

in temperate Europe, here in Belgium itself, the zoologist who is really an observer meets at every step cases of dissimulation which are every whit as striking as those which tropical nature offers us."¹

The arguments I have used elsewhere in discussing this subject² attempt to show that in the very nature of things protective resemblance must prevail in a world where creatures are the food of others, and escape destruction when observed by their predaceous foes less easily or less frequently than their fellows. From this standpoint it would be difficult to refrain from the logical conclusion that protective resemblance was nearly or quite as much a feature of past life as of present.

Naturally, since colouring forms the next important or the most common part of protection, proof of such protection cannot be derived from the fossils. But pattern of markings is also a conspicuous element of protection in existing types, and in a few fossils among insects we can detect markings of a precisely similar nature to some which in existing insects can be proved protective; but here habit and association are often necessary factors and these can usually only be inferred in the extinct types, but inferred in some instances with considerable reasonableness.

The examples which I have in mind are all drawn from Tertiary faunas; but the reason I refer to the matter here is that it seems to me fairly reasonable to look upon some forms of Carboniferous cockroaches, if not indeed most of them, as probably imitative, and thereby protected. The first cockroach wing ever described from the coal was at first regarded as a fern leaf, and in all or nearly all the localities where their remains have been found they are associated with fern leaves in immense abundance. While searching for them in the Permian deposits at Cassville, W. Va., I was much struck by their resemblance to each other and was repeatedly obliged to use the glass to determine whether it was the wing of a cockroach or the pinna of a fern like *Neuropteris* I had uncovered, and the instances are not rare where they agree completely in size. The general distribution of the nervures is to cursory view the same in each and the contour is often nearly identical. Only the differentiation of the anal area in the cockroach wing at once distinguishes them, but this is really a feeble point and would often be noticed only by an expert. Is it not then plausible to suppose that the intimacy of the resemblance is due, as such an instance of associated organisms would now be regarded as due if the colour agreed, to the action of natural selection in producing protective resemblance? The ordinary colour of the fore wings of existing cockroaches is brown or testaceous, yet there are not wanting numerous examples, at least in the tropics, where they are as green as the leaves of ordinary vegetation.

¹ Bull. Acad. Roy. Belg., (3) xxiii, 92.

² Atl. Monthly, Feb., 1889; Butt. East. U. S. and Canada 710-720.