

dered. Regarded in this way, the familiar statement that parasites cannot become robbers loses its significance as an argument against the derivation of *sanguinea* from *rufa*-like ancestors, for *sanguinea* comes not from *rufa*, but from a *rufa*-like type, with a loss of colony-foundation instincts, which does not involve parasitism. Neither does this mean degeneration, but rather a high development, as in the present day *rufa*. Viehmeyer's opinion that these species are doomed to extinction seems "curious" to Brun, considering the immense size of the colonies of *rufa*; as "curious" as the organic and psychical degeneration which he thinks he finds in the high psycho-plastic endowment of *sanguinea*. In saving the psycho-phylogeny of his robber stages, Viehmeyer assumes that the females of *sanguinea* originally took part in the robber raids of their colonies, but this opinion is too uncertain to be taken seriously in the discussion. Brun concedes Wasmann's derivation of dulosis in *Formica* from a facultative adaption stage to be the weakest part of his theory. The apparent analogy of permanent dulosis and temporary parasitic colony foundation will not stand strong criticism, because we do not know that the colonies are exclusively founded with the aid of *fusca*. We can account for the social parasitic condition of *rufa* only by assuming a condition involving the loss of the ability to establish a colony unaided, and this loss could have been due as directly to the pupal-robbing habit as to obligatory social parasitism. Wasmann did not mean that a subparasitic condition was a step toward dulosis, any more than he wished to deduce the already developed social parasitism from dulosis. He considers dulosis in *sanguinea* a direct engraphic influence. Through the presence of *fusca* in the nest the young *sanguineas* are influenced to raise the *fusca* pupae obtained by raids, and care only for those whose smell is similar to their own. This psychological reason of Wasmann does not seem to Brun to hold, for the tendency of *sanguinea* is not limited to *fusca* pupae, but extends also to allied species. This, Brun explains, is a fixed, inherited association from analogy. The workers in colonies not socially parasitic often show just as strong a tendency toward dulosis.

Brun is not inclined towards Wasmann's hypothesis of the origin of dulosis in *Formica* from facultative social parasitism,