

will make a special study of the needs of particular localities.

Group III.—Teachers engaged in the diffusion of knowledge; of these the following subgroups may be distinguished:—

(a) Lecturers in universities and colleges instructing pupils whose age, previous education, and circumstances enable them to attend college courses.

(b) Teachers employed at farm schools in instructing pupils who for various reasons would not benefit from, or could not attend, college courses.

(c) Instructors employed in peripatetic work teaching those who, because of their age and circumstances, cannot study in schools or colleges.

The work of persons employed in the different groups may overlap. The worker in a research institute may often be asked for advice, a college teacher may frequently be called upon to give extension lectures, and at certain seasons of the year the peripatetic instructor may be required to teach in a farm school; but in the main the work of the different groups is distinct, and now that increased funds are available it is to be hoped that the authorities responsible for selecting those employed under agricultural education schemes will recognise more fully than heretofore the need for a division of labour. The "all-round" agricultural expert is no longer much required, except for the general supervision of local work; to be really useful either to the large farmer or the small-holder the teacher must be a specialist; if he is a scientific man his attainments in some branch of science should be high; if a practical man he must be a more skilful practitioner than the majority of those whom he instructs.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

LONDON.—Mr. T. Ll. Humberstone has been appointed to the Mitchell studentship. The studentship, which is of the value of 100*l.*, is awarded to the selected candidate to enable him to study and investigate some definite feature of business or industrial organisation at home or abroad. Mr. Humberstone proposes to investigate a scheme of industrial fellowships in the Universities of Pittsburg and Kansas, under which research work in applied science is promoted with funds provided by, and to some extent under the supervision of, great industrial and commercial organisations.

Applications are invited for the newly established Franks studentship in archæology, founded by the Society of Antiquaries in London, in memory of Sir A. Wollaston Franks, K.C.B., sometime president of the society. The object of the studentship is to enable the student to carry on some research or preparation for research (as distinct from professional training) in the archæology of the British Isles in its comparative aspects. The studentship is of the value of 50*l.*, and is tenable for one year. Applications should reach the academic registrar not later than March 5.

OXFORD.—Prof. Lloyd Morgan, F.R.S., has been appointed Herbert Spencer lecturer for 1913.

By the will of the late Lord Ilkeston, the sum of 800*l.* is bequeathed to the warden, bursar, or other proper officer of the University of Durham upon trust to apply the income for a "Winifred Foster Scholarship" for a woman student who requires help to maintain herself at the University.

A VERY well illustrated prospectus of Bingley Training College has been received. The college owes its existence to the public spirit of the County Council of the West Riding of Yorkshire, and was opened

for the reception of students in October, 1911. It provides accommodation for 200 resident women students, and includes a central educational block, five halls of residence, gymnasium, kitchen, bakery, and laundry. The purpose of the college is to train teachers for public elementary schools, and the training provided is such as to fit the students for their work as teachers. No provision is made for students wishing to take a course leading to a university degree.

THE Berlin correspondent of *The Morning Post* states, in the issue for February 24, that plans for transforming the scientific institutes at Frankfurt-on-Main into a university have now been sanctioned by the Prussian Ministry of Public Instruction. In May, 1912, the Emperor commissioned the Ministry to submit to him the draft of the statutes as soon as it was satisfied that the necessary funds for the establishment and endowment of a university were in hand. Ample funds are at the disposal of the city of Frankfurt for the purpose, and the drawing up of the statutes is now merely a matter of form. The capital required and subscribed for the scheme is nearly 400,000*l.* The existing institutes will be enlarged and a medical institute created. It is doubtful whether the university can be opened, as anticipated, in October, 1914. The new university will devote special attention to social science.

It is announced in *Science* that Ohio-Miami Medical College of the University of Cincinnati has received 25,000*l.* from a donor whose name is being withheld. An effort is being made to raise an endowment fund of 200,000*l.* From the same source we learn that during the past year three wills, involving property valued at 25,000*l.*, have been proved in favour of Knox College. About half of this amount becomes available immediately for the endowment of a professorship in one of the departments of science, while the remainder is held in trust during the lifetime of the widow of one of the testators. Mr. Eugene Meyer and his wife, of New York, have given Cornell University 2000*l.* to endow a fellowship in memory of their son, Edgar J. Meyer, who graduated from Sibley College, and whose life was lost by the sinking of the *Titanic*. The purpose of the fellowship is to encourage research in mechanical and electrical engineering.

A REUTER message from Delhi announces that an important State paper on the educational policy of India was issued officially there on February 21. It begins by quoting the King's speech at Calcutta University and the promises of Imperial grants for education. The needs of every grade and department of educational work are reviewed, and the paper goes on to state that India urgently needs to be equipped with an ethnographic museum. It lays special stress on the formation of character through direct instruction, and indirect agencies such as the betterment of environment, hygiene, physical culture, and organised recreation. It invites local governments to appoint expert committees to ensure satisfactory school and college hygiene. In reviewing university education, the paper contemplates facilitating grants in aid, and frames rules distinguishing the Federal and the affiliating university. The policy is to multiply universities, having one affiliating university for each leading province and developing teaching faculties and research at a university centre, while establishing teaching and residential universities at Dacca, Benares, Aligarh, and elsewhere as the need arises. Special attention is given to the education of the domiciled community and Mahomedans, the training of teachers, and the establishment of an Oriental Research Institute on Western lines. It foreshadows a large increase of the inspectorate and teaching staff,

and indicates the need of better prospects for the educational services and of having expert guidance at every turn. The paper recommends also that primary and secondary education should be more practical; and that provision should be made in India for higher education and research.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 20.—Sir Archibald Geikie, K.C.B., president, in the chair.—Prof. H. E. Armstrong, M. S. Benjamin, and E. Horton: Studies on enzyme action. XIX., Urease: a selective enzyme. II., Observations on accelerative and inhibitive agents.—Prof. C. S. Sherrington: Nervous rhythm arising from rivalry between antagonistic reflexes; reflex stepping as outcome of double reciprocal innervation. The paper is in continuation of work on the reciprocal innervation of symmetrical muscles—work recently communicated to the society. The observations have been almost wholly upon the decerebrate preparation. The symmetrical muscles used in the present experiments have been the extensors of the right and left knee. It is shown that taking an afferent nerve which produces steady reflex excitation of the muscle, and another which produces steady reflex inhibition of the muscle, it is possible by stimulating both nerves concurrently to obtain regularly rhythmic contractions and relaxations of the two muscles, the rhythm being about 2 per second.—Dr. H. E. Roaf: The liberation of ions and the oxygen tension of tissues during activity (preliminary communication). The combination Ag|AgCl|Muscle|Ringer-Solution|HgCl|Hg shows an increased negative charge on the silver when the muscle contracts. The combination Pt|MnO₂|Muscle|Ringer Solution|HgCl|Hg shows an increased positive charge on the platinum when the muscle contracts. This result must be due to an increase in hydrogen ions. The combination Pt|Muscle|Ringer Solution|HgCl|Hg can be used as an indicator of the oxygen tension in contracting muscle.—W. Cramer and J. Lochhead: Contributions to the biochemistry of growth. The glycogen content of the liver of rats bearing malignant new growths. Glycogen disappears more rapidly from the liver of tumour-bearing rats than from the liver of a normal rat.—Prof. T. G. Brodie and J. J. Mackenzie: Changes in the glomeruli and tubules of the kidney accompanying activity.

Geological Society, February 5.—Dr. Aubrey Strahan, F.R.S., president, in the chair.—Dr. A. M. Davies and J. Pringle: Two deep borings at Calvert Station (North Buckinghamshire), and the Palæozoic floor north of the Thames. The two borings are about 370 yards apart in a due east-and-west direction. The eastern boring gives the following section:—

Altitude of Surface = about 290 O.D.		Thickness	
		ft.	in.
Soil	...	4	0
Oxford Clay—Ornatum Zone	...	93	3
Non-sequence.			
Forest Marble	...	38	9
Non-sequence.			
Great Oolite	...	59	6
Non-sequence.			
Chipping Norton Limestones	...	7	6
Non-sequence.			
Lias—Domerian, Algovianum Zone			
to Charmouthian, Jamesoni Zone	240	6	
Unconformity.			
Lower Tremadoc—Shinerton Shales	954	6	
		1398	0

NO. 2261, VOL. 90]

—R. W. Hooley: The skeleton of *Ornithodesmus latidens*, an Ornithosaur from the Wealden Shales of Atherfield (Isle of Wight). The bones were obtained from blocks recovered from the sea after being washed from a huge fall of the Wealden Shales. Portions of the skeleton missing in the Atherfield specimens are supplemented by bones in the British Museum (Natural History), No. R/176, upon which the late Prof. H. G. Seeley founded the genus. There are remarkable peculiarities in the skull which isolate it from all known families. The wonderful preservation of the bones enables the mechanism of the skull, joints, and movements of the limbs to be described. The paper deals with the morphology, and institutes comparisons with other types. The evidence proves that it is necessary to form a new family, and that *Ornithodesmus* had descended from a suborder which should include *Scaphognathus* and *Dimorphodon*.

Physical Society, February 14.—Prof. A. Schuster, F.R.S., president, in the chair.—Prof. G. H. Bryan: The dynamics of pianoforte touch. The author discussed Helmholtz's and Kaufmann's theories of the vibrations of a pianoforte wire excited by impact, with special reference to the effects obtainable with the modern pneumatical piano-players and player-pianos, and the common widespread belief that these can never reproduce the touch of the human fingers.

Royal Meteorological Society, February 19.—Mr. C. J. P. Cave, president, in the chair.—W. H. Robinson: Periodical variations of the velocity of the wind at Oxford. The author dealt with the annual and diurnal changes in the velocity of the wind as recorded at the Radcliffe Observatory during the last fifty years. The average monthly values show that there is a rapid fall in the velocity of the wind between March and June, and an equally rapid rise between September and December. The minimum is in September. There is a range in the annual variation of three or four miles per hour. On comparing the wind velocity with the mean monthly temperatures of the air the author finds that an increase (or decrease) of one mile per hour in the velocity of the wind corresponds to a fall (or rise) in the temperature of about 8° F. As regards the diurnal oscillations, the wind increases its velocity with an accession of warmth, and decreases with a lowering temperature, this being the inverse of that found in the discussion of the annual variation.—J. S. Dines: Rate of ascent of pilot balloons. The author described some experiments which he had made in the large airship shed at the Royal Aircraft Factory, Farnborough, with the view of determining the rate of ascent of small pilot balloons of the type which he has used for the past two years in his work for the Advisory Committee for Aeronautics.—W. L. Balls: Meteorological conditions in a field crop. The author described the methods which he had adopted for ascertaining the temperature, the humidity, and the force of the wind on the surface of the soil in a field of cotton at Giza. The growth of the cotton plant in Egypt is usually completely arrested by sunshine during the greater part of the day, through the severe water loss necessitated by thermo-regulation of the internal temperature, and growth, during most of the season, is thus confined to the hours of darkness. The usual limiting factor of this growth during the night is the temperature of the tissues—roughly, the air temperature, with slight modification by clouds; thus any cause making for a rise in temperature at night involves a higher growth-rate in consequence; this in its turn, in the early part of the season at least, implies more rapid development of the flowering branches, bringing about earlier appearance and more rapid accumulation of the flowers, and hence of the crop.