

not a disease but the result of long continued confinement, caused by continuous cold weather which does not permit of the bees flying so as to evacuate the bowels in the way nature has provided. In here speaking of confinement, I mean such as comes to bees wintered on their summer stands, for all are aware that with a uniform temperature at 15° above the freezing point bees can stand from four to six months confinement with perfect ease, while a confinement of the longest named period, if on the summer stand, would be ruinous. But I think I hear some one say "bee-diarrhœa must be a disease, if not tell me why one colony often dies of it while another, apparently in no different shape in the fall, comes through all right." Now with all respect to such an one, I would ask him to account for this state of affairs along the line of disease. This was the very ground which caused me to leave the disease theory. To all the "knowing ones" of the theory I propounded the following question (as I had many cases of the kind) two colonies sitting side by side and as near alike as to stores, bees, etc., as two peas, as far as could be seen, are prepared in the same way for wintering. One dies before March 20th and the other comes through in splendid condition. What caused one to die and the other to live? The reply I got, without exception, was: "We do not know." Will any reader of the C.B.J. answer the question?

Now let me explain a little farther and see if it is not all plain along the line of being caused by confinement. In 1873 I was put on record as saying "that with a long, steady cold winter would come great mortality of bees, while in winter during which warm spells occurred, wherein a chance was given bees to fly, the mortality would be at minimum, even although the average temperature might be several degrees colder than the former." The thirteen years which have elapsed since then prove that prophecy correct. During our greatest loss, a few years ago, I had 145 colonies, 55 of which were placed in the cellar for winter, and 90 left on their summer stands. From the 22nd day of October till the 20th day of March there was not a day warm enough for bees to fly, although the average temperature of the winter was above those we frequently have. The result was I lost 75 colonies out of the 90, while of the 55 wintered in the cellar 54 came out in splendid condition. Now the question I understand to be raised is, if no disease was present, why did not all the 90 die alike? Why was the 15 exempt? Simply because from a little more vitality on their part they were enabled to hold out a little longer than the other 75, while a month more of

the same weather would have caused the loss of all which were outdoors. There is a period of confinement beyond which a colony possessing the *most vitality* cannot pass, as all must admit hence I ask is it a disease which kills the last? If not, and they that are possessed of the best vitality succumbed earlier, is it a disease that kills the first. Again, if bees just ready to die with "the disease" have a good fly so as to empty themselves, they are cured at once, thus proving that I am right, for if a flight cures, the lack of it must be the cause. Once more, with the same food and same surroundings, except temperature which caused the first colony to die, the "pre-disposing cause" to diarrhœa and death, if down in Texas and Florida causes life and health. This at the same time of year as above, while the same is true in this locality during July and August, when the bees can fly here as they do in Texas and Florida in winter. Is it not plain then that the *prime* cause is not in the food but in the confinement. That food, dampness, poorly protected hives, etc., have much to do with our wintering trouble I am free to admit, but if we had no winter we would not have any *wintering troubles*. Is not this plain? After a careful watching of our wintering trouble I find about this in every case, the present winter being no exception. All colonies pass through the Nov. and Dec. confinement in safety, but by the 25th of Jan. some of the colonies having older bees or less vitality from any cause begin to show uneasiness, and as the days wear on the bees begin to eat more to support their wasting tissues. From this strain upon them many now begin to die, and instinct teaches the survivors that unless more bees are reared to take their place they must soon become extinct. Chyme is now prepared by the nurse bee, with which the queen is fed, so she shall begin egg laying and in a few days the cluster is broken, thereby causing the temperature of the hive to rise from its normal degree of 64° to 68° up to that of brood rearing which is from 85° to 95° . If a chance to fly occurs at this time or a little before all the trouble is ended for another six weeks or two months, but if not the mortality commenced gains rapidly, as many times the food is required to keep up this brood rearing temperature, which was required for the other, so that the intestines are overloaded to bursting and the bees have the so-called "diarrhœa." A chance to fly now helps, but such a colony is liable in spring to dwindle and die from exhausted vitality. Should this chance not come the combs and hives are soiled, the bees die by hundreds every day till most of the old bees are dead. Young bees now begin to hatch, but such young fuzzy bees have not vigor enough to stand the rigors of our northern winters and soon all perish together. As week after week of confinement succeed each other, other colonies more vigorous than the first commence to get uneasy and go through the same process, this continuing till warm days come, so they can fly often, after which nothing of the kind occurs. From three careful watchings I am convinced that no colony could endure more than six or seven months confinement on the summer stand and not more than eight or nine when placed in the best repository.

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