has carried on a number of oxygen determinations, particularly during the colder months.

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THE VITALITY OF BURIED SEEDS

Two long-term seed tests have been started in the United States, and are still in progress. The first was started by Dr. W. J. Beal at the Michigan Agricultural College. In this test, one half of the kinds germinated after forty years. The other was begun by the Seed Laboratory, Bureau of Plant Industry, U. S. Department of Agriculture, in 1902 at Arlington Farm, Virginia. At the end of twenty years, fifty-one of the 107 kinds planted were viable. Other sets of seeds in both tests remain buried and will be taken up and germinated at intervals. These two tests have been particularly suggestive with respect to revegetation and crop rotation in relation to weed control.

It now seems desirable to put down a more comprehensive long-time series of tests to determine the effect of typical soil and climatic conditions on the length of time seeds will remain alive when embedded in the soil. Such a test is now being planned by the Seed Laboratory, Bureau of Plant Industry, U. S. Department of Agriculture. The success of the project will require the cooperation of many interested organizations and individuals. Suggestions as to characteristic areas with reference to both soil and climate will be welcomed as well as suggestions as to the kinds of seeds of particular interest in these typical localities. It is expected that the seeds used will be of the crop of 1931, and that they will be placed in the ground during the fall of that year.

E. BROWN

SPECIAL CORRESPONDENCE

RESEARCH AT THE MELLON INSTITUTE DURING 1929–30

SINCE Mellon Institute was established in Pittsburgh nineteen years ago, about thirty-five hundred companies have benefited directly, either as individuals or as members of industrial associations, by the work carried out under the institution's industrial fellowship system. Robert Kennedy Duncan, the originator of this procedure, envisioned as its goal ideal industry, which would "give to all broader opportunities for purposeful lives." The double function of the institute as a technical experiment station and as a training school for industrial scientists is manifested by the successful products and processes worked out under its auspices and by the regiment of earnest researchers who have here gained knowledge and experience that they are now applying in wider fields.

In his seventeenth annual report to the institute's board of trustees, just issued, Director Weidlein has summarized the progress during the fiscal year ended February 28, 1930. A quantitative measure of the activities is afforded by the funds contributed by the industries in this period for the support of research, which reached the sum of $929,109.02, showing an increase of 16 per cent. over the preceding year. At the close of the year, sixty-one problems were under investigation, twenty-one by multiple industrial fellowships and forty by individual industrial fellowships. Eight studies are being supported by industrial associations. Five additional fellowships will begin work during the spring. One hundred and forty-three industrial fellows and fellowship assistants are carrying on the experimental work. During the calendar year 1929, publications by members of the institute included seven bulletins, fifty research reports and fifty-nine other papers. Sixteen United States patents were issued to industrial fellows.

The institute expends its income not only in conducting research for the industries and in the extension of its library and experimental facilities, but also in sustaining its department of research in pure chemistry and in supporting certain investigations of general importance to public welfare, such as, for example, the comprehensive study of air pollution now in progress.[1] The fellowship on pure research, maintained since 1915, was perpetuated in 1927 as a separate department. In this way the institute is giving constantly increasing attention to the encouragement of research on fundamental chemical problems. This attitude is the result of altruistic motives and of the realization that such studies are necessary as a background and stimulus for industrial research. Since this department was established, it has published nineteen papers on various subjects in pure organic chemistry. Most recently its work has been on the acidic carbohydrates occurring in plants.

Of the sixty-one fellowships now active, twenty-nine, approximately half, have been in operation for five years or more. Fifteen have completed more than ten years of work. These facts bear witness to the growing realization by industrialists that long-time, fundamental research is profitable.

Information concerning the subject-matter and progress of many of the fellowships is not releasable. The following developments during the year are

[1] On the institute's air-pollution investigational program, see L. W. Bass, SCIENCE, 70: 186, August 23, 1929.

among those of which the institute is privileged to speak. The Portland cement fellowship has carried on a cooperative study of bricklaying in the course of which 350 experimental walls and two small experimental houses have been built; the project is being conducted along broad but thoroughly practical lines with the advisory help of a group of brick manufacturers, construction engineers, architects and brickmasons. A second new breakfast food has been developed by the food varieties fellowship, and the work on carbonated beverages has resulted in valuable contributions to the technology of extract manufacture in this industry. The studies on cooking utensils have shown that corrosion during cooking operations is insignificant in degree and does not contribute in any way to food poisoning or other diseases. The investigation of sleep has been one of the outstandingly productive projects of the institute. A new high-temperature insulating material has been worked out by the fellowship on heat insulation, and the contributions of the vitrified sewer-pipe fellowship have led to important economies in fuel consumption in this industry. The laundry and petroleum production fellowships have been partly transferred to the donors' organizations, certain of the fundamental problems remaining in the institute. Comprehensive studies on iodine are now in progress.[2] The process for the chrome-plating of aluminum worked out in the institute is now being applied commercially on a large scale. The organic synthesis fellowship has been remarkably successful in developing new, commercially valuable compounds for a wide variety of industrial uses. The plastic vinylite resin is one of the latest additions to this large list of products from hydrocarbon gases.

Ten fellowships—those on surgical supplies, felt hat manufacture, aluminum plating of chromium, licorice, beds, gum, industrial alcohol and stearic acid, and two fellowships on cast iron—completed their investigational programs during the fiscal year. Nine new fellowships became active: rosin oil, garment, hemp paper, steel treatment, can, nicotine, wood by-products, fatty acid uses and oxygen. The institution has been obliged, because of lack of space, to postpone the acceptance of several important problems.

The 143 men composing the industrial fellowship personnel at the end of the fiscal year hold degrees from seventy-eight universities and colleges.[3] Of the 109 men with the rank of senior industrial fellow or industrial fellow, 46 have the Ph.D. or Sc.D. degree, and 22 others have a master's or advanced engineering degree.

Since 1925 the institute has sponsored each year a series of radio talks on late progress in science and technology, broadcast from the University of Pittsburgh Studio of Station KDKA. In a similar manner the importance of science to the nation's welfare is kept before the public by means of public addresses and newspaper and magazine articles prepared by members of the institute.[4]

During the nineteen years since the establishment of Mellon Institute at Pittsburgh, the amount of money appropriated to it by companies and associations was $6,749,273. The total contributions to scientific literature comprise 15 books; 96 bulletins; 528 research reports; 849 other articles, and 407 United States patents.

LAWRENCE W. BASS,
Executive Assistant

MELLON INSTITUTE OF
INDUSTRIAL RESEARCH

[2] On the institute's researches on iodine, see L. W. Bass, SCIENCE, 71: 37, January 10, 1930.

[3] On the institutional sources of industrial research men, see W. A. Hamor, SCIENCE, 51: 625, 1920; 64: 380, 1926.

[4] For a full account of the educational activities of Mellon Institute, see W. A. Hamor and L. W. Bass, *J. Chem. Education*, 7: 81, 1930.

QUOTATIONS

A NEW HEALTH INSTITUTE

BLANKETED by the debates over the tariff, the treaty and the Supreme Court, a bill has slipped through Congress, almost unnoticed, which will have a place in governmental history. It sets up a National Institute of Health. This has long been the dream of Senator Ransdell, of Louisiana. In realizing it he has had the support of the American Medical Association, the American Public Health Association and various scientific bodies. His bill has the endorsement of Secretary Mellon and will doubtless be signed by President Hoover, who has always taken a special interest in scientific research and in government agencies to further it.

Under the Ransdell bill the Hygienic Laboratory is made the nucleus of the new establishment, which will be devoted to the purpose of inquiring into the cause, prevention and cure of diseases. The Treasury Department is specifically authorized to accept gifts from private sources for the furtherance of these investigations, much as the Library of Congress was authorized some years ago to accept donations in its field. A system of fellowships in scientific research has been devised in order to secure the proper per-