

## MEDICINE

# Measure Drinking Capacity

The maximum a man can drink in one day has been found by experiments on the alcohol consumption of dogs. The results are believed applicable to humans.

➤ A MAN of average weight (about 154 pounds) can, at most, drink one quart of 100-proof liquor in a day. And he can manage that only with a "high level" of alcohol in his blood.

These are the findings of Dr. Henry W. Newman of the Stanford University School of Medicine, San Francisco. If a drinker tells you he consumes two quarts a day, don't believe him, Dr. Newman advises.

His scientific answer to "How much can a person drink?" was inspired by the stories of patients suffering from chronic alcoholism. These chronic alcoholics show a "wide variation in estimates given by them when asked how much they drink daily," observes Dr. Newman.

"In general," he notes, "they fall into one of two classes: those who state that they never take more than a couple of beers, and those who stoutly maintain that they consume up to two quarts of whisky every 24 hours."

Doctors need to know how much a person can drink in a day to know what to believe in these stories, the Stanford scientist explains. To find out just how much alcohol a person can down in a day, Dr. Newman did not set up a scientific bar. Instead, he turned to scientific literature and performed some laboratory experiments. The conclusions are based on the alcohol consumption of dogs, but they can be adjusted to apply to humans, he finds.

Dr. Newman's report, entitled "Maximal Consumption of Ethyl Alcohol," is published in the journal, *SCIENCE* (June 10).

Studying earlier reports of alcohol consumption by dogs, Dr. Newman calculated the probable human limits. Then he used two human subjects in experiments which showed that estimates based on dog experiments could be adjusted to apply to humans. Some experiments have put the top human alcohol capacity as low as less than a pint of 100-proof whisky a day. This, Dr. Newman points out, may have been because the alcohol metabolism was not considered to be changing. The body does, he shows, increase the rate at which it can use the alcohol as the dosage goes up or the blood alcohol concentration is raised.

Thus, the person weighing about 154 pounds (70 kilograms, scientifically) will be able to consume a full quart of 100-proof liquor only when the blood's alcohol concentration is up. Dr. Newman's calculations indicate that a heavier person might be able to consume more alcohol.

For further studies of the question, Dr. Newman urges a "direct experimental ap-

proach." This type of experiment with human subjects, "should certainly some day be made," he declares.

Science News Letter, June 18, 1949

## ENGINEERING

## New Type Carbon Arc Lamp Promises Double Brightness

➤ A ROTATING carbon disk replaces the conventional negative carbon rod in a new type of arc lamp developed at Fort Belvoir, Va., at the Army Engineer Research and Development Laboratories. The new lamp gives promise of greatly increased life and double the brilliancy of lamps now used in searchlights.

It is expected that this new carbon arc lamp will have 30 times the normal, measured in terms of uninterrupted illumination. It will be twice as bright as the present standard 60-inch military searchlight arc. In tests already made the rotating disk negative electrode was found to have

lost only 50 grams of weight in eight hours of operation. The disk is 12 inches in diameter and a quarter inch thick.

The arc is formed between one end of the positive carbon and the negative disk. Due to the non-uniform magnetic field around the arc proper, there is a tendency for the cathode spot, or "foot" of the arc to move slowly out of the disk away from the carbon, scientists state.

To compensate for this action, the disk must be rotated. Rotation is accomplished through suitable gearing by a small motor. The positive carbons are fed by automatic mechanism, and are liquid cooled. Combining the accumulated advantages of the revolving disk negative and the liquid cooled positive with magazine feed, an uninterrupted light of 150,000 candlepower will be possible for periods up to two days.

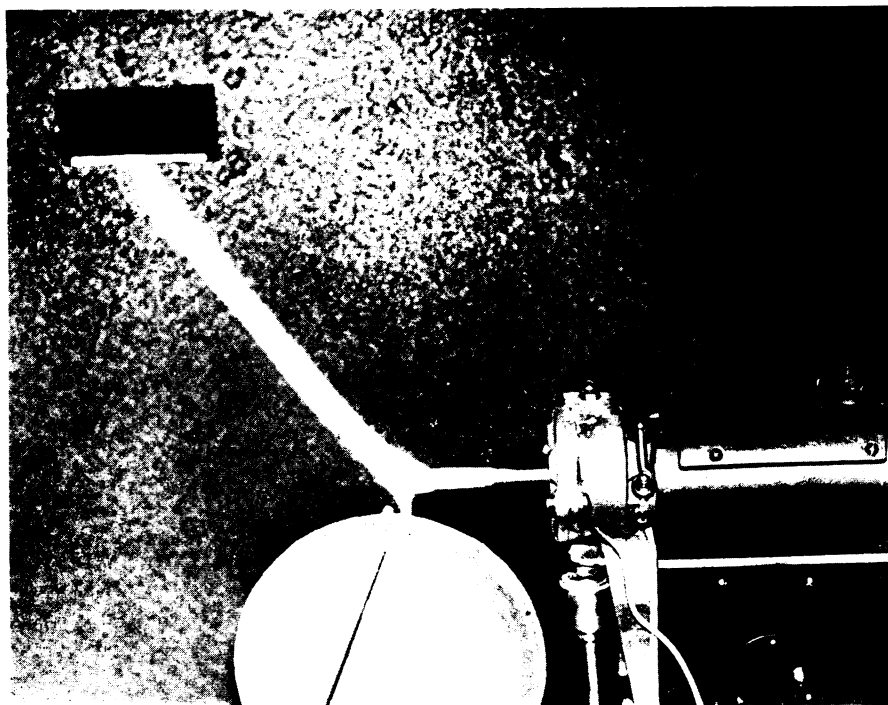
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## MEDICINE

## B Vitamin Lack May Cause Hardening of Arteries

➤ LACK of one of the B vitamins, pyridoxine by name, may be responsible for arteriosclerosis, better known to the layman as hardening of the arteries.

Studies over a three-year period that give "most suggestive evidence" for pyridoxine lack being concerned in artery hardening were reported by Drs. J. F. Rinehart and



**LONGER LIFE AT DOUBLE BRILLIANCY**—This is the promise of a newly developed revolving disk carbon arc light. Location of the arc "foot" in relation to the positive carbon, and the speed-controlling tungsten electrode is shown.

L. D. Greenberg of San Francisco at the meeting of the American Heart Association in Atlantic City.

Monkeys kept in a state of pyridoxine lack for six months develop artery damage that is "surprisingly" like that seen in human patients with arteriosclerosis.

As in the human disease, the blood vessel walls of monkeys in the experiments showed a loosening of the innermost layer or coat. The ground substance on which this inner artery layer rests loses its quality of an effective cement. Accompanying these changes in the vitamin lacking monkeys, certain cells of the inner artery wall multiply rapidly, forming spots of fibrous tissue that

narrow the arteries. These spots are widely scattered. Arteries of the heart and other internal organs are involved to a greater or lesser extent in all the vitamin-deficient monkeys. In many the internal elastic membrane of two large blood vessels, the aorta and the iliac vessel, splits and reduplicates.

How much of the vitamin, pyridoxine, is needed by humans and how many persons are deficient in the vitamin are not known. It is believed that the vitamin is needed for normal utilization of protein and that defects in protein handling which come when the vitamin is lacking are responsible for the degenerative changes in the blood vessels.

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#### MEDICINE

## Diabetes Spotting Test

► "TILLIE", the "tin technician," made her debut at the meeting of the American Medical Association.

Tillie is a machine that performs a blood test for sugar. Within two months, many Tillies will be rolling off the production line, ready to help in the fight against diabetes.

A million Americans—men, women and children—are estimated to be victims of this disease without knowing it. Finding these diabetics so they can get treatment before the disease threatens life is the object of the American Diabetes Association.

A new, simple test for mass detection of diabetes has been developed by Dr. Hugh L. C. Wilkerson of the U. S. Public Health Service. The test is made with a few drops of blood taken from the finger. Pills of

various chemicals are added to the blood in a small tube, and the tube and contents are heated. Development of a blue color tells whether the person's blood contains so much sugar that he might have diabetes. He is then urged to see his doctor for more tests and examination to determine whether he does have the disease.

Tillie, the new machine made by Lessells and Associates of Boston, performs the test automatically in 30 seconds. Blood from six persons can be tested simultaneously. As the tubes revolve, the chemical pills drop in, heat is applied and the tubes finally pass through the path of a photoelectric cell. If the blue color has developed, the cell signals this fact by either a bell or a light.

Science News Letter, June 18, 1949

#### BIOCHEMISTRY

## New Anti-Clotting Drug

► SUCCESS in the first use of a new, synthetic anti-blood clotting drug in 11 human patients was announced at the New York Academy of Medicine.

The new drug may become a substitute for the relatively scarce and costly heparin now used to overcome dangerous blood clotting tendency in certain heart and blood vessel diseases. It is a sulfated mannuronic acid. It will be known by the trade name of Paritol.

Paritol was synthesized by research chemists at the Wyeth Institute of Applied Biochemistry, Philadelphia, under the direction of Dr. Joseph Seifter. Reporting on the new drug besides Dr. Seifter were Dr. C. W. Sorenson, research fellow at Cornell University Medical College, and Dr. Irving S. Wright of the New York Hospital, chairman of the American Heart Association's committee for the evaluation of anti-coagulants.

Heparin is a naturally occurring sub-

stance, found most abundantly in the liver. It is expensive because it must be extracted, by costly and laborious processes, from animal livers and other tissues. Dicumarol, another anti-clotting drug found originally in spoiled sweet clover, has now been made synthetically. Slower-acting than heparin, it is used for patients who do not require emergency treatment but do need prolonged periods of anti-clotting treatment.

Paritol is similar to heparin chemically, acts quickly, and while larger doses are needed, it has a more prolonged action. It is an extremely powerful drug and, like heparin, produces a certain percentage of undesirable reactions. In all cases, however, these have cleared up by themselves or responded to treatment with epinephrine. No signs of permanent damage have been detected. The drug is not yet ready for general use.

Of the other synthetic heparin substitutes developed in the search that led

to Paritol were two that had to be discarded because they would have given the patients a blush lasting several weeks. These were the dyes, Chlorazole Fast Pink and Pontamine Red.

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#### MEDICINE

## Elderly Mothers-to-be Reassured as to Safety

► REASSURANCE was offered to elderly women becoming pregnant for the first time. They stand in no greater danger than the elderly woman who has borne a child before, Dr. L. A. Calkins of the University of Kansas Medical Center, Kansas City, told the American Medical Association.

Although these women tend to have more abnormal deliveries they have no serious effect on the mother or child, he said. The reason that there are more cesarean operations among the older pregnant women is due to a greater prevalence of heart disease and the fear of complications in labor, he explained.

Dr. Calkins, however, urged a thorough examination of these elderly women to rule out major complications which are apt to occur in this age group such as fibroids, diseases arising from high blood pressure, and cancer.

Dr. Calkins based his opinions on a study of 9,867 births, the majority of which were delivered under his direction. Young and elderly mothers were included in the series.

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#### MEDICINE

## Emotional Stress May Bring on Asthma Attacks

► AN asthmatic attack may follow the accumulated pressure of worry and work, Dr. Francis M. Rackemann of the Massachusetts General Hospital, Boston, told the American Medical Association.

A business man under constant pressure or a housewife with endless routine tasks and family troubles will develop asthma if the susceptibility exists in these people, Dr. Rackemann told the doctors.

This emotional basis for the disease should be taken into consideration if asthma develops after the age of 40, Dr. Rackemann said. He added that after this age the condition is generally caused by trouble inside the patient and not by an allergy.

Fear of the asthma is another emotional aspect of the disease which the doctor should consider. Dr. Rackemann recommends that patients should be taught how to control their symptoms and stress should be laid on their individual needs rather than on the disease. He said that deaths have resulted from acute attacks of the disease which apparently were produced by emotional upsets.

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