

## News and Views.

AT the recent monthly meeting of the Zoological Society, the Duke of Bedford presented the bronze medal of the Society to Keeper E. Bowman for the successful rearing of the young male hippopotamus which was born in the Society's Gardens at Regent's Park last August. A similar award has not been made since the year 1872, when the last baby hippopotamus was reared by Michael Prescott and Arthur Thomson. This animal was "Guy Fawkes," who afterwards lived for thirty-six years at the Zoo. In nine months the present youngster has trebled his birth-weight, which was in the region of a hundred-weight, and now seems to be well on the way towards equalling the record set up by his famous predecessor. Some interesting facts were recorded at his birth and during the time which followed. From the Keeper's own observations in this case and previous records made by A. D. Bartlett in 1871 and 1872, the period of gestation for the hippopotamus has been fixed at 240 days. The mother's behaviour immediately before parturition indicated that in Nature birth probably takes place in very shallow water or in a bed of reeds at the water's edge. Although unable to stand or walk properly, the young one shuffled along on his knees into the water a few hours after birth and swam round the pond with his mother. After a time the mother submerged her body entirely and turned on her side. The young one immediately began to suckle under water, coming up to breathe at intervals varying from twenty to forty seconds. This he has continued to do up to the present time, although he has now cut a good set of milk teeth and is able to eat a certain amount of solid food. He has occasionally been observed to remain under water for so long as three minutes while suckling. The average time for an adult hippopotamus to stay submerged is four minutes.

DR. A. C. D. CROMMELIN, who retired from the Royal Observatory, Greenwich, on May 11, after thirty-six years' service, was educated at Marlborough and Trinity College, Cambridge. After a short time as assistant master at Lancing, he obtained by competitive examination a post as junior assistant at Greenwich in 1891. Dr. Crommelin was a regular observer with the transit circle, altazimuth, and Sheepshanks' equatorial. He had a wide general knowledge of astronomy and became an authority on questions connected with comets, minor planets, dates and times of eclipses, etc. His frequent notes on comets and his annual reviews on minor planets, as well as the physical ephemerides which he calculated for objects in both these groups, have been of great service. It was Dr. Crommelin who suggested to Dr. Cowell that they should calculate the 1910 return of Halley's Comet, and by the elegant method devised by Cowell, they predicted the return correctly to two days. For this they received a prize offered by the Astronomische Gesellschaft and the degree of D.Sc. from the University of Oxford. Dr. Crom-

melin went to the eclipses of 1896, 1900, and 1905, and had the good fortune to take part in the observations in 1919 which verified the bending of light predicted by Einstein. He has served on the Council of the Royal Astronomical Society since 1906 and was secretary from 1917 until 1923. He has also been on the council of the British Astronomical Association since 1896 and was president 1904-1906. Dr. Crommelin is such an enthusiastic astronomer that his work will not cease with his retirement from Greenwich. He has for several years been the chief contributor of notes in our Astronomical Column, and we hope to continue to have the advantage of his valuable co-operation.

ACCORDING to an announcement circulated by Science Service, of Washington, Dr. H. Fairfield Osborn has reported to the American Philosophical Society the discovery of fossil bone implements in Nebraska of Pliocene age. More than three hundred implements of forty different types have been found. They are made of the fossilised bones of extinct animals—camels, horses, deer, elephants, and mastodon. The exact locality of the discovery is not disclosed, beyond that it is in western Nebraska, in order to protect the site. The first find was made two years ago, and since then machinery has been used in excavating the area. Two localities about 75 yards apart have produced most of the finds. Dr. Osborn regards the implements as of undoubted human origin. Among them are skin dressers, awl-like implements, neck ornaments of strung bones, and a comb-like form that may be a tattooing implement. Eighteen of the types have been matched with counterparts from the ruins of cliff-dwellers of the south-west, and one can be nearly duplicated by a much more recent implement from a shell-mound in eastern America. Pending further information as to the geological evidence upon which the date of these implements has been determined, judgment must remain in suspense, although the opinion of Dr. Osborn must be given full weight. The comparison with the implements from the cliff dwellings is not necessarily reassuring until we know the types which present these similarities and have indubitable evidence of their high antiquity. Should this be established, the discovery will give strong support to those who have favoured the human character of the tooth discovered in the Pliocene of Nebraska a few years ago.

FARADAY'S lecture theatre at the Royal Institution was on May 18 the scene of a meeting of the Chemical Society and its distinguished guests, amongst whom was Lord Balfour, to hear the Faraday Lecture delivered by Prof. Richard Willstätter, whose discourse was devoted to a consideration of problems and methods in enzyme research. Taking Faraday's experiments "on the power of metals and other solids to induce combination of gaseous bodies" as the

starting-point in his discussion of organic catalysts, Prof. Willstätter said that the catalyst may function in degrees of association with the substrate varying from fixation to approach, the continuous distribution of electrical charges of the catalyst and the substrate mutually influencing one another. Platinum is capable of transferring hydrogen catalytically only in the presence of oxygen, hence the oxygenated platinum may be regarded as comparable with the enzyme-activator complexes. No single hypothesis is adequate to explain all the phenomena, but in enzyme chemistry no theory is so fruitful or so satisfactory as that assuming the existence of intermediate compounds between catalyst and substrate. The enhanced effects produced by mixed inorganic catalysts are closely analogous to the differences in potency and specificity exhibited by such enzyme systems as trypsin and trypsin-kinase or papain and papain-hydrogen cyanide. These catalytically active mixtures may be of the nature of new chemical compounds; the assumption that the admixture to the simple catalysts merely increases the frequency with which the catalytically active atoms stick out from the lattice is inadequate.

PROF. WILLSTÄTTER dealt also with the problem of the isolation of the enzymes in a state of purity, a problem which is in process of solution by taking advantage of absorption effects of alumina, kaolin, lead phosphate, etc., followed by elution with very gentle chemical reagents. No less should the method of preparation of an inorganic catalyst aim at increasing as much as possible the efficiency of unit weight of the material. Prof. Willstätter gave examples of the use of the process of purification by adsorption in determining whether or not certain elements such as iron or phosphorus are essential constituents of the enzymes. There is, however, no certain method of freeing the enzymes from protein derivatives. The tenacity with which proteins cling to enzymes threatens again and again to impose the conclusion that the enzymes are of a protein character. Invertase can, however, be freed almost completely from various chemically recognisable substances of high molecular weight without loss of activity or stability. The highest degrees of enzymic purity hitherto obtained have been achieved by a process of fractional adsorption on a finely divided precipitate, whereby an enzyme can be separated even from the products of its inactivation. In many cases there are indications as to which atomic groups of an enzyme are responsible for its union to an adsorbent, and delicate gradations in adsorptive power are determined by differences in the constitution of the particular gel employed. The only property of enzymes which is independent of their varying degree of purity is, apparently, their qualitative specificity. It is even possible, in certain cases, to ascertain the particular atomic group of the substrate molecule towards which the enzymic activity is directed.

In addition to the official welcome given to Prof. Willstätter by the Chemical Society, a number of

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members of the Athenæum, representing many branches of biological and chemical science, entertained him at dinner at that Club on May 17. Prof. H. E. Armstrong was in the chair, and by the kindness of the director of the Royal Botanic Gardens, Kew, the table was decorated with some of the flowers of which the pigments have been investigated by the guest of the evening. When, in 1913, Willstätter and Everest described their work on the pigment of the blue cornflower, which they called cyanin, they laid the foundation of the fuller investigation of the anthocyan pigments that has been developed so successfully since that date, with the result that the colouring matters of the rose, pelargonium, viola, peony, hollyhock, cherry, and many other flowers are now known. Prof. Armstrong made a felicitous reference to an extract from Walt Whitman's "Leaves of Grass" in proposing the toast of Prof. Willstätter at the dinner:

"A Child said, 'What is Grass?' fetching it to me with full hands.

How could I answer the child?

I do not know what it is any more than he.

I guess it must be the flag of my disposition, out of hopeful green stuff woven."

Prof. Willstätter was welcomed as the man who had so greatly helped to draft what must finally be the answer to the child's question, at least in respect to the mingled greens and yellows which make up the beauty of plant colours; and Prof. Armstrong expressed the hope that he would return to this field of inquiry and discover new secrets in it.

In a report from Cairo, Dr. Reisner states that at the moment of closing down operations for the season, the Harvard-Boston Expedition has made another discovery of no little importance at Giza. While excavating the burial chamber of Queen Hetepheres discovered two years ago, the clearing of the Royal Necropolis eastward of the Great Pyramid has proceeded simultaneously, and here, on what was intended to be the last day of the season's work, a doorway in the rock was disclosed which proved to be the entrance to the tomb of Meresankh, a granddaughter of Khufu (Cheops) and great-granddaughter of Queen Hetepheres, wife of Seneferu. It appears that three halls of the funerary chapel have been discovered. Statues and statuettes stand in niches in the walls; but the special feature of the tomb is the decorations in relief and colour. Some of these were added after the original decoration, one being of a son of Neweserraankh, a king of the Fifth Dynasty who claimed royal descent from Queen Meresankh, possibly being her grandson. This gives six generations descended from Queen Hetepheres represented here, extending from the Third to the Fifth Dynasty. According to the account given in the *Times* of May 19, all the figures show the characteristic physique of the family of Cheops, a receding chin, stumpy build, and obesity. One outstanding feature of the report is that a representation in relief of Hetepheres, daughter of Khufu and mother of

Meresankh, has short yellow or red hair. This is the earliest representation of that variant of pigmentation among the dark-haired Egyptians, and opens up an interesting field of speculation as to racial admixture at this early date.

A MEMORANDUM on the inscription of Darius I. recently discovered at Hamadan has been submitted by Prof. E. Herzfeld to the Indian Archaeological Department. The record, which was engraved in three languages, old Persian, Elamite, and Babylonian, on each of two tablets of gold and silver, fixes the limits of Darius's empire "from the Saka, who are beyond the Sugd as far as the Kush, from the Hindu as far as Sparda." According to an account in the *Times* of May 19, Prof. Herzfeld concludes that Darius added Hindu to his conquests in 516 B.C. More important than his determination of the date, however, is his identification of Hindu with the third Indian sculptured figure of Darius's tomb, the other two being Gandara and Thatagush. The location of the last named had not hitherto been determined, but it is now suggested that the specific mention of Hindu, that is, Sind (Persian H = Indian S), and Gandara occupying the Kabul River Valley, Swat and the country around Tazila, fixes Thatagush (Persian Satagus, Indian Satagav—"having a hundred head of cattle") as having inhabited the Punjab. The inscription has a further significance in its bearing upon early racial distributions, for in giving the location of Saka as beyond the Sugd, Prof. Herzfeld holds that it throws light on the home of the kindred tribes which occupied the country between the Danube and central India and founded the empire which extended from Seistan to Malwa in central India.

At an extraordinary meeting of the Council of the National Union of Scientific Workers, held at Caxton Hall, Westminster, on May 21, it was decided to change the name of the society to "The Association of Scientific Workers" in accordance with the votes cast by members and potential members for each of three titles, "The Association of Scientific Workers," "The Association of Scientists," "The Institute of Scientists." It was also decided, in order to give every qualified scientific worker in Great Britain the opportunity of becoming a member of the society, to make the subscription rate, as from Jan. 1, 1928, a minimum of ten shillings, leaving it to members to increase this amount according to their means. In view of the attitude of the Government towards professional organisations, as outlined by Mr. Ronald McNeill, the following resolution was put and passed unanimously: "That this Council Meeting of the Association of Scientific Workers calls on H.M. Government to amend Clause 5 of the Trade Disputes and Trade Union Bill in order to make it clear that civil servants in professional and technical grades are not deprived of the right to organise in their respective professional organisations, which have for their principal objects the maintenance of a high standard of professional attainment and the general

improvement of status and conditions of service among their members, by whatever authority employed, as well as the spread of scientific knowledge and the increase of public support for scientific work. It reminds H.M. Government that H.M. Government has adopted the policy laid down in the Report of the Committee on State Servants that the professional man in the Civil Service, unlike any member of the administrative or fighting services, should relate his pay and position with those of his professional brethren in the outside world, which implies that the professional civil servant should be organised with his brethren in outside occupations."

DURING the past few days, long-distance flights by aeroplane have been well to the fore. Nungesser and Coli set out on May 8 from Le Bourget, near Paris, to cross the Atlantic, but at the time of writing, no news has been received of them. On May 20, two long-distance journeys commenced. Capt. Charles Lindbergh took off from Roosevelt Field, Long Island, New York, at 7.50 A.M. with the intention of making a non-stop flight to Paris; and Flight-Lieutenants C. R. Carr and L. E. M. Gillmans started at 10.42 A.M. from Cranwell Aerodrome, Lincolnshire, on a non-stop flight to India. Capt. Lindbergh landed at Le Bourget at 10.30 P.M. on May 22, having flown some 3500 miles in 33½ hours. His machine was a Ryan monoplane fitted with a 220 h.p. Wright "Whirlwind" engine and he carried 448 gallons of petrol. His course was along the American and Canadian coast to Newfoundland, across the Atlantic by a northerly route, along the south coast of Ireland, to Cornwall, Cherbourg, and Paris. Capt. Lindbergh was alone, and his feat was a noteworthy achievement of skill and endurance. Only once before has the Atlantic been crossed in one stage of flying and that was in 1919, when Aleock and Brown, flying a Vickers-Vimy machine, left the coast of Newfoundland at 4.28 G.M.T. on June 14 and landed at Clifden, Ireland, at 8.40 G.M.T. on June 15, having flown nearly 1900 miles. Lieuts. Carr and Gillman, on their attempt to reach India, flew a Hawker Horsley day bomber fitted with a 650-700 h.p. Rolls-Royce "Condor" engine, and carrying 1100 gallons of petrol. The total weight of the loaded machine was 14,200 lb., as against the 4750 lb. of Capt. Lindbergh's monoplane, which was of course specially designed for the Atlantic flight. Lieuts. Carr and Gillman came down in the Persian Gulf 45 miles south-east of Bandar Abbas at 8.15 P.M. on May 22. Both airmen were picked up by a passing vessel, but their machine was lost. They appear to have covered about 3500 miles in 30-32 hours.

ON May 4 occurred the centenary of the death of Mark Beaufoy, F.R.S., who assisted to found the Society for the Improvement of Naval Architecture of 1791 and to whom we are indebted for a long series of experiments on the resistance of bodies moving through water. Beaufoy's experiments, described in his "Nautical Experiments," were carried out in the old Greenland Dock and extended over

the years 1793-1798. It is said the experiments cost between £20,000 and £30,000 and that most of this was found by Beaufoy himself. The history of the Society and Beaufoy's work was the subject of a paper to the Institution of Naval Architects by Mr. A. W. Johns in 1910. Beaufoy was born in 1764, and was the son of a brewer. When twenty-three years of age he visited Switzerland and was the first Englishman to climb Mont Blanc, reaching the summit on Aug. 9, 1787, six days later than Saussure. In later life he turned his attention to magnetism and astronomy, and was one of the earliest members of the Royal Astronomical Society, to which his son afterwards presented his instruments.

THE *Proceedings of the Cambridge Philosophical Society, Biological Sciences*, has changed its scope and, under the title of *Biological Reviews and Biological Proceedings of the Cambridge Philosophical Society*, will take the form of critical summaries of recent work in special branches of biological science. The contents of vol. 2, No. 2, give an excellent idea of the aims of the publication in its new guise. It contains three articles, the first of which, by M. Abeloos, deals with the theories of polarity in the phenomena of regeneration. After a review of recent work in this field, M. Abeloos concludes that Loeb's theory of formative substances, if apparently providing a satisfactory interpretation of the facts of regeneration in plants, is insufficient when applied to the animal kingdom. He is of the opinion that the theories of Child alone provide any approach to a complete explanation of the quantitative, qualitative, and physiological aspects of polarity. Dr. F. H. A. Marshall discusses the conditions governing parturition and recent investigations which seem to throw light upon the problem. He shows that parturition is not the result of one or two factors but of a combination of conditions all contributing to the end in question. These conditions are analysed in the light of recent research. In a brilliant review of the mechanics of vertebrate development, Dr. G. R. de Beer summarises the work which has been done and the results achieved in the experimental study of the early development of vertebrates. If this number can be taken as indicative of the aims and scope of the journal for the future, it can be stated at once that it will meet a long-felt want. The articles are comprehensive in character, critical in outlook, and masterly in treatment. Biological workers will welcome such authoritative summaries of current work, and university teachers, in particular, will be grateful for such valuable help in their struggles, often under the most adverse conditions, to keep pace with the bewildering multiplicity of developments in biology and the ever-increasing scope of the science. *Biological Reviews* deserves the support of all workers in this branch of science.

THE annual report of the Institute of Physics for the year 1926, which was received and adopted at the annual general meeting held on May 16, refers to the changes which have been made in the honorary secretaryship and secretaryship of the Institute,

already announced in our columns, consequent upon the resignation of Prof. A. W. Porter and the death of Mr. F. S. Spiers. The report shows a steady increase in the membership of the Institute, and refers to revised regulations for the admission of students which are intended to make the student membership more attractive to those who are not yet in a position to apply for corporate membership. Particulars are also given of the arrangements which are being made at the new offices of the Institute at 1 Lowther Gardens, Exhibition Road, South Kensington, London, S.W.7, whereby the Institute will undertake at the new offices, on behalf of the Physical and Optical Societies, routine work such as correspondence in relation to membership and subscriptions, and the control of stocks and sales of publications. The annual exhibition of the Physical and Optical Societies is included in this arrangement, and the exhibition will in future be organised from 1 Lowther Gardens, and controlled by a committee of representatives of the two societies, to which the secretary of the Institute will act as secretary. A fund for the furnishing and equipment of the offices has been raised largely on the initiative of Mr. Robert W. Paul, chairman of the Finance Committee, and generous contributions to this fund have been made by members of the Institute and by a number of firms. The editor of the *Journal of Scientific Instruments* reports the satisfactory progress of this publication, and announces that under the new editorial arrangements it is hoped to extend the manufacturing sections of the Journal.

THE second of the conversaciones of the Royal Society this year will be held on June 22.

THE Safety in Mines Research Station at Harpur Hill, Buxton, will be opened by Viscount Chelmsford, chairman of the Miners' Welfare Committee, on June 14.

DR. MAX WEBER, emeritus professor of zoology in the University of Amsterdam, who is an authority on marine mammals and fish, and has for many years engaged in oceanographic work, has been awarded the Agassiz Medal by the U.S. National Academy of Sciences.

THE following have been elected honorary members of the Russian Academy of Sciences: Prof. Albert Einstein (Berlin), Mme. Curie (Paris), Prof. W. Nernst (Berlin), Prof. A. A. Michelson (Chicago), and Prof. M. G. Mittag-Leffler (Djursholm, Sweden).

THE tenth Silvanus Thompson memorial lecture of the Röntgen Society will be given at 8.30 on Tuesday, June 14, in the Barnes Hall of the Royal Society of Medicine, 1 Wimpole Street, W., by Sir J. J. Thomson. The subject will be "The Structure of the Atom and Radiation."

DR. E. H. RAYNER will deliver a lecture, to be followed by a discussion, on the solar eclipse of June 29 at a special meeting of the Physical Society, to be held on June 3 at 5 P.M., at the Imperial College of Science and Technology, South Kensington. Fellows of the Society are invited to take friends to the meeting.

At the annual general meeting of the Manchester Literary and Philosophical Society, the following officers were elected: *President*, Prof. W. L. Bragg; *Vice-Presidents*, Dr. G. H. Carpenter, Dr. O. T. Jones, Dr. H. Levinstein, Dr. R. S. Willows; *Secretaries*, Mr. John Allan, Prof. E. A. Milne; *Treasurer*, Mr. R. H. Clayton; *Librarians*, Mr. C. L. Barnes, Dr. J. C. Withers; *Curator*, Mr. W. W. Haldane Gee.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant lecturer in agricultural chemistry at the East Anglian Institute of Agriculture, Chelmsford—The Clerk of the Essex County Council, Shire Hall, Chelmsford (June 4). A demonstrator in the department of organic chemistry of Bedford College for Women—The Secretary (June 8). A senior and a junior lecturer in comparative anatomy and embryology in the Natural History Department of the University of Edinburgh—The Secretary, The University, Edinburgh (June 10). A lecturer in chemistry in the University of Reading, preferably with physical chemistry qualifications—The Registrar (June 10). An assistant lecturer and tutor in social science at the London School of Economics and Political Science—The Secretary, London School of Eco-

nomics and Political Science, Houghton Street, W.C.2 (June 15). An assistant lecturer in applied electricity at the University College of North Wales, Bangor—The Secretary and Registrar, University College of North Wales, Bangor (June 15). An assistant lecturer in mathematics in the University of Sheffield—The Registrar (June 15). A professor of pathology at St. Bartholomew's Hospital Medical College—The Academic Registrar, University of London, South Kensington, S.W.7 (June 20). A professor of agriculture and a lecturer in entomology and zoology at the Imperial College of Tropical Agriculture, St. Augustine, Trinidad—The Secretary, Imperial College of Tropical Agriculture, 14 Trinity Square, E.C.3 (June 29). A temporary research officer under the Foot-and-Mouth Disease Research Committee of the Ministry of Agriculture and Fisheries—The Secretary of the Committee, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1. A Secretary and bursar of the South-Eastern Agricultural College, Wye, Kent—The Principal. A research assistant at the Government Laboratory, Porton—The Commandant, Experimental Station, Porton, near Salisbury. Chemists in the establishment of the War Department Chemist, Woolwich—The Permanent Under-Secretary of State, War Office (F.6), London, S.W.1.

### Our Astronomical Column.

THE COMING TOTAL SOLAR ECLIPSE.—As an example of the general interest in astronomy that is being awakened by the approaching eclipse, we may mention a pamphlet by Mr. A. J. Hawkes, Borough Librarian at Wigan, in which he gives a list of the astronomical books in that Library, together with particulars and a map of the eclipse track. The map seems to place Wigan too far from the zone of totality; it is placed five miles outside, but the map issued by the Ordnance Survey places it considerably closer. The author seems to be in error in saying that the eclipse of August 1999 will not be total in Cornwall; it is true that calculations have not yet been made using Brown's tables of the moon, but fairly trustworthy calculations indicate that the Lizard and several miles to the north of it will enjoy total eclipse.

The list of books on astronomy is grouped under 23 different headings and occupies 8 pages. It is to be hoped that it may lead to a revival of popular interest in astronomy, such as was awakened by the Norwegian totality of 1896.

#### NEW DETERMINATIONS OF THE VELOCITY OF LIGHT.

—The velocity of light *in vacuo* is a constant of fundamental importance in modern science, and it is necessary that the utmost attainable accuracy should be aimed at in determining its value. Great interest, therefore, lies in the experiments started in 1924 by Dr. A. A. Michelson at Mt. Wilson, with the object of re-determining this important quantity. The method originally employed was to send a beam of light from an octagonal mirror at Mt. Wilson to a station 22 miles distant, whence it was reflected back (by a fixed mirror) to the first mirror, and finally into a micrometer eyepiece. The octagonal mirror was rotated at such a speed that it moved one-eighth of a turn during the journey of the beam of light to the distant station and back (44 miles). The returning beam was thus received on the succeeding facet of the rotating mirror at the same angle as if the latter were at rest. The

velocity of rotation required gave, by a simple calculation, the velocity of light in air. This apparatus has been slightly modified and improved in the later series of observations made by Dr. Michelson. Rotating mirrors of various types are used, some of steel, others of glass, with eight, twelve, and sixteen facets; the results from the different mirrors being in excellent agreement. These latest experiments are described in the *Astrophysical Journal*, vol. 65, p. 1, in which the final value of the velocity of light *in vacuo* is given as 299,796 km./sec. The success so far attained has led to the consideration of an extended base line, and it is hoped to continue the work with a distant mirror on Mt. San Jacinto, 82 miles from Mt. Wilson.

#### ROYAL ASTRONOMICAL SOCIETY'S ANNUAL REPORT.

—The annual report of the Council of the Royal Astronomical Society (*Monthly Notices*, Feb. 1927) contains the usual valuable summary of astronomical progress during the year. In particular a lengthy section by "H. D." on variable stars may be mentioned, which summarises all the important papers published on this subject during the year, and gives copious references. The fact that more than a third of this article is devoted to Cepheid Variables shows that the recent revival of interest in these objects is still being maintained. A valuable innovation has been introduced by "J. A. C." in the sections on solar research and stellar spectroscopy. This consists in a classified bibliography at the end of each section giving references to all relevant papers published during the year, including those not specifically mentioned in the text. This will be appreciated by those specially interested in solar and stellar physics, and is a procedure which might advantageously be extended to the other sections. In addition to the notes on astronomical progress, this issue contains obituary notices of deceased fellows, annual reports of observatories, and the presidential address of Dr. Jeans on the occasion of the award of the Society's Gold Medal to Prof. Schlesinger.