

Insects from the Summit of Mauna Kea.

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(Presented at the meeting of October 5, 1922.)

Several reports have been made on the insect life at higher elevations on Mauna Loa. On September 7, 1916, William H. Meinecke exhibited specimens collected by him in Mokuaweoweo crater (Proc. Haw. Ent. Soc., III, p. 285). December 14, 1916, William A. Bryan exhibited a similar series, which he had captured on the summit the previous August (id., III, p. 295).

As long ago as 1897, Dr. H. B. Guppy, writing in the *Pacific Commercial Advertiser* on "The Summit of Mauna Loa" (see review in *Nature*, Vol. LVII, p. 21, November 4, 1897), speaks of the insect life on the summit as follows:

"Curiously enough, insects of various descriptions are common on the summit. One species of butterfly common at the coast is not at all infrequent. The butterflies were more often to be found dead than alive, and those flying about were in a half-drowsy condition and easily caught. There were flies of different kinds, the house-fly and the blue-bottle fly proving a great nuisance. Besides these there were moths, bees, gnats, and an occasional dead dragon-fly; while bugs and other insects were collected as they fed upon the bodies of dead butterflies. These insects were more common when the wind was southerly, and no doubt they had been brought up to this absolutely sterile region by the wind. Evidently most if not all of the butterflies and moths soon die, and probably the other insects, too. The whole matter is, however, very suggestive, and shows how readily insects (even the parasitic bug) may find their way into the upper air currents."

Mr. William H. Meinecke ascended to the summit of Mauna Kea, July 25, 1922, where he secured specimens of the following species: Lepidoptera: *Pontia rapae* (Linn.), the cabbage butterfly; Diptera: *Chaetogaedia monticola* Bigot, and *Frontina archippivora* Williston; Hymenoptera: *Amblyteles koebelei* (Swezey), *Echthromorpha fusco-orbitalis* Cam., *Bassus laetatorius* (Fabr.), and *Limnerium blackburni* Cam.

Concerning these he says: "Several dead cabbage butterflies were observed. Other insects, principally flies and ichneumons dead on the snow, the larger ones causing the formation of deep holes in the snow. Several flies and wasps were alive when captured." He thinks there is little doubt that all these insects were carried to the higher altitudes by the wind, and that between the lower temperature and the lower air pressure few are able to survive for any length of time.