marketed. The station must continue to devote its efforts to all these methods. The increasing of export trade and the buying power of the public at large are of course vital factors in this problem, but they must be dealt with by other agencies.

Enlarged research directed toward discovering new uses for farm products and by-products is the purpose for which the liberally financed regional laboratories provided for in the Agricultural Adjustment Act of 1938 will be established. The Federal Soybean Laboratory already located at this station is equipped to make notable contributions in this field, as will other laboratories in other fields and in other locations. The public must be patient, however, for the results of such research are slow in materializing, and it may be years before these efforts will result in substantial outlets for our major agricultural commodities. It is unfortunate perhaps that this is not the kind of quick-acting farm relief that stimulates public enthusiasm and sustained support.

Discovering Facts of Value to Homemakers

Research in the Department of Home Economics at Illinois was started early in its history. Expansion was made possible in 1925 with the passage of the Purnell Act. Recent investigations have been concerned with the vitamin value of certain foods, and with nutritional problems resulting from a lack of certain of these elements. The combined extension-station project for the development of home accounting and the determining of the levels of living enjoyed by farm families has attracted wide attention. A study just completed has resulted in the identification of 17 varieties of soybeans having superior qualities for table use.

Studies in rural architecture, in the electrification of the farm home, and in home equipment have not only stimulated the interest of farm people in the possibilities of adding attractiveness and convenience to their farm homes, but also have demonstrated with what economy this can be done.

Conclusion

In this brief sketch I have had to omit mention of lines of work and accomplishments just as comprehensive, just as significant, just as well done as those that I have cited for illustrative purposes. When I remind you that the last annual report of the station carried results from some 300 organized projects, you can see why only a bare outline can be given at a time like this.

I have not mentioned the names of my colleagues who have helped guide this work nor of the men and women who have produced these results. I can only say that the opportunity accorded me to help mold the situations in which members of this great research staff could do their work has been an honor and a privilege. Through the years, the staff has increased in experience and in academic maturity. There has developed a closer integration of departments and divisions for concerted attack on different phases of complicated problems. In late years a whole new group of workers has been organized into what is now known as the Department of Agricultural Economics.

I have said nothing of the excellent working relations established between farm people and the Experiment Station through the Extension Service, which is organized to carry the results of the station's research directly to rural people. I have said nothing of the vision of the state and national legislative bodies that have provided the funds making the work of this station possible.

I have refrained from anticipating the future of this organization. I have done this because I am confident that what the future is to be may safely be left to those whose responsibility it will be to guide its destinies. But of one thing we may be sure—with the growing complexities of agriculture the need for research will increase rather than diminish in the years ahead.

EARLY DAYS OF THE ILLINOIS AGRICULTURAL EXPERIMENT STATION[1]

By Dr. EUGENE DAVENPORT
DEAN EMERITUS OF THE COLLEGE OF AGRICULTURE

It is my privilege to speak of the early days of the Illinois Agricultural Experiment Station; others will speak of its achievements.

When I first knew the station it had been in existence but seven years and was operating on a budget of $15,000, all federal money. It had bought out the College of Agriculture; that is to say, all the agricultural equipment of the university belonged to the station, instruction had been abandoned except for a "winter school," and the main farm was rented. Last year's budget for research in agriculture amounted to something over a half million dollars alongside a third

[1] Abstract of an address by Dr. Eugene Davenport, dean emeritus, College of Agriculture, University of Illinois, at the fiftieth anniversary of the Illinois Agricultural Experiment Station, March 25, 1938.

of a million for instruction, not to mention the extension service.

How did this feeble thing attain such vast proportions in half a century? Not so long indeed for, to be exact, it is not quite thirty-seven years since the State of Illinois determined to enlarge its facilities for research into the sciences that underlie a successful agriculture.

In a marked degree the station drew upon two sources of great strength. The first was the spirit of research that characterized the personnel of the young and struggling state university. The second was the confidence of farmers and of the legislature, yes, of governors, in what science could do for farming and for a state like Illinois through the development of its agriculture.

Both of these sources of strength will bear a word of detail. First of all was that "grand old man" of blessed memory, Dr. T. J. Burrill. Prophet-like, he could vision a new earth through science put to work. I can see him yet at our first meeting forty-three years ago. There he stood in the fields speaking of some things that might be done for agriculture and of what the doing of them might mean to the state. As his eye swept the horizon, his arm extended as beckoning a coming day. Almost reverently he exclaimed, "And this is Illinois."

A scientist by instinct and habit of thought, Dr. Burrill followed almost unblazed trails in the field of bacteriology. He began the study of fruit diseases and leaf blight in 1871, and in 1876 reported bacterial invasion as the cause of pear blight. In 1880 he reported his success in producing this disease artificially by inoculation. This was two years before Koch isolated the tubercle bacillus. He was truly a pioneer in pioneer times.

Then there was Professor Morrow, who, for many years, campaigned the state for a better agriculture. Horrified by the current assertion that the soils of Illinois were "so rich they would never wear out," he started on the Rothamsted plan what Dr. Hopkins so fittingly named "The Morrow Plots," whereby in time the land itself could be depended upon to refute the fallacy. This was two years before the passage of the Hatch Act; yet here was the true spirit of research, an appeal to facts rather than resort to argument.

The spirit of Burrill and Morrow was at work in the other colleges. There was Forbes, the entomologist, not only a source of strength in the early days of the station but a power in the state in attracting attention to the growing menace of insect ravages and the value of birds in their amelioration. Across the campus were Ricker and Talbot developing manual training into engineering. In chemistry were McMurtrie and Scovell and later Palmer and Parr, not to mention many others who saw in the Experiment Station the first opportunity for organized service in science.

Illinois did not, like some neighboring commonwealths, establish a state experiment station in advance of the Hatch Act. It was, nevertheless, sensitive to the spirit of research; and in this connection we must not forget that here was the first invasion of the prairie by the restless white man, bent on what he called "improvement."

So it was that as early as November, 1868, a committee of the trustees reported in favor of extensive plantings of forest trees for the production of material "at home" for "railroad ties, culverts, cars, roadways, buildings, fencing, vineyard stakes, hop poles, stanchions for coal banks, soft wood for berry boxes, crates and staves, hoop poles, carriage and wagon materials, agricultural implements and the multiform wants of the age." They certainly had a comprehensive view of the situation.

They also had in mind the planting of "wind belts" as a protection from the northern blasts, and at the March meeting following this report the board appropriated out of its slender funds the sum of $1,000 for "seeds and trees" in order to learn the species best suited to prairie conditions.

But we must not judge these early efforts by modern standards. Science was then still in its swaddling clothes. At that time the chemist was doing business with only a few more than half a hundred elements, all "absolutely indivisible," and I knew one teacher who still clung to the four old fundamentals: earth, air, fire and water. Nobody yet had even surmised the solution of the so-called "nitrogen mystery" and the tubercles on the roots of clover were considered a disease by the best botanists. The work of Mendel, the Austrian monk, was unknown in college circles. Galton was a name not yet heard, and Weismannism was twenty years in the future.

Yet Dr. Burrill was hard at work in bacteriology ten years before the tubercle bacillus had been isolated. In December, 1893, he published a report on orange rust of raspberries and blackberries, with an appendix entitled, "A New Factor in Economic Agriculture." In this appendix he comments on the most important single discovery in all the field of agriculture; namely, the solution of the so-called and long-discussed "nitrogen mystery." And he raises the question whether these nitrogen-gathering bacteria might be so modified as to live on the roots of the grass family. He conducted some preliminary experiments in that direction with slight suggestions of success in the case of corn but entirely negative as to oats.

These altogether inadequate allusions to the early experimental work of the university show how intensely alive to the problems of the farm as well as to the

new phases of science were these pioneers in agricultural research; and they make clear how necessary were additional funds if the possibilities that lay ahead were ever to be adequately realized.

ENTER THE FARMERS

At this point the farmers of the state undertook the task of providing additional funds. They were already perfectly organized for the purpose and withal somewhat experienced in the art and procedure of agricultural legislation, having previously secured the passage of two bills, one providing $150,000 for an agricultural building, the other increasing the funds of the college fourfold. To determine the character and scope of the new building a joint committee of farmers and trustees had paid a visit to the agricultural colleges of Wisconsin, Michigan, Canada, New York and Ohio, after which they filed a unanimous recommendation that the largest possible building be erected within the limits of the appropriation. By the time the building was done, the registration in agriculture had increased from six to eighty-seven, and at the dedication of the structure in 1901 it numbered 150. The farmer's efforts were being justified. With this experience behind it, the committee was in position to serve as a powerful ally of the station when it took up the cause before the legislature of 1901. This it did through the famous "Bill 315," known everywhere by its house number.

The bill was drawn in seven sections, one for each agricultural interest at that time represented by a definite organization. Section one made it the duty of the college to "maintain typical specimens representing the various market classes and the several pure breeds of livestock and to give instruction in stock judging and the most advanced and approved methods of livestock husbandry." It also made it the duty of the Experiment Station to "conduct feeding experiments intended to determine the most successful combination of stock foods . . . and to investigate livestock conditions both at home and abroad so far as they affect livestock values. . . ."

Section two provided for experiments on the production of corn; section three, for the study of the chemical and physical characters of the various soil types of the state. Section four related to orchard management, section five to the production of "wholesome milk," and through section six it was proposed to learn whether Illinois should undertake the production of sugar beets. (The last-mentioned matter was settled the first year and in the negative.)

The work under each section was to be carried on "along lines to be agreed upon by the Director of the Experiment Station and a committee of five" to be appointed by the association corresponding to the interest covered by the section. Section seven provided that these committees should serve without compensation except for actual traveling expenses. As the bill was drawn in its entirety by a committee of the associations represented, it was clear that public welfare, not individual profit, was the impelling motive.

The bill totaled $54,000 annually. Over a hundred thousand dollars for agricultural research in a single biennium! So far as I am aware, no such proposition had ever been presented to a state legislature. It must have looked to many like a leap in the dark. The only argument was the ability that science had shown in settling some of the problems that were plaguing the farmers and the certainty that if only one could be disposed of in the biennium it would more than repay the cost of the whole attempt.

No trickery was ever resorted to. The whole matter was put on the basis of public welfare and the ability of the university to conduct a kind of experiment that the farmer could not conduct for himself. The farmers did not hesitate to remind the legislators that they were paying their full share of the taxes. In the words of L. H. Kerrick, who had been in former legislatures: "We do not come asking favors. All we ask is your permission to put our hands into our pockets and take out some of our money with which to develop our business." And he did not hesitate to point out further that in a very large sense agriculture is a matter of intense public concern.

To everybody's credit it should be said that the farmers' bill never got in the way of the university interests. Besides, as legislators came to realize the power of science to solve the problems of agriculture, it was but a step to the realization that funds devoted to education and research in any line of public interest are an investment rather than an expenditure, contributing not only to the welfare of individuals but to the development of the state as well. Indeed, it is not too much to say that the larger view of the function of the university is in no small measure due to the labors of these farsighted farmers of the early days.

And now a word must be said for the governors of the time who, without exception, lent their sympathy and support to this new and strange sort of legislation. But this does not mean that these bills were "hammered through" by the executive's dictum. Quite the contrary, for in Illinois administration is administration and legislation is legislation—a fortunate distinction this for education as well as for good government, especially in these days of magnifying the executive.

ACADEMIC FREEDOM

Illinois has been so free from outside interference that she can hardly realize all that "academic freedom" means. She is one of fewer than a half dozen states in which the trustees are elected by the people, rather than appointed by the governor either with or without legislative approval.

"How can the best board be secured?" is a question often asked. But the "best board" is not the primary issue, which is the *source of authority*. When the board is elected by the people, its mandate is as direct and independent within the field of education as is that of the governor or the legislature in that of government. And that is right, for education is an extra-governmental enterprise.

When the board is appointed by the governor, that officer is, on the face of things, as much responsible for the proper operation of a university as for that of an asylum or a penitentiary. And he not seldom acts upon the theory that such operation is an executive matter rather than legislative. In one notable case the governor discharged four boards and appointed new ones, resulting in the peremptory discharge of four faculties and the appointment of a new personnel, all of which did not enhance the reputation of the state in academic circles.

Many institutions are the victims of "efficiency experts" who regard everything as "business" and would have "a business man" for university president. In these states everything is secondary to the machinery of government. In several states a finance board, of which the governor is chairman, can withhold any part or all of an appropriation after it has been made by the legislature. In some states the state purchasing agent is often the cause of delay and waste of funds because of his unfamiliarity with the great range of university needs.

All of which leads me to believe, after correspondence with our kind of institution in every state of the Union, that there are many facts and situations that have not yet entered into the calculations of the expert organizer; and that the best way to have a great institution of higher education and research is for the citizens to support it liberally, then let it grow naturally in ways that will meet the needs of the times and the locality.

SCIENTIFIC EVENTS

MEDICAL RESEARCH IN CANADA

A SURVEY of existing facilities for medical research in Canada is to be made under the auspices of the Associate Committee on Medical Research established in March last by the National Research Council, according to an announcement made at the close of the organization meeting of the committee held recently in Ottawa. Sir Frederick Banting, chairman of the committee, will personally conduct the survey, visiting each of the principal centers to learn at first hand of the work that is in progress. An assistant secretary is to be appointed to aid Sir Frederick in the conduct of the survey and to carry on the routine work of the committee.

Discussions on a number of proposed activities of the committee took place, but it was the consensus of opinion that beyond the consideration of matters of general policy it would not be possible to shape a definite program until the results of the survey were made available for study. Stress was laid on the advantages to be gained by the further coordination of work that is being carried on in the principal centers of medical research in Canada. It was felt that much of the benefit to be gained through the newly established committee would be in the stimulus it could give and the assistance it could render to existing institutions for medical research.

Proposals were put forward that the committee should plan to provide for scholarships in medical research and also to grant financial assistance for the conduct of research in universities and hospitals on approved projects. It was agreed, however, that owing to the limited funds available to the committee at the present time no action should be taken immediately on these matters.

In view of recent press statements suggesting that the Associate Committee on Medical Research would set up at this meeting a national scientific committee to investigate purported cancer cures throughout Canada this subject was raised for consideration. After the subject had been discussed at some length the committee agreed that the investigation of reputed cancer cures was not a matter on which the committee could take any action at the present time.

Those present at the meeting were: *Chairman,* Sir Frederick Banting, University of Toronto; *ex-officio members*—Major-General A. G. L. McNaughton, president, National Research Council, Ottawa; Dr. R. E. Wodehouse, deputy minister, Department of Pensions and National Health, Ottawa; Dr. T. H. Leggett, president, Canadian Medical Association, Ottawa; Dr. George S. Young, president, Royal College of Physicians and Surgeons of Canada, Toronto; Members—Dr. G. H. Ettinger, department of physiology and embryology, Faculty of Medicine, Queen's University, Kingston, Ont.; Dr. A. Grant Fleming, dean of the