



**NEW IRON LUNG**—Polio victims confined to bed-type respirators may be able to sit up if the iron lung, which Dr. James L. Whittenberger is demonstrating, passes laboratory tests.

MEDICINE

## Polio Victims Sit Up

Scientists now testing model of sit-up iron lung and an electronic "brain" to guard patients from danger of mechanical failure of the respirator.

► POLIO PATIENTS doomed to months or years of life in an iron lung may be able in the future to sit up in the lung, instead of lying flat on their backs and viewing the world through a mirror.

This hope comes from a new "sit up" respirator, or iron lung, devised at the Harvard School of Public Health in research directed by Dr. James L. Whittenberger.

The sit-up lung Drs. Benjamin Greeley Ferris Jr. and Bertrand Kriete of Harvard and the Children's Medical Center demonstrated at the center in Wellesley Hills, Mass., is a full body respirator. But instead of being horizontal, it rises at about a 30-degree angle from a platform equipped with wheels. Inside the lung is a comfortable chair which can be raised, lowered or otherwise adjusted to the convenience and comfort of the patient.

The experimental model of the sit-up lung is the only one of its type in the world. If it passes tests now being conducted under a March of Dimes grant from the National Foundation for Infantile Paralysis, it can be duplicated for lung-crippled polio patients elsewhere.

It may get its first try-outs at the eight respirator, or iron lung, centers that the National Foundation has been establishing throughout the nation. These centers are both for care of patients and research on the causes and effects of breathing difficulties suffered by many polio patients. Iron lung centers for patient care only also exist.

One of the greatest fears of iron lung patients is that the mechanical lung on which they depend for the breath of life will fail. Scientists at Harvard School of

Public Health have designed an electronic "brain" to guard the patients against this peril. Called a servomechanism, the brain can be set to any desired pattern for pressure within the lung.

The brain passes this information back to an air pump that maintains the predetermined pressure. When the nurse opens one of the ports in the iron lung to attend the patient, or if a leak develops, a pick-up device reports this to the brain. The brain then increases the action of the air pump to offset the pressure loss.

As a research tool, the iron lung's new electronic brain is expected to give scientists a chance to test the effects on the lungs of polio patients and experimental animals of changes in frequency, amplitude, average pressure and wave form of the pressures within a tank respirator.

While these new devices will help patients in the future, polio patients today, including some stricken during the current outbreak, can be greatly helped by the iron lung centers. Gathered together in one big room the iron lungers no longer feel the terrible loneliness, dreariness and futility, as well as fear, that afflicts an iron lung patient by himself in a hospital room. They help cheer each other, and those held to the lung more by fear than physical inability to breathe without it are encouraged by the sight of others getting out of their lungs to try breathing for short and longer periods on their own.

Science News Letter, August 15, 1953

MEDICINE

## Polio Patients Discover "Frog Breathing" Helps

► POLIO PATIENTS at Rancho Los Amigos Respirator Center at Hondo, Calif., are learning to breathe like frogs. Success in "frog breathing" helps them to spend hours and even all day outside the tank respirators, or iron lungs, chest respirators and rocking beds on which they formerly depended for the breath of life.

The trick of "frog breathing" was discovered by a couple of the patients themselves. When Dr. John E. Affeldt, chief physician at the center, learned about this, he arranged to have the technique studied and taught to other patients.

A moving picture of the method has now been made to teach doctors, nurses and patients at respirator centers in other parts of the nation.

In "frog breathing," the patient uses his tongue as a pump. With this and certain muscles of throat and neck he is able to gulp little mouthfuls of air down into his lungs. With many little mouthfuls he can get a lungful. Doctors call the method glossopharyngeal, glosso referring to the tongue and pharyngeal to the pharynx in the throat. The trick in "frog breathing" is not to swallow the gulped mouthfuls of air but to get them down into the lungs.

Some patients who have perfected the technique spend as many as 10 and in one

case 14 hours at a time free of iron lungs or any other mechanical aid to breathing. Since "frog breathing" is not automatic, however, they must return to a respirator or rocking bed at night while they sleep.

In order to teach patients how to do the "frog breathing" properly, fluoroscopic and X-ray studies have been made. Instruction of patients at Rancho Los Amigos is now given by Dr. Clarence Dail.

"Frog breathing" was shown to science writers touring respirator centers for polio patients under the auspices of the National Foundation for Infantile Paralysis.

At present 2,800 patients throughout the nation depend on respirators of some kind. Cost for the care of these patients amounts to \$7,000,000 a year. And each year's epidemic adds hundreds more patients who must live in respirators.

Respirator centers are being established in many parts of the nation. By the end of this year there will be 10 of them.

Science News Letter, August 15, 1953

#### MEDICINE

## Treatment of Skin Ills

► BURNING, ITCHING, inflamed and weeping skin is the sad summertime lot of many a person as a result of too much sun, chiggers, poison ivy and similar seasonal troubles.

The wise person will avoid the causes where possible. If he does get one of these skin troubles, he will be careful about treatment for it. Remember that skin ailments often lead to more serious infections.

"There is no substitute for prevention and no short-cut cure for poison ivy, or oak, chigger bites, sunburn and athlete's foot," declares Dr. J. Lamar Callaway, skin specialist at Duke University, Durham, N. C.

"If common safeguards don't clear up the condition, see your doctor," he warns.

"Some sunburn repellents are very good," Dr. Callaway points out, "but avoiding overexposure is still much more important than all of the so-called sun screens."

Bathing with soap and water is the first step he advises in treating poison ivy, chigger bites and athlete's foot. Cool wet dressings should be used to relieve itching, and the irritation might be eliminated with antihistamine pills and soothing lotions, prescribed by a doctor.

"One popular misconception is that poison ivy can be spread from the fluid of the blisters," Dr. Callaway points out. "It cannot be spread from the blister fluid any more than the fluid from an ordinary burn blister can spread burns."

Itching in eczema and welts, hives, nettle rash, mad itch or strawberry rash usually is eased with use of antihistamines recommended by your doctor. These diseases usually are the result of an allergy, which may be complicated by external irritation, nervous tension or some general upset of the person's system.

#### INVENTION

## Recovering Uranium

► THE A-BOMB material, uranium, can be recovered more easily from ores and "artificial ores" by an improved flotation process that captures the radioactive material in froth and carries it to the top of a vat.

The improved process can either be used to recover uranium from ores or it can be used to recover the precious element from earth materials containing it. These earth materials are called "artificial ores" by inventor Preston L. Veltman of Severna Park, Md., who assigned his patent, No. 2,647,629, to the Atomic Energy Commission.

Previous flotation methods have been developed, but they rarely can extract all the uranium economically. Furthermore, separating this element from the froth is tedious, difficult and expensive.

Mr. Veltman's process involves crushing the uranium-containing ore into fine particles, mixing them with water, adding a polyethylene oxide-phenol detergent and a sodium salt of at least one fatty acid. The mass is agitated so that froth is formed. The froth carries the uranium to the surface of the liquid, permitting easy recovery when the froth is sprayed with water.

Science News Letter, August 15, 1953

#### SCIENCE NEWS LETTER

VOL. 64 AUGUST 15, 1953 NO. 7

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., North 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, Eldorado 5-5666, and 360 N. Michigan Ave., Chicago 11, State 2-4822.

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#### BIOCHEMISTRY

## Premature Babies Give Clue to Test for Cancer

► THE DISCOVERY that premature babies and children with cancer excrete in their body wastes the same abnormal chemical substances is announced by Drs. Bruce D. Graham and Makepeace Uho Tsao of the University of Michigan Medical School.

The substances apparently are by-products of a sub-normal activity in the "life processes" known as metabolism in which less than normal amounts of oxygen are used. Healthy children do not excrete them.

The specific metabolic process which leads to development of these substances may hold the key to the high death rate among premature babies. One-third of these die from undetermined causes.

Lowering this high death rate may be possible in future when the scientists have been able to identify the substances and their relationship to metabolic processes.

Tests for earlier diagnosis of cancer are another possible result of the discovery, the scientists believe.

The research leading to the discovery and further studies now under way were supported by a grant from Playtex Park Research Institute and were under the direction of Dr. James L. Wilson.

Science News Letter, August 15, 1953