Gambling on Science

Congress in 1938, desperate to find ways to dispose of surplus crops and end a chronic farm depression, authorized the U.S. Department of Agriculture to build and staff four regional research laboratories. Their purpose would be to find new chemical and technical uses and markets for farm commodities, particularly those, like wheat, cotton, milk, and potatoes, with "regular or seasonal surpluses."

Authorization for the laboratories formed a relatively small part of the omnibus 1938 legislation—the Agricultural Adjustment Act of 1938. The law was enthusiastically described by Secretary of Agriculture Henry A. Wallace as "a new charter of economic freedom for farmers." It provided for marketing controls, acreage allotments, soil conservation, and loans and crop insurance. One detailed history of the legislation, under the subhead of "other provisions" of the 1938 Act, devotes only half a sentence to the creation of the regional research laboratories.

The laboratories might not have been authorized at all were it not for the influence of the chemurgy movement. (The word means the development of new industrial products from organic raw materials, especially farm products, and the term was much in vogue in the 1930's.) In 1935, a group of scientists and industrialists formed a Farm Chemurgic Council, to be headed for many years by Wheeler McMillen, longtime editor of *Farm Journal*. The Council had the support of such influential Americans as Henry Ford, Irenee duPont, and Dr. Karl T. Compton, who made sure that their message reached Congress. That message was that, through research, practically unlimited opportunities existed for the creation of new products from farm commodities.

New scientific and engineering tools promised to change the direction of agriculture.

McMillen in particular felt strongly that chemurgy's time had come. He wrote: "During the 1800's, organic chemistry began to be important, and Mendel's law, the basic principles of plant genetics, became known. The early part of this century saw the rising application of power to agriculture. These three relatively recent developments in chemistry, genetics, and engineering have made chemurgy possible. They have provided a wholly new set of tools for moving agriculture forward in new directions."

Three of the first three directors of the regional laboratories were (left to right) D. F. J. Lynch, Southern; T. L. Swenson, Western, and O. L. May, Northern.

Congress was also encouraged by the excellent track record of research of the U.S. Department of Agriculture. With limited funds, its scientists had made many significant scientific discoveries since USDA's creation during the Civil War, and several small research facilities were proving their value in developing new products from farm commodities.

The most potent stimulus for Congressional action, however, were the crop surpluses themselves. Overproduction had been a vexing problem since World War I—a problem worsened by the loss of foreign markets for U.S. crops in the early stages of World War II. In the 1920's came inflation, followed by deflation and a crash in commodity prices. Also contributing to surpluses and low farm income was the growing productivity of the American farmer. Mechanization and better crop varieties year after year increased farm output per acre, per hour of labor, and per animal unit.

At 32, the youngest of the first lab directors was Percy A. Wells, who headed the ERRC until 1969. Wells attended the 50th anniversary ceremonies at the laboratory.

All these reasons—the crop surpluses, USDA's proven record in research, and the influence of the farm chemurgy movement—led Congress to seek help in reducing surpluses from scientists and technologists. The original proposal for a research laboratory came from Sen. Theodore G. Bilbo of Mississippi, whose primary concern was the cotton surplus. He negotiated with other senators with different commodity interests, and they agreed to authorize laboratories to explore new uses for specific crops in each of four regions. Briefly, that is how the research centers began.

After passage of the 1938 Act, Congress directed USDA to conduct a survey to determine the most promising avenues for research and to recommend locations for each of the four laboratories. Results of that survey, which was carried out by the four scientists selected to head the labs, were published in 1939 in a 429-page report (Senate Document No. 65, 1st session, 76th Congress). It is a remarkable report, not only for its lucidity and breadth, but also because it was prepared in less than 9 months. Members of the staff reviewed 10,000 research projects and visited 1,300 institutions with an interest in chemurgical research. They included 200 colleges and universities, State experiment stations, farm organizations and trade associations, and no fewer than 1,100 industrial research laboratories. From this multitude of sources, the staff was able to put together a comprehensive picture of current research in agricultural commodities. More importantly, they were able to present proposals for additional research on practically every type of crop in the United States, from corn and wheat to olives and papayas.

The scientists also visited 80 separate sites proposed for the four laboratories, considering such practical matters as accessibility to transportation, housing and living conditions, and availability of adequate utility services. They also looked at proximity to agricultural processing industries. The staff recommendations

were turned over to the USDA administration, and the four sites were selected. They were: the Philadelphia area for the eastern lab; Peoria, Illinois, for the northern lab; New Orleans for the southern lab; and the San Francisco Bay Area for the western lab.

The commodities to receive initial attention by the four research centers were designated as follows: southern area—cotton, sweetpotatoes, and peanuts; northern area—corn, wheat, and agricultural waste products; eastern area—apples, potatoes, milk products, vegetables, and tobacco; and the western area—fruits and vegetables, wheat, potatoes, and alfalfa. The authors of the survey report said they expected the list of commodities to grow in time, a prediction that came true almost as soon as the laboratories opened their doors.

Congress appropriated $4 million to build and equip the laboratories, the funds to be divided equally among the four. Sites were secured quickly. In the East, a former horse farm was purchased in Wyndmoor, just outside Philadelphia. In New Orleans, the site was a swampy part of City Park, near Bayou St. John. It was given to USDA by the municipal government. The lab at Peoria received for the price of $1 a tract of land in a residential area. The donor was Bradley Polytechnic Institute, later to become Bradley University. Finally, the western lab obtained its real estate in Albany, California, next door to Berkeley. Part of the land was a gift of the University of California.

The design of the newly constructed Western laboratory in 1940 was practically identical in design to those of the other three. The Western lab today (below).

Building designs were the work of USDA architects and were practically identical for all four laboratories. Each eventually was to be a U-shaped, four-story structure, with certain areas left wide open enough to construct industrial pilot plants. These were among the first laboratories in the country built solely for research, and other institutions, both public and private, were to copy parts of their design in the years that followed.

Contracts were let quickly, and by 1940, all four research facilities were under construction. By the end of 1940 or early 1941, the buildings had been completed and equipped, the first scientists employed, and research begun.

In today's age of public relations hype, official enthusiasm for the new laboratories in 1940 seems remarkably restrained.

Dr. Percy A. Wells, first head of the Wyndmoor lab and the only one of the initial quartet of directors to live to see his laboratory's 50th anniversary, admits that his new facility was not without flaws. "Within an hour," he recalls, "employees discovered that all the restrooms lacked toilet paper holders. This omission was brought forcibly to my attention. After a long and somewhat ludicrous telephone conversation, I finally convinced the purchasing people in Washington that there wasn't time to advertise and seek bids from contractors. Eventually I outreasoned or outshouted them. Within 48 hours, we had our toilet paper holders and our employees settled down to work."

For administrative purposes, the four laboratories formed part of a Bureau of Agricultural Chemistry and Engineering, with an assistant chief of the Bureau as their immediate supervisor. He remained in Washington, D.C.

In today's age of public relations hype, official enthusiasm for the new laboratories seems remarkably restrained. An article in *Farmers in a Changing World*, the 1940 Yearbook of Agriculture, notes in a single brief reference to the four laboratories: "The market for farm products is to be held—and expanded wherever possible—by aggressive use of...science and technology...That, at least, is the purpose [of the labs]. The desired result may not be attainable, but the game is not to be lost by default, at any rate."

Funding the Labs

The original 1939 appropriation of about $4 million for the four regional centers stayed approximately level until after World War II, when funding slowly began to climb. In 1950, the four labs shared funds of $8.3 million; in 1960, $16 million; in 1965, $29.9 million; in 1975, $41.4 million; in 1980, $60 million, and in 1991, about $64.7 million. Each individual lab's percentage share of the funds varied from year to year, depending on the cost of its projects at any given time. By all estimates, the research has paid for itself many times over.

Also restrained was Secretary Wallace, a scientist himself, who spoke when laying the cornerstone of the Western laboratory in 1939. He cautioned that "results from the research program are likely to be slow in coming. We must think, not in terms of weeks or months, but of years and decades." He added, however, that the research program "does have constructive possibilities."

More enthusiastic (and a better forecaster, as it turned out) was the first director of the laboratory at New Orleans, Daniel F.J. Lynch, who in 1939 told a scientific group: "One important line of attack (on the surplus problem) is by means of research...a comprehensive, concerted, closely knit program of research...carried on with the specific aim of finding new and extended uses for farm commodities. We believe that research of this nature will pay (not immediately of course—that would be too much to hope for) but more and more with the passing of each year. We believe, moreover, that such a program is long overdue."