

# Electricity Helps to Heal German Soldiers Wounds

**T**HE photograph shows a number of wounded German soldiers under expert treatment in a hospital for the wounded. As will be seen, some of the soldiers have their arms inserted in an electric heating oven, and it has been found that this heat treatment acts very remarkably to remove stiffness from the joints and muscles.

The temperature of these ovens is very carefully watched by means of the thermometers, and the soldiers receive this treatment at regular periods each day until they are thoroughly well and ready for the front again.

The electric ovens shown have been used considerably in hospitals and sanitariums with great success. They comprise an electrical heating element composed of a wire or ribbon resistor, which becomes heated to different degrees when the electric current is applied, depending upon how the different sections of the heating element are connected to the line wires.

As seen, each heater has a marble switchboard on same which contains the different switches for adjusting the amount of current used, and

which, in turn, permits any degree of heat wanted to be had readily.

Some of the electrical ovens for this purpose are much larger than the ones here illustrated and are adapted for heating the entire leg, etc. Also some of the ovens

## LOCATING SHELL FRAGMENTS IN WOUNDS.

A method of localizing shell fragments or other pieces of magnetic material in the human body, which has recently been tested in France, is noted in the *Engineer*.

A powerful alternating current electromagnet is brought near the region affected, and the presence of a magnetic body within the flesh is indicated by a perceptible trembling of the surface at the immediate locality. By feeling the flesh the surgeon can easily find the spot where the trembling is strongest, and can thus locate the fragment of projectile with considerable accuracy.

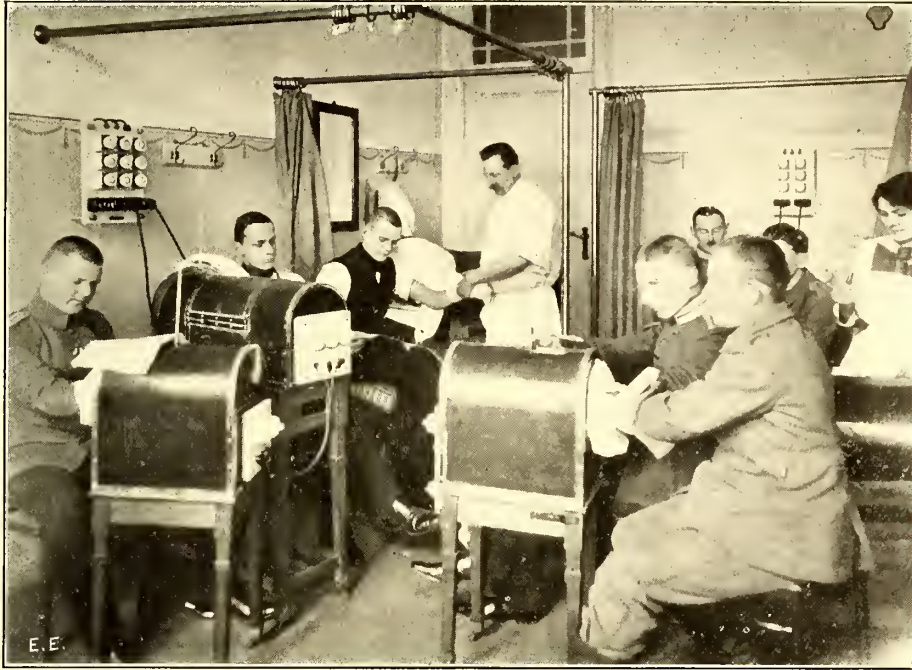
The action of this alternating current method of locating pieces of iron or steel which may become buried in the flesh, is based upon electromagnetic induction set up in the iron particles or fragments, due to the powerful alternating magnetic field of flux created by the A.C. magnet.

The pieces of iron thus manifest magnetic qualities, owing to the current set up by induction in them and, of course, will also manifest movement, the same as the action taking place in an A.C. motor, etc.

Other methods in use consist of the X-Ray, the Induction Balance, etc.

## NOVEL "BOXING BOYS" ELECTRIC SIGN.

A spectacular electric sign, having rapid action to hold the attention of the public, is



The Kaiser's Wounded Soldiers Make Use of Electric Ovens to Limber Up Their Stiffened Muscles.

Photo (C) by Underwood & Underwood.

are built in such a shape that the abdomen or back of the patient can be heated as well.

electric lamps were built upon it. When the red lamps were lighted their rays penetrated the glass of the outer electric bulbs and gave the appearance of a *real* gigantic lamp. This photograph is from the wonderful collection of Willam J. Hammer, the eminent electrical engineer and for many years the associate of Thomas A. Edison in the development of the incandescent lamp.

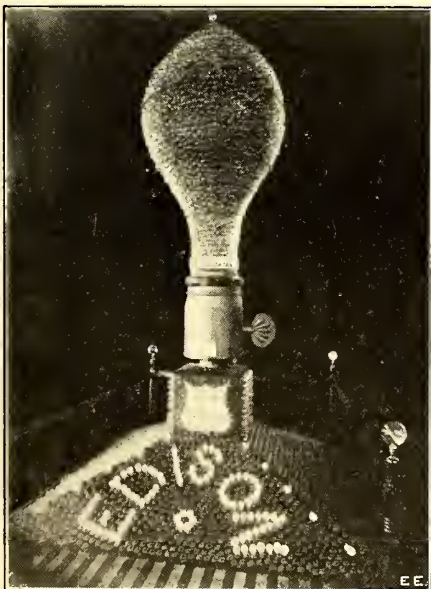
## SELF-INDUCTION OF SOLENOIDS OF APPRECIABLE WINDING DEPTH.

At the April 23 meeting at the Imperial College of Science, London, a paper by S. Butterworth was read having the above title.

The existing formulæ for coils of this type, viz., those of Rosa and Cohen, of the U. S. Bureau of Standards, Washington, D. C., are shown to be inaccurate, the error amounting to one-fifth of 1 per cent. for the best formula when the winding depth is one-tenth the diameter of the coil. For greater winding depths the error is larger. The inaccuracy in Rosa's formula is due to the neglect of curvature in correcting for thickness, while in Cohen's formula the error is due to the approximate method of development. New formulæ are developed by methods which are free from such approximations, and which apply to any coil for which the length is greater than twice the diameter, and the winding depth is less than one-tenth the diameter. These formulæ are capable of giving eight-figure accuracy. Simplified formulæ are also given which are suitable when only four-figure accuracy is required.—*The Electrician*, London.

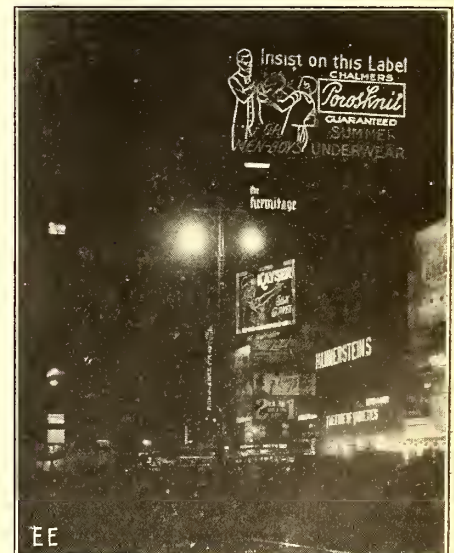
## ELECTRIC BULB COMPOSED OF 16,000 LAMPS.

A huge electric lamp, herewith shown, was built for the Cincinnati Exposition in 1888. This lamp consisted of a form or frame made of wire and having 16,000



An Early Edison Exhibit in the Form of a Monster Lamp Bulb Containing 16,000 Regular Size Bulbs.

electric lamps fastened on it. The "filament" consisted of a 3-inch pipe bent in the form of a regular filament, and red



Electric Sign in New York City Featuring the "Boxing Boys" of Porosknit Fame.

shown in the illustration herewith. This sign is one of the many marvelous attractions along the "Gay White Way" of New York City.