



1. *Experiments on Seasonally Dimorphic Forms of African Lepidoptera.*
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It is now well known that the phenomenon of seasonal dimorphism is of common occurrence in tropical and subtropical lepidoptera. In those species that produce several broods in the course of the year it is often found that the successive broods differ widely in appearance according to the meteorological conditions prevailing during their immature stages. The contrast between such seasonal phases becomes especially marked in the case of forms inhabiting regions where there is a sharp distinction between the periods of rain and of dry weather.

The succession of these distinct phases is not determined by a regular principle of alternation; for in the instance of quickly breeding forms a series of successive generations may follow one another during the same 'wet' or 'dry' season, all the generations being of the same type, and varying in number according to the duration of the 'wet' or 'dry' conditions in any particular year. But no sooner do the meteorological conditions change than the next emerging brood of the same species shows a corresponding alteration, often sudden, but sometimes so gradual that it appears to take two or more transitional stages to bring the insect up to the full development of the new seasonal phase. This latter phenomenon is especially well marked in the genus *Byblia*.

Experiments have been tried with a view to ascertaining the particular stimulus or combination of stimuli which causes the butterfly to assume its special seasonal form at the appropriate time. In the classical instance of the European *Araschnia prorsa-levana* it was found by Dorfmeister, Weismann, Merrifield, and others that pupæ which left to themselves would have produced the 'summer' form *prorsa*, will if refrigerated give rise to a phase more or less closely resembling the 'spring' form *levana*.

Similar trials have been made with tropical and subtropical species, but until recently with somewhat inconclusive results. Mr. G. A. K. Marshall, however, working at Salisbury in Mashonaland, has now succeeded in showing that by artificially varying the conditions to which the butterflies are exposed in their immature stages it is possible to bring about in the midst of one season the emergence of a form which under natural conditions would only have been produced in the other.

Mr. Marshall has further demonstrated by experiment that the period of growth during which the butterfly is susceptible to climatic influences varies in different species, the critical stage being in some cases confined to the larval, in others to the pupal condition. He has also shown in one instance (that of *Belenois severina*) that the effect of moisture combined with heat differs entirely from the effect of the former factor alone.

Some of the actual results of the experiments referred to are exhibited, the specimens shown belonging to the genera *Teracolus* (*T. achine* Cram. and *T. omphale* Godt.) and *Belenois* (*B. severina* Cram.). The exhibit also includes specimens of other groups to illustrate the general principle.

