

## MEDICINE

# Glaucoma Weapon

Chemical that failed as war gas may help those with the blinding eye disease and may lead to better understanding of myasthenia gravis.

► A CHEMICAL that failed as a war gas nevertheless held the spotlight at the meetings of the Federation of American Societies for Experimental Biology in Atlantic City. The reason: Trials on patients show that it may help those with the blinding eye disease, glaucoma, and may lead to better understanding of and treatment for the muscle weakness disease, myasthenia gravis, and perhaps other ailments involving nerve and muscle chemistry.

In more than a score of patients with glaucoma, who had not been helped by physostigmine or pilocarpine, the usual medicines for this disease, the war gas chemical kept tension in the eyes normal and prevented further loss of visual fields, Dr. Irving H. Leopold and Dr. Julius H. Comroe, Jr., of the University of Pennsylvania School of Medicine, reported.

The chemical is di-isopropyl fluorophosphate, called DFP for short. Early in the war British chemists explored its action because its effect in contracting the pupils of the eyes led them to hope it might interfere with enemy marksmanship. This proved a false lead, but when scientists in our own Chemical Warfare Service at Edgewood Arsenal studied DFP they learned facts about its effects on body chemistry which led them to ask doctors at certain medical centers to try its value for patients.

Some of the 76 glaucoma-affected eyes were not helped by DFP or any other medicine. This occurred in 16 instances. In another 24, DFP gave the same results as the two medicines commonly used for this eye ailment. But 36 eyes were helped by DFP when other medicines failed.

DFP has a much longer lasting action than pilocarpine or physostigmine. These drugs have to be dropped into the eyes three to six times every day, but in only 10 cases was it necessary to use DFP more than once a day. Once a day was enough for the majority, while in one case DFP was needed only every 10 days.

Undesired effects reported for DFP were blurring of eyesight, brow and eye-ache, spasm of accommodation and peri-

corneal vasodilation.

DFP is not the final answer for myasthenia gravis patients, it appears from the report of its trial in seven patients by Drs. Julius H. Comroe, Jr., John Todd, and George Gammon and Lt. George B. Koelle and Maj. Alfred Gilman. These scientists, at the University of Pennsylvania and Edgewood Arsenal, also examined the effects of DFP on the blood, liver and kidneys of 20 normal persons. No changes in liver, kidney or blood-forming functions were found, the most frequent undesired effects being on the stomach and intestines.

DFP relieved the weakness of the myasthenia gravis patients for longer periods than did neostigmine, the usual drug for this ailment, but never to the same degree. Muscle power was only partially improved by DFP, but markedly increased by neostigmine.

With DFP's effects on body chemistry as a guide, however, scientists may be able to develop a more effective chemical than any yet known for treatment of myasthenia gravis.

In studies of its effects on the body generally, DFP was given by injection into the muscles or by capsules that were swallowed. When dropped into the eyes for glaucoma treatment, however, very little if any of it is absorbed by the body.

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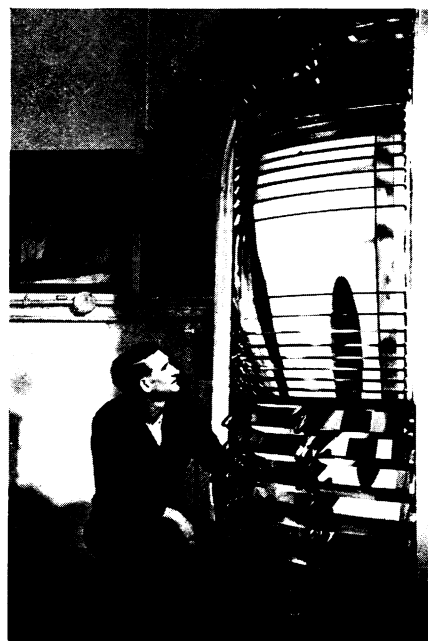
## MEDICINE

## Electric Knife Now Used For Chest Surgery

► SURGEONS may now use the superior electric knife for the first time in chest operations as a result of a new anesthesia technique developed at the University of California Medical School. A general improvement in such operations is expected from the development.

In the new technique curare is used to paralyze the respiratory muscles and nitrous oxide to put the patient to sleep. This eliminates the use of the explosive anesthetics which are ordinarily used and which preclude electric cautery.

The doctors explained that it is necessary in a chest operation to use an anes-



*ON LOAN—A Coast Guardsman examines an old-style lighthouse lens. Schools, museums, and maritime societies may borrow this lens and many other old lenses from the Coast Guard. Because of the change from oil to electricity, other scientific improvements and modern designing, these old lenses, still in excellent condition, have been retired from active service.*

thetic which is potent enough not only to put the patient to sleep but to paralyze the respiratory muscles so that breathing can be controlled by gentle pressure on a breathing bag attached to the mouth.

The explosive anesthetics, such as ether and cyclopropane, have been the only ones potent enough to accomplish both these purposes. The electric knife would cause an explosion on contact with these gases within the lung.

A combination of nitrous oxide and curare is desirable because no bad after effects have been noted. The gas is potent enough barely to put the patient to sleep, and the curare is strong enough for paralysis of the respiratory muscles.

The doctors have found the technique safe to use over the long periods of time—six hours is not unusual—required for a chest operation. It is especially advantageous when young doctors are operating; it puts them at their ease, they can work without pressure. Sixty-eight chest operations have been performed using the technique.