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THE CANADIAN BEE JOURNAL

FOUL BROOD

By D. M. Macdonald, Banff, Scotland.

The editor lately desired me to write an article on Foul Brood for publication in the Canadian Bee Journal, and I have pleasure in responding, because I have some expectation that I can shed some light on a subject very much written about and yet not much understood. It has long been recognized in this country (Great Britain) that there were two types of this destructive disease-a virulent and a mild. Many statements made by trustworthy bee-keepers, seemingly antagonistic, can be reconciled when we accept this fact, and in no other way. The most recent names are far from being satisfactory, and I will not use them, as both types are quite common, both in Europe and America. The one I will call by the good old name Bacillus Alvei; the other, following Dr. White's descriptive name, I shall designate Bacillus Larvæ.

No name is more honored in connection with the scientific investigation of this disease than that of Mr. Frank A. Cheshire. His main facts remain undisputed, and most of his assertions are impregnable, but it must be remembered that much water has passed under the bridge since 1885—a quarter of a century ago.

Bacteriological study has advanced considerably, new and more sympathetic media have been discovered, and microscopic appliances have been considerably perfected. Therefore, without lessening our respect for Mr. Cheshire, or seeking to deduct anything from his claims, we must recognize that more is known now than in his time. For long, indeed, investigators took too much for granted, and, without seeking more light, simply assumed that all forms of bacteria found in cases of foul brood must be Bacillus Alvei, and they treated matters as if no other could be present. That was simple, because even under the microscope, different species might look alike. It must be remembered that it requires a microscope magnifying 600 diameters before these germs or r.:crobes can be even seen. They are so infinitesimal in size that it takes 12,000 of them placed end to end to extend the length of a single inch. It follows that examination of these minute parasites, even under the microscope, can reveal the fact only that they are bacilli.

This Cheshire did, and he also, by culture, reinfected other bees with the bacillus, to which he gave the specific name of Alvei. This remains with us, an incontrovertible fact, and aids us in differentiating between these and other somewhat similar bacilli also found in foul brood. Now, if this latter, when subjected to cultural media, such as gelatine, bouillon, potato milk, and many other of the media employed by the bacteriologist, will not reproduce this particular bacillus when they do develop Alvei, it should be clearly seen that here is evidently something new. For years past some new organism was observed by several investigators, among them being Drs. Maasen and Burri in Europe, and Dr. White in America. These scientists cultivated this strange microscopic plant on new media, and produced a new species of bacillus. It would only involve us in intricate technicalities to dissert on the various "soils," but it is by the differences which are observed in the growth upon the various media, and the effect produced by the various growths on the media, that one species of bacteria is determined from another. Here we have the secret of it all! By a medium not used by Cheshire, namely, bee larvæ from a healthy hive, Dr. White was able to prove the existence of two species of bacillus-the hitherto investigated and described Alvei,

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