

OPTICAL DEVICE THAT RIVALS TELESCOPE IN STUDYING THE HEAVENS.

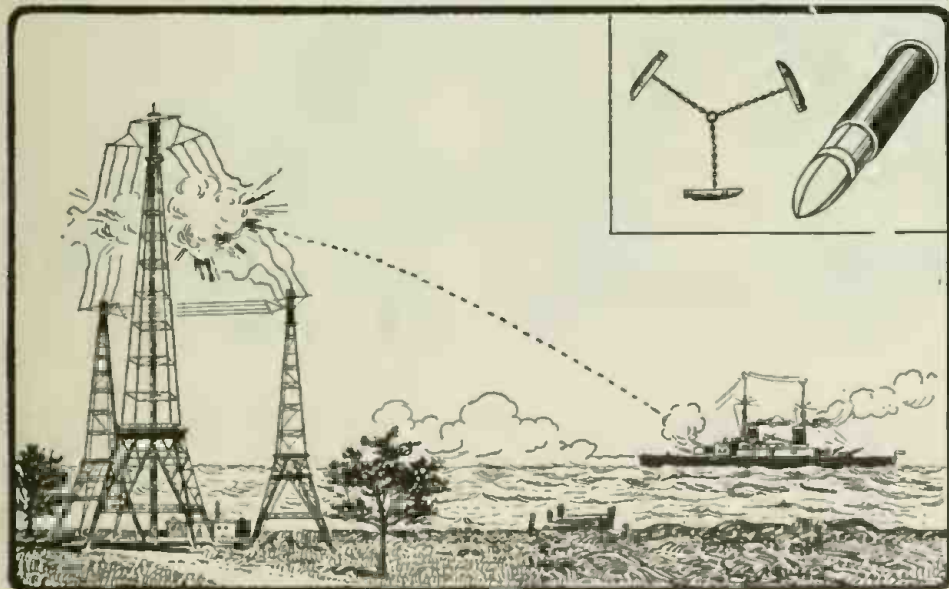
An optical device, which is said to rival if not surpass the telescope in revealing the mysteries of the heavenly bodies was exhibited at a recent meeting of the American Society of Mechanical Engineers in New York. The invention was exhibited by Dr. John A. Brashear, the grand old man of American astronomy, of Pittsburgh.

"This instrument is called a diffracting grating," said Doctor Brashear, as he showed what looked like a rectangular piece of metal about 2 by 4 inches long that changed colors under the electric lights. "On the plane surface of this polished plate, made accurate to one-tenth of a light wave, or within one-forty-five-thousandth of an inch, are ruled more than 45,000 lines between which there is no greater error than one-two-millionth of an inch.

"With this delicate piece of apparatus, made possible, first by rigorous scientific research; second, by the skill of the artisan; third, by a knowledge of a vigorous care to avoid temperature changes, and, fourth, by the accuracy of the mechanism, the astrophysicist has been able to tell the composition, temperature and distance of the stars."

REVIVING THE CHAIN SHOT TO DESTROY RADIO AND OTHER AERIAL WIRES.

An American inventor has recently proposed that the military and naval authorities revive a relic of warfare which was in vogue many years ago—this is nothing less than the generally well-known *chain shot*. In our grandfathers' and great-grandfathers' day it was considered quite a nifty idea to tie one or more cannon balls together with an iron chain—thus, the name *chain shot*. The accompanying illustration shows a clever form of split projectile composed of three or more pieces divided in the manner shown, so that by means of a time fuse or other arrangement, these pieces would fly thru the air as a solid projectile, and at the critical moment would explode and describe a path of considerable width thru the atmosphere, and proving, it would seem, of decided efficiency



A New War Invention Is a Split "Chain Shell" That Automatically Explodes at a Given Range. It Should Prove Particularly Valuable In Destroying Radio Antennae and Other Wire Structures.

in destroying radio antennae, and all other elevated wire structures such as telegraph and telephone wires, power transmission circuits, et cetera.

GOVERNMENT TAKES OVER MARCONI STATIONS.

The U. S. Government has availed itself of the offer of the Marconi Wireless

Todd, at Washington, will have charge of stations operated by the government. Enrollments will be made by commands of naval districts.



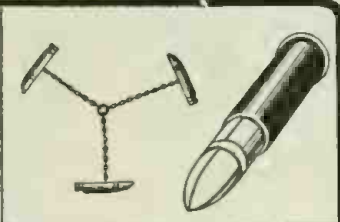
To Counteract the Poisonous Gas Fumes Blown Toward European Trench Rescuers Who Are Called Upon to Go Forth and Carry Prostrate Soldiers From Their Positions, They Have Guarded Themselves Against Being Overcome by a Novel Telephone Appliance Attached to the Gas Defying Equipment.

Telegraph Company of America, placing its staff and stations at its service and has taken over for the period of the war not only the Marconi stations but all other radio stations for military purposes. The eligible operators will be enrolled in the government service. Stations not required will be closed. The trans-Pacific stations will continue handling commercial traffic, but under government supervision. No ship traffic will be permitted on the Atlantic and Gulf Coasts and the Great Lakes excepting for the government, but it will

EUROPEAN SOLDIERS USE GAS MASKS FITTED WITH TELEPHONES.

The accompanying illustration shows in a marked manner one of the peculiar and particularly effective scientific devices brought out by the great European war.

Needless to say this war of all wars has developed hundreds, even thousands, of new inventions of every conceivable character. First the Germans invented the gas apparatus by which they attempt to overcome their enemies in the trenches with clouds of noxious fumes, and here we have the answer to this challenge in the form of a *gas mask* or helmets, which are worn by the members of the trench rescue brigade, who are called upon to go forth and carry prostrate soldiers from their positions where they may have fallen between the trenches, when overcome by the gas cloud. Each gas helmet and mask is fitted with a novel and specially designed telephone outfit, properly connected to a trailing wire leading back to the trench, so that the rescuers are able to telephone for aid without removing their helmets or apparatus.



GOVERNMENT RADIO BILL GOES OVER.

House leaders at Washington have decided definitely not to pass at this session the Administration bill for permanent Government dictatorship over wireless apparatus, unless the President specifically requests it.

It was learned that the House Merchant Marine Committee believes the President already has power enough over radio stations to prevent their use in time of war.

The principal feature of the bill is its provision for eventual Government ownership of radio companies. This feature is not considered by the committee to be strictly war legislation.

continue for the present on the Pacific. Trans-Atlantic traffic via Glace Bay will not be disturbed. The Director of Naval Communications, Lieutenant Commander