

*Karpovich M. A.*

## **"IRON LUNGS" - BREATHING APPARATUS FOR POLIO VICTIMS**

*Scientific supervisor senior teacher Kostiouckina O. M.*

*Department of Foreign Languages*

*Belarusian State Medical University, Minsk*

Poliomyelitis is an acute disease caused by the poliovirus. To date, polio is known to have been common in ancient Egypt and Babylon. This is evidenced by hieroglyphic inscriptions on three millennia-old mummies about paralysis – a characteristic and main symptom of this disease. However, officially the causative agent of this disease was first described in monograph “La Poliomyélite aiguë épidémique” in 1913 by famous virologists and bacteriologists C. Levaditi and K. Landsteiner. It was clear that the disease could someday cause an outbreak and it was urgent to create a safe vaccine. But no one was concerned about it at that time.

At the beginning of 1950, initially in the United States, and then in other countries, a major outbreak of polio occurred. About 50 thousand people fell ill, and approximately 40 percent of them remained paralyzed until the end of their days. The main victims of polio were children aged 6 months to 5 years.

The paralytic form of the disease affected the motor cells of the spinal cord. Because of this, the innervation of the muscles was significantly impaired, and children became disabled for the rest of their lives. In the worst cases, poliomyelitis affected the parts of the nervous system responsible for breathing. It caused the disruption of the diaphragm and the patient died from suffocation. A ventilator was the only help that could really help patients in particularly severe cases.

Great success in the development of such devices was achieved by Swedish scientists, who already in 1952 presented the first mass-produced C.G. Engstrom. Respirators for polio victims were called "Iron Lungs". Their mechanism was to ventilate artificially the lungs using a variable pressure chamber. Patients underwent lung surgery and were completely placed in the chamber, except for the head. Inside the airtight reservoir, the pressure alternately decreases and increases, forcing air into the lungs and removing it. Thus, the apparatus provided breathing to a person who, due to his physical condition, could not breathe.

The need for such devices was so great that they were produced even at automobile factories. For example, about 2000 devices were produced at one of the automobile plants, but ten times more were required. In this regard, it was decided to increase the number of seats in the apparatus from one to two.

The halls of hospitals were almost completely crammed with such devices. Thousands of children lived in the Iron Lungs, who were forced to lie down and look at the world around them with the help of mirrors installed around them. Despite the serious condition of the patients, they, like other ordinary children at that time, studied and read books thanks to these mirrors. As these patients grew older, they were discharged home, where they were also inside the apparatus, which their family members were taught to operate.

By the middle of 1955, poliomyelitis began disappearing and was no longer a world threat. The explanation for this was the vaccine created thanks to scientists such as M.P. Chumakov, A.A. Smorodintsev, Jonas Salk and Albert Sabin. Huge work was carried out to immunize the population, and already in 1961 it was announced that polio had been defeated. However, in countries such as Afghanistan, Pakistan, Nigeria, and Tajikistan, outbreaks of poliomyelitis periodically appear, but according to experts, they are no longer dangerous.

It is known that patients living in "Iron Lungs" also exist at the moment. They are three, aged 74 – 86, all of them are from the USA. During their lives they have achieved great success and they can really be called survivors of our time.