by tin foil or white paper. It is obvious that if we take care that the glass of a slide forms the hottest surface in the neighbourhood, no dew can be deposited on it. As the glass absorbs a good deal of the more intense rays, and the slide itself is appreciably warmed, there should be no trouble in securing that nothing else should get warmer. The only possible cause which could not be dealt with would be the evaporation of water from the silver deposits which form the photographic picture, but there is no reason to suppose that they condense a sufficient amount of moisture to do much mischief if the slides are carefully dried to begin with.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

SIR MICHAEL FOSTER has resigned the chair of physiology at Cambridge, which he has held since 1883, when the professorship was established.

PROF. J. A. EWING, F.R.S., professor of mechanism and applied mechanics in the University of Cambridge, has been appointed Director of Naval Education, under the new scheme of training. The scheme was discussed in connection with the Navy Estimates on Monday, and an amendment disapproving of it was moved, but upon a division the amendment was rejected.

THE Liverpool Marine Biology Committee has, in consultation with the Nature-Study Association of Teachers of Liverpool, issued a circular expressing its willingness to make arrangements for a special class in elementary marine biology, to illustrate the principles of nature-study, and to be held at the Port Erin Biological Station during the Easter holidays. The course will extend from April 10–17. Intending students should communicate with Mr. F. J. Cole, University College, Liverpool.

AT the annual meeting of the National Home-Reading Union on March 13, Dr. Richard Garnett delivered an address in which he dealt with the community of aim and feeling between the Union and the public library system. One great wish of the Union is through the systematic

[1] Read at the British Association Meeting in Belfast, September, 1902, by Prof. Arthur Schuster, F.R.S.

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inculcation of good reading habits and the systematic dissemination of superior literature, not merely to make this literature better known, but to create an atmosphere in which—except in the case of thoroughly inferior minds—inferior literature will not be able to exist.

IN 1901 a central committee was formed in Berlin for the purpose of organising gratuitous post-graduate courses in medical science throughout Prussia. This committee, of which Prof. von Bergmann is the chairman, has now instituted such courses in twenty-three towns, and has acquired a collection of medical books and instruments to be lent to the local committees in small places where such means of instruction are not sufficiently available. A building, to be called the Empress Frederick House for Post-graduate Training, will be erected in Berlin to serve as the headquarters of the organisation in Prussia. The Emperor has expressed complete approval of the plans of the committee.

THE eleventh annual report for the year 1902 of the Technical Instruction Committee of the City of Liverpool shows an increase of 1040 in the number of registered students of the evening science, art and technological classes. The total number of entries to the classes held at the Central Technical School was 3625. This increase is to be attributed in some measure to an exhibition of students' practical work held just before the commencement of the session, and it is in contemplation to continue the exhibition and extend it to other centres. The establishment of a day technical school in the central school building, and of improved local buildings in the south end and on the east side of the city are still under consideration. The report also shows that the City Council has devoted to educational purposes the whole of the amount received under the Local Taxation (Customs and Excise) Act, 1890, with the exception of a sum of 7000*l.* paid to the credit of the City fund in 1892. The total amount thus allocated to educational purposes during the twelve years, 1890–1902, is 225,450*l.* 19*s.* 4*d.*

THE platitudes often expressed by speakers on educational subjects, and the verbose character of the larger part of educational literature, are responsible for the suspicion and want of respect with which many practical teachers regard any attempts to construct an educational science. What is wanted at the present time is a centre where the aims and practice of education can be studied without the limitations of traditional doctrines, and with modern requirements well in mind. The University of Birmingham seems to offer an opportunity for work of this kind in connection with the new chair of education, for which applications are invited. In the particulars issued to candidates for the post we read:—"The University believes that the improvement of education in England is a vital matter, and that the present post offers attractive opportunities to a man of influence and ability who is willing to cope with the difficulties of the task. Such a man would meet with cordial cooperation and assistance, and might be able to accomplish a worthy piece of work." The professor will be required to take control of the training of secondary teachers and to organise the inspection and examination of secondary schools. It should thus be possible for the successful candidate to establish a system of training of teachers in the science and art of education which would have a decided influence upon the work of secondary schools.

A CONFERENCE of representatives of county and county borough councils was held on Tuesday, under the auspices of the National Association for the Promotion of Technical and Secondary Education, to consider the question of higher education. Lord Avebury presided, and the following resolutions were adopted:—(1) That this conference of representatives of local authorities and educational bodies recognise the great importance of suitable, adequate and systematic provision being everywhere made for the supply of facilities for higher education by means of continuation schools, secondary schools, technical institutes, and classes, and by access to the universities, such facilities to include a sufficient number of scholarships and exhibitions, and, where suitable funds exist, to provide for a post-graduate course and the endowment of original research; (2) that every effort should be made to secure proper cooperation between local authorities and educational bodies in promoting higher, including university, education; (3) that it is urgently necessary for the improvement of education that more suitable means should be provided for the training of all grades and classes of teachers. Mr. J. Bryce, M.P., was one of the speakers, and in the course of his remarks train for the universities; and in towns of 100,000 people what they might call a grammar school, providing the elements of technical instruction; in towns of 40,000 or 50,000 population there ought to be a school competent to train for the universities; and in towns of 100,000 people there should be a completely equipped technical institute to fit boys for a science profession and for the pursuit of science. He added that in towns of 300,000 there should be a university college.

SCIENTIFIC SERIALS.

American Journal of Mathematics, vol. xxv. No. 1, January.—D. N. Lehmer, parametric representation of the tetrahedroid surface by elliptic functions. Various properties of the singular points, lines and planes.—E. B. Skinner, on ternary monomial substitution-groups of finite order with determinant ± 1. All the groups can be got from three generators or less, one of order two, and conversely.—V. Snyder, forms of sextic scrolls (two papers). There are sixty-eight types of such scrolls which are unicursal, and thirty-two of genus 1.—E. D. Roe, note on symmetric functions.—A portrait of Cremona accompanies this part.

Annals of Mathematics (2), vol. iv. No. 2, January.—J. W. Bradshaw, the logarithm as a direct function (with introduction by W. F. Osgood).—P. Saurel, positive quadratic forms.—E. A. Hook, multiple points on Lissajous's curves in two and three dimensions.—C. C. Engberg, a special quadri-quadric transformation of real points in a plane $(x=x', y=\pm\sqrt{x'^2+y'^2})$.

Bulletin of the American Mathematical Society (2), vol. ix. No. 5, February.—W. F. Osgood, transformation of the boundary in conformal mapping.—V. Snyder, quintic scroll with three double conics.—L. P. Eisenhart, surfaces referred to their lines of length zero.—E. R. Hedrick, note on calculus of variations.—E. B. Wilson, synthetic treatment of conics at the present time. The author (very properly) emphasises the value of v. Staudt's methods.—Reviews: Brown's "Lunar Theory" (F. R. Moulton), Geissler's "Die Grundsätze u. das Wesen des Unendlichen" (E. R. Hedrick), recent German text-books in geometry (P. F. Smith).

Bulletin of the American Mathematical Society (2), vol. ix. No. 6 (March).—L. E. Dickson, the abstract group isomorphic with the alternating group on six letters.—H. F. Blichfeldt, property of conics.—R. W. H. T. Hudson, analytic theory of displacements.

Transactions of the American Mathematical Society, vol. iv. No. 1 (January).—F. Morley, orthocentric properties of the plane n-line.—L. E. Dickson (two papers), definitions of a field by independent postulates; definitions of a linear associative algebra.—E. V. Huntington (two papers), definitions of a commutative group and of a field.—C. N. Haskins, invariants of differential forms of degree higher than two.—A. Loewy, reducibility of groups of linear homogeneous substitutions.—A. B. Coble, the quartic curve as related to conics.—E. Kasner, cogredient and digredient theories of multiple binary forms.—R. E. Allardice, envelope of axes of conics through three fixed points.—W. F. Osgood, a Jordan curve of positive area.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 19.—"The Evaporation of Water in a Current of Air." By Dr. E. P. **Perman.** Communicated by Prof. E. H. Griffiths, F.R.S.

The object of this investigation was to discover with what accuracy the vapour-pressure of water could be calculated from the amount of water vapour carried off by an air current passed through the water, the temperature being maintained constant. The method adopted was to aspirate air, at a rate of not more than 0·1*l.* per minute, through

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