series, and not found a possible death ray anywhere. How about the second class, the rays composed of streams or jets of atom-fragments or other minute particles?

There are a number of these, some of them of quite recent discovery, so that not all their properties are exactly known. These particle-projectiles include such things as electrons, protons, positrons, neutrons, deutons, positive ions and alpha particles. They consist variously of single fragments of atom construction (electrons, positrons, etc.) or of atoms that have lost a small part of themselves (alpha particles and positive ions). They may have high velocity, but usually low penetrating power, and without exception their ranges are short—seldom more than a fraction of an inch. Obviously not much military possibility there.

Destructive Cathode Rays

The nearest approach to a "death ray" that has ever been made with these streams of electrical particles was the production of massive quantities of cathode rays, or electrons, into the air. This was done on a pioneer scale first by a German physicist, Lenard; then with an improved and much more massive apparatus by Dr. W. D. Coolidge, director of the General Electric research laboratories.

The Coolidge cathode ray tubes shot their streams of high-speed electrons out into the air to an extreme range of several feet. They did strange things to chemical substances, indicating that they might have deadly effect on living animals. The ear of a rabbit was placed in their path, with the rest of the animal shielded from the rays. The rays that went through the openings in the shield that protected most of the ear caused sore spots to appear, which presently healed over, leaving no trace except that the new hair was white. So not even the ponderous Coolidge tube could be counted a long-range death-ray producer.

Supersonic Killers

There remains, then, the third class of possible death rays, the highly intense beams of inaudible or shrilly audible sound waves, first used for experimental destruction in the private laboratory of A. L. Loomis, New York banker-scientist. These proved their power to kill such things as small fish, water plants, and (sometimes) bacteria; but they could not kill a mouse. Moreover, they could act only in water or other fluid, not in air, and had at best a range of mere inches, even though enough power was poured into them to run a full-sized broadcasting station.

So our survey of the whole field of rays of all kinds yields us not one that holds out any possibility of being a genuine death ray. If the youth of the present generation must presently go to the trenches, they will have to be contented with modification and improvements of the lethal toys their fathers and uncles used in 1918. The lightnings of Jove are still denied to war-making earthlings.

This article was edited from manuscript prepared by Science Service for use in illustrated newspaper magazines.

Science News Letter, March 23, 1935

BOTANY

Famous Insect-Eating Plant Catches Many Spiders

See Front Cover

VENUS' flytrap might with equal correctness be called a spider-trap. This famous insect-catching plant, once called by Darwin "the most wonderful plant in the world," has been re-studied recently by Prof. Robert F. Griggs of George Washington University. He discovered that the largest single class of animals among its victims consists of spiders. Examination of hundreds of its trap-like hinged leaves showed that spiders formed 28 per cent. of all its catch. Flies were a close second, with 24 per cent.

Other prey included beetles, ants and roaches. There was one tiny toad, a scorpion, a couple of snails and one daddylonglegs. In general, the plant's victims were mainly insects that fly little or not at all; there were few highly active fliers like bees and wasps.

Prof. Griggs made an effort to find an answer to the old question of what use the plant's carnivorous tendencies are to it; for though it secretes a ferment like the gastric juice, it has never been proved that it uses the captured victims for food. He was not able, however, to arrive at any completely conclusive findings, for specimens grown in various types of soil, some fed and others kept without insects, all throve about equally.

It is probable that the species once had a far greater range than its present restricted area of about a hundred-mile radius of semi-swampy costal plain around the city of Wilmington, N. C. Its nearest existing relative is found in Europe. Two colonies of it were experimentally transplanted into bogs far to the north of its present habitat some years ago. One of these is in Maryland just outside the District of Columbia, the other in Virginia. Both colonies survived the severe winter of 1933-34, which was far colder than anything these plants have been called upon to endure for probably thousands of years.

Prof. Griggs expressed the wish that people generally might abandon the rather awkward and unbeautiful name, Venus' flytrap, and adopt the more euphonious botanical name, *Dionaea,* for common use, as they have already englished such strictly scientific names as chrysanthemum, rhododendron and gladiolus.

One of Prof. Griggs' photographs, taken in the native haunts of *Dionaea,* is shown on the cover of this issue of the SCIENCE NEWS LETTER. It shows the hinged halves of a leaf as they slowly open, disclosing the empty shell of a luckless large fly that was not quick enough to escape the snap of their trap-like action. Wind or a raindrop will clear away the victim's carcass, leaving the hungry leaves ready for another catch. In the meantime, two other empty leaves wait with deadly patience.

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