

Senegal uses Canadian manual

Engineering professors and technicians at the Thies Polytechnical School in Senegal are currently developing a drafting manual based on a Canadian manual published by the National Research Council of Canada (NRC).

Since no national standards exist in Senegal, a Senegalese team has obtained permission from the NRC to borrow excerpts from the *Manual on Metric Drafting Practice* or use it for reference purposes.

The new manual will serve as a training document for Senegalese technicians and engineers and might eventually be edited and distributed to all technical schools in Francophone Africa.

Cold-hearted surgery method

Two Vancouver doctors are pioneering a technique that reduces the risks of cardiac surgery.

The method involves chilling the heart to a few degrees above freezing and stopping it altogether during surgery while a heart-lung machine keeps the patient alive, said Dr. R.T. Miyagashima.

In conventional cardiac surgery, the heart keeps beating while the surgeon races against time to complete the repairs before the organ suffers too much damage from oxygen starvation. It is estimated that the heart can go without oxygen for only ten or 15 minutes at normal body temperature; when an operation takes an hour or more, damage can be considerable.

"We know that there is always some damage done to the heart, and some of it is obvious," said Dr. Miyagashima.

"There is undoubtedly also subliminal damage that we cannot pick up and yet it may become apparent — possibly years later — when the victim has another heart attack."

Chilled to near freezing point

Dr. Miyagashima and Dr. W.E. Jamieson have been working together to lessen this damage and report that chilling the heart to near the freezing point greatly increases the time the organ can go without damage from lack of oxygen.

Further, with the heart stopped completely, the surgeon can work more quickly and accurately, without the pressure of having to rush the operation for

fear of heart damage.

The technique starts with an injection of a cold cardioplegic solution at four degrees Celsius to cool the heart. Another injection stops the heartbeat while the heart-lung machine takes over.

Then the chest cavity is packed with crushed ice made from a saline solution to maintain a temperature of 10 or 11 degrees Celsius, well below the normal body temperature of 37 degrees Celsius.

When the repairs are complete, the ice is removed and the patient's temperature gradually brought back to normal. The heart-lung machine is shut down and

heartbeat restored.

Dr. Miyagashima said the technique is so much faster it enables doctors to perform as many as four or five bypass operations in a single session of surgery where only one or two were possible before.

He notes that open-heart surgery now has a mortality rate of only 2 per cent, lower than many other procedures. Further, post-operative complications have been reduced so that the average patient stay in hospital now is nine or ten days, down from the former stay of 16 to 18 days.

Inflatable tent designed to revolutionize the camping industry

After spending six years at the drawing board, Quebec inventor Pierre Jutras says he has perfected a new inflatable tent that could revolutionize the camping industry, reports the *Canadian Press*.

"Trailers and tent-trailers are finished, first because of their cost and also because of the price of gas," said Jutras.

Jutras's creation, modeled after geodesic structures, consists of a nylon balloon that is inflated with a small fan powered by a standard car battery.

The tent, which requires no supporting poles, weighs 12 kilograms, when not inflated and can be stored in a cupboard. When blown up, it stands about two metres high and five metres long and can

house the average family.

Jutras said the fan keeps the tent, which has four windows and a door, slightly pressurized to keep out insects, while a specially-designed heater can make it liveable even when it is -50 degrees Celsius outside. A second membrane placed over the tent, leaving a small gap of air between the two, provides insulation.

Jutras, who says he plans to put his tent on the market this spring at a cost of less than \$1,000, hopes he can interest mining exploration companies and other industrial concerns in his invention.

Jutras says he now plans to design a free-standing inflatable house that uses solar and wind energy.



Jutras (centre) in his tent with his wife and a friend.