

Nasal Function and the Radiologist *

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Mr. Chairman and Members of

The Nova Scotia Society of Radiologists:

ONE feels quite honoured to have been asked to take part in this course—the first of its kind to have been given in Canada.

I want to congratulate Doctor Johnston, Professor of Radiology, for arranging such a course of instruction. The prophet Joel wrote "your old men shall dream dreams, your young men shall see visions." Here we have the old man seeing visions. Here we see the flights of the imagination coming down to earth and arranging a programme so diversified as to include the bio-chemist, the anatomist, the internist, the pathologist, the lawyer and even the otolaryngologist.

It was suggested that a review of the anatomy and physiology of the nose might be of interest as in all probability some years have passed since your minds have been directed to such worldly matters. The radiologist lives in a rarified atmosphere—a world of shadows—a sort of spirit existence. It was further suggested that I might touch on the relationship that exists between radiology and rhinology.

Slide No. 1. This shows the lateral wall of the nostril with the three turbinate bodies so designed as to provide, radiator-like, a large surface in a small space. Superior marked (9), middle (8), and inferior (6) parts of the accessory sinuses are shown, sphenoid (3) and frontal (10).

Slide No. 2. In this the middle turbinate has been removed and the middle meatus has come into view. The arrows indicate position of the sinus exits or ostia and the general direction of drainage you will note is backwards and downwards.

Slide No. 3. Here a further dissection has taken place by removing the superior turbinate and so exposing to view the ethmoid labyrinth. (4 to 17 cells—average of 9).

Slide No. 4. Coronal section made on a plane to show as many ostia as possible (viewed from behind).

Slide No. 7. Low power view of respiratory nasal mucosa. On the left a duct is seen lined with ciliated epithelium. The cilia in this position assist in extruding the mucus on to the surface of the membrane.

Slide No. 6. Normal mucous membrane of an ethmoid cell.

*Victoria General Hospital, May 8th, 1951.

Slide No. 8. Diagram to compare the relative thickness of the respiratory mucosa and that of the sphenoidal sinus. The expansile elements of the nasal or nostril side stopping abruptly at the ostium of the sinus.

Slide No. 10. This diagram is drawn to show the components of the mucosa and their individual functions. Mucus (protection and transportation). Cilia (propulsion). Epithelium and basement membrane (protection). Tunica propria (support and expansion). Gland (humidification). Artery (heating and erection). Nerve (control). Vein (heating and erection). Periosteum (repair). Bone (support).

Slide No. 9. Inferior turbinate. Note the great cavernous spaces.

Slide No. 12. This diagram shows a portion of ciliated epithelium covered by its mucus blanket in which are enmeshed several foreign bodies—bacilli, cocci and red blood cell. (Note that the length of a cilium is about equal to the diameter of the blood cell).

Slide No. 13. These are four very instructive diagrams. (a) represents normal ciliary movement of the mucous blanket—making for the ostium—note it is travelling uphill—e.g. from the floor of the antrum to the normal exit which is near the roof.

(b) The rolling over the mucus in masses when too viscous and in excessive amounts.

(c) Similiar behaviour normal mucous when it reaches an area denuded of cilia or the margin of a surgical operation.

(d) Here the mucus is represented as watery and not of sufficient viscosity to form a blanket.

Although the foregoing anatomical slides* might suggest a rigid design it may be said that apart from the maxillary antra which are usually fairly well balanced—those originating in the ethmoid bone and sphenoid vary tremendously in shape and size and even in position in the case of the elements of the ethmoid.

THE DEVELOPMENT OF THE SINUSES FROM BIRTH

	At birth	1 yr.	1-3 yrs.	7 yrs.	12-15 yrs.	15-18 yrs.
Maxillary:	Size of small bean	Gradual	Development	to		Fully developed
Ethmoid:	Present	Gradual	Development	to	Fully developed	
Frontal:	Absent	Absent	Appearance	Pea-size	Distinct cavity	Well developed
Sphenoid:	Present as a rule	Distinct cavity	Size of large pea	Fully developed	

The sense of smell, that is the process by which odours are perceived, has *not* been determined with certainty. Man's sense of smell is comparatively rudimentary, yet poor as it is, it is capable of recognizing the presence of $\frac{1}{200,000,000}$ of a mg. of vanillin in a liter of air.

*A series of 11 slides was shown where the paper was presented, but could not be reproduced here.

Down through the ages the ability to smell was thought to be the one and only function of the nose. You will remember how Jacob dressed himself in his brother Esau's clothes and appeared before Issac his blind father seeking his blessing. The old man who probably had cataracts said—"The voice is Jacob's voice, but the hands are the hands of Esau." Still puzzled he "smelled the smell of his raiment" and said, "See the smell of my son is as the smell of a field which the Lord hath blessed."

The Psalmist referring to gods, the work of men's hands, goes on to say "noses have they but they smell not."

To mention the fragrant balsams, frankincense and myrrh, immediately brings to mind one of the greatest events in human history.

St. Paul refers to this sense figuratively. In his "thank you letter" to the Phillippians he refers to a gift they had sent him during his imprisonment in Rome as "an odour of a sweet smell" or an another translation expresses his gratitude "Your generosity is like a lovely fragrance, a sacrifice that pleases the very heart of God."

When Mark Anthony first met Cleopatra floating down the Nile under the perfumed purple sails of her barge the very winds said Shakespeare "were lovesick." Smell has been called man's deepest and most primitive sense. Since the dawn of history, millions of unsung Cleopatras have known how to lead him by his nose.

It was less than 200 years ago that a bill was sponsored in the British Parliament providing a witchcraft trial for "all women . . . virgins, maids, or widows, that shall . . . seduce and betray any of His Majesty's subjects by the use of scents, paints, cosmetics . . ."

Solomon—the great authority on women and some of their ways, having had 700 wives and 300 concubines, wrote: 'So she caught him, and kissed him, and with an impudent face said unto him, I have perfumed my bed with myrrh, aloes and cinnamon.

You will recall the painting of Cardinal Woolsey passing in procession holding beneath his nose an orange stuffed with spices to offset the body odours of the vulgar crowd.

Was it not the nose that prompted in part Columbus and Vasco de Gama to seek a *shorter route* to the spice islands of the East?

With Milton we all will say during the coming months "fragrant the fertile earth after soft showers."

Robert Browning reminds us that "Any nose may ravage with impunity a rose."

The air-conditioning functioning of the nose—i.e. the warming, moistening and filtering of air is rather interesting, in fact, somewhat amazing. The journey of four inches from the nares to the choanae requires not over a quarter of a second or less. Yet the relative humidity when it reaches the pharynx is 75% or more, quite regardless of the humidity of the air to be inspired. To 15,000 liters of dry air at 37 C. (98.6 degrees F.) the nose contributes 680 to 1,000 c.c. of water, 1/25 c.c. per breath. The temperature is about 36 degrees C. (96.8 degrees F.) no matter what the temperature was a quarter of a second previously just off the tip of the nose. All bacteria, dust or other particulate matter have been removed and the air is ready to be received into the lung.

Ciliated epithelium and its blanket of mucus is widely distributed in the nostrils and their extensions, the accessory nasal sinuses, and for our purpose this afternoon must be thought of as an "organ" which crowns the mucosa. The cilia are about 5 to 7 μ in length and are located on the end-plates of the surface cells in the epithelium. There are 25 to 30 to each cell. A single cilium will continue to stroke as long as a tiny bit of cytoplasm remains attached to it. Not only are the strokes of adjacent cilia co-ordinated as to time, but the directions of untold millions in a sinus are so co-ordinated as to carry the mucus accurately to the ostium. Each stroke has a powerful rapid phase in direction of flow with the cilium straight and stiff and slower movement of recovery in which the cilium bends. There is a speed gradient in the sinuses. The rate of flow is increased as the ostium is approached. The rate varies from 2 to 4 up to 15 to 20 mm. per minute. This primitive and rugged organ will continue its 8 to 12 strokes per second under the most unfavorable conditions, such for example as in a purulent sinus,—only calling a halt when exposed to cold and dryness. The other component of this "organ" is the blanket of mucus, a clear, transparent, tenacious secretion made up of two to three parts mucin with small amounts of sodium, calcium and potassium salts and about ninety-seven parts water. The pH. is about 7 or neutral and is maintained fairly constant. This is important because cilia do not function well if the pH varies much. Neither does lysozyme, the contained enzyme which destroys most air-borne bacteria. Lysozyme was first described by Sir Alexander Flemming the discoverer of penicillin. Bacteria are almost instantly destroyed when they come in contact with the mucous blanket. So effective is this action that the posterior half of the nose is practically sterile. Almost none of the myriads of bacteria that enter the nares ever reach the back part of the nose alive. Probably this explains why a culture cannot be made in the first 72 hours of an acute rhinitis. Tears are rich in the same enzyme.

The cilia propel an unbroken sheet of this thin but very tough mucus continuously from the most remote corners of the sinuses to the naso-pharynx. Upon this travelling blanket, acting as a sort of conveyor belt, bacteria and other minute foreign materials are carried to the point where the swallowing mechanism can dispose of them. The necessary moisture is supplied by the mucous glands, abundant in the nostrils and immediate vicinity of the ostia, but thinly scattered in remote areas of the sinus where the air exchange and hence the evaporation is negligible. A foreign particle placed on the outer wall of the antrum will arrive in the naso-pharynx in about half an hour. This distance as measured on a wet specimen in my possession is approximately 14 cm. To help visualize the amazing capability of this "organ", which can move with apparent ease a load of viscid mucus several hundred times as deep as the cilia are long, I will quote an illustration from Proetz.

This teacher "has often found it expedient in teaching, to multiply all values by 100 and to fabricate an imaginary structure which can be regarded from a more familiar and objective viewpoint. The comparisons thus obtained are truly enlightening.

The nose becomes a sort of duplex apartment or rather two apartments, mirror images of one another, with a wall—the septum—between.

On the first floor is the antrum—on the second are the ethmoid and the sphenoid cells, and under the roof, reached by a narrow stairway, is the frontal. These rooms have no doors opening into the halls—only transoms—or, if you prefer, ventilators. The wallpaper in these apartments, miraculously, if self-regenerating. As it forms it slides slowly long the walls, to and through the ventilators to merge with the paper in the hall. From here it is unceremoniously thrown down the back-stairs into the incinerator. Fancy! Clean carpets and wall-paper from cellar to garret every twenty minutes.

Now let us examine one of these rooms—the antrum. We will take no liberties with any of the accepted figures. Only the decimal point we will shift two places to the right.

Our 3 cm. antrum is now a ten-foot room. It is dark, for the only communication it has with the outdoors is an 8-inch ventilator, and that opens under a penthouse in the hall.

The ventilator is adequate to the situation but it would leave something to be desired were the room required for habitation, as there is no forced draught through it. There is an intermittent breeze down the hall but most of it goes by, and what else could one expect of an 8-inch ventilator under a penthouse—and no circulation?

The walls, ceiling and floors of this antrum are lined with the thinnest imaginable velvet, for the cilia even now are only $1/42$ inch long and $1/300$ inch thick. And yet if one were to heave a washtubful of molasses and a bucket of sand into that room, they would mop it up, carry it across the floor and discharge it through the ventilator in a short ten minutes!

May the reader forgive this grotesque comparison, but if he be a surgeon, may he likewise not forget it."

The perfectly functioning nose is a highly defensive organ. It is difficult to conceive of the most ingenious, ambitious and adventurous organism succeeding in getting a foothold once entangled in the fast moving stream of mucus with its bactericidal enzyme which will dump him into the rough handling of the muscles of deglutition. To a bacterium the speed must be breath taking when you consider that the mucus conveyor is renewed every twenty to thirty minutes. Nevertheless infection does succeed in penetrating this barrier giving rise to both local and bodily discomfort and even on occasion destroying its host. What are the things that may weaken the defences as represented by this muco-ciliary organ and permit of invasion? Such come under two headings (a) Physical—the result of drying, which may be atmospheric or due to the diversion of air currents to impinge upon a local area and secondary to anatomic abnormalities. (b) Metabolic upsets due to exposure, fatigue, endocrine dysfunction and too much rum which disturb the normal relationship that exists among the vaso-motor responses of the tissues—the activity of phagocytic cells and the presence of antibodies in the tissues. First, however, must come some change in the physical or chemical character of the mucus which permits the invading organism to reach the sub-epithelial tissue.

With this review of the functions of the nose you can readily see that this organ is of interest to rhinologist, physiologist, bio-chemist, psychologist, perfumer, food taster and historian.

Assume that infection has penetrated the physiological barriers and as a result the patient has developed an acute sinusitis. The diagnosis is based on strictly clinical evidence; viz: history of an upper respiratory infection, disturbance of temperature, discomfort to severe pain, tender areas on palpation, the stuffy nostril and the recognition of pus presenting beneath the middle turbinate or in the naso-pharynx. Graduated transillumination although not infallible is very suggestive. The essence of treatment is to facilitate the task of the ciliated epithelium in carrying out its primary function of drainage.

Should it be deemed necessary to enter the frontal sinus externally it may be desirable to know more about the anatomical arrangements. It is to the radiologist we turn for this help.

The X-ray is of no value in making the diagnosis—that is, as I said, a clinical problem and the X-ray cannot add anything of diagnostic value. Not only is it useless; it may be worse than useless and be positively misleading. Some years ago I presented a paper at the Canadian Medical Association entitled "How to be Wrong—the X-ray a Quick and Easy Method", and one of the cases quoted was that of a young school master who was admitted to hospital in an extremely weakened condition not being able to even turn himself in bed. He had a double acute pan-sinusitis. A few days later he developed a tender, doughy, non-inflammatory swelling on the forehead. Osteomyelitis of the frontal bone was recognized and arrangements for operation were promptly made. As an after thought an X-ray was taken and only seen after the operation. The frontal bone was soft and purulent and the sinus occupied by oedematous mucosa and pus under pressure. The X-ray film was beautifully clear and gave no suggestion of the startling and serious morbid changes actually present.

It may not be wholly out of place to remind you that the X-ray is of no value in the early recognition of acute osteomyelitis because the disease is primarily an infection of the diploic venous system (thrombophlebitis) and any bony changes (necrosis) capable of throwing a contrasting shadow do not develop for 7 to 10 days and by that time the infection of the medulla of the bone is an inch to two inches beyond the necrotic area. The oedema of the soft tissues of the forehead is the practical guide to the extent of involvement. If operation is deemed necessary it should include the bone well beyond that indicated by the oedema.

A couple of years ago I operated on the frontal sinus of a young woman—for chronic infection—and found the sinus occupied by creamy pus—yet the diseased state was unsuspected by the radiologist. Such are not odd and isolated instances. I think it is well to direct the attention of the young radiologist to such possibilities in order to put him on his guard against committing himself in this the most difficult of all the many branches of radiology. Law points out that nowhere is exacting technique so essential. Assuming good technique it is no reflection on the radiologist if a shadow doesn't exist in the film being examined. If the bone and the physical nature of the diseased occupant offer identical resistance—then a contrast cannot exist.

Only recently I had a man one of whose maxillary antra was very obscure. Exploration revealed a very small antrum with an unusually thick wall. Its

X-ray appearance might have been described as a non-pathological shadow. A sinus that has had its mucosa removed gives rise to a dense shadow, hence the importance of close enquiry as to the nature of the "nose operation" alleged to have been done some years ago. I suppose it would be rare for a person to get saline solution into his antrum but if he did it would throw a shadow.

Allergy may add to your difficulties. As Hansel says—"In allergic cases one must be cognizant of the capriciousness of positive roentgen findings" and goes on to quote Proetz to the effect "that acute allergic reactions may occur in the antrum, for example, giving rise to positive findings which may completely disappear within 24 to 48 hours, just as a urticarial wheal disappears from the skin."

Such observations give immediate rise to the question of the value of a single set of films.

Proetz in his address before the Canadian Medical Association in 1947 said: "During a given illness, unless one has access to the films made of the patient at some previous time under the same relative radiological conditions, one has no way of knowing whether some local density is recent or not. If it should happen that the patient is not clinically improved and clinical signs point to the offending sinus, then we proceed regardless of the X-ray shadows. If these are dense, we have learned nothing new: if they appear clear, we are still not assured that the sinus is unaffected."

Ballenger in his text-book (1947) after listing three-quarters of a page of modifying conditions writes: "In view of the above modifying conditions, it is illogical to assume that a diagnosis can be made from films alone."

So you can plainly see how relatively little value an X-ray can be in any given case.

Lillie of the Mayo Clinic some years ago wrote and it still holds good that—

"It can be said in general that roentgenologic examination gives more accurate results for conditions other than infections, such as osteoma and malignancy.

"It should be emphasized that roentgenograms must not be relied on for accurate diagnosis in a case of disease of the sinuses but they must be taken into consideration along with the history and the physical findings resulting from competent observation in the case."

To quote from the conclusion arrived at from a recent study, published in November 1950, carried on at the Radcliffe Infirmary, Oxford, and involving one hundred cases of chronic Maxillary sinusitis,—"A radiograph is of great help in the elucidation of chest conditions, perhaps essential where broken bones are concerned, and our purpose is to say that while in the practice of rhinology an X-ray film of good quality aids the diagnosis, it is very far from providing incontestable evidence of the conditions existing in the maxillary antrum."

One could go on quoting and illustrating but as all this is ABC in principle to radiologists and otolaryngologists there is little point in so doing. When the radiologist renders a report in the words "there is no evidence of sinus disease" (meaning purulent disease) I find that many (certainly one's internes) are apt to take it to mean that the part is free from disease, which in

the light of the foregoing references may or may not be right. So I would suggest that when you are rendering a report that you try and protect yourselves and the patient by saying "the shadow is somewhat suggestive of", "there is a remote possibility of it being," or "permit me to point out that the X-ray is the least reliable element in the investigation of sinus infection." Such prefixes or affixes should seldom or never be omitted.

The radiologist is at a distinct disadvantage. He sees a shadow. Its origin and age he has no way of telling with any degree of certainty. A former film taken under approximately identical conditions is seldom available. The surgeon on the other hand has the history and transillumination plus inspection of the nasal mucosa plus shrinking and posturing plus the aid of the naso-pharyngoscope plus exploration (irrigation) with the result that whether the shadow is for or against the diagnosis does not make much difference.

It must then be ever kept in mind that X-ray findings are not conclusive but merely suggestive of the presence of infection and as Morrison says—"it is extremely important that radiographic findings be correlated and checked by clinical evidence."

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Hon. Hugh Bell, Founder of The Nova Scotia Hospital

By WINTHROP BELL, PH. D.

The following address was given before a meeting of the Nova Scotia Society for Mental Hygiene and invited guests, 28, November, 1951, at the Nova Scotia Hospital, Dartmouth, N. S. The meeting had been announced as a celebration in honour of Hon. Hugh Bell, founder of the hospital. A portrait of him in the hospital had been damaged and become in need of general renovation. Some of his descendants had had the restoration carried out; and the restored painting was unveiled at the meeting.

The following reproduces as nearly as possible the talk as the author gave it. It will be noticed that he emphasized the inadequacy of his information on some points. Supplementary notes on those points are now added at the end of the paper, correlated by numbers with the relevant passages in the text.

THREE or four days ago I was disconcerted, and even somewhat dismayed, when I received one of the printed notices of this evening's meeting. The announcement indicated an "address" from me as central feature of the meeting, and even seemed to imply that that address would justify mention of the fact that I happen to be, just at present, president of the Nova Scotia Historical Society.

I had promised nothing so pretentious, nor had I understood that anything so extensive was wanted. As I had understood it, there had been in connection with this portrait an expression of opinion that many active to-day in the Nova Scotia Hospital and allied work had little knowledge of the inception of this institution and no knowledge at all of why this portrait should hang here;—that a few words of explanation would therefore be in order and might even be welcome, as to (1) who the Hon. Hugh Bell was, and (2) just how he figured as the founder of this hospital.

I had expected that you would listen to me politely for a few minutes before going on to the real business of your evening—whatever that might be.

When I got the printed announcement it was too late for me to do much about it. I was not even in Halifax, where I could have looked up documents in the Archives and elsewhere, to make a more finished account. I could only marshal a bit more carefully and fully material that I already had at hand, so as to be able to give you a little more amply what I had expected to cover very briefly indeed.

First, then, who was the Hon. Hugh Bell?

He was born at Enniskillen, County Fermanagh, Northern Ireland, on January 12th, 1780, the son of Samuel Bell and his wife Ann Cross. But he was brought to Nova Scotia when not more than two years old. Indeed, it is not known exactly just how it happened that he was born in Ireland. His father, Samuel Bell, at least, had been in Halifax already from 1769 on until 1776, when he volunteered for military service in the war of the American Revolution. After that war, in 1783—that is, shortly after the infant Hugh

Bell had been brought out to Nova Scotia—Samuel Bell received one of the grants of land given to loyalist veterans of the war. His grant, however, different from most such grants, was not in one of the large blocks awarded entirely to veterans, but was right on the Halifax-Windsor road, in the district now known as Mount Uniacke. Remains of the old foundation of a small house are still visible on the lot. But the house soon burned down, the family moved to Halifax, and the father died, leaving the widow and child, so far as is known, unprovided for. The widow was, however, a vigorous and capable woman, and somehow or other she managed to give her son a fair education—no easy thing for a widow without means in the Nova Scotia of that time. Hugh Bell himself had a natural eagerness for learning. In a letter to one of his own sons long afterwards he spoke of having had to cope with great difficulties as a youth, and says "I had to tug it out as well as I could."

Whatever the difficulties were, he overcame them. He became, first, a school-teacher in the Cumberland district—the region of Amherst and Point de Bute; then was bookkeeper for a firm of brewers and tallow-chandlers in Halifax. The owners of that business soon dissolved their partnership, and one of them made a partnership offer to the young Hugh Bell. A few years later Hugh Bell was able on his own account to purchase a large property between Argyle Street and Water Street and put up a brewery and soap and candle factory. The site of this establishment is commemorated to this day by the name Bell's Lane, on which was one of the entrances to the premises. He had evidently prospered rapidly over a few years (about 1802 to 1815). In the long and severe depression that Halifax went through after the end of the Napoleonic wars and the war of 1812 he had a hard time to keep afloat financially. He managed, however, to discharge all his obligations, and by the mid-1830's was evidently prosperous again, as he then bought a considerable property in the north-west suburbs and built thereon a rather dignified residence. To the property he gave the name "Bloomfield"—still preserved in Bloomfield Street and the Bloomfield schools, which are on part of the old estate. The house still stands, shorn now of all its grounds, and sadly reduced in state and circumstance.

In the 1830's, too, Hugh Bell was being gradually drawn into active public life. By the end of that decade he had handed over the running of his business affairs to his two eldest sons, and, as one of his younger sons later wrote: "Thenceforth his life was that of a busy public man." It apparently started by his doing a good deal of voluntary editorial writing for the "Acadian Recorder". Then he was asked, by Joseph Howe and others, to be a candidate in a by-election for the legislature in 1835.

By the way, his "card" as candidate was rather unusual. It said: "It is customary for candidates to make large promises. I shall promise nothing for it is probable that I shall be able to effect little or nothing." He went on to say that while he was willing to pledge what small abilities he possessed in the interests of the electors, if any one of many other more eligible men would offer themselves he would be delighted to withdraw. He was elected by acclamation. Perhaps some modern candidate might try the same approach and see if it would have the same result.

He was returned again at the general election of 1836. He associated

himself whole-heartedly with the so-called Reform party which Howe was building up; and Howe conceived a deep respect and affection for the older man. In 1841 Lord Falkland, making his effort to gain the support of both parties for his administration, raised Hugh Bell to the upper chamber—the old Legislative Council. In 1848 he became one of the members of the historic first cabinet under responsible government. At first he had no specific portfolio, later acted briefly as Financial Secretary, and then became Chairman of the Board of Works—corresponding more or less to to-day's Ministry of Public Works. On the reorganization of the government in 1854, when Howe ceased to be a minister, Hugh Bell also resigned from the cabinet. This reflected no disagreement with the policy of the government, and he continued as Chairman of the Board of Works until the fall of the Liberal government in 1857. From 1849 to 1853 he was also Judge of Probate for the county of Halifax.

Meanwhile he had been active otherwise, too, in public affairs. From the incorporation of Halifax on he was for several years one of the aldermen, and was chosen Mayor in 1844. For over twenty years he was one of the commissioners of the Poor's Asylum. When the Acadian School was incorporated he was one of the trustees, and was later president of the corporation. From 1840 to about 1858 he was one of the governors of Dalhousie College. And just to mention an almost random list of activities which I happen to have been able to verify almost out-of-hand:—in 1837 he was one of the firewards (in which function he got involved in a bit of an altercation with the military authorities); in 1838 one finds him chairman of the meeting at the founding of a Society for the Encouragement of Trade and Manufactures; in November 1843 he was the opening lecturer in the season of the Mechanics' Institute; in 1846 he was one of the managers of the Halifax-Agricultural Society.

All his life he was an avid reader and had an excellent library at "Bloomfield". One further feature I fancy he himself would have wished mentioned in any account of him. He was throughout his life a devout and active member of the Methodist Church.

He died very suddenly and quietly, in Province House, on May 16th, 1860;—quite probably the only case of a person actually dying within the walls of that notable building.

Hugh Bell was twice married; first, in 1808, to Elizabeth Lain, a young Englishwoman. She died in 1814, leaving three children all of whom grew up and two of whom had issue. But no descendants of that marriage are alive to-day. In 1815 he married, second, Ann ("Nancy") Allison, daughter of John Allison of "Mantua", Newport, Hants County, and sister of Hon. Joseph Allison, the partner of the famous Enos Collins. She survived her husband, dying at "Bloomfield" in September 1866. She had eight children, of whom four grew up, married, and left descendants. The number of descendants now living is about seventy, and they are to-day fairly widely scattered.

So much in answer to the question: Who was the Hon. Hugh Bell—*omitting*, as you may have noticed, so far, everything about the Nova Scotia Hospital.

When it comes to the story of the founding of this institution, I would emphasize that I am not able, this evening, to give you that story as a complete and properly presented chapter of history. Some day some competent and conscientious historian may have the interest, the time, and the pertinacity to investigate and write the history of the hospital. He will have to do a great deal more research than I have had either the time or the opportunity to do in preparation for this evening's talk>(*1).

I cannot even be sure of giving you all the cardinal points of *Hugh Bell's* role in connection with the founding. I believe the material I have covers the gist of it. And of one thing I can assure you:—For everything I shall tell you I have documentation (could cite my authority "by chapter and verse", as the saying goes). None of it will be a matter of mere family tradition or hearsay.

Hugh Bell's interest in the condition and treatment of the insane dated from early in his public career, when he became one of the new commissioners of the "Provincial and City Poor's Asylum", after Joseph Howe, with his famous article in the "Nova Scotian" and his successful defence in the ensuing libel suit, had made things untenable for the previous board. At that time the only public care offered for the mentally deranged in the province was the insane ward of that Poor's Asylum, or confinement in the various county jails. To a gathering like this I need not emphasize what that meant. Conditions were distressing in the extreme; accommodations unsuitable and pitifully inadequate; remedial or alleviating treatment practically speaking non-existent. This state of things came insistently to Hugh Bell's attention in his position as commissioner of the Poor's Asylum.

One cannot set a precise date at which he conceived the determination to remedy the matter. One can say that before long the establishment of a proper hospital for the care and treatment of the insane had come to be his dominant philanthropic concern; that he made the first donation for creating the institution; that he pursued this purpose indomitably for many years; and that he had the ultimate satisfaction of himself bearing the official responsibility in connection with the erection of the first unit of Mount Hope hospital.

If one cannot set a precise date for the beginning of this purpose in Hugh Bell, one can say that it must have been some years before 1844; because when, in that year, he launched the active campaign which he was to keep up for the next dozen years, he did it in a way which showed that he had long had the matter under study and preparation.

Hugh Bell had taken an active part in the agitation for the incorporation of Halifax city, having been, for instance, chairman of the big citizens' meeting in 1836 for memorializing the government to that end. From the incorporation in 1841 he was for some years one of the aldermen, and in 1844 was elected Mayor. The election of Mayor was in those days made by the aldermen and councillors from among their own ranks (as in London, England, to this day). In his speech of acceptance Mr. Bell announced that he proposed not to utilize the salary of the post for the purposes for which it was ordinarily understood to be intended. He said "that his predecessors had spent the salary attached to the office in acts of courtesy and hospitality . . . their example was entirely justifiable and commendable . . . but . . . he intended to appropriate

the salary for another object. In the course of his address Mr. Bell adverted to the want of an asylum for the insane in Halifax, and to the high utility of such establishments in other countries. He read an extract from a report of the principal or governor of an insane asylum at New York, and a letter directed to himself from a Dr. Bell" (no relation whatever) (*2) "respecting a similar establishment at Charleston, all containing much information on the subject. The matter, he observed, had long dwelt in his mind; and although some of his friends might think it romantic, and perhaps uncalled for, still he intended to apply the salary to such an establishment in Halifax." The old newspaper article from which this particular account of Hugh Bell's announcement has been quoted goes on to say: "Mr. Bell fulfilled his promise to the letter; and the amount of the salary being put at interest until such time as the legislature decided to erect an hospital for the insane, Mr. Bell's contribution towards the object reached the sum of \$1,946."

The initial contribution was soon supplemented by that of an anonymous "Friend of Mr. Bell's" in the sum of £200. An interesting indication of the study he had been giving the project lies in the stipulation attached to both these gifts that the interest of at least four years on the capital sum be earmarked for the purchase of books for a library for the inmates.

Shortly afterwards (*3) a public meeting was called in Halifax to further the project. The sheriff was in the chair. The Mayor repeated to the meeting his pledge of his salary of £300. The Speaker of the legislature (Hon. Wm. Young) subscribed £50. There were speeches, several of them by medical men. Favorable resolutions were passed and a committee was appointed to solicit subscriptions. Apparently the sum aimed at in that canvass was £2,000. Just what this was regarded as being adequate to, or just how the fund was to be applied I regret that I cannot say. (*4)

Subscriptions soon reached the sum of approximately £900. The most striking response to the movement initiated by Mr. Bell came, however, somewhat later. It took the form of a bequest of £1,670 (or a little over \$7,000 at the time) from one, John Brown. I have reason to believe that a portrait of Mr. Brown is, or was, also somewhere at Mount Hope. The fund was to be invested and its interest used for the support and care of indigent insane. Hon. Hugh Bell's son, John A. Bell, who was, later, a member of the short-lived Board of Commissioners to which the governance of the hospital was first entrusted after its completion, left a written memo about John Brown. "The person alluded to was a humble, elderly man, not known to Hugh Bell and very little known in the community. He was an Irishman, a Roman Catholic, and unmarried. He had made some money by peddling in the country districts, and left the whole of it to the hospital."

The Halifax "Evening Mail" of 22, May, 1903, in a long, illustrated article on the Nova Scotia Hospital, the material for which obviously came from authentic sources within the institution, stated that the three subscriptions of Hugh Bell, the anonymous "friend of Mr. Bell's and John Brown, were the largest private donations ever received.

In 1844 when he launched the active campaign for a hospital Hugh Bell had already been for three years a member of the Legislative Council. Under the influence of the interest he had aroused the government was, in 1845,

induced to authorize a commission of three to go to the United States to visit the most advanced institutions there and get ideas for a hospital suitable for the insane in Nova Scotia. (*5). Mr. Bell himself went as the head of this commission, the other members being Samuel F. Fairbanks and Dr. A. F. Sawers. They presented a report to the legislature in the session of 1846 (*6); and a committee of the legislature in the same year recommended an annual grant for five years "for the purpose of purchasing the necessary grounds and erecting and furnishing such a building as would meet the requirements of the province."

Nothing, however, was done.

The province was, of course, at the time in the most feverish throes of the struggle which eventuated in the establishment of responsible government. Whether the fact that the protagonist of the hospital cause was one of the leading "Reformers", while the government was still opposing the change, had anything to do with the inaction, I do not know. Not only was popular attention focussed on the political battle, but the railway agitation was going on simultaneously, and took the centre of the stage as soon as the other issue was settled. That Hugh Bell kept pressing indefatigably for action in the hospital matter is abundantly testified, for example, in articles in the press at the time of his death. It was emphasized in a speech by Joseph Howe in the House of Assembly in 1858. This speech is not in Sir Joseph Chisholm's two-volume edition of Howe's Letters and Speeches, but it was quite extensively reported in the Halifax "Evening Express" of July 8th, 1858. And the article of 1903 in the "Evening Mail", to which I have already referred, stated that, after the reports of 1846, "ten years elapsed . . . before anything really definite was accomplished, and it was largely owing to the untiring energy of the late Hon. Hugh Bell that a commencement was then made."

Hugh Bell's son, John A. Bell, writing forty years or more later, left the following account: "Into this work he threw his whole soul and energies for ten years and more of his life. It is not too much to say that an asylum for lunatics would have been delayed for many years and certainly would not have been carried out on so noble a scale had it not been for the persistent zeal and untiring activity of Hugh Bell. On this subject he was a thorough enthusiast . . . and I verily believe, had he been able he would have completed the whole establishment at his own expense."

As already mentioned, in 1848 Hugh Bell became a member of the government,—at first without portfolio. In 1851 he acted, for a short time, as Financial Secretary. In the session of this year a bill passed the legislature for the creation of a provincial Board of Works, to be placed under the care of a member of the administration, and to have charge of several public services, theretofore under separate boards of commissioners. This piece of legislation was not, however, immediately implemented. Not until some time in 1852 was the new board constituted, with Hugh Bell as its chairman, Hon. Samuel Cunard and William Murdoch as the other members, and Jacob P. Miller as "Superintendent" (or, as he would perhaps be called today, Chief Engineer). William Condon was the first secretary of the board, soon replaced by James N. McNab.

Meanwhile, the legislative session of 1851 was marked by one step further towards a hospital for the insane. In the speech from the throne at the opening of the session on January 23rd the necessity of an asylum for the insane was mentioned, thus giving the project (albeit still in rather vague form) the status of a piece of government policy. At the same session a committee of the House brought in a report urging action.

What continued to impede the enterprise I cannot say. It is for details of the story just in these years that I should need to be able to look for relevant material that I have not had ready to my hand these last few days. (*7). Hugh Bell, however, was getting everything ready to go ahead as soon as the decision for action might be achieved. He brought to Halifax, for consultation and assistance, the Dr. Bell already mentioned, who was a recognized authority of that day on the treatment of the mentally afflicted. He had also been in correspondence with the famous Dorothea Lynde Dix, who had begun in 1841 the remarkable work which brought about so great an improvement in the institutionalized handling of the insane, first in North America, and then over much of the civilized world. She came to Halifax several times at Mr. Bell's invitation and as his guest, and had considerable and on many points determining influence. It was she who selected the site—and this selection is reported to have caused "a stiff and persistent contest with the governor and his advisers", before she carried the point. I have not been able to lay my hands on it while preparing this little paper, but my recollection is that I have, or once had, a paper which indicated that the hottest point of this dispute was as to the amount of land to be set aside for the purpose, which some of the government thought unnecessarily extensive. Some also thought it a pity for such a fine site to be preempted for just this purpose. (*8). Miss Dix also selected and sent or brought to Halifax the plans for the first units of the buildings, Mr. John A. Bell, in the memoir from which I have already quoted, stated that it was Mrs. Hugh Bell who hit upon the name "Mount Hope" for the institution—a title of which, he says, Miss Dix highly approved, and to which she thereupon lent the force of her recommendation.

From one or two little things one gets the impression that perhaps there may have been some local criticism of the extent to which Miss Dix's judgments were deferred to. At any rate, in his speech in the legislature in 1858 Joseph Howe defended this. He said that Miss Dix was universally recognized as the most competent authority in North America on hospitals for the insane, and that Hugh Bell was therefore to be commended for seeking and following her advice rather than the amateur ideas of local wiseacres.

Meanwhile time was going on and Hugh Bell had become an old man. In 1853 he resigned as Judge of Probate. In 1854 there was a reorganization of the ministry, Joseph Howe leaving it to take over the railway commissioner-ship. Hugh Bell also resigned from the ministry. But although now 74 years old he held on to the Chairmanship of the Board of Works. From 1852 on it was pretty clear that the hospital would be proceeded with before too long, and that the Board of Works would be in charge of the building.

I am sorry that I cannot tell you exactly when and in what terms the decision to go ahead with the work was made, the initial scope of the undertaking settled, and the necessary funds finally voted. At any rate Hugh Bell

lived to see the fruition of his efforts. On June 9th 1856 (*9) the corner-stone of the new hospital was laid with all due ceremony (the building having commenced some time previously). The work was pushed ahead vigorously. As Chairman of the Board of Works Hugh Bell had the final responsibility and decision for most of the construction and some of the equipment. But he was not able to carry this responsibility and exercise this decision right through to the completion of the first unit and the opening of the institution. In 1857 the Liberal government of William Young fell and the Conservatives under James W. Johnston came into power for two years. This brought, of course, a change in the personnel of the Board of Works. Mr. Bell lived, however, to see the first unit of the hospital completed and in operation. Just at the end of 1858 the first patient was admitted, and before the end of 1859 the new institution was in full swing.

To be responsible for its management the new government appointed a commission of nine members. About this commission I do not think I can do better than quote directly from the manuscript of John A. Bell's memoirs:—"The government was anxious to have a mixed board—that is, commissioners from both sides of politics. But the opposition declined to take office, all but myself. I was offered a commissionership in place of Hugh Bell who was then getting too old for active work; and the government felt that next to himself the Commission should include one of his sons. For my own part, I thought that differences in politics should not prevent men from working together for the benefit of a humane institution; Hugh Bell thought the same. So I accepted office with a lot of thorough-paced Tories—Hon. Dr. Parker, John W. (later Judge) Ritchie, John Doull, S. A. White, D. Creamer, George H. Starr, D. Falconer, Dr. Farrell. I was the only Liberal in the lot and party politics at that time ran very high. However, I must say we got on together very harmoniously; we did not allow politics to intrude in the least. Being the first year, we had a great deal to do, and it was necessary to visit the Hospital three or four times in every week. Disputes arose also between the Doctor of the establishment (Dr. DeWolfe) and the Steward (Amos Black). These quarrels became so fierce and so constant that it took a great deal of time to hear their several statements and make matters run smoothly. About this time there was a change of government, Joseph Howe coming in again at the head of affairs. There was an investigation into the troubles at the hospital. The commissioners took it for granted that the new government would dismiss Dr. DeWolfe and abolish the Commission. Instead . . . Howe and his friends put the whole affair under the charge of the provincial Board of Works." In other words they did not appoint another set of commissioners, but did away with the separate commission for this institution altogether. They simply put the Board of Works back in the place of the Commission and left to it the settlement of all disputes. And they did not treat Dr. DeWolfe as a party political appointee. As most of you are probably aware he remained Medical Superintendent for twenty years.

I have quoted the passage from John A. Bell about the short-lived Commission partly because of little touches in it that you would seek in vain in any published material dealing with the history of the institution; but also because, as he himself indicates, John Bell's occupancy of one of the commissioner-

ships was intended as a gesture of courtesy to his father, and thus represented, so to speak, Hugh Bell's last connection with the undertaking which had been his aim for nearly twenty years. It must have been late in 1859 or early 1860 that the Commission was abolished. And it was in May 1860 that Hugh Bell died, very suddenly, at the age of 80, in full command of his faculties and still in good health to the last moment.

His obituary notices in the Halifax papers were generous, but perhaps not undeservedly so. They show that he was recognized as having been the founder of Mount Hope. The "Morning Sun" of 21, May, 1860, for instance, devoted a long paragraph to this, from which I shall quote just a part. "The name of Hugh Bell will be remembered, and deserves to be remembered, in Nova Scotia, if for nothing more than in connection with the Hospital for the Insane . . . Nor did he spare his time, his resources, or his talents, until his wishes were happily consummated in the erection . . . of the noble building which now adorns the eastern side of our harbour." In the same paper there appeared a memorial appreciation by a writer identified only as "an old and esteemed friend of the late Mr. Bell," but who was, in reality, Joseph Howe. He concluded this memorial with the sentence: "The Lunatic Asylum was for ten years uppermost in his thoughts, and will ever remain a monument to his memory." Duncan Campbell in his "History of Nova Scotia" (1973) (page 337) said: "Though a zealous and consistent adherent of the Liberal party, Hugh Bell was better known as a philanthropist . . . The noble establishment at Mount Hope, Dartmouth, known as the Provincial Hospital for the Insane, was largely indebted to Hugh Bell for its inception; and it was mainly owing to his persistent energy and his own personal liberality, that the Legislature was induced to project that Institution on a scale which many at the time deemed extravagant, but which subsequent experience has proved to be not more than adequate to the wants of the Province."

There exists an excellent portrait of Hon. Hugh Bell, in his prime, at about the age of 55, by the painter Valentine. This is now in the possession of his great-granddaughter, Mrs. Stewart Gibson, of Halifax. With respect to this present portrait, his son John A. Bell wrote: "The portrait of Hugh Bell in the Hospital for the Insane at Dartmouth is a vile caricature. I never see it without indignation and disgust. It was taken after Hugh Bell's death, from a very defective daguerreotype and enlarged by a young man named Barrett—a lad of some talent, but at that time of no culture or experience. The Board of Works of the local government (Mr. Robertson, chairman) got it done without consulting any of the family. Had we been aware of their intentions—which no doubt were kindly and well meant,—we would have had a copy made of Valentine's picture."

On the margin of this passage in his memoirs John A. Bell later wrote: "The painting alluded to is now in a back room at the hospital, and another, copied by Wells, of Saint John, from Valentine, has been substituted." So you should have also, at Mount Hope, somewhere another painting of Hon. Hugh Bell, recognizable as being a more or less successful copy of the Valentine portrait. (*10).

NOTES:

*1. Quite an account of the course of affairs may be found in a series of articles in "The Nova Scotia Medical Bulletin" in 1937: "Historical Sketches of Hospitals in Halifax and Dartmouth", by Marguerite H. L. Grant. For Mount Hope hospital the May and June numbers in that year come mostly into consideration.

Dr. D. C. Harvey, Provincial Archivist, has sources of information about the Nova Scotia Hospital in government and legislative records in the Public Archives of Nova Scotia indexed so that most of *this* material can be turned up promptly.

*2. This Dr. Bell was head of the then already noteworthy and ever since eminent MacLean Hospital, at that time situated at Charleston, opposite Boston, more recently at Waverly, Massachusetts.

*3. The mayoralty election was on October 3rd. The public meeting was held on November 1st. When the legislature met early in 1845 the Mayor, Aldermen and Councillors memorialized the House of Assembly. Subscriptions then amounted to \$871 and another £500 or so was still confidently anticipated.

*4. Some of the contemporary newspaper files reveal that Mr. Bell's pledge was conditional on a total of £2,000 being raised by general subscription within some reasonable time. Otherwise his donation should be applied to some other charitable object. Following the matter through the newspapers of those years and the journals of the legislature with their appendices, one finds that for many years the idea persisted that legislative action guaranteeing *maintenance* of such a hospital should, or reasonably might, be made contingent on some substantial sum having first been raised by voluntary charity for the capital cost of the building itself. Various amounts were suggested from time to time. Mr. Bell's figure of £2,000 seems to have been merely the first of these.

*5. Inasmuch as the establishment of a hospital would involve money bills, effective action could come only through the House of Assembly. Hugh Bell, as a member of the upper house, was consequently not most advantageously situated for initiating legislative action. When the House met early in 1845, however, he was Mayor of Halifax; and the Mayor, Aldermen and Councillors of the city formally memorialized the legislature on the matter, on the basis of the existing need and the fund which was being subscribed by private charity. The wording of this memorial echoes so faithfully that of other documents on the project known to have been written by Mr. Bell, that he must have been the virtual author, at least, of this one too.

Dr. Clyde Marshall, of the Nova Scotia Department of Public Health, speaking at the meeting of the Nova Scotia Society for Mental Hygiene on November 28th, 1951, after the conclusion of the present paper, mentioned these documents from the pen of Hugh Bell, and justly observed as worthy of note the fact that, in them, Mr. Bell had repeatedly urged methods of treatment of the mentally afflicted very advanced for his day and generation, and in many respects almost startlingly modern in comprehension and recommendations.

*6. This long and very interesting report, dated 3. February, 1846, is printed in Appendix No. 32 to the Journals of the House of Assembly for 1846. A supplementary report, more detailed estimates of costs, is to be found in Appendix No. 11 of the Journals of 1847.

The report of 1846 might to-day even have some historical interest beyond the bounds of Nova Scotia, since it gives a survey of the public accommodation for the insane existing at that time in a good part of the United States, with observations about financial support, private patients, methods of administration and treatment, and so on, as seen through outside and eagerly interested contemporary eyes.

*7. The delays were due more than anything else to differences of opinion on various points; and there was reluctance to commit the province to what seemed in those days a very heavy expenditure in a matter of public health, while these differences persisted. Dr. Marshall, in his remarks at the meeting of November 28 1951, already referred to, mentioned as one major point in dispute the question whether there should be a single hospital for mental and other patients alike, or two separate institutions; and, if the latter, which should come first. It might just be noted that the Victoria General Hospital was commenced just a year after the Nova Scotia Hospital; so that, although there were many years of delay, the province did, at the end of that period, commit itself to a really large public health expenditure. Mrs. Grant's articles, referred to in Note 1, give some further

points in dispute. From year to year committees of the legislature dealt with this or that feature, or reviewed the project as a whole. In 1852, for instance, the history of the project to that time was ably reviewed by a committee which brought detailed suggestions and urgent recommendations for action.

*8. In Appendix No. 18 of the Journals of the House of Assembly for 1850 may be found a lengthy memorial to the legislature from Miss Dix herself. In this she lays especial stress on the necessity for large acreage and an attractive site. This emphasis may well reflect the opposition she had encountered on both points.

*9. In practically all later accounts this date is given as June 8th. The author so quoted it in his address; and Mrs. Grant gives it so, too. It those days June 8th was celebrated as the anniversary of the founding of Halifax. The authorities had, indeed, selected the natal day in 1856 as a suitable occasion for the corner-stone ceremony and its laying was the major feature of the formal celebrations in that year. But June 8th in 1856 fell on a Sunday, and the newspapers of the time make it perfectly clear that the celebrations took place on Monday the 9th. Those newspaper accounts also indicate that the corner-stone laying by no means represented the beginning or even, it would seem, a very early stage of the construction, which would appear to have been already well under way.

*10. This copy of the Valentine portrait was easily identified after the meeting of November 28th, by some of the descendants of Hugh Bell who were present.

APPOINTEES TO HOUSE OF DELEGATES MARITIME MEDICAL CARE INCORPORATED

At the annual meeting of the Executive of The Medical Society of Nova Scotia held at Antigonish, Nova Scotia, on September 10th, 1951, the following were nominated to the House of Delegates of Maritime Medical Care Incorporated: Doctors J. R. MacLean, C. H. Reardon, N. H. Gosse and A. L. Murphy of Halifax; A. G. MacLeod of Dartmouth; P. R. Little of Truro; D. F. Macdonald of Yarmouth; A. E. Blackett of New Glasgow; H. J. Devereux of Sydney; W. A. Hewat of Lunenburg; H. A. Fraser of Bridgewater; J. C. Wickwire of Liverpool; T. B. Murphy of Antigonish; Eric W. Macdonald of Reserve; R. A. Moreash of Berwick and D. M. Cochrane of River Hebert.

"Weighed In The Balance"

BERTHA O. ARCHIBALD, Pharmacist.

WHEN I received the appointment as Pharmacist in the old Victoria General Hospital at Halifax after the death of Dr. Charles Puttner I had to make many changes, in fact some of them were indeed drastic, as it was not easy to change customs that had been in vogue for so many, many years. One minor change was the prohibiting the weighing of patients in the Pharmacy or Dispensary as it was then called.

Once a week this weighing performance took place, and all the medical patients male and female who were able to walk to the Dispensary were weighed on the Fairbank's platform scale; which stood over by the stimulant cupboard.

The women from the north ward known as 15 and 17 would come slithering along the corridor wearing their bed attire under their rather gaudy kimonos as there were no "Housecoats" in those days. Occasionally one would wear her wrapper.

Often their hair if not in bangs would be done up in rag or paper curls with their pig-tails dangling each tied with a piece of gauze bandage or white string as "bobbed-hair-do" had not yet made its appearance. Their feet slipped into buttoned or laced boots which were seldom buttoned or laced.

The men from the south wing or ward 16 wore the old faded blue ward bath robes, which were always too short, and worn over their "Johnny-shirts". Covering their legs were the blue flannelette operating room socks which came up to their knees and were kept in place by the aid of a piece of gauze bandage and were always much too large for the patients. Their hair was towseled and in need of cutting. Sometimes these patients had their dentures and sometimes not and the nurses were much too busy to shave patients every morning. Some patients could not be trusted with their straight razors. Most of these patients were treated by Dr. Montague Albert Blower (Bucket) Smith of Dartmouth who was then head of the medical service.

In this queue or line of patients one might over hear strange remarks such as "Did you get a blister on you yet"? meaning a Chanthardes Plaster which was one of Doctor Smith's pet prescriptions. He would cut the plaster into little pieces and place them along the distribution of some misbehaving nerve. Or "I could not take the stomach powder it made me sick." Or "Have you swallowed the bucket yet?" meaning the little silver Einhorn bucket with its attached strings used for taking samples of stomach content after a test meal. The patient (not having Duodenal or Levine Tubes in those days) would swallow this little bucket at the appointed times, fractional tests being made in this way, the patient or nurse vigilently holding the strings for fear of losing the precious bucket. Or "Dr. Smith couldn't get his heart tester to work this morning." "Why—what was the trouble?" "Found it plugged with chewing gum." (I wonder which intern did that)? Or "Have you had your stomach washed out yet?" "You have to swallow a rubber tube until you come to the black line. Then in goes a quart or two of warm water and then they pump it back. They do that to me every morning, before breakfast."

In viewing this queue Dr. Vincent Hogan remarked to me one day "The Lord's Poor" quoting no doubt from the professor who said "Gentlemen you have three types of poor patients "God's Poor, the Devil's Poor and the Poor Devils."

One day while Dr. Smith was doing a "Fractional-test" one of the interns dashed in and said, "Dr. Smith your horse has broken away from its hitching post and is running away. Dr. Smith, a tall slight man, with his coat tails flying, took off after his rig and finally succeeded in bringing his steed back to its hitching post. Perhaps that was the time the silver bucket disappeared.

Another of the doctors prebreakfast treatments was the drinking of a quart or two of quite hot water and the patient lying on his back would gurgle the water in his stomach by the use of the abdominal muscles and then lying on his side with the idea that the contents would then flow onward until the stomach was quite empty.

Speaking of weighing people the doctors would often drop in to check up on their own weight. Dr. W. E. Kirkpatrick used to weigh himself quite regularly. He was a small man and rather delicate in appearance and was on the Eye and Ear Service. His offices are now occupied by my own folks The Archibald Coal Co. on the corner of Barrington and Morris Streets

Dr. Norman MacKay was, with just one exception, the heaviest man that I ever weighed. He had the shortest and fattest hands and one day told me that when he was in the Old Country taking his Post Graduate Course in Surgery his professor made him do the most intricate needle work (embroidery) to develop nimbleness in his fingers.

One day a man came to the Dispensary a giant of a man filling the door lengthwise and crosswise. One would think he might have belonged to the line of Angus MacAskill as he too came from Cape Breton and was a doctor practising at Whyecomagh. He wished to check his weight. I put on one hundred weight then another hundred weight and then a third and he went well over the three hundred pound weight, nearer four hundred than three.

They tell rather an interesting story about this man, Dr. Hugh MacDonald, and known by his more intimate friends as "Doctor Hudy" or "Hoodie." While at Queens University he was made head of the Athletic Club. He and his boys went to Boston for an Athletic event and celebrated (so the story goes) by entering a saloon. There seemed to be some dispute about Hudy's (or Hoodie's) change and the young bar tender refused to be convinced. He stepped back into an inner room and an immense man came out and said: "Well young man what seems to be your difficulty?" Hudy informed him that he wanted his change and that he was going to get it. Words were exchanged and seeing the upraised arm as if he were about to receive a blow got his foot behind the Proprietor's feet and gave him a terrific push landing him on the broad of his back. The man picked himself up and turning to the stranger said: "Young man there is not another man in American who can say that he put John L. Sullivan the pugilist on his back." Turning to the young bar-tender said "Give the young man his change."

As I said in the beginning this weighing of patients was one of the customs I had to change, but in changing it I lost contact with many interesting and often amusing persons and situations. Hereafter the male nurse wheeled the scale from ward to ward.

COMMITTEE ON TRAUMA
AMERICAN COLLEGE OF SURGEONS

The Care of Hand Injuries*

VII

TRAUMATIC AMPUTATIONS

I. Protection of the Hand (Abstract of Article I)

The first-aid care of wounds of the hand is directed fundamentally at protection. It should provide protection from infection, from added injury, and from future disability and deformity. The best first-aid management consists in the application of a sterile protective dressing, a firm compression bandage and immobilization by splinting in the position of function†. No attempt should be made to examine, cleanse, or treat the wound until operating room facilities are available.

II. Requirements of Early Definitive Treatment (Abstract of Article II)

Early definitive care requires thorough evaluation of the injury with respect to its cause, time of occurrence, status as regards infection, nature of first-aid treatment and appraisal of structural damage. For undertaking the definitive treatment the conditions required are a well-equipped operating room, good lighting, adequate instruments, sufficient assistance, complete anaesthesia and a bloodless field. Treatment itself consists of aseptic cleansing of the wound, removal of devitalized tissue and foreign material (exercising strict conservation of all viable tissue), complete hemostatis, the repair of injured structures, protecting nerves, bones and tendons and providing maximum skin coverage, and the application of firm protective dressing to maintain the optimum position. After-treatment consists of protection, rest and elevation during healing and early restoration of function by directed active motion.

III. Surface Injuries (Previously circulated)

IV. Lacerated Wounds (Previously circulated)

V. Fractures and Dislocations (Previously circulated)

VI. Open Fractures (Previously circulated)

VII. Traumatic Amputations

*Note: This is the seventh of a series of articles on "The Care of Hand Injuries." This material is prepared by the American Society for Surgery of the Hand and is distributed by the Committee on Trauma, American College of Surgeons, through its Regional Committees.

†Position of function or position of grasp: wrist hyperextended in cock-up position; fingers in mid-flexion and separated; thumb abducted, slightly forward from hand and slightly flexed.

The loss of part of the hand by injury may result from cutting, tearing or crushing wounds. Such injuries almost invariably produce one or more open fractures. There are often associated injuries of the remaining parts of the hand. Such injuries require appropriate treatment, as outlined in previous articles.

The purposes of early treatment of traumatic amputations are:

- (1) To relieve pain, control hemorrhage and combat shock.
- (2) To conserve all viable tissue possible.
- (3) To prevent or control infection.
- (4) To secure the maximum restoration of damaged structures.
- (5) To secure healing at the earliest possible time.
- (6) To restore the injured hand to maximum usefulness.

These objectives are sought by:

A. First-aid treatment

1. All tissues not actually severed from the hand should be retained. Without attempt at cleansing or the application of any antiseptic, a voluminous sterile dressing is applied and bandaged with firm, even pressure. The hand is immobilized by splinting in the position of function and kept elevated.
2. The pressure dressing will usually suffice to control the loss of blood. If it does not and free hemorrhage persists, the use of a tourniquet, properly applied, may be necessary. This should not be left in place more than forty-five minutes.
3. Appropriate measures should be taken to control pain and combat shock.

Proper conditions for definitive treatment should be sought at the earliest possible time. (See Article II).

B. Definitive treatment

Under operating room conditions and following x-ray study of the hand with first-aid dressing in place, the following measures of definitive treatment are appropriate:

1. Cleansing of the injured area and evaluation of the injury under pneumatic tourniquet hemostasis if necessary. (See Article IV Lacerated Wounds).
2. Arrest of hemorrhage by ligation of injured vessels.
3. Thorough but gentle removal of foreign substance and excision of devitalized tissue, sparing all that may live. (See Articles IV, Lacerated Wounds and VI Open Fractures).
4. Repair, as far as practicable, of damaged structures and reduction of fractures and dislocations. This repair should aim particularly at the protective covering of bones, tendons and nerves. Maximum skin coverage should be provided at once by

- a. Utilization of local skin,
 - b. Free split-thickness grafts, or
 - c. Employment of an abdominal or thoracic pedicle graft.
- Where skin loss is extensive, or in stripping or denuding amputations of digits (especially the thumb) leaving bone exposed, the application of a pedicled skin graft is desirable.

Local skin should not be employed if the preparation of flaps requires further amputation or sacrifice of living bone. Thus, the stump of an amputated digit should be left at full length and be covered by appropriate graft, either immediate or delayed. Sacrifice of finger length by formal re-amputation is to be condemned.

Partially amputated parts of digits should be retained and lightly sutured in place with skin stitches only. Many will survive and may subsequently be restored to usefulness.

5. Retention of reduced incidental fractures or dislocations by appropriate splinting or fixation. (See Articles V Fractures and Dislocations and VI Open Fractures.)
6. Application of firm pressure dressing, the hand (except when fixed to the body for grafting) being splinted in the position of function.
7. Administration of tetanus toxoid or antitoxin and antibiotic drugs.

C. Subsequent care

1. Dressings.

Unless evidences of infection develop, the dressing should be left in place for a sufficient time to permit healing of initially closed wounds or the firm taking of grafts (7 to 10 days). Coincidental fractures require additional periods of immobilization to assure union. (See Articles V Fractures and Dislocations and VI Open Fractures).

2. Surface healing.

If skin coverage has not been completed at the time of initial definitive treatment, or if grafting has failed, preparations should be made to place or replace skin grafts at the first post-operative dressing. Denuded areas should be given skin coverage at the earliest possible time.

3. Restoration of form and function.

When healing is complete a program should be developed and prosecuted for

- a. Restoration of function by exercise and occupational restraining.
- b. Reconstructive surgery to render the hand remnant as useful as possible, or
- c. Preparing the stump for prosthesis.