

PUBLIC HEALTH

Dye Needed to Tag Milk

Government scientists are now investigating ways to "tag" milk from penicillin-treated cows to prevent its being used by people sensitive to the drug.

► THE U. S. Food and Drug Administration (FDA) is searching for a dye that can mark milk given by penicillin-treated cows, Dr. Henry Welch, director of the FDA's division of antibiotics, reports.

Penicillin-containing preparations are currently used to treat mastitis, an infection of the cow's milk-producing glands, and some of the penicillin can be found in the milk for several days. The chief concern with these small quantities of penicillin in milk is that they may cause a harmful reaction in persons who are sensitive to the drug.

Milk producers have been requested to discard milk from treated cows for at least 72 hours, by which time most of the penicillin has been eliminated. But earlier surveys have shown slight concentrations of the antibiotic existed in up to 11% of market milk samples.

Since mid-June, it has been mandatory for packages of the penicillin preparations to bear a label warning not to use milk from treated cows. In the past, the warning was only required in the accompanying brochure and in many cases never read by the user.

The special dye that the FDA is working on would characteristically color the milk for a period of 72 hours so that it could not be mistakenly added to non-penicillin-containing milk.

As yet we have not found a dye that will stay long enough in the milk, and still be nontoxic to the cow, Dr. Welch said. One that looks promising is a modification of an early sulfonamide that gives a red color to the milk. But at present, it only remains in the milk for approximately 30 hours instead of the necessary 72.

Another preventive measure that will become the law at the end of July is the restriction of the penicillin content in the mastitis preparations.

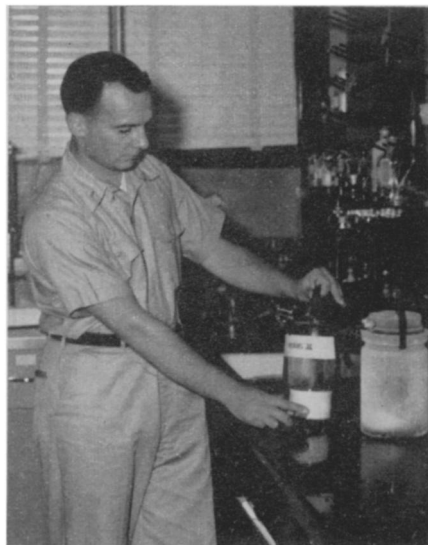
The maximum concentration will be limited to 100,000 units, in contrast to the more than a million units found in some packets presently available. Dr. Welch said anything over 100,000 units is unnecessary.

In practice, the penicillin is combined with other antibiotics which alone could do the same job. One of them, bacitracin, is equally effective as penicillin but is not as popular because of its higher cost.

The most desirable way to handle the whole problem is to do away with penicillin entirely for this use. If all the penicillin was replaced by bacitracin, the cost of this second drug would drop, he said.

He reports on past and current work on the problem in the *American Journal of Public Health* (June).

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MARTIAN LIFE—Bacteria are grown in an artificial atmosphere resembling that of Mars. Lt. John A. Kooistra Jr. is shown with a bottle of soil containing bacteria at one of the Air Force School of Aviation Medicine's laboratories, Randolph Air Force Base, Texas.

BACTERIOLOGY

Bacteria Survive in Mars-Like Atmosphere

► BACTERIA have been made to grow and reproduce in a Mars-like atmosphere duplicated in a laboratory at the Air Force School of Aviation Medicine, Randolph Air Force Base near San Antonio, Texas.

First results of the eight-month-old research project were reported to a symposium on Mars at Lowell Observatory, Flagstaff, Ariz. The living specimens, collected from desolate regions in the United States, are kept under conditions similar to those on Mars.

The red planet has an atmosphere composed mostly of nitrogen and the pressure there is approximately equivalent to that in the earth's stratosphere some ten miles up.

The water supply, spreading from thin polar ice caps in the Martian spring, is normally less than that found in earth's driest desert.

Temperatures range from about 70 degrees Fahrenheit at noon on a summer day near the equator to 95 degrees below zero on a winter night.

The bacteria-containing soils are kept in bottles filled with dry nitrogen. Organic materials in the soil are the bacteria's food, and their only water is a trace of moisture left in the soil. The Martian temperatures are simulated by keeping the samples overnight in a very cold refrigerator, then warming them up during the day.

Lt. John A. Kooistra Jr., Dr. Roland B. Mitchell and Dr. Hubertus Strughold of the Air Force School made the report.

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ASTRONOMY

Probe Space "Weather"

► THE WEATHER of interstellar space, the motions and composition of the vast clouds of matter in the void between stars, is being probed by astronomers.

Dr. Lyman Spitzer Jr., director of the Princeton University Observatory, Princeton, N. J., says the turbulent movements of these gas clouds are probably influenced by two factors not found in earthly weather: the presence of large-scale magnetic fields and cosmic rays.

The enormous invisible clouds composed of gases and "grains" are thought to be the birthplace of stars. Locating and defining these clouds and determining their composition are among the most pressing problems of modern astronomy, Dr. Spitzer reports in *New Horizons in Astronomy*, a Smithsonian Institution publication, partially supported by National Science Foundation.

Although space is thought to be more empty than the finest vacuum ever made on earth, the total amount of matter in interstellar space is nevertheless enormous. Two or three new techniques, Dr. Spitzer points out, promise for the first time to furnish

information on the nature and distribution of these invisible clouds, believed to contain all known elements.

One method is the determination of tiny color differences between stars known to be of the same type and brightness. These differences are due to the amount of interstellar light through which the star's light passes. This method will indicate directions in which interstellar material is most abundant.

Another possibility, Dr. Spitzer reports, is determination of the nature of material between stars by measuring much fainter differences in the spectra of light emitted by stars than has been possible in the past. Atoms of the various elements through which light passes absorb certain wave lengths.

Probably the most abundant element of all is hydrogen, which emits radio waves under certain conditions, present in interstellar space. The density of hydrogen in various parts of the heavens is now being measured by radio astronomers.

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