

plane is on the ground its floor is level, permitting easy loading direct from trucks or up ramps. A small door on the left forward side permits simultaneous loading.

The wings of this new plane are high enough above the ground to let trucks pass under them with safety to both, and its horizontal stabilizer is 14 feet above the ground so the largest trucks can back up to the tail door free from

obstructions.

The Packet is powered by two Pratt and Whitney Wasp engines of 2100 horsepower. It is able to lift a load of 18,000 pounds after a ground run of only 800 feet. It is constructed of aluminum alloy. Its empty weight is 28,000 pounds and its useful load 22,000 pounds. Its cruising speed is over 200 miles an hour and maximum range is 4,000 miles.

Science News Letter, July 7, 1945

ENTOMOLOGY

Million Crickets Killed

Crop-devouring Mormon crickets may be killed at the rate of one million per square mile by chunky-bodied wasps belonging to one species.

► ONE MILLION crop-devouring Mormon crickets may be killed per square mile of territory in a season, by chunky-bodied black wasps belonging to one species, Dr. Ira La Rivers of the University of Nevada estimates on the basis of careful counts made on measured sample plots in the field. He tells of his observations in the new issue of the *American Midland Naturalist* (May).

Mormon crickets are not so called because Mormons regard them with any favor. Quite the contrary, they are among the worst insect pests that beset farmers in Utah and surrounding states; their crawling, hopping hordes at times lay waste fields in the intermountain basin of the West as did the locust plague of ancient Egypt. That is why the heavy slaughter inflicted on them by the wasp is both important and welcome, not only to Latter-Day Saints but to all the inhabitants of the land.

Dr. La Rivers studied the hunting behavior of the cricket wasp long and carefully. Almost invariably, he says, she first digs the burrow in which she will later place her prey. Then she goes out to get her cricket.

She pounces on it from the air and, usually after a rough-and-tumble struggle, succeeds in stabbing the cricket one or more times on the underside of its body with her sting. This permanently paralyzes the cricket; sometimes even kills it.

Since the cricket is several times larger than the wasp, she is unable to fly off with it, but must drag it over the ground, ant-fashion. Sometimes the kill is made 20 or 30 feet from the burrow. Since the wasp apparently has no very keen sense of direction, she often has a hard time

finding her way back; occasionally fails altogether.

Once arrived at the burrow, she shoves the stunned cricket in, usually head first, and deposits an egg near the base of one hind leg. Then she goes off in search of another cricket. As a rule, two paralyzed crickets, each with its wasp egg attached, are placed in each burrow before the wasp closes it up with soil and heaps a little mound of pebbles and bits of twig over the top. In this grisly catacomb the wasp's larvae hatch from the eggs, and feed on the living bodies of their helpless hosts until they are full grown and ready to undergo transformation into adult wasps and emerge into the upper world.

Two cheater insect species sometimes dog the wasp's steps as she drags her quarry home, like jackals hanging on a lion's heels. They are both members of the group known as flesh-flies. After the wasp has deposited the cricket in the burrow and attached her egg, one of these flies will slip in. Instead of laying eggs, these flies deposit tiny larvae already hatched and hungry, which immediately begin to feed on the cricket's body.

There is a third cheater, another species of wasp, that sometimes gets into the still-open burrow, crushes the cricket-wasp's egg in her jaws, deposits an egg of her own and hastily closes up the excavation. The whole business reminds one of the laying habits of the European cuckoo.

The cricket-wasp also has enemies that attack the adult insect herself. Two of them are mammals, a carnivorous field-mouse and a shrew. Three are bird species, one of them a sparrow-hawk.

Dr. La Rivers has also noticed behavior on the part of the Mormon cricket suggesting a possibility that the cricket may occasionally turn the tables on the wasp, seizing and devouring her when she is preoccupied with digging her burrow or dragging home the body of another cricket.

Science News Letter, July 7, 1945

Cultivated *guayule*, an American source of natural rubber, is ready to harvest in four to five years if grown on good well-watered soil; wild *guayule* in its arid native southwestern home requires twice this time to mature.

SCIENCE NEWS LETTER

Vol. 48 JULY 7, 1945 No. 1

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. armed forces, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25; where letter postage is 5 cents, \$1.50; by airmail, \$1.00 plus 12 times the half-ounce airmail rates from U. S. to destination.

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Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members. Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAtE 4439.

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