Collections from southern New York produced very few but among them was Trachythrips watsoni Hood. Particularly interesting is the situation in the Great Smoky Mountain National Park. From the western slope of the main range—the Tennessee side—numerous collections produced not a single thysanopteron (again showing the sensitiveness of this fauna to excessive moisture), but a parallel, but much lower, range just west of the town of Gatlinburg was moderately rich in this fauna, as were several locations near Laurel Falls in the Park.

Going west, a collection of oak leaves from 125 miles northeast of San Antonio, Texas, produced 70 per square yard of seven species, of which Trychothrips pergandei was the dominant one, again showing as in the case of the live oak hammock that this species is able to survive in relatively dry situations. A collection of oak leaves taken near Jonesboro, Arkansas, in late August produced but one species, Hoplothrips angusticeps Hood. A collection from the banks of the Missouri River at Omaha, Nebraska, also in late August produced but a single individual. A collection of leaves under the Piñon on the brink of the Grand Canyon in Arizona produced one species, an undescribed one. The redwood forest of California produced none, as did also collections of leaves from the Sandia mountains of New Mexico. These two failures, however, may have been due to the drying of the material before it could be placed in the funnels.

The data given here is the result of some hundreds of collections taken over a period of 15 years.

—J. R. Watson

EFFECTS OF THE REFLECTED SOLAR RADIATION ON INSECTS

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(Continued from Vol. XXVIII, p. 21)

The intensity of the rays depends upon that of the rays reaching the ground from the sun, and varies in accordance with the geological nature, color and temperature of the reflecting surface. It depends also upon the difference of temperature between the air and ground. Both humidity and living vegetation absorb the radiations, attenuating their effects. The winds, when they are cold, have the single effect of reducing the temperature of the soil.
The reflected radiations act in accordance with the other factors of the climate. Strong radiations are suitable to the insect life at a low temperature, while they are injurious at a temperature moderately high. It seems that the best living conditions, for most species of insects, occur when the temperature is high and the solar radiation intense but abundantly absorbed either by the wet soil or luxuriant vegetation, or better, by both. Of course there are some species of insects which react to the climate in a manner opposite to the majority.

Now we are trying to explain what we noted at Cuba about the abundance and scarcity of the insects (9).

By the end of October 1929, while travelling eastwards from Havana, we saw everywhere plenty of butterflies. Afterwards, we collected for eleven months near Santiago (10), until November 12 a storm occurred almost every day about at noon. Both before and after these heavy rains the sun was shining so that we were able to go into the country and collect, the soil always remained moist. High temperature, great humidity and feeble reflected radiations (as the solar ones were largely absorbed and scantily reflected by the ground), formed the most favorable conditions for the development of insects, which emerged and flew in large number both day and night.

On November 13, when the rains suddenly ceased, there were certainly in the country a large amount of eggs, larvae, pupae and adults. Little by little the soil dried and began to emanate its radiations, injuring most species of insects which became more and more scarce. The Lepidoptera almost disappeared. We suppose that when the country became barren the eggs continued to hatch, while most larvae and chrysalides were killed. Only a few larvae and pupae, set in some humid places, or where dense vegetation, absorbing the radiations, attenuated their hurtful effects, fell into dormancy and survived. Also some mated females of Lepidoptera aestivated (11). The insects in any stage, which remain long in lethargy, are exposed to parasites and predators which cause the mortality to increase.

Similar massacres are unavoidable, otherwise, as Uvarov states (12) : “any insect should be able to multiply its numbers within a short time to limits verging on the absurd, and the earth’s surface appears too small for the theoretical progeny of a single pair.”

After a period of severe drought, some rainy days alternated with sunny ones and the climate seemed to be favorable, while
most species of insects were all but missing. We now realize that those rains were unaccompanied by high winds and that they fell in the morning so that the water soon evaporated and generally the soil remained damp for no longer than three or four days. Even though the larval cycle, in that subtropical zone, is very rapid, it is doubtful that the larvae could mature in so short a time.

Only on May 18 and July 12, did the storms occur after after sunset and a large amount of water penetrated deeply into the soil during the night and the country remained moist for about a week. Many larvae, pupae and dormant adults broke off their lethargy not only because of the humidity and scarcity of reflected radiations, but perhaps under the influence of the ionized air and dropping of the barometric pressure.

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(4) Entomologist's Record, 47, pp. 47, 60, 87, 111, (1935).
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Rome, Italy, May 12, 1945.