

## MEDICINE

# Stomach Ulcer Cause

Experiment with wetting agents that reduce surface tension of watery solutions shows that when digestive juices penetrate stomach lining, self-digestion occurs.

► ULCERS in the upper part of the digestive tract are indicated as a consequence of the stomach's "digesting itself"—a classic and much-debated paradox of physiology—by experiments of three University of Kentucky researchers, Dr. R. L. Driver, Dr. G. S. Dozier and Dr. H. C. Denham (*Science*, Aug. 13). So long as normal health prevails, the acidified digestive juices of the stomach cannot penetrate the lining, but if something happens to make it more permeable, the damaging self-digestion begins, causing the acutely distressing internal "raw" spots.

In their experiments, the three physiologists introduced several well-known wetting agents, or substances that reduce surface tension of watery solutions, into the upper intestines of laboratory animals, together with an acidified solu-

tion of pepsin. Ulcers developed in a very high percentage of cases. In the control experiments, where pepsin and hydrochloric acid were introduced separately and without the addition of wetting agents, there was no ulceration.

Four wetting agents were used: calgon, pinacol, hexylresorcinol and methyl salicylate. They all make the mucous lining of the digestive tract more permeable, though each acts in a different fashion to bring this about.

The three Kentucky scientists call particular attention to the action of calgon, which is a water-softener; that is, it takes calcium ions out of circulation.

"Calcium," they state, "combines with lipids and proteins to produce a hardening and protective effect on the mucosa. It is not inconceivable that the beneficial effects of milk in the treat-

ment of ulcers may be attributed in part to its calcium content, and it would seem that the fortification of milk with a calcium salt is indicated."

*Science News Letter, August 21, 1943*

## MEDICINE

## Surgeon Uses Special Tub In Treating Severe Burns

► A NEW surgical tub, expected to reduce greatly the danger of infection and contamination in the treatment of burns and wounds, has been developed by Dr. Neal Owens, professor of clinical surgery (plastic surgery) in the Tulane school of medicine. The tub, which was built in Birmingham, Ala., was demonstrated by Dr. Owens to the staff of the South Highlands Infirmary, there.

"Designed to offer all necessary requirements for the proper treatment of burns and infected wounds, the tub avoids the usual contamination encountered with our present equipment," Dr. Owens pointed out.

The tub is shaped to accommodate a person lying on his back with his arms spread perpendicular to his body and his legs slightly apart. It has small metal supports pointing upward from its rim. The patient does not lie in the tub, but is suspended on sterile canvas straps in a manner which permits thorough cleansing of the entire body and subsequent application of a dressing without the usual contamination.

Dr. Owens said he found many years ago in the treatment of burns that the normal facilities for the care of such patients were inadequate. About a year ago he set about to design equipment which would make the patient with extensive burns or wounds more accessible for treatment.

"In treating the patient while suspended above the tub, one can thoroughly examine the wound and evaluate its progress more accurately. Because of the special features of the tub it should be a valuable aid in developing a more suitable type of treatment in cases of established infection," Dr. Owens predicted.

*Science News Letter, August 21, 1943*



**NEW PLANT**—A big Douglas C-54 cargo transport is shown being finished just inside the door of the new all-timber assembly plant just constructed at Chicago by the Austin Company. By use of laminated timber construction and in other ways, it is estimated that more than 30,000 tons of steel and important metals were saved in putting up this plant. Notice the great beams that look like steel girders.

## GENERAL SCIENCE

## 17-Year-Old Youths Go to College for Army

► FIRST group of 17-year-old boys selected to prepare for the Army specialized training program have started study at 11 colleges under War Department auspices. Plans are under way to add 12

additional colleges to the program in September.

More 17-year olds will be selected for scholarships by the next qualifying test to be given early in November. Designated as the Army Specialized Training Reserve Program, the plan will provide a continuous flow of specially qualified young men before they enter active military duty.

Three 12-week terms are scheduled, including studies in sciences, English, history, geography and mathematics. At the end of the term in which the trainee reaches his 18th birthday, he will be placed on active military duty. After completing his basic training he will be screened for continuation in the Army specialized training program.

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**MAKING NEW NICKEL**—*The photographs on this and the facing page show how that nickel in your pocket was made at the U. S. Mint in Philadelphia. First an artist makes the design in plaster about seven times the size of the finished coin. A negative cast is made from this original and this is copper plated (left) in an electrolytic bath. From the copper plate, a transfer engraving is made on a three-dimensional pantograph (center). The copper plate is then preserved carefully so that it may later be copied as many times as necessary. The transfer engraving first made by pantograph is about half the size of the original and is called an "intermediate." It must be touched up, smoothed and corrected (right).*

RADIO

## New Radio Station

**Ticks, hums and whistles will constitute only broadcasts from the National Bureau of Standards more powerful station.**

➤ A NEW, more powerful radio station has been opened by the National Bureau of Standards. No one will be able to tune in for entertaining programs, however, for its broadcasts are limited to ticks, hums and whistles which set the frequency standards for technical men in many industries.

The service has now been extended so that good reception is possible throughout the United States, the North Atlantic Ocean and, with fair reception, over most of the world. Broadcasts will be continuous night and day on five, ten and fifteen thousand kilocycles.

The radio and audio frequencies serve as standards used by radio engineers of the armed forces, commercial stations, and radio industry. It is by the National Bureau of Standards broadcasts that a station periodically checks to make sure that broadcasts are on the frequency prescribed by law and that the programs will come in where the listener expects them to be.

One of the audio frequencies used, 440 cycles per second, is the standard musical pitch corresponding to A above middle C. It is used by all musical instrument manufacturers, and many piano technicians and musicians. The broadcasts are helping to set up a uniform standard; for there has been some difference of opinion as to what the tone A really is.

Besides these frequencies there is a pulse every second heard as a faint tick when listening to the broadcast. These may be used as accurate time signals and their one-second spacing permits scientists to make accurate physical measurements.

*Science News Letter, August 21, 1943*

PSYCHOLOGY

## Three Persons Out of Four Don't Know Themselves

➤ DO YOU know yourself?

If you can recognize your own hands when seen in a photograph, your own handwriting, the silhouette of your own profile, you know yourself better than three-fourths of the persons tested by Dr. Werner Wolff, chairman of the department of psychology at Bard College, Columbia University, in an 18-year study of personality.

If you can recognize your own voice, you are one person in ten.

This failure of individuals to recognize themselves, Dr. Wolff, in an interview, attributed to an unconscious unwillingness to remember or realize what he is like.

"Man's own image," he said, "is for him taboo. He forgets it. If we show it to him he reacts with emotion."

Yet, surprisingly enough, although men seldom have a chance to observe

