when it became vacant in 1874. Ball threw himself into his new duties at Dunsink Observatory with his usual energy, and decided to continue the investigations on the annual parallax of stars carried out by his predecessor, Brünnow, by means of micrometer observations. In addition to working on a few stars throughout the year in the usual way, he broke fresh ground by attempting to find stars with a large parallax by what he called "reconnoitring observations." He observed a great number of stars only twice, with an interval of six months, at the time of greatest parallactic displacement. In a very few cases the measures seemed to indicate that the star might be within a measurable distance from us, and he therefore took a regular series of observations of these stars. For two stars he found in this way parallaxes of a third of a second and half a second, which, however, were not subsequently confirmed, and the rapid rise of astronomical photography has led to the complete abandonment of visual observations in work on annual parallax. But Ball's experiment in search of stars with a large parallax is an interesting one all the same. For three or four years he devoted his whole time to this work, which he arranged and carried out in the most businesslike and methodical manner, often observing till 2 or 3 o'clock in the morning, and the results were published in Parts III. and V. of the Dunsink Observations, the latter of which appeared in 1884. After that time he seems to have done very little observing, probably on account of renewed trouble with one of his eyes, which had been accidentally injured in his youth, and later (in 1897) had to be removed.

In 1884 Ball was appointed scientific adviser to the Commissioners of Irish Lights, and in 1886 he was knighted by the Lord Lieutenant of Ireland. In February, 1892, he was elected Lowndean professor of astronomy and geometry and director of the Observatory at Cambridge, leaving Dunsink to take up the appointment in the following autumn. At Cambridge he continued as previously to divide his time between his official duties, his mathematical researches, and his activity as a popular lecturer and writer of popular astronomical books and articles. He was president of the Royal Astronomical Society in 1897–99. In 1908 he published his last book, "A Treatise on Spherical Astronomy," more intended for the use of college students than for practical astronomers, but written in his usual clear and concise style.

Sir Robert Ball died on November 25, after a long and lingering illness. His genial and hearty manner, his fund of wit and his enthusiasm for any subject which had taken hold of his mind, made him a favourite wherever he went. Anyone who has worked under him will not forget his readiness to allow his subordinates to carry out any special work in their own way and to reap therefrom whatever credit they could.

J. L. E. D.

THE ANNIVERSARY MEETING OF THE ROYAL SOCIETY.

THE anniversary meeting of the Royal Society was held on Monday, December 1, when the report of the Council was presented and the retiring president, Sir Archibald Geikie, delivered an address. Sir William Crookes was elected president of the society, and the other officers and members of council, whose names were given in NATURE of November 13 (p. 324), were also elected.

The council reports that a critical period has been reached in the development of the work of the committee on the Catalogue of Scientific Papers. Since 1901 the sum of 21,151*l.* 15*s.* 2*d.*, mainly contributed by the late Dr. Ludwig Mond, has been expended on the preparation of the Catalogue, and with the exception of the income of the Handley Fund, now amounting to about 190*l.* a year, there are no funds available for continuing the work after the end of this year.

The whole of the tenth annual issue of the International Catalogue of Scientific Literature has been published, with the exception of the volumes of physiology and bacteriology. A meeting of the International Council will be held in 1914. At this meeting the question of continuing the Catalogue beyond the first fifteen issues will be taken into consideration.

In the course of the year the treasurer received from the executors of the late Lord Lister, securities and cash to the value of 8995*l.* 9*s.* 10*d.*, on account of a legacy left by Lord Lister to the society for its general purposes.

The financial position of the National Physical Laboratory has been a cause of anxiety to the Council. In consequence mainly of the strikes and general disturbance of trade at the beginning of 1912, the receipts for the year were less than the expenditure, and but for a considerable revival at the end of the year would have been much less. The responsibility for any deficit rests with the society; and the council, while ready to advance by all means in its power the national work of the Laboratory, considers that the society should be freed from this serious liability. It is in communication with the Treasury on the question. Much valuable work is at a standstill for want of funds.

In his presidential address, Sir Archibald Geikie referred to some of the subjects in the report presented by the council, and particularly to the national activities of the society and the inadequacy of the financial provision necessary for the carrying out of important work. He pointed out that five years ago at the request of the Home Office the council appointed a committee to investigate the physical and physiological problems presented by the disease known as glassworkers' cataract. In proposing this inquiry, the Home Office made no provision for the cost of the numerous experiments and examinations that obviously would be required, while the Royal Society has no funds at its disposal for meeting

such expenditure. As only a small sum has been contributed by the Treasury, the work of the committee has been seriously delayed. The society has acquired the character of a kind of central council of science, and may legitimately claim that few scientific problems could arise affecting modern life for the solution of which the most extensive experience and the most authoritative opinion would not probably be found within its own representative ranks. The public recognition of this serviceableness has greatly increased the range of the society's activities, but there has not been a corresponding increase of financial support. Continuing, the president said:—

There is unfortunately a prevailing but mistaken impression that a society which can thus freely place its knowledge and experience at the disposal of the State must be a wealthy body. It is true that we administer every year a considerable sum of money; but almost the whole of this sum is earmarked for certain definite objects, and cannot be diverted to anything else. Even the annual Parliamentary grant of 4000*l.* for scientific investigation, which is placed in the hands of the society, is not a contribution to the society's own operations. The whole of it, except the trifling sum required for clerical assistance and necessary printing, is allocated to applicants from all parts of the country for their individual researches. . . . There is a second annual Parliamentary grant of 1000*l.* made to the Royal Society to assist in defraying the expenses of publication. But it is understood that a portion of this sum is to be set aside for the purpose of aiding the adequate publication of scientific matter through other channels and in other ways. Thus the whole of the subvention which the society receives annually from the State for its own requirements amounts to only a few hundred pounds towards the cost of its publications, together with the use of its rooms in Burlington House, where it sits rent free, but subject to expenditure for internal upkeep and repairs. . . .

When we consider the amount and value of the gratuitous service given at the request of the various public departments, it is abundantly obvious that the Government of this country is under special obligations to the Royal Society, which, were they expressed in the plain language of professional practice, would be indicated by a considerable sum of money. . . . We claim that our disinterested action deserves to be recognised by at least a generous and sympathetic attitude on the part of the Government towards our aims and objects, and a disposition to help us when our means prove inadequate to carry out the work which we have undertaken for the furtherance of the progress of science.

Sir Archibald Geikie announced that since his address was written Sir James Caird, Bart., of Dundee, so well known for his munificent benefactions to science, had sent him a cheque for 5000*l.* to be expended in yearly disbursements of about 500*l.* for the furtherance of physical research. Subjoined are summaries of the description of the work of the medallists given in the address.

The Copley medal is this year assigned to Sir Edwin Ray Lankester, in recognition of the value of his original researches in zoology and of the importance of his personal influence in stimulating the investigations of his pupils and others, which have materially extended the boundaries of our knowledge of the animal kingdom. His own work, which has been in large measure morphological, has thrown light on the mutual relations of living animals and also on the structure and affinities of long extinct organisms. His researches in the comparative embryology of the higher Mollusca and of the anatomy of the Nautilus gave him an assured place among the zoologists of his day. His early papers on the Ostracoderm fishes of the Old Red Sandstone afforded a memorable example of palæontological acumen. In addition to his original investigations, he has laid zoology under a debt of gratitude to him for his luminous general articles in some of the larger departments of the science.

The council's awards of the two Royal medals annually presented by the King have received his Majesty's approval. The medal on the physical side has been adjudged to Prof. Harold Baily Dixon, to mark the society's appreciation of the importance of his long-continued investigations of the phenomena of gaseous explosion. His important observations on the theory of combustion have shown that water-vapour acts as a carrier of oxygen during the oxidation of carbon, and undergoes a cycle of changes wherein it gives up its oxygen to carbon monoxide. From the further study of the explosion of this monoxide and oxygen, in the presence of other gases, he concluded that any substance capable of producing steam will determine the explosion. By the introduction of photography into his studies of the explosive wave he has been able to throw light on the mode of burning of carbon and its compounds.

The Royal medal on the biological side is bestowed on Prof. Ernest Henry Starling, as a mark of the society's high appreciation of the wide range of his contributions to the advancement of physiology. By his inquiry into the relation of lymph production, and the absorption of fluids from the peritoneal cavity and the cavity of the eye-ball, he showed the dependence of these processes upon the osmotic pressure of the blood and tissue fluids and the hydrostatic pressure in the blood-vessels. In his excellent studies of the mammalian heart he has greatly improved the technique. By much reducing the volume of blood needed to maintain a circulation through heart and lung, he has increased the sensibility of the preparation to variations of state, and by introducing into the circuit of the blood a readily adjusted resistance to the flow he can ascertain the effects of the obstacle upon the heart's action. He has discovered that the normal heart of the dog will consume 4 mgrm. of sugar per gram muscle per hour, but that if the animal is diabetic, the heart is incapable of consuming sugar—an observation of singular value in the light it throws upon the cause of diabetes.

The Davy medal has been awarded to Prof. Raphael Meldola, in acknowledgment of the distinction of his contributions to synthetical organic chemistry, especially in the series of aromatic compounds. He discovered the first representative of the oxazines, a group which has since been developed into one of great importance. He has contributed to the chemistry of naphthalene derivatives, and carried out extensive researches upon the azo- and diazo-compounds, with results which have an important bearing upon the question of the constitution of these compounds. He has likewise added to our knowledge of the chemistry of other groups of nitrogen-containing compounds, notably the triazines and the iminazoles. Of late years he has shown the synthetical value of compounds containing a mobile nitro-group, and has discovered a remarkable new class of quinone-ammonium derivatives.

The Sylvester medal is conferred this year on the veteran mathematician, James Whitbread Lee

Glaisher. His prominent career in mathematical science, which began at an early age, has been continued down to the present day without remission, not only in the production of original papers, but in university teaching, and in the careful editorship of most of the special mathematical journals in this country. To these journals he has constantly contributed much of his own work, such as his papers on the theory of numbers, on elliptic functions, and many other departments of pure mathematics.

In considering the bestowal of the medals this year the council has determined to award the Hughes medal to one who has spent his days in the application of scientific discovery to practical life—Alexander Graham Bell. Although he has been resident for many years on the other side of the Atlantic Ocean, we remember that he was born in Edinburgh, and was educated there and in London, so that we claim him as a fellow-countryman. His preponderating share in the invention of the telephone, now so long ago as 1876, and his practical investigations in phonetics, have laid modern civilisation under deep obligation to him, while his numerous other inventions and experiments show the fertility of his genius.

The anniversary dinner of the society was held on Monday evening at the Hôtel Métropole. Sir William Crookes presided and responded to the toast of "The Royal Society," proposed by the American Ambassador. The toast of "The Retiring President" was proposed by Sir Joseph Larmor and acknowledged by Sir Archibald Geikie. Sir Ray Lankester and Prof. Harold Dixon responded to the toast of "The Medallists," Sir David Gill proposed the toast of "The Guests," and Lord Sumner responded to it.

NOTES.

A CORRESPONDENT points out that the list of the new members of the council of the Royal Society published in NATURE of November 13 (p. 324), contains the names of ten fellows of the society who have not served on the council before, out of the total of sixteen ordinary members of the council. In the council elected in 1912, there were only five members who had not served in previous years; and the list for 1911 included eight fellows who had served before and the same number of fellows who had not done so. This year's list contains, therefore, a larger number of completely new members of the council than is usual. Ten members of the new council, and nine of the retiring council, are Cambridge men.

DR. HENRI DESLANDRES, Paris, has been elected an honorary member of the Royal Institution.

A LECTURE on the properties and uses of radium will be delivered at the Cancer Hospital (Free), Fulham Road, London, S.W., by Mr. C. E. S. Phillips, honorary physicist to the hospital, on Wednesday, December 10, at 5 p.m.

As announced already, the Physical Society's annual exhibition is to be held on Tuesday, December 16, at the Imperial College of Science, South Kensington. In the afternoon, the Hon. R. J. Strutt, F.R.S., will give a discourse on spiral electric discharges, and in the evening Mr. Louis Brennan, C.B., will show some experiments with soap films. About thirty firms of scientific instrument-makers will be exhibiting, and there will also be certain experimental demonstrations.

THE gold medal of the Apothecaries Society was awarded on November 28 to Mr. J. E. Harting, in recognition of his services in preparing and editing the catalogue of the library in Apothecaries' Hall. The society was founded in 1617, and the library, which chiefly consists of medical and botanical works, contains a number of rare old "Herbals," including a copy of Johnson's edition of "Gerarde's Herbal," published in 1633, presented by the author.

THE Board of Trade has appointed a committee to consider the causes of explosions which have occurred in connection with the use of bitumen in laying electric cables, and to report as to any steps which should be taken to prevent explosions in future from the use of bitumen or similar substances. The members of the committee are:—Sir T. Edward Thorpe, C.B., F.R.S. (chairman); Mr. R. Nelson, of the Home Office; Mr. W. Slingo, of the General Post Office; Mr. J. Swinburne, F.R.S.; and Mr. A. P. Trotter, of the Board of Trade. Mr. M. J. Collins, of the Board of Trade, will act as secretary to the committee.

AN International Dairy Congress is to be held at Berne, Switzerland, in June next. It will be the sixth congress organised and held under the auspices of the Federation Internationale de Laiterie, a body having its head office in Brussels, and a committee composed of representatives of all the leading countries in the world. The secretary of the British Dairy Farmers' Association, Mr. F. E. Hardcastle, 12 Hanover Square, W., is acting as secretary to the British Section, and will give full information to any who may be interested. The sections under which papers will be read and subjects discussed are:—I., Hygienics; II., Chemistry and Bacteriology; III., Theory of Management; and IV., Trade.

THE death is announced, in his seventy-sixth year, of the Rev. J. A. Gilfillas, who, with Mr. W. W. Cooke, made important explorations between 1880 and 1890 around the head-waters of the Mississippi. They contributed largely toward fixing Elk Lake, instead of Lake Itaska, as the chief source of that river. Mr. Gilfillas was also an expert in ethnology and in the Indian languages.

AN interesting collection of photographs from Hungary, Germany, Sweden, and New Zealand is now on view at the house of the Royal Photographic Society, 35 Russell Square, W.C., and will be open to the public on presentation of visiting card, daily from 11 a.m. to 5 p.m., until December 20. The collection includes a remarkable series of twenty-seven marine studies taken by flashlight in the Biological Marine Aquarium of Heligoland, by Mr. F. Schensky. The great technical merit of these photographs of fishes, crustacea, sea anemones, molluscs, &c., will be obvious even to the superficial observer; it is very rarely that one has the opportunity of seeing such fine work of this class. The rest of the hundred or so photographs claim attention chiefly because of their pictorial merit.