

Federal Entomology in Indiana¹

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Entomology had its inception in Indiana by the Federal Government in 1884 when F. M. Webster was appointed as special agent by the Bureau of Entomology of the U. S. Department of Agriculture, and stationed at Purdue University where he also acted as consulting entomologist of the Agricultural Experiment Station. While there, he made careful observations on corn insects and how they may be controlled. He was also interested in the Hessian fly, and wrote the first publication of the Purdue Agricultural Experiment Station on this insect. After spending several years here he resigned his position to become State Entomologist of Ohio, but soon thereafter he rejoined the Bureau of Entomology as leader of the Division of Cereal and Forage Insects with headquarters in Washington, D. C.

Webster's interest in Entomology in Indiana continued, and resulted in the establishment of the first federal field laboratory in Indiana at Richmond in 1905 with W. J. Phillips in charge. In 1909, this laboratory was moved to the Purdue Experiment Station at West Lafayette, Ind. In 1913, a separate building nearby was leased to accommodate the enlargement of the work. Phillips remained in charge until 1913, when he was transferred to Charlottesville, Va.

He was succeeded by J. J. Davis who continued in charge until 1919 when he accepted the position of taking charge of the Japanese beetle work at Riverton, N. J. From 1919 to 1925 this laboratory was in charge of W. H. Larrimer. W. B. Cartwright was temporarily in charge from August, 1925, to August, 1926. During the latter part of this period C. M. Packard was transferred to this station to take charge of its operations which consisted of studies of the Hessian fly and other cereal and forage insects. Packard was called to Washington in 1937 to take charge of the Division of Cereal and Forage Insects, and Philip Luginbill was placed in charge, which position he held until he retired in 1950. He was succeeded in charge by W. B. Cartwright, who is in charge at the present time. It should be mentioned that since 1932 the Laboratory has been situated in the Post Office Building at Lafayette, Ind.

During the period, 1905 to date, many workers have been connected with this station. W. J. Phillips, 1905-1913, in charge; T. H. Parks, 1909; Philip Luginbill, 1910-12, 1933-1950; J. J. Davis, 1911-1919 (in charge 1913-1919); C. W. Creel, 1911-1912; Henry Fox, 1912-1913; A. F. Satterthwait, 1913-1916; R. J. Kewley, 1914-1916; D. G. Tower, 1915-1916; F. A. Fenton, 1915-1916; W. H. Larrimer, 1916-1925 excepting during army service from 1917 to 1919 (in charge 1919-1925; J. M. Aldrich, 1917-1918; W. O. Hollister, 1918-1919; R. J. Fiske, 1919-1920; A. L. Ford, 1919-1920; C. F. Turner, 1919; F. L. Simanton, 1919-1920; R. A. Blanchard,

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1920; W. B. Cartwright, 1920-1926, 1938 to date (in charge 1925-1926, 1950 to date); S. Blum, 1920; H. R. Painter, 1920-1950; G. B. Pearson, 1920-1922; W. B. Noble, 1922-1938; Curtis Benton, 1924-1949; C. M. Packard, 1926-1937 (in charge 1926-1937); George G. Ainslie, 1929-1930; E. V. Walter, 1936 to date; D. W. LaHue, 1935-1943 (left for military service 1943); Robert Gallun, 1952 to date.

During this long period of about 50 years many important studies of cereal and forage insects have been made. Much of these results have been published as articles in journals and bulletins. From 1909 to 1913, under the direction of W. J. Phillips, the important studies included the wheat jointworm and aphids as well as general cereal and forage insect feeders. From 1911 to 1919, under the direction of J. J. Davis, emphasis was given to the white grub problem, although progress was also made on studies of several species of aphids and the Hessian fly.

From 1919 to 1925, under W. H. Larrimer, the Hessian fly was the major project, although attention was also given to grasshoppers and other clover and grass insects; under the direction of C. M. Packard, the Hessian fly continued as the major project, but during the latter part of his reign the chinch bug was given much attention. Under the direction of Philip Luginbill the chinch bug received a large amount of attention and white grub studies were continued. At the present time, Hessian fly studies on resistant wheats are in progress with W. B. Cartwright as Project Leader, assisted by Robert Gallun, and corn earworm studies under the direction of E. V. Walter.

For several years the Bureau of Entomology maintained a laboratory at Plymouth, Ind., for the investigation of truck crop insects. H. K. Larrimore was first in charge of this station. M. R. Smith was connected with this laboratory in 1917 and 1918, being in charge in 1918. During the last year of the existence of this station Smith was assisted by J. M. Craig. Incidental to the economic studies, Smith made a study of the syrphid fly fauna of that area, and published a list of the species encountered at Plymouth.

There was a demand for federal assistance in studying deciduous fruit insects in the central west, and as a consequence, A. L. Quaintance, in charge of deciduous fruit insect investigations of the U. S. Bureau of Entomology at Washington, established a laboratory at Vincennes, Ind., in 1923 with B. A. Porter in charge. This was a cooperative laboratory, as the Purdue Experiment Station and the growers in the vicinity contributed funds to aid in the work. Investigations which had been carried on by Purdue since 1921 were turned over to the federal workers. The main projects the first few years of the laboratory were studies of lubricating-oil sprays for the control of the San Jose scale, the cause and control of peach catfacing, and the use of paradichlorobenzene for peach borer control in Southern Indiana. This last chemical proved successful in controlling the borer. B. E. Montgomery was employed as a summer assistant in 1924. Much of the work outlined for 1923 was continued. The tarnished plant bug was shown to be one of the causes of catfacing. J. E. Bussart served as a summer assistant in 1925, and late in the fall R. F. Sazama was transferred from Maine to assist in the work at Vincennes.

In 1926 and 1927 a crisis developed in the problem of arsenical spray residues on apples as a result of the use of lead arsenate for codling moth control. Numerous arsenicals other than lead arsenate were tested, and a limited number of non-arsenicals.

In 1928 B. A. Porter was transferred to the Washington office for the study of deciduous fruit insects. In 1929, W. P. Yetter was appointed to the Vincennes laboratory and assigned to work on the Oriental fruit moth. He tested numerous insecticides and bait materials against this pest, which had by that time become widespread and destructive throughout the area. In 1930 F. H. Lathrop was transferred from Maine, and was placed in charge of the general work of the laboratory. Yetter continued in charge of the Oriental fruit moth work.

An appropriation of \$150,000 was obtained to carry on large-scale experiments to control the Oriental fruit moth with baits. In 1932 the large-scale tests were discontinued due to the lightness of infestation and reduction of funds. Mr. Yetter was transferred to Georgia, and Lathrop was transferred to Whittier, Calif., leaving R. F. Sazama temporarily in charge. But in 1934, L. F. Steiner was transferred from Georgia and placed in charge until 1949 when he was sent to Honolulu, T. H., to study the Oriental fruit fly.

Entomologists on the staff during the time Steiner was in charge were R. F. Sazama (resigned in 1937); A. J. Ackerman, 1934 through 1936 (died); S. A. Summerland, 1936 through 1953 (retired); B. E. Hodgson, Jr., 1937 through 1940, and H. J. McAlister, 1946 through 1952 (transferred). Sub-professional employees on the staff were C. H. Arnold, 1941 through 1943; and K. W. Lamansky, 1946 to date.

During the period when Steiner was in charge of the laboratory, numerous college students worked as summer assistants. Among the well-known in Entomology are J. M. Amos, now with the Virginia Agricultural Experiment Station, and C. C. Alexander, now with the Geigy Agricultural Chemicals.

Codling moth damage to apples was severe in the 1930's. Lead arsenate was not maintaining control. Besides the laboratory at Vincennes, a sub-laboratory was maintained at Orleans, Ind., in 1934 and 1935 with D. W. Hamilton in charge, and S. A. Summerland as an assistant. The effect of light traps and bait traps were evaluated, and information relative to the habits of the codling moth was obtained. During the period 1934 to 1943 the number of materials screened and tested at Vincennes for codling moth control was very large. The first DDT ever applied to apple trees was at Vincennes in 1943. The control obtained was so good it was astonishing. Large-scale tests with DDT followed, and results obtained were almost perfect. However, other problems developed from the use of DDT. The European red mite population was increasing, and the lady beetle population was decreasing.

In 1949, D. W. Hamilton returned from New York to take charge of the laboratory, and is in charge at the present time, being assisted by K. W. Lamansky. A large number of publications have emanated from this laboratory during the period of its operation.

In June, 1934, the Division of Insecticide Investigations of the Bureau of Chemistry and Soils established a chemical laboratory at Vincennes to cooperate with the Fruit Insect laboratory. Jack E. Fahey was transferred from Wenatchee, Wash., to take charge of this work, and he has been in charge of the chemical investigations at Vincennes since that time. H. W. Rusk was transferred to Vincennes to serve as assistant to Mr. Fahey and has served in that capacity, except for a two-year period during 1943 and 1944, since that time.

In September of 1935 the Insecticide Division of the Bureau of Chemistry and Soils was transferred to the then Bureau of Entomology. It is now the Pesticide Chemicals Research Section of the Entomology Branch, Agricultural Research Service.

From 1934 through 1943 the Pesticide Chemicals Research Section contributed to the study of control of fruit insects by study of the magnitude, distribution, weathering, and removal of insecticide residues, as well as the study of insecticide formulations.

Since 1943 these studies have been continued with the new synthetic organic insecticides. In addition, the rapidly developing use of these insecticides on field crops has presented the problem of residue studies on these crops. The Pesticide Chemicals Research Section laboratory at Vincennes now furnishes chemical residue studies for most of the Research stations of the Entomology Branch within the North Central States area.

European corn borer research at West Lafayette was started in March, 1942, when L. H. Patch, Morris Schlosberg and Ray T. Everly were transferred from the main federal corn borer laboratory at Toledo, Ohio, to West Lafayette, Ind. A. M. Vance joined the staff in August of the same year to take charge of the station. However, in 1949 Vance was transferred to the main office in Washington and appointed as assistant chief of the Division of Cereal and Forage Insects. Messrs. Patch, Schlosberg and H. R. Painter, who earlier was transferred from the general Cereal and Forage Insect office to the corn borer project in 1943, were all transferred to Ankeny, Iowa, in 1950 to start research on the corn borer in cooperation with the Iowa State College of Agriculture. Ray T. Everly was transferred from the West Lafayette laboratory in 1946 to Columbus, Ohio, to work on legume insects. E. J. Udine and L. L. Stitt were members of the Corn Borer Laboratory from 1943 to 1945.

The main project at the corn borer station was the testing of dent, sweet and popcorns to find resistant germ plasm which could be used by the corn breeders in the corn improvement program. Patch worked on dent corn, Schlosberg on sweet corn and popcorn. Both cooperated with corn breeders at the Purdue Agricultural Experiment Station. Painter was responsible for the production of eggs for manually infesting the corn plots, and made photographs. Everly spent considerable time in evaluating corn strains for their resistance to oviposition by moths of the corn borer. This station operated as a sub-station of the Toledo, Ohio, station. The corn borer workers received most encouraging and helpful cooperation from the Entomology Department at Purdue as well as from the entire Purdue Experiment Station.