

tensive and growing industry. The Division stands ready to continue this work at any time when Congress shall make appropriation for it."

Personally I was intensely interested in the results of this experimental work, and while unforeseen contingencies arose which materially interfered with my plans, yet I knew Mr. McLean to be a man full of energy and enthusiasm in the cause, and exceptionally well posted in all matters relating to bee culture. Yet he never had the full sympathy or co-operation of some of the most voluminous writers on the subject, and who, from being looked up to as authorities, are not always most sympathetic with others. There is probably not one of Mr. McLean's critics who would have done more of real benefit to apiculture during the same time and under the same circumstances. The experiments to determine whether bees injure fruit or not, certainly put a quietus to the discussion in so far as grapes are concerned, and have done much to prevent misapprehension on the part of growers who are not bee-keepers and to harmonize both classes. Aside from the above, the observations and information contained in Mr. McLean's reports on foul brood and in experiments looking to the control of fertilization of the queens, are many of them valuable, even though in the latter case he could not finally present any practical method of accomplishing this object.

The apicultural exhibit, which I prepared for the Department for the Paris Exposition of 1889, was largely made up of material contributed by individual bee-keepers, and received very favorable notice from foreign bee experts. In fact, it was rated the best of all the exhibits in this line. It certainly had much to do with educating foreigners as to the forward part taken by Americans in this industry, notwithstanding the display was hampered by restricted space. The success of the exhibit was largely due to the efforts of Mr. McLean.

In 1890, I felt that the appropriations to the Division of Entomology justified further effort to do something for bee culture. It was my purpose to continue experimentation, more especially in lines which individual efforts could not so well reach, as indicated in the previous work. The conditions around Washington are very unfavorable for this kind of experimentation, and three methods of carrying it on remain. One was, to establish a station controlled and worked entirely by the Department, as had been done under Mr. McLean previously. Another was, to establish a number of sub-stations in different parts of the country, representing

different climates, but all under the general management of some one especially in charge here at Washington. The third was to establish one or more stations in connection with some of the State experiment stations, created by the Hatch bill. After visiting a number of prominent bee-keepers in the south, and considering the matter fully in connection with the limited means to be devoted to the subject, the last of these methods was chosen. Prof. A. J. Cook and Mr. J. H. Larrabee were commissioned early in 1891 to conduct the experiments at the apiary of the Michigan Agricultural College. The results of the work of that year are reported in Bulletin No. 26 of the Division of Entomology. They included a continuation of the earlier experiments, especially planting for honey, observations and experiments in regard to the fertilization of plants by bees, selection in breeding, the amount of honey consumed in the secretion of a pound of wax, the effect on bees of spraying fruit trees while in blossom, and other minor experiments and observations, some of them a repetition of the work that had previously been performed by others. There was not much that was original in the apiarian work of the year, and perhaps the most important were the results in reference to the poisoning of bees by arsenical sprays. Moreover, the policy of dual interest in and control over the work at the station was not the most satisfactory as a working policy, because of the difficulty of separating the Department's interests from those of the station, and the feeling which developed on the part of others, and which I could not very well overcome myself, that the funds furnished by the Department were utilized primarily to improve a somewhat neglected apiary and to add to the income of the station. Prof. Cook's commission expired June 30, 1889, and Mr. J. H. Larrabee was appointed to continue the work, which he did up to June 30, 1892, when, by virtue of the great reduction in the appropriation for the Division of Entomology for the ensuing fiscal year, all the work in bee culture had to be abandoned. Mr. Larrabee's report will soon appear, and will, I think, make a creditable showing for the season, considering the means which he had at command.

Early in 1891 I had considerable correspondence with Mr. Frank Benton, whose interest and work in apiculture you all know, and who had made a personal effort to introduce *apis dorsata*. The failure of his effort was due to over exertion and undue exposure, and I have little doubt that, under more favorable circumstances, and with the aid of the Department, the effort would prove successful. I