

of the State but of the landowners, may be stabilised on a remunerative basis, among which may be mentioned the organisation of credit facilities, co-operative purchase and sale, utilisation of machinery and power, improvement of livestock sires, establishment of central dairies and bacon factories, the fuller exploitation of all farm products, especially in times of glut, and above all the elimination of superfluous and unnecessary middlemen. Apart from the heavy burden of local and Imperial taxation the toll levied by the middlemen is the main cause of the poverty-stricken condition of the English agricultural labourer; the disparity of the prices paid to the farmer and by the consumer for the same produce was well illustrated by tables.

During the last eight years occupying owners have increased by 49 per cent. and the acreage that they own by 100 per cent.; the political and industrial power resulting from this considerable reinforcement of their class should prove the greatest stimulus to enterprise on the part of landowners. The existence of the Central Landowners' Association is a welcome augury of future corporate efficiency, as its objects are to a great extent economic and constructive. In conclusion Lord Bledisloe emphasised once more the need for the effective organisation of agriculture and for the solidarity of all three classes of the agricultural community, without which continuous progress is difficult of attainment.

Current Topics and Events.

THE Rowett Institute of Research in Animal Nutrition, Aberdeen, was formally opened by H.M. the Queen on Tuesday, September 12. It will be remembered that the Institute, which in the two years of its existence has done valuable work on problems of animal feeding, is under the control of the University of Aberdeen and the North of Scotland Agricultural College; the director is Dr. J. B. Orr. The Institute owes much to the generosity of Dr. J. Quiller Rowett, after whom it was named, who contributed a sum of 10,000*l.* towards its endowment (NATURE, September 9, 1920, p. 67). This was followed by another gift for the purpose of purchasing a farm which would allow of expansion of the Institute; H.M. Treasury, on the recommendation of the Development Commission, promised a further sum of 20,000*l.* It is the establishment of such institutions as the National Institute of Agricultural Botany and the Rowett Institute of Research in Animal Nutrition which will go far towards improving the unsatisfactory state of our knowledge of food problems, both animal and human.

To the August number of the *Nineteenth Century* Sir Arthur Keith contributes a timely article on the present position of Darwinism as applied to the problem of man's origin. The strange action of a strong party among the legislators of Kentucky in America, and ill-informed articles in certain American newspapers, have met with some feeble response in this country; and an authoritative statement of the case which can be understood by the general reader is especially needed at the present time. Sir Arthur Keith has stated the case admirably, and he emphasises the fact that if a new edition of Darwin's "Descent of Man" were prepared to-day, the work would merely need large additions, and scarcely any important revision. The discoveries of the fossil remains of man made since 1871 agree in pointing towards a common ancestry with the apes. The progress in our knowledge of human embryology within the same period has revealed a succession of facts which can be explained only on the theory of descent from lower forms of life. The latest discovery, that the development and growth of all parts of the body are regulated and co-ordinated by a "hormone"

(the pouring of substances into the circulating blood by the ductless glands), leads even to the hope that before long we may begin to learn something about the processes of evolution. To the investigator, indeed, Darwinism is not a mere theory, but an instrument of advance, trusted as implicitly as are the Admiralty charts by a navigator.

WE learn from the *Times* that an expedition headed by Capt. F. Hurley has left Sydney for Port Moresby with the object of exploring New Guinea from the air. The party will include an ethnologist and a naturalist. Two seaplanes are being taken and will be used in a four months' air survey of the western portions of British New Guinea. Meanwhile the scientific section of the expedition will navigate the Fly River in a ketch. The cost of the seaplanes is being borne by Mr. L. Hodson, of Sydney. Owing to the densely forested nature and steep slopes of the interior, exploration of New Guinea on foot is most arduous. Capt. Hurley's scheme promises some hope of success, but landing places, except along the coast, will be difficult to find. The leader's previous experience in exploration was obtained with the Australian Antarctic Expedition. He has also flown across the Australian continent.

THE earthquake reported on the morning of August 27 in the Midland Counties was possibly, as Sir George Fordham has suggested in the *Times*, caused by the bursting of a meteorite. A tremor and sound were observed at 9.12 A.M. (G.M.T.) over an area of about 650 square miles with its centre a few miles south of Birmingham; at Woodhouse Eaves, seven miles north-north-west of Leicester, at 9.13; and at Whissenthorpe, near Oakham, at 9.10. The observed times are so close that it seems probable that all three shocks were due to the same cause, and the detachment of the three areas and their nearly linear arrangement are certainly suggestive of successive explosions of a meteorite.

THE centenary of the Yorkshire Philosophical Society, which was founded in 1822, will be celebrated on Wednesday, September 20. The members of the Society and its guests will be received in the

gardens of the Yorkshire Museum by the president, Mr. W. H. St. Quintin, and a number of congratulatory addresses from national as well as local learned bodies will be read by their representatives. Later, the gathering will go in procession to the Minster, where a short service will be held and an address delivered by the Bishop of Beverley.

THE following have been appointed to the Board of Trustees of the National Portrait Gallery: the Earl of Ilchester, Sir Martin Conway, and Mr. W. B. Hardy, in place of the late Viscount Bryce, Sir Edward Conway, and Viscount Harcourt, respectively.

THE sixty-seventh international annual exhibition of the Royal Photographic Society of Great Britain will be opened on Saturday, September 16, by Mr. S. J. Solomon, president of the Royal Society of British Artists, at 35 Russell Square, W.C.1.

THE Harveian Oration of the Royal College of Physicians of London will be delivered at the college at 4 o'clock on Wednesday, October 18, by Dr. Arnold Chaplin. Sir Maurice Craig is to deliver the Bradshaw Lecture (on "Mental Symptoms in Physical Disease") on November 2. The FitzPatrick Lecture will be given by Dr. R. O. Moon on November 7 and 9. The subject will be "Philosophy and the Post-Hippocratic School of Medicine."

It has been decided that an Institute of Paint and Varnish Technologists shall be founded, and a dinner is to be held shortly to inaugurate the new Institute. The objects of the Institute will be the dissemination of practical and scientific knowledge by reading and discussing papers, the improvement of technical education, the promotion of research, and the establishment of close relations with the Government and with societies interested in the products of the industry and their application. Applications to attend the inaugural dinner should be forwarded to H. D. Bradford, 42 Ribblesdale Road, S.W.16.

At a conference of the leading societies in North America that deal with biological subjects, recently held in Washington, it was decided to recommend to the constituent bodies the formation of a Federation of American Biological Societies. The members of the federation are to be societies, not individuals, and the governing body is to be a council consisting of two representatives from each society; the council is to choose an executive committee from its own members. One of the first questions to come before the council, if and when constituted, will be the improvement of biological publications, and a committee is already studying the question in co-operation with a committee from the Division of Biology and Agriculture of the National Research Council of the United States.

In our issue of April 15, p. 486, reference was made to the preparations in progress for the celebration in France of the centenary of the birth of Pasteur. A committee was formed in this country, under the chairmanship of Sir Charles Sherrington, in support of the commemoration measures, among which were

the promotion of an exhibition of hygiene and bacteriology in Strasbourg and the erection of a statue of Pasteur before the University. Various amounts have been sent to France from time to time by the British committee, in addition to which it is now stated that a sum of nearly 850*l.* is to be forwarded to the general treasurer of the fund, M. T. Héring. The British committee has expressed the wish that should the amount be greater than that the French committee desire to spend on the statue of Pasteur, the excess should be devoted to some other form of permanent memorial in the University of Strasbourg.

THE programme has been issued of the meetings of the Institute of Metals to be held during the session 1922-23 under the presidency of Mr. Leonard Sumner. The annual May lecture will be delivered on May 2 by Dr. W. Rosenhain. The Scottish Local Section, which has arranged for six meetings in Glasgow, will be under the chairmanship of Mr. James Steven; membership is open to all local members of the Institute, and applications should be addressed to the hon. secretary, Mr. H. H. A. Greer, 50 Wellington Street, Glasgow. The chairman of the Sheffield Local Section is Prof. C. H. Desch, and the hon. secretary, H. P. Gadsby, 193 Sandford Grove Road, Sheffield; an important event in the Sheffield programme is a joint meeting with the Faraday Society for a symposium on stainless and non-corrodible alloys to be held on February 9 at Sheffield.

THE third International Conference of "Psychotechnique appliqué à l'orientation professionnelle" will meet this year at Milan on October 2-5. In order to prevent waste of time it has been decided to limit the discussions to the following subjects:— (a) What is meant by vocational aptitudes? (Lahy); (b) Natural aptitudes and acquired aptitudes (Décroly, Patrizi); (c) The psychological analysis of work (Gemelli, Lipmann); (d) Vocational guidance and Taylorism (Bauer); and (e) An international unification of tests and individual ratings (Claparède, Mira, Myers). A short paper of about twenty minutes' duration will be given on each subject in order to guide the discussion, and the language used will be French. The general session will be occupied with these subjects, but other meetings to discuss more detailed problems will be held in rooms specially set apart for the purpose. Papers presented at the meeting will be grouped together according to the relationship between them. A room will be reserved for the exhibition of tests, instruments, etc. Those desirous of attending are asked to communicate with the Secretary, III^{me} Conférence Internationale de Psychotechnique, Milan (XIV.), via S. Barnaba 38. October 5 will be spent in visits to scientific and industrial establishments in the neighbourhood of Milan.

DR. M. J. SIRKS takes exception to the notice of his handbook of heredity published in NATURE of July 22, p. 111. He deprecates especially the charge of affirming that mutations have been actually pro-

duced as a direct consequence of changed conditions, and he adds, "I do not accept mutations at all, neither as a direct consequence of changed conditions, nor spontaneously, as being sufficiently proven." The writer of the notice regrets that he should have misrepresented Dr. Sirks's opinions. The criticism arose out of passages in chap. xiv., and referred in particular to the confident narration of Tower's alleged discovery of a sensitive period in the life of a beetle, during which its germ-cells could be modified by external conditions. Dr. Sirks summarised the account in a statement which may be translated thus. "In other words: without any doubt Tower succeeded, by means of very abnormal conditions of life, in breeding from the original form *Leptinotarsa decemlineata* offspring which had lost one hereditary factor; he called these 'mutants,' the name which is generally given to forms suddenly arising which exhibit hereditary variations." Nothing could be more explicit. In continuation, however, Dr. Sirks

definitely dissociates himself from the interpretation of the alleged new forms as mutants. The objection should therefore have been expressed differently. It was not the interpretation which seemed to the reviewer unfortunate or uncritical, but rather the unqualified repetition of sensational reports which, though they have attained some currency, are gravely in need of confirmation.

MESSRS. BENN BROS., Ltd., announce a new series of monographs dealing with gas and fuel. The first three volumes will be "The Administration and Finance of Gas Undertakings, with Special Reference to the Gas Regulation Act, 1920," by G. Evetts; "Gasworks Recorders," by Dr. L. Levy; and "Modern Gasworks Chemistry," by Dr. G. Weyman. The same firm will also publish shortly "Practical Optics for the Laboratory and Workshop," by B. K. Johnson, and "The Bronze Age and the Celtic World," by H. J. E. Peake.

Our Astronomical Column.

SEPTEMBER METEORS.—Though September is not a month in which any rich shower of meteors is periodically visible, a considerable number of meteors and many radiant points of moderate activity should be seen. Fireballs are also particularly abundant during the month, especially on September 13-15, and again on September 24-28. The principal systems of meteors at this time of the year radiate from Aries, Perseus, Auriga, and other constellations in that part of the heavens. At the middle of September there is usually a strong display of ϵ Perseids from $61^\circ + 36^\circ$; there is also a prominent shower from near α Cygni, at $314^\circ + 48^\circ$, and swift, streaking meteors from the Lynx frequently manifest themselves. September is, in fact, usually a productive period for the meteoric student, and further watching may reveal a somewhat rich annual display that hitherto has not received the notice it merits.

INVISIBLE SUNSPOTS.—In the year 1908 Dr. G. E. Hale published (Contributions from the Mount Wilson Solar Observatory, vol. i., No. 26) his discovery of solar vortices. This vortex hypothesis assumes that a sunspot resembles a vast tornado in which electrified particules, due to ionisation in the solar atmosphere, are rapidly whirled. The invariable presence of a magnetic field, caused by the revolving charges, confirmed this view, but it was also supported by other results of observation with the spectrograph and spectroheliograph. It was found also that most sunspots were associated in pairs of opposite magnetic polarity, and 61 and 33 per cent. respectively of 970 spots were observed as bipolar and unipolar. The fact that some groups oscillated between unipolar and bipolar types, one or more small spots appearing and disappearing within the mass of calcium flocculi, suggested to him the idea of looking for invisible spots. That these might be found seemed most probable, there being vortices giving appreciable magnetic fields without any actual visible sunspots. Dr. Hale now describes his recent investigation in this direction (Proc. Nat. Acad. of Sciences, U.S.A., vol. 8, No. 7). The method he adopts is a device for rendering feeble magnetic fields visible by the Zeeman effect, and details of the procedure are given in his paper. Suffice it to say that he has found a great number of cases in which

a local magnetic field was observed where no spot was recorded. He points out the importance of making systematic observations of invisible spots, especially during the periods preceding and following the visible life of those that reach maturity, in order to assist in revealing the cause of sunspot formation.

ABSOLUTE MAGNITUDES OF STARS.—Several years ago Prof. H. N. Russell produced a striking diagram of absolute magnitudes, on which the theory of giant and dwarf stars was based; it met at first with some opposition, but has gradually won its way to general acceptance. The number of stars of which trustworthy parallaxes (photographic, spectroscopic, and hypothetical) have been obtained, has now been greatly increased, and Dr. Heber D. Curtis has prepared a revised diagram, which is reproduced in the Journal of the R.A.S. of Canada for July-August. It contains 2375 stars, and shows the division into giants and dwarfs very plainly. The gap between them is complete in type M, but begins to be filled by a few stragglers in type K, suggesting that this may be the maximum temperature attained by stars of small mass. In types G and K the giants outnumber the dwarfs, but the reverse holds in type F. The giants here are comparatively few, but they include some of remarkable luminosity.

Broadly speaking, the regions of maximum frequency form two straight lines; that of the giants forms a horizontal line at magnitude +1; that of the dwarfs slopes downwards from +1½ at type A₀ (the giants and dwarfs being here mingled) through +5 at type G₅ (so that the sun is an average star of its type) down to 8 or 9 for M_a.

The diagram suggests to Dr. Curtis the conclusion that a sensible number of B-stars have parallaxes of the order of 0".02; he notes that stars of this type are being put on the working lists at the Allegheny and Leander McCormick Observatories. These stars cannot as yet be investigated for parallax by the spectroscopic method, so that the results of these measures will be awaited with interest. It will be remembered that the results have a bearing on the adopted distances of the globular clusters. The fainter the absolute magnitude found for the average B-star, the nearer we must put the clusters.