

Again, the double-anode valve can be used as a telephonic relay in ordinary telephony to magnify and repeat sounds.

The oscillation valve is not simply a detector; it is a quantitative detector, and hence has been extensively used as a receiver in all experiments in wireless telephony. In fact, most of the successful long-distance experiments in radiotelephony have been conducted by it. For when so used it rectifies the continuous high-frequency oscillations in the receiving circuit into a direct current. Hence the variations in amplitude in these oscillations which are produced by the microphone in the transmitter circuits make themselves evident as variations in the rectified current which flows through the telephone receiver, and these reproduce the sounds of the speech made to the microphone in the transmitter. This thermionic detector promises, therefore, to be of great use in the solution of the problem of radiotelephony, as well as that of repeating or relaying ordinary telephonic currents.

THE INDIAN SCIENCE CONGRESS.

THE Indian Science Congress held its fourth annual meeting in Bangalore on January 10 and the three following days, under the presidency of Sir Alfred Bourne, F.R.S. The six sections—those, namely, of Mathematics and Physics, Chemistry, Agriculture, Botany, Zoology, and Geology—met in the mornings, and in all seventy-two papers were read. It is obviously impossible, in the space available for this notice, to give an account of the work of the various sections or even to enumerate the papers, but certain points in connection with the present meeting are deserving of mention. Two of the sectional presidents departed from the usual custom in giving addresses on general topics. In the Mathematics and Physics Section the Rev. Dr. Mackichan referred to the great value of early Indian contributions to mathematics, both pure and applied, but deprecated the suggestion put forward by some enthusiasts that there was no scientific truth of importance that could not be traced in the ancient Hindu scriptures. The other address, given to the Chemistry Section, is referred to below.

There was a comparatively large proportion—about one-third of the total number—of papers dealing with the application of science to particular industrial problems. The increase in the number of papers of this kind is undoubtedly due to war conditions, which have stimulated industrial enterprise in many parts of India. The papers on industrial science read at meetings of the Congress represent but a small part of the work which is being carried on in different parts of the country; those on pure science, on the other hand, record very nearly the whole of what is being done in Indian colleges, and one cannot help noticing their fewness. The causes of the paucity of research work were examined by Dr. J. L. Simonsen in his presidential address to the

Chemistry Section. Lack of proper training in past years, understaffing of colleges—resulting in a man's whole time being taken up by routine work—and inadequate pay in subordinate grades of the teaching profession were mentioned as among the most important; and to these must be added the absence of the research atmosphere that is so marked a feature of the larger English educational centres. The Indian Science Congress constitutes at present the only means of remedying this situation effectively. It can, through the proper official channels, direct the attention of the Imperial and local Governments to those defects of the present system which it is in their power to remedy; it can also provide once a year the research atmosphere and facilities for discussion and criticism which are lacking in the colleges, partly because the great distances which separate them make the personal exchange of ideas almost impossible, and partly because, excepting a few agricultural research stations, not more than one or two men are working at the same subject in any one place.

Although the actual amount of research in pure science is small, it is large when compared with what was being done four years ago. At the first meeting of the Congress in 1914 only twenty papers were read: the number this year had increased to seventy-two. This year, too, a new rule was in force, making it necessary for authors to submit their papers to a referee. While in some of the sections—that of Zoology, for example—the quality of the papers was excellent, this is not true of all. There were a number of papers from a certain quarter that appear to have been inspired by a determination to produce the maximum quantity of "research" in a given time. Work of this type falls into its proper place in the course of the discussion and criticism which take place in the sectional meetings, and there is no doubt that the Congress is doing a good deal towards setting up a higher standard of work than exists at present.

An interesting discussion took place, under the chairmanship of Sir Sydney Burrard, F.R.S., on scientific libraries in India, following some suggestions which had been made to the effect that research work in India was sometimes hampered by inability to obtain references. It appeared from the contributions to this discussion that the difficulty was felt chiefly by zoologists, to whom plates and diagrams were frequently of greater importance than the text of a paper (which could always be copied and sent by post). But the general feeling was that any lack of library facilities in India could scarcely be considered a contributory factor in hindering research, and that the existing needs would be adequately met by the preparation of a catalogue showing the periodicals available in different places and the rules under which they could be lent or copied.

The remaining activities of the Congress may be briefly mentioned. Three public lectures were delivered, and were attended by large audiences. The first was by Mr. C. Michie Smith on "The

Sun," and this was succeeded by a lecture on "Soaring Flight" by Dr. E. H. Hankin, and one by Mr. F. L. Usher on "Explosives." The only social function took place on the afternoon of January 11, when the members were received at the palace by H.H. the Maharajah of Mysore, to whose Government the Congress is indebted for the invitation to meet this year in Bangalore. On the following afternoon the members visited the laboratories of the Indian Institute of Science at the invitation of the director and staff.

At the concluding business meeting it was announced that the Congress would meet next year in Lahore, under the presidency of Dr. Gilbert Walker, F.R.S. F. L. U.

NOTES.

WE regret to learn from the *Times* that the death of Dr. E. von Behring, the discoverer of the curative effect of the serum of immunised animals in the treatment of diphtheria, is announced in the German newspapers.

THE annual general meeting of the Chemical Society was held at Burlington House on March 29, Dr. Alexander Scott being in the chair. Prof. W. J. Pope was elected president, Col. Smithells and Prof. Sydney Young were the two new vice-presidents elected, and Prof. H. C. H. Carpenter, Prof. A. Findlay, Prof. A. Harden, and Dr. T. A. Henry were elected as new ordinary members of council. Dr. Scott delivered his presidential address upon the subject of "The Atomic Theory."

A NEW branch of the Ministry of Munitions has been established under Sir Lionel Phillips as Controller, to deal with the examination and development of such mineral properties (other than coal or iron ore) in the United Kingdom as are considered likely to be of special value for the purposes of the war. The Minister of Munitions has appointed the following to act as an advisory committee on the development of mineral resources:—Sir Lionel Phillips, Bt. (chairman), Mr. F. J. Allan, Mr. C. W. Fielding, Mr. R. J. Frecheville, Prof. F. W. Harbord, Mr. F. Merricks, Sir Harry Ross Skinner, Dr. A. Strahan, and Mr. Edgar Taylor, together with a representative to be nominated by the Board of Trade.

WE learn from *Science* that Prof. A. V. Stubenrauch, professor of pomology in the University of California, died at Berkeley, Cal., on February 12. A graduate of the University of California of 1899, Prof. Stubenrauch was for ten years in the U.S. Department of Agriculture, resigning in 1914 his position as pomologist in charge of field investigations to return to service in the University of California. He was the first to demonstrate that dates could be grown with commercial success in the Imperial Valley, on the desert in southern California; and in association with Mr. G. H. Powell he developed the pre-cooling method, which has greatly contributed to success in the shipping of fruit from California.

A KINEMATOGRAPH film of great interest is now being shown at the Philharmonic Hall, Great Portland Street, by Capt. Campbell Besley. Capt. Besley, who is an Australian, undertook an expedition to the head waters of the Amazon at the request of the President of Peru in co-operation with Mr. Bryan, then Secretary of State of the United States of America. The chief objects of the expedition were to determine the source of the Amazon and to ascertain the fate of

former explorers, who were supposed to have been killed by hostile Indians. The expedition, which was away two years, achieved its objects, but at considerable cost of life, for of the twelve white men who started only four returned. Several fell victims to the poisoned arrows of the natives. The pictures, which are explained by Capt. Besley, show the great rivers, the vegetation, and animal life of the region visited. They are an example of the great educational value of the kinematograph. The film is at present shown daily at 3 and 8 p.m.

THE seventieth annual meeting of the Palæontographical Society was held on March 30 in the Geological Society's rooms, Burlington House, Dr. Henry Woodward, president, in the chair. The report referred to the delay of the publications owing to existing circumstances, but noted that there was no diminution in the number of monographs offered. Installments of the volumes on Pliocene Mollusca, Palæozoic Asterozoa, and Wealden and Purbeck fishes were about to be issued. Dr. Henry Woodward, Mr. R. S. Herries, and Dr. A. Smith Woodward were re-elected president, treasurer, and secretary respectively, and the new members of council were Mr. H. A. Allen, Mr. E. Heron-Allen, Rev. H. N. Hutchinson, and Mr. C. T. Trechmann. In a brief address the president mentioned that when the society was founded on March 23, 1847, it was estimated that the description and illustration of all the British fossils could be completed in twenty-five years. The long series of volumes published during seventy years, however, had proved to do little more than make a good beginning of the task.

ON Thursday, March 29, a representative assembly of the friends and admirers of the late Sir William Huggins, O.M., and Lady Huggins met together in the crypt of St. Paul's Cathedral to witness and participate in the unveiling and dedication of a medallion commemorating conjointly the achievements of a great astronomer and the inspiring efforts of a wife who, for some thirty-five years, identified herself with his aims and labours. Among those present were Sir Joseph Thomson, O.M., president of the Royal Society; Dr. A. Schuster and Mr. W. B. Hardy, secretaries R.S.; Sir Alfred Kempe, treasurer R.S.; Sir Archibald Geikie, O.M.; Major MacMahon, president of the Royal Astronomical Society; the Astronomer Royal; Sir W. Crookes, O.M.; Mr. H. F. Newall; Sir Joseph Larmor; Mr. E. B. Knobel; Sir W. Tilden; Mr. E. W. Maunder; Mr. W. H. Wesley; and the Rev. T. R. R. Stebbing. A number of ladies were also present. After the memorial had been unveiled a short form of service was conducted by Dean Inge, with whom were Canon Simpson and Canon Alexander. In committing the memorial to the charge of the Dean and Chapter, Sir Joseph Thomson paid eloquent tribute to the scientific achievements of Sir William Huggins. Born and educated in London, and all his work having been carried on and issued from a London observatory, St. Paul's appeared the fittest of destinations for a medallion. Major MacMahon, referring to certain points in a great life, said that Huggins saw celestial chemistry looming in front of him, and before many years had elapsed he was the pioneer of a new branch of science. The medallion of Sir William Huggins, it should be noted, was the primary object of the memorial, but, on the death of Lady Huggins, it was decided to place her portrait beneath that of her husband, on the same slab. Both are the work of Mr. Henry Pegram, A.R.A. The inscriptions run respectively: "William Huggins, Astronomer, 1824-1910"; "Margaret Lindsay Huggins, 1848-1915."