

families in Central New York, with the addition that the costs of the diets were also worked out (*Bulletin* 502, April 1930, Cornell University Agricultural Experiment Station, Ithaca, N.Y., U.S.A.). The survey in each family covered a period of four weeks and both bought and home-grown food was included, the cost of the latter being credited at current average wholesale prices. The standards used were similar to those employed by Orr and Clark, though the table for calculating the 'man-value' of a family with respect to energy requirements was not quite the same. In addition, an 'adequate food cost unit' was employed; this was obtained by taking the annual retail value of a diet supplying 3400 calories daily, a 'man's' requirements, as equal to unity, and expressing the cost of other diets as a fraction thereof. The adequate food cost scale was found to diverge slightly from the energy scale, especially in the case of children

and when diets of low energy value were employed, since, for calories consumed, the cost of these is relatively high.

The analysis showed that 42 per cent of the village families and 64 per cent of the farm families were adequately fed. In many cases home-produced food made a substantial contribution to ensuring the adequacy of the diet and accounted for a considerable part of the retail value of the food consumed. In the inadequately fed families, it appeared that poor food selection rather than poverty was the cause of the poorness of the diet: the deficiency was most marked in the minerals, less so in the protein and calorie consumption. As in Orr and Clark's study, over-consumption was observed in a number of families.

The result of the study indicates the importance of proper selection of the food, and the addition to income represented by a supply of home-grown produce.

### News and Views.

WHEN the Expiring Laws (Continuance) Bill came before the House of Lords on Dec. 15, Viscount Hailsham's amendment, which provided for the continuance of the Dyestuffs (Import Regulation) Act, 1920, until Dec. 31, 1931, was carried by 87 votes to 14. Viscount Hailsham sketched once again the circumstances attending the birth, decline, and revival of the industry in Great Britain. During the past ten years the progress made has been so remarkable that success appears to be the main argument used against the continuance of a protective measure. Although the Council of the Colour Users' Association expressed a majority opinion in favour of the lapse of the Act, the president of that Association holds the contrary view; any risk of undue exploitation in the matter of price is removed by the undertaking which the dye-makers have given. Lord Parmoor (Lord President of the Council) repeated the Government's view of the matter as involving conflict between dye-makers and dye-users. The dye-makers have been put into a position in which they can compete with imported dyes; they have built up a great industry, for which everyone is grateful, but the time has now come to make the change in the interests of the dye-user. The Earl of Crawford said that so far as research is concerned, this industry has been a triumph. Some of the most remarkable discoveries in organic science have been made by men working on dyestuffs. The industry is emphatically a key industry, is of great importance in defence, and is becoming the focus from which pharmaceutical progress radiates. The Marquess of Reading said that the matter is not one of free trade or protection; Lord Cowley claimed that the continuance of the Act would be a burden on the textile industry, a view which was challenged by Lord Newton, who showed how small is the cost of the dye contained in a suit of clothes. Lord Arnold, Paymaster-General, contended that the dye industry would not be injured. Hence the present situation, besides being of political interest, may lead to a comprehensive scientific examination of a scientific and industrial problem.

THE Slaughter of Animals Bill, which passed its second reading in the House of Commons on Dec. 12, would make compulsory in England the modern methods of slaughter already in vogue in Scotland, Holland, and elsewhere. This measure has been vigorously resisted for many years by the meat traders, but their opposition has now been withdrawn except as regards the inclusion of pigs. The questions at issue were mainly questions of fact which could be, and nearly all have been, settled by experiments and observation in a scientific way. In 1925 the meat inspectors of the City of London Corporation conducted trials on an extensive scale, and since then other trials of a scientific character have been carried out, notably that by Dryerre and Cameron of Edinburgh. It is to be regretted, therefore, that some members of Parliament attempted to deal with these matters of fact by means of disingenuous rhetoric. One member, for example, dramatically produced two skulls, as evidence of the relative merits of the poll-axe and the humane-killer; whereas the City of London meat inspectors had tested this point by observations on no fewer than 1745 animals. Again, Messrs. Marsh and Baxter circulated to every member a manifesto in which they alleged that the humane-killer causes 'blood-splash' in pigs, and quoted in support of this view veterinary opinions all dated 1923 or earlier; whereas in 1925 the City of London meat inspectors examined more than 700 shot pigs, and found that "in not one of them was splashing in the slightest degree observed". Humanitarians may learn a lesson from the rapid progress that has been made by the humane-slaughter movement in recent years. Most of its advocates have worked by patient insistence on verifiable facts, and its success has been far greater than that achieved by some other good causes in the promotion of which there has been recourse to exaggeration and rhetoric.

THE Pilgrim Trust, founded by Mr. Edward S. Harkness of New York, has made one of its first gifts to the Royal Institution. The Trustees have allocated

the sum of £16,000 to meet the deficiency on the fund for reconstruction of the building in Albemarle Street. In informing the Institution of this grant, the Trustees state that in making it they had regard to the distinguished scientific services rendered to the whole community for more than a century by the Royal Institution, and to the approaching Faraday celebrations. They were also not unmindful that the founder of the Royal Institution, Count Rumford, was of American origin. The provision of funds to meet the cost of the extensive programme of reconstruction which was forced upon the Managers has been a matter of the greatest concern to them and to every friend of the Institution. It will be recalled that, following a series of alarming explosions in Albemarle Street more than two years ago, the condition of the historic lecture theatre from the point of view of fire risks was shown to be such that reconstruction could no longer be deferred. Plans conforming to modern standards of fire protection, including the provision of suitable exits from the theatre, proved to involve the rebuilding, not of the theatre itself alone, but also of a large part of the structure surrounding it. After the fullest consideration, the work was put in hand at an estimated cost of not less than £80,000; now, as it is rapidly approaching completion, the actual cost is found to be upwards of £90,000.

THE aim has been to raise the sum required for reconstruction without drawing upon the existing funds of the Royal Institution and thereby crippling the already inadequate provision for research. In this the Managers have been successful, and by special measures, and with the generous assistance of private individuals, and of industries which have benefited, indeed in certain cases have their origin in the scientific work at the Royal Institution, they have raised a large fund. This, with the addition of the £16,000 from the Pilgrim Trust, is now sufficient to meet practically the whole cost of the rebuilding. The Institution is thus enabled to enter upon the year of the forthcoming Faraday celebrations and to look forward to a continuance of its work free from immediate financial embarrassment. With the cost of the rebuilding provided for, the Managers are free to turn their attention to another pressing object, the endowment of research. Some progress has already been made towards the establishment of a fund for this purpose. In the coming year it is hoped to add considerably to this fund, and thereby to place the scientific work of the Royal Institution and the Davy Faraday Laboratory on a financial footing which accords with the requirements of modern research.

FOUNDED in 1881, the Society of Chemical Industry will next year celebrate its jubilee, chiefly by means of proceedings of a domestic character associated with the annual meeting, which will begin on July 13 and extend over the succeeding seven days. It is intended to confer the rare distinction of honorary membership of the Society on a small number of eminent foreign technologists. It is also intended to present inscribed plaques to the original members of the Society and to the prime wardens or masters

of such livery companies of the City of London as have specially fostered the education or progress of applied science. In addition to the social engagements appropriate to such an occasion, there will be arranged exhibitions of apparatus and plant and visits to works typical of the manufactures of London. Two special publications are being prepared in honour of the jubilee. Dr. Stephen Miall, editor of *Chemistry and Industry*, is writing a comprehensive history of the chemical industry, whilst a special number of the Society's *Journal* will include reprints of the outstanding papers which have appeared during the fifty years of its existence. The progress of chemical industry and that of the Society itself will be outlined, and use will be made of the opportunity for biography. These publications will be available to the general public, for whose information and interest there are also being arranged a series of broadcast addresses and the distribution of authoritative articles dealing with the relation of chemistry to life and industry.

THE International Conference on Silicosis held at Johannesburg on Aug. 13-27 last has an interest quite apart from the valuable conclusions reached in its study of the medical aspects of this dangerous industrial disease. The Conference, which was summoned by the International Labour Office with the assistance of the Transvaal Chamber of Mines and the Government of the Union of South Africa, was the first held outside Europe under the auspices of the League of Nations, and was also the first experiment in co-operation between the International Labour Office and the scientific world. Delegates from Germany, Australia, Canada, Great Britain, Italy, Holland, the Union of South Africa, and the United States of America participated in the work of the Conference, which, in addition to the opportunity of exchanging views and comparing practice, enabled the delegates to obtain personal acquaintance with the achievements of the Miners' Phthisis Bureau of South Africa. An average of £1,000,000 per annum is spent by the mining industry of the Rand in medical care and compensation for silicosis, and Mr. Sampson, the Minister of Posts and Telegraphs, in opening the proceedings, stressed the value of international co-operation in combating this disease.

THE recommendations of the International Conference on Silicosis were adopted as a result of discussion upon reports presented upon three groups of problems: prevention, medical aspects, and compensation—the greater part of the sessions being devoted to the discussions in these groups. Among the recommendations of chief interest to scientific workers are those which urge the absolute necessity of scientific research, and particularly research designed to secure uniformity of terminology and of radiological technique. The collection of further information concerning the incidence and development of the disease and the study of methods of rehabilitation was urged, and the Conference requested the International Labour Office to publish periodically a bibliography on silicosis. The Conference sets a

precedent that might well be followed more widely in the co-ordination of scientific research on social and industrial subjects.

IN connexion with the International Conference for Phytopathology and Economic Entomology held in Holland in 1923, prizes were offered in 1928 for the best two memoirs concerning (1) investigations on rust diseases (*Uredineæ*) of cereals, and (2) investigations on the rôle played by insects or other invertebrates in the transmission or initiation of virus diseases in plants, the prizes being of the value of 1000 Swedish crowns (about £55) each. It is now announced that the prize for the most meritorious investigations on Rusts has been awarded to Mr. J. H. Craigie, Senior Plant Pathologist in Charge, Dominion Rust Research Laboratory, Winnipeg, Manitoba, Canada. Mycologists will recollect that it was Mr. Craigie who recently discovered the hitherto unknown and important function of the spermogonia of the rust fungi. The adjudicators have made no award in connexion with the subject of the second prize.

ONE of the most interesting developments in high voltage engineering is the use of a method by means of which cables are kept constantly impregnated with oil. As the temperature of the cables is continually altering owing to variations in the load, it is necessary to provide means so that when the cable is hot it is relieved of the excess oil caused by expansion due to temperature and when cold the oil is returned to it. For this purpose feeding tanks have to be supplied when the level of the cable is high and pressure tanks when the level is low. These cables seem to be opening up a new era in power transmission and they are being very closely studied. In the *G.E.C. Journal* (England) for November is published the second of a series of articles by E. H. Horley on the manufacture and testing of the accessories used in oil-filled cables. He points out that the length of the cable which can be supplied from one feeding tank is limited by the viscosity of the oil and the resistance the central channel in the cable offers to the flow of oil along it. The length of this section can be increased considerably by using a pressure tank to assist the feeding tank by taking in oil during the first period of the heating of the cable and sending it out during the first period of the cooling. This is done by constructing cylinders containing flexible walled cells made of corrugated nickel plates. The number of these cells corresponds to the amount of oil required to operate the section of the cable. To test a cell, it is subjected to 10,000 cycles of rarefaction and compression. The test is done automatically for a few days and nights, and is equivalent to several years of actual working. Every length of cable dispatched from the factory has a tank filled with oil under pressure connected with it.

As Italy has practically no coal resources, it has to import nearly all its own coal. Since the War, the price of coal in Italy has fluctuated between wide limits. At the present time it is about thirty shillings per ton. One of the objects of electrifying the railways in Italy was to utilise the water power available

in the mountainous regions and thus reduce the importation of coal. Last year the saving effected in amount of imported coal required was about 20 per cent, and the average water power developed exceeded two million kilowatts. During the thirty years since electric traction first began to be used, much experience has been gained on the electric systems in use. G. Bianchi read a paper on this subject to the Institution of Electrical Engineers on Nov. 20. Up to 1916, 230 miles of the railways had been electrified on the three-phase system at 16 cycles. A drawback to this system was that it required exclusive generating stations fairly close together and so further electrifications after 1916 were carried out on the three-phase system at the standard industrial frequency of 45 cycles. The energy was converted into direct current of 3000 volts before reaching the motors of the locomotives, as this has the advantages of simplicity of the overhead contact line and great ease in speed regulation. It was originally intended to confine the 3000 volt d.c. system to the lines of southern Italy, but it has now been decided to carry out the electrification of the Florence-Rome and of the Milan-Bologna lines on this system. When this is done, there will extend from Milan to Naples an electric line which, traversing the peninsula from north to south, will carry the greatest part of the longitudinal traffic of the Italian railways. In order to meet the eventuality of a sub-station break-down which cannot be repaired in a short time, travelling sub-stations have been constructed. These travelling sub-stations have proved so useful, both from the technical and economic points of view, that it seems probable that they will come into continuous use.

IN two addresses to members of the Eugenics Society in association with the Psychology and Education Sections of the British Association at the Bristol meeting, Prof. R. J. A. Berry, Director of Medical Services in the Stoke Park Colony, Bristol, discussed the physical basis of mind and the diagnosis of mental deficiency. His addresses are summarised in the October number of the *Eugenics Review*. He points out that probably 80-90 per cent of primary mental deficiency is due to bad heredity. In mental defectives it is the pyramidal cells of the controlling supragranular cortex of the brain which are chiefly lacking, while those controlling the animal instincts of self-preservation and sex are often well developed. Mental defectives are usually more or less markedly microcephalic owing to the small development of the brain. Several striking cases were described, illustrating the various types of arrested mentality—the idiot, the imbecile, and the feeble-minded. The various physical and mental tests applied in determining the mental condition are also described. A feeble-minded woman thirty-two years of age may have the brain of a girl of six years and the mental capacity of one of eleven years, combined with bodily growth at the fourteen-year level and the sexual passion of an adult. Lack of control of the natural reactions is the inevitable result. Prof. Berry states that in Great Britain we are spending some £93 per head per annum on mental defectives, who frequently are allowed to reproduce their kind,

while we spend only £12 per head on the normal child. Thus does civilisation bring about its own downfall.

REFERRING to the correspondence under the heading of "Highest Recorded Shade Temperature", on p. 723 of NATURE for Nov. 8, Prof. A. J. Henry gives some further interesting particulars of the conditions under which a temperature of 134° F. was recorded at Greenland Ranch, Death Valley, California, on July 10, 1913. On the day in question there was a slow drift of air from the north, that is, from the high plateau of Nevada, which reaches a general elevation of 6000-8000 ft. On this bare continental plateau the temperature probably approached 100° F., in spite of the elevation. Death Valley itself lies below sea-level, and in its steep descent of several thousand feet from the Amargosa and Funeral Mountains the air was warmed dynamically to a most abnormal temperature. The extreme conditions occurred only in Death Valley, which is a long, narrow trough running north and south, while in other parts of California the day was not especially hot; but these considerations justify the acceptance of the record. Unfortunately, there is not sufficient information available in Great Britain to examine the Azizia record in similar detail, and Prof. Henry is still sceptical as to its reality.

INQUIRIES are often made by amateur naturalists as to how, without starting upon some intricate investigation, they may add new facts to the sum of knowledge. To such and to their advisers we commend an article in the November issue of *British Birds* on "Our Present Knowledge of the Breeding Biology of Birds", by the Rev. F. C. R. Jourdain. The author emphasises the lack of information which at present exists about the length of the incubation period in many common birds, and about that interesting and variable detail, the parts taken by the cock or hen or both in sitting upon the eggs and later in tending the young. The information given is of real value as a guide to the potential investigator, for not only does the article contain a list of the birds concerning which further observations are required, but also it states the form which the observations ought to take. Readers familiar with the immense amount of literature which has been devoted to the birds of the British Isles will be amazed at the number of blanks which occur in the records of incubation and fledging periods of common birds.

It is highly probable that in the future tidal power will be used extensively. In most industrial countries, however, the low cost of coal and the progress made in the technique of coal burning imposes a severe restriction on its development, except in a few very special cases. The main problem that has to be overcome is to find an economic way of getting a continuous supply of energy from a variable source. An experimental attempt is being made at the Avonmouth docks (NATURE, Oct. 4, p. 541), where the tidal range is about 30 feet; of this, about 10 feet cannot be used by the turbines and recourse is had to a steam accumulator which has been 'charged' by the tidal turbines. In *World Power* for November, two tidal projects in

the Argentine are described, one at the mouth of the Deseado River, and the other at the Gulf of San José. The Argentine has a difference between high and low tide levels sufficient to justify the consideration of a tidal scheme and a Government commission has reported favourably on it. In the Gulf of San José, the sea rises 15 feet in neap tides and about 26 feet in spring tides. By a special arrangement the turbines can be made to run in the same direction whether the tide is going out or coming in. It would be possible to have five hours' continuous operation out of every six.

A NEW high-tension power line, costing more than one million pounds sterling, between Toronto and the Pagan Falls electric generating station, a distance of 230 miles, has just been brought into operation by the Ontario Hydro-Electric Power Commission. The voltage of the transmission line is 220,000, which is the highest yet adopted in Canada. In transmitting 150,000 horse-power, the line is also believed to carry the greatest volume of electric energy. It is used to supplement supplies received from Niagara Falls, the station generators at which are now working in perfect synchronisation with those at Pagan Falls. The new line is carried on steel towers, 73 ft. in height, placed at distances apart of about one-fifth of a mile. It is the second of two service lines from Pagan Falls to Toronto. Both are of aluminium with a steel core, the external diameter being 1½ inches. It is interesting to note that the route was planned with the aid of aerial photography. Located in the first instance from the best available maps, the route was photographed with oblique exposures, after which a definite line was selected. This was then re-flown and vertical photographs taken, from which a mosaic map was made for detailed study and the selection of tower sites. It has been, in fact, an important application of the aerial survey method, and it resulted in a considerable saving of time.

MR. SIDNEY SMITH, Assistant Keeper in the Department of Egyptian and Assyrian Antiquities at the British Museum, has been appointed Keeper of the Department in succession to Dr. H. R. Hall, who died on Oct. 13 last.

WE much regret to record the following deaths: Mr. A. B. Basset, F.R.S., a vice-president in 1892-94 of the London Mathematical Society, on Dec. 5, aged seventy-six years; Sir Otto Beit, Bart., K.C.M.G., F.R.S., well known for his generous benefactions for medical and other scientific research, on Dec. 7, aged sixty-five years; and Sir Francis Ogilvie, C.B., formerly Director of the Science Museum, South Kensington, on Dec. 14, aged seventy-two years.

THE Christmas Lectures at the Royal Institution will be delivered this year in the reconstructed lecture theatre of the Institution by Prof. A. M. Tyndall, H. O. Wills professor of physics in the University of Bristol, on the electric spark. The first lecture will be given on Dec. 30, at three o'clock, on "Some Properties of Electrified Bodies". The remaining five lectures will deal with the spark as a

current of electricity, air as a conductor, and the mechanism and properties of sparks and arcs.

As already announced, the twenty-first Annual Exhibition of the Physical and Optical Societies is to be held on Jan. 6-8 at the Imperial College of Science, Imperial Institute Road, South Kensington; it will be open in the afternoon from 3 P.M. to 6 P.M., and in the evening from 7 P.M. to 10 P.M. To mark the coming-of-age of the Exhibition, it will be opened formally by Sir Arthur Eddington, on Jan. 6 at 2.30 P.M. Two discourses, with experiments, will be given at 8 P.M. on Jan. 7 and 8: Mr. E. Lancaster-Jones, "Searching for Minerals with Scientific Instruments", and Sir Gilbert Walker, "Physics of Sport". Members of learned societies can obtain tickets of admission from their secretaries; others may obtain tickets on application to the Secretary, the Physical and Optical Societies, 1 Lowther Gardens, Exhibition Road, London, S. W.7. No tickets are required for Jan. 8.

DR. T. A. STEPHENSON, senior lecturer in the Department of Zoology at University College, London, has been appointed professor of zoology in the University of Cape Town in succession to Prof. L. T. Hogben. Prof. Stephenson received his education in zoology and allied subjects at the University College of Wales, Aberystwyth, where he was afterwards demonstrator in zoology for about three years. His earlier research work was on the morphology and ecology of the sea anemones, and more recently he has studied the ecology of corals and coral-reefs; in 1923 he made an investigation of the Guernsey *Haliotis* fishery. In 1928-29 he was in charge of the shore-work of the Great Barrier Reef Expedition. Prof. Stephenson is the author of various publications dealing, among other subjects, with the Actiniaria of the world and British orchids, but his principal item is Vol. 1 of a monograph on the British sea anemones, which is one of the Ray Society publications.

THE annual meeting of the American Association for the Advancement of Science will be held at Cleveland on Dec. 29-Jan. 3. This will be the fourth occasion on which the Association has met at Cleveland. The address of the retiring president, Dr. Robert A. Millikan, director of the Norman Bridge Laboratory of Physics and chairman of the executive council of the California Institute of Technology, will be delivered on Dec. 29. Dr. Edwin B. Wilson, professor of vital statistics in the School of Public Health, Harvard University, will deliver the Gibbs lecture (under the auspices of the Association and the American Mathematical Society) on the afternoon of Dec. 30; and Dr. C. E. K. Mees, of the Eastman Kodak Company, will give the Sigma Xi lecture on the same evening. General lectures have been arranged for every afternoon and evening of the meeting, and a science exhibition will also be open. It is also announced in *Science* that the first of the new series of summer meetings of the American Association for the Advancement of Science will be held at Pasadena, California, on June 16-20, 1931, at the

California Institute of Technology, the Huntington Library and Art Gallery, and the Mount Wilson Observatory.

ON Nov. 10, the University of Colorado celebrated the twenty-fifth anniversary of the theory of relativity; it was on Sept. 26, 1905, that Einstein's first paper on relativity, entitled "Zur Elektrodynamik Bewegter Körper", appeared in the *Annalen der Physik*. A banquet was given in the Memorial Union Building, after which addresses were given by various members of the faculty. Dean O. C. Lester, of the Graduate School, spoke on "The Changed Outlook on Physical Theories"; Dr. V. P. Lubovich, assistant professor of physics, spoke on "Does the Inertia of a Body depend upon its Energy Content?"; Dr. Walter B. Veazie, of the Department of Philosophy, discussed "Relativity and Philosophy"; and Dr. Frank E. E. Germann, professor of chemistry, spoke on "Chemistry and Relativity". A painting of Dr. Einstein by Miss Virginia True, of the Art Department, was also unveiled.

THE Augustus and Alice Waller Memorial Research Fund is held in trust by the Council of the London (R.F.H.) School of Medicine for Women, but is not restricted to members of that institution. A permanent income of about £100 a year is provided for the primary purpose of making grants, usually of small sums, for the purchase of research apparatus. Twenty-nine grants representing a total sum of £540 have been made, varying in amount from £3 to £48, the average grant being £18. The grants have been given for research work in physiology, physics, chemistry, anatomy, pharmacology, and pathology. It is felt that the Fund is fulfilling its purpose as a memorial to Dr. and Mrs. Waller, who themselves devoted their lives to research. The sum of £105, with accrued interest, subscribed for a memorial at St. Mary's Hospital, will be used to help equip one of the physiological laboratories in the new school to be known as the "Waller Memorial Laboratory". It is expected that the laboratories will be completed in about eighteen months' time.

THE report of the Irish Radium Committee for 1929 has been published by the Royal Dublin Society (*Sci. Proc. Roy. Dub. Soc.*, vol. 19, [separate issue] No. 42). The large quantity of 14,730 millicuries of radon was issued during the year. Reports from several surgeons are included, and some surprisingly good results are recorded in some cases of cancer of the breast, lip, and skin, and in one of pelvic sarcoma, though it has to be admitted that there are numerous failures. In some of the latter, nevertheless, the patient's condition for the time being is often much benefited.

THE first number of a new periodical, *Bulletin Météorologique de l'Observatoire Météorologique de Beograd*, dated 1928, has recently been received. Its contents, however, consist of the daily observations of the various meteorological elements at 3 hours on each day at numerous stations in Serbia during the half year July-December 1905. The *Bulletin* is a sequel to two former publications, one—the monthly bulletin

of the Belgrade Observatory which was published for the period 1902–June 1905, and the other a separate publication giving data from 1904–June 1905. The Observatory archives contain data, for the most part not reduced, for the whole period 1888–1914. It is hoped to publish these and later data in further issues of the *Bulletin*, so that in twelve to fourteen years the whole material will be made available. Meteorologists in other countries will join in wishing that this modest hope may be fulfilled.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant master for mathematics and physics in the Smith Junior Nautical School, Cardiff—The Director of Education, City Hall, Cardiff (Dec. 27). An assistant science teacher at the Central Municipal Technical School, Liverpool—The Director of Education, 14 St. Thomas Street, Liverpool (Dec. 31). A male assistant under the Department of Scientific and Industrial Research for work in connexion with research on fruit—The Secretary, Department of Scientific and

Industrial Research, 16 Old Queen Street, Westminster, S.W.1 (Dec. 31). A professor of pathology in the University of Glasgow—The Secretary, The University Court, University, Glasgow, W.2 (Jan. 7). A graduate woman teacher for arithmetic and geometry at the Bloomsbury Trade School, Queen Square, W.C.1—The Education Officer (T.1), County Hall, S.E.1 (Jan. 9). A research assistant in plant breeding at University College, Dublin—The Secretary, University College, Dublin (Jan. 15). A mechanic and laboratory assistant in the physics laboratory and workshop of the University of Cape Town—The Registrar, The University of Cape Town, P.O. Box 594, Cape Town, South Africa (Jan. 20). A professor in mathematics in the University of Dacca, East Bengal—The Registrar, University of Dacca, East Bengal, India (Feb. 7). A professor of economics and political science at the University College of Wales, Aberystwyth—The Financial Secretary, University College of Wales, Aberystwyth (Feb. 14). A principal of the Dundee School of Economics and Commerce—The Town Clerk, Dundee.

### Our Astronomical Column.

**A Solar Eruption on Nov. 25.**—At the meeting of the Royal Astronomical Society on Dec. 12, observations were described of a solar eruption that was seen near the centre of the sun's disc on Nov. 25 with the spectroheliograph at Greenwich. Eruptive prominences possessing velocities of 100 km./sec. or greater have been often observed in hydrogen light at the sun's limbs with the spectrograph by recording their linear displacements with time. Similarly they are recorded in spectroheliograms in hydrogen or calcium light. The spectroheliograph in addition enables the observer to follow the changes of the prominences as they are carried by the sun's rotation across the disc as absorption markings. A simple device for progressively changing the wave-length of the light entering the eye enables the observer to locate and measure the line of sight component of the radial velocity outwards or inwards from the sun with which the absorption marking may be moving.

The phenomena observed on Nov. 25 evidently represented the end-on view of an eruptive prominence blown out of the sun's chromosphere with a maximum observed velocity of 450 km./sec. Forty-five minutes before the eruption, an apparently stable dark marking was visible; at 10<sup>h</sup> 34<sup>m</sup> G.M.T. the velocity rose within a few minutes from 40 km./sec. to about 400 km./sec. At 11<sup>h</sup> cloud stopped the observations, but the eruption was then declining, and part of the gaseous structure was descending at about 100 km./sec. Contemporary with the appearance of those rapidly moving masses of hydrogen gas, brilliant patches of hydrogen with little or no radial velocity made their appearance. It may be added that the phenomena described could have been photographed with a spectroheliograph had the second or selecting slit been set at appropriate distances from the *H $\alpha$* , or *H* or *K* lines of the solar spectrum so as to allow for the Doppler displacements equivalent to the velocities observed.

**Autumn Fireballs.**—Mr. W. F. Denning, 44 Egerton Road, Bristol, writes as follows: "Several large fireballs or meteors have been observed during the last two months, and further observations of the following would be welcomed:

Oct. 24, 8.24: Brilliant meteor, fell perpendicularly down in southern sky, seen at Bristol.

Nov. 16, 9.46 P.M.: Estimated four times as bright as Jupiter; path, 165° + 55° to 135° + 35°; duration 5 sec.; seen from Nuneaton, Warwick.

Nov. 16, 2.30 A.M.: Splendid meteor, gave a brilliant flash and left a fiery streak for several minutes; appeared in the eastern sky and moved from north to east; fell at angle of 45°; Campbeltown, Scotland.

Oct. 30, 10.5 P.M.: A fireball passed along parallel to the horizon eastwards; altitude low, first seen when slightly east of the moon and endured 8 to 10 seconds; disappeared in the south-south-east; observed by several people from Edinburgh and described in the *Scotsman*.

Nov. 27, 11.6 P.M.: Reported by observers in Cornwall and Devonshire; it lit up the whole countryside. As seen at Lostwithiel, it moved from north-west to south-east and ended near Orion; as viewed from St. Agnes, it shot almost perpendicularly down the southern sky and traversed the region of Perseus or border of Aries and Taurus and vanished near Orion."

**Stellar Absorption Band near  $\lambda 4200$ .**—Recent work by Dr. A. V. Douglas, described in the *Monthly Notices* of the Royal Astronomical Society for October 1930, throws some light on the discussion concerning the origin of this band. Previous work by Elvey and Zug showed that in the case of the Yerkes spectrograms its presence in stellar spectra could be accounted for by absorption in the optical system. Shapley, also, has withdrawn his earlier identification of cyanogen as the origin in early type stars. Miss Douglas, by means of experiments similar to Elvey's, has been unable to trace any selective absorption in the optical train of the Ottawa 15-inch refractor; whereas, in the case of three cepheid variables examined by her, the absorption band is not only strong but also exhibits periodic variations in intensity in phase with similar variations of enhanced lines. The stellar origin (most probably cyanogen) is thus strongly supported. No mention is made of early type spectra, and the origin in such cases is still not definitely settled.