

News and Views

Science in the Modern World

THE presidential address delivered to the Science Masters' Association, by Sir William Bragg on January 1 on "School Science after School" (see p. 78), was an impressive plea for the teaching of science in ways that will facilitate co-operation in dealing with national and international problems. The extraordinary growth of natural knowledge and the increase in community feeling, largely stimulated by the applications of that knowledge, are two of the great characteristics of our time. The school in its science teaching should therefore consider the community and not merely the individual and his own vocational and examination needs. The early members of the Royal Society, Sir William pointed out, unlike the fellows of the Society to-day, who are almost entirely professionals, specialists in some definite field of scientific study, pursued science as one of several interests. They were as much amateurs as they were professionals, and their scientific work was largely related to the welfare of the nation. In the pursuit of natural knowledge they found themselves always in touch with the world's affairs.

THERE is no splendid isolation for science, which indeed, said Sir William, would lose all its vitality if made to turn in upon itself. Science has always drawn inspiration from the attempt to solve the problems that continually occur in the nation's business, and the very necessity for specialisation to-day makes it essential for the chemist, the biologist and the physicist to keep contact if their own progress is to continue. Such contact often proves a great stimulus to further advance, and to-day alliances are also being established between science and industry—agriculture and other national occupations and interests. More than specialisation is demanded to-day, and because understanding depends largely on language, Sir William Bragg made a further plea that school teaching should see that while the scientific workers learn to express themselves logically and lucidly, others learn to understand the language and purpose of science. If in this way school science promotes the inclusion in one team of those representing many sides of life and their harmonious co-operation for the welfare of the nation, we need no longer fear the misuse or misdirection of the great powers with which science has endowed mankind.

Floods on the Continent

WHILE the peak level of the floods in the Thames Valley, reported in last week's issue of NATURE, has apparently been reached and passed, and the river, despite some additional rainfall during the week-end, is subsiding, less satisfactory reports are received from the Continent. Persistent rains all over France are stated to be causing the river discharges

to assume alarming proportions, the conditions being unparalleled for a period of a quarter of a century. The Rhône, the Seine and the Loire give particular cause for anxiety. Along the banks of the last-named river, hundreds of dwellings have had to be abandoned under threatening conditions, and in Nantes itself the main railway line has been cut, while whole districts of the town are under water, which has penetrated the main squares of the city, causing business activity to be paralysed. In the Département of Vienne, "the worst flood for seventy years" has occurred at Poitiers, where many houses have been evacuated. The Rhône Valley is again invaded: both at Lyons, at the confluence with the Saône, and at Avignon, there are extensive flooded areas. From Toulouse, a "catastrophic" situation is reported. At Paris, the Seine has been rising at the rate of eighteen inches in twenty-four hours, and has exceeded danger level. Considerable lengths of quay front are submerged and cargo handling operations are seriously impeded, where not definitely suspended. Water has entered the buildings of the Quai d'Orsay, and the Place de la Concorde is inundated for the first time since 1910. The effects of excessive precipitation are being felt with equal severity in Spain, in the northern provinces of which widespread damage has been caused and the town of Padron isolated; as also in Switzerland, where there have been a number of minor landslips, particularly in the Alps. The railway line to Chamonix has been completely blocked for some days by a mass of rock and stone. The authorities fear intensification of the trouble.

The Physical Society's Exhibition

THE Physical Society's twenty-sixth Annual Exhibition of Scientific Instruments and Apparatus was held in the Imperial College of Science and Technology, South Kensington, on January 7-9. Eighty firms exhibited their products in the Trade Section, in which many new instruments were shown for the first time. There were to be seen examples of recent applications of physics to a wide range of industrial problems, in addition to improved forms of the more usual physical instruments and apparatus. Four firms exhibited scientific and technical books. The Research and Experimental Section was again divided into two groups: Group A, illustrating recent research, contained exhibits contributed by research associations, Government laboratories and industrial and private laboratories, while Group B consisted of lecture and instructional experiments in physics. The annual competition in craftsmanship and draughtsmanship, held in conjunction with the Society's annual exhibition, attracted some eighty entries from apprentices and learners employed by exhibiting firms, or firms which have exhibited at previous exhibitions. The entries for this competition

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 Å. and 13,000 Å. 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