were on view and attracted a great deal of attention. Discourses were given on two of the evenings; on January 7, Mr. R. A. Bull lectured on "Some Instruments used in Recording Sound on Films", and on January 8, Mr. R. W. Paul lectured on "Electrical Measurements before 1886". We understand that these lectures are being published in the special Exhibition Number (February) of the *Journal of Scientific Instruments*.

A New Electrical 'Eye'

ACCORDING to a report from its New York correspondent in the issue of January 4 of *The Times*, an electron tube device which is sensitive to both visible and invisible light was demonstrated on January 2 before the American Association for the Advancement of Science, by Drs. V. K. Zworykin and G. A. Morton. The device comprises an electron image tube of high overall magnification (compare NATURE, Jan. 4, p. 36) fitted with a fluorescent screen which acts as an artificial retina. The cathode emitter of this tube is operated directly by the incident light, which need not be in the visible range, since it is sensitive to radiation over the whole spectrum between 1,800 A. and 13,000 A. Thus the image which becomes visible on the fluorescent screen may be the result of incident radiation in either the ultra-violet or the infra-red portions of the spectrum. It would therefore appear that this electrical eye will literally enable us to see in the dark. If the further development of the device is successful, it is likely to be of considerable service in various branches of pure and applied science. It may, for example, provide the solution to the problem of navigation in fog on land and sea and in the air, while in astronomical and biological work, the use of infra-red radiation may reveal much that is not readily to be seen by visible light.

Suppression of Radio Interference

A DESCRIPTION is given in the *Electrician* of December 27 of experiments on the suppression of radio interference produced by trolley buses, carried out by Post Office engineers in several towns. At Southend, 'stopper' coils were fitted by the Corporation to its trolley buses. In most parts of the town the suppression of the interference was most satisfactory, but in a few parts of the town it had little effect. This was particularly noticeable in a narrow road in which the trolley bus track turned sharply at each end. Experiments with condensers fitted to the trolley poles were fairly successful in diminishing the disturbance in the troubled regions. Most of the interference was found to be due to the internal electrical equipment of the buses, and tests are being made by electric 'filters' to try to improve reception conditions. The weight of the stopper coils when placed on the top of the vehicles lowers the factor of safety for overturning tests and is therefore disadvantageous. Further tests on these coils has been postponed until the development of a lighter coil made of aluminium has been developed by the engineering department of the Post Office. In tests made recently on a G.E.C. Leyland trolley bus at Birmingham, good results were obtained by the application of interference filters to the individual items of the trolley bus equipment, and similar tests were carried out on one of the Hastings trolley buses. The items of the equipment causing interference were the controller, driving motor (60 horse-power) and collectors of the wheel type. Experiments showed that good suppression can be obtained by using these filters, but possibly line condensers will also be necessary. The tests show how serious the interference sometimes is when the weather conditions are bad, and that much of it can be suppressed by 'stopper' coils.

Fading of Radio Signals

THE phenomenon of fading has caused a great deal of trouble in radio-telephony. It is due to high-angle waves being reflected down from ionised layers in the upper atmosphere and interfering with the direct horizontal waves of the receiving station. By diminishing the former and increasing the latter, fading can be greatly mitigated or even entirely eliminated. In wealthy countries where people can afford to buy highly efficient receiving sets, and the broadcasting authorities can afford to erect more transmitting stations where necessary, the trouble is easy to overcome. In countries where many crystal and primitive valve sets are used, and the transmitting station serves distant receivers, the area for good reception is very limited. In this case, the area of reception can be considerably increased by the use of a single vertical antenna (aerial) instead of the usual *T*-type antenna suspended from two steel masts. The mast recently erected in Budapest for the broadcasting station is the highest structure in Europe. A description of it is given in *Links*, a paper published by Duckham and Co. Ltd., of 16 Cannon Street, London. The height of the antenna is 1,005 ft. and its weight is 230 tons. It is nearly three times the height of St. Paul's Cathedral. It rests on a porcelain insulator which has to withstand, owing to the pull of the guy ropes, a permanent crushing load of 480 tons. Compared with the old *T*-antenna, the Budapest vertical mast has more than doubled the service area of the station.

Bureau of Standards, Washington

THE Bureau of Standards publishes an interesting "Visitor's Manual" (Misc. Publ., M153), giving a brief synopsis of its history, functions and facilities. An afternoon visit to certain of the laboratory rooms is arranged every day. It is mentioned that the discovery of deuterium (heavy hydrogen) was the result of co-operative work of the laboratory with Columbia University. The use of the lowest temperature so far attained in the United States—the melting point of liquid helium (−456° F.)—has made possible the study of the properties of materials at very low temperatures, in particular the supra-conductivity of metals. The Bureau constructed the first 'altitude' laboratory for studying aeroplane engine performance under flight conditions. In it the low air pressures and temperatures encountered at altitudes up to

30,000 feet can be duplicated. The Bureau workers were the first to discover that a thin coating of pure aluminium greatly decreases the atmospheric corrosion of duralumin, an alloy largely used in aircraft construction. They worked out the very successful process of plating steel and other metals with chromium, the hardest metal known; this more than trebles the life of gauges, printing plates and similar devices. The Bureau developed the paper now used for printing U.S. paper currency, which has extended the total service life of such notes at least three times. It discovered that certain waste water from paper mills makes satisfactory material for tanning leather, and it established the dextrose (corn sugar) industry. It keeps the public well informed of its work, and its staff has increased by fifty times since it began in 1903.

Emoluments in the U.S. National Bureau of Standards

THE U.S. Department of Commerce has issued a circular giving a description of the scientific and technical positions in the National Bureau of Standards. It is pointed out that the Bureau affords an excellent opportunity for training in scientific work, and is in close touch with industrial research. Many employees have found their post an excellent stepping-stone to more highly remunerative work outside. It is an excellent post-graduate training ground, and outside interests are ever on the alert to secure successful research workers. All positions on the staff are subject to the competitive requirements of the civil service rules and regulations. The Bureau staff comprises about 775 professional, 'subprofessional', clerical, administrative and custodial positions. All appointments are made at the entrance salary of the grade for which eligibles have qualified by examination. Examinations for posts in the lower grades are held throughout the country in every large city. Applicants for the higher grades do not have to sit for a written examination; but are rated on their previous training and experience.

IN view of the present unemployment conditions in the United States, when any member of a single family living under one roof is in the service of the District of Columbia or of the United States Government, additional members of that family are not appointed. Assuming 5 dollars to the pound sterling, the following are a few of the rates of pay. In the 'professional service' which is the highest grade, there are eight divisions between 'junior' and 'chief'. A junior begins at £400 a year and ranges in seven steps to £500. A senior, which is the fifth grade, steps up from £920 to £1,080 and a 'chief' from £1,600 to £1,800. We are told that rentals for apartments and houses in the neighbourhood of the laboratories range upwards from about £165 a year, and that the cost of a room and board (two meals) is about £10 a month.

Protection of Antiquities in Nebraska

BY a resolution of the State Legislature of Nebraska, police powers over sites of archæological and palæontological interest have been conferred on the State Geological Survey, which will enable that service to control the future collection of antiquities and fossil bones, for which the State is widely known as a favourable locality. Although the efforts of the National Research Council have done much to make widely known among the people of the United States the desirability of preserving intact their monuments of antiquity, up to the present only a few of the States have taken legislative action to protect them; and should the measures adopted in Nebraska prove effective, it is anticipated that other States will follow this example before long. As recent investigations have shown, Nebraska and the neighbouring States of the south-west are rich in relics of early man and of the extinct fauna with which, it would appear, early man was associated in this part of America; but this wealth of material has proved an irresistible attraction to the amateur collector and the curio hunter, with the result that much important scientific evidence has been lost or destroyed by the removal of specimens from their stratigraphical context without adequate record, or indeed, in many instances, with no record at all. Some indications of the extent of the loss that science has suffered in this way is afforded by the references to important archæological specimens in private hands scattered throughout the records made by Prof. E. B. Renaud's archæological surveys of Colorado and adjacent territories. It has been specifically stated on behalf of the Geological Survey that there is no intention to restrict duly accredited scientific research.

F. W. Hodge Anniversary Publication Fund

IT is proposed to commemorate the services to anthropology of Dr. Frederick Webb Hodge, director of the South-West Museum, Los Angeles, during the fifty years in which he has been engaged in anthropological and archæological studies by the formation of a fund to assist in the publication of research work in the field of American prehistory. Dr. Hodge's career as an anthropologist began in 1886, when he joined the Hemenway South-western Archæological Expedition to Arizona. He became one of the pioneers in American anthropology, his best-known and undoubtedly most frequently consulted work being contained in the "Handbook of American Indians north of Mexico", of which he was editor and one of the principal contributors. He was one of the founders of the American Anthropological Association, editing its journal, the *American Anthropologist*, for the first fifteen years of its existence. He was for eight years head of the Bureau of American Ethnology, and has held his present office since 1932. The proposal for a publication fund to commemorate Dr. Hodge's long and strenuous career is put forward by a committee which is fully representative of the foremost anthropologists in the United States, including Dr. Aleš Hrdlička, Prof. F. Boas, Dr. Clark Wissler, Dr. A. V. Kidder, Dr. Fay-Cooper Cole, Dr. Bruno Oetteking, Dr. E. Sapir, and others. The fund will be administered as an endowment trust by the South-western Museum, and managed by an editorial committee to be nominated by the appealing Committee.