Conclusion.

In the foregoing pages the habit of developing repletes has been shown to recur sporadically in some six different genera of ants, namely, *Prenolepis, Melophorus, Plagiolepis, Leptomyrmex, Camponotus* and *Myrmecocystus.* We are therefore dealing with a case of convergent development and as in other cases of this kind, we are led to determine the external conditions that must act as the common stimulus in calling forth this peculiar adaptation on the part of such different ants. The geographical distribution of the various honey ants points to drought as one of the most important of these conditions, for nearly all of these insects are confined to the dry plains and deserts of North America, South Africa and Australia. Forel seems to be the only author who has noticed this peculiarity in the distribution of these insects. He says (1902): "The extraordinary distension of the crop seems to be frequent in the Australian species of the genera *Melophorus, Camponotus* and *Leptomyrmex.* I suppose that this is due to the extremely dry climate of the country, which must compel the ants to remain, often for long periods, in their subterranean abodes. At such times a store of provisions in living bags must be very useful to them."

There can be little doubt of the truth of this statement, but I believe that it should be expressed in a different manner. The impulse to develop repletes is probably the brief and temporary abundance of liquid food (honey dew, gall secretions, etc.) in arid regions and the long periods during which not only these substances but also insect food are unobtainable. The honey is stored in the living reservoirs for the purpose of tiding over such periods of scarcity, and the ants remain in their nests because they do not need to forage. Hence the confinement mentioned by Forel is not the immediate but one of the ulterior effects of drought, for I am convinced from my observations on desert ants that no amount of dryness will keep these insects in their nest when they are in need of food.

Nylanderia imparis would seem to be an exception to the general rule of distribution in the honey ants, since the typical form of this species occurs in rather shady places and in clayey soil which holds moisture rather tenaciously. It is not improbable, however, that what is known as var. *testacea* Emery is really the ancestral form of this species. This ant nests in sandy soil and is one of the most abundant insects in the pine barrens of New Jersey and in similar localities in the Eastern States. Now these are xerophytic regions, as shown by the pines, scrub oaks and many other plants, and the sand in which this vegetation grows does not retain water readily and therefore presents conditions not unlike those of the deserts and great plains.