

# THE CANADIAN BEE JOURNAL.

PUBLISHED BY

JONES, MACPHERSON & CO.,

WEEKLY - - \$1.00 PER YEAR

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F. H. MACPHERSON. AS'T ED'R, & BUS. M'GR.

## SUCCESS IN BEE CULTURE.

WE said we would have something more to say about friend Heddon's book. After reading it all through once we went over several important chapters the second time, and those on his new hive and management the third time, in order to fully understand it. To say that it is a valuable work is in our opinion scarcely doing it justice. Perhaps some may fail to grasp the *keen edge* of the many valuable points which to our mind are so vividly explained. He has not failed to dip down deep into the depths of scientific apiculture and has apparently reached the foundation under-lying the system of management practised and required in connection with his method of procedure. Though the volume is not large yet it is full of good things. We should like to see the work in the hands of all of our best bee-keepers, as we think it will open a new field to their visions. We are so convinced of its value as a practical work that we have ordered a large lot of them with which to supply our Canadian customers. We shall speak of the hive and system later on. After the above some may imagine that we endorse *all* friend Heddon's views; such, however, is not the case, as we differ on many points (which we may have occasion to speak of hereafter,) and we feel that we will *agree* to disagree, until either one of us is convinced that we are in the wrong.

FOR THE CANADIAN BEE JOURNAL.

## SCIENCE AND APICULTURE.

DEAR MR. EDITOR:—The answers to questions in the last C. B. J.—which by the way is rapidly becoming a vigorous adjunct in the bee-keeping world—makes it evident that some points of physiology and physics are not well understood, even by some of our most able and wide-awake bee-keepers.

The view so well presented by Mr. Cushman, p. 93, though once held by Liebig and eminent scientists the world over, and which now often creeps into the writings of scientists, is not the view of the leading physiologists of to-day. Carbon is not fuel for the body to be burned as wood is burned in a stove. It is to aid in building up the body and in the work of building—assimilation as scientists say—that is changing the carbonaceous and other food into tissue heat results. Let me give a proof of this We cut a piece of fresh muscle from an animal just dead. Place this in a vacuum or in an air tight jar containing nitrogen, or hydrogen, or even carbon dioxide, and it will continue for a time to give off carbon dioxide or carbonic acid. Of course fire in such a place is wholly impossible. If by connecting this muscle with a battery and galvanizing the muscle, it can be made to contract with energy. Now both carbon dioxide and heat are evolved quite rapidly. Thus we see the vital process is so far from mere oxydation or combustion that it is not that at all. Like many other of Liebig's beautiful theories this lacks the important element of truth. We may say that nutrition, or the changing of food into tissue and the breaking down of such in work results in heat, and in this complex process oxydation results; but that it is direct and only to supply heat. The above experiment and many others which I might give, had I time, is not true, and will not be found in the teachings of our present authorities in physiology.

Again there is a misconception as to the amount of air needed for life. Marchand found that a frog would live an hour in pure hydrogen, and during the time would give off more carbon dioxide than in air. He also found that frogs would recover after a half hour in a nearly perfect vacuum. Even people in cases of profound syncope breath almost no air. Thus the case recently reported from Ontario, where a girl after burial had turned in her coffin and had torn her hair. Such cases are often reported, and are authentic. Here even human beings breath so little that it is entirely imperceptible, and the air in a coffin suffices, perhaps for days and maybe weeks. This is like hibernation, where animals live with almost no air; though it is likely some is taken. Such statements as these are indeed strange, and some may feel inclined to say that they show culpable ignorance, and are an insult to the bee-keepers of the country. Let me say to such that in these days of the wonderful revelations of science it becomes the modest man to pause before he denies or condemns, else he will prove Pope's remark that a "little learning is a dangerous thing." I have known a score of insects, yes, a hundred, to live for