

oxidizable elementary matter they contain will depend their value as force (or heat) producers. In all of them their capacity for appropriating oxygen corresponds only with the carbon that is present."

On page 50 Dr. Pavy says: "As the force produced is in proportion to the amount of chemical action, we may measure the value of different articles for force production by the amount of oxygen they will relatively consume in undergoing complete combustion."

On page 15 Dr. Pavy says: "Food may be considered as comprising that which contributes to the growth and nutrition of the body, and by oxidation to force production."

On page 135 of his work referred to above, Huxley says: "As oxygen is not taken in by the alimentary canal it hardly comes within the ordinary acceptation of the word food."

From the foregoing statements and others which might have been quoted we are in accord with leading authorities of the present day in making the following assertions:

1. Besides the development and maintenance of the living fabric it is a principal function of food to keep up the animal heat at the proper standard, and in the case of bees this is accomplished principally by the direct oxidation of carbo-hydrates in the blood.
2. The amount of heat produced by bees in repose is in proportion to the quantity of carbonic acid discharged.
3. The carbonic acid discharged is in proportion to the quantity of carbon oxidized.
4. For the oxidation of any given weight of carbon (when in combination as in honey) the quantity of oxygen required can be determined by a simple calculation.

This was the method followed in the solution of problems on page 501, Vol. 1, C. B. J., and the quantity of air necessary for a stock of bees "from November till May" was found to be very much more than "a mere hive full."

In his letter on page 722, Vol. I. C. B. J., Prof. Cook says he does not recommend "no ventilation" for bees in winter. Quite true, but in his essay on "Insect Respiration" page 83, vol. xi. of the *A. B. J.* he says "Now does it not hold to reason that if we secure the best conditions for wintering, those which will secure the most persistent hybernation, as indicated by the most perfect quiet, our bees will need scarce any air, and hence no ventilation either upper or lower." His experience, which he says sustains this as a fact, is the oft repeated account of cases in which hives having their entrances closed with ice were entombed in snow for several months. On the other hand it can be shown by reference

to the bee journals that it is a matter of common observation among bee-keepers, that when hives are protected from the cold by being covered with snow, the heat of the bees soon melts the snow for several inches around the hive. The ice at the entrance would soon melt and the bees would not be long without good ventilation. Had accurate observations been made in the cases referred to this fact would have been noticed, and the results would not have been brought forward as experience to prove that "no ventilation is needed either upper or lower."

S. CORNEIL.

Lindsay, 26th April, 1886.

FOR THE CANADIAN BEE JOURNAL.

### BEE-KEEPERS' ASSOCIATION OF WELLINGTON.

IT was quite a surprise to me, as it doubtless was to many other bee-keepers in various parts of this large county, to find, from the last issue of the *JOURNAL*, that a few persons living in and around Fergus had assumed to act for the whole of Wellington in the matter of organizing a Bee-Keepers' Association. I received an invitation by postal card to attend a meeting of bee-keepers in Fergus on the 15th of March, but had not the slightest idea that the formation of a county association was contemplated. It read as follows:—"Dear Sir, as we are about forming a bee convention in Fergus, we would like the pleasure of your company." I often get invitations of this kind, and would take pleasure in accepting them all, did time and means permit.

Your correspondent says, "A meeting was held for the purpose of forming a bee-keepers' association in the County of Wellington," which was all right, but they took upon themselves to form one for the county, which was very much like the celebrated action of the nine tailors of Tooley Street, who met in convention and issued a manifesto beginning: "We, the people of England, etc." Our friends in and around Fergus might have been content to follow the example set them at Listowel, where a number of bee-keepers met and organized a "Listowel Bee-Keepers' Association," which they were quite competent to do. Had this new organization been styled the "Fergus Bee-Keepers' Association," or had it even taken the name of the Centre Riding, probably none would have objected, but surely the parties to this movement have only to reflect for a moment to see that they have committed a blunder. They had no authority to act for the whole county, and must not be surprised if their action is repudiated.

For the information of these good people it may be here stated that the city of Guelph is the