

←Clarence McKelvey fixes a port in the respirator of a U Hospitals patient.

## The Backstage Battle against **POLIO**

*University Hospitals crew  
kept respirators running  
to save hundreds of lives*

**A**N IRON LUNG looks something like a boiler tank fitted with four plastic windows and six metal ports. A patient whose respiratory muscles are paralyzed lies enclosed in the respirator from his neck down. About 16 times a minute a set of bellows pumps air in and sucks air out of the low-pressure respirator, making a soughing sound rather like gentle snoring. The rhythmical increase and decrease of air pressure causes the patient's lungs to expand and contract—in other words, to breathe.

A conventional respirator costs about \$2300. Its real value is impossible to determine. It is worth as much as a human life, for it is the only means of keeping alive patients with acute respiratory polio.

Handling, servicing, and shipping these respirators is a life and death fight against time. Last summer, when polio struck hard in Minnesota, the University became a pool for respirators in the upper midwest. U Hospitals received 93 respirators from all over the country and shipped 73 out again. Mechanics and maintenance men at U Hospitals worked around the clock—without complaints and without glory. They put in 793 hours—many during week-

ends and evenings—from June to November, servicing, shipping, and checking the desperately needed respirators.

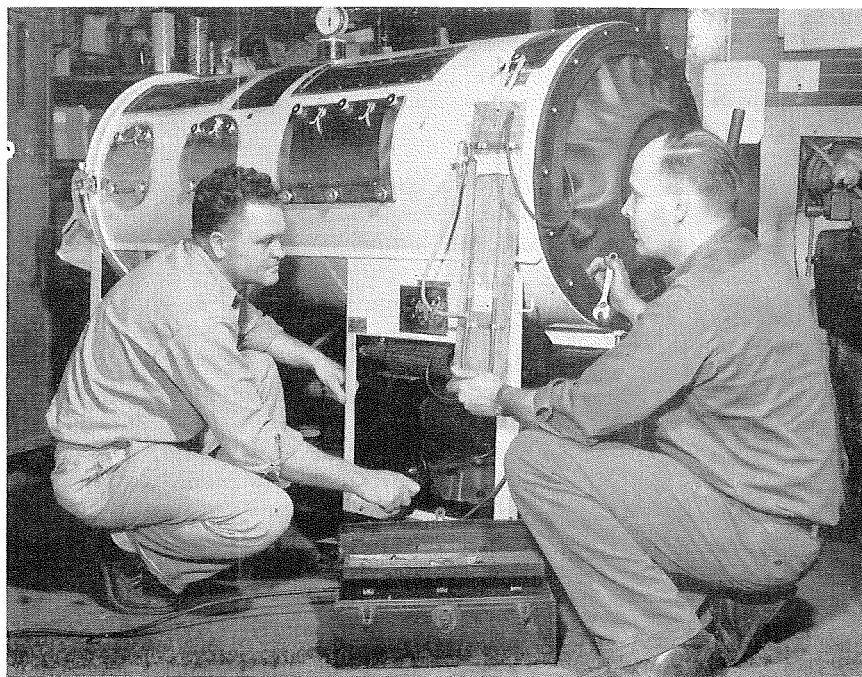
H. Fred Hamilton, maintenance supervisor at U Hospitals, who spearheaded the operation, says:

“Our workday started at 8:00 a.m.

and ended at 8:00 a.m. the next day when polio was here. Our big problem was making certain we always had enough respirators for ourselves and the hospitals in the area, including Sister Kenny, General, Ancker.”

The respirators came from pools all over the United States, Hamilton

*A recently received respirator is put into perfect working order by George Hilton, L., as William Mattox checks its internal pressure on a manometer.*



explains. "They came in every way you can imagine — sometimes by army and navy plane, sometimes by overland trucking or railway express," says Hamilton. "I'll never forget how a hospital in North Dakota sent a highway patrol car to escort its respirator up here!"

Some people needed respirators for only a few days, some for weeks and even months, Hamilton explains. "On a Friday evening we might have 14 standbys not in use. By Sunday our polio cases had often jumped so high we'd be on the phone canvassing for extra respirators any place in the country that could spare them. One thing I will say, during the entire epidemic this year we always had enough on hand, and never had to have any made specially, like we did back in '46."

Receiving and shipping the precious respirators was just part of the hospital crew's work. They also had to inspect the iron lungs and keep a 24-hour vigil to see there was no breakdown. Thanks to a special wiring job done by electrical foreman Adolph Green and his crew, duplicate switches were installed to eliminate the risk of overloading circuits and causing a breakdown that would have meant operating every respirator by hand.

**H**ERE'S HOW Hamilton describes a typical day during the epidemic's peak in August or September.

"At 8:00 a.m. we begin, ready to stick with it all day if necessary. We haven't a man who wasn't willing to work the clock around, often at great inconvenience. At 8:00 we make a complete tour of the three polio stations. We check all respirators to see that they're in perfect order, then service and oil them. We keep a log of all our incoming and outgoing respirators, and we record the serial number and room location of every respirator in use.

"While that's going on," Hamilton continues, "we have maybe unloaded one or two respirators at the ambulance entrance, and then we check these over and service them."

"Then maybe a bunch of us will

have a meeting to plan a new piece of equipment. It may have been suggested by a doctor, a therapist, or a maintenance man. Somebody will recommend a footboard to prop up the patient's feet inside the iron lung and prevent 'foot drop' — the flabbiness of foot muscles that makes some polio patients shuffle when they walk.

"Or someone else may dream up a Rube Goldberg device that will turn pages automatically for respirator patients. If we think a suggestion seems reasonable, we'll ask the scientific apparatus shop or one of our own boys to make it up.



*A. F. McGilp, maintenance foreman, and Fred Hamilton, U Hospitals maintenance supervisor, estimate the number of respirators they'll need for the day.*

"After this," Hamilton goes on, "we have a conference with the local representative of the National Foundation to decide on our requirements for the day and also to build up for the weekend when we seem to get our heaviest load. Sometimes we've had as many as 23 respirators going at once—all makes and models."

**T**HE DAY'S BIGGEST headache and biggest challenge is moving an iron lung patient from U hospitals to another local hospital. This requires the most exacting teamwork; the slightest mishap could be fatal.

"Usually three men from our crew, plus a doctor and nurse, wheel the

patient from his room in the polio station to the ambulance entrance of the hospital," says Hamilton.

"Several times we've pushed an 800-pound respirator, containing a patient, from one extreme end of the hospital to the other. We work with 50-foot extension cords and plan the route in advance so we can pull the cord out of one socket and plug it into another without missing a single respiration enroute.

"The really ticklish part is getting the patient out of the hospital and onto the truck. The respirator containing the patient is very carefully

loaded onto a transfer truck with a hydraulic tailgate. To prepare them for operating the respirator manually on the trip, the doctor briefs our maintenance men about the number of respirations per minute and the depth of respiration this particular patient needs," Hamilton says.

"Before we take off, and while the respirator is still plugged into an electric socket in the hospital, the men practice working it by hand. One man will turn the switches that control the depth; another cranks the lever that regulates the number of strokes per minute. They've got to get it timed absolutely *perfect!*

"When all this is synchronized,"

says Hamilton, "we're ready to take off. The cord is pulled out and the respirator is now operated entirely by hand. We start moving, and it's a regular caravan! Heading it up is a police car from Protection and Investigation, with its siren blaring away. Next is the transfer truck with the driver, the patient in the respirator, the doctor and nurse and maintenance men.

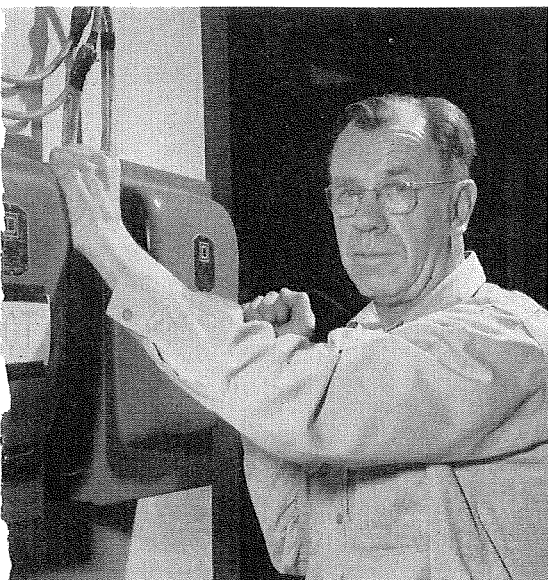
"I follow last in my car so I can observe the whole open end of the truck while we're moving. I carry extra 50-foot cords so that if there should be a hitch we could plug the respirator into a socket in any home or place of business along the way.

"We always plan in advance the smoothest, most direct route with the least traffic. We managed to make more than 15 moves across town this year without any mishaps!

"Back at the hospital we start the whole business of receiving, checking, replacing respirators all over again. Through the summer and most of the fall, it was a never-ending job," he concludes.

Hamilton, who has been at the University 32 years, himself pitched into the battle against polio with single-minded devotion during the long, hot

*Gay Wahlstedt throws the emergency control switch for respiratory circuits. This special system of duplicate wiring prevents power failure.*



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*Hydraulic tailgate truck moves respirator patient from U Hospitals to another local hospital. It's a team job involving doctor, nurse, maintenance men.*

summer. Like the men on the crews he put in hundreds of hours on weekends and evenings.

He tells, with a grin, about his rather weird Saturdays:

"Whatever spare time I had last summer I worked on building an addition to my garage," he explains. "Well, during the epidemic my Saturdays at home were out of this world! I had a 40-foot extension cord strung from my phone into the garage where I worked, and believe me, I *lived* at the end of that phone on weekends! I was in constant touch with doctors and hospitals and National Foundation people locating and releasing respirators.

"Why, sometimes it took five hours long distance phoning to get hold of a single respirator. And my eight-party telephone line didn't help any! (We live in a rural area.) I heard rumors that people on the line resented my tying up the phone most of the day.

"Well, I caught a couple complaining about it once, and boy, I really gave it to them! I asked them did they have kids and did they know

what it meant when a kid got polio and had to get treated right away—or else! Well, there were no complaints after *that*. In fact," he chuckles, "I once overheard one of my neighbors saying in a friendly kind of way on the phone, 'I wonder how the polio man is making out!'"

Another U hospitals staff member who oversaw much of the maintenance work is maintenance foreman A. F. "Scotty" McGilp. Among the other crew members who worked around the clock during the emergency: Otto Christensen, Leo Grutte, George Hilton, William Mattox, Clarence McKelvey, Harold Olson, James Pepper, Bob Rosenkranz, Gay Wahlstedt, and Lowell Walsh.

In tribute to the Hospitals crew, Mr. Les Walters, state representative of the National Foundation for Infantile Paralysis, says: "The Foundation is more than grateful to Mr. Hamilton and his staff for the outstanding service performed in keeping Minnesota hospitals supplied with life-saving equipment during the 1952 polio epidemic. The entire state owes a great deal to these men."