publications as these, if duplicated by federal journals on heredity or on phytopathology or on what you will, would lose not only their generally shaky financial stability, but would also lose one of their main sources of research publications. It seems doubtful that science, the government or society has much to gain from competition with these useful publications. Any plan for federal publication of subject journals, if it is to improve dissemination of knowledge, must be designed to supplement rather than to supplant these valuable self-supporting journals.

A considerable number of papers reporting results of research can not now find space in all the existing channels combined. These contributions are now published only by deposit in libraries, which then make them available in microfilm or photostat copies. This indicates that such subject journals as Dr. Seidell recommends might be added to the channels of publication, where they do not duplicate other existing channels, with very profitable results.

Regardless of the form of organization of publications as physical objects, the key to giving publications power is the organization of the information contained in the articles or books.

There is a wide variety of techniques for this purpose. In addition to general indexes, abstract journals, and the like, there are specialized tools such as the Index-Catalogue of the Surgeon General's Library, or the Plant Science Catalog of the Department Library, the Bibliography of American Economic Entomology, the Bibliography of Agriculture, the Experiment Station Record, the Index-Catalogue of Medical and Veterinary Zoology and our many special subject bibliographies, which attempt to organize knowledge for use.

Effective use of such tools requires that the literature they list be made available to all scientists throughout the world. To this end, the Department Library, with the aid of Mr. Watson Davis, of the American Documentation Institute, and Dr. Atherton Seidell, has developed its microfilm service, which now provides some twelve thousand articles a year to workers at a distance. In one recent month our Bibliofilm Service supplied film copies of more than sixty thousand pages.

The need for better guides to the content of the world's literature is clearly shown by the classic case of Mendel's work, which was lost to science despite the fact that it was actually published, because it was not published in one of the journals in general circulation, and it was not brought out in a generally distributed index.

Existing indexing and abstracting journals in our fields regularly cover only a small fraction of the 11,500 periodical and serial publications regularly received in the Department Library, and we do not receive all the periodicals in our field of work. Thus a very large percentage of knowledge that is created in laboratory and field all over the world is not readily available to those who should have it. Furthermore, there is a considerable amount of duplication among indexes. It seems to me that serious consideration should be given to the problem of organizing the *content of publications* so that all pertinent knowledge, no matter how written, where published or in what language it is printed, may be promptly and readily available to all men working in any scientific endeavor.

I hope that we may work together with scientists, publishing agencies and librarians of other countries to effect this end after the war is won.

OBITUARY

ALBERT LLOYD BARROWS

1883–1942

FOR more than twenty years the National Research Council has been largely the lengthened shadow of Albert Lloyd Barrows, who was its executive secretary. His death makes it possible to say this. He would have denied the statement vigorously. Over many years' association I have never heard him say that *he* had done a particular task. The task was done only when some one else took responsibility, applied a signature, called a meeting or set the terms of a policy. He would have thought that he had failed if his views were put forward by himself. He was engaged in an associative enterprise. It was his self-imposed task to find the institution or the man who would establish a new current or pool of interest or drive forward with new energy toward an agreed objective.

He had an unlimited faith in that great American institution which we call the huddle: the habit of agreeing, after debate, on a decision that all could sustain. How often we, his associates over many years, have said, "More than any one else, Barrows is the NRC"! Not the least part of him was his devotion to high scientific standards. He was elected to Phi Beta Kappa and Sigma Xi. He had a well-trained and well-informed mind inspired by the ideal of national service and duty.

Thousands will bear witness to-day to these conclusions. He never thought of himself, served himself or spared himself. To the representatives of more than seventy affiliated organizations and to successive

chairmen of the council and of its divisions, he was an indispensable strength. He knew what the scientific men of America could do.

An executive who shares responsibility for an organization is always looking ahead. There is little enough time in which to reflect leisurely upon or take satisfaction in accomplishment that meets with general approval. His day is lived mostly in to-morrow. One remembers the almost superhuman drive which Barrows put into the things that to-morrow had to put forth. This gave his work the relentless quality of time itself. Time, organization, men and officers, with Barrows added in, became one inexorable continuum. A force reached out from his desk to every part of the country and into every institution where creative work was done in science. He would repudiate my words if he could hear them. He thought of himself only as the agent of an idea—how organization and consultation could promote progress in scientific research. I remember how greatly Oscar Firkins's definition of an institution pleased him: "Whenever man finds a useful idea he creates an institution, systematically to remind himself of the idea."

He could scarcely be brought to talk about his family and he did so in a rare and shy way that was endearing. Only once did he seem to speak spontaneously on that theme—when mention was made of his son's part in the present war as a Lieutenant on a submarine in the Pacific. And what a part! To be told when the war becomes history. His enthusiasm reflected perhaps his own disappointment when our armed preparations began that it seemed best to remain at his post rather than resume active military work at fifty-nine, if indeed he were allowed to do so. For thirty years he had trained for it as a Lieutenant Colonel in the Infantry Reserve. (He had been Captain of a Machine Gun Battery in France, 1917–1919, and won the Croix de Guerre by dangerous reconnaissance at Audenarde in the final push in Flanders.) He loved the techniques of modern military tactics and the possibilities of their efficient use under the chain of unified military command.

He was a born organizer for defined purposes. The purpose was uppermost. He had an essential instinct for loftiness of purpose and was visibly inspired by it. He had an unquenchable public spirit. If paper work occasionally dragged him down, a turn on his motorcycle or a tour of duty in the reserve officers' corps or a new plan of action and new men and forces in the National Research Council would restore him quickly to his natural rate of putting organizational power back of an agreed plan or idea.

It was most fitting that the memorial services held on November 11, 1942, should have consisted largely of the reading of a few of his favorite poems. There was a passion in his work for the Council and in his spirit that only certain emotional forms of poetry could express. Many who knew only his professional drive and his formal manner missed an integrating and profoundly sustaining quality, his capacity for feeling and for the beautiful expression of it. Now that we can appraise the whole of his life we can choose our viaticum with a better sense of appropriateness in a few lines from Kipling's tribute to the devoted teachers of his school:

> For their work continueth,
> And their work continueth,
> Broad and deep continueth,
> Great beyond their knowing.

ISAIAH BOWMAN

RECENT DEATHS

DR. WILLIAM ALBERT SETCHELL, professor of botany, emeritus, of the University of California at Berkeley, died on April 5, 1943, in his seventy-ninth year.

DR. MARY JANE RATHBUN, honorary associate in zoology of the U. S. National Museum, died on April 4 at the age of eighty-two years.

DR. GARFIELD POWELL, assistant professor of chemistry at Columbia University and an assistant to the dean of Columbia College, has died. He was forty-nine years old.

THE death on March 30 is announced of William Oscar Walker, for the last twenty-five years professor of chemistry at McMaster University, Canada.

SCIENTIFIC EVENTS

TUFTS COLLEGE CHAPTER OF THE SOCIETY OF THE SIGMA XI

THE Tufts College Chapter of the Society of the Sigma Xi was formally installed by the national officers of the society on April 2. The day's activities began with an academic procession and convocation, attended by the Tufts College faculty and student body as well as by the national officers and delegates from chapters in many other institutions. At the convocation exercises Dr. Leonard Carmichael, president of the college and member of Sigma Xi, gave a brief history of scientific research at the college. Dr. George Baitsell, of Yale University, national secretary; Dr. Harlow Shapley, of Harvard University, national president, and Dr. Edward Ellery, of Union College, past national president, were introduced and presented interesting accounts of the growth and aims of the Society of the Sigma Xi. A luncheon for the