

MEDICINE

# Typhus Control Praised

Checking of the epidemic in Naples is called one of the most outstanding achievements of modern preventive medicine; DDT and vaccine chiefly responsible.

► THE CONTROL of the typhus fever epidemic in Naples early this year "is regarded as one of the most outstanding achievements of modern preventive medicine," Brig. Gen. Stanhope Bayne-Jones, deputy chief of the preventive medicine service in the Office of the Surgeon General, U. S. Army, and director of the United States of America Typhus Commission, declared at the meeting of the National Academy of Sciences.

"At devastated Naples in 1943," he related, "typhus began to spread in an environment that contained all the elements which from ancient times have favored typhus, namely, war, undernourishment, crowding, disorganized services, lack of the means for keeping

clean, and a non-immune population with a high degree of infestation with lice.

"In this setting the ancient pestilence associated with war and human misery was attacked successfully by new weapons which were largely the product of wartime research and by militarized preventive medicine."

The new weapons were the vaccine used by U. S. Forces, new insecticides, chiefly DDT, and new methods of applying DDT powder to destroy lice.

The vaccine is a suspension of killed typhus fever germs which had been cultivated in the yolk sac of embryonated chicken eggs.

"The U. S. Army experience with this vaccine and field studies carried out by the U. S. Public Health Service and the U. S. A. Typhus Commission clearly show," Gen. Bayne-Jones stated, "that proper administration of this vaccine probably protects against infection, greatly modifies and ameliorates the disease if and when it occurs in a vaccinated person and appears to prevent death from typhus.

"There have been fewer than 50 cases of louse-borne typhus in American soldiers vaccinated against typhus and no deaths. A similar, but not identical result has come from studies of the efficacy of the vaccine in civilians in certain countries abroad."

DDT in the form of 10% powder in porophylite kills lice in from two to six hours. While it does not kill louse eggs, it persists in clothing and kills the young insects as soon as they emerge from the hatched eggs. It persists as an insecticide for at least a month and can be dusted into clothing by hand- or power-driven dusters. Persons can be deloused with their clothes on, making unnecessary the cumbersome establishments for undressing and dressing, bathing and steam sterilization of clothing familiar to veterans of the last war. Thousands can be deloused by a few persons and in the same time and with far less effort than a few hundreds could have been before the discovery of the properties of DDT and how to use it.

About 40 cases of typhus a day were

developing in Naples among civilians near the peak of the epidemic, with a death rate varying from 4% to 54%, depending on the age of the patients. Up to the end of May, 1944, there had been approximately 2,000 cases in the civilian population, but at most two cases in military personnel.

The epidemic phase was definitely over within a month after thorough operation of modern control methods, Gen. Bayne-Jones reported. The control program consisted of seven main divisions. Of these the essential starting point and guide was finding of cases and isolating them in their homes or hospitals under a "protective sprinkling" of DDT louse powder to cut off infection at the source. Delousing of intimate and remote contacts of patients both in buildings and air raid shelters seems, according to the charts of the epidemic, to have turned the tide, although mass delousing was later done, as was immunization with typhus vaccine of a few thousand essential civilian personnel.

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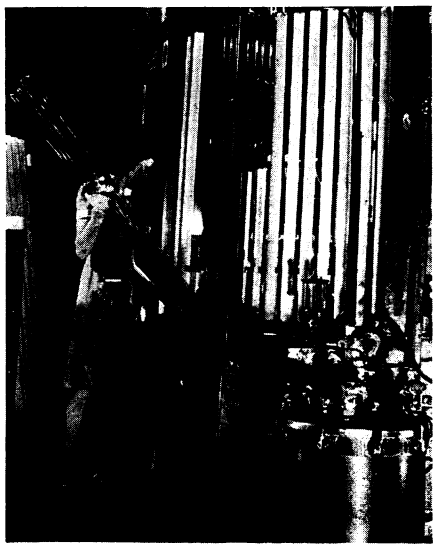
## Shock Treatment Revision

► THE TREATMENT of shock in the burned and wounded will undergo "some radical revision" when scientists have learned more about the fundamental mechanisms involved, Dr. C. N. H. Long, of Yale University, predicted at the meeting.

At present it is far easier to prevent than to treat shock, Dr. Long pointed out. The plasma or whole blood transfusions which the layman thinks of as treatment for shock are really preventive measures, he explained. They are given to prevent shock and the damage associated with it from becoming irreversible and fatal.

One of the most important features of shock is that it is associated with a marked reduction in circulating blood, he said. This may occur either through bleeding from severed blood vessels or through "white hemorrhage" of plasma into the tissues after burns or injuries. When the circulating blood volume is reduced in these ways, the amount of oxygen reaching the tissues per unit of time is also reduced.

The time angle is important, Dr. Long stressed. Some tissues, such as muscles, can get along without oxygen for longer periods than others. But while the microscopic cells of the body are struggling along with a depleted oxygen supply, they are undergoing such damage that



"LIQUID LIGHT"—Is being applied to these 100-watt fluorescent lamps at the Fairmont Works of the Westinghouse Lamp Division by an automatic machine which coats, drains and heat-dries in one operation. Previously each step was done separately. From the tank in the foreground, the phosphor mix, from which the liquid is made, is forced through three tubes at a time. By varying the proportions of phosphors, eight different colors, ranging from daylight to pastel red, can be produced.

when more oxygen is finally supplied through blood transfusion, the cells may not be able to assimilate it. Or, if they can assimilate the oxygen, they will no longer be able to use it for the chemical transformations on which our lives depend.

Lack of oxygen, Dr. Long declared quoting an earlier physiologist, "not only stops the machinery but wrecks it."

Important and established measures for preventing these irreversible changes in shock, he said, are: Prompt use of whole blood, plasma or albumen for early relief of the decreased blood volume and flow and hence decreased oxy-

gen supply; replenishment of lost fluid and salt by judicious use of saline solutions; relief of fixed acid acidosis by use of sodium bicarbonate or lactate.

Changes in action of the adrenal glands and in biochemical reactions involving enzyme systems related to certain vitamins have led scientists to suggest as additional measures in shock treatment the use of adrenal cortical hormones, the use of vitamin mixtures and the use of chemicals that have undergone part of the change they would normally undergo in individual cells of various body organs. The value of these measures has not yet been proved.

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duces wind velocity and decreases evaporation from the soil. At the same time, growing trees transpire much water through their leaves, enriching the humidity of the air over forests.

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## Lumber Reduction

► **SOME RESTRICTION** in American lumber production will probably be necessary after the war, in the interests of good long-range forest policy, Edward I. Kotok, assistant chief of the U. S. Forest Service, declared. The assumption that we can safely exceed our present war-accelerated cut of timber he declared fallacious.

This restriction need not be permanent, however, if we take the saving stitch in time, the speaker indicated: "In the long run, America's forests have high potential capacity, if real forest management is undertaken with dispatch, and surpluses for export will be available, either as primary products or converted material."

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*Nylon rope*, used to pick up and tow gliders behind airplanes, can stretch nearly a third without breaking.

## CONSERVATION

# Wood Production Massive

Simply in the gross tonnage produced in the world each year, wood ranks second only to coal; new uses are constantly being discovered.

► **WOOD'S** importance in the world was stressed by a group of speakers at the autumn meeting of the American Philosophical Society held in Philadelphia. Simply in the gross tonnage produced in the world every year, wood ranks second only to coal, Dr. W. C. Lowdermilk, assistant chief of the U. S. Soil Conservation Service, told the meeting. The world's annual cut of wood is estimated at 1.2 billion tons; coal mined in the same period amounts to 1.3 billion tons. And coal was wood once, Dr. Lowdermilk reminded his hearers.

Unlike coal, oil and all other things dug out of the earth, wood is a replaceable resource, the speaker continued. Under intelligent management, new crops of wood can be grown as fast as existing wood is harvested. Furthermore, while a forest is growing it confers great benefits on the community that fosters it, in soil erosion control, in flood amelioration, and in a score of other ways.

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## Water Regulation

► **THE ROLE** of the living forest as a regulator of the regional water supply was given particular attention in the address by Dr. Rafael Zon, retired director of the Lake States Forest Experiment Station at St. Paul. The tree canopy, he pointed out, breaks the violence of the rain, and the spongy litter of the forest floor absorbs water for gradual release

later, besides keeping open the pores of the soil.

The forest, Dr. Zon continued, abates both summer heat and winter cold, re-



**DEADLY WEAPONS**—The rocket launcher assembly line of the Firestone Tire and Rubber Co. at Akron, Ohio, is turning out thousands of these new war-winners. Completed launchers in the foreground are ready for packing and delivery to the fighting forces.