primitive wasps belonging to the families Scoliidae, Mutillidae and Thynnidae, but authorities differ as to which of these families should be selected as the most probable ancestors. Emery<sup>2</sup> believes that the ants arose from the Mutillidae, Forel from the Thynnidae and Handlirsch<sup>2</sup> from the Scoliidae. But as all three families are so closely related to one another that authorities fail to assign them the same limits, the differences of opinion are after all not very pronounced.

Handlirsch<sup>4</sup> advances the opinion that the ants first made their appearance during the Cretaceous, but I am inclined to seek their origin in an earlier period, during the Jurassic or possibly even as far back as the Triassic. According to Schuchert,5 these were periods of maximum continental emergence and aridity and would therefore present what I conceive to be the optimum environmental conditions for the development of the family Formicidae. The insects most closely related to the ants (Thynnids, Scoliids, Mutillids) are very decidedly xerothermic and hence confined to deserts or to hot sandy and gravelly situations, and the ants present a number of peculiarities which seem to indicate more or less clearly that they originally lived and developed in the same kind of a habitat. They are at the present time extraordinarily abundant in species and individuals in the desert regions of the globe (Australia, North Africa, Sonoran Regions of North America) and as a group seem to show in their inherited small average stature the stunting effects of an arid environment. The great majority of species have retained the primitively terrestrial and fossorial habit. which is an obvious adaptation to avoiding intense heat, insolation and evaporation during the summer months and the cold of nights and of the winter. The aptery of the workers and dealation in the females are closely connected with such habits. Most of the species, moreover, are decidedly petrophilous and many are exquisitely hypogaeic. marriage flight, to which the males and females of most of the species so rigidly adhere, would seem to be a habit that had originated in open, unobstructed country. The adaptations, though numerous and intricate, to living in mesophytic and hygrophytic forests (Amazonian and East Indian rain-forests) are clearly secondary and of much more recent origin.

That the workers of ants originally possessed wings like the females is shown by the presence of minute vestiges of these organs in the larval and pupal stages<sup>6</sup> and by the occasional, pathological development of very small wings in the adult. This condition occurs in the 'pterergates' found by Donisthorpe<sup>7</sup> and myself<sup>8</sup> in certain species of *Myrmica*, *Cryptocerus* and *Lasius*. The development of aptery, with the concomitant