CARDIOLOGICAL SERVICES - WELLINGTON HOSPITAL 1926 - 1950

by

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INTRODUCTION

It may be difficult for members of the Profession serving the Wellington Hospital Board at this time, to realise that prior to World War I, the only members of the staff who would have claimed themselves to be Specialists were those who attended to disorders of the eye, ear, nose and throat. It is true that there was a Childrens Ward which was under the responsibility of a certain Dr Noel Usher, a general practitioner residing in Newtown.

Apart from the Medical Superintendent of the Hospital who was a surgeon, all doctors apart from the resident medical staff were general practitioners in the city who combined their general practice with that of surgery.

Having given some thought as to what might properly be incorporated in this paper, it appealed to me to be of some interest, to look at the background of the two physicians who were primarily responsible for the early development of the Cardiology Department in Wellington Hospital.

SIR FREDERICK BOWERBANK K.B.E., M.D., F.R.C.P.(E), F.R.A.C.P.

Sir Frederick Bowerbank was an Englishman born at Penrith, a small town in Cumberland, located in an area sometimes referred to as "Wordsworth Country" and lying close to the English lakes: he was born in 1880, the fifth of a family of eight children, his father having been a business man and the owner of a foundry.

Having always wanted to be a doctor, he took his medical course in Edinburgh, graduating in 1904, and having been first in his class in Medicine, he was offered a post as House Physician in the Royal

Infirmary, but felt unable to accept it because in those days resident medical staff in a teaching hospital in Great Britain received board and lodging but no salary (the pay in my day was £100 ($200) per annum in New Zealand.

The alternative was to do locums and assistantships, a course which he followed for about twelve months. It might be mentioned that he had become engaged just previous to his final examinations in 1904. Now it so happened that one of his friends at the Royal Infirmary in Edinburgh was a New Zealander with whom he had lodged for a number of years - a certain Dr A.W. Hogg who subsequently returned to New Zealand following having been a House Physician at the Royal Free Hospital in London, and it was he who introduced Fred Bowerbank to this Hospital's "Board of Governors", and so it was, through this friend, that he was able to follow him as House Physician in that Hospital, following which he became an assistant in a practice in Walthamstow, North London, following which again on the invitation of his friend Dr Hogg who was by that time practising in Wellington, he decided almost on impulse to follow his friend's recommendation, that he come out here into general practice. He made an immediate decision, and his fiancee having agreed to this course, they married and came out to Wellington in March 1907: after living in a house in Adelaide Road for a short time, he became the owner of 27 Riddiford Street, where they lived and from which house he practised from that time onwards until he left New Zealand as a medical officer NZMC in 1915.

As was the case with the vast majority of doctors in his day, the work was primarily that of a general practitioner with the addition of some surgery and anaesthetics.

Shortly after he entered practice, he received a visit from the late Mother Mary Joseph Aubert, Foundress of the Home of Compassion at Island Bay, set up originally for the care of babies born with congenital deformities, as also "little unwanteds". Since that day, many Wellington physicians, surgeons and other Specialists have served on the staff of the Hospital Section, Home of Compassion and have been so very happy to have been asked to do so.

Now in those now far off days, apart from the resident staff including the Medical Superintendent, hospital work was carried out by local general practitioners who happened to be practising surgeons but there were no Honorary Visiting Physicians.

However, in 1912 it was suggested to him by the then Medical Superintendent, the late Dr Harold Hardwick-Smith (father of Dr John Hardwick-Smith), knowing that in fact Fred B. was interested in "Diseases of the Heart and Lungs" linked together as they were in London at that time in many of the Chest Hospitals, that he apply for a post to be established at that time as Honorary Visiting Physician to the Wellington Hospital. Apart from the physician to the Tuberculosis Department, no interest was being taken in specialist medical disorders at all. It would appear that F.B. had spoken a lot about the work of the late Sir James Mackenzie in heart diseases and the development of treatment of cases of pulmonary tuberculosis which had followed on the discovery that these persons were afflicted by Koch's Bacillus. It should be mentioned that chest radiography was very much in its beginnings. Apart from Sanatorium treatment there was very little to be done for the afflicted in those days, apart from bed rest. The fatality rate amongst young doctors and nurses was quite high.

This post gave him, not only a number of beds and a weekly admission day for all types of medical cases, but he was able to admit those of his own patients who could not afford the cost of Private Hospital treatment. At that time there were the rudiments of a Pathology Department under the charge of a technician, a certain Mr Hurley who had a knowledge of bacteriology only, and as for pathology the Hospital was dependent on the late Dr E.M. Monroe Hector, a skilled Pathologist who was at the same time a general practitioner in the Hutt and who visited the hospital with no administrative responsibility but merely to examine and report on pathological specimens, although he was at the time the Government Pathologist.

With the outbreak of war in 1914 Fred Bowerbank enlisted immediately, but it was not until April 1915 that he was asked to report to Trentham Military Camp, later to be appointed Medical Officer to the

No. 2 N.Z. Stationary Hospital, and later to leave New Zealand in June of that year en route to Egypt.

In June 1916, he left Egypt for England with the No. 1 N.Z. General Hospital as Officer in Charge of the Medical Division, at Brockenhurst.

Subsequently, in January 1918 he went to France as "Senior Medical Officer", N.Z. Base Depot. as also President of the Standing and Travelling Medical Board, responsible to Medical Headquarters, London.

The war over, Fred Bowerbank returned to New Zealand and to his old home at 27 Riddiford Street and continued thereon as a general practitioner. As he understood the situation, he had now finished with any duties arising out of his services during the war years, and as a physician to the Standing and Travelling Medical Board in France.

However, an amendment to the War Pensions Act of 1915 allowed of the setting up of the War Pensions Appeal Board, consisting of three members, of whom it would appear, from his account of the situation, rather reluctantly, he accepted the position of Representative of the R.S.A. in association with the late Mr Campbell Begg, a surgical specialist, the Board being Chaired by the late Sir Frederick Chapman, a Judge of the Supreme Court: many physicians and surgeons have served on that Board since those years.

Now, many doctors who previously had been general practitioners, following their return to London, and aware of the great developments within the field of Medicine during their overseas service, began to think, and indeed as in the case of F.B., to dream about becoming physicians or surgeons with overseas Degrees, and sooner or later returned to London to that end. As we will remember, Fred Bowerbank had been on the Honorary Visiting List at Wellington Hospital before he went overseas, but without higher qualifications he was no longer, I would believe, acceptable for appointment to the Honorary Visiting Staff.

At that time thyrotoxicosis was a common disorder in New Zealand, treated for the most part by surgical removal of the affected gland.

Moreover, advances were being made in regard to cardiac diagnosis with the development of the Einthoven Electrocardiograph and in the diagnosis of thyrotoxicosis from the use of the Metabolimeter in doubtful cases.

Hence it was that in June 1924, F.B. arranged for the late Dr William Shirer (father of William (Bill) Shirer FRCS), to take over his practice at 27 Riddiford Street (W.S. was a fellow student of mine in Dunedin).

The Bowerbanks left for England in September of that year. It happened that I was in London at that time working for the M.R.C.P. and I well remember, while working at the National Heart Hospital in Westmoreland Street, meeting F.B., sometimes in the company of the late Professor Frank Fitchett of Dunedin, who himself was interested in diseases of the heart, and working with the object of passing the examination for M.R.C.P. (Lond).

Some time later F.B. left London for Edinburgh, where he studied general medicine and sat the examinations for M.D. as also M.R.C.P.E. both of which he passed, and then, following a visit to the United States, arrived back in New Zealand in November 1926, following which he was appointed as a Specialist in Cardiology and Metabolism, and provided with an outpatient Department in the main corridor of the Hospital, as well as having beds wired from the wards to his Department, so that patients need not be brought down to the electro-cardiograph. He was allowed four beds into which he could admit cardiac cases. He was fortunate in that Sister M.E. Tattersall (some years later to become Matron of the Wellington Hospital) was appointed as his technician, a keen and intelligent woman who learned quite quickly to obtain electrocardiograms and to carry out basal metabolism tests with his Kendrick Metabolimeter; and so the Department of Cardiology and Metabolism - so called - came into existence.

At the same time F.B. established himself in private practice as a Consultant, first of all in Willis Street and later in Kelvin Chambers.

Moreover in 1929, because of his considerable experience in the N.Z. Medical Corps in World War I he was requested to become A.D.M.S. Central Medical District, and although, at first he was not at all happy about such an appointment, he did eventually agree, and not very long afterwards became Acting Deputy Director of Medical Services, arising out of which, in 1937 he attended in Adelaide, a Conference of Military Medical Personnel and presented a Paper on "The Physical Efficiency of the Recruits of the N.Z. Permanent Forces". Thereafter he went to London by ship and remained there over three months, during which time he met up with the late Dr Rae Gilchrist of Edinburgh, recognised as a consultant in cardiology and from whom he learnt of the use of "chest leads" (he did not however use them on his return to New Zealand, for by this time he was becoming more and more involved as Deputy D.G.M.S.).

On the 29th August 1939 he was advised that his name had been submitted to Cabinet for appointment as D.G.M.S. (Army and Air) on a full time basis.

Now shortly after the outbreak of war in September 1939 the late Mr J.M. Clarke and I, our appointments at the Auckland Hospital having been terminated by the Health Department, had come down to Wellington - we had already enlisted in Auckland - to try and speed up our acceptance for overseas service. Unfortunately for me, I was turned down on medical grounds, whereupon Fred Bowerbank asked me to look after his practice as a cardiologist within the Wellington Hospital and at his Rooms, until it became clear as to whether it was to be a "phoney war or not". The answer of course was in the negative, and so it was, that he remained on at Medical Headquarters until the War was over, and the Occupation Force in Japan was demobilised.

THE WAR YEARS

I might mention that I had never considered the possibility of becoming a specialist in any department of medicine although I might say "urged to do so" by the late Sir John Parkinson who believed that the days of the general physician were over. My place as Cardiologist was to have been of a very temporary nature, until such time as I could find a place in the NZMC, which did not present itself until 1944, with the arrival back in New Zealand of the late Dr Morvyn Williams, himself interested in this subject.

Fred Bowerbank remained at Medical Headquarters as D.G.M.S. throughout the war and thereafter until the Occupation Force of the British Commonwealth in Japan finished, from which time onwards he returned to private practice in Kelvin Chambers. Meantime, just before the end of the war in Europe, Dr James Roberts Boyd had returned to New Zealand to his duties as Senior Visiting Physician to Wellington Hospital and Lecturer in Clinical Medicine.

On my own return in May 1947, I was appointed as Cardiologist in my own right but without general beds. A year or so later I came on to the staff as Visiting Physician on the retirement of Dr Boyd.

I get the impression from reading the Autobiography of the late Fred Bowerbank that he had wide interests in the community, involved to some extent in the battle which was very much in the foreground just before the War, as between the New Zealand branch of the British Medical Association and the Labour Government. He also took a considerable interest in the newly formed Royal Australasian College of Physicians (founded in 1938).

As to what I can remember of what was happening in the Department of Cardiology when I took over in late 1939, my main function

appeared to be to report on electrocardiograms as obtained with the old Cambridge type electrocardiograph, the glass plates on which the records had been made, having then to be developed and fixed before being reported on, the E.C.G.'s being printed on paper.

The technicians (both nursing sisters) in addition were required to carry out tests with the Basal Metabolimeter as requested by members of the medical profession.

BACKGROUND TRAINING AND EXPERIENCE OF CHARLES R. BURNS

As a further background to cardiology in New Zealand before the establishment of the first ever Cardiac Unit in this country here in Wellington, I would like to mention something about medical therapeutics as it was in Dunedin during my period as a student, House Physician and Assistant Pathologist in that city, during and immediately after the completion of my Medical Course.

Now following World War 1 there occurred the devastating Influenza Epidemic which swept through the country over a period of two to three months with a heavy death toll amongst the civilian population. Late one afternoon in November 1918, all members of our class were called down to the Dunedin Hospital at the request of the then Assistant Medical Superintendent - the late Dr John Tait Bowie, a man of middle age who previously had been a Medical Missionary in the Islands, from which he had had to retire because of a violent earthquake.

The intensity and ferocity of the influenza epidemic had led to many of the very few doctors in practice at that time as also of the nursing staff of the hospital being ill, with the result that all

available House Surgeons and senior students in the fourth and fifth years had been sent out to cover the work of general medical practitioners and it had now become necessary to recruit those in their third and second years to take their place in the wards as nurses.

From that time onwards for the next few weeks of the emergency situation, two second year students were allotted to each of the wards taking in influenza cases, the person in charge being a third year medical student.

It was my lot to be appointed as a "nurse" for night duty 7 p.m. to 7 a.m. in the old Plunket Ward - at that time it was under the charge of the late Professor (then Dr) Frank Fitchett M.D. on the left hand side and the late Dr Marshal McDonald on the right hand side.

Now each of Dr Fitchett's patients were given 1/30gr (2mg) of strychnine subcutaneously every four hours while those under the care of Dr McDonald were given half an ounce of brandy by mouth every four hours (there was no analysis as to the relative or absolute recuperative powers of these two forms of therapy in those so called "good old days"). I might mention that in the two to three weeks in which I was engaged in this way, I myself on my own, laid out 17 bodies of otherwise healthy middle aged males who for the most part had been in hospital for not more than 48 hours.

The Epidemic vanished as it had come almost miraculously and for us medical students it was back to University in preparation for the term's examinations in anatomy and physiology, not to return to the Hospital until June 1919 when strangely enough I found myself again in clinical work in a very different capacity on the left hand side of Plunket Ward, and this time, as a student of Dr Marshal McDonald, a shrewd but not always accurate diagnostician who adopted the attitude of many of the older English physicians of making a "spot" diagnosis from the end of the bed - a form of guesswork which often appealed to the young student which in point of fact clearly seldom paid off. Anyway what a difference in the variety of sick people - sick with cardiac failure, with pneumonia, acute or chronic nephritis,

with rheumatoid arthritis, in other words a wide variety of clinical illnesses, for many of which there was little to be done but to care for them and comfort them and this was freely available from the excellent nursing staff.

Clinical examination, which included a careful interrogation of the patient (often with undue concern about his or her family history), and was followed by a full physical examination with the stethoscope as the Number One technical instrument: blood pressure readings were seldom taken, the nurse's chart showing temperature, pulse and respiration findings, always recorded on a chart hanging above the top of the patient's bed and kept in perfect order, the examination appearing to be a somewhat academic exercise rather than an important clinical approach. It was the duty of both House Physicians, nursing staff and students to test the urine for protein, sugar, bile, blood, as also as to what could be seen under a microscope. Similarly testing of the blood for haemoglobin content and counting of red and white cells in the appearances of the blood under the microscope were expected as of routine, but at that time there was no blood chemistry available.

Apart from Ward rounds twice a week by the Physician in Charge, in the case of both of those whom I have mentioned they were men of good Royal Infirmary of Edinburgh training, with a wealth of experience behind them as to what they had learnt in peace - in general practice, and in war and were in both cases good doctors. There were of course no Registrars and although some House Physicians and House Surgeons were liberal in their help for the student, the time available was always limited. Regular Journal reading in those days was never impressed upon us as important - rather the old textbooks and what the teachers had to offer from their own experience. On looking back it is sad to reflect on the fact that what was at the time a quite good medical library was always available but unused from daylight until dark on most days.

Looking more closely as to the state of "Cardiology" in my final years.

In those days the Profession was obsessed with the importance of rheumatic carditis, and its complication, rheumatic valvular

disease as being the one and only important cause of heart failure. One seldom heard the term "congestive heart failure": people were said to be suffering from "dropsy", or "cardiac decompensation", meaning a breakdown in cardiac function arising out of the overwhelming effects of some form of rheumatic heart disease - indeed I met a well known physician at the Heart Hospital in London in the 1920s whose sole examination of the heart had the purpose of discovering whether he could hear a systolic murmur in the mitral area, as though that were the sole be-all and end-all of cardiac diagnosis. The treatment of this disorder was long periods of rest in bed in the sitting up position and how difficult that was to maintain in those days, with only pillows with which to support the patient and no modern type of bed as is available today, the mechanism of which allows of the patient being placed in different positions.

Digitalis was prescribed as the Tincture or the Infusion but there were no diuretics as such.

Puncturing of the lower limbs from the knee down, with the fine tip of a Bard-Parker surgical blade was commonly used, having the patient sitting out of bed with his feet in a bath to drain out the subcutaneous fluid, or alternatively to be kept in bed with the legs wrapped up in towels.

It was not till I got to London that I found that leeches were being applied regularly in such cases to the liver region and occasionally venesection was carried out on the basilar vein. In addition of course, pleural cavities were drained as also sometimes the abdomen. Once cardiac failure had set in, the life of the patient was thereafter a struggle against the need to return to bed, there being at that time no thought about restriction in sodium intake but an over restriction in the water content of the diet.

The fact that syphilitic disease of the aortic valve was common, it was accepted as a fact of life but added nothing to the way of these people being treated apart from the treatment of the syphilis itself which of course is a long and painful form of treatment.

The importance of the coronary arteries as a cause of cardiac disease was not recognised by our teachers, nor were the words "coronary thrombosis" nor "cardiac infarction" ever heard of, outside the postmortem room. The fact that hypertension was a common cause of heart failure was never mentioned, although thyrotoxicosis was so.

The irregularity of the heart beat, now known as "atrial fibrillation" was then called "auricular fibrillation" and was of course accepted as a diagnosis in its own right, as pointed out by the late Sir James Mackenzie, but it was not until I went to London that I saw a Mackenzie Polygraph.

In passing, it might be mentioned that there were no dietitians (nor physiotherapists except in the Orthopaedic Department) in the very early 1920s, all special diets being prepared by the Ward Sister in her kitchen attached to the Ward. Naturally the variety of special diets had to be strictly limited.

My first year following graduation was spent as Assistant to the Professor of Pathology: I had made up my mind to train in preparation for "Consultant Medicine", guided in this choice by the writings of the late Sir William Osler who made the point in one of his Lectures that having made such a choice, much time must be spent in the post-mortem room and the reporting on pathological specimens: this post gave me a lot of time for reading and I found the Medical Library to be a goldmine of modern information, not previously passed on to us by our teachers. And so it was that I came across the classical description of a case of "cardiac infarction" with survival, by the late James Herrick M.D. of Boston, and written up in the Journal of the American Medical Association in 1912. This of course was a revelation for it had been claimed up till that time that to have suffered a thrombosis of the anterior descending branch of the left coronary artery ended always in sudden death.

It was then that I came across cases of persons thought to be suffering from gall stones who in fact had suffered a coronary thrombosis with infarction; and so when one Friday in June 1922 I heard of the case of a middle aged man who had been admitted that night under the care of the late James Renfrew White F.R.C.S. who

was acting as General Surgeon in the absence of his Chief on overseas leave (J.R.W. was of course a very well known Orthopaedic Surgeon). Enthusiastic teacher as he was, he had summoned his class down to the operating theatre to see him deal with this case of "gallstones". However, no such stones were found, nor any disease of the gall-bladder. The subsequent history of this patient was of course of great interest to me, and when on the following Sunday week, while sitting up to take his breakfast, he fell back dead; a postmortem was requested - and there it was, a massive cardiac infarction affecting a majority of the anterior portion of the left ventricle, a ca which of course should have been written up.

It might be mentioned that Osler, in another of his Lectures had made the point that the future of medicine would rely a great deal on advances in biochemistry and how true that was. Again I was truly blessed because during my final year the late Sir Stanton Hicks, at that time a fourth year medical student, and in addition being the Government Analyst, had set up all that was necessary to carry out modern blood chemistry, using the Folin and Wu method of examining plasma free blood to test the levels of such substances as glucose, urea, uric acid, bile and creatinine. Now it was a duty of mine as Assistant in the Department of Pathology to supervise the Biochemistry Laboratory and hence a close liaison was established as between the Medical Wards in the Hospital and the Biochemical Department.

1923 was spent as House Physician and House Surgeon in the Dunedin Hospital and it was during that year that we first began the use of Insulin amongst patients under the care of the late Professor Frank Fitchett, there being a wide variety of clinical interests for a House Physician or House Surgeon, with no Registrars to help and no Visiting Assistant Physicians, not to mention that apart from a regular anaesthetic roster there were often emergency anaesthetics to be given, and all this meant for the most part a 12 to 15 hour day on seven days a week.

The year 1924 was spent in Britain with the object of obtaining the London M.R.C.P., the only form of entry in those days into the sphere of Consulting Medicine, and taken previously by only a very few

persons known to me.

There were of course no formal courses for the London Membership in those days and so we had to find our knowledge the best we could.

The National Heart Hospital for Diseases of the Heart in Westmoreland Street, London W.1 was where physicians were beginning to involve themselves in the great advances in this field which had begun in the United States of America on the clinical side and were beginning in London, in the first place through the introduction of the Mackenzie Polygraph and the then very new Electrocardiograph; at that time no serious work had been published as to the value of the latter in clinical practice, the only machine available being "The Cambridge" which was very largely a research tool of the late Sir Thomas Lewis whose book "The Mechanism and Graphic Registration of the Heart" became a classic in 1925. This electrocardiograph had been invented by Einthoven (1903), using the String Galvonometer plus photography, the instrument being mounted on a bench or table about four and a half feet high, and of course not being portable, requiring that the patient be brought to the Electrocardiograph or that beds in a Ward be wired to that purpose.

This Electrocardiograph was composed basically of a String Galvanometer which consisted of an exceedingly fine fibre, such as silver coated glass, suspended between the poles of an electro-magnet: when a current passed through the fibre, the latter was deflected towards one or other pole according to the direction of the current. By suitable magnification and illumination, the movements of the shadow on the string could be recorded by moving photographic film.

It was essential to include satisfactory insulation of the machine and lead wires to prevent 50-cycles A.C. interference, proper standardisation of the galvanometer so that a deflection of 1 CM represented a potential difference of one mv., and the elimination of skin resistance by means of submersing both hands and wrists as also the left lower limb in jars of normal saline solution (much later on to be replaced by the modern electrode saline jelly).

The arrangement was such that only the standard limb leads were being used, the Wilson Chest Lead not coming into general use until the

30's or even early 40's.

By suitable magnification and illumination, the movements of the shadow of the string were recorded on a moving photographic plate (glass) so that a deflection of 1 CM represented a potential differenc of 1 mv., as mentioned above. The photographic plate had then to be developed and fixed and reproduced on paper for examination (each such photograph was about six inches in length).

At that time it was the practice of the late Sir John Parkinson to obtain a Mackenzie Polygraph Tracing on all of his patients, the findings from which were compared with those from the electrocardiogra

At that time too, he and his Registrar, the late Dr Evan Bedford, were working at a Paper to be produced in 1928 in which they showed the essential electrocardiographic differences between anterior and posterior infarctions.

Before proceeding further I think we should remind ourselves of the very great contribution to modern cardiology, made by the late Sir James Mackenzie, FRCP, formerly a general practitioner working in Burnley in the North of England, and one who had a very sincere concern for the welfare of his patients and only too well aware of the pitiable state of modern medicine as it was at that time. As well as being the very first to introduce a technical advance into diagnosis, namely his Mackenzie Polygraph, allowing of his interpretation of the cardiac irregularity known as "auricular fibrillation" in those days, but more commonly known now as "atrial fibrillation". The strength of this man's character was such that coming to London and being scorned by the array of Consultant Physicians then practising in that city, all Fellows of the Royal College, none of whom would have possessed little if any general practitioner experience let alone Research background, he nevertheless, was appointed to the London Hospital as a Specialist Cardiologist at the behest of the then Chairman of the London Hospita Board of Governors, and later was admitted as a Fellow of the London R.C.P.

obstetric patients. It was the death in the course of labour of a young woman with heart failure associated with chronic rheumatic valvular disease which led him eventually to make meticulous observation as to what was happening to the heart beat throughout labour, with the assistance of his own invention of the Polygraph, an instrument made for him at his direction by a certain local watch-maker, a person not regularly fit for work because of his alcoholism.

In passing, it might be mentioned that the Mackenzie Polygraph was in fact introduced into New Zealand by the late Dr A. Samuel Moore on his return to New Zealand following Postgraduate study in London, subsequent to his service in France as a medical officer, and this instrument was in fact demonstrated to us in the course of "Sammy" Moore's Lectures on Medicine. Unfortunately however "Doggy" Moore as he was then known was not really interested in technical equipment and switched over to modern developments in nutrition for a time and subsequently to psychiatry. It has always been a regret to me that I failed to have the opportunity of meeting Mackenzie, who died on the day before I was to have met him in his home in Wimpole Street.

It was Mackenzie who first pointed out that heart failure is primarily "failure of the myocardium" rather than "valvular disease alone". At the time, physicians in general refused to accept Mackenzie's thesis: heart failure was then known as "Decompensation" arising out of the presence of the valvular disease.

Having promised the then Professor of Medicine to return to New Zealand on completion of the Membership Examination, this meant needing to be back in this country in early 1925, which as you will understand was a source of very great regret for me at the time.

However, in 1926 the Hospital Board decided to appoint a Medical Registrar who would be responsible both to the Board and to the University, each of these Organisations paying half of his salary, and in this position I remained until entering practice as a Consultant in 1927, at which time the Physiology Department of the University obtained an Electrocardiograph which was under the directi of the late "Harry Manson", the Professor's Assistant.

However, subsequently, during the year 1929 I held a position as Resident Physician in the New Plymouth Hospital, the Superintendent at the time being the late Mr J.M. Clarke FRCS, who persuaded the Board to supply me with a portable Electrocardiograph, and then of course on returning to Dunedin it became possible in special circumstances to obtain a "trace" by bringing the patient down to the Physiology Department.

As an example of such a situation was the case of a North Island surgeon who had come down to visit his people in the Taieri. He telephoned me one morning to say that during the night he had had a nasty attack of "indigestion" which sounded to me very suspicious of a coronary thrombosis. I got him up to a private hospital in Dunedin, from whence he was conveyed to the Physiology Department, where he showed the classical evidence of mild anterior infarction. He was treated accordingly, following which he lived some years, coming to die eventually from a further "coronary".

In 1932 I felt that the time had come for more Postgraduate experience - there were no grants to that end in those days and in order to avail oneself of all that was best in Great Britain, it seemed to me essential to remain a student at large, rather than seek employment at some hospital.

Again, I did spend a lot of time at the National Heart Hospital where more and more of the staff were becoming "moderns". Now 1932 was the Centenary Year of the British Medical Association and I was fortunate in being able to attend Sir John Parkinson's address on "The Diagnosis and Treatment of Coronary Thrombosis" published and read widely in Great Britain, and I am sure, overseas.

Now the matter of the place of rest in the treatment of this disorder had long been debated. The question had been - if we had believed before, that a person could not suffer infarction of the left ventricle, without dying so to speak on the spot, and if this is not necessarily so, what do we do? Now it had been the custom for many years to demand that individuals suffering from rheumatic carditis be kept in bed for at least six weeks, and that they must not move neither hand nor foot: now of course in some cases this was not very difficult because any movement of any joint was extremely

painful, but of course not so in cases of cardiac infarction. Nevertheless, Parkinson supported by the late Samuel Levine, a famous Cardiologist from Boston, appear between themselves and no doubt with the backing of others, to have agreed to make it mandatory for patient diagnosed as having cardiac infarction to remain in bed for six weeks, at total rest, which became the rule for several years following that Paper.

On my return to Dunedin, having been appointed as Assistant Visiting Physician with Outpatient duties, I had an increasingly wide involvement in medicine, and the Outpatient Department provided many patients of interest and importance to students. Moreover, the time had come for the late Professor Frank Fitchett to give up his Diabetic Clinic which he kindly placed at my disposal, but moreover I was involved in the Physiotherapy Department, overlooking the needs of patients with medical disorders and helping with the teachin Again, the late Dr Douglas Iverach and I set up an Asthma Clinic as there appeared to be an increasingly great number of persons with this disorder for which very little was being done.

With the passage of the years, the need for further Postgraduate experience seemed important and so once more in 1937 I returned to London and visited the great Teaching Hospitals in Boston.

It was while I was in Great Britain that I was made aware of the decision on the part of the Auckland Hospital Board to establish posts for a full time physician and a full time surgeon, and having learned over the years, the importance of such units in Teaching Hospitals as there were in London, I felt it incumbent to apply. I was not aware at the time that these appointments were the brain child of certain doctors who had been able to persuade the then Labou Government to request that these appointments be made with the Blessing of the Department of Health. Unfortunately, before we took up our duties, the Board was defeated by a group of citizens determine on reducing Hospital Board expenditure and so it was that these new appointments came on the line although not abolished for about 12 months - a most interesting year, particularly working with resident medical staff and final year students, and how loyal they were to us in our endeavour to establish full time units with teaching responsibilities and hence coming under the supervision of not only

the Hospital Board but of the University.

During that year, so far as Cardiology went, I endeavoured to follow the teaching of my friends in the National Heart Hospital and the London Hospital Cardiac Unit - the interrogation of patients with circulatory symptoms, followed by their screening clinically and with the Electrocardiogram and by Radiographic examination.

After 12 months we were informed that on the recommendation of the Auckland Hospital Board, the Health Department had agreed to the termination of our appointments or perhaps to be more precise, the abolition of the positions which we held. This decision came just at the outbreak of war.

Now some weeks before September 3rd 1939, as war clouds were gathering my friend Mr J.M. Clarke and I had enlisted for possible overseas service. When it seemed almost impossible to get any kind of information as to what was or was likely to happen, we came down to Wellington, hopefully to hurry things along at Defence Headquarters. As a result, my friend Marcus Clarke was accepted for overseas service but I was turned down on medical grounds and there appeared to be no appeal against this decision.

I believe it would be of interest at this point to look once more at the situation in the Wellington Hospital in terms of medical staffing as it was in late 1939 as compared with the situation when F.B. joined the staff prior to World War I.

The staff had acquired a considerably increased number of well trained Visiting Physicians with higher degrees, some of whom could claim to be Specialists in their field. For example, the late Dr Montgomery Spencer had become Physician in Charge of the Childrens Wards; the late Dr I.M. Allen had been appointed as Visiting Neurologist to the Hospital as also a full time member of the staff in charge of the Chest Department. Then there was a mentioned, the Department of Cardiology and Metabolism.

Moreover there were four medical units and four surgical units.

As to the former, these were under the charge of the late Dr James

Roberts Boyd, the late Dr John Twhigg, Dr Gordon Paterson and the late Dr Gordon Kemp. Physicians in charge of the first three of these four units had teaching responsibilities for final year students

There were in addition three Assistant Physicians, Dr Reay Mackay, Dr Maui Kronfeld and the late Dr William Shirer whose duties it would appear were largely taking over their Wards when their Chiefs were away.

However Dr Reay Mackay was appointed to the Childrens Ward to replace the late Dr Montgomery Spencer who had gone overseas, and in the course of time, when Dr Roberts Boyd went overseas, I took over his Ward and shared with Dr Gordon Paterson the teaching of students.

I might add that although two doctors had been appointed just before the War to be Medical Registrars, their duties as such were abandoned in that they were put in charge of Service Personnel being cared for in the two Wards 11 and 12, built at short notice to that purpose.

The point to be made at this point is that there were no regular medical Outpatient Departments in the Hospital at that time, all patients ostensibly being referred back to their general practitioners at the time of discharge.

Turning now to the function of the Cardiology Department as I found it in 1939, it seemed clear to me that the demands on the time and interests of the then Dr Bowerbank, particularly in regard to the Defence Services were such as to preclude his being able to give much attention to his work in the Hospital. Basically, the particular concerns were to interpret such electrocardiograms as were obtained on the request of staff members and of other doctors in the community, as also the findings presented to the Physician in Charge by the Sister who carried out basal metabolic tests and to attend such patients as were admitted into his four beds. In addition of course he had a private Consulting Practice. As indicated there was no regular follow up arrangement for inpatient cases, so that if they were discharged e.g. on Digitalis for atrial fibrillation they were not asked to return regularly nor, or so it appeared, did their doctors make any attempt to follow them up in order that they obtained regular supplies of the medication, so that when they ran

out of same, they left the situation as it was until heart failure returned, when they would be readmitted for a further course of treatment. We were soon to change that. It was made quite clear that the Department was not only for the diagnosis and immediate treatment of cardiac cases but for their follow up.

With the War on, there was of course an increasing demand by the Defence Department for an assessment of the cardiac state of persons presenting themselves for service overseas, or for home service.

In that we stimulated students to come to the Department for training in cardiac diagnosis and treatment, teaching was an added interest which of course took up time.

In the absence of so many staff members overseas it will be clear tha "the team" consisted of the Ward Sister, the House Physician, the Visiting Physician and the students, and this meant that the Visiting Physician had to spend a great deal more time in the Hospital than would be the case nowadays, but it was all taken in their stride.

I was most fortunate in that early in the War, the late Dr Roger Bakewell, at that time a general practitioner in Petone, but interest in becoming a Consultant, joined me as an Assistant both in the Cardiology Department and in the Wards and was indeed a faithful follower until the Hutt Hospital was built and he was appointed as Physician in Charge of Cardiology.

INVESTIGATION OF CASES

As regards the extent of investigation of patients with circulatory problems, it was our practice, following routine interrogation relati to all systems and of course particularly the circulatory system and of course with special reference to heart sounds and murmurs, to have an electrocardiogram obtained and the heart screened with the assistance of a Radiologist.

Blood pressure readings were taken in all cases but in that there was no satisfying treatment for "hypertension" at that time the findings

were largely of academic interest.

Referring back to auscultation, we had in those days no appreciation of the importance of "clicks" and either failed to hear them or ignored them - it was often difficult enough fully to appreciate the heart sounds and the abnormalities causing "murmurs".

So far as electrocardiography goes, those were the days when we had only the standard leads and the Cambridge Electrocardiograph.

As to radiology, we tended to follow in the footsteps of the London School of Cardiology for whom the screening of the heart was paramount, films being taken only when there was some special abnormality worthy of permanent record.

TREATMENT

1. Bed Rest:

A person in severe chest pain or in a state of breathlessness automatically seeks rest, and for a long time the question of "how much rest" was a debatable subject.

All patients with any degree of congestive failure were submitted to a varying period of bed rest, at least until they were able to lie flat in bed in the recumbent position without becoming breathless; but in the latter years of the period it became common practice to get patients out of bed into a comfortable chair alongside the bed for a varying portion of the day. Of course in those days there were no modern beds available allowing of patients being placed in various positions - the beds were all flat and positioning had to be assisted by the use of multiple pillows and some means of preventing patients from slipping down had to be devised.

As mentioned above, in the 30's a Committee of Cardiologists led by John Parkinson and Samuel Levine of Boston, decided that it would be appropriate for persons who had suffered a cardiac infarction to

be submitted to six weeks total rest in bed similar to that which was practised in the case of persons suffering from acute rheumatic carditis. This practice had been hammered home so forcibly in the early 30's that as so often happens in medical practice, it had become an absolute rule, quite improperly applied to persons who needed a short degree of rest maybe for a few days only, if indeed in some cases at all, but that is history.

2. Dietary Treatment:

Ever since my student days it had been the practice for patients with cardiac oedema to order "three small dry meals a day" with a limitation of water intake to one and a half pints, but no specific exclusion of sodium chloride.

Occasionally the physician might order the so called Karell Diet, which permitted of nothing by mouth except one and a half pints of milk a day representing one gramme of sodium and 550 calories.

It was not until 1941, when Schroeder showed the importance of sodium restriction in the treatment of cardiac oedema, that the "low sodium diet" became the order of the day; of course, as usual the making of it a routine procedure took several years: in 1946 McCance and Widdowson of Kings College Hospital in London produced, from their Dietary Department, tables giving the composition of numerous foods as to their sodium content allowing of the construction of suitable diets, which meant of course forbidding the use of all salted and preserved foods, meat extracts etc. containing sodium chloride.

Again, in 1946, Kempner introduced his low sodium diet as an adjunct to the treatment of hypertension.

3. PHARMACOLOGICAL PREPARATIONS USED IN THE TREATMENT OF CONGESTIVE FAILURE:

1. DIGITALIS has of course for many many years been the standby of all therapeutic regimes in the treatment of congestive failure proving particularly useful when atrial fibrillation with a very rapid heart beat was present, the mere reduction in the ventricular rate to around about 72 per minute, sometimes alone allowing of reasonable activity without breathlessness or oedema.

One day, when I was working in the Auckland Hospital, a fairly senior surgeon said to me "Why do you spend so much time on heart cases, there are only two forms of heart disease - those which can be treated with Digitalis and those which can't, it's as simple as that" - and although not perhaps expressed by others at that time, it had in fact come to this in 1939. Of course, in those days so many of our hospitals were controlled by Surgeon-Superintendents some of whom had almost Dictatorship like powers.

By the 1940's the administration of Digitalis was no longer in the form of a tincture or an infusion, the tablet having taken over. One of the most popular commonly used products of those days was Digitalis Folia B.D., made up of compressed leave of the Digitalis plant, later to be superseded by the more elegant Digoxin or Digitoxin etc.

2. MERCURIAL DIURETICS - The first of these, "Salyrgan" (1924) which was a painful preparation given intramuscularly was later replaced by a combination of a mercurial with theophylline, each 2 ml dose containing 80 mg of metallic mercury plus 0.1 of a gramme of theophylline. Such preparations acted by encouragir tubular reabsorption of sodium and were given either intra-venously or intramuscularly, the latter being often, quite painful.

3. CATION-EXCHANGE RESINS. One gramme was capable of absorbing one meq. (23mg) of sodium which was passed out in the faeces from a diet containing 1.5 grammes of sodium a day.

4. CARBONIC ANHYDRASE INHIBITORS such as Diamox we used occasionall

Of these four approaches to treatment of oedema, in addition to the use of Digitalis, particularly of course in the presence of atrial fibrillation, the low sodium diet proved in my experience the most useful, although often difficult to accept by patients who had become so used to excessive salt in the diet as to find their food quite tasteless, so that often a balance had to be established as between a strictly low sodium diet and one which allowed of some sodium chloride, plus an injection of a mercurial diuretic once a week, or

the addition of Diamox or a cation-exchange resin.

4. Pharmacological Preparations Required in Special Cases:

(a) MORPHINE (or heroin before its use was forbidden by the Department of Health) was a sheet anchor of treatment for the relief of the pain of cardiac infarction and again for the dyspnoea of left ventricular failure.

(b) AMINOPHYLLINE. Given intravenously, was used for the relief of dyspnoea, particularly in severe Sheyne-Stokes breathing or bronchial spasm.

(c) QUINIDINE and PROCAINE-AMIDE - to restore normal rhythm in cases of paroxysmal-tachycardia such as in atrial fibrillation, simple paroxysmal tachycardia and atrial flutter.

(d) PROPYLTHIOURACIL and NEO-MERCAZOLE in the treatment of thyrotoxicosis which proved wonderfully efficient but were replaced in the late 1940s and 1950s by Radio-Iodine.

(e) ADRENALIN introduced occasionally into the heart muscle in cases of "complete heart block" with convulsions, and this proved wonderfully successful at times. (There were of course no "pacemakers" in those far off days).

5. PHYSICAL MEANS OF TREATMENT:

(a) Restricted activity:
Apart from the demand for complete bed rest following a coronary thrombosis with cardiac infarction or severe heart failure, restriction in activity has of course always been advised sufficient not to induce breathlessness nor angina.

(b) Venu-puncture:
This was used occasionally in cases of marked congestive heart failure with high venous pressure leading to marked breathlessness: it was the practice to remove approximately one pint of blood from the basilic vein, sometimes with considerable relief of symptoms.

(c) Acupuncture:
This was the name given in those days to the puncturing of the subcutaneous tissues of the lower limbs with the sharp end of a Bard-Parker surgical blade, which was remarkably helpful in the removal of oedematous fluid before the days of mercurial diuretics.

(d) Supervised Breating and Limb Exercises:
Once physiotherapists became available for ward work they were and have of course ever since been of great help in supervision of proper breathing exercises.

(e) Sleep:
Sleeping draughts have been legendary over the years in the form of mixtures of chloral-hydrate and a bromide, to be replaced in more modern days by tablets of the barbiturates and now followed in more recent years by the benzodiazepines, such as Mogadon.

6. ANTI-COAGULANTS:

It was towards the end of the 1940s that the use of anticoagulant therapy came into vogue in the treatment of coronary thrombosis. This treatment had the two-fold purpose hopefully on the one hand of preventing extension of a thrombus in a coronary artery, and secondly of preventing the development of thromboses in the veins of the lower limbs, which was so liable to lead to pulmonary embolism, and this second complication was of course much more likely to happen in people being kept strictly at rest in bed for long periods. The popularity of this treatment was such that many of us felt quite guilty until we had in fact established a given patient with coronary thrombosis, carrying with it as it did of course serious hazards, and demanding very careful supervision in terms of the level of coagulation time.

In the earliest days it was popular to commence with Heparin intravenously, which was administered for one, two or possibly three days until the Dicoumarol or other anticoagulant being given by mouth had become stabilised on a therapeutic level.

7. Treatment of Hypertension:

Over the years, until the 1940s with the arrival in New Zealand of Sir Horace Smirk there had never been any attempt to establish the "basal blood pressure", so that the diagnosis depended on the figures obtained after perhaps several readings. In cases of malignant hypertension with very high readings and retinal and renal complications, the prognosis was accepted as hopeless.

As far as treatment went, with lesser degrees of hypertension, genera measures were depended upon largely, such as reduction in weight and levels of smoking and alcohol use, improved exercise level and some attempt to reduce overwork and excessive strain. Barbiturates particularly in the form of phenobarbitone, were prescribed almost routinely by some doctors in the presence of high blood pressure. I cannot remember in those days ever coming up against a person who had become addicted to this drug. Most of us had persons under our care with blood pressure readings of well over 200, systolic, and ove 130 diastolic which nevertheless remained much the same year after year with no undue ill effects until the inevitable "stroke" occurred or the patient was struck down with a "coronary thrombosis". On the other hand some progressed to a ripe old age in spite of their hypertension. We were of course always on the lookout for the possible haemochromocytoma or "coarctation of the aorta" for which surgical treatment was available, in the latter case in Auckland in the 1950's.

In the earlier years of the century there was a vogue well established in the Profession whereby it was thought important to reduce the intake of red meat in the diet in which personally I could never see any sense unless the amount being consumed was excessive, granted that the intake of fresh meat in the earlier years was undoubtedly in many cases far above the optimum.

Fortunately, in 1944 we were able to use the findings of Schroeder in that he had found that sodium restriction was of help in lowering blood pressure: for example, the Kempner diet which was introduced in that year was not infrequently used, being made up mostly of fruit and rice, some sugar and a little milk, containing approximately 2000 calories, allowing of 20 grammes of protein, 5 grammes of fat

and 200 mg of chloride with 150 mg of sodium; meat, fish, non-leguminous vegetables without salt and a little fat being added when the blood pressure came under satisfactory control. It should be noted that such a diet did in fact relieve serious manifestations of malignant hypertension including retinopathy, encephalopathy and left ventricular failure, monotony only being complained of.

LUMBO-DORSAL SYMPATHECTOMY:

Although as a physician one was opposed to such a drastic operation, nevertheless as the late Dr Paul Wood pointed out, it is important to remind ourselves that this procedure did in fact open the way to medical sympathectomy and indeed encouraged pharmaceutical research into the use of drugs which lowered blood pressure down to normal limits and kept them at that level thereafter. This meant the abolition of that dread disorder "malignant hypertension" with improvement in the patient's health and length of life etc., thereby disproving the supposed theoretical objection that the mere lowering of the blood pressure e.g. treating the hypertension did nothing to help us deal with the disease itself, but this type of criticism of course is nothing new in medicine.

Even before the ganglion blocking drugs were in fact introduced through the influence of Vakil in India, active hypotensive drugs were introduced such as extracts of the Rauwolfia plant including Reserpine 0.25 mg, and in doses of one to two tablets three times a day, often with remarkable success, and few if any side effects. Of course such did occur in some cases (nasal congestion, looseness of bowels, weight gain, tremor and sometimes quite severe mental depression).

It was the demonstration by Burn and Dale in 1915 that tetraethyl-amonium ions inhibited transmission of all sympathetic and para-sympathetic nerve impulses at the autonomic ganglia level which opened the way to medical sympathectomy. And so it was that Pentarmethonium iodide (C5) and Hexamethonium iodide (C6) or Bromide were introduced by Paton and Zaimis (1949) and were thereafter fully investigated by Rosenheim et al at the University College Hospital in London, and it was following his visit in 1949 to that Unit, (a member of which

he had been some years previously) by Sir Horace Smirk, that these drugs were introduced into New Zealand.

In the early days this and similar drugs were given subcutaneously. While in those earlier days the problems of hypertension were soon overcome, it of course required careful control by the patient himself or herself and his or her physician.

By 1954 Horace Smirk had shown that the best all-round results were undoubtedly obtained by combining rest, a low sodium diet, a Rauwolfia drug and Pentolinium tartate (M & B 2050A known as Ansolysen).

Naturally a proper combination of this sort required a great deal of patience as well as supervision, hence the establishment of well run Hypertension Clinics, primarily required to satisfy the basal blood pressure before treatment was begun, as also to exclude conditions which may in part have been responsible for the blood pressure itself and which could be treated otherwise. Then secondly for the supervision of the patient maybe over a period of years by follow up and testing blood pressure taken over a period of half or maybe a whole day, so that a reasonably accurate quantum of the preparations being used can be determined.

WHAT OF CARDIAC SURGERY?

It is of interest to note that in 1917 Henry Souttar FRCS of the London Hospital carried out the first mitral valvotomy ever, but the patient died, and the story is that the late Sir James Mackenzie who was Cardiac Physician to that hospital, so argued against this operatio that it was dropped in Great Britain at that time: in those days of course the use of massive blood transfusion and modern anaesthesia were unheard of.

Again, in 1925, while in Boston for a few days I was invited to a meeting at the Boston City Hospital to hear the story of a young

surgeon named Cutler who was reporting the findings in the case of his fourth mitral valvotomy - unfortunately with an outcome similar to the first three, namely death immediately following operation: and so it was not until after Bailey of the United States performed this operation successfully that the late Sir Douglas Robb began to perform it in New Zealand.

Now in the 1930s experimental work was being carried out in Great Britain to improve the myocardial circulation in cases of coronary ischaemia, and one of these experimental techniques was to scarify the surface of the heart and at the same time to bring the omentum up through a hole in the diaphragm and then either stitch it or glue it on to the peridcardium.

It seemed that when Sir Fred Bowerbank was in England in 1938 he saw this operation performed by a surgeon named M. O'Shaughnessy FRCS about which he, Sir Fred, had taken note. On his return to New Zealand he found a man in one of his beds unable to move about because of severe angina but who in fact improved remarkably following this operation carried out by the late Dr John Cairney FRCS (formerly Surgeon Superintendent of the Wellington Hospital). Unfortunately there is no record as to the subsequent history of this particular patient, and the career of the surgeon O'Shaughnessy came to an abrupt end when he was killed in France early in the war.

In the 1940s (I cannot recollect the actual year) the late Mr Richard Orgis FRCS successfully operated on a young Airforce Officer with endocarditis of his patent ductus arteriosis so that this young man was able to return to his unit fully fit.

The history of cardiac surgery in New Zealand, but particularly here in Wellington would be covered more appropriately by some member of the current Cardiological team.

Similarly, such a remark holds for the development of diagnosis and treatment of patients with congenital heart disease with their preparation for surgery which is in part dependent on the findings of cardiac catheterisation.

SUMMARY

In these notes I have endeavoured to cover the years between the first establishment of a Cardiology Unit in Wellington Hospital, up to the time approximately anyway of Dr Hallwright's return from Great Britain in the early 1950s following which he established the use of cardiac catheterisation and such other measures as would provide a full study of cardiodynamics. It should be mentioned as a matter of history as well as of the forward thinking of Dr Verney Cable who in fact performed the first cardiac catheterisation under x-ray in the Wellington Hospital some time before Dr Hallwright's return, and how proudly he showed me the film indicating the success of this examination in his hands. It would be interesting to discover the fate of that film.

Finally I wish to put on record my very sincere gratitude to all of those who over several years - colleagues, nursing staff, technicians, patients and members of the Wellington Hospital in general for the cooperation and kindness shown to me personally in the field of Cardiology.

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