

MacMillan Talk on Coronary Unit--

I am not going to give you a scientific paper. I will tell you a story about an adventure that Ken Brown and I had about 40 years ago. My model for the story-teller is the Berber wearing a green turban who sits cross-legged in the market -place in Marrakesh, Morocco. His next neighbor is a dentist who is pulling teeth with a pair of household pliers. A pail of teeth represents a week's work and is evidence of his skill. The story-teller is surrounded by about 100 listeners of all ages. At times they laugh and at other times they are quiet and very sad. A good story should have humour and sadness. My story has these ingredients. I will try to emulate the Berber but I will not ask you to sit on the floor. If I sat cross-legged I would have to ask Dr. Alan Gross to replace my other knee first. Besides I do not have a green turban.

Our story begins in the crowded ball-room of the Fontainebleau Hotel. The Miami Heart Institute were holding a Symposium on the use of anticoagulant drugs in patients who had had heart attacks. It was under the chairmanship of Dr. Sterling Nichol, an expatriate Canadian. Dr. Ken Brown and I had just completed a seven-year study at the Toronto General Hospital in which patients who had

survived coronary thrombosis were maintained on an anticoagulant drug when they left hospital. They returned every two or three weeks to have their blood tested and their dose of drug adjusted if necessary. The design of the study was fairly sophisticated and had built in statistical limits that told us when the study could be stopped. We had just reached the end-point that told us we were not saving lives and sufficient data was on hand to terminate the study. This was our message at Miami. Dr. Sterling Nichol who was in the Chair said that he had never much help from statistics in clinical medicine but when he looked around the ball-room he saw the faces of friends who would not have been alive today if it wasn't for anticoagulant drugs. He received a standing ovation. He then called for a show of hands by the audience as to who would continue to use anticoagulants. A wave of hands went up. He then called for the contrary and three hands went up, Ken Brown's, mine and Fraser Mustard's (he had come down with us from Toronto). Later that day a reception was held for the wives of the speakers. Mrs. Sterling Nichol was in the receiving line and greeted Irene and Lyn. " we have been nice to you girls but if we had known what your husbands were going to say. you would not have been invited to this reception."

On our return to Toronto we realized that we had effectively talked ourselves out of a job. We had to find something else to do. We turned our anticoagulant clinics (which by this time were running over 40 patients twice a week) over to Dr. Jack Crookston the head of Haematology. What else could we do?

We asked ourselves questions about the high mortality following acute myocardial infarction. Some patients after a heart attack seem to be doing so well- reading the stock market reports in the evening paper when the evening nurse removes the flowers (the flowers were kept overnight in the halls because they used too much oxygen if left in the room). When the day nurse brings them back in the morning she finds that the patient has died. It was known that many patients from a cardiac arrhythmia such as ventricular fibrillation but nothing was known what preceded the fatal outcome. An electrocardiogram was taken daily. This takes about 10 minutes and we had no knowledge about the electrical activity during the other 23 hours and 50 minutes. What we would like to know is what was happening during the entire 24 hours. Perhaps we could obtain advance warning that something bad was about to happen. Avoiding measures might be possible. To do this meant a continuous cardiogram running day

and night. It also meant that a nurse must be with each patient at all times. She was to be the most important person in the loop.

With this in mind Ken and I visited Dr. Farquharson our department chairman. He liked the idea and told us to provide him with full details of what we wanted to do. We did this and he took our proposals to the Medical Advisory Board. They approved the study and told us to talk to the Hospital Administration. We did this and received a lukewarm reception. Where did we propose to work in the busy hospital? Where were we going to obtain a machine to record a continuous electrocardiogram? We searched the College Street Wing of the hospital and found a disused 4 bed room on Ward G. Next door was shabby small room that would serve as a nursing station. We spoke to Dr. John Scott who ran the EEG lab and was also a Professor of Physiology. He was a big help. He had a four channel Grass ink writing recorder that he had used to record brain waves but had become derelict and was on the junk heap. Heart electrical activity is easier to record than brain waves. He patched up the machine and it was great and allowed us to obtain continuous records on each of our four patients. Our biggest problem now was to

obtain 4 nurses around the clock. The hospital budget would not permit this and we were put on the waiting list. For the next year we visited Dr. Jack Sharpe, the Hospital Medical Superintendent at monthly intervals to enquire about the budget and developed a degree of mutual animosity. About this time Mr. Percy Gardiner, a patient of Ken Brown's came in for his annual check-up at Dr. Brown's office. Mr. Gardiner asked how things were going with the coronary study that Ken had told him about last year. Ken said that it hadn't started yet.

Mr. Gardiner said that it had sounded like a good idea. "there must be something wrong with you and MacMillan-obviously slow to get off the mark etc!" Ken explained about the lack of nurses. Percy said "I see no problem. Let me have your phone and the yellow pages". The next morning the first four nurses arrived and the Coronary Unit opened on Ward G. Mr. Gardiner wrote a cheque for \$25,000 to get started.

As we expected Dr. Sharpe was furious. We were called in to his office and were told that we were trouble makers and had stepped out of line. Also, the Hospital was preparing a project in

Endocrinology that they planned to ask Mr. Gardiner to support. We had ruined this. A week later Dr. Hank Doyle, assistant to Dr. Sharpe came to see us to say that funds had been found in the budget for our nurses.

The Unit was now working well and we sent a report to the Lancet which was published in August 1963. A few months later Dr. Hughes Day reported a similar Unit in Kansas City, Missouri and Dr. Meltzer one in Philadelphia. None of us knew what the others were doing. The Americans called their Units the Coronary Care Unit. (CCU). Care brings to mind curly haired angels hovering overhead. In our experience angels were in short supply except for Mr. Percy Gardiner so we continued to call our unit the Coronary Unit.

Our years experience taught us several things. It confirmed the value of the nurses. They were the most important part of the successful operation. We needed four more beds to meet the patient load. We needed electronic monitoring. The paper recorder with ink pens did great work but the paper was bulky and the nurses had to move heavy bails at the risk of developing a hernia. Even having Dr. Shouldice perfecting his operation for hernias on the floor beneath us

gave scant comfort. We decided that we needed to have an electronic engineer design new equipment. I had a cousin who worked for Canadian General Electric. We explained to him our problems and he arranged for us to meet his president. We were told that there was no money in this sort electronics but he liked my cousin so he would arrange for one of his electronic engineers to work with us for six months. We would pay half of his salary and General Electric would pay for the other half. An excellent engineer practically lived in the Unit for six months. He got along well with the nurses and prepared a good report giving specifications for the equipment we needed. We ordered for 8 beds and were given a delivery time of 6 months. We had one reservation. We wanted that the equipment should be made and serviced by Canadian General Electric. We had previous experience with some x-ray equipment made by American General Electric. Service was very bad, we were assured that the Canadian was entirely separate from the American division.

Six months passed and no sign of the equipment. We were told that the 16-inch scopes required had to be made in Minneapolis. Only 4-

inch scopes were available in Canada which meant the nurses would need a magnifying glass to read the small scopes.

Shortly after this Ken and I went to the annual meeting of the American Heart Association which was being held in Cleveland. The first thing that we saw as we entered the convention hall was our equipment on display at the General Electric booth.

On our return to Toronto we visited the President of Canadian General Electric who said he was sorry but this was the first time anything like this had happened but he would see that we would get our order a good price. We declined his generous offer.

It was annoying that we had paid in part for being sold down the river. We thought that we were becoming less naïve as the years went by. We had consulted the patent lawyer at the University after we got the report from the electronic engineer as to whether it would be a good idea to patent the equipment we needed. He reviewed our plans and advised against a patent. This was not the type of electronics that would appeal to many on the market place. It was disquieting as we walked out of his office when he said that General Electric had many good lawyers who could break a patent like this.

We decided that we would have to do something else. We wondered about computers. For the next six months we spent one evening a week at IBM on Eglinton Ave. learning about the possible use of a computer in our work. This included learning Fortran the computer language. We were fortunate to meet Ron Yamato, a computer engineer who became interested in our problems. He arranged to come with us to San Francisco to visit a hospital to see a computer used to monitor post-operative patients. It was very interesting but required the use of a main-frame computers which was beyond our resources in Toronto. I had another cousin in California who was working on the Apollo project in Downey which is near Los Angeles. Cousin Bob arranged for us to talk with the Medical Department of North American Aviation which was building the vehicle that was going to the moon. This was a great morning. They were sending all sorts of medical information back and forth in space.