

ENTOMOLOGY

Grasshopper Hordes Are Marching Through Colorado

Insect Army Now in Crawling Stage Moving At Rate Of Two and Half Miles in Eight Hour Period

By WATSON DAVIS

Director of Science Service, Writing From Hugo, Colorado.

INVASION millions are on the march, carrying a threat to the crops of eastern Colorado and western Kansas. I have seen them trekking across the plains near here, almost as if the earth itself in this dustbowl region were moving.

The predicted plague of grasshoppers has arrived. Ranchers and farmers of this region are joining state and federal officials in poison warfare against them.

The grasshopper of the plague hereabouts is a little fellow. This long-winged grasshopper of the Plains, entomologically known as *Dissostera longipennis* Thomas, is now only a half to three-quarters of an inch long. He is dust-gray in color, and when he jumps nimbly out of your way he shows yellow, green and brown splotches and a cream-yellowish belly.

His personal lack of size is made up for by numbers in the grasshopper army. Dozens and scores are found in a square foot, which means millions per acre in the thicker, larger hordes.

At the Denver science meetings I heard of the grasshopper invasion growing more serious hour by hour. Here at Hugo I joined an anti-grasshopper war council led by Colorado's agriculture extension director, F. A. Anderson. With him and the Lincoln County agent, D. L. McMillen, I saw the monotonous, persistent advance of the hoppers across yellow- and red-flowered cactus-studded ranges from which the wind constantly whipped up fine dust that gritted one's teeth hours afterward. I charged through the millions of hoppers with an automobile that killed hundreds with each turn of a tire. Heavily traveled Route 40 near here is swarming for a distance of five miles with grasshoppers hurrying to more food.

It is a swift and earnest march for these migrating hoppers just now. They put one foot in front of another like a mouse or a man, and jump only when

they are frightened and really must.

The aviation phase of their advance is still to come, due not long after the beginning of July. When they do fly they will travel much faster and be more dangerous.

At present they are moving a matter of miles per day. One curious person here painted some of the hoppers with luminous paint and found that that particular army traveled two and one-half miles in an eight-hour period.

Just where these migratory hoppers came from this year the insect experts could not tell me. The batch I observed was headed north, and that may mean that they were hatched farther south in Colorado.

The only way to attack the hoppers

HYGIENE

Avoid Heat Strokes By Adopting Army Methods

A LESSON on avoiding heat-stroke may be taken from a report of the Inspector General of the Italian Army and Navy medical services during the Italo-Ethiopian War. This eminent scientist, Sir Aldo Castellani, was responsible for the health of the Italian fighting forces during that war waged by white men in a tropical country.

Heat-stroke was expected to play havoc with the troops. During the World War, in the Expeditionary Force in Mesopotamia in 1917 there were 6,242 cases with 524 deaths. Heat-stroke was almost completely absent among the Italian troops both in Eritrea and Somaliland, Sir Aldo reported. There was a total of 30 cases with 7 deaths.

Sir Aldo attributed this remarkable record to three precautions: 1. The use of the sun-helmet by every soldier; 2. No alcoholic drinks, not even a glass of wine, except after sunset; 3. Whenever possible marching was avoided and the

now is to offer them poisoned food. I saw great troughs of old sawdust, bran, and deadly sodium arsenite being mixed. This bait is spread in the fields in the path of the advancing hoppers. S. C. McCampbell, Colorado's extension entomologist, designed a mechanical spreader for this bait, with which three men can distribute as much as 25 men with shovels.

In this respect there is a shortage of material and men, despite the whole-hearted aid with trucks and men of the U. S. Soil Conservation Service forces. Dr. H. H. Bennett, its chief, motored through here and pledged continued aid to agents and commissioners of nine Colorado counties assembled.

Dr. E. D. Ball, Arizona state entomologist, told the scientists at Denver that grasshoppers normally get a quarter of the grass on the ranges that stock should be eating. They will get much more than that this year.

And unless the anti-hopper forces get prompt and generous support—poison spread now is much more effective than attempts at control later—we human beings will lose some of the food that we need for our dinner tables.

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troops were transported in motor lorries.

Application to civilians of the principles behind these protective measures is fairly obvious. Sun-helmets are probably not necessary outside of the tropics, but the idea is to keep the head protected from the sun by a light hat that has an air-space between the top of the hat and the top of the head.

Sundown is the hour for serving mint juleps or any other alcoholic drinks during hot weather. Incidentally, the Italian troops did not get mint juleps even then, but the much lighter beverage, wine. Stronger drink was limited to brandy once a week. The amount was one ounce, and less than that in the lower and presumably hotter regions of Eritrea and Somalia.

The third preventive measure, avoidance of marching, translates for civilian life into the precaution of avoiding strenuous physical activity as much as possible.

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