

Kingdom of silver pieces which gave way to copper as the State grew poorer, the whole standard being backed by gold. It is difficult to decide how far the balance was used for general purposes, as its representation on tomb paintings is almost confined to the weighing of gold, silver and precious stones, either domestically for distribution to the metal workers on private or public estates, or as a registration of income or taxes from within the State or of 'tribute' or prizes of war from abroad.

Sewage Purification

MR. JOHN D. WATSON, in his presidential address delivered on November 5 to the Institution of Civil Engineers, dealt with the phases of public works which have engaged his attention for more than half a century, and showed how the development of sanitation and improved water-supplies has brought about a very considerable reduction in the death-rate. He spoke of the Iddesleigh Commission, the reports of which showed that the disposal of sewage into an adequate volume of clean water—either salt or fresh—is sound and proper, not only on the grounds of efficiency and economy, but also on strictly scientific principles. As a matter of principle, purification by land-irrigation is sound and still fairly popular. Percolating filters are now popular, and while this method of purification has a direct relationship to the contact-bed method, it produces a more consistently uniform effluent, is more generally reliable and the operating costs are less. Although almost unknown twenty years ago, bio-aeration or activated sludge is now established beyond question as one of the most useful methods of sewage purification. It has proved itself to be scientifically sound, and, when the plant is well designed, it is economical and freer from nuisance than any method yet discovered. Having stated the most desirable lines for future development and discussed several noteworthy schemes, Mr. Watson emphasised the extent of loss resulting from lack of co-operation, and concluded his address by pointing out that, while the nation owes a great deal to the Ministry of Health, there is still much to be done before the goal is reached when there will be no river-pollution. In his opinion, a central authority is necessary, and this should be the Ministry of Health rather than the *ad hoc* body suggested by the Royal Commission, provided that power is given to set up a research department wide enough to include the excellent work which has been done in recent years by the Water Pollution Research Board.

South African Association for the Advancement of Science

THE South African Association for the Advancement of Science held its annual meeting at Paarl on July 1-6. On July 1, Prof. M. M. Rindl, professor of chemistry in Grey University College, Bloemfontein, president of the Association, delivered an address entitled "A Plea for the Establishment of a National Research Council and for the Limitation of a National Research Policy in South Africa". Replying to criticisms of the Association and its policy, Prof.

Rindl said that provision of funds for fostering research in the form of fellowships, scholarships and research grants in South Africa is not ungenerous. Much of this is directly attributable to the persistent agitation of the Association. In its early days, the Association and the Royal Society of South Africa were the only bodies providing research grants from their own funds. Furthermore, the annual award of the South Africa Medal and Grant to a prominent research worker in South Africa has done much to stimulate competition among investigators. As a result of the Association's action, a national committee of intellectual co-operation has been appointed, and it is hoped that the outcome will be the establishment of a National Research Council, and the inauguration of a national research policy on lines similar to those adopted in Great Britain, the Dominions and in many industrialised countries overseas. Another activity of the Association has been to appoint a committee to collect authentic data of the early history of scientific endeavour and industrial achievement in South Africa. With this end in view, the committee is approaching pioneers of science and industry to place on record their reminiscences and the history of the development in the industries which they founded, or with which they have been associated.

At the conclusion of his address, Prof. Rindl presented the South Africa Medal and Grant to Dr. Edwin Percy Phillips, and the British Association Medal and Grant to Miss Margaret Orford. His Excellency the Earl of Clarendon, Governor-General of the Union of South Africa, has graciously accepted the invitation of the Council to become the president of the Association for the year 1935-36. This will be the thirty-fourth annual session and will be held at Johannesburg. For this year the Association is departing from its normal procedure of meeting in July, and the Johannesburg session will be held on October 5-10. Members attending the meeting thus will have opportunity of visiting the Empire Exhibition, which is being staged for several months in Johannesburg.

Mellon Institute of Industrial Research

IN accepting the Chemical Industry Medal for 1935, at the meeting of the American Section of the Society of Chemical Industry, at the Chemists' Club, New York, on November 8, Dr. Edward R. Weidlein, director of the Mellon Institute of Industrial Research, Pittsburgh, Pa., described some of the scientific investigations at the Institute. The Mellon Institute is an industrial experiment station, a training school for industrial scientific workers, a centre for research in pure, as well as applied, chemistry, and a clearing-house on specific scientific information for the public. Dr. Weidlein said that the Mellon Institute has shown about 3,600 American companies, either as individuals or as members of industrial associations, that scientific research, properly carried out, is profitable to them. Most of the problems accepted for study during 1911-35 have been solved satisfactorily. The Institute has also

been active in stimulating research in other laboratories and in collaborating with other research establishments, both in the United States and abroad. It is best known, however, by the commercial processes that it has evolved (582 U.S. patents) and by its additions to the literature of chemistry and allied sciences (18 books, 122 bulletins, and 1,727 papers). During the past twenty-four years, the Institute has received more than 10,000,000 dollars from industrial fellowship donors to defray the cost of scientific investigations conducted for these companies and associations. Dr. Weidlein referred to no less than ten new industries that have come from these researches. In conclusion, he said that they hope to occupy the Institute's new building early next year.

Relief of Animal Suffering

THE ninth Stephen Paget Memorial Lecture of the Research Defence Society was delivered last June by Sir Frederick Hobday, the Principal of the Royal Veterinary College, who chose as his subject "The Relief of Animal Suffering" (*The Fight against Disease*, 23, No. 3). The attacks of anti-vivisectionists are directed not only against research work for the relief of human suffering, but also against research on diseases of animals, so that the subject of Sir Frederick's address was opportune. After some preliminary remarks on the statistics of the animal population of Great Britain and the diseases that affect them and on the training of the veterinary surgeon, he first mentioned the electric killer. The animal receives a shock of 70 volts by touching it on the head for a few seconds with the instrument connected to a source of electric supply, and it is claimed that the animal is thus rendered unconscious for 2½ minutes, during which time the blood may be withdrawn. Remarks were then made on articles accidentally swallowed by animals and their treatment, and finally on glanders, mange and other diseases affecting animals, and their prevention and treatment, illustrating everyday cases brought to the veterinary surgeon. At the annual general meeting of the Society, which followed the lecture, the honorary treasurer, Sir Leonard Rogers, pointed out that the expenditure of the Society somewhat exceeds its income, and additional subscriptions and donations would, therefore, be welcome.

Artificial Drying of Grass and Other Fodder

IN the agricultural world, much has been heard recently of the high nutritive value of grass and fodder crops when cut at a very early stage, and also of the possibility of preserving these special qualities by artificial drying. The Committee appointed by the Agricultural Research Council to investigate these questions has now issued its report, "The Preservation of Grass and other Fodder Crops" (London: H.M. Stationery Office. 1s. net), which provides an up-to-date authoritative account of the whole subject. After surveying the methods at present available for hay-making, ensilage, etc., the committee shows that the artificial drying of grass in the usual hay stage does not promise to be a

paying proposition. Drying grass cut young at frequent intervals throughout the season, however, has a good prospect of economic success, particularly in districts of moderate or high rainfall on land in good condition. The report then gives a full account of the methods for cutting and collecting young grass, the physical principles of drying grass, the special practical requirements of a farm drier, the cost of drying and the methods of processing and storage. Descriptions are also given of driers now on the market or those shortly to appear there, those suitable for farm as apart from large-scale factory use receiving special attention. The report concludes with a bibliography for those desirous of still further information.

Safety in Mines Research

WE have received from the Mines Department the thirteenth annual report of the Safety in Mines Research Board for the year 1934. This contains a large amount of interesting and valuable matter. The report proper, after a general introduction, deals with safety instructions, and then there is an important section (Part 3) on the progress of safety researches, dealing with coal-dust explosions, firedamp explosions, spontaneous combustion of coal, mining explosives, falls of ground, haulage, wire ropes and mine ventilation, while the next part deals briefly with various health researches reported by the Health Advisory Committee of the Mines Department. The report is followed by a number of appendixes which are of great importance, and cover the work of the various local committees; it is interesting to see that the value of protective equipment is becoming more widely recognised by the miners.

The Colonial Institute of Holland

WE have received the annual report of the Royal Colonial Institute, Amsterdam (Koninklijke Vereeniging Koloniaal Instituut, Amsterdam), which has now been in existence for twenty-four years. It gives an account of the activities of the Institute, its funds, the museum, and scientific expeditions, and of the affiliated institutes in the Dutch East Indies. A list of the staff and of their publications is given, together with a summary of the research work carried out. The last-named includes investigations on rhinoscleroma, dengue and food-poisoning, and on the mosquito fauna of Holland.

Meteor Observations in U.S.S.R.

WITH the object of studying the acceleration of the velocity of a meteor, the Moscow branch of the U.S.S.R. Astro-Geodetical Society has installed a camera of focal ratio $f/2$ behind a two-bladed fan, which interrupts the exposure on a star field nine times per second, at Koutchino, twenty kilometres east of Moscow. Prints of two photographs—one of a meteor and another of a meteor spectrum—together with a note upon meteor observations, have reached us from Moscow. From a typical example of observations collected (to be described in the *Monthly Notices of the Royal Astronomical Society* by