

## MEDICINE

# Salt Water for Shock

Future first aid treatment of shock in severe burns may be just a drink with just the right amount of salt in it. Proved life saver for mice.

► A DRINK of salt water, of just the right strength, may become the future first aid treatment for shock in extensive burns.

Experiments at the National Institute of Health by Dr. Sanford M. Rosenthal, principal pharmacologist of the U. S. Public Health Service, point that way, although so far no human trials of the method have been made.

Survival rate for the first two days among burned mice given about one-fourth of a teaspoon of the salt drink was about twice as high as among the animals not given this drink. When the animals were given two salt drinks, one and four hours after the burn, only about 13 out of 100 died the first day and 17 out of 100 on the second, as compared with about 93 out of 100 dying among untreated controls.

Dr. Rosenthal compared the salt drink treatment for shock from burns with other standard methods of treating shock. No benefit was observed, he reports, from epinephrine (adrenalin), posterior pituitary gland extract, adrenal cortical extract, or a synthetic adrenal cortical hormone preparation.

Human blood serum showed little effect when injected into the veins of the mice. Mouse blood serum was more effective but not as good as the salt drink.

Whether a salt drink can replace blood serum or blood plasma as life-saving treatment for shock in human victims of burns cannot be told until more experiments have been made. The salt drink treatment is based on a different principle from that of replacing lost fluids as by plasma or blood transfusions, Dr. Rosenthal explained.

In mice, he finds, the acute mortality, that is death, occurring within a day or two after an extensive burn, is closely related to a disturbance of the balance of sodium and potassium in the body as well as to the escape of fluids from the blood stream. The upset in sodium-potassium balance seems the most important, he reports, and may be the cause of the concentration of the blood and other effects attributed to the loss of fluids in the burned areas. Doses of potassium speeded death in the burned mice, and

when this was given with sodium chloride, it antagonized the effects of the salt drink.

The strength of the salt drink, he explains, has to be such as not to upset the fluid balance of the body, and should have about the same osmotic pressure as that of the blood.

Since it is the sodium of the salt that is effective, other sodium salts, such as sodium bicarbonate, might be given if the salt drink proved too nauseating. Salt tablets of the right dose with a glass of water might prove the most practical method for first aid use, if the new treatment develops into one useful for human burn victims.

Further studies on methods of saving those who succumb to burns after the first two days will be made, Dr. Rosenthal says. The studies have so far been limited to effects of treatment for shock, rather than for the burn itself, since in man from 60% to 80% of the deaths

from extensive burns occur within the first few days as the result of shock.

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## CHEMISTRY

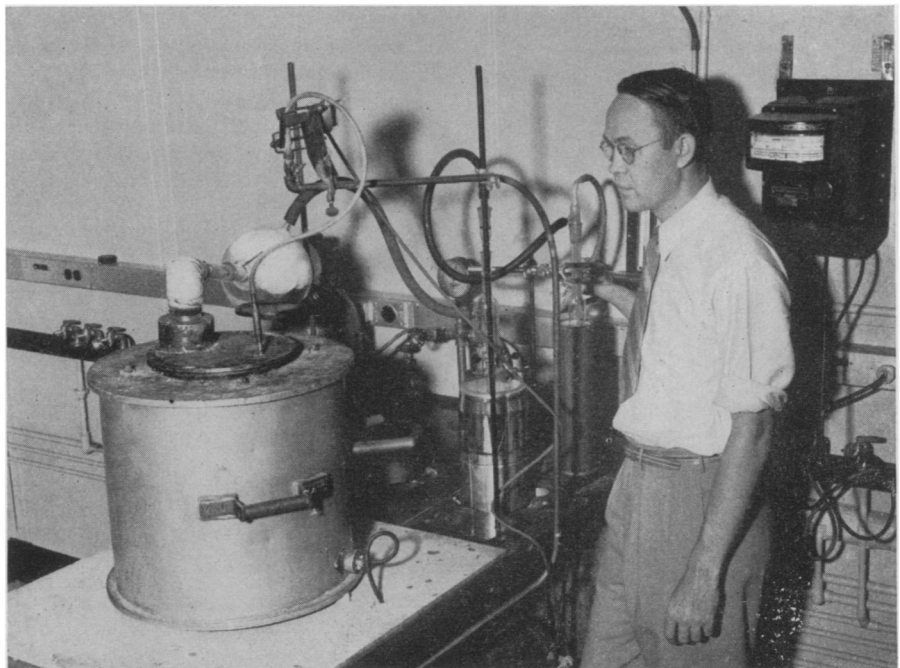
## Synthetic Rubber Paracon Now Being Produced

► THE DEVELOPMENT of a new kind of synthetic rubber which will help meet essential war needs was announced by the Bell Telephone Laboratories. This new material, christened "Paracon," looks and feels like ordinary rubber, has a high resistance to damage by oil or gasoline, and is superior to natural rubber in resistance to heat, light and oxidation. It is inferior to natural rubber in resistance to steam, alkalis and acids.

In the raw state, Paracon is unusually adapted to moulding into intricate shapes. It is useful not only as a replacement for rubber, but in particular as a material for special application where its combination of unique properties is required. The aircraft industry is an example.

Paracon can be derived from agricultural products and coal products, or from coal and petroleum sources. It can therefore add to the present supply of rubber substitutes without interfering with the production of those already under way.

Synthesis of Paracon was accomplished by Dr. C. S. Fuller and Dr. B. S. Biggs



**FOR PARACON**—Here is Dr. C. S. Fuller with some of the equipment in Bell Telephone Laboratories with which he and Dr. B. S. Biggs developed "Paracon," newest synthetic rubber.

of Bell Telephone Laboratories and their associates. Several months ago, after Paracon had been demonstrated practicable at the laboratories, information was made available to the Baruch Rubber Committee and the War Production

Board. Details as to the process involved were turned over to several chemical manufacturing companies to enable quantity production, and the Resinous Products and Chemical Co. is now producing Paracon.

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PSYCHOLOGY

## What Bombardier Needs

**To operate Norden Bombsight, you must have good eyes and mental as well as manual agility. Must be calm under fire.**

► IF IT IS your ambition to be the one to shout "Bombs away!" over Tokyo when America moves on Japan, you can start practicing now some of the skills you will need to operate the Norden bombsight.

Now that the bombsight is no longer kept boxed away in strict military secrecy, it can be told just what sort of abilities a man needs to work this precious all-American gadget.

First of all you must have good eyesight. And this means more than just ability to see a capital E at a distance of 20 feet. It means being able to pick out a camouflaged war plant from a background of trees or city pavements or other roof tops. You must be able to spot, at a great distance, an objective you have seen before only on a map. And you must spot it quickly. You have only something like 25 seconds—that is less than half a minute to do everything. If you waste many seconds in spotting your target, you won't have many seconds left in which to make the adjustments on your instruments.

If your plane is flying at a great altitude, you may have a little longer in which to search for your target. But if you are flying low, the ground will go whizzing along below you at a great rate.

Your eyes must be very good at detecting small movements. In operating the Norden bombsight, it is necessary to set the sight so that the cross-hairs are placed accurately over the target. If you should get it exactly right at the first setting, you won't need to do anything more; the instrument will go on and do the rest. But most people are not that good. If the setting is imperfect the target will start to drift just perceptibly off the exact intersection of

the cross-hairs and it will then be up to you to detect this drift instantly and make the necessary correction.

If you are going to be one of Uncle Sam's bombardiers, you must be able to make the adjustments on a precision instrument with great accuracy and great speed.

You must be able to use calculating devices such as a slide rule. You must be able to make lightning calculations in your head. You must be able to hunt up values in tables of figures quickly. You must be able to do a great many operations always in the proper order and without forgetting a single item. And you must be able to do them all at top speed.

And you must be able to remain quite calm and unflustered while you go through all this complicated procedure even though a Messerschmidt has a machine gun pointed straight at you.

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PHYSICS

## Million-Volt Industrial X-ray Machine Installed

► A POWERFUL million-volt X-ray machine has just been installed at the University of Rochester, made possible by the collaboration of eight Rochester industries with heavy war contracts, Dr. Alan Valentine, president of the University, has announced.

"A number of Rochester firms with millions of dollars' worth of war contracts each wished to build one of these X-ray laboratories, but the cost and effort would have been too great," he states. "By combining forces they have not only cut the pro-rata cost to a fraction of the total, but they also have acquired a metallurgical laboratory whose research on

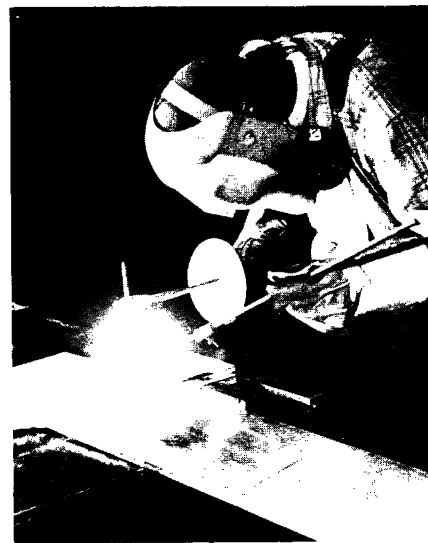
alloys and new materials will be valuable long after the present immediate need has been met."

Each of the eight contributing industries will use the giant X-ray machine to inspect and test war materials, thus greatly speeding up their work on vital government contracts. The University's scientific staff will assist in testing, and will use the equipment for research on alloys, plastics and similar products, for medical therapy and experiments involving the use of the deeply penetrating rays.

There are about 30 of these powerful X-ray machines in use in various places, but all are in industrial plants. This is the first of them that has been put into a university.

The Rochester industries collaborating in the purchase and installation of this huge X-ray machine are the Eastman Kodak Company, Bausch & Lomb Optical Company, Symington-Gould Corporation, Pfaulder Company, Delco Appliance Division and Rochester Products Division of General Motors Corporation, General Electric Corporation, and General Electric X-Ray Corporation. The machine was designed by Dr. E. E. Charlton of the General Electric X-Ray Corporation.

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**SILVER**—Loaned by the Government, this solid silver bus bar is now doing war service at the Dow Magnesium Corporation's new Michigan plant, relieving the demand for copper needed for cartridge casings and other types of ordnance equipment.