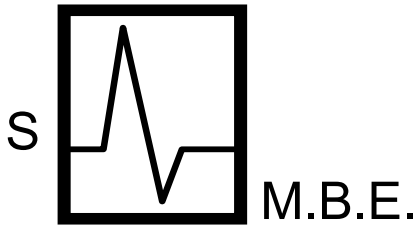


The Society for Medical & Biological Engineering S.A. Incorporated



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Biomedical Engineering in the USA

Tony Carlisle November 2000

PART 1

One of the many BME facilities John Robson visited while in the United States a couple of months ago was the Clinical Engineering Department at Johns Hopkins Hospital, Baltimore, Maryland. Bob Stiefel, Director of the Clinical Engineering Department told John that he and other hospitals in the area were finding it difficult to recruit experienced biomed technicians. Hence an opportunity was spawned for me to head over there for 3 months and work in their department.

I received a warm welcome on my first day at work. There are about 20 BME technicians and 3 Engineers in the department at the moment, with ongoing vacancies for further 3 more technicians. The BME technician training college is down to only a few students at this time as there is little incentive over here for student BME technicians to enrol. Most of the potential students are looking primarily at what the typical salaries are followed by what career

progress can be made in BME compared to other high tech careers. They are choosing to get into IT and related areas as the pay is around 150% to 200% that of a BME technician with greater career prospects.

I was put to good use straight away as my first day of work was also their first day of finishing daylight saving. So I went up to the Operating Theatre Suites with one of the guys to reset the clocks in a range of equipment types. There are more than 40 operating rooms and there is equipment stacked on trolleys hiding in all sorts of recesses. This took some time and when we finally finished I was lost. My internal compass was spinning. I had no idea how to exit the way I came in. We then checked the Recovery rooms followed by the ICU's. First was the Neuro ICU. Then the Surgical ICU, Cardiac ICU, Medical ICU, Paed ICU, Neonatal ICU. Each of these ICU's had approx 18 beds arranged in two rows of single rooms. Then came the step-down wards for each of the ICU's. I had to trust the guy I was with as he could have led me anywhere. My legs were fairly tired at the end of this first day.

The workbenches are not big and everyone shares a phone and desktop computer. Part of everyone's tool kit includes a small trolley, toolbox, multiparameter simulator, a few specific simulators, calibrators, odds and sods, as well as an electrical safety checker. Most of the guys prefer to place their tools, simulators and spares on a trolley because when they go off to work in an area, they are often gone for a while for two main reasons. Firstly, they are likely to come across a lot of equipment and secondly, the lifts take ages before they arrive at your location. There are people walking around in all directions and there are 15 floors to contend with. Hence the formula for long waits in lift lobbies. So you might as well check on a few other pieces of equipment in your designated area. The department is split into teams and each team will look after everything in their area. This means having multiples of similar testing devices. Although there is a high cost to buy all this test equipment, at least there should be lots of backup test devices should one fail or be sent out for calibration.

The design of the Hospital is such that patients have a range of lifts to choose from and staff have another range to choose from. The staff lifts can only be accessed by swiping your Photo ID near the closed doorway in front of the staff lift areas. Also, your staff Photo ID needs to be prominently displayed at all times. If you forget to bring it, you need to get a one-day temporary staff sticker and stick it on your shirt. Every patient and every visitor must also log in and display their adhesive short-term sticker. The hospital security staff will not let you loiter inside the hospital. Just diverting a bit here, there is an armed policeman sitting in a little police box on every street corner in the immediate neighbourhood. The neighbourhood has a long reputation, and this is what the Baltimore Police Department has come up with to confront the problem head on. This has not been running for very long but I certainly feel very safe going for a walk at lunchtime to a nearby food mall.

The BME heirarchy (in ascending order) for this department starts with the BME Technical Associate. This is for people who are studying for a formal qualification in BME technology, i.e., an Associates Degree in BME. This is a two-year full time course and is usually done at a technical college. A similar type of qualification back in Oz would be an Associate Diploma in BME. There is an automatic promotion to BME Technician I, once you gain the BME Associates Degree. After a couple of years of experience, you can sit for the AAMI BMET Exam for BMET certification. If you score at least 65% to 70% in all sections it is considered a pass. It costs a bit over USD\$200 to sit the exam but a financial incentive exists here. If you pass the exam you can expect between 5% to 7% pa increase in your salary because you are now a BME Tech grade II. The salary ranges for a BMET I and a BMET II overlap as this allows years of experience to count for something. Here at Johns Hopkins, the only way to get higher than BMET I is to get AAMI accreditation.

The BMET III's here are all team leaders. Each team on average consists of 3 technicians and one team leader. The department director strongly supports the AAMI accreditation and is in a position to run the department how he sees fit. Some of the other hospitals in the area do and some don't have financial incentives for accredited BME staff. It is entirely voluntary.

The hospital has just been delivered with over 400 new bedside monitors along with enough central stations to suit. They are stacked in a holding area (the former workshop in the basement) awaiting BME acceptance testing, inventory labeling and installation. This begins next Monday morning starting at 6am sharp (Several of the guys at work start at 6:30am to avoid the traffic congestion coming into the city and to get a car park in one of the expensive hospital car parks.) This monitor replacement program is largely funded from private sources. The hospital had a fundraiser project over the past 4 years and managed to raise one billion dollars.

I expect we are all going to be extremely busy for a while.



Baltimore City centre not far from my accommodation.