FRIEDRICH HAYN, extraordinary professor of practical astronomy at the University of Leipzig, died on Sept. 9 at the age of sixty-five years. He was educated at the Dresden Gymnasium and the Universities of Leipzig and Göttingen. He gained his degree with a thesis on the orbit of comet 1862 III. He then obtained a position at Leipzig Observatory, and retained his connexion with that institution in various capacities for nearly forty years. He is perhaps best known for his studies of selenography and the rotation elements of the moon. He also made numerous observations of comets and planets, eclipses of the sun and moon, and carried out triangulations of the Pleiades and the Præsepe cluster. He was also interested in clocks and time-determination. He was appointed professor in 1920; his work as a teacher during the last eight years has been active and fruitful.

WE regret to announce the following deaths:

Sir Hugh Anderson, F.R.S., Master of Gonville and Caius College, Cambridge, a distinguished worker on the physiology of the nervous system, on Nov. 2, aged sixty-three years.

Sir Alexander Kennedy, F.R.S., emeritus professor of engineering in University College, London, and a past president of the Institutions of Civil and Mechanical Engineers, on Nov. 1, aged eighty-one years.

Prof. Theodor Paul, director of the research institute for the chemistry of foodstuffs at Munich and director of the Imperial Health Department at Berlin from 1902 until 1905, on Sept. 30, aged sixty-six years.

Prof. J. G. Pertsch, Jr., professor of electrical engineering, Cornell University, on Aug. 23, aged forty years.

M. Pierre Henri Puiseux, member of the Paris Academy of Sciences, and honorary observer at the Observatory of Paris, and author with Lœwy of a photographic atlas of the moon, on Sept. 28, aged seventy-three years.

Dr. Joseph T. Rosa, Jr., of the branch of the college of agriculture of the University of California at Davis, who had conducted extensive researches on the physiology and genetics of vegetable crops, on Aug. 22, aged thirty-three years.

Dr. Benjamin W. Snow, until 1926 professor of physics in the University of Wisconsin, known for his work on radiation and infra-red metallic spectra, on Sept. 21, aged sixty-eight years.

Sir Charles Tomes, F.R.S., a pioneer in the scientific development of dentistry, who carried out important investigations on the structure and development of the teeth of some of the lower vertebrates, on Oct. 24, aged eighty-two years.

News and Views.

HIS MAJESTY THE KING has approved of the following awards this year by the president and council of the Royal Society in respect of the two Royal Medals: A Royal Medal to Prof. A. S. Eddington, for his contributions to astrophysics; a Royal Medal to Prof. R. Broom, for his discoveries, which have shed new light on problems of the origin of mammals. The following awards have also been made by the president and council: The Copley Medal to Sir Charles Parsons, for his contributions to engineering science; the Rumford Medal to Prof. F. Paschen, for his contributions to the knowledge of spectra; the Davy Medal to Prof. F. G. Donnan, for his contributions to physical chemistry, particularly for his theory of membrane equilibrium; the Darwin Medal to Dr. L. Cockayne, for his contributions to ecological botany; the Sylvester Medal to Prof. W. H. Young, for his contributions to the theory of functions of a real variable; the Hughes Medal to M. le Duc de Broglie, for his work on X-ray spectra.

THE following is a list of those recommended by the president and council for election to the Council of the Royal Society at the anniversary meeting on Nov. 30: *President*, Sir Ernest Rutherford; *Treasurer*, Sir David Prain; *Secretaries*, Sir James Jeans and Dr. H. H. Dale; *Foreign Secretary*, Sir Henry Lyons; *Other Members of Council*, Dr. F. A. Bather, Dr. C. Bolton, Dr. C. G. Douglas, Mr. R. H. Fowler, Prof. E. W. Hobson, Sir Frederick Hopkins, Prof. A. Lapworth, Prof. J. C. G. Ledingham, Prof. F. A. Lindemann, Dr. P. C. Mitchell, Prof. J. C. Philip, Prof. A. C. Seward, Prof. G. Elliot Smith, Sir Thomas Stanton, Mr. A. A. C. Swinton, and Prof. C. T. R. Wilson.

THE immense practical importance of virus diseases of plants is being increasingly recognised, and it is a pleasure to note that the investigation of their more fundamental aspects has not been lost sight of. Generous provision has now been made for the latter by a grant from the Empire Marketing Board to the Rothamsted Experimental Station. This will allow of the addition to the staff of the Station of a plant physiologist, a cytologist, and an entomologist, together with adequate maintenance, equipment, and laboratory assistance. The grant also provides for the erection of a range of insect-proof glasshouses with special facilities for virus researches. The appointments will be to the Department of Mycology, of which the head is Dr. W. B. Brierley. The chief of the Section of Virus Diseases in the Department is Dr. J. Henderson Smith, whose work in this field is already well known, and the intimate co-operation of a medical bacteriologist, a plant physiologist, a cytologist, and an entomologist in the intensive study of the more fundamental aspects of virus diseases marks a noteworthy step forward in the exploration of this congeries of very difficult and obscure problems. Further, this group of workers will be an integral portion of a research department of mycology, and thus carry out their investigations in the closest association with workers on fungous and bacterial diseases of plants and general plant pathology. The Empire Marketing Board is to be congratulated on its wisdom in making this development possible, and it is hoped that the Department of Mycology at Rothamsted will become an Empire centre for the study of virus diseases of plants where workers from at home and overseas will be welcomed and find facilities unobtainable elsewhere.

THE centenary of the *Spectator*, which again recalls by its name the earlier publication of Addison and Fielding, was celebrated last week by the issue of a voluminous and interesting number, giving both the history of the review since 1828 and general articles by many leading writers in science, literature, and politics. It may well claim an honoured, and even a unique, position among English journals. With the *Times* and *Punch* it probably represents better than any other paper the mental attitude of the English cultivated middle class, which is, in the broad sense, liberal, without being revolutionary, very open to useful new ideas while tenacious of the settled traditions of the country, eager to redress palpable injustice while avoiding sensations and dangerous adventures. The *Spectator*, founded by an ardent and outspoken Scot, R. S. Rintoul, and established by Meredith Townsend and R. H. Hutton, tended during the long editorship of J. St. Loe Strachey rather to the conservative side. This was due, as in so many other cases, to the split over Home Rule, and, the Irish question being now out of the way, it has resumed a more comprehensive attitude. Its circulation has recovered, and is far higher than even in the palmy days of Townsend and Hutton.

IT is pleasing to notice that in this centenary number of the *Spectator* considerable space is given to articles on the progress and prospects of science. Both Sir Oliver Lodge and Sir Alfred Ewing contribute papers. This way undoubtedly lies the best hope of the future, especially for the classes of people who read the *Spectator*. There is great scope and great need for a further admixture, both of the results and still more of the spirit of science, in publications which appeal to the general reader and must perforce give their main space to books and politics. While the scientific journal becomes more specialist, the general aspects of science will need more constant presentation to the non-specialist. We congratulate our veteran contemporary most heartily on its long course so brilliantly executed and the vigour with which it faces the tasks of another century.

ABOUT thirty years ago V. Poulsen of Denmark invented the telegraphone, an instrument for recording sounds in such a way that they can be reproduced. In the case of the gramophone, the recording and reproducing are purely mechanical, but the telegraphone is worked magneto-electrically and can be operated from a distance. The principle on which the instrument acts is that of magnetising in varying strengths the successive points of a thin steel wire as it is moved past the pole or poles of an electromagnet, the winding of the electromagnet being in the secondary circuit of an induction coil connected with a microphone. On speaking into the transmitter, the induced currents in the secondary produce variations in the magnetic field which cause the moving wire to be permanently magnetised in different intensities along its length. If we pass the steel wire magnetised in this way in the same direction as it originally passed the poles of the electromagnet, the receiver produces the original sounds, the loudness, however, being much diminished. It was proposed many years ago to use the instrument for the recording of conversations held over an exchange telephone line. When the subscriber is absent, the ringing of his bell automatically starts and switches in his telegraphone. On the return of the subscriber his telegraphone repeats the caller's message. The sounds heard in the telegraphone were quite clear and were free from extraneous noises, but they were faint, and in most common battery telephone circuits the results were poor.

A CONSIDERABLE step in advance in developing the telegraphone has recently been made by Dr. Curt Stille. According to the *Times* of Nov. 1, a British group of financiers has obtained from a German bank the rights of manufacture for the whole world outside of Germany. It is claimed that the new machine can be used for recording speeches and office letter dictations, the wire 'record' being wound on a spool. It can also be used to record telephone messages. It is claimed that the provincial and foreign correspondents of newspapers will thus be able to transmit news by telephone at a quarter of the present cost. A demonstration of the new apparatus was given in London on Oct. 31. Among the items recorded were a vocal solo, a recitation, and an orchestral selection. After a few minutes' waiting the mechanical process was reversed and the complete programme was reproduced. The reproduction, although the tonal effect was not quite so good as a gramophone, was clear and strong. Some of those present spoke into the machine and heard the reproduction of their voices immediately afterwards.

IN his presidential address to the Institution of Electrical Engineers, delivered on Oct. 25, Colonel Edgcumbe discussed mainly the economics of engineering production. It was encouraging to hear him prophesy that the electrical industry will double, and possibly even treble, its production in about fifteen years' time. There is the important limitation, however, that no industrial upheavals occur in the interval. He touched on more controversial matter when he suggested that the British manufacturer should be protected from foreign competition in the home market, although he modified the suggestion by saying that it should only be for a limited period. He made the proposition very attractive by saying that if the manufactured goods of the value of 100 millions sterling at present being imported into Great Britain were made here instead we could find employment for 800,000 men and thus solve the unemployment question. He does not grudge our foreign friends their orders, but merely regards tariffs as an economic necessity of the moment. He said that when a corporation places an order for £50,000 abroad the chief sufferers are the unemployed, some 500 operators being kept out of employment for about six months. In order that a country may have a high standard of living it is necessary to have a high rate of production per annum. In the United States and in Canada the yearly output per operative is nearly £900; in Great Britain it is only about half this. The relative pur-

chasing power of the hourly wage in America is nearly double that of our own. We think that his suggestion of selling a certain fraction of a factory's output overseas at cost price, or even slightly less, is a sound one. He shows how it might actually bring down the cost to the home purchaser. Electrical undertakings nearly always sell 'power units' at a much cheaper rate than 'lighting units,' and this policy can be justified. It is no easy matter for one manufacturing country to compete with another where working hours are longer, wages are lower, and where also luxury, entertainment, and living are on a much lower plane.

IN his Cameron lecture, delivered to the University of Edinburgh on Oct. 30, Dr. F. G. Banting gave a historical account of the research that resulted in the discovery of insulin. It was exactly eight years previously, on Oct. 30, 1920, that he conceived the idea that, if he ligatured the pancreatic duct and allowed the pancreas to degenerate, he might be able to obtain from the degenerated pancreas an active extract of the islets of Langerhans. He obtained permission to try out this idea in the Department of Physiology in the University of Toronto, and also obtained the services of Dr. Best, who was then a medical student, for help in estimating blood sugars. Work was commenced in May 1921, and the extracts from degenerated pancreases were found to lower the blood sugar and to produce clinical benefit in depancreatised dogs. A more adequate supply of islet extract was found to be available in the pancreases of fœtal calves, and from the material thus obtained something was learnt of the solubility of the active principle. This led to the discovery of a method by which active alcoholic extracts could be obtained from the pancreases of adult cattle.

CONTINUING, Dr. Banting said that in January 1922 the pancreatic extracts were first tried on diabetes patients. The results were sufficiently encouraging to cause Prof. J. J. R. MacLeod to turn a large proportion of his staff to work on the problems of the physiological activity of the pancreatic extract. Very soon the results were such as to attract general attention, and from that time onwards intensive investigations on insulin have been conducted all over the world. Prof. Banting succeeded where many failed, and this fact lends special interest to the concluding words which he addressed to his large audience of students. "I am a firm believer in the theory that you can do anything that you wish in this world, within reason, if you are prepared to make the sacrifice, think and work hard enough and long enough.

> 'There is no chance, no destiny, no fate
> Can circumvent, can hinder or control
> The firm resolve of a determined soul.
> Gifts count as nothing. Will alone is great;
> All things give way before it soon or late.'"

PATENT law, which ought to operate to the encouragement and reward of chemical investigation, frequently exercises a quite contrary effect. Remarking that chemical invention differs in many respects from mechanical invention, Mr. F. H. Carr, the immediate past-president of the Society of Chemical Industry, referred in his recent presidential address to the unsatisfactory state of legislation in this matter, and offered the suggestion that chemists in various countries should endeavour, in some concerted manner, to encourage research, to maintain a truly international spirit in science, and to secure a just reward to the inventor for the improvement in industry resulting from his invention—the reward, moreover, including recognition of the value of researches freely published in scientific journals. Such preliminary action should lead to an improvement in the unification of patent law and avoid the necessity for much of the secrecy which surrounds many important manufacturing operations and investigations carried out in connexion therewith. On one hand, a large number of chemical patent specifications are designed to bar the field of research to other workers, and, on the other hand, many successful inventions yielding large royalties are based on the scientific work of others who have not sought patent protection.

MR. CARR'S stimulating address was not confined to criticism, however justifiable, but discussed the work of the research associations, and referred to some of the major advances of chemistry and chemical industry, naturally with particular reference to those based on researches carried out in Great Britain and the United States of America. Mr. Carr concludes—and few competent judges will disagree—that industrial leadership should be entrusted to those who understand science and are therefore able to judge the value of an invention; further, that amalgamation, whether of firms or of their research departments, should be accompanied by the provision of effective scientific leadership invested with a proper degree of influence in relation to commercial and financial affairs. With Mr. Carr, and with all scientific workers of goodwill, we hope that when the world is finally released from the fear of war and from the fear that our civilisation may suffer destruction through the power of science, nations will combine to promote with greater intensity the objects of science in harnessing the resources of the world to the betterment of mankind.

IN 1781 there was published at Mannheim, on behalf of one Henry Zimmermann, an account of the third voyage (1776–1779) of Capt. James Cook. Not long ago the Alexander Turnbull Library, Wellington, N.Z., prepared and issued a translation of this record, for which we believe Miss Tewsley, of the library staff, was mainly responsible. Much interesting matter is made generally available thereby. Zimmermann's narrative informs readers that in the year 1776 two war-sloops, the old *Resolution* and *Discovery*, were being sent out on an exploring expedition, and he signed on the latter as a common sailor. She had 72 men and 12 guns aboard, and in command, Capt. Charles Clerke. "Fearing," he says, "as indeed proved to be the case, that we sailors would be obliged either to give up, or to destroy, all papers dealing with public matters, I took the precaution to write down briefly, and in the German language, all the principal

events which took place. It is from this notebook and my memory that I have drawn the materials."

ON Thursday last, Nov. 8, occurred the centenary of the death of Thomas Bewick, celebrated for his woodcut illustrations of animals and birds. A north-countryman, he was born at Cherryburn, Northumberland on Aug. 12, 1753, and died at Gateshead on Nov. 8, 1828. Early in his career, and whilst in apprenticeship at Newcastle, Bewick secured the valuable patronage of Dr. Charles Hutton, the mathematician, whose treatise on mensuration was in progress. After working in London for a short time Bewick returned to Newcastle. In 1790 appeared "A General History of Quadrupeds"; in 1797 the first, and in 1805 the second, volume of his "History of British Birds," considered to be his premier work. For R. J. Thornton's "Family Herbal" (1814) Bewick prepared two hundred and fifty-eight engravings exemplifying plants drawn from Nature by Henderson. He also designed the woodcuts in Robert Bloomfield's "The Farmer's Boy" (1800). Bewick rendered distinct service to the science of his time as an interpreter, through spirited and facile engravings illustrative of many branches of natural history in the wild. He did not profess to be other than an observant student, but fine craftsmanship was at his call. To the country gentleman he was an inspiration. Reference to the British Museum Catalogue of Printed Books will show the nature and astonishing variety of his illustrative efforts. His accessories, backgrounds, vignettes, and tail-pieces bore each a story. There is a portrait of Bewick by James Ramsay in the National Portrait Gallery.

THOSE of our readers interested in Prof. Bone's article in the issue of Sept. 1 on "The Centenary of James B. Neilson's Invention of Hot-Blast in Iron Smelting," will be glad to know that the West of Scotland Iron and Steel Institute has recently published in booklet form a short life of Neilson, compiled by Mr. T. B. Mackenzie. Included in this booklet are a portrait of the inventor, a reproduction of the painting showing Neilson, Macintosh, Wilson, and their law agents, made after the great 'hot-blast trial' at Edinburgh, and some sketches showing the early application of the hot blast. Extracts are also given of Neilson's address at the opening of the Workmen's Institution which he founded at the Glasgow Gas Works, and Neilson's own account of the steps by which he was led to his epoch-making invention. The latter is extracted from the reports of the discussion which took place on a paper read by Mr. H. Martin before the Institution of Mechanical Engineers in Birmingham, "On the Construction of Hot Blast Ovens for Iron Furnaces," the paper being read on May 4, 1859, and the discussion taking place on July 27. Neilson undoubtedly belonged to a clever family, and in the brief biographical sketch we are given we see him as a man of quiet, reflective mind, strict in his religious and social duties, unassuming and kind, and invariably actively interested in the welfare of those around him. We are not told what fortune he made or left, but in concluding his interesting review Mr. Mackenzie remarks: "It may be estimated that as a result of Neilson's invention of the hot blast his country has benefited to the extent of about twelve million pounds sterling per annum."

THE destructive winds that occurred in several places in the south-east of England, including a part of London, on Oct. 22, have been the subject of an official inquiry by the Meteorological Office. The request for information from private individuals met with such an unexpected response—264 letters and 217 barograms had been received up to Nov. 3—that the inquiry is still in progress. It has been established, however, that the London storm travelled slightly east of north on a straight path of very narrow width, from near Victoria station to Highgate, but it was diminishing in severity by the time it had reached Euston, and no damage was reported until a fresh access of energy took place at Highgate. Barograms on the storm's path showed a very sudden fall and recovery of pressure, amounting as a rule to two or three millibars. The phenomena observed were similar in character to those of an American tornado, but although the wind was of destructive violence it was less strong than that of a typical American storm. It was unfortunate that it occurred after dark, as this made it impossible to tell whether the characteristic 'funnel cloud' was present. Events of a similar nature took place on the same evening at Bromley (Kent), where a track parallel to that of the London tornado was followed, and near Southampton. It may be recalled that in 1913 a tornado occurred on nearly the same date in South Wales, and resembled this one in that its track was very narrow and was from south to north; on that occasion also it practically died out, only to reappear farther north, and there was at least one other outbreak of the same kind in another part of Great Britain.

EXPLANATIONS of the precise conditions under which a tornado arises are somewhat speculative, owing to want of sufficiently detailed observations of atmospheric structure in the immediate neighbourhood. It is evident that they develop most often, as did the London storm, at the discontinuity between different wind currents, but it is unlikely that the differences in density between the different currents provide any appreciable part of the kinetic energy of the whirl, which must presumably come from the latent heat set free in the condensation of water vapour into rain. According to this view, tornadoes may be more frequent in America because of the nearer presence of large areas of warm sea-water capable of supplying the necessary water vapour, and not, as has sometimes been assumed, because of the greater contrasts of temperature there.

THE U.S. coastguard patrol vessel *Marion* returned to New London, Conn., on Sept. 18, after a ten weeks' cruise in the waters between Greenland and Labrador; and some preliminary information as to the main results has been received. More than 2500 soundings were made with the echo gear. The larger part of the area was found to have a depth of more than 1000 fathoms, and 2000 fathoms or more was reached at

the southern end. The Greenland shelf is not so wide as was supposed, and has a very abrupt outer edge. The Labrador shelf, on the other hand, is wider than it is generally charted, and has a remarkable trough in it, running parallel to the coast, at a distance of 40 miles, for the greater part of its length. More than 2000 records of temperature and salinity were obtained at various depths at 191 positions, intended for the dynamical calculation of the speed of the ice-bearing currents on the basis of the work of V. Bjerknes. This will take a considerable time, but so far as they have been examined they have led the officers of the expedition to some unexpected conclusions. No trace of a warm north-going under-current was found in Davis Strait, and it is suggested that the openness of the North Water is due to the shape of the basin. A layer of water 100 metres thick covered the larger part of the deep area with "a temperature 5° above normal." The deep-bottom water had a temperature of 2·6° C., and a salinity of 34·90, and, in the opinion of the leader, Lieut.-Commander E. H. Smith, is not formed locally, but has crept slowly northwards from the Antarctic regions. Warm Atlantic water pushed in past Cape Farewell, and apparently kept well over to the Greenland side; on the Labrador side water of low salinity extended far seawards. About 1000 bergs were seen off Disko Island, and 200 near Cape Harrison. No pack-ice was found south of Cumberland Sound.

AT the International Conference for Phytopathology and Economic Entomology, held in Holland in 1923, a prize fund was inaugurated at the instance of Prof. Eriksson, who contributed a substantial sum to it. Other contributions were made and sums collected, so that the standing committee of the Conference is now able to announce the offer of two prizes of the value of 1000 Swedish crowns (about £55) each. The prizes are to be awarded for the best two memoirs concerning: (1) investigations on rust (Uredineæ) diseases of cereals (wheat, oats, barley, and rye); and (2) investigations on the rôle played by insects or other invertebrates in the transmission or initiation of virus disease in plants. Competitors may be of any nationality, and memoirs (which may be in English, French, or German) must reach the Secretary of the Committee on or before May 30, 1930. The awards will be announced, after adjudication by two boards of specialists of international reputation, during the International Botanical Conference in Cambridge in 1930. Full particulars of the scheme may be had on application to the Secretary, Mr. T. A. Schoevers, Wageningen, Holland.

THE first Liversidge Lecture before the Chemical Society, entitled "Physical Chemistry in the Service of Biology," will be delivered by Prof. F. G. Donnan in the meeting hall of the Institution of Mechanical Engineers on Thursday, Nov. 29, at 5.30 P.M. The lecture is open to the public, without ticket.

PROF. A. R. LING, of the University of Birmingham, will deliver the eleventh Streatfeild Memorial Lecture before the Institute of Chemistry in the Lecture Theatre, King's College, Strand, W.C.2, on Friday, Nov. 16, at 8 P.M., taking as his subject, "Contributions to the History of Starch and its Transformation Products." Admission is by ticket, obtainable free of charge, from the registrar of the Institute of Chemistry, 30 Russell Square, London, W.C.1.

IT has been decided by the council of the British Institute of Radiology incorporated with the Röntgen Society, to hold a special meeting at the opening of the new session on lines similar to last year, when the inaugural meeting of this body was celebrated. On the present occasion, in addition to the address by Dr. G. W. C. Kaye, the president for 1928–29, papers have been promised by Prof. W. L. Bragg, Sir Thomas Horder, Mr. W. Sampson Handley, Mr. A. T. Walton, Dr. G. Shearer, and other distinguished workers in the radiological world. Most of the meetings will be held at the Central Hall, Westminster, and at the same time there will be shown examples of the most modern X-ray and allied apparatus, which will include exhibits by all British firms engaged in this industry. The proceedings are not open to the general public, but any person practically interested in radiological work is invited to attend. The Director of the Institute, Dr. J. Muir, 32 Welbeck St., London, W.1, will give any information desired.

INTENDING purchasers of publications of the U.S. Bureau of Standards, such as the *Journal of Research*, obtainable through the Superintendent of Documents, Washington, will be glad to have the information, forwarded to us by a correspondent, that the Superintendent of Documents will not accept cheques, but only international money orders.

THE reviewer of "British Rainfall" in NATURE of Nov. 3, p. 678, suggested that Mr. L. C. W. Bonacina's article on the snowfall of the half-century from 1876 to 1925 was inspired by the heavy snowfall in the south of England last Christmas. Mr. Bonacina writes to correct this impression. His article was actually in typescript last November, and the reference to the Christmas snowstorm was added afterwards.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A chemical assistant in the bio-chemical laboratory of the General Hospital, Birmingham—The House Governor, General Hospital, Birmingham (Nov. 13). Two assistant inspectors of weights and measures under the Somerset County Council—The Clerk of the Somerset County Council, Boulevard, Weston-super-Mare (Nov. 15). A temporary technical assistant on farm economics under the Board of Agriculture for Scotland—The Secretary, Board of Agriculture for Scotland, Queen Street, Edinburgh (Nov. 15). A senior assistant in the chemical department of the West of Scotland Agricultural College—The Secretary, West of Scotland Agricultural College, 6 Blythswood Square, Glasgow (Nov. 15). A lecturer in mechanical engineering at the Aston Technical College—The Chief Education Officer, Birmingham (Nov. 16). An assistant at the Low Temperature Research Station, Cambridge, with

knowledge of physics and biology, for work in connexion with the preservation of fruit and vegetables—The Superintendent, Low Temperature Research Station, Cambridge (Nov. 17). A lecturer in electrical and mechanical engineering at the College, Swindon—The Principal, The College, Swindon (Nov. 17). A research assistant under the Safety in Mines Research Board for work in connexion with wire ropes used in coal mines—The Under-Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, S.W.1 (Nov. 19). An assistant lecturer in dairy husbandry in the department of agriculture of the University of Leeds—The Registrar, The University, Leeds (Nov. 19). An agricultural entomologist at the Kirton Agricultural Institute—The Principal, Kirton Agricultural Institute, Kirton, nr. Boston, Lincs. (Nov. 20). An assistant to the public analyst of the City of Manchester—The Medical Officer of Health, 1 Mount Street, Manchester (Dec. 1). A physiologist, a cytologist, and an entomologist at the Rothamsted Experimental Station, for research on virus diseases of plants—The Secretary, Rothamsted Experimental Station, Harpenden (Jan. 31). An agronomist under the Director of Investigations of the Australian Tobacco Investigation—F. L. McDougall, Room 321, Australia House, Strand, W.C.2. An investigator on aluminium founding, under the British Non-Ferrous Metals Research Association—The Director, British Non-Ferrous Metals Research Association, 71 Temple Row, Birmingham.

ERRATUM.—Mr. K. Sreenivasan, referring to his letter entitled "Long Wave Radio Reception and Atmospheric Ozone" in NATURE of Oct. 27, p. 646, informs us that while correcting the proof he overlooked a mistake on p. 646, near the bottom of col. 2. The figure for correlation given there is $1{\cdot}77 \pm 0{\cdot}23$; it should be $1{\cdot}77/2 \pm 0{\cdot}023$, that is, $0{\cdot}88 \pm 0{\cdot}023$.

Our Astronomical Column.

TAYLOR'S COMET.—Herr Reinmuth, of the Königstuhl Observatory, announces that he made a careful search by photography for Taylor's comet on two nights without success, which gives ground for apprehension that this comet is following the example of the lost comet of Biela; it will be remembered that Biela's comet divided into two portions in 1846; the two portions were again seen six years later, but then vanished completely Taylor's comet likewise divided into two portions in 1916. It was too badly placed in 1922 to make observation possible. It looks as though division into two nearly equal portions is too great a strain on a comet's constitution for it to survive long as a visible object. However, it is too early yet to give up hope, as the comet is approaching the earth, and also coming into a better position in the morning sky.

THE LEONID METEORS.—Prof. Harlow Shapley, in *Harvard Announcement Card*, No. 74, reminds observers that the maximum of this shower is due in 1931 and 1932; he asks for half-hour counts of meteors to be made each night, from Nov. 10 to 17, at as many stations as possible; if this is done each year until the maximum is past, it will give useful information on the distribution of density on each side of the maximum. He also asks for calculations to be made as to the perturbations of the swarm since 1899; it will be remembered that in 1899, Drs. Downing and Johnston Stoney calculated that the action of Jupiter would cause the dense part of the swarm to miss the earth; this was in fact verified, but their prediction was published too late to warn the public, so that great disappointment and considerable distrust of astronomical predictions resulted.

There is a special difficulty in such predictions; the periods of the earth and meteors not being exactly commensurable, we meet each time a portion of the swarm that has not met the earth before, so that we have to guess its position, guided by our knowledge of the positions of other portions of the swarm at a considerable distance away from it.

DISTURBANCES ON JUPITER.—Rev. T. E. R. Phillips spoke on this subject at the October meeting of the British Astronomical Association. Mr. B. M. Peek observed a curious marking south of the south tropical belt early in August. This expelled a number of small dark spots that travelled at a great speed in the direction of increasing longitude. They gave a rotation period of 9 h. 59 m., which is the greatest ever recorded. They were carefully watched as they approached the Great Red Spot. The majority of them were deflected into a curved path which went round the Spot on the north side. As they passed the narrow passage between the Spot and the equatorial belt, they were drawn out into elongated ovals, suggesting a strong current through the narrows. They were followed for a short distance after this and then melted away. A few of the spots hazarded the direct path across the Red Spot, but they suffered for their temerity, as they were lost to sight and never reappeared. Mr. Peek's original marking also produced a region of irregular disturbance, which travelled, though much more slowly, in the opposite direction, that of diminishing longitude.

News of the disturbance was sent by cable to Dr. Wright, and it is hoped that he may have obtained some photographs of the phenomena in light of different wave-lengths; such photographs give information on the relative heights of markings. R. A. Proctor used to explain markings with a long rotation period as having come from a great depth, where the rotational speed was less, so that they lagged behind on reaching the surface.

THE GREAT FIREBALL OF SEPT. 30.—Mr. W. F. Denning writes: "This object passed over the north of England, its luminous flight beginning over Hawick, then passing over Northumberland in a direction to east by south; it continued its course far out over the North Sea to the region of the Dogger Bank. About seventy-five accounts of the fireball's appearance were received, and from the best of these the object appears to have had a height of from about 60 to 21 miles along a path of about 160 miles, which it traversed at a velocity of about 18 miles per second. The radiant point was at 220° + 16°, near the star Zeta in Boötes, which was about 15° above the horizon a few degrees north of west at the time of the meteor's appearance. The light it gave startled some of the many observers in Yorkshire, Durham, and other northern counties. No detonation was heard, but it appears highly probable that the object fell into the sea. Many persons allude to the fireball as appearing to be quite low in the air, several estimates of the height being 50 yards, 100 yards, and 100 feet. Two of the observers state that they distinctly heard a 'fizzing' noise as the object passed. Errors of this kind are often made, however, by persons who lack experience in observing such phenomena."