



Caterpillars

► IF humans could only control caterpillars with some sort of radio directing device, the drudgery of clipping hedges, mowing lawns, pruning trees and weeding the garden would be over for all time. Lucullus was a dainty eater compared to the caterpillar. With shearing jaw-action spurred on by prodigious appetite, this fuzzy little monster spends most of its young life chomping away at flowers, foliage, or food in the garden. He chews and chews and chews and chews. The more he eats, the bigger he grows, and the bigger he grows, the more he eats.

The coming of fall sends most caterpillars off to hibernation, spun in rough silky cocoons. But there are some which seem to care nothing for first hints of frost. Bristling little orange-and-black fellows, commonly called woolly bears, nonchalantly hump themselves across the sidewalk on warm September and October days. When winter does come, the woolly bear merely hunts himself a well-sheltered corner, curls up and goes to sleep without the formality of a silken sleeping bag. He dreams of early spring, when he will begin eating again, fattening up for the mysterious transformation into a butterfly or gauze-winged moth.

Caterpillars are unpleasant-looking creatures, except perhaps to other caterpillars. Some have gaily-colored coats, but many

more are naked, squidgy things, like the cabbage worm or green maple worm. The bigger they are, the more repulsive they are to the squeamish—the cecropia, with its rows of stiff, short bristles; the tobacco caterpillar, with its long horn to whack you if you meddle too persistently; the puss and the sphinx which rear up and try to stare you out of countenance.

The caterpillar's life is a hazardous one. His soft, helpless, juicy body is a choice morsel for birds, wasps, ants and other insects. Fungi prey upon him, and man attacks him with poisonous chemicals. But his most terrifying enemy is the family of parasites which likes nothing better than to eat him alive from the inside out.

At Yale University this summer, a giant horde of orange and black caterpillars

threatened for a time to strip away every trace of ivy from the sleeping walls. Then nature sent in her shock troops. Countless flies appeared; like low-flying bombers, they deposited their eggs just behind the caterpillars' heads.

The eggs hatched into tiny white maggots in a few days. Straight-away the larvae burrowed into the bodies of the caterpillars, fastening themselves on the tissues of their unwilling hosts, growing larger as they fed.

At the last, discouraged, sick and robbed of the fat built on ivy leaves, the caterpillars one by one stopped eating, their brilliant stripes turned to a dull yellow, and they fell from the tattered ivy to the ground.

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## RADIO

## Hams Aid Invasion Plans

► PLANNING communications for large-scale invasions, such as that at Normandy, will be greatly aided by studies being made of reports from "hams," or amateur radio operators.

Rapid communication between field units and headquarters is particularly essential during an invasion. If normal radio channels are blacked out by severe atmospheric storms, there must be emergency ones that can be used immediately.

Every now and then, to a ham's delight, he will be able to contact another operator far beyond his usual range. Until recently no systematic record was kept of these unexpected conversations beyond the normal contact range, other than for the ham's purpose of learning which operator had talked with the most persons and at what distances.

Last year, however, the hams were asked to report their contacts at unusual distances to O. P. Ferrell of the Scientific Radio Observation, Inc., in Philadelphia.

N. C. Gerson of the Air Force's Cambridge Research Laboratories has now reported in the journal, *NATURE* (Aug. 19), the first results of analysis of the data sent in by hundreds of amateurs.

Wavelength used by the hams was 50 megacycles. Most radio waves, such as those used for daily broadcasts, are reflected back to earth from the ionosphere. The 50 megacycle wavelengths, however, pass right through these reflecting layers. But if there is intense ionization in the region known as the sporadic E-layer, the 50 megacycle waves will be reflected back to the earth.

It works like this: At 10:00 one night, Joe in Cleveland makes contact with Jim in San Antonio; at 10:30 with Dick in Denver; but he cannot during this time make contact with operators in Miami, approximately the same distance as Denver, but in a different direction. He reports these facts.

Analysis of hundreds of reports, including both contacts made and those that were attempted but not successful, gives the information about how fast the sporadic E-layer is moving and in what direction.

As more is learned about this layer, frequencies can be assigned for emergency use when the normal ones are blacked out by atmospheric storms.

On May 15, 1949, four very definite sporadic E-layer regions were found above the United States. They seemed to move at a speed of about 100 to 200 miles per hour. "The possibility of some type of anti-cyclonic motion in the upper atmosphere is suggested," Mr. Gerson states, by the combined motions of two of the areas with respect to the other two.

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## GENERAL SCIENCE

## Life-Span of Wage-Earners, Families Increasing

► LENGTH of life for the American wage-earners and their families has been steadily increasing for the past half-century and more.

Expectation of life at birth is now 67.7 years for the many millions of industrial policy-holders of the Metropolitan Life Insurance Company. Average lifetime among this large section of the industrial population has doubled since 1879-1889, earliest period for which figures are available.

The improvement in mortality and longevity during the past 40 years has been greater in the industrial population than in the population of the United States as a whole.

"This achievement of the rank and file in our country," the life insurance statisticians point out, "has broad implications and gives added meaning to the phrase, 'the American way of life.'"

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