

heart. Michael was told he would soon be asleep. When he was, Dr. Sloan connected him to a ventilator so he'd have an easy supply of oxygen.

Dr. Filler and his senior resident, Rick Superina, arrived, freshly scrubbed. A nurse helped them into gloves and gowns, and Michael's small body was draped in sterile green towels.

The team of seven—surgeon, anaesthetist, residents and nurses—took their places around the table under circular lamps. Jeremy Sloan stood at the top watching Michael's heart rhythm, body temperature and heart rate wiggle across the screen in green lines.

Filler exposed Michael's sternum and lower rib cage. He and Superina planned their next move.

"Now, that cartilage has to go," Filler said. "Just cut it. That rib there can stay. Do you agree?"

The residents agreed.

With effort Filler took out a two-inch piece of rib and handed it to a nurse. He worked his way over Michael's right side, removing cartilage. A nurse mopped his face with a green towel. He took out parts of five ribs on the right and moved over to the left. Parts of five more came out there.

The team was now ready for the next phase.

Filler cut across the sternum so the depressed bone could be bent upward and sewn in place. He placed a few stitches and set free the skin and muscles that had been held back with retractors.

Filler put a plastic drain in Michael's chest and closed the muscle and skin incisions. The nurses counted the gauzes to make sure none had been left inside, and Filler and Superina wiped off his chest, painted it with tincture of benzoin and sealed the incision with tape.

The two-hour operation was over. Sloan removed the breathing tube and Michael began breathing on his own.

Michael took a walk down the corridor the next day and went home four days later.

The Hospital for Sick Children

The Hospital for Sick Children, which is attached to the University of Toronto, is the biggest children's hospital in the western world and one of the best. It attracts first-rate researchers from around the globe.

It was founded in 1875, and it established Toronto's first pasteurization plant in 1909. Alan Brown, the physician-in-chief from 1919 to 1951, pushed his associates to develop proper food for infants, and two of them, Theo Drake and Frederick Tisdall, combined vitamins and minerals and produced both Sun-Wheat biscuits and Pabulum.

In 1953 the hospital established the Research Institute, and research is now the hospital's essence.

Aser Rothstein, director of the Research Institute and a professor of medical biophysics and pediatrics at the University, was in charge of the primary toxicology lab at the Manhattan Project



Dr. Aser Rothstein

and chairman of radiation biology and biophysics at the University of Rochester's medical school. He directs research and recruits researchers.

He says the capacity to pick good researchers is the key to the Institute's success.

"Research is a very elitist occupation. One brilliant guy might do something twenty mediocre guys could never do."

The Institute has sixty-two full-time researchers, a \$15 million annual budget and 180 current projects.

Much of the research is basic, and a lot of it has to do with congenital diseases. Biotechnologists are busy here, as elsewhere, on strands of DNA.

"You have to identify the good gene and the sick gene," Rothstein says, "and replicate them in bacteria. You then put the good gene into the sick gene. This can be done in the test tube right now. We're going to attempt to be at the very forefront of genetic engineering."

There is also a great deal of research going on in other fields. There are regular advances in surgical techniques and post-operative care. There are innovations every day.

Spinal Pacemaker

Dr. Walter Bobecko, chief of orthopedic surgery at the Hospital for Sick Children, and his col-