

panied with the consequent increase of wood-boring insects. He strongly held that our cultivated trees are more vigorous in growth than their natural congeners in the natural forest, while the trees of North America, as a rule, grew more vigorously than those of Europe; and that the view that insects attack cultivated trees because these are more tender is entirely erroneous.

Mr. Howard read the following paper :

THE HABITS OF EURYTOMA.

BY L. O. HOWARD.

From the close morphological relationship of *Eurytoma* with the only phytophagic chalcidid genus, *Isosoma*, it has been questioned as to whether the former genus might not be inquilinous, or at least contain inquilinous species. From the fact that *Eurytoma* is reared almost exclusively from the habitations of endophytic insects, the correctness or incorrectness of this surmise is difficult to ascertain; and while the general opinion is to the effect that *Eurytoma* is parasitic, still no conclusive observations concerning the gall-inhabiting forms are on record, so far as I know; and we must remember that general opinion has always, until very recently, considered *Isosoma* as a parasite, solely from a supposed necessary uniformity of habit in the family Chalcididæ, or the series *Parasitica*.

Eurytoma is reared commonly from hymenopterous (Cynipid and Tenthredinid) and dipterous (Cecidomyiid, Trypetid and Agromyzid) galls, as well as from the burrows in wood of beetles of the families Curculionidæ and Scolytidæ, and of wood-boring bees and wasps. But two exceptions to this general statement are known to me. Mayr reared *E. appendigaster* from a *Microgaster* cocoon, and Giraud reared *E. nodularis* from a burrowing wasp's nest, and noted that it was hyperparasitic upon *Cryptus bimaculatus*.

In order to absolutely prove the actual habits of the species so commonly reared from galls, it will be necessary to open a gall at the proper time, note what the larvæ are doing, and watch them to maturity, and thus determine that you have *Eurytoma* larvæ and not those of some other of the very numerous gall-inhabiting Chalcidids.

Somewhat by accident, and certainly by good fortune, I have just been able to accomplish this result: In August,

1889, I picked a handful of galls of *Cynips quercus-prunus* (determined for me by Dr. Riley) from the ground in Lovers' Lane, Georgetown, D. C., and placed them in a beaker on my office desk. May 17, 1890, I cut open one of the galls and found six apparently full-grown parasitic larvæ and the remains of a larva which they had nearly devoured. I was very doubtful as to my success in rearing these larvæ after they had been thus disturbed, but I put them away without covering the hole. May 31 I again examined them and found that all had transformed to white pupæ, which on June 1 had turned to the natural black color, and which were at once recognizable as those of a species of *Eurytoma*. June 2 another gall was cut open and similar larvæ were found not as yet transformed. No more conclusive proof will, I think, be needed as to the parasitism of this species, at least, of this genus.

Walsh reared from *C. quercus-prunus* his *Eurytoma prunicola*, and I find from Prof. Riley's notes that in February, 1879, he bred a species of *Eurytoma* from galls of *C. q.-prunus* collected by Mr. E. A. Schwarz at Hearne, Texas.

Examination of these latter specimens, which I found in the National Museum collection, shows that the Texas *Eurytomæ* belong to a new species, which may or may not be the same as that found in the District of Columbia. Future rearing of the latter only can determine this point.*

Prof. Riley stated that the parasitic habit of *Eurytoma* had been practically proved in his experience long since, and that its being thus conclusively shown in this instance was interesting. The concensus of observation was so overwhelming that doubt was hardly justified; the larvæ of Chalcids are easily distinguished from those of Cynipids, and he had often had proof that was satisfactory to himself of the fact. He mentioned the much more justifiable doubt of some whether *Isosoma orchidearum* was truly phytophagic, and described having watched day after day the feeding of the *Isosoma* larva on the plant tissue.

Mr. Ashmead said that *Eurytoma* were frequently reared from Cecidomyiids and that the National Collection was rich in such rearings.

It was decided to dispense with the July and August meetings.

* June 6, 1890. Two of specimens issued to-day, and proved to be *Eurytoma prunicola* Walsh.—L. O. H.