



**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.

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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