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BINARY ANTERIOR OCELLI IN ANTS

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In a paper by this name in the *Biological Bulletin* William Morton Wheeler (1936) published an account of binary anterior ocelli which was believed to be the first record of this condition in adult insects. He was led into a search of the literature by finding a doubling of the anterior ocellus in 15 out of more than 4,000 of a colony of anomalous ants (*Cephalotes atratus quadridens* DeGeer), which he called gynandromorphs. This colony was one which I collected in Trinidad, British West Indies. The discovery led him to examine other ants, an examination which revealed a comparable condition in a soldier of the Indomalayan ant, *Pheidologeton diversus laotina* Santschi, and in more than 60 per cent of a series of 300 soldiers from 25 colonies of the neotropical leaf-cutting ant, *Atta cephalotes* L.

The anterior ocellus of the insect eye has long been known to have a double innervation, while the lateral ocelli have a single innervation. In the ontogeny of insects there are also two primordia for the anterior ocellus itself, one for each of the lateral ocelli.

It is the purpose of this note to give credit to a much earlier discoverer of the binary anterior ocellar condition in ants and to add several additional records.

H. W. Bates in *"The Naturalist on the River Amazons,"* of which the first edition was published in 1863, while writing of the large leaf-cutting ants or Saüba at Pará, Brazil, says:[1]

"The third order of workers is the most curious of all. If the top of a small, fresh hillock, one in which the thatching process is going on, be taken off, a broad cylindrical shaft is disclosed. . . . If this be probed with a stick . . . a small number of colossal fellows (Fig. 3) will slowly begin to make their way up the smooth sides of the mine. Their heads are of the same size as those of the class Fig. 2; but the front is clothed with hairs, instead of being polished, and they have in the middle of the forehead a twin ocellus, or simple eye, of quite different structure from the ordinary compound eyes, on the sides of the head. This frontal eye is totally wanting in the other workers, and is not known in any other kind of ant."

A new record which is here figured (Fig. 1) is that of another fungus-grower, *Acromyrmex* (A.) *coronatus* Fab. In this genus, however, there is no soldier caste, although the workers are otherwise as polymorphic, and the large workers do not normally have ocelli. Three large workers from Bolivia (Rosario: L. Rocagua, W. M. Mann, collector) show the condition as represented. The frontal area,

[1] His description and figures (Everyman's Libr. ed., 1930, pp. 10–16) of the large, shiny-headed soldier with distinct ocelli fits *Atta cephalotes* L. and this is the species he names (as *Oecodoma cephalotes*). He, however, states that the male is not much more than half the size of the female and this is characteristic of *Atta sexdens* L., the common Brazilian species. It is possible that most of his extensive account, which is not quoted, refers to *sexdens* and the condition of double ocelli refers to *cephalotes*. When he returned to England he may have examined the latter in collections and then discovered the ocelli, or he may have seen the condition in life along the upper Amazon where *cephalotes* and *laevigata* occur.