

Practical suggestions for the handling of records have been compiled to guide business firms, libraries and others who wish to put the written record of commercial progress in order for the future.

Microphotographic duplication of records which has been developed in the last few years promises to allow large

volumes of records to be photographed on little rolls of permanent film and stowed away in small space. Even if the original records are to be preserved in full size, the experts recommend that film copies be made as a safeguard of the originals against destruction by fire or other catastrophe.

*Science News Letter, July 16, 1938*

## BIOLOGY

## Drinking Heavy Water Brings Death or a Faster Life

### When Mice Are Kept One-Fifth Saturated With Heavy Water They Are Not Poisoned; Cancers Slowed

**D**EATH or a faster life are the effects of drinking heavy water (deuterium oxide to chemists) instead of ordinary water, depending upon amount of heavy water consumed.

Dr. H. G. Barbour of Yale University School of Medicine reported to the American Association for the Advancement of Science experiments in which white mice die in about a week if all their ordinary drinking water is replaced by water whose hydrogen is the heavy or double-weight sort.

Ever since 1935 when the existence of heavy hydrogen was discovered, scientists have been wondering what would happen if a person drank heavy water instead of the ordinary natural kind. When a European professor drank a small amount it made the headlines a few years ago.

Until recently it was difficult to produce enough of the heavy water to use in large scale experiments.

When animals like mice are kept only one-fifth saturated with heavy water, they are not poisoned but their life processes are kept going at a faster rate, Dr. Barbour found. Chemists theorized quite the contrary because of the fact that the chemical energy of heavy water is low.

The heavy water stimulates the sympathetic nervous system, raising the hair of the animals as though they were frightened and producing pop-eyes. Dr. Barbour found that this effect is produced by heavy water protecting and preventing the decomposition of the epinephrine which is poured into the body, usually disappearing too fast to sustain these effects.

The growth of cancer in mice is slowed when the fluids of their bodies

contain one-fifth heavy water, but unfortunately for any possible use of this effect the mice do not survive as long as ordinary mice with the same tumors.

A condition of catalepsy was induced in rats, cats, and a monkey by direct application of deuterium oxide to the outside of the brain. This impairment of physical and mental action is the first effect of heavy water to be observed on an animal closely related to man.

*Science News Letter, July 16, 1938*

## ASTRONOMY

## Theory of Life on Mars Is Dealt a Blow by Spectra

**T**HE THEORY that there is life on the planet Mars is dealt a new blow by astronomical observations that show the greenish or bluish color of its so-called "seas" cannot be due to vegetation.

Dr. Peter M. Millman of David Dunlap Observatory at Richmond Hill, Ont., described to the American Association for the Advancement of Science, 200 photographs, wave length maps of the light coming from the planet, that confirm the bluish-green color seen by the eye but rule out chlorophyll of green leaves as the cause.

A favorite idea has been that the dark seas (not bodies of water) become darker with the melting of Martian polar snows and are therefore due to vegetation growth. But Dr. Millman's spectra show that the Martian seas' light is uniformly and progressively stronger toward the short or green-blue-violet end of the spectrum, whereas light from leaves is relatively weak in violet, blue and blue-green, but strong in yellow-green and yellow.

*Science News Letter, July 16, 1938*

## ENGINEERING

## New "Jet" Pulverizer Produces Finer Powder

**F**INER face powder, made at less cost, is one immediate application of a new super-pulverizing device which has been introduced to the chemical engineering profession.

The new pulverizer will grind particles to a size finer than the finest sieves. Particles can be obtained, economically and on a commercial scale, which correspond to 2,500 theoretical mesh, or only 5 microns in size. A micron is the scientists' unit of length which equals a thousandth of a millimeter, or about four one-hundred-thousandths of an inch (.00003937 inch).

The new machine blows particles of a material together until they attain minute size by mutual fracture. Besides finer face powder, the device makes better mineral fillers for writing paper, finer insect and fungicide powder, paint and rubber pigments and the powders which are turned into the useful and beautiful plastic products.

A sealed pancake-shaped container is the grinding unit. One-eighth inch diameter particles enter this unit for pulverizing. Multiple jets, around the peripheral wall of the chamber, shoot in streams of compressed air, or superheated steam, at pressures of from 100 to 500 pounds to the square inch.

The direction of the jets creates a rapid whirling motion of the material within and a small amount of material placed in the air jet stream, does the grinding, by impact, as it strikes the inner mass.

Because of the whirling motion centrifugal forces are set up in the chamber which move the larger particles out to the peripheral region and into the severe blasts of air. As the particles become smaller they gradually work toward the center and fall, downward and off, into a collecting receptacle.

Surprisingly enough, the tremendous pulverizing action is obtained almost without action by the confining walls of the chamber. The grinding is between particles themselves.

The new device, known as a "Micro-nizer," was developed from the invention of Norwood H. Andrews, by the International Pulverizing Corporation of Camden, N. J. It is not sold, but is used under license. The first technical description of its design and operation, outside of the original patent specifications, appears in *Chemical and Metallurgical Engineering*. (May)

*Science News Letter, July 16, 1938*