

Entomological Pioneers in Indiana

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The need of professional entomologists to study economic insect problems and to devise methods of controlling insects was evident in the early days of Indiana history although public funds were not available until the latter part of the nineteenth century. Man, living in the modern era of today, may on occasion be annoyed by insects, but science and technology has so greatly alleviated insect problems that he finds it difficult to visualize the gravity of uncontrolled insects as they existed a century ago. Without doubt many disease epidemics, the cause of which was unknown, were carried by insects which raged uncontrolled throughout vermin-infested houses and stagnation created by lack of sanitation and poor sewage facilities.

It is interesting to note that in *Indiana as Seen by Early Travelers*, visitors to the state in the early nineteenth century were so annoyed by pestiferous forms, or were so impressed by the magnitude of insect damage, that they included them in their reports. Bedbugs were a frequent annoyance as David Thomas reported in 1819. Even though his host, when Thomas stopped for the night, extended hospitality, it couldn't be enjoyed because he suffered sleepless nights due to the bugs.

Thomas Scattergood Teas, reporting on his trip to Fort Wayne, in 1821, told of spending a night in "continual warfare with myriads of fleas." "I was compelled to retreat from the field, or rather bed of battle, about two hours from daybreak and got a little sleep in a chair." It is quite possible that the fleas referred to were another case of bedbugs.

William Corbett in 1828 reported arriving at Louisville, but on observing stagnant waters about the town and the appearance of vermin-infested houses did not stay overnight.

Teas also found the mosquitoes and gnats as numerous as along the seashore. They were so abundant in the woods that it was impossible to find drinking water in a pool that was not filled with mosquito larvae, and on stopping to rest one had to kindle a fire and sit in the smoke for protection against the insects.

Mosquitoes were such a continual annoyance that William Pelham noticed their decline when cold weather set in and wrote in 1825, "This coldness of the air silenced the musicians who have so diligently amused the inhabitants of this town ever since I have been here. I mean certain little winged insects who take care to indemnify themselves for any trouble they are at to entertain us, by piercing the skin and drawing off the superfluous moisture."

These mosquitoes which the early travelers in Indiana complained of were more than an annoyance. Some of them were the vectors of malaria and yellow fever. Williams, 1941, pointed out that in 1882 malaria was endemic in the area southeast of the Appalachians and as far north as

Long Island. West of the mountains the endemic area extended to the Canadian border. In southern Indiana the disease was of frequent occurrence. However, by 1912 the endemic area extended no farther north than southern Indiana and there was largely confined to a narrow strip along the Ohio River.

Yellow fever reached epidemic status several times in early American history. There are records of outbreaks on ships and in the eastern seaport cities of Philadelphia and New York. According to Sawyer, 1943, yellow fever swept up the Mississippi to Memphis and beyond and probably many cases occurred in the Ohio Valley in southern Indiana.

Early travelers to Indiana not only noticed an abundance of insects that were annoying to man, but were impressed by the pests that damaged crops. David Thomas observed the destruction of meadows and the killing of corn twice in a season on a 1,000-acre farm by armyworms. The problem became so acute that ingenious farmers devised a mechanical control whereby deep furrows were plowed in which logs were constantly drawn by horses, so long as the armies of caterpillars continued to approach. Such a method was tedious and took a great deal of time, but thousands of the destructive worms were killed and crops were saved.

Early methods of applied insect control in agriculture were largely mechanical. Many of the early economic entomologists were men of wide agricultural background who had a keen perception of the farm but little or no formal training in entomology. However, they contributed greatly to economic entomology by developing mechanical controls and other techniques that could be best applied in the farm program. The log drawn by a horse is symbolic of the beginning of crop insect control. From it, as experience and knowledge have expanded, other methods have evolved.

At Vincennes in 1816 Thomas was impressed by what he called a "curious fly flapper." It was a mechanical device to drive the flies away. He described it as follows:

"The construction is simple, and in hot weather, the fresh air that attends its motion, is scarcely less agreeable than relief from these troublesome insects. Its position is over the center of the table.

"Two strips of lath three feet long, with a hole in the lower end of each to receive a gudgeon, are first prepared. A broad board with a gudgeon so placed in each end, that one edge shall always preponderate, is then connected with the strips. To that edge a piece of linen one foot wide is fastened; and a handle, eighteen inches long, projects from the opposite edge. The upper ends of the laths are then nailed at the ceiling, and a small cord attached to the handle communicates motion to the instrument."

These early observations made by visitors to Indiana over a century ago illustrate that the need for professional entomologists existed for many years before public funds were allocated to that purpose.

The year 1854 is historically significant to entomologists because it was the first date that a state legislature set aside funds for the study and control of insects. In a sense, because this act involved public funds and for the first time provided a vocation for the insect specialist, it was the

beginning of entomology as a profession. Heretofore, the entomologist's only remuneration was the personal satisfaction one might obtain from the pursuit of any avocation.

However, to entomologists the year 1854 is not synonymous with the beginning of entomology as a science, particularly in Indiana. The science of entomology actually had its birth in the Hoosier State a quarter century earlier when in 1826 Thomas Say came to Indiana. He was a member of the expedition of scientists known as "The Boatload of Knowledge" who founded the historical New Harmony settlement.

As a scientist, Thomas Say has been called the "Father of American Entomology" and has been recognized as one of the greatest of zoologists and naturalists. More specifically, Say was a taxonomist and in the short period of eight years in Indiana, until his untimely death at the age of 47, he described many species of insects. Davis (1932) estimated that Say described more than 1,000 species of beetles plus over 400 insects of other orders. He found that Say listed 404 new insect species from Indiana and that not less than 10 per cent of the 250 most important Indiana pests were described by Say.

Recognition of the insect is fundamental in insect control and it cannot be overlooked in economic entomology. Knowledge of the morphological characteristics of the insect as well as its biology and habits are necessary before control measures can be determined. Therefore, in the truest sense, economic entomology began not with the employment of the first state entomologist, but with Thomas Say, the naturalist, who a quarter century prior to 1854 made fundamental studies that were basic to the control studies that came later.

It is indeed unfortunate that the young State of Indiana and the young science of entomology should lose Thomas Say in the prime of his life. As has been pointed out, Say's contributions to Indiana entomology during a brief eight years were tremendous. However, he died 16 years before the first professional entomologist was appointed in the United States and 50 years before entomology was established in Indiana at Purdue University.

In the half century between Say's death and the arrival of F. M. Webster in Indiana as Special Agent of the U. S. Department of Agriculture and Consulting Entomologist for the Purdue University Agricultural Experiment Station, little entomological progress was made in the state. During that period the only entomological contributions were the collections compiled and biological notes made by a few men who enjoyed entomology as an avocation in their spare time.

It seems probable that professional entomology would have had an earlier beginning and would have made significantly great contributions in Indiana prior to 1884 had Say lived. Certainly Say, himself, would have added a great deal more to our knowledge of insects. It is also reasonable to presume that a man of Say's stature would have had influence to spur legislative interest in the importance of insects and the need for study and control.

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