titles of works published. He criticised the book for the omission of all references to the literature of the family name.

—Prof. Smith read a paper entitled "An Essay at the Classification of the American Noctuids." He gave considerable importance to the position of vein 5 of the hind wings as indicating the groups Trifinæ and Quadrifinæ, basing the division upon the position of the vein rather than its tendency to obolescence, which he regarded as a more secondary character. He also showed a series of phylogenies which he had prepared for the genera of several groups. Dr. Dyar took exception to Prof. Smith's idea that the Quadrifinæ were the more generalized, stating that it would be expected that the three-branched median vein represented the lower type as in the Notodontians, etc. Dr. Gill remarked that it did not follow that the highest Noctuids should necessarily have the most specialized venation. Prof. Smith briefly explained his position further. Dr. Dyar called attention to *Arsilonche albovenosa*, which has been considered to be the same as the European species. Dr. Chapman has shown in a letter recently received that the genitalia of the European form differ from those of the American form as figured by Prof. Smith, thus indicating a specific distinction as claimed by Grote. Mr. Ashmead also remarked on Prof. Smith's paper.

In the absence of Mr. Schwarz, Mr. Benton read the following letter written by Mr. Hubbard while in the southwest, in 1897.

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## LETTERS FROM THE SOUTHWEST.

By H. G. Hubbard.

*Insect fauna in the burrows of desert rodents.*

Yuma, Ar., *March 30, 1897.*

I find I have not reported my operations at Palm Springs, Cala., since March 14th. I have, in fact, not collected many things during the last week of my stay, as I was engaged in the laborious work of digging out and exploring the burrows of Spermophiles and the Kangaroo rat (*Dipodomys desertorum*). The holes of the latter baffled us entirely, and I am sure I did not succeed in reaching the true nest as I had to abandon the excavation at a

depth of 8 feet because of the treacherous dust in which we were digging. At that point the burrow, which had dwindled down to a single tunnel, was still going deeper, descending in short spirals, and although there were occasional sleeping pockets leading off from the gallery, as from those nearer to the surface, they contained nothing but a few scattered fragments of grass. A small Tineid moth (apparently not different from our common clothes moth, *Tinea biselliella*), was, however, continually coming up out of the depth of the hole, and this seems to indicate that we might have found at last a true nest or incubation pocket lined with grass and containing insects. The upper portion of the system of galleries was simply an interminable labyrinth of holes intersecting each other, irregularly and frequently in the upper layers of soil, but deeper down in more or less well defined layers or stores a foot or two apart. We saw, of course, no sign of the rats, but their dung, which is in very small and hard pellets, was scattered about the galleries in single pieces, never in accumulations. The holes, about the size of a man's wrist, were lined with dry and extremely fine dust, in which only a wingless cricket (*Ceuthophilus* n. sp. ?) and an occasional large Tenebrionid larva appeared to live in considerable numbers. The crickets sheltered themselves in pits or small tunnels as large as the little finger, and which were excavated vertically in the roof, extending upwards from the gallery about 2 or $2\frac{1}{2}$ inches. Nevertheless, I found in the upper galleries an occasional specimen of various small grey flies (*Leria pectinata* Loew, *Phorbia fuscipes* Zett. and *Ph. acra* Walk.); very rarely an Aleocharid with bright red elytra (? *Aleochara n. sp.*) which I found more commonly in the Spermophile holes; a wingless roach (*Heterogamia sp.*); a few specimens of a small Carabid (*Tetragonoderus pallidus*) and a small Silphid (*Ptomaphagus fisus*). The most interesting species is, however, a rather small black Histerid, resembling a Saprinus but having a single very slender claw on all tarsi (*nov. gen.*) and thus resembling the genus Chelioxenus. I secured only 3 or 4 specimens.

In one preliminary excavation in which the galleries were small we found also a single old and mutilated, but living, specimen of a large red Aphodius (*A. coquilletti* Linell), and a large, most remarkable Histerid, also allied to Chelioxenus, having red elytral

spots but with only the humeral striæ, and these nearly obsolete. It has also only a single tarsal claw and the front margin of the posternum is deeply emarginate (*nov. gen.*). The Tenebrionid larvæ are distinct from any I have seen before.*

The Spermophile, a very small greyish or almost white species, makes much smaller holes, although the entrances are begun in the hole of some larger mammal, so that for the first two feet it is frequently as large as that of the Florida Gopher. The Spermophile holes sometimes branch near the entrance and always turn abruptly. At a depth of 3 or 4 feet they ramify and enter a network of galleries connected with several external entrances. Frequently they are blind ends or small pockets, and sometimes in these there are large wads or nests of a peculiar soft grass which grows sparingly on the desert, or, at least in this oasis. Some, if not all, of these grass bunches are nests, as they are full of fleas and mites, and if near the surface they contain usually specimens of *Ptomaphagus fisus*. One nest we found at the termination of the deepest burrow, about 5 feet vertical depth, in a layer of very dry gravel and stones, which was composed not of grass but of a soft material like inner bark and felted into a ball with a cavity inside, evidently an incubating nest. It was also full of fleas in larva and imago, and also mites. Small bits of dung occur at random in the burrows and these attract in considerable numbers the Aleocharid with red elytra mentioned above, and more rarely a peculiar Saprinus† with rather translucent chitine and with oblique internal elytral spot. A large fly larva eats into the pellets of dung and there is also the small Tineid moth mentioned before, and a larger lepidopterous larva the imago of which I did not see. The subterranean crickets (*Ceuthophilus*) and the gray flies are very abundant and Tenebrionid larvæ not rare. In digging one of these nests we uprooted a common woody desert shrub and found in the roots an immense Cerambycid larva [*Derobrachys brevicollis*] which I still have alive. The elytra of this Cerambycid were frequently found in and about the nests or holes of the Kangaroo rat. The larva or the Saprinus mentioned above I secured in good series.

* They have not been bred but may belong to Craniotus or Triorophus. —E. A. S.

† This is a true Saprinus but quite different from anyone in our fauna.—E. A. S.

I forgot to mention that a single specimen of a dark Apocellus Staphylinid beetle [*A. tenuicornis* Casey?] was taken March 22d in the gallery of a Kangaroo rat, and in the same hole or system of holes near the surface I found a large, dead Stenopelmatus, with the legs bitten of by the rat but otherwise not eaten. My Indian helper, Benito, a very intelligent fellow, was well acquainted with this "Idaho devil" as an enemy to their agricultural plantations. Benito and I dug four days at these burrows and I paid him $1.25 per day, so that the few insects found are valuable. I feel sure there are more things to be found in subterranean mammals' holes, but the labor and expense of unearthing them are very great. It quite tired me out.

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## March 2, 1899.

The 142d regular meeting was held at the residence of Mr. E. A. Schwarz, 230 New Jersey Avenue N.W. Vice-President Gill in the chair and Messrs. Ashmead, Schwarz, Motter, Pratt, Dyar, Caudell, Chapin, Vaughan, Howard, Johnson, Patten, Heidemann, Benton, Matthis, Currie, and Woods also present.

Under the head of "Short notes and exhibition of specimens," Mr. Benton stated that on January 22d he had found brood honey bees in all stages of growth and new adults, indicating egg-laying the last of December. This is a very early instance.

—Mr. Matthis exhibited specimens of what he takes to be *Boreus brumalis* Fitch, which he had caught upon the snow in the Rock Creek valley after the recent blizzard. He showed by comparison specimens of a Boreus which he had caught last October at a high elevation on the Big Horn Mountains. This was a larger and darker form than *B. brumalis* and has not been specially identified. Mr. Schwarz stated that a Western Boreus had been described by Hagen, and Mr. Ashmead stated that Fitch's types of Boreus are in the U. S. National Museum. Mr. Matthis remarked on the appearance of Boreus near Boston, and Mr. Schwarz stated that these insects are common at Cambridge, rarely being found on snow, but readily obtained by sifting moss in early spring.

—Mr. Dyar showed a blown larva of *Apatela hæsitata* Grt.,