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## Reminisces of an Old Perfusionist

I got started in perfusion in the mid-sixties, training at Louisiana State University Medical School in New Orleans, Louisiana. It was the era of LBJ, the Vietnam war, miniskirts and the Beatles. Education was acquired and techniques practiced in the animal research lab before moving on to clinical work. There were only a handful of formal training programs and the only textbook available was *Heart-Lung Bypass*, Galletti and Brecher, 1962. The lab practice was interesting in that we did the anesthesia, opening and cannulation on the animals before sitting down behind the pump.

During the first few years there was no disposable equipment of any kind. All tubing was cut from 100 foot coils and assembled by hand using metal connectors. Pump head tubing was soft latex and would explode like a balloon if over-pressurized. Arterial connections were secured using wire tightened with pliers. Even the venous and arterial cannulas had to be assembled from lengths of tubing with metal tips. Oxygenators were the disc type, cardiotomy reservoirs and other ancillary components of the circuit were basically glass cylinders in stainless frames with rubber or silicone gaskets. All of this had to be rinsed with distilled water and sprayed with Dow Anti-foam before assembly. Each was then double wrapped in cloth drapes and brought over to Charity Hospital to be autoclaved. Even syringes were glass and stopcocks metal (which leaked like sieves).

There were no filters for particulates or air, no automatic shut offs for disasters or battery back-up for power failures. Only one set up was available per case; so if something went terribly wrong it was all over with. One had to be very aware constantly.

The source of heating/cooling was heavy red rubber hoses connected to wall spigots in the O.R. We felt very modern with the advent of the Sub-Zero unit which required several large buckets of ice. This was the first equipment available to allow true hypo/normo thermia, although it had a tendency to overheat and had to be monitored very carefully.

Around 1970, the first disposables began to appear. Among them the Travenol Variflo and

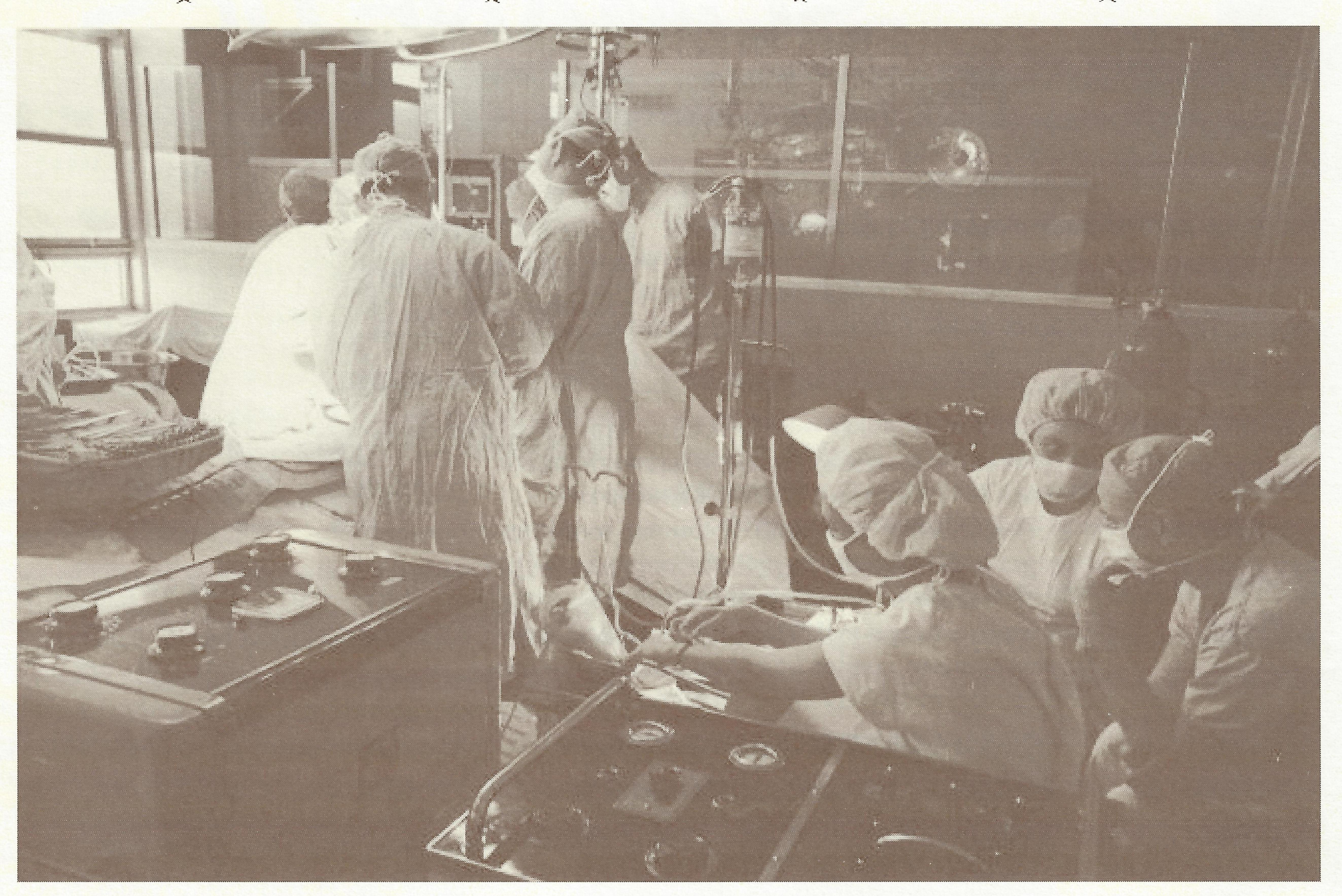
the Bentley Temptrol. The original Temptrol had a stainless heat exchanger that slid into the oxygenator reservoir, this device also suffered disastrous leaks and never made it out of our lab setting. The advent of the membrane oxygenator was an improvement but had its own problems. After failing during a case, a membrane was returned to the manufacturer for testing. Their report stated the reason for failure was the presence of a hurricane in the Gulf of Mexico that had caused the barometric pressure to drop. That was, without a doubt, the most creative albeit bizarre excuse I have ever heard.

On another occasion, we put a patient on support in the E.R. When it came time to transport to Surgery, we discovered that the very large pump, patient and personnel wouldn't all fit in the elevator. Picture this scenario: Patient is placed on the floor. Anesthesia is kneeling at the patient's head bagging. My partner and I are straddling the pump while hand-cranking the pumpheads. The O.R. itself was also quite primitive. One of the private hospitals had windows open for fresh air! Pressure monitoring was accomplished using transducers that were nondisposable and took about thirty minutes each to assemble and calibrate. These were connected to a huge (seven foot tall) Hewlett-Packard machine. All gases were in large tanks on hand trucks. Labs had to be sent off the floor to the main lab and could take up to an hour for results. There were no readily available tools to check gas exchange, acid/base balance, clotting time, electrolytes or hemolysis.

Charity Hospital was the designated emergency destination whenever the U.S. President was in the area. Our team was required to totally open the O.R. including instruments and drugs, and the pump was set up and primed. We had to stay in that mode the entire time he was on the ground.

These were the days before coronary bypass surgery. Our cases basically consisted of pediatric anomalies, valve replacement, aneurysm and trauma. Pediatric procedures required priming blood less than 24 hours old. On several

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These pictures are circa 1970. Things to note in these pictures are the Bentley Temptrol oxygenator, solutions in glass bottles, "modern" cooler/heater, roller pumps on the side, cardiotomy that looks like a blood bag, tape on the stool to keep from slipping off and the open window.

People behind the pump are Marion Hackman, CCP operating the heart-lung machine, Dr. Robert Carter and Barbara Ridge, CCP.



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