populous, a single one containing between 70 and 100 specimens, but the males appear to be just as rare as in Xyleborus.

In one instance another borer in Phoradendron twigs was met with, viz., a Bostrychid larva. This was bred and produced a somewhat crippled specimen of an undescribed species of Amphicerus. The species was not met with elsewhere in Arizona, but is probably not peculiar to the mistletoe.

The Californian Psyllid mentioned above was not observed at any place visited by me in Arizona, but a Lycænid larva was not rare feeding on the leaves of Phoradendron. Several imagoes were bred, and Dr. Dyar determined the same as *Thecla halesus*.

Mr. Dyar stated that the published records show the food plant of this Thecla larva to be oak. This he thought probably was a mistake and mistletoe is its true food. Mr. Ashmead said that the live oaks in the city of Jacksonville, Fla., were covered with mistletoe, especially at the tops. He has seen a scale insect and an Aphid on the mistletoe, but has never worked either of them up.

—Mr. Pollard asked whether any insects were known to feed upon the Spanish moss (Tillandsia) in the South. Messrs. Ashmead and Schwarz replied that this moss is full of insects, but they thought that none of them feed upon it, although Mr. Schwarz stated that *Monocrepidius vespertinus* eats the leaves occasionally. Mr. Morris stated that in the moss used in packing he had seen a breaking or eating of the ripened pods, but was not sure that it was caused by insects.

Mr. Schwarz read the following letter written by Mr. Hubbard in 1894, on the fauna of Florida caves:

INSECT LIFE IN FLORIDA CAVES.

By H. G. Hubbard.

Crescent City, Fla., *July 31, 1894.*

I found so much to do at Eustis with Webber and Swingle that I spent four or five days with them in the laboratory. Just as I was thinking of leaving them, Mr. Swingle received a letter from an old-time guide of his telling about some large caves in Hernando and Citrus counties. As they are only 30 or 40 miles west of Eustis, we concluded to visit them and explore, but we found much trouble in getting there. However, we reached Istachatta on the Withlacoochie river after a night's traveling. We found here extensive but shallow and muddy caves. I should say about

100 acres entirely cavernous—caves all connected by a network of small galleries and rat holes, with occasional air holes to surface and some fair-sized chambers filled with bat guano. Had to crawl about on hands and knees over mud composed of red ochre, and got well plastered and painted red like Indians. We three were four hours in one cave and lost our way, so had to look around for another opening. Fortunately we found one just as our candles were giving out and came up to daylight through a very small chimney about 500 yards from where we went in. Found almost nothing but bats in this cave—no insects except a Podura and a small dark cricket.

Next day we went across the country, 8 or 9 miles in wagon, to Double Hammock country, in Citrus County, and found a very much larger cavern, 75 to 100 feet deep, in hillside in open pine woods. Chambers in this cave were very large, 150 feet long by 40 feet wide, and 20 or 25 feet high. Chambers were all very much deeper, but lower portion of all of them was filled with clear, cold water. Had much trouble to get around in the cave because of the water. There was much loose and fallen rock, so that we managed to get over the deep places by climbing from rock to rock or by clinging to the side walls. In the water were white crawfish very much like those in the Mammoth Cave, but we saw no fish. Got a good lot of the crawfish, mostly small specimens, but one or two big ones as large as *Cambarus bartoni*. The creature has eyes, but they are without pigment and entirely sightless.

In this cave there was no mud, only white phospatic rocks full of fossil echinoderms and crustacea. In some of the larger chambers, however, there were tons of bat guano. The bats were also present in tons' weight clinging to the roof and flying about, to our great annoyance and danger, since they constantly put out our lights with their wings. These bats proved to be very interesting, however, as they were infested with parasites in millions of specimens. Beside the ordinary small mites on the wing membranes, they were attacked by a winged Hippoboscid fly (*Trichobius major*) which hovered about the clustered bats and ran over the walls of the cave, and a wingless Nycteribid fly which rarely left the bats. In the neighborhood of the bat rookeries the walls were black with the puparia deposited by the Trichobius females, and once or twice we captured a pair of these winged flies clinging together in copulation. I took some puparia that had not disclosed, in a dry vial, and one of them has produced the imago.

The freshly fallen dung of the bats was covered with such multitudes of Acari that its color was changed from jet black to chestnut brown. The living mites formed a layer of an inch thick; a moving, struggling mass through which we had to

wallow and often crawl on hands and knees. When we disturbed the pendant masses of chattering bats, they disentangled themselves and flew away into deeper recesses of the cave, leaving behind them such swarms of the winged parasites that we were almost suffocated by them, and as they sought a shelter in our hair, beards, and even our eyebrows, the nuisance quickly became intolerable, so that we had always to beat a hasty retreat into some less infested passageway until quiet was again restored. There was also about the bat chambers, apparently living in or about the dung of the bats, a number of other flies, one of which was apparently rare and equal in size to a blue-bottle fly. It is, however, a hairy Muscid which looks unfamiliar to me. More numerous by far is a minute black gnat.

On the walls in the first large chamber, 75 feet below the mouth of the cave, we found a few specimens of a very large mite, quite like a small tick and evidently an interesting cave species. It is white with pale evanescent markings on the dorsum, and is quite flat and tick-like in form. We found it hiding cleverly in small but deep pits in the white marly walls of the cave, remote from the bat roosts. There were of course a number of spiders. One is a large crepuscular species quite like those found in small Kentucky caves. There are, however, some small colorless species belonging evidently to true cave genera, and resembling Authrobia. Scolopenders were conspicuous by their absence except at the mouth of the cave, and there were no crickets found. A small pale-red cockroach does not seem to be common, and is apparently not remarkable. A minute Hemipteron was not uncommon on the surface of the water in pools deep within the cavern My specimens all look like immature and very young skippers, but certainly do not belong to any common forms above ground. They are dark colored, and evidently closely allied to the small Hemiptera found on the surface of springs and pools in shaded forests.

We were so much interested in this cave that we gave two days to its examination. A log farm house near by sheltered us at night, and we had pot luck with the hospitable cracker whose farm adjoined the cavernous region. Webber and Swingle made a notable collection of moulds and cave fungi, and I salted down a good series of articulates. The cave we have named the Gum Tree cavern, from a large sweet gum tree which grows on the verge of the sinkhole at the entrance. It is situated in the southwestern corner of Citrus County, and about 8 miles from Floral City, on the S. S. O. & G. Railroad. The rocks here are all phosphatic, and the entire region is dotted over with phosphatic mines in active operation.