

PUBLIC SAFETY

Revive War Gas Victims

Forced breathing method developed to provide treatment under combat conditions for troop casualties resulting from enemy gas attack.

► A MOUTH-TO-MOUTH forced breathing method sometimes used to revive choking babies has been modified by Army Chemical Corps scientists for use in saving war gas victims.

The forced breathing is done through a length of corrugated rubber tubing which is connected to the gas masks of both operator and victim.

According to the official report of the new device, it was developed specifically to provide treatment under combat conditions for troop casualties that might result from an enemy attack with gases. In such an attack, it is likely that a number of casualties would require artificial respiration, in addition to drug inoculations given to counteract the action of the poison. This task would be difficult because both the victim and his rescuer would have to be gas masked.

The operator inhales clean air through his own canister and by exhaling, forces it into the lungs of the victim. The victim exhales through a valve in the side of the

tube. If the victim is unconscious and cannot breathe, himself, the contaminated air may be forced from his lungs by pressure on the lower ribs.

Tests at the Chemical Center at Edgewood, Md., show that the forced breathing is not unduly tiring on the operator and it has been carried on for more than an hour, although 20 minutes would normally be the maximum time required. It was also determined that the operator's lungs can exert enough pressure to overcome the constriction of the victim's windpipe that usually occurs in gas poisonings and which ordinary artificial respiration will not overcome.

Further tests show that the "second-hand" air breathed into the victim contains more than an adequate supply of oxygen and that the concentration of carbon dioxide is not injurious to the victim.

Developers of the resuscitator emphasize that it is not a substitute for normal artificial respiration. It was designed specifically for the treatment of gas victims in combat. As such, they said, it is not likely

that the device will have any industrial application, except possibly in instances where both the victim and the rescuer must be gas masked.

Science News Letter, March 1, 1952

ASTRONOMY

Star Varies in Brightness Every 80 Minutes

► A STAR that every 80 minutes shines brightly, then becomes dim only to brighten up again, has been discovered in the southern constellation of the Phoenix. This is the shortest period known for a variable star.

Often the star doubles its brightness within ten minutes, report Drs. Olin J. Eggen and Gerald E. Kron, astronomers of the Lick Observatory of the University of California, now working at the Commonwealth Observatory, Canberra, Australia.

Science News Letter, March 1, 1952

TECHNOLOGY

Air Used as Cutting Edge Of "Supersonic Knife"

► AIR IS now being used to cut everything from asbestos to zinc in a General Electric Research Laboratory at Schenectady, N. Y.

The air is compressed by a small knife blade which whirls at supersonic speeds on a wheel. Dr. E. F. Fullam, who uses the instrument, said he believed air does the actual cutting rather than the knife because he had noticed the blade did not become dull with use.

Called a high-speed microtome, the machine revolves the knife blade 65,000 times a minute, reaching a knife-blade velocity of 818 miles an hour, about 68 miles an hour faster than the speed of sound. Sections of metal less than two-millionths of an inch thick can be cut by the compressed air. A smooth surface is left on the face of the cut.

The invisible-to-the-naked-eye sections are then studied under a powerful electron microscope which magnifies 25,000 times.

Size and sharpness of knife blades have no effect on the cutting properties of the microtome except as to their abilities to compress an "edge" of air. Small, almost invisible wires have even been used by Dr. Fullam in previous microtomes. His latest model, however, employs specially built knife blades.

The machine is capable of slicing specimens of most materials about as round as a pencil. Rubber and vitallium resist cutting. Dr. Fullam said rubber could be cut if it first was frozen in liquid nitrogen or vulcanized to a more brittle state. Vitallium, one of the hardest of metals, could be cut, he said, if higher knife-blade speeds could be obtained to compress the air to a greater extent.

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CUTTING WIND—Moving faster than the speed of sound, a cutting wind is used to slice extremely thin sections by Dr. E. F. Fullam, of the General Electric Research Laboratory, who designed the instrument known as a high speed microtome.