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Emerson Infant Respirator

In 1928, Philip Drinker and Louis Shaw at Harvard Medical School introduced the iron lung to help individuals suffering from acute poliomyelitis. Polio impaired patients' ability to breathe by paralyzing the diaphragm and intercostal muscles; the iron lung provided relief in the form of artificial respiration. It consisted of a sealed chamber in which air pressure is alternately reduced and increased. The patient was placed in the chamber with his/her head emerging from a port at one end. Each cycle of vacuum within the chamber allowed their lungs to be filled with atmospheric air; subsequent increase of pressure forced exhalation of air from the lungs. Manufacture of iron lungs began in the early 1930s and J. H. Emerson Co. soon emerged as a leading producer. John Haven Emerson had vivid recollections of the suffering wrought by polio, for his father had been Commissioner of Health in New York during the 1916 epidemic. Spurred by another outbreak in 1931, Emerson introduced a simplified "tank" respirator that soon became the standard for all iron lungs. The infant model Emerson iron lung at the Dittrick Museum dates to 1952. In that year, the number of reported cases of polio reached an all-time high, and public concern was steadily mounting. Thankfully, new vaccines were just around the corner. In 1949, Enders, Weller and Robbins at Children's Hospital in Boston showed how cultures of kidney and other human and monkey cells could produce large quantities of the polio virus. This Nobel Prize-winning breakthrough led directly to the engineering of the Salk and Sabin vaccines that eliminated the dreaded specter of a disabling and often lethal disease. In 1954, Jonas Salk demonstrated that exposure to a killed polio virus preparation imparted lasting immunity to the disease. The Salk polio vaccine was widely used between 1956 and 1960 in the United States, with dramatic results. In the early 1960s, Albert Sabin developed a second polio virus vaccine. It consists of live but severely weakened polio viruses that induce immunity but do not cause disease. Sabin's vaccine could be administered orally, rather than by injection, and this greatly facilitated immunization programs across the country. Approximately 100 million people of all ages received the vaccine in the United States between 1962 and 1964. While the iron lung performed a life-saving task, and thus prolonged life, it raised troubling issues of compromised quality of life. Many found it a chilling prospect to spend the rest of one's days confined in an iron lung. In addition, the medical research community condemned the iron lung as a "halfway technology", an expensive palliative that did not alter the root cause of disease. The iron lung has thus achieved icon status, epitomizing in a negative way much of modern machine-embodied medical technology. Of local note: Polio virus researcher Frederick Robbins left Boston in 1952 to become Professor of Pediatrics at Western Reserve University School of Medicine and Director of the Department of Pediatrics and Contagious Diseases, Cleveland Metropolitan General Hospital. He later became Dean of the School of Medicine.



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Virtual Museum of the Iron Lung <http://members.xoom.com/lungmuseum/>

J.H. Emerson Co <http://www.jhemerson.com/index.htm>

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