

GENERAL SCIENCE

Breakdown of Cooperation Most Damaging Effect of War

Even in United States Voluntary Control Over Scientific Publication Is Being Put Into Effect

THE BREAKDOWN of international cooperation in science is one of the most damaging by-products of the war. Up until the very eve of hostilities, international congresses of scientists were being held, in some cases with scientists from totalitarian countries in attendance, particularly if the science being discussed did not conflict too much with the ideologies of the dictators.

Now, as Hitler's armed forces have undated neutral and belligerent countries alike, extinction of fruitful centers of research has occurred or is in progress. In some cases, as in Poland, apparatus and books have been carried off to Berlin as loot. The staffs of scientific laboratories have been dissipated or have suffered worse fates. The seed of scientific progress is being crushed mercilessly.

In all parts of the world, science is becoming more nationalistic and secretive. With armed might being used ruthlessly, scientists are rushing to the defense of their threatened countries. Longtime projects are being pushed aside to help

military preparations. Ideas for military use, scorned as wasteful in more peaceful days, are being revived and nurtured.

Here in our own country there is being put into effect a voluntary control over scientific publication for fear that information may be given "to the enemy." For example, it is very improbable that if significant advances are made in the release of atomic energy from uranium, details will be made public under present conditions. It will become a military secret.

Even in the war upon disease in which all inhabitants of the earth should be allies, war between men interposes its barriers. Here in America has been developed an immunization against typhus fever, louse-borne disease prevalent in eastern Europe. Vaccine for experimental use has been sent to Hungary and Rumania, but it is proving difficult to pass new supplies and reports on results through the military lines of Germany and Italy.

Science News Letter, July 20, 1940



LIGHTNING RECORD

The disks in the background of this instrument being demonstrated by Charles F. Wagner of Westinghouse bear magnetic records of lightning. From these records, precise pictures of lightning may be drawn.

surge front recorder," answers "how fast?" Four coils, connected in parallel with the wires over which the surge is coming, magnetize two small strips of steel. The amount they are magnetized is dependent on the change in current in the coils, so the maximum lightning current may be found.

Science News Letter, July 20, 1940

PHYSICS

Find Quantity of Electricity In Single Lightning Bolt

A SINGLE bolt of lightning, crashing from cloud to earth for about a fiftieth of a second, may contain a quantity of electricity sufficient to operate a hundred watt lamp for nearly three minutes. This has been learned from studies made with a new device, the "magnetic surge integrator," which Charles F. Wagner, consulting transmission engineer for the Westinghouse Electric and Manufacturing Company, described at the meeting of the American Institute of Electrical Engineers in Swampscott, Mass. He also told of two other devices which he and an associate, Gilbert D. McCann, have devised in order to answer about lightning strokes the questions, "when, how, how fast and how much."

The "fulchronograph", which tells "when and how," consists essentially of an aluminum disc a foot in diameter, around the edge of which are inserted 400 small steel fins, each about half the size of a nail file. Every 1/25,000 second a fin passes through a narrow coil, where the lightning surge magnetizes it. The disc is returned to the laboratory after operation, and the amount of magnetization of each fin is measured. From these data the buildup of the electrical wave is determined.

The magnetic surge integrator is somewhat similar, but is designed to magnetize the strips continually through the duration of the stroke, so they carry a record of the total amount of electricity. The third device, the "magnetic

BIOLOGY—PHYSICS

Plant Virus Demonstrated With Electron Microscope

VIRUS diseases of plants, like tobacco mosaic, that produce colorless patches in the leaves, do so by direct attack upon the green chlorophyll particles. This has been demonstrated in photographs made with the electron microscope at the Siemens-Halske laboratory in Berlin by Drs. G. A. Kausche and H. Ruska.

The pictures, at 19,000 diameters, show the characteristic rod-shaped giant molecules of the virus in intimate contact with chlorophyll granules. These molecules are not visible in electron pictures made of preparations from healthy leaves.

Science News Letter, July 20, 1940

Droning airplanes spoiled so many movie "takes" that Hollywood producers now send a *balloon barrage* aloft to show planes where sound stages are.