PHYSIOLOGY

Must Rush Life-Saving Shocks To Save the Electrocuted

Electric Counter-Shocks Within Four Minutes Revive Dead Animals Without Surgery; Stop Heart Fibrillation

IN CASES of accidental electrocution, life-saving electric counter-shocks must be administered within four minutes. Otherwise all hope of reviving the dead must be abandoned.

Research by Prof. William T. McNiff and Dr. Leonard J. Piccoli of Fordham University has demonstrated this urgent need for heroic treatment of electrical workers or others who suffer killing shocks. But they warned:

"The method of counter-shock would be absolutely ineffectual in reviving any victim of electric shock resulting from legal electrocution."

Their studies showed that damage to animals from electric shock was most severe when one electrode of the shocking apparatus was attached to the skull and the other to the tail. In legal electrocution one electrode is attached to the base of the brain and the other to the calf of the leg. The result, as in the head-to-tail arrangement on animals, is that a strong current causes death by paralysis and destruction of the brain. Furthermore, the body temperature becomes so high in any case of legal electrocution, more than 140 degrees Fahrenheit, that the reestablishment of the blood circulation is impossible.

Like other investigators in this field, Prof. McNiff and Dr. Piccoli find that electric shock kills its victims by throwing the heart into what doctors call fibrillation. This is a condition in which each fiber of the heart muscle contracts individually. The effect is a useless twitching, instead of a strong contraction that will force the blood out into the body.

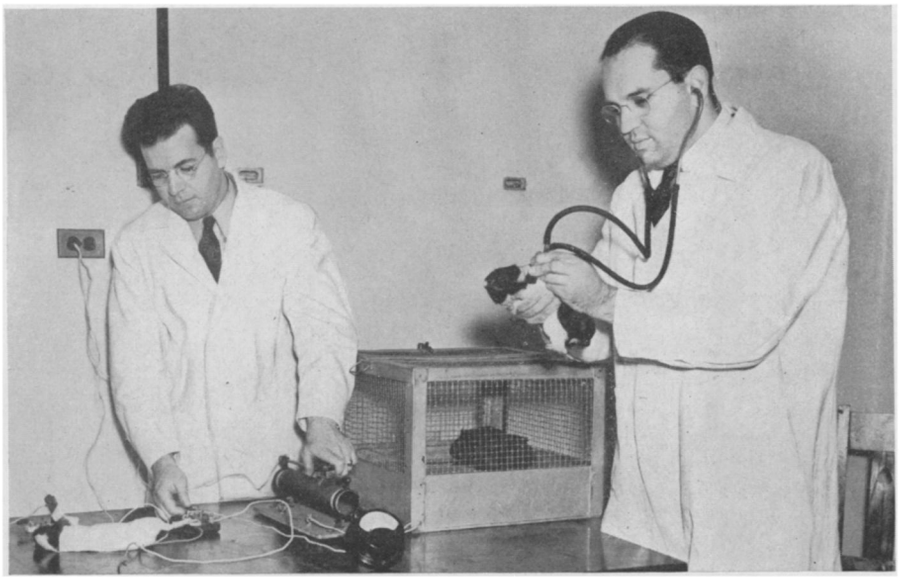
Counter-shock with a 60-cycle alternating current applied for a very short time stops this fibrillating and revives the animals. The method has been applied in cases of fibrillation during operation when the heart is already exposed and electrodes can be applied directly. But the Fordham investigators point out that by their method of applying one electrode to the back and another to the chest, both near the heart area, it is possible to revive animals without surgery and should be possible in the same way to revive victims of accidental electric shock.

This method should, they feel, be particularly valuable in accidental electric shocks encountered in electrical industries, because in these accidents the victim is generally shocked not through the head but through the arm or body.

Following revival by counter-shock, the patient should be kept in a room the temperature of which is at least 60 degrees Fahrenheit. Animals revived but kept at lower temperatures did not survive.

The Fordham investigators also found that following electric shock animals were ready prey to tuberculosis. They died in from one-sixth to one-third the normal time when tuberculosis germs were injected following revival from previous electric shock.

Science News Letter, December 12, 1936



GIVING LIFE

Prof. William T. McNiff, left, is about to restore life to a guinea pig dead from electric shock as Dr. Leonard J. Piccoli listens with a stethoscope to the heart of an animal already so restored.

TECHNOLOGY

Better Coking of Coal Results from Researches

CHEAPER, better and more versatile coking of coal is in prospect as the result of five years of fundamental research at the Coal Research Laboratory of the Carnegie Institute of Technology.

By breaking with traditional methods of turning bituminous coal into coke, gas, tar and chemicals, William B. Warren explained to leading industrialists, it should be possible for coke oven operators to decrease cost, cut operating time by a third, while improving quality and yield of coke.

Mr. Warren recommended that coal be preconditioned before coking by warming it to 200-400 degrees Centigrade (400-750 degrees Fahrenheit). This precarbonization treatment could be carried out in low temperature apparatus that is much less expensive than the coke ovens themselves.

Delving into just what happens when coal is heated and carbonized, Mr. Warren evolved a theory. This theory, applied to practical operation of coke ovens, promises the large economies.

First, when coal is heated the large molecules break apart into much smaller units. At slightly higher temperatures, surface changes take place within