

California at Berkeley, has returned from an expedition to the Andes, after having spent a year and a half in South America, bringing back a collection of dried plants, photographs and picture films. He also represented the Committee on Inter-American Artistic and Intellectual Relations. In this connection he gave two hundred lectures throughout Chile, Peru, Colombia and Argentina and gave numerous showings of three moving picture films in color. At the request of the president of Chile, he selected a site and worked out plans for a national botanical garden and in Peru he reorganized the garden in Lima.

At a meeting of the Physical Society, London, on June 4, Professor F. C. Bartlett, F.R.S., gave the Thomas Young Oration on "Some Current Problems in Visual Functions and Visual Perception."

THE Anglo-Polish Committee, London, held on May 24 a meeting of commemoration of the four hundredth anniversary of the death of Copernicus at the Royal Institution, London.

To insure a continuous supply of scientifically trained personnel for war industries, a committee of the American Institute of Chemical Engineers, of which Dean Frank C. Whitmore, of the Pennsylvania State College, is chairman, has drawn up a plan, suggesting that all able-bodied men in college, scientific and engineering fields be inducted into the armed forces when they reach the age of eighteen years, but that the thirteen weeks of basic training be omitted and instead that the men be retained in college for further technical training. It is also suggested that the armed services select not over fifty per cent. of such students for active duty, reserving the remaining

fifty per cent. to complete their training and enter war industries. At the present time there is no provision for recruiting for war industry. This plan is designed to strengthen the home front as well as the battle front, and to provide the men on the battle front with adequate supplies of essential equipment.

For the first time in the history of the Evening Division of the New York University College of Engineering a summer program of degree courses in nearly all departments of engineering will be offered, beginning on July 7. The program was formulated as the result of a survey made in the evening division earlier this year, which indicated that there is a general desire among the students to accelerate their degree training. The majority of the students of the Evening Division are employed during the daytime, many of them with the engineering departments of vital war industries for whom the study of engineering in the evening is an actual adjunct to their positions.

THE Board of Estimate of New York City has agreed to the proposal for post-war construction at Coney Island of a large oceanarium, or aquarium, replacing the abandoned aquarium in Battery Park. Reversing its action of May 6, the board, by a vote of 10 to 5, approved a capital budget amendment providing \$42,000 for preparation of plans for the project. The amendment must now be approved by the City Council, where its passage is considered certain, and then the Board of Estimate must give final authorization for the expenditure of the funds. To the \$42,000 to be provided by the city, the New York Zoological Society will add \$20,000, so that \$62,000 will be available for planning the project, which is expected to cost \$1,502,000.

## DISCUSSION

### THE MOBILIZATION OF SCIENCE

THE Kilgore bill (S. 702) amply illustrates the old adage that the road to hell may be paved with good intentions; for while professing beneficent aims toward scientists and technologists, it would in effect turn them over to the power of partisan politics, besides hampering or emasculating the drive of individual effort. According to Dr. Harold G. Moulton, of the Brookings Institution, the government had in its employ in 1939 more than 40,000 scientists, and in wartime a very much larger number.<sup>1</sup> Furthermore, there is no telling how great this number would become if we include all those to be classified as "scientists and technologists" by the false and distorted meanings proposed for these terms in the Kilgore bill, which states (Sec. 2 (b)) (*italics mine*):

"Scientific and technical personnel" shall include all persons, excepting physicians and dentists, who *have completed any* course of study in *any* college or university in *any* branch of science or its practical application or who have had not less than an aggregate of six months' training or employment in *any* scientific or technical vocation.

After one semester, college freshmen would become "scientists" whether they passed or not, and any worker in a chemical factory, for example, would become a "technologist" in six months, irrespective of his competence. I must recall here a question posed by Lincoln in his debates with Douglas. Lincoln said: "If you call a dog's tail a leg, how many legs has a dog?" And when many in the audience answered "Five," Lincoln replied: "No, only four. Calling a dog's tail a leg does not make it a leg." This falsification of the meanings of the words "scientist" and

<sup>1</sup> SCIENCE, 96: 524, 1942.

"technologist" would not increase the number of *real* scientists and technologists, but it would classify with them enormous numbers of incompetents and great numbers of members of many labor unions, whose united votes would drown out real scientific opinion. I query if this is an object of the bill.

There seems to be considerable misunderstanding as to the extent to which scientists are "mobilized." *The New York Times* editorial which is printed in *SCIENCE* for May 28 states: "Despite assertions to the contrary, scientists and technologists are not fully mobilized"; and in the issue of June 4, L. C. Dunn points "to the thousands of biologists of all kinds, of geologists, mathematicians and other scientists whose work has no immediate relation to the war; and to the many laboratories which are operating as usual without reference to either the war or the government." It is true that many scientists are carrying on the control of food and water supplies and the numerous manufacturing operations by which are produced most of the necessities for the civilian population as well as for the armed forces, and also training and teaching more chemists, engineers and other scientists and technologists—but all this is *important* to the conduct of the war, even if it has no *immediate* relation.

Furthermore, the word "mobilized" is a weasel word. Competent scientists and technologists are listed in the membership lists of hundreds of scientific and technical societies and in professional directories, and have also been listed by the National Roster of Scientific and Specialized Personnel. I have yet to hear of cases where scientists have refused to answer a government call; even though many of them probably never will be called, they are all ready to serve, if and when their services are called for. Just as only a few of those "mobilized" in our armed forces are on the actual firing line at any moment, so too many scientists must abide finding their proper and wanted call to the war effort. As Milton wrote: "They also serve, who only stand and wait." And in the meanwhile, they keep the home fires burning. Any attempt to supersede the thousands of actively operating scientific and technological agencies by a dominant group of appointees would be disastrous. And of the seven "top" appointees, only two must be "scientists and technologists" in the falsified meaning of these words.

Human nature and politics being what they are, nepotism and favoritism are not impossible in appointive positions, and government "brass hats" do not always recognize real merit and advanced ideas, as General "Billy" Mitchell and General de Gaulle found out. With the intense competition existing not only in individual businesses but also between whole industries, the urge to develop and perfect new meth-

ods and materials and products has led to outstanding advances. Our government scientists do splendid work within their limitations and render great public service; but consider the great array of new products, medicines and machinery (electric iceboxes, autos, vacuum sweepers, vitamins, improved lighting and transportation, etc.) which have been brought to the public at great savings in cost by industrial laboratories. We have Nylon to replace silk and quite a number of "synthetic rubbers"; radios; substitutes for many raw materials cut off by the war; magnesium and aluminum at low cost, etc., etc. According to *Mining and Metallurgy* (April, 1943), under the best conditions only about 5 per cent. of the total development cost of most products is claimed by laboratory research and patent prosecution—the balance goes into pilot-plant research, experimental design and construction and in getting the process into commercial operation. Following Langley's unsuccessful attempt to fly his apparatus, financed by Congress, nothing was done of account until two enthusiastic bicycle mechanics, the Wright Brothers, built and flew their own machine, and established the airplane industry.

Despite the good intentions behind those who framed and support the Kilgore bill, its results will be evil. Neither science nor technology, nor scientists nor technologists will thrive under regimentation. Far from being a "Magna Charta of Science," as Thurman Arnold called it, it might well become a tangle of chains to enslave science and industry. We must guard against unwise concentration of power in the hands of appointees and sub-appointees, and its possible and even probable misuse or abuse, with results that can now be seen in Germany, Japan and Italy.

JEROME ALEXANDER

#### BIOLOGY AND THE KILGORE BILL

PROFESSOR L. C. DUNN in an article<sup>1</sup> entitled "The Opposition to the Kilgore Bill" takes Dr. Gustav Egloff severely to task for certain of his recent statements concerning the bill, one of which was that "over 95 per cent. of our scientific and technical manpower and facilities are now highly organized and coordinated to the single end of advancing the war effort." Professor Dunn asserts that this statement is certainly not true and goes on to say that "one has only to point to the thousands of biologists of all kinds, of geologists, mathematicians and other scientists whose work has no immediate relation to the war. . . ."

To support his contention, Professor Dunn quotes from an article by Professor J. S. Nicholas, "The War Problem of Manpower in Biology and Agriculture," commenting thereon as follows: [Professor

<sup>1</sup> *SCIENCE*, 97: 510-11, 1943.