

MEDICINE

Surgery in Hemophilia

Successful skin grafting operation has been performed for the first time on a hemophiliac. The bleeding was controlled by thrombin.

► SUCCESS in what is believed the first attempt at skin grafting on a hemophiliac, or "bleeder," is reported by Dr. Charles S. Davidson and Dr. Stanley M. Levenson, of Boston City Hospital and Harvard Medical School. (*Journal, American Medical Association*, June 30.)

An active thrombin preparation applied to the place from which the skin graft was taken apparently was responsible for saving the patient from bleeding to death from this wound.

The patient, a 26-year-old man, suffered from the hereditary bleeding disease, hemophilia. He had had to go to the hospital 13 previous times for bleeding from a cut lip, bleeding when he lost his "milk" teeth, bleeding from cuts on his knee and similar episodes.

Operations of any kind are not often undertaken on such patients because of the great danger of their bleeding to death. Excessive bleeding after such a

simple operation as pulling a tooth has been a common cause of death in hemophiliacs. Now that active thrombin preparations are available, however, hemophiliacs can have teeth pulled with relative safety.

The skin graft reported today was required because of an injury to the patient's right leg. Originally this was a bruise in which the skin was scraped off. This healed satisfactorily but after a second injury on the same place three and a half weeks later, swelling, pain and infection set in. The gangrenous skin had to be removed and later grafted with fresh skin.

The graft was taken from the patient's left thigh. Bleeding at this place was controlled instantly, the doctors report, by applying a mixture of powdered sulfanilamide and thrombin. The area healed in nine days and the graft took excellently.

Science News Letter, July 7, 1945



TESTS TIRES—An earthmover tire is given a deflection test under normal load by this huge tire testing machine installed at the Goodyear Tire and Rubber Company's plant. The operator is John Ward, development engineer for the company.

given composition, the intensity increases as a direct function of the wall thickness. In determining liquid level, the instrument is moved slowly down along the wall until a change in the meter reading is noted due to a variation in the intensity of the back-scattered radiation from the wall of an empty tank and the same wall when backed by a liquid.

Science News Letter, July 7, 1945

PHYSICS

Thickness Measured

Thickness of steel in walls of a boiler tank, or the level of liquid inside the tank, can now be determined accurately by using a new instrument, the Penetron.

► THE THICKNESS of the steel in the walls of a boiler tank, or the level of the liquid inside the tank, can now be determined accurately without drilling holes through the metal by means of a new instrument that employs radium rays from a commercially available radium salt. It can be used to measure the thickness of any type of material, and also to determine the densities of liquids.

The new instrument, called a Penetron, was demonstrated to a group of scientists in New York by the Texas Company as it is a product of a subsidiary, the Texaco Development Corporation. It will be manufactured and sold by Engineering Laboratories, Inc., Tulsa, Okla.

In use, the portable 40-pound Penetron is placed in position against the outside wall. It does not require access to the containing vessel. The apparatus has

a detector head connected through a flexible rubber-coated cable to a control case. In this is electronic equipment, and on it is mounted the meter from which readings are taken.

The principle on which the instrument works is simple. Penetrating gamma rays emerge from a radioactive source. They impinge on the wall and penetrate it. Some emerge on the opposite side, and having no useful purpose, are disregarded. Another portion of the radiation is scattered in all directions by the electrons of the atoms which make up the wall. Some of these emerge on the same side of the wall from which they entered. These are the ones used to determine the wall thickness. They constitute the so-called back-scattered radiation.

By measuring the intensity of this back-scattered radiation, thickness is determinable, because, in a wall of any

AERONAUTICS

Heavy-Cargo Army Plane Has Square Fuselage

See Front Cover

► THE PACKET (shown on the front cover of this SCIENCE NEWS LETTER), a completely new airplane for transporting heavy and bulky cargo produced for the Army, will be displayed at Hagerstown, Md., to a group of scientists and aviation writers by the maker, Fairchild Aircraft. The body of the plane is nearly square in cross-section, increasing its capacity over the ordinary fuselage which is usually rounded. It has straight sides, a flat ceiling and a level floor at truckbed height.

The fuselage is, in effect, a large flying truck or freight car with a total cargo capacity of 2,870 cubic feet. It can be loaded or unloaded through the tail doors, which when open, make an entrance eight by eight feet. When the

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.

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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.

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