

LETTERS FROM THE SOUTHWEST.

Insect fauna of *Dasyilirion wheeleri*.

By H. G. HUBBARD.

HOOKER'S HOT SPRINGS,
GALIURO MTS., AR., May 25, 1897.

The ridges in this vicinity are populated by numerous clumps of *Dasyilirion wheeleri*, many of them killed by the cattle, which constantly eat out the buds. The young and vigorous plants do not seem to be infested by insects, but the dead and dying plants are inhabited by a fauna as interesting as that of the Giant Cactus, and among them I recognize a few species as identical, for instance some of the small Histeridæ and one of the Hololeptas (*H. vicina*), which are extremely abundant in *Dasyilirion*; I find also *Trimium puncticolle*, *Eumicrus lucanus*, *Ditoma gracilis*, and *Holoparamecus pacificus*. The numerous Staphylinid beetles of the *Dasyilirion* fauna are, however, wholly different from those of the fermenting mass of *Cereus giganteus*, and belong mostly to the more deplanate forms of the subfamilies Aleocharinæ, Pæderinæ, and Piestinæ. The large *Belonuchus ephippiatus* of the Giant Cactus is represented in *Dasyilirion* by another species (*B. xanthomelas*), which, however, I find also in decomposing *Yucca* and *Agave*. The large Dipterous (*Volucella*) larvæ and the Staphylinidæ of the genus *Maseochara* as well as the Hydrophilidæ are here wanting, but there are in *Dasyilirion* numerous other species of insects, almost all of them Coleoptera and of small size.

All these insects live between the broad, flat, imbricated, and closely applied leaf bases of this most singularly constructed plant, and are dependant upon the disorganization effected by a large Calandrid beetle (*Scyphophorus acupunctatus*), and, more rarely, allied species (*Yuccaborus frontalis*). These beetles usually enter the inside of the plant alongside the buds that start between the leaf bases from the central axis.

Into the holes made by these Calandrids the Hololepta and *Belonuchus* push their way, and they are accompanied by the smaller Histerids (*Epierus planulatus*, *Paromalus opuntia*, *P. gilensis*, *P. tenellus*), the smaller Staphylinidæ, several Tenebrionidæ (*Aphanotus parallelus*, *Ulosonia marginata*), and finally a very peculiar beetle, which is no doubt an undescribed Othnius. The small Staphylinidæ of this fauna are very interesting; the commonest is a Piestid, a veritable beauty (*Piestus extimus* Sharp). It runs actively about and sweeps its long antennæ from side to side like a *Læmophlœus*. Next in interest is a small slow-moving Pæderid (*Leptogenius* n. sp.), its body being dark umber-brown, velvety and opaque, with dull-red head and legs. A few

specimens of *Eleusis fasciata* also inhabit the fermenting Dasyliirion leaves. Finally there are several Aleocharinæ, all more or less flattened, opaque, with dark coloration, the elytra alone being reddish. Of other orders I find the jumping larva of a Pio-phila, a peculiar Phlæotrips and the larva of a small Lepidopter.

Without a careful and methodical dissection of the plant hardly anything of this rich fauna can be found. The bud and the bud leaves must first be removed, and then the leaves surrounding the central axis of the plant lifted out one by one in their regular order, beginning with the uppermost layer of leaves. It takes several hours to thoroughly examine a large plant, but not a single insect living between the imbricated layers of leaves can make its escape from the bowl-shaped cavity between the handles of the leaves and the central axis.

In the lower layers of leaves, near the ground, a number of other beetles creep in from beneath but do not properly belong to the Dasyliirion fauna: various Tenebrionidæ (*Arcoschizus decipiens*, *A. sulcicollis*, *Emmenastus longulus*), Hemiptychus, Elaterid larvæ, etc. Underneath the dry clumps of dead Dasyliirions which can be overturned, there are the usual rats' and mice nests and usually a numerous colony of Eleodes.

In the dead flower stalks I see the burrows of a Buprestid, probably *Thrincopyge*, but flower stalks are rare here, as they are generally eaten off while young and tender. One of the poles of last year, however, had a large colony of *Apotrepus densicollis*, most of the specimens being immature. The flowers of Dasyliirion attract great numbers of a Chrysomelid (*Triarius trivittatus*) and small Mordellid beetles (*Pentaria decolorata*).

I forgot to mention that I find constantly in the central axis of dead Dasyliirions a large lamellicorn larva (*Phileurus illatus*). It is this larva which reduces to powder the axis of the dead plant, following up the work of *Scyphophorus*, which feeds for the most part in the leaf bases, seldom burrowing deeply in the central core, and never attacks the dry and dead plants. The *Phileurus* larvæ reduce the core which binds together the disk-like whorls of leaf bases, so that the entire plant can be overturned and disintegrated by a few kicks with the foot. The larva is forming its pupa cell in the rotten heart of the plant; the pupa has a pair of stout horn-like elevations upon the head, and is dark red in color; in fact, it resembles very much that of *Xyloryctes*. It is difficult to preserve the living pupa without injury in spite of its apparently solid construction. There is apparently another large white grub in the older stems after they have been partly eaten out by the *Phileurus*. I have not found the pupa of this, but it may belong to *Listrochelus* or *Phytalus*. A Longicorn larva of rather peculiar appearance (perhaps *Tragidion armatum*) bores into and through the dying leaf bases of Dasyliirion and forms pupa cells which resemble those of *Scyphophorus*.

This communication was briefly discussed by Messrs. Pollard, Cockerell, Ashmead, and Schwarz. Mr. Pollard asked whether the agave and other large plants of that region have similar insect fauna. Mr. Schwarz replied that there are in Mr. Hubbard's letters various scattered observations and notes on the insects living in or on *Yucca*, *Agave* and *Nolina* which he expects to gather and present at a future time. *Agave palmeri* seems to be the only Amaryllidaceous plant of southern Arizona which when perfectly healthy is attacked by insect borers. These are two species of the Curculionid genus *Zygops* and a lepidopterous larva of the genus *Megathymus*.

Mr. Cockerell stated that two Coccids had been found upon the *Dasyliirion*, but that both species were also found upon yuccas. Mr. Ashmead said that the *Dasyliirion* insects were very similar in characters to the insects found in decomposing palmetto in Florida.

—The next paper was by Mr. Marlatt, and in the absence of the author was read by Mr. Benton. It was entitled :

REMARKS ON SOME RECENT WORK ON COCCIDÆ.

By C. L. MARLATT.

No group of insects has excited more interest, nor attracted more new students perhaps in the last few years, than the scale insects, or Coccidæ. Entomological magazines, and, in fact, journals of all sorts and descriptions, and in the most unexpected and unusual quarters, have been heavily charged with literature of new species, sub-species, etc. The great number of such new species has struck the attention of non-workers in this group, and particularly has the designation of an astonishing percentage of sub-species, physiological species, varieties, etc., been calculated to arouse the gravest suspicion as to the reliability of the work done and the validity of the forms characterized, especially when the characters on which the new species, sub-species, etc., are based are at all carefully investigated. That with all the enthusiasm manifested in working up new material and describing new forms many good species are found and characterized cannot be doubted, and it is therefore the more to be regretted that the authors responsible for much good work have been led by a surplus of zeal to be guilty also of much that must be a positive detriment to the knowledge of this group of insects. For the benefit of future students, and with the intention merely to bring about, if possible, a much needed reform in the interest of the