

# Army Bombards Goats with Gas in Safety Tests

**H**OW much gas does it take to kill a man?

At the Lakehurst, N. J., proving grounds, army officers are continually conducting tests to find out by gassing, not men—but goats.

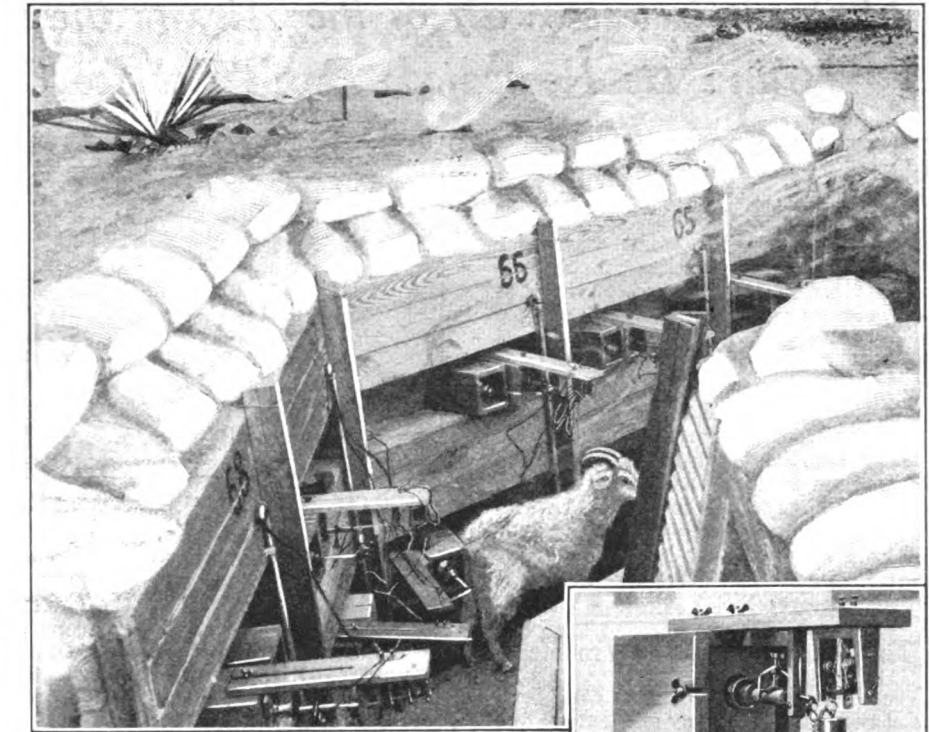
The chief reason for these tests is the increasing use of poison gas in peacetime. Already gas is being employed on a small scale to exterminate the boll weevil and other insect pests, as well as to destroy rats and vermin. And were it not for the danger of killing human beings, still more important results might be achieved. Thus, accurate knowledge of exactly what concentration of gas is harmful to man is of great practical importance.

## Batteries Shell Trenches

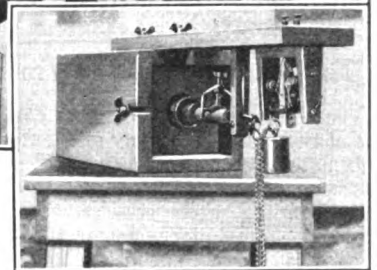
In making the tests, gas is liberated either from containers, in clouds, or by the explosion of gas shells fired from a battery at trenches that imitate conditions in the late war. The effect of the fire is judged both by the behavior of goats tethered in the trenches, and by analyzing the gas collected later in automatic gas samplers.

The sampler consists of a glass bottle placed inside a wooden box, the sides of which are about an inch thick. After a vacuum has been created in the bottle, the neck of it is closed by a rubber stopper penetrated by a short section of rubber tubing that ends in a thin glass tube sealed with a metal stopper.

To the stopper is fastened a chain and a heavy lead weight. When the sampler is placed in the trench, the weight is held up in a swinging hook that can be released by closing the circuit of an electromagnet on a wooden arm fastened to the container. A pinchcock on the rubber tube closes the bottle after the gas has been admitted.



A view of one of the experimental trenches at the Lakehurst proving grounds. The goat in the trench, surrounded by gas samplers, awaits its doom as a battery opens fire with gas shells. A sampler is shown at the right.

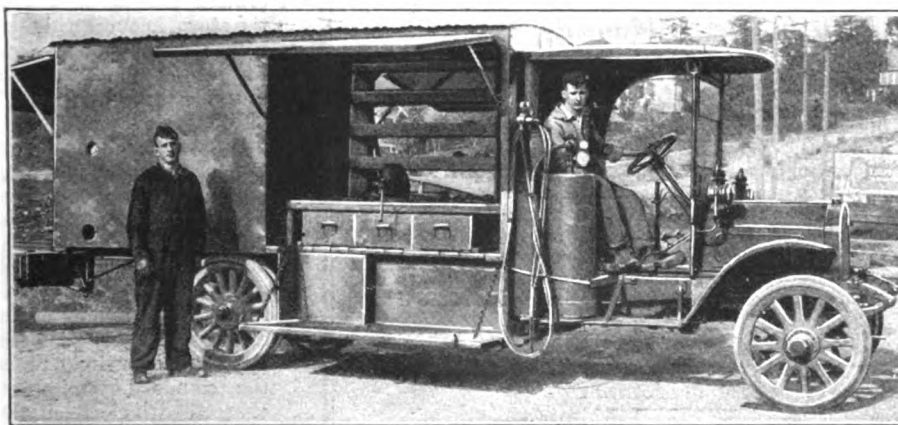


When the trenches are shelled, flying shell fragments break the glass tubes, which are in exposed places. The air, laden with the poison gas, rushes in to fill the vacuum in the bottle. By analyzing the contents of the bottle later, observers in a near-by steel tower can determine the exact density of the gas in the trench. In addition, the

effect is judged by autopsies on goats tethered near by.

However, since not all the glass tubes are broken at the conclusion of the fire, the observers close a series of switches that energize the electromagnets. The heavy load weights fall and pull the stoppers from the bottles.

## Traveling Machine Shop Repairs Trucks on the Road



Courtesy The Commercial Vehicle

By ingenious arrangement of full repair equipment and drawers for small tools and parts, this traveling power plant and repair shop is equipped for any emergency

**H**OW is a man to keep his auto trucks in repair when they are out in the country districts, far from a garage, for days at a time, as is the case in road construction work?

One successful way is to carry the repair shop with the trucks. A Pacific Coast paving firm, for example, has converted an old truck into a completely equipped portable garage by installing a special body and a compact mechanical outfit equipped to handle a majority of the repairs that

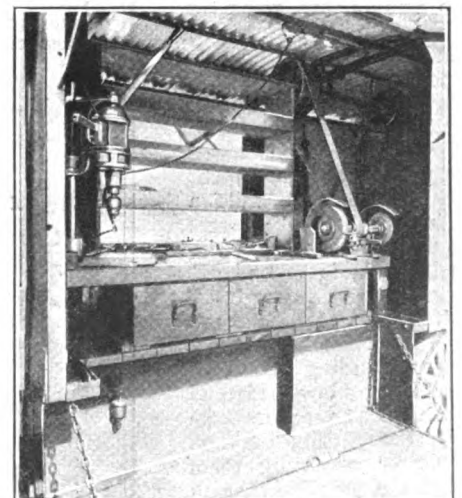
would usually have to go to the machine shop.

Power from the driveshaft is carried by an overhead shaft, belt, and pulley to the rear of the truck, where it operates an air compressor that will inflate tires, do painting, or operate a riveting hammer. On the same shaft is a three kilowatt electric generator that drives a tool grinder, a drill press, and a forge blower for the collapsible blacksmith's forge.

To carry the complete outfit of tools in

such a small space, ingenious arrangements have been adopted for utilizing every inch of space inside the body. From the photographs it will be seen that the sides of the truck can be let down, and that the mechanics stand upon these extensions while working at the bench.

A complete electric lighting system makes it possible for the mechanics to do emergency work at night.



How overhead shafting supplies power for the machine is shown in this close-up of the repair bench