REPORT OF THE GOVERNMENT CHEMIST.

IN his report[1] upon the work of the Government Laboratory for the year 1911–12, the Government Chemist gives a short historical introduction, showing the principal steps in the progress of the department.

The origin of the laboratory dates back to 1843. Its duties at first were mainly concerned with checking the adulteration of tobacco; but subsequently its scope was extended, and other branches of the executive besides the fiscal departments obtained permission of the Treasury to avail themselves of its services. Recently, in order to promote the centralisation of Government chemical work, and to place all the departments using the laboratory on the same footing, it was constituted a separate establishment, with the official title of "The Department of the Government Chemist." There are two branches of the laboratory, namely, the main building, at Clement's Inn Passage, and a smaller establishment at the Custom House.

In the present report the matter has been classified more conveniently than formerly, and in respect of the chief substances examined explanatory notes are given, showing for what purposes the analyses are undertaken. These modifications make the report so much the more easily understood by the non-technical reader.

Evidence of the necessity for the kind of analytical control which the laboratory exercises is to be found in plenty in the pages of the report. For example, in the matter of safeguarding the revenue it was found that the "declarations" of brewers, on which the assessment of beer-duty is based, were erroneous in 20 per cent. of the cases examined during the year. Also, out of 2608 samples of certain exported spirituous articles on which rebate was claimed, the proportion of alcohol was found to have been wrongly stated by the exporters in 315 instances, and the amount of sugar in 185.

In connection with the supervision of foodstuffs, more than a quarter of a million pounds' weight of tea was condemned as containing sand or being otherwise unfit for consumption. This quantity of tea, it is noted, though apparently large, is small compared with the total amount of tea imported, namely 347 millions of pounds. The rejected tea was allowed to be used free of duty as a source of the alkaloid caffeine. Of the samples of imported butter examined, 30 per cent. were found to contain boron preservative, and 13·7 per cent. to have been coloured artificially. Oysters suspected to have caused copper poisoning were proved, on analysis, to contain not only copper, but zinc. A few samples of malt and beer were found to contain an excessive quantity of arsenic, which was generally traced to the fuel used in drying the malt.

For many years past analytical work has been done in connection with supervision of dangerous trades by the Home Office. Numerous samples of air from collieries were examined last year for the purposes of the Mines Regulation Bill; and from pottery works where cases of lead poisoning had occurred fifty-six specimens of the glazes in use were taken; these proved to contain lead ranging in amount from 9 to 51 per cent. With few exceptions the whole of the lead present was "soluble" lead—accentuating once more the danger which attends the use of this form of lead in pottery glaze.

The total number of analyses and examinations made during the year was 195,170, as compared with 186,044 for the preceding year.

[1] Report of the Government Chemist upon the Work of the Government Laboratory.—Cd. 6363.

ANNIVERSARY MEETING OF THE ROYAL SOCIETY.

THE anniversary meeting of the Royal Society was held, as usual, on St. Andrew's Day, November 30, when the report of the council was presented, the president's address was read, and the new council, the names of the members of which were given in NATURE of November 14 (p. 312) was elected.

From the report of the council, we learn that the Government of India has agreed to appoint an additional European assistant in the Indian Meteorological Department, and to maintain the scheme of observations of the upper air for a further period of ten years, unless in the meantime they prove void of result.

The council of the Royal Cornwall Polytechnic Society has informed the Gassiot Committee that it will be necessary, owing to insufficiency of funds, to discontinue Falmouth Observatory at the end of the year. Individual members of the committee have been giving their support to efforts that are being made to secure the necessary financial assistance for that observatory from Government.

The attention of the council has been directed to the urgent desirability of installing self-recording magnetic instruments at suitable stations in South Africa, as few standard records of terrestrial magnetism are available for the southern hemisphere; and also to the great need of providing stations to take part in the observations of tidal disturbance of the solid earth, which are now being inaugurated in Europe and America under the general direction of Dr. Hecker, of Strasburg. The council has transmitted to the Royal Society of South Africa, for its information and for transmission to the South African Government, the opinion of the Royal Society that provision for installing and attending to permanent magnetographs, giving continuous magnetic records at suitable observatories at different places in South Africa, and also arrangements for observations on tidal deformation of the solid earth, are urgently needed in the international interests of the sciences of terrestrial magnetism and geodesy.

Reference was made by the council last year to the provision of new buildings for the National Physical Laboratory. The estimated cost of these buildings, together with the Wernher Metallurgy

building recently erected, was 30,000*l.*, or 35,000*l.* including equipment. Towards this total the sum of 10,000*l.* was given by Sir Julius Wernher, and 15,000*l.* will be provided by the Treasury. Some additional amounts have also been received. For the further sums necessary the laboratory will be dependent on the assistance of other donors. A committee, with Sir William White as chairman, consisting of representatives of the various societies and institutions connected with the laboratory, has been appointed to raise the necessary funds, some 9000*l.* in all, and help has already been received from some of the City companies and others.

In his address, the president, Sir Archibald Geikie, K.C.B., referred first to the losses the society had sustained by death since the previous anniversary meeting. Four foreign members have passed away, and ten Fellows, among whom were two former presidents of the society and Copley medallists. We print from the address the descriptions of the prominent points of the work of the medallists of this year.

The Copley Medal.

The Copley medal is this year assigned to Prof. Felix Klein, of Göttingen, for his researches in mathematics. Prof. Klein is, perhaps, most widely known in this country for his investigations in geometry, which attached themselves closely to the work of Cayley and other British mathematicians. This work has expanded and systematised our conceptions of non-Euclidean geometry, and indeed the philosophy of geometry in general. Of at least equal importance have been his researches in theory of functions. In his earlier papers he dealt mainly with the transformation of elliptic functions and the related theory of modular functions. The key to the most of what followed lies in the memoir, "Neue Beiträge zur Riemannischen Functionentheorie," published in 1882. In this memoir, quite independently of Poincaré, and from an entirely different point of view, Klein lays the foundations of the theory of automorphic functions.

The Rumford Medal.

This year the Rumford medal has been awarded to Dr. Heike Kamerlingh Onnes, of Leyden, in recognition of the great value of his contributions to low-temperature research, among which his liquefaction of helium is the most noted. He has founded at Leyden the most thoroughly equipped laboratory in the world for investigations in low temperatures. In that institution a series of researches has been carried out regarding the effects of such great cold as can be obtained by the use of liquid hydrogen and even helium on the properties of substances, such as their magnetic relations and the electrical resistance of pure metals and alloys, the results of which are most striking and important for future progress.

The Royal Medals.

The awards of the two Royal medals annually given by our patron the King have received his Majesty's approval. One of these medals has been assigned to our colleague, Prof. William Mitchinson Hicks, as a mark of the society's appreciation of the value of his contributions to physical science. Among his researches may be specially mentioned those on hydrodynamics, and particularly on vortex motion, published in the Philosophical Transactions. Of late years he has devoted much attention to the numerical relations which exist between the frequencies of lines belonging to the same spectral series.

The other Royal medal has been adjudged to Prof. Grafton Elliot Smith, in recognition of the value of his biological investigations, more especially in regard to the morphology of the brain as developed in amphibians, reptiles, birds, monotremata, marsupials, and nearly every group of placental mammals. Prof. Elliot Smith's work among the ancient cemeteries of Nubia may also be mentioned. Already it has brought to light many interesting anatomical features in the buried remains of the former population of the Nile Valley.

The Davy Medal.

The Davy medal has been assigned to Prof. Otto Wallach for his researches in organic chemistry, particularly in regard to the essential oils. Our present knowledge of these complex vegetable products is largely the result of the numerous analytical investigations which he has carried out in the laboratories of Göttingen. He has made many important discoveries, more especially in connection with the cyclo-olefines and their derivatives, and his researches on these compounds have played a notable part in the general development of organic chemistry.

The Darwin Medal.

The Darwin medal is this year awarded to one of the sons of the illustrious man in whose honour this medal was founded twenty-two years ago. Mr. Francis Darwin by his researches has done much to emphasise the importance of plant movements in relation to environment, and has shown how strong is the evidence for the view that these various movements are the expression of the plant's own individuality in response to external stimuli, and that they have been developed or acquired by the plant as an adaptation to environment in the struggle for life. It is pleasant to remember that these interesting researches have been a continuation of the work which he carried on, conjointly with his father, in the long series of observations and experiments which are recorded in that important treatise, "The Power of Movement in Plants."

The Buchanan Medal.

This medal is awarded every five years in recognition of distinguished services to hygienic science or practice in the direction either of original research or of professional, administrative, or constructive work, without limit of nationality or sex. It has this year been adjudged to Colonel William Crawford Gorgas, for his remarkable services under the American Government, in combating the terrible scourge of yellow fever. As chief sanitary officer at Havana, Cuba, he there for the first time applied those sanitary methods by which the yellow fever was almost entirely eradicated from the place. This marked success led to his being entrusted in 1904 with a similar but greater task in the Panama Canal zone, where the same disease was rampant, and where he is still engaged. His success in that region has been not less conspicuous.

The Hughes Medal.

This medal has been adjudged to William Duddell, F.R.S., in recognition of the value of his researches in technical electricity, and, in particular, his investigations with the oscillograph on telephonic sounds, his work on radiotelegraphy with the thermo-galvanometer, his development of the vibration galvanometer, and his investigations on the production of currents of very high frequency by the electric arc and by mechanical means.

At the anniversary dinner, held on Saturday evening, the new German Ambassador (Prince Lichnowsky) and Prof. Metchnikoff were among the guests. In proposing the toast of "The Royal Society," Sir Rickman Godlee, president of the Royal College of Surgeons, dwelt upon the relations of the society to medicine. After responding to the toast, Sir Archibald Geikie proposed the health of the German Ambassador, and pointed out that this was the first public dinner that their guest had attended since he arrived a few weeks ago.

In the course of his reply, Prince Lichnowsky remarked:—

"Of all bonds that unite nations none are stronger than intellectual sympathy, and nothing is more apt to promote a real and lasting understanding between nations than the common struggle against darkness, ignorance, and misery. From time immemorial a close connection has existed between the intellectual leaders of our two great countries. Newton laid the basis of the modern development of physical science in Germany. Carlyle's work on Frederick the Great is a standard work, unrivalled, and of the works of all foreign historians the most popular in Germany. Hume was the predecessor of Kant and Schopenhauer, and I do not believe that in any country in the world are Shakespeare and Byron more fully appreciated or deeply understood than in Germany. I am confident that this close intellectual connection will in the future as in the past be a powerful help to the efforts of all those who work for the establishment of good understanding and harmony between our two kindred peoples."

Prof. Metchnikoff replied to the toast of "The Guests," in a speech in which he referred, in appreciative terms, to the influence the society exerted upon scientific progress, and the recognition it gave to the merits of men of science in many parts of the world. He cited particularly the case of Mendeléeff, who, though refused admission to the St. Petersburg Academy of Science, was elected a foreign member of the Royal Society.

NOTES.

IN reply to a question asked in the House of Commons on Monday, the Prime Minister stated that he feared the Government will not be able to find time to pass the Mental Deficiency Bill this session, but that the Home Secretary hopes to reintroduce the Bill early next session embodying the amendments made by the Standing Committee. The pledge that the Bill would be passed this session is thus held to be of no account. That Parliamentary exigencies should cause the jettisoning of the Bill is greatly to be deplored. Men of science know with a certainty that arises out of their qualifications that the problem of the feeble-minded and mentally deficient does not stand still. Its urgency caused the appointment of the Royal Commission in 1904; the report emphasised the necessity for immediate action in 1908; yet December of 1912 finds the subject shelved and put on one side. *The Times* has opened its columns to various expressions of feeling on this occasion, but many people who do not see its files will share in Sir Edward Fry's "distress and dismay" at a postponement which is "little short of a national calamity," and agree with the long list of distinguished signatories in the issue of November 28, that "this neglect is causing untold suffering to thousands of feeble-minded individuals who, because it is impossible under the existing law to train them and care for them, become inebriates, prostitutes, criminals, and paupers." Nor is it only these persons themselves with whom we need concern ourselves. They leave behind them a new generation of mentally and physically degenerate children, increasing daily in number, to be a shame to our national life, and a menace to our racial superiority.

THE High Commissioner for the Commonwealth of Australia has received official information of the arrangements that are being made for the visit of the British Association to Australia in 1914. A Federal Council has been formed, under the patronage of the Governor-General, with the Prime Minister as chairman. The members of the association will arrive at Fremantle on August 4, Adelaide August 8, Melbourne August 13, Sydney August 20, and Brisbane August 27, and those returning home by the shortest route will reach London on October 11. The Commonwealth has granted 15,000*l.* to be handed to the British Association by the High Commissioner to cover the passages of not fewer than 150 official representatives, including selected Dominion and foreign men of science. A special invitation has been issued to Sir Charles Lucas, formerly head of the Dominions Department of the Colonial Office. Dr. Rivett has been appointed organising secretary, and will visit London next year. The Governments of the several States offer special facilities for prolonged visits of men of science interested in special problems in Australia.

A VERY interesting tract of wild country has just been vested as a nature reservation in the National Trust for Places of Historic Interest or Natural Beauty. This is Blakeney Point, in Norfolk, a tract of about 1000 acres, consisting of three and a half miles of the shingle spit, with the sand-dunes and salt-marshes protected by it; the frontage on the North Sea is three and a half miles, viz. the end of the spit. A remarkable feature of the tract is the series of terrains instituted by the silting process, and the resulting formation of series of vegetations. Norfolk generally is one of our richest counties in rare flora and fauna. Blakeney Point is a typical area of the county in this regard. It possesses the four chief species of Statice (sea lavender), the very rare *Mertensia maritima* (oyster plant), and the fine shrub, sea-blite, *Suaeda fruticosa,* which grows in great profusion. It is famous for its birds, protected for some years now by the Wild Birds' Protection Society. The oyster-catcher, ringed plover, common and lesser tern breed freely; the latter and various gulls are extraordinarily abundant. Being a sort of "hook" in the North Sea, the point receives interesting stragglers, seals, sharks, and last year a whale. Salt-marshes such as these are rich in insect fauna. The gift is due