

other respects characteristic tubercle bacilli, may be grown in the depth of culture fluids, an observation which we<sup>3</sup> have just confirmed and extended.

In our papers,<sup>4</sup> which the authors quote among their examples of "misnamed cultures and studies of the tubercle bacillus," we demonstrated that a series of cultures of tubercle bacilli recently isolated from active tissue lesions and cultures with a history of maintained virulence exhibit certain characteristics, characteristics which without question place them as belonging to the species. Certain of these have been shown to dissociate into avirulent forms which exhibit certain characteristics at variance with the classical definitions. These observations are in agreement with and in extension of the work of the authors mentioned in the previous paragraphs. At the same time, we pointed out that a series of avirulent cultures and cultures with a history of loss of virulence exhibit characteristics which relate them to the forms known to have arisen by dissociation from characteristic tubercle bacilli. Professor Hastings and Dr. McCarter advance interesting historical evidence that one of the latter should be regarded as an acid-fast saprophyte rather than a tubercle bacillus.

Work of the last decade has established beyond cavil the fact that bacteria are subject to variation. Variation of the tubercle bacillus is imperfectly understood, but the results and theories so far advanced are in complete agreement with the more extensive data accumulated concerning other groups. Studies of the tubercle bacillus will not be promoted by defining the species in such conservative terms as to exclude the variants which we observe.

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### THE SWARMING OF ANTS

ON Sunday afternoon, September 4, 1932, as I was returning from a walk in the country, I noticed several winged ants (*Tapinoma humilis*) in the air. By the time I reached home, there were great swarms of them everywhere. I examined my front lawn, and found great excitement among the ant colonies. Workers, winged queens and winged males were running herē and there around their entrances. The entire lawn was a seething mass of ants. The winged forms were rapidly leaving the ground, and taking to the air.

On my coat I found many males, apparently exhausted and unable to fly away when I tried to shake

<sup>3</sup> G. B. Reed, *Canadian Journal of Research*, in press.

<sup>4</sup> G. B. Reed and C. E. Rice, *Canadian Journal of Research*, 4: 389, 1931; 5: 111, 1931.

them off. They had mated with some flying queen a few minutes before, I assumed. Before an hour had passed, I noticed numerous males on the ground, helpless, and apparently dying. Some were being dragged away by workers, which appeared to be attacking the males as though helping to kill them.

At the end of another hour there were many mated queens crawling about on the ground and on the grass blades. As I watched them, I found several in the act of tearing off their own wings. They had evidently mated while in flight, and were now ready to settle down to their business of rearing a family. Soon there were countless queens stripped of their wings crawling about everywhere, seeking new homes. There were also many queens which did not tear off their wings.

As darkness approached, the air cleared up, and no more flying honeymoons were in evidence. The excitement of the colonies was dying down, and the queens were disappearing in various crevices and holes. There were still many males crawling about in a semi-stupor. A careful look over the surface of the ground revealed hundreds of delicate wings which had been shed by the mated queens. As darkness fell, all was again quiet.

My attention was first called to the flying ants about three o'clock in the afternoon, Central Standard time. Their numbers seemed to be greatest between four and five o'clock, and by six o'clock, the affair was waning. By seven-thirty, all was quiet. I inquired to find out whether this swarming was very extensive, and learned that it covered most of this state as well as adjoining states. I do not know how much farther it extended. Tourists stopping at the gasoline stations that same evening, reported having driven through swarms of them for several hours over a distance of a hundred miles or more.

The next morning I examined my lawn again, and found no indications of the previous day's rendezvous, aside from the many wings scattered about like the remains of some aeronautic battle. A few wingless queens were found, and a number of dead males were uncovered. The workers had apparently cleared away the debris as much as possible. All was peaceful and industrious. Life had once more settled down to routine matters.

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### THE GROWTH OF STALAGMITES

THE brick part of Fort Morgan (at the mouth of Mobile Bay, Alabama), where the data in this communication were observed, was built in 1855. Active use was made of this portion of the fort until after the Spanish-American War, when it was abandoned.