

meetings of farmers and farmers' institutes and has probably addressed more people than any other public man in Canada and imparted to them information of economic value which must have been of immense benefit.

The culmination of his work in economic botany is the *Weed Book*, published in 1906 in conjunction with the Seed Division of the Department of Agriculture, Ottawa.

Not only as an entomologist and botanist has he been of great assistance and influence, but also as a horticulturist. Throughout the Dominion of Canada the horticultural societies have known him for many years as advisor and educator. At the Convention of Horticultural Societies held in Toronto recently which I attended, many were the expressions of sincere regret at the great loss the horticultural societies had sustained by the death of one whom they spoke of not as a public official, but as a personal friend.

The life of Dr. Fletcher was a standing example to young men. While a clerk in the Parliament Library he utilized every spare moment in studying or seeking information, and after office hours he did not waste his time in idling about the streets. Early and late he was to be found studying Nature and, when in later years, the Government decided to establish the Dominion Experimental Farms, he was the one man in Canada equipped with the necessary knowledge to fill the important and responsible position of Dominion Entomologist and Botanist.

Finally, considering the great debt that the Ottawa Field-Naturalists' Club owes to Dr. Fletcher, I think it is our privilege to take the lead in commemorating the work he has done, and in talking the matter over with some friends and members of the Club, the unanimous opinion is that in no way could we do it more appropriately than by erecting a drinking fountain at the Central Experimental Farm, -where so many of the best years of his life were spent.

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## DR. FLETCHER AS AN ENTOMOLOGIST.

BY ARTHUR GIBSON.

I am very glad indeed of this opportunity of saying a few words of one with whom it was my happy lot to be closely associated, for nearly ten years, in the official Government work of practical entomology. It is not necessary for me to say that Dr. James Fletcher was a great entomologist. This fact is widely known, not only in Canada and the United States, but even throughout the whole world. It is the people of Canada, however, who will chiefly miss his kindly help, always so cheerfully



given. To Canadian students of insects, his untimely death is a terrible blow, and entomology generally has lost one of its most accomplished exponents. Early in life Dr. Fletcher had a keen love for insects and their ways, and before he came to Canada he was familiar with the butterflies and other insects of his native land. He made a special study, however, of those kinds which are injurious or beneficial, and never lost an opportunity to add to his knowledge of these creatures, which play such an important part in the welfare of mankind. Not a few Canadians have done splendid work in entomology, from the continued encouragement and help which they received from him.

From a purely scientific standpoint Dr. Fletcher did splendid work among the diurnal lepidoptera. For many years he was intensely interested in Canadian butterflies and through his studies was recognised as a high authority on these insects by American entomologists. He was not only a student of the perfect forms of butterflies, but was deeply concerned in finding out their true life-histories. Many a long trip from Ottawa was taken by him to get the eggs of a rare species, in order that the various stages of the insect might be studied. During these collecting trips, too, many new species were discovered. If we glance through the lists of North American insects, we find that quite a number of species were named in his honour. The following is a list of the insects to which the name of Fletcher has been given:—

*Cryptus fletcheri* Provancher: Additions Faune Hymenopterologique, 1886, Vol. II, p. 361. (= *Comsocryptus calipterus* Say).

*Xylomiges fletcheri* Grote: Canadian Entomologist, 1888, Vol. XX, p. 130. ( *Xylomiges patalis* Grote).

*Coleophora fletcherella* Fernald: Canadian Entomologist, 1892, Vol. XXIV, p. 122.

*Cratæpus fletcheri* Ashmead: Canadian Entomologist, 1892, Vol. XXIV, p. 309.

*Lecanium fletcheri* Cockerell: Canadian Entomologist, 1893, Vol. XXV, p. 221.

*Trogus fletcheri* Harrington: Canadian Entomologist, 1894, Vol. XXVI, p. 245.

*Coccophagus fletcheri* Howard: Bulletin No. 7, New Series, Division of Entomology, U. S. Dept. Agr., 1897, p. 63.

*Papilio turnus* L., var. *fletcheri* Kemp: Entomological News, 1900, p. 481.

*Culex fletcheri* Coquillett: Proceedings of the United States National Museum, Vol. XXV, 1902, p. 84.



*Catocala unijuga* Walker, var. *fletcheri* Beutenmuller: Bulletin of the American Museum of Natural History, 1903, Vol. XIX, p. 509.

*Xylina fletcheri* Smith: Psyche, 1904, Vol. XI, p. 56.

*Enarmonia fletcherana* Kearfott: Canadian Entomologist, 1907, Vol. XXXIX, p. 127.

*Brephos fletcheri* Smith: Canadian Entomologist, 1907, Vol. XXXIX, p. 370.

*Platycleis fletcheri* Caudell: Proc. U.S.N.M., Vol. XXXII, 1907, p. 403. (= *Idionotus brevipes* Caudell).

*Eupithecia fletcherata* Taylor: Ottawa Naturalist, 1907, p. 200.

*Lithocolletis fletcherella* Braun: Transactions of the American Entomological Society, 1908, Vol. XXXIV, Oct., p. 338.

*Psilocorsis fletcherella* Gibson: Ottawa Naturalist, Jan. 1909.

Speaking more particularly of his work in economic, or practical, entomology which occupied the best of his time and labour for at least 25 years, he has truly left behind him a vast store of knowledge in the annual reports which he presented to the people of Canada in the large yearly reports published by the Dominion Experimental Farms, in the special bulletins which he prepared, and in the almost yearly Evidence which he gave before the Standing Committee on Agriculture and Colonization of the House of Commons, all of which have already been referred to by Dr. Saunders. In all of these publications valuable information on insects injurious or beneficial to agriculturists, horticulturists and others, is given in the most accurate manner, with the remedies which have been found most useful for those kinds which are destructive to crops, etc.

Of the many injurious insects upon which he did original research work, brief mention may be made of the following.

The Mediterranean Flour Moth, which first appeared in Canada in 1889: its life-history was worked out and the advantage of freezing the insects by opening the mills to the cold of winter was pointed out, among other remedies.

The Cigar Case-bearer of the apple was first treated of in his annual report for 1891, and further original observations are to be found recorded in his report for 1894.

The Hop Vine Borer did much harm in Ontario hop fields in 1892. The habits of the insect were studied and published. The same year new facts were learned regarding the life-history of the Red Turnip Beetle, which every year does some damage to cruciferous crops in the Prairie Provinces.

The Pea Moth claimed special attention in 1894, and a lengthy article was published in his annual report for that year.



The Peach Bark-borer was also studied the same year and new facts recorded regarding the life-history.

In 1895 the Joint-worm which attacks wheat was investigated, and valuable information was obtained on the habits of this enemy of this important cereal. The Cottony Grass Scale was also studied the same year, as was also the New York Plum Scale.

Mention of the Wheat-stem Maggot in Canada first appeared in his 1896 report when an outbreak which occurred in the Northwest was studied. The same year the first record of the Apple Maggot in Canada was made.

In 1897 much study was given to the San José Scale, which had gained a firm foothold in certain of the western counties of Ontario. A lengthy article appears in his report for that year.

The Rocky Mountain Locust was given special study in 1898 when the insect did much damage in southern Manitoba.

The Hessian Fly wrought serious injury in the fall wheat fields of Ontario, and the spring wheat fields of Manitoba in 1899, and called for special investigation. The same year the Destructive Pea Aphis made its first appearance in Canada, as did also the Asparagus Beetles.

The Greenhouse Leaf-tyer was also studied in 1899 and 1900 and the life-history has since been published.

One of the most remarkable outbreaks of an injurious insect which has ever been recorded in Canada occurred in 1900, when the Variegated Cutworm appeared in British Columbia. Original notes on the life-history appear in his annual report for that year, as also on the Spotted Cutworm which did much damage in Ontario.

In 1901 original observations on the life-history of the Variable Cutworm were published and a more complete article describing in detail the various larval stages appeared in the Canadian Entomologist for November, 1902. Notes are also given in his 1901 report on *Semiophora youngii*, a new enemy of conifers.

The Sugar Beet Webworm was studied in 1903 owing to the damage it did in Manitoba. Attention was also given to the White-marked Tussock Moth, which has done so much harm to shade trees in many Canadian cities.

During 1905 another new pest made its appearance in eastern Canada in destructive numbers and the common name, "The Spined Rustic" was given to it by Dr. Fletcher. The full life-history was worked out and published.

The first Canadian nests containing caterpillars of the Brown-tail Moth were received by Dr. Fletcher in 1906, and during the summer the insect was studied at the Central Experimental Farm, and a lengthy article on it was prepared and pub-





lished in his annual report, as well as in several agricultural papers.

The same year and in 1907 the Rose Chafer caused enormous losses in vineyards in the Niagara district, an account of which appears in his report for 1907. The same year the Rusty Tussock Moth was given special study.

In 1907 and during the present year, the large losses in the hop-yards of British Columbia occasioned by the attacks of the Hop Flea Beetle, called for special thought, and during his recent trip to British Columbia in September last he visited the hop-yards and gave valuable advice to those in charge.

The above are only a few of the injurious insects upon which Dr. Fletcher did original research work. His studies of even the very commonest insects resulted in the finding out of new facts.

In his annual reports, etc., Dr. Fletcher did grand work in educating farmers, fruit-growers, market gardeners etc., to know their worst insect enemies and the way to fight them, and many articles appeared by him on such well-known pests as the San José Scale, the Codling Moth, the Plum Curculio, the Colorado Potato Beetle, the Turnip Beetle, Root Maggots, Cutworms, Grasshoppers, the Hessian Fly, the Wheat Midge, the Western Wheat-stem Sawfly, the Joint-worm, the Oyster-shell Scale, White Grubs, the Pea Weevil, etc., etc.

In the year 1896, Dr. Fletcher received the honorary degree of LL. D., from Queen's University, in recognition of the great services he had rendered to agricultural science. He also received honours from various foreign societies. He was elected a Fellow of the Linnæan Society, a Fellow of the American Association for the Advancement of Science, a Fellow of the Entomological Society of America, a Member of the Association for the Promotion of Agricultural Science, an Honorary Member of the Lancashire and Cheshire Entomological Society, a Corresponding Member of the Washington Entomological Society, and was at the time of his death President of the Entomological Society of Ontario and Honorary Secretary of the Royal Society of Canada. He was the first man to urge the formation of the Association of Economic Entomologists, which is the most important society of its kind in the world. For many years he was a member of the Editing Committee of the Canadian Entomologist, and quite recently, since their beginning, was on the Editorial Boards of the Journal of Economic Entomology and of the Annals of the Entomological Society of America.

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NOTE—Plate No. VI is from a small negative taken two years ago by Mr. Shutt, and is considered as giving Dr. Fletcher in a characteristic pose. Members and friends can obtain copies of the photograph from the Topley Studio, Ottawa.





Gibson, Arthur. 1909. "Tributes to Dr. James Fletcher." *The Ottawa naturalist* 22(10), 207-211.

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