PART II

The address of President W. E. Britton was presented at the opening session Tuesday morning, with Second Vice-President Summers in the chair, and was as follows:

THE OFFICIAL ENTOMOLOGIST AND THE FARMER

By W. E. BRITTON, *New Haven, Conn.*

It is, with hesitating steps that I attempt to follow the path, at first but a trail, blazed by the pioneers of American Economic Entomology, and later trodden by their followers, so illustrious—some of whom are no longer with us. That path is now a well-worn thoroughfare. Seemingly little grain can be left along its borders, so many careful workers have gleaned by the wayside.

In looking over the list of subjects treated in the addresses of former presidents of this Association, I find that almost every phase of Economic Entomology has been ably discussed, but conditions are ever changing, and it remains for me to call your attention to a few present aspects of the subject, and to leave with you a few somewhat disconnected thoughts regarding them.

My subject, "The Official Entomologist and the Farmer," needs perhaps a word of explanation. By "official entomologist" I mean such men as are employed by the various states and territories and by the Federal Government to study insects and their relations to man and his crops. It includes state entomologists, state nursery inspectors, commissioners in charge of suppressing certain important pests, experiment station entomologists, professors of entomology in agricultural and other colleges, and members of the working staff of the Bureau of Entomology at Washington. Certain museum curators also might well be included under the term. It may be assumed at the out-

ent at the demonstration, as guests of Mr. H. L. Frost, and after examining his office and extensive storehouse, containing all kinds of insecticide machinery, the demonstration was held. A high power gasoline sprayer was used, and the members had an opportunity to observe the solid stream system of spraying.

Several new devices, in the way of couplings, nozzles, etc., were also on exhibition.

All those present expressed much satisfaction in having had an opportunity to be present at the demonstration, and a vote of thanks was extended to Mr. Frost for his courtesy and hospitality.

set that the official entomologist is an economic entomologist, because men are not usually employed by nations, states, or even universities and colleges to investigate the purely scientific aspects of entomology. Such an official, therefore, is supposed to be in readiness to impart information at all times and places regarding insects and their injury, and how to suppress them.

For the purpose of this discussion we should not limit the term "farmer" to the man who tills the soil as his chief business, but should rather give it a broader interpretation and make it include the "gentleman farmer" and the resident of the village and city; in fact, anyone and everyone who can be helped by the official entomologist or who seeks his aid. In other words, the title might read, "The Official Entomologist and His Constituency."

What are the qualifications of a model official entomologist? For the first essentials we can probably do no better than to quote from Mr. F. M. Webster's excellent paper before this Association at the Baltimore meeting a year ago in regard to the requisites of an assistant.

"With all of us who have the management of men there comes a time when an emergency arises and someone must be detailed to a most difficult piece of investigation, where only the most resourceful, persevering and trustworthy are to be employed, and lucky is the man who gets the opportunity. Now if I were to be asked to indicate some of the most essential qualifications for such a man I should say, first, honesty, and, second, common sense."¹

Let us adopt these qualifications as being the two most important ones also for the official entomologist. Indeed, lacking them he can never be a real success in this or any other profession. The importance of training should not be overlooked, and right here let me say that many, perhaps most, of us have gone into our work and our positions with very scanty training. In fact, the great demand for workers during the past few years has necessitated the acceptance of many otherwise excellent men who are not sufficiently trained in entomological methods and technique. This cannot be helped, and in such cases the men must get their training through actual experience in their work, which is perhaps after all the best school. If these men have honesty, common sense, energy and a little ingenuity, or resourcefulness, they will soon outstrip others who have had far better training in whom these qualities are lacking.

The entomologist must do something more than gather facts; he

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must be able to interpret their meaning. He cannot always be in his office or laboratory, even though it is a great convenience to his people to find him when they call. He cannot always be in the field, but he should have a thorough knowledge of the conditions there. In fact, he should have a good general knowledge of all phases of his subject, and it is desirable that he be a specialist and an authority in a few of them.

Probably few of us possess all qualifications necessary to make us ideal official entomologists. Perhaps everyone has some of them. As his work increases, he must have help,—and if funds are available, scientific and clerical assistants are secured. He must then plan and direct their efforts as well as his own. He must possess tact, must be a good organizer, and must be able to judge the ability and capacity for work in others. He must be able to manage men. New problems are then introduced in regard to the proper credit for work done by his assistants. The ideal official should err on the side of generosity rather than that of selfishness in such matters. It is true that the assistants can usually do much of the routine work where no credit is expected or given in publication.

In his relations with other entomologists he must be courteous, and give credit where credit is due. He should refrain from engaging in personal controversies, though he should not hesitate to stand up for the right as he sees it.

Too many of us have our attention occupied by work of a routine nature because of a lack of help. It is extremely important that the entomologist be given some time for research work in order that he may aid in increasing the sum total of human knowledge in his chosen subject. There are still many problems to be solved, and the official entomologist from his wealth of experience and observations can survey the field with a broader view than the beginner. Unfortunately, in many cases the official has little time for investigation and whatever is done must be done by assistants. At any rate, some research work should be done.

To gain knowledge through observation and research is clearly the first essential of the profession. The second essential is to bring this knowledge before the public. And let me say that right here is one of the problems of the official entomologist as well as of every experiment station worker. The most intelligent farmers, and a certain number of merchants, manufacturers and employees, as well as scientists, are always in touch with such work and often aid the official in it. But there is always a great mass of people who have never heard of the state entomologist or of the agricultural experiment station of

their own state, and who are entirely ignorant of all such matters. They must be informed. I say *must* because their own welfare and the public interests are at stake. The public health demands it. Health officers and medical men are now calling upon official entomologists for expert evidence and advice about the breeding places of mosquitoes and flies, and this support should be given them wherever possible. Ignorance of the law—man's law—excuses no one; but in ignorance of nature's laws our greatest dangers lie. The comparatively recent discoveries of the spread of human diseases by insects make it imperative that no opportunity be neglected to place the proper instruction regarding entomological sanitation before the people. This should be done, however, in a dignified way, and the commonest method is by means of publications. Lectures, illustrated by lantern slides and by insect specimens, are also an important means of getting the facts before the people. The press is our most powerful ally, but the modest entomologist shrinks from the publicity acquired if he is interviewed too often by the reporter, and also hesitates to send information to the papers. Perhaps some of this publicity can be avoided if the information is given out as coming from the institution instead of from any particular individual connected with it.

I believe that educational exhibits at fairs and agricultural meetings are of the greatest value in educating the people. They should be arranged in an attractive manner, and supplied with neat descriptive labels that give real information. In an exhibit of this kind at a Connecticut fair in September, twenty cages of living insects attracted more attention and excited more interest than any other portion of the exhibit. The living insects shown included mosquitoes, both *Anopheles* and *Culex*, in larval, pupal and adult stages, and a number of caterpillars, which could be readily procured at that time of the year, most of them being common pests of the field or garden.

We should avoid the vaudeville methods practiced by some zealous workers for the betterment of mankind. Dignity and good taste should be maintained, or we had better dispense altogether with this means of educating the public.

In order to do effective work, an official entomologist must have the confidence of his clientele. It is not always easy to gain this confidence. Personal contact with the farmer, honesty and frankness regarding entomological matters, and prompt attention to the details of each inquiry will help much. It is always better to say "I don't know," if that indeed be the truth, than to allow the farmer to learn that fact from some other source.

I have given some of the requirements of the ideal official entomologist. Few of us, I fear, can meet them. Nevertheless, in spite of all his shortcomings, the official entomologist is often of great practical value to the state. For instance, in case of a local outbreak of a serious insect, if there is an authorized entomologist with forces already organized and a small fund at his disposal, the pest may be not only kept from spreading, but perhaps actually exterminated in that locality, thus saving great losses of crops as well as tremendous expenditures of money to later subdue the pest and get it under control, if that is even possible.

The experience of the New England states with the gypsy moth, *Porthetria dispar* Linn., and the shipment into this country of nests of the brown-tail moth, *Euproctis chrysorrhœa* Fabr., on nursery stock last year, in the absence of any system of Federal inspection, would seem to make it not only expedient but almost necessary for the safety of property and other interests, that each state not having such a department should at once organize one. An instance from my own state will serve as an example: On December 14th, 1909, I learned that the gypsy moth had been reported from the town of Wallingford. That very day we verified the report, and the following day had men at work destroying the egg-masses, getting 2,000 the first day. Since then the work has been continued, and over 5,000 egg-masses have been destroyed. The infestation is a bad one, covering at least three quarters of a square mile, but the pest must be exterminated. It is needless to say that any prompt and effective suppressive measures would be out of the question in a state without funds available for the purpose and an organized entomological force ready to act.

There are still many farmers in each state who have never heard of their own agricultural experiment station or even of the Federal Department of Agriculture,—but their number is growing less and less—and these institutions are now more firmly entrenched in the minds and the work and lives of the people than ever before. The taxpayer may have borers in his squash vines, San José scale on his fruit trees, or lice on his cattle; he likes to have some central bureau of the state or Federal government where he can apply for information entomological and feel that he will receive the best of advice.

Having just mentioned some of the qualifications of the official entomologist and the proper development of his department for efficient service, it now behooves me to say a few words about the ideal farmer, or member of the entomologist's constituency. He is often a hard working man, with little time for study, and his interest has never been aroused in the living things around him. He is too often

bent on "making both ends meet." The most intelligent are usually ready and willing to aid the entomologist by furnishing information about the prevalence of certain insects, and report regularly to him. They take their teams at a busy season and drive him around the neighborhood in order that he may get a better idea of conditions prevailing there. Coöperative experiments are arranged and often carried out faithfully, to the advantage of both owner and experimenter.

Occasionally we have experiences similar to that of an experiment station botanist who had conducted a coöperative experiment on the grounds of a truck grower to test the efficiency of sulphur treatment to prevent celery leaf blight. The treated plants promised well, and one day he visited the place to make final notes in the field before the crop was harvested. Before reaching the field he saw the owner, and, asking him about the celery, was disappointed to learn that it had just been dug. "Oh, that is too bad," said he. "Well, I don't think so," remarked the owner, with a laugh; "I got two dollars a crate for it."

But most farmers are willing to do the fair thing when they know that the entomologist is working for a small salary to learn truths which may benefit them. I have known them to greatly inconvenience themselves in order to give him ample facilities for conducting experiments, the results of which were of no particular benefit to them, or at least not more so than to other farmers.

Of course it must be expected that the farmer will be more interested in the practical results of the experiments than he will be in any scientific value which they may possess, yet many farmers have a full realization of the necessity of a careful study of an organism to determine its life history as a means to an end—practical methods for its control.

We all find it difficult at times to answer the questions put to us by some of the growers, and their shrewdness is often amusing. I have known a correspondent to send insect specimens to his own experiment station for identification and at the same time send duplicate lots to a similar institution in another state and to the Bureau of Entomology at Washington. If the replies all coincide, presumably he gets the right name for the insect.

A further consideration of the matter only makes it more evident that the official entomologist in order to be efficient in his helpfulness to the farmer should do something more than write long-range prescriptions. He can go to the field occasionally, view the conditions, and will then probably prescribe differently and more to the purpose.

The farmer will know him better and will soon have more confidence in him.

The entomologist, too, will have more respect for the farmer and his methods, and more interest in him and his particular problems because of the contact. It will prove mutually advantageous.

The literature of economic entomology has been discussed several times in the meetings of this Association, but I wish to mention it here on account of its bearing upon my subject. Some official entomologists publish annual reports. Others publish in the reports of the institutions with which they are connected, and such reports appear to be a fit place to publish the full accounts of any experiments or investigations, or descriptions of methods and technique. Descriptions of new species or important facts regarding the life history or habits of an insect should be published in monographic treatises or in entomological journals. These publications are of great service to other workers, but do not as a rule appeal to the popular mind, especially if somewhat technical in their nature.

The popular bulletin or circular fills a distinct place in the list of publications of any official entomologist or experiment station worker—and I believe this has been conceded by those who have previously discussed the matter. Such a bulletin should give a brief, concise, non-technical account of the insect and directions for its control. Though we can place no definite limits as to the size of such a bulletin or circular, in general it should be brief. Often all that it needs to contain can be told in four or six, and seldom requires more than twenty-four pages. If very long, it should be provided with a table of contents and a brief summary. Illustrations are of the utmost importance in the popular bulletin, but they should be good ones. Photographs of insect injury are usually better than drawings, and the larger species can be shown very well in photographic illustrations. There are many details, however, that can be shown only by drawings, and zinc cuts are often used for all the illustrations.

Such a bulletin as I have mentioned is usually sent to all names on the mailing list. But there is frequently a demand for another form of imparting information, and some experiment stations issue special bulletins or circulars either to convey brief, timely information or to assist in the correspondence. Several forms of these have been given a trial at the Connecticut Station at New Haven. For instance, aside from our numbered series of reports and bulletins, we issue occasionally the "Bulletin of Immediate Information," which is mailed, not to the names on the regular list, but to a certain class, such as fruit growers, truck growers, dairymen, or nurserymen. This

publication is supposed to contain timely information not important enough or of enough permanent value to go as a regular bulletin. Like the other bulletins and reports, it requires a special wrapper for mailing, and can be sent out under the usual frank. We have also used for the same purpose the "postal card bulletin" for short articles of timely information. These are printed on postal card stock 4 x 7 inches in size, with the frank and space for the address on one side and the printed message, with possible illustrations, on the other.

These publications all have their place, and are of value in imparting timely information, and are of great convenience to the official entomologist as an aid in answering his letters. But none of them can be sent out in quantity without a mailing list and considerable work in addressing envelopes.

During the past summer another method has been tried which has long been in use by advertisers. We call it the "correspondence slip" or "dodger," and it consists of a single sheet of paper of the proper size to go into the letter envelope without folding. It may be printed on one or both sides, and is adapted for only very brief messages. Where possible a characteristic illustration is used in one corner, and perhaps the seal of the institution in another. These slips are not mailed to any list of names, but are simply placed in all the letters sent out from all departments of the institution at the time when the information will do the most good. They are also enclosed at other times, when the correspondent needs the message which they bear. In this way they reach many names not on the regular mailing list, and serve the purpose of calling attention to the work of the institution perhaps outside of the particular subject of the letter, and also outside of the department where the letter was written. They bear no date, and therefore are just as good a year hence as today, provided there has been no change in our knowledge of the facts or of the best method of treatment. So far only six of these slips have been prepared, and each has been printed on a different color of paper, but of course the list of tints would soon be exhausted. Press bulletins are also in vogue at some institutions, and serve their purpose admirably.

I realize, however, that many entomologists through no fault of their own are unable to bring forth publications that could be considered as ideal or even satisfactory. The plans are made by others higher in authority, and the rules of the institution prevent the entomologist from carrying out his own wishes and ideas. Perhaps there are scanty funds for publishing; or so much attention is required in teaching that there is no time for anything else. Such conditions, of course, are to be deeply regretted.

Fellow-members, it is truly a matter of congratulation that we now have so many young and earnest workers in the field of entomological research, and each one doing the best he can. There are many problems yet unsolved. Let every worker rejoice in the opportunity. There is a chance for each to contribute his full share in the days to come, for the good of the whole race.

The next paper on the program was entitled "A First Course in Economic Entomology," by F. B. Lowe, Detroit, Mich.

A FIRST COURSE IN ECONOMIC ENTOMOLOGY

By F. B. Lowe, *Detroit, Mich.*

[Withdrawn for publication elsewhere.]

At the close of this paper, the session adjourned.

Afternoon Session, Tuesday, December 28th, 1909.

The meeting was called to order at 1.15 p. m. by President Britton, who called Second Vice-President Summers to the chair.

CHAIRMAN SUMMERS: The next thing on the program will be the discussion of the presidential address.

MR. SANDERSON: All of us certainly appreciate and are in full sympathy with the remarks of our President made this morning concerning our relation to the farmer. One of the greatest factors in securing the application of the methods of insect control devised by the entomologist is in the entomologist keeping in touch with the farmer and putting himself on the farmer's level so that he can appreciate his viewpoint and can make such suggestions as will appeal to the farmer. One of the greatest aids in this work is the actual demonstration of the methods advised in the field. Where these methods are used, it is wonderful how readily many farmers will take up new methods. I remember when the first work was done on the boll weevil in Texas and we felt that it would be some time before we could secure the adoption of the methods devised by the planters, but owing to the demonstrations which were carried on thruout the state, it was but a few years before the method of cotton growing was largely revolutionized. It makes but little difference whether one is working in the West or in the East, the North or the South, if the farmer is approached in this way. When I commenced an agitation for spray-