

DIFFUSION OF THE HAWK MOTHS IN NORTH AMERICA.*

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In the issue of *Psyche* for April, 1903, I published a paper on the diffusion of insects in North America, in which reference was made in a footnote to the probable trend of diffusion in the Sphingidæ, and this may be looked upon as supplementary to that publication. In the former paper I could not deal with this phase of the problem of diffusion of insects, to the extent that this family deserves, nor am I certain that this is possible even now, but it seems desirable to point out some suggestive features of the present distribution and probable diffusion of this interesting family of moths.

The Sphingidæ, or Hawk moths, are noted for their stout, spindle-shaped bodies, and for possessing the most powerful wings of all the Lepidoptera, these last being long and slender, and provided with exceedingly strong muscles, thus resembling those of sea birds. They are in this way fitted for long flights, and are not infrequently driven by the winds far out at sea, where they are encountered by ships long distances from any land. They are primarily tropical insects, though they have become widely diffused, have adapted themselves to almost frigid climates, and are thus found throughout all the principal regions, except in New Zealand, where there is but a single form closely allied to, if not identical with, the almost cosmopolitan *Sphinx convolvuli*, Linnaeus. That these insects have existed structurally the same since a very remote period is shown by the occurrence of an insect in Prussian amber that belongs to this family, and has been referred to the genus *Sphinx*. The specimen cited by Wallace as having been found in the Upper Oolite of Bavaria seems to have been another insect and not one of the Hawk moths.

We have in North America 82 species belonging to 31 genera. Of these, 48 species, or more than one-half, are found in the eastern United States, and 21 of these are known to occur southward through Florida and in South America, while of the remainder many are known to extend southward into Mexico. The 21 species have most assuredly reached North America by way of what I have termed the Antillian trend of diffusion. Of the remaining 26 of the 48 species, some few of them range far enough to the west to indicate a diffusion from Mexico, or northward through that country, though the majority of them are more or less closely

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