

MEDICINE

New Detector Locates Metal Fragments In War Wounds

Radio Frequency Circuit With Movable Coil Enclosed In Steel Finger Used With Success at Pearl Harbor

PIECES of metal may now be removed from war casualties and victims of accidents with unprecedented facility and speed. The old method using probes and X-rays often takes one or more hours compared to the new record of a few minutes.

The revolutionary technique is based on the use of an instrument known as the Moorhead Foreign-Body Finder. By means of this guide surgeons may definitely locate bits of steel or other metals easily and quickly. The instrument was designed by Col. John J. Moorhead of the U. S. Army, professor of traumatic surgery at the Army Post Graduate School in New York City. It was used for the first time in Tripler Hospital, Schofield Barracks, after the Japanese raid at Pearl Harbor, Dec. 7.

On the morning of the attack Col. Moorhead—a visitor in Honolulu—was lecturing to a group of physicians. When the call came for medical help he accompanied the doctors to the army hospital. Col. Moorhead's instrument was used successfully that day to locate fragments in 20 cases and in many more to prove the absence of any imbedded metal.

Col. Moorhead has made a study for years of the methods of detecting foreign bodies in tissues and wounds. He served for two years in France during World War I and was decorated for excellence in war surgery. He felt that there was a definite need for better means of locating embedded metal fragments. His foreign-body finder was designed to fill that need.

The finder consists of a radio frequency circuit mounted in a box, with a movable coil or capacity attached by a wire and inclosed in a steel finger. The steel finger—about one-half inch in diameter and about 12 inches long—is water-tight and the wire to which it is connected is covered with rubber so that they may be detached and sterilized by boiling.

As the indicator approaches a piece of metal there is a deflection on a

millimeter. One knob of the instrument adjusts for iron fragments and another for other metals.

In use the indicator is passed above or around the wound in two planes at right angles to each other. At the points of greatest deflection marks are made on the flesh. The projection of these points indicates the position of the metal fragment. If this is not sufficient the indicator may be introduced directly into the wound, even in lung, brain, or abdomen.

Col. Moorhead's instrument has many advantages over the old method using X-rays. It cuts the time needed to remove the fragments to a mere fraction of that formerly required. This is not only a great boon to the individual pa-

tient but in times of disaster allows the surgeons to treat many cases within the first six hours known as the "golden period" of surgery. The instrument is cheap to construct and operate and constitutes an enormous saving over that of the ordinary X-ray outfit, perhaps a hundred dollars or so compared to five to ten thousand. The machine is easily portable. The box is about one by one by two feet and weighs approximately ten pounds.

Dr. F. J. Halford, Honolulu surgeon who worked with Dr. Moorhead on Dec. 7, says:

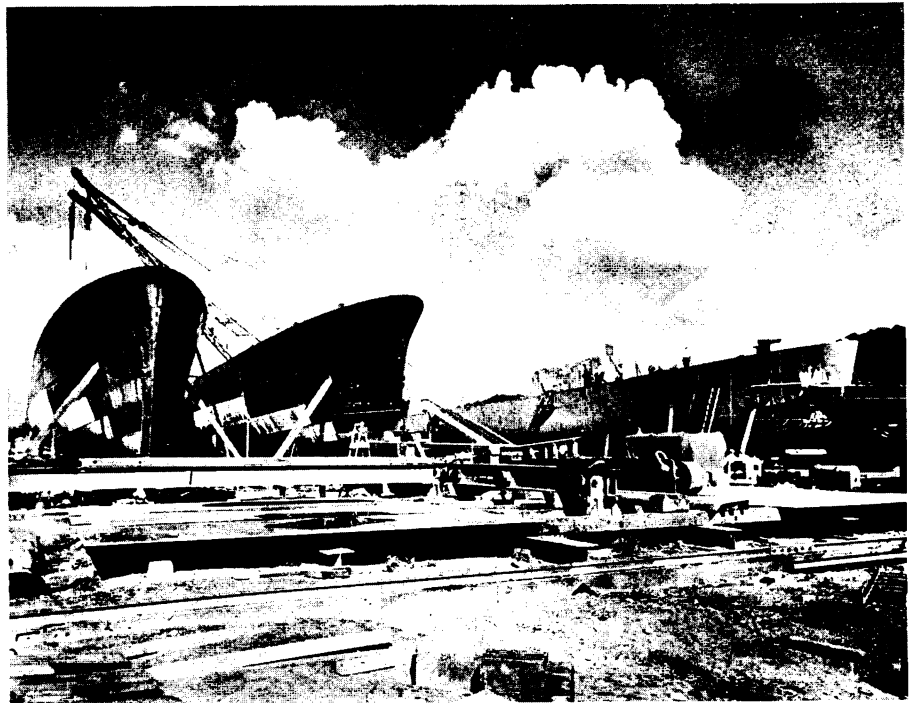
"The Moorhead Finder will probably equal or supersede the X-ray in this type of work not only in emergencies but under the best conditions."

Science News Letter, January 31, 1942

PHYSICS

Officer Invents Furnace For Gas Mask Charcoal

AN electric furnace for preparing activated charcoal, such as is used in gas masks, has been invented by Col. Maurice E. Barker of the Army's chem-



TO CHASE SUBMARINES

Production line methods have been applied to the construction of submarine chasers at Pittsburgh, Pa., where a number of the Diesel-powered vessels are being constructed by the Dravo Corporation. These craft are built in sets of three, upside down and in three sections. When the hulls are completed, the vessels are righted as shown and placed on the ways. The photograph is used through the courtesy of the Lincoln Electric Company.

ical warfare service. In applying for his patent (No. 2,270,245), Col. Barker specifies that his invention may be used by the United States government without payment of royalty.

The furnace heats the charcoal to a temperature of about 1,000 degrees Centigrade, at the same time keeping it stirred, while a mixture of carbon dioxide and steam, with a small amount of oxygen, is passed through the mass. This renders the charcoal highly adsorbent to poison gases and other impurities.

Activated charcoal for gas masks is a development dating since World War I. At that time, natural charcoals prepared from coconut shells, prune pits and other hard-to-obtain sources were the only adsorbents suitable for gas-mask use. This special treatment of ordinary charcoal has made the manufacture of gas masks simpler and less expensive.

Science News Letter, January 31, 1942

American *golden-eye ducks* can remain under water as long as 55 seconds.



WAR FASHION

Eskimos and United States soldiers on Far Northern duty have no monopoly on the snug invention of the parka—hood and coat in one. Here is how it looks, as streamlined and designed for America's farm women. The new cold-weather outfit, creation of Miss Clarice Scott, of the U. S. Bureau of Home Economics, resulted from a visit by Miss Scott to the Quartermaster Corps' sample clothing room in Washington in the company of a Science Service representative.

ENGINEERING

Super-Power Test Laboratory Guards Our Electric Plants

Short Circuit Such As Might Be Produced by Saboteur Rendered Harmless in Demonstration For Officers

See Front Cover

ELECTRICAL knockout blows of 2,000,000 kilowatts, equal to twice the power generated at any instant at Niagara Falls, were delivered, and rendered harmless by improved protective devices, at the first public demonstration of Westinghouse's new super-power testing laboratory, most powerful of its kind in the world.

In demonstrations before Army and Navy Officers, these knockout blows duplicated the effects of a short circuit such as could be caused by a bar of steel thrown across the electric circuits in a power station by a saboteur, the severance of a power line so that it would fall to the ground, explosives planted on the ground, or an aerial bomb.

The torrent of power suddenly released produced flaming arcs 20 feet in length, exploded old-time safety fuses with detonations as loud as shellfire, and shattered six-inch timbers into kindling.

But a new 12-foot-tall improved oil circuit-breaker snuffed out the arc in a twentieth of a second and by-passed the current into a chamber where it was choked off with magnetic plates. Applied to a power line, the circuit-breaker cuts out a short-circuited section, allowing the remainder of the system to function normally.

In another demonstration, a compressed-air circuit-breaker blew out a 1,500,000-kilowatt arc in a hundredth of a second.

In a room-sized refrigerator, where temperatures 20 degrees below zero can be maintained, an outdoor power switch, encrusted with frost and dangling with icicles, was tested. At 120,000 volts the current flashed over the four-foot-high porcelain insulators with a blinding light and a thundering crash.

Experiments like this indicate how much insulation a winter-proof switch must have.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows still another demonstration in which 1,500,000 kilowatts were sent through three copper cables sandwiched lengthwise between six-inch timbers and the whole bound together by stout ropes. The ropes were snapped and the timbers blown apart and shattered into kindling wood by the magnetic forces of the discharge.

The power for the 2,000,000 kilowatt flash was built up gradually by two 500-ton generators and then released suddenly in a maximum time of five seconds. This power, which is equivalent to 2,680,000 horsepower, if it could be delivered continuously, would light enough fluorescent lamps to girdle the earth twice at the equator. The sudden release of this energy caused the generators to recoil like guns. Special spring mountings took up the shock to prevent injury to the foundations.

Science News Letter, January 31, 1942

PHYSIOLOGY

Scientists Still Uncertain Whether Vitamins Darken Hair

MEDICAL scientists and nutritionists are still uncertain whether vitamins will darken gray hair, and if so, which vitamin is the true anti-gray hair remedy, it appears from a summary of the situation in the *Journal of the American Medical Association* (Jan. 24).

Para-aminobenzoic acid darkened gray hair in adults in all cases reported by Dr. B. F. Sieve, of Boston. Similar results previously obtained in laboratory animals furnished the basis for these clinical trials.

"Confirmatory reports (of the clinical