

## PHYSIOLOGY

# Dogs Breathe Water

Water enriched with oxygen has been pumped rhythmically through the lungs of dogs and mice preparing the way for men to breathe water someday.

► DOGS THAT have breathed oxygen-enriched water for as long as 43 minutes may point the way for humans of the future to "breathe" fluids in further exploration of the seas and space.

By inserting a Y-shaped tube into a dog's mouth with one arm of the Y in each lung, Dr. Johannes Kylstra, visiting Dutch assistant professor of physiology now at the State University of New York at Buffalo, was able to pump oxygenated water rhythmically through the dog's lungs so that the animal was able to receive enough oxygen to maintain life.

The water was prepared by bubbling oxygen through it at five times normal atmospheric pressure and treated with a special solution of salt and sugar. With a sort of artificial respiration method of opening and shutting valves, the water flowed through the anesthetized dogs' lungs for periods up to 43 minutes long.

Three of the ten dogs used in the experiments are still alive and retired in private ownership. These dogs, named Squalus, Girl and Shamrock, recently received silver-plated collars as awards for being Research Dog Heroes of 1964, presented by the director of the bio-sciences program of the National Aeronautics and Space Administration.

Dr. Kylstra conducted research in water-breathing mice, as well as dogs, at the University of Leiden, The Netherlands. Since his arrival in the United States in 1963, he has continued his research on dogs at the Medical School of the State University.

In The Netherlands, Dr. Klystra was able

to keep a mouse breathing water in conditions similar to that of being one mile undersea.

Dr. Kylstra believes a lot more work must be done before such a method of breathing water is perfected and safe enough for human beings.

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State University of N.Y. at Buffalo

**DOG HEROES**—Dr. Orr E. Reynolds (left) and Dr. Johannes Kylstra hold three of the dogs that breathed water in an experiment performed by Dr. Kylstra (left to right) Squalus, Shamrock and Girl.

## MEDICINE

# Cancer Detection Risky

► THE EARLIEST FORM of breast cancer is found by chance, Dr. Edward F. Lewison, chief of the breast clinic, Johns Hopkins Hospital, Baltimore, Md., told SCIENCE SERVICE in elaboration of a paper before the Southeastern Surgical Congress, Washington, D.C.

"A surgeon removes a benign, or harmless, lump in a patient's breast and often does not recognize the danger of the small lobes, or lobules, that have developed in the surrounding tissue," Dr. Lewison explained.

Even the pathologist may not find cancerous cells in these lobules, and it is a struggle both for the surgeon and the woman involved to decide to have a breast removed under these circumstances.

Dr. Lewison called the lobules "cold war precursors of breast cancer," but said he advised removing them rather than taking

a chance on watchful waiting. He believes they will become invasive and malignant.

The doctor's dilemma of deciding whether the lobes are benign but intensified in their activity, or are precursors of a monstrously destructive disease can be solved by accepting them as premalignant. At this stage, the entire danger of cancer cells spreading can be removed with surgery.

Lobular carcinoma in the breast has been considered a rare and little-known type of breast cancer, Dr. Lewison said, but "recent studies indicate that it is ever-increasing in incidence and importance."

The number one malignancy in the body is breast cancer, but with early diagnosis and treatment the surgeon believes it can be lessened if not cured.

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## MEDICINE

# New War Against Cancer Brings Control Closer

► IF NEW MEDICAL DISCOVERIES are made available to cancer patients, the death rate, estimated at 290,000 Americans in 1965, will be reduced between one-third and one-half.

Dr. Murray M. Copeland, president of the American Cancer Society, told a seminar of the society that "the medical value of a scientific discovery is only as great as its application to human health problems."

At the same time he warned that every caution should be observed in protecting patients from ill effects of new medical preparations and techniques.

Some of the most practical research has been tested experimentally in humans as well as in the laboratory. Dr. Copeland said at the seminar in New Orleans that science and medicine should include these measures:

1. Blood, urine and chemical tests that will indicate not only the presence of early and hidden cancers but also an individual's susceptibility to specific cancers.

2. The detection of hidden cancer viruses or cancer-causing organisms and the designing of drugs that will inhibit their growth or destroy them.

3. The development of safe and effective vaccines for the prevention of specific cancers.

4. The application of immune measures that directly or indirectly may suppress cancer growth.

5. Widespread public knowledge of the chemicals that cause cancer in experimental animals and their elimination as much as possible from man's food and environment.

6. Exact information on the biological activity of X-rays for the guidance of physicians, dentists and others who use this cancer-causing and cancer-curing medium.

7. New and better anticancer drugs, and their employment, alone or in combination with surgery, radiation and immune measures, with maximum effectiveness and safety.

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## MEDICINE

# Growth Hormone Aids In Healing Fractures

► THIGH BONE fractures in persons treated with growth hormone and thyrotropin healed two months sooner than in untreated fracture patients, a Finnish orthopedist reported.

Similarly, Dr. E. V. S. Koskinen said, tibial fractures in the treated patients took a month and a half less to join.

Thyrotropin is an anterior pituitary hormone that stimulates the thyroid gland.

Dr. Koskinen, who is at the University of Helsinki, said metabolic studies showed an increase in the acidity of serum in patients who were treated with the hormones. This condition favors bone repair.