

ENTOMOLOGY

Hot Waves Bring Northwest Grasshopper Invasion Menace

Great Drought and Mild Winter Conspired to Produce Pests In Hordes That Are Already Stripping Farms of Green

See Front Cover

GRASSHOPPER outbreaks in Nebraska and South Dakota may be only the advance guards of a much worse and more widespread insect horde to arrive before very long if hot waves continue to sweep the country. So say entomologists of the U. S. Department of Agriculture. The coming of these insects in June was in a sense premature, they state, for even in bad grasshopper years the pest does not ordinarily assume serious proportions until July.

Just how bad the grasshoppers can be expected to be in the West this year it is impossible as yet to estimate. The Bureau of Entomology, however, has a number of scouts in the field, investigating the areas most under suspicion as probable breeding centers of the hoppers, and battle plans are being laid. The principal means of combat against the grasshopper armies is chemical warfare: poisoned bait, consisting of a molasses-sweetened bran mash loaded with sodium arsenite or other arsenical, is distributed where they can find it.

Severe Winter Kills Them

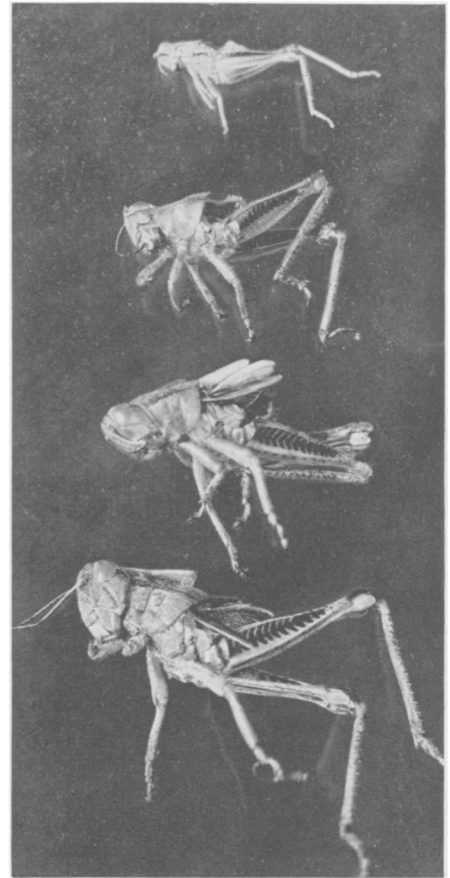
Events of last summer and winter have conspired to make the present situation threatening, the Federal entomologists explain. Last year there were moderately severe grasshopper outbreaks in a number of western states. It was feared at first that the situation might become serious even then, but the hoppers failed to develop in really large numbers. However, there were enough of them to deposit huge quantities of eggs in the drought-hardened soil.

But even with myriads of grasshopper eggs in the ground, the country can still be spared a grasshopper plague during the following year, if only the winter is severe enough. January and February are often the northwestern farmer's best friend. However, last winter was a very mild one, so that a relatively large proportion of the eggs survived. Early warm weather this year brought forth the advance guards and continued heat may call out the main army.

The grasshoppers that are raising the trouble today are the direct descendants of the ones that caused the terrible "grasshopper years" in the pioneer West, and near relatives of the locusts that Moses called up out of the desert to scourge hard-hearted Pharaoh for breaking his word to let the Children of Israel go. They are long-winged grasshoppers, with considerable powers of flight, and the most unselective appetites in the insect world. They will eat literally anything they can take a bite out of, and when a horde of them hits a farm it simply cleans the place up.

Grasshoppers are unlike the insects used most commonly in the schools as nature-lesson objects. They do not pass through the stages of grub or caterpillar, pupa or chrysalis, and full-grown insect or adult, as do such insects as bees, ants and butterflies. When a grasshopper egg opens, a tiny grasshopper comes out. It looks as much like a grown-up grasshopper as a baby looks like a grown-up man. Such an infant grasshopper is called by the wholly over-complimentary name of "nymph" by entomologists.

Grasshopper nymphs feed greedily and grow rapidly. They shed their skins



BABY CLOTHES

As the ravenous insect grows he leaves worn-out skins behind him, each discarding four skins before becoming full-grown.

four times, with each change attaining longer wings and a more adult-like appearance. Finally, after the last change, they have wings they can use for flight, and then they are ready to launch themselves into the air in streaming clouds.

Science News Letter, July 11, 1931

MEDICINE

Female Gland Extract Checks Bleeders' Disease in Males

ONE of the female sex hormones may play an important part in the future treatment of the strange bleeders' disease known as hemophilia, if the preliminary studies just reported to *Science* by Dr. Carroll La Fleur Birch of the University of Illinois College of Medicine are confirmed.

This condition is a rare disease of the blood with a strong hereditary tendency. Only males suffer from it, but it

is transmitted through the unaffected women of the family. The outstanding symptom is a tendency to excessive bleeding which may be spontaneous or may result from a slight injury that would pass unnoticed in an ordinary individual.

A strong hemophilic tendency exists in several of the royal families of Europe today. The oldest son and heir of the recently deposed King of Spain suf-