

known as the hibernation theory, but that the paternity of it belongs to the man who, of all others, has opposed it most vehemently and dogmatically, viz:—Prof. A. J. Cook. I made, this to me, astounding discovery while in the midst of my labors on my book, and it created no little confusion of ideas in my mind. I was going to make a little "splash" in the body of the work about hibernation, and take some degree of credit to myself in connection with the theory, when the discovery I have mentioned took all the wind out of my sails, and nearly all the breath out of my body! I could only allude to hibernation in a general way, reserving explanations for the notes, where I have stated as above that Prof. Cook is the father of the theory, and cited in proof of the statement an essay of the Professor's, read at the North Eastern Bee-keepers' Association, Utica, N.Y., Feb. 3, 1875. This essay is given in full in the *American Bee Journal*, Vol. XI., page 82-3. As the quotation was too long for insertion among the notes to my book, and as probably but few have a file of the *A. B. J.* reaching so far back, I have thought it would be a means of gratifying public curiosity to reproduce that portion of the essay which refers to hibernation, in the columns of the *C. B. J.* The Professor's topic was "Insect Respiration and Bee Culture," and his essay concludes as follows:—

"Insects, in common with many animals much higher in the scale of animal life, possess that strange power to hibernate during cold weather, at which time they seem to be on the "dead line," just between life and death. In this condition the vital processes are held in almost entire suspense. No food is taken, the blood moves very feebly, and little oxygen is required. The condition is something like profound sleep. As there is no exertion or exhaustion, and the breaking down of tissues almost ceases, while, no doubt, there is a slow, but continuous recuperation of strength and energy. Now, this being the case, it seems highly probable, ay, almost certain, that in the interims of productive exertion the more protracted the hibernation the better the condition of the animal.

Now does it not hold to reason that, if we secure the best conditions for wintering, those which will ensure persistent hibernation, as indicated by the most perfect quiet, our bees will need scarce any air, and hence no ventilation either upper or lower. Reason proclaims this as a fact. My experience sustains it. I have had colonies surrounded by snow the winter through, with hives sealed with propolis above, and the entrance below frozen solid with ice, and in this condition from November to April, come out in

spring as bright and beautiful as if only restful sleep had visited them, with scarce any dead bees, and hardly any consumption of honey. Hence I believe we may conclude from our study of insects, first, that the destruction of trachea will, of itself, produce no harm; that the only harm will come through the loss of the organ. And, second, that if bees are in condition to winter best, the respiratory action is at the extreme minimum, and hence we need take no pains to arrange for ventilation.

Conclusion from second inference.

This being granted, what more important problem awaits solution than a method of wintering, which insures the most perfect hibernation. How can we arrange to keep our bees always at the proper temperature?"

On the above extract, I will only now remark:

1. That the theory was entirely original with me so far as I know, and that it was an electric shock of surprise to me to find the Professor ahead of me.

2. In all the discussions on this subject at conventions and in the bee journals, Prof. Cook has never hinted that he once held the theory, but saw cause to abandon it; has never condescended to argue the question at all; but has merely said authoritatively, "Bees do not hibernate," which he has modified when called upon to do so, by adding, "in my opinion." Surely it is now time for the Professor to "rise and explain."

WM. F. CLARKE.

Guelph, July 26th, 1886.

FOR THE CANADIAN BEE JOURNAL.

THUMB SCREWS FOR HEDDON HIVE.

HAVING just read Mr. Pringle's article on page 329, and thinking that perhaps others may be having the same trouble, I hasten to reply, hoping to be able to set all of this difficulty aside. I just asked my foreman and students if they had experienced any of the troubles mentioned by Mr. Pringle, and the unanimous answer came, "no." They say that not one frame has ever offered to slide when wholly dependent upon the screws for support.

By this mail I send you two samples of our wood screws and threaded holes to receive them, and wish to call your special attention to two features: the screws are not only of good, hard wood, but we have boiled them in tallow, a job that is practical and quickly executed. Take notice that the screws run very loosely in the threads that receive them, and let me say that even with this loose fit, their power and durability is far beyond our needs. I consider these samples of the proper size, and the No. of the