

GENERAL SCIENCE

Dangers in World Situation Stimulate Effort in Science

Duty of Providing Continuity Essential for Progress Rests on Few Remaining Scientists Working in Freedom

SCIENCE in a world at war responds by stimulated and increased activity, declares Dr. Vannevar Bush, president of the Carnegie Institution of Washington, in the Institution's annual report.

The duty of carrying on and providing the continuity essential for the best progress, he says, rests mainly on the few remaining scientists who can still continue in freedom to extend basic knowledge in a turbulent world.

"Fortunately," continues Dr. Bush, "the emergency has brought a quickened pace and a new intensity in scientific activities throughout this country, even in fields which are remote from the preparedness program. When a nation is in danger, and this danger becomes fully appreciated by its people, slumbering loyalties are aroused, petty disagreements disappear, and simple patriotism regains its rightful place.

"A democracy may exhibit a confusing dissidence in times of peace, but the very freedom of expression which produces discord as each small group pursues its limited objectives acts powerfully to unite and stimulate when common self-interest becomes focused by a single clear threat. Mass thinking takes time to crystallize, and is accompanied always by disturbing impurities and contaminations, but the strength of the resulting product is very great.

"Science feels this influence early. The urge to do something for humanity, by improving its knowledge of its environment, is so allied to the urge to do something definite to protect one's country from aggression that all scientific effort responds to the stimulus. This is one of the reasons why fundamental scientific advance, and in fact basic intellectual accomplishment of many kinds, is often accelerated rather than retarded by national stress."

Science News Letter, December 21, 1940

Atomic Power Nearer

WHAT, in theory, might have proved a stumbling block in obtaining atomic power from the famous

Uranium 235 seems removed, according to the report of the Institution's department of terrestrial magnetism.

U-235, it is believed, may be a useful power source if it can be isolated in sufficient quantities. When hit by an atomic fragment called a neutron, the nucleus of an atom of this kind of uranium splits into two parts, with liberation of energy, and the emission of more neutrons. These, in turn, might split other nuclei, and so on, in a chain reaction.

During 1939, Dr. Emilio Segre, at the University of California, found an unknown substance of which half decayed in 2.3 days, and which was not the result of a fission, or splitting. If "the 2.3 day substance arose also from U-235," says the report, "enough neutrons might be consumed by this non-fission process

to prevent the propagation of a chain."

Dr. P. H. Abelson, of the Department of Terrestrial Magnetism, and his colleague, Dr. L. R. Hafstad, attempted to identify the mysterious substance, but could not do so. Recently, however, Dr. Abelson visited the University of California's laboratory at Berkeley. There, with Dr. E. McMillan's collaboration, he succeeded in showing that the 2.3 day process arises from element 93, of weight 239. This is one of the short-lived elements heavier than uranium, which do not ordinarily exist in nature. It in turn, originates from U-238, another form, or isotope, of uranium.

"Hence," this part of the report concludes, "the considerations regarding a possible chain-process using U-235 are clarified."

Science News Letter, December 21, 1940

Measuring Sun's Effect

A NEW way of measuring the sun's effect on the earth, in causing magnetic disturbances, has been inaugurated, despite the fact that war threatened to stop the flow of much valuable information from other countries.

States the report:

"Through joint studies with the U. S.



SPEEDING DEFENSE

Moving on a conveyor chain are thousands of potential horsepower to propel the wings of war. In this photograph, taken in a new paint shop of the Wright Aeronautical Corporation in Paterson, N. J., are shown cylinders as they are dipped in the vat of finishing enamel in a continuous process. The painted cylinder at the extreme right is being whirled to remove excess paint.