

News and Views

Science and Social Ethics

THE attitude of scientific workers towards warfare, and what it now signifies to the future of the human race, has been the subject of many articles and other communications published in *NATURE* in recent years. Following a leading article in the issue of May 9, 1936, a letter from twenty-two graduate workers at the University of Cambridge was published in *NATURE* of May 16, and similar views on the international character of science and the barbarity of war were afterwards expressed by representatives of science in Cape Town and Bangalore. Whatever part physical conflict between individuals or communities has taken in the progressive development of man in the past, it cannot be questioned that the outlook for the future is very dark if all the resources of modern science are to be available for destructive purposes in the struggle for superiority among nations. Dr. Goebbels, who practically controls the Press of Germany, has said: "War is the most simple affirmation of life. Suppress war, and it would be like trying to suppress the processes of Nature". Such a primitive conception of the functions of war leaves out of consideration man's ethical and spiritual nature, and regards him purely as a fighting animal. Those of us who believe in a higher destiny for the human race cannot think it will be achieved through the use of high explosives, poison gas and incendiary bombs to settle disputes between civilized communities. It is because of such uses of their discoveries that scientific workers have not only the right but also the responsibility of making a collective pronouncement upon these disturbing aspects of our so-called civilization. Science has a message to deliver and a social mission to perform with far higher aims than those usually associated with it in the public mind. It believes in the evolution of social ethics, and therefore associates itself with all spiritual teaching which will promote peace upon earth and goodwill among men. On this account we are glad to put on record the following resolution adopted at the spring session of the Church Assembly at Westminster last week; and we suggest that a similar resolution might just as appropriately be passed at a representative assembly of workers for the advancement of natural knowledge.

The Christian Church and War

THAT this Assembly—

(1) endorses the Resolution of the Lambeth Conference, 1930, that war as a method of settling international disputes is incompatible with the teaching and example of our Lord Jesus Christ;

(2) deplores the general rearmament throughout the world;

(3) calls upon all Christian people to redouble their efforts to promote international good will;

(4) assures the Government of its moral support in all efforts to remove the political and economic causes of war, and in securing a general reduction of armaments by international agreement;

(5) welcomes the declared policy of the Government to adhere to the Covenant of the League of Nations, and to use armed force only for the defence of the country and in the interests of international security and peace;

(6) recognizes the right of the Government to maintain such forces as the Imperial Parliament deems necessary for the pursuance of this policy, and believes that, so long as this policy is maintained, Christian citizens may bear arms in the service of their country;

(7) affirms the responsibility of Christian people to support, criticize, or oppose all defence programmes in the light of Christian principles and in relation to their advancement of the Kingdom of God.

The University of Oxford Appeal

ON February 9, in speeches by Lord Halifax and others at the Goldsmiths' Hall in London, the appeal that the University of Oxford is making for money was launched. The capital sum aimed at is a million pounds, and some of the needs for which this sum is required are urgent. About a quarter of it is needed to ease the fund which the University has been accumulating for paying its share of the large cost of the extension to Bodley's library now being built. A similar amount is needed for the erection and equipment of new laboratories and other buildings. The remainder is required as a trust fund, the interest of which may be used to endow for a period of years new developments in any subject which looks promising, rather than be tied down to this particular subject or that. These needs are altogether separate from those of the medical school, which have been generously met by Lord Nuffield recently, and cannot be paid for out of his two million pounds gift. That gift, unlike some gifts, will not in any way be a liability on the University, but obviously the new school of clinical research which it is calling into existence, by quickening research throughout all departments of the University, must indirectly make new endowments of scientific departments a necessity. The needs for which the appeal is being made are, indeed, independent of, and of longer standing than, those of the medical school, and Lord Nuffield has recognized this by subscribing an additional £100,000 towards the million pounds required.

AGREEMENT has been reached as to the order in which the immediate scientific needs should be met. Most urgent is a new physics building for Prof. F. A. Lindemann. The Clarendon Laboratory of 1872, in which his department is housed, was never a suitable

place for research, and despite the ingenious make-shifts its deficiencies have called forth, has now become almost intolerable. It is proposed to adapt this laboratory for the Department of Geology, at present cramped in the Museum itself, and to erect and equip a new building near the old and consequently near the other Physics Department, the Electrical Laboratory. The Clarendon should be a suitable place for the Department of Geology, which under the new professor to be elected soon should readily take on a new lease of life within it. Next, it is intended to build a physical-chemistry institute—the first *University* building for this subject—not, as might be thought most convenient, next to the Inorganic Laboratory (there is quite insufficient space available there for an adequate new building, especially when possible extensions of both departments are envisaged), but immediately on the other side of the Organic Chemistry Laboratory from it. Researchers in physical chemistry who now do their work in the laboratories and cellars of Balliol, Trinity and Jesus Colleges, overflowing at times into the engineering and organic chemistry laboratories, should find in the intended University institute an ampler and much more convenient home. After that building has gone up, it is hoped to rebuild, near by, the Physiology Laboratory, which dates from 1884.

Reflection of Radio Waves from the Middle Atmosphere

THE method of studying the ionized regions of the upper atmosphere by emitting small pulses of electric waves and recording the echoes reflected from the ionosphere is now well-known and is in everyday use in many parts of the world. The commonly recognized reflecting regions are at heights of 80 km. and above. Communications to the correspondence columns of *NATURE* of May 9 and 23, 1936, described observations indicating the existence of reflecting regions at much lower heights. These new regions were first discovered in May 1935, and an account of their investigation over a period of about a year from that date was given in a paper presented on February 4 to the Royal Society by R. A. Watson Watt, A. F. Wilkins and E. G. Bowen. A summary of the paper will be found on page 299. It appears from this work that there may be three electrified regions in the middle atmosphere at average heights of 10, 40 and 60 km., which are capable of reflecting radio waves of frequencies of the order of 6 megacycles per second and above (wave-lengths 50 metres and below). The lowest region has been found to be stratified to such an extent as to indicate the existence of five distinct layers at heights between 8.5 and 13.5 km., with reflection coefficients as high as 0.7. The observations so far made do not indicate any marked diurnal or seasonal changes. An interesting feature of the investigation so far conducted is that echoes from these layers have been recorded at sensibly vertical incidence at wave-lengths at and below those now in use for the television service. The existence of such echoes would cause the picture seen in a television receiver to have a doubled or blurred appearance. There is, however,

insufficient evidence available to state how serious this possibility may be in the development of television services on the wave-lengths at present in use.

Auroral Display on February 3

REPORTS from various observers in Yorkshire and south Lancashire, who witnessed a display of the aurora borealis in the evening of February 3 last, have appeared in the *Yorkshire Post*. The aurora, which was evidently a striking phenomenon to those favoured with a clear sky, began about 18^h 30^m and lasted for an hour. One observer at Bradford noted a broad band of red passing overhead from east to west. On inquiry at the Royal Observatory, Greenwich, it was stated that a magnetic disturbance, which could be associated with this aurora, had been recorded at the Abinger magnetic station. The disturbance began suddenly on February 2 at 23^h 5^m U.T., and within a few hours a range of 220 γ in horizontal force had been registered. The disturbance then died down, but was renewed between 17^h and 22^h on February 3; a typical movement (associated with auroras) in declination occurred about 19^h with a range of $\frac{3}{4}^{\circ}$, the range in horizontal force being 190 γ . At the commencement of the magnetic disturbance on Feb. 2^d 23^h, the centre of the large sunspot, reported on p. 228 of *NATURE* of February 6, was about 40° west of the sun's central meridian and the following extremity of the spot about 32° west. A statistical analysis made at Greenwich of big sunspots and associated magnetic storms shows that spots of the size of the recent one are associated, in about two out of three cases, with either a large or a small magnetic storm, occurring on the average about 1 $\frac{1}{2}$ days after the central meridian passage of the spot. It may be added that 27 days (or a solar synodic rotation) before the aurora on February 3, the Abinger magnetic traces at about 19 $\frac{1}{2}$ ^h on January 7 show a movement distinctive of auroral activity. An observer at the Saltburn Coastguard Station who saw the aurora on February 3 is reported by the *Yorkshire Post* as having stated that he "saw the lights a month ago".

The United States Floods

WHILST it is fully expected that the liability of the countryside to flooding through the possible bursting of the riverside levees in the Mississippi Valley will continue to be a menace for another week or ten days, yet there has been a perceptible diminution in the anxiety felt as regards the general situation, which is much more satisfactory than at the time of our previous issue. The crest of the flood wave is gradually diminishing in height. It did not quite reach the anticipated level at Cairo, and as it passes down the valley, unless reinforced by fresh rains, it should subside in intensity. There is believed to be a margin of at least four feet available above water surface level from New Madrid to New Orleans, and this should be adequate for the occasion. None the less, caution is being exercised, and some 120,000 workmen are being kept on the alert along the course