On Tuesday, June 10, 1834, the following item appeared in the Royal Gazette, published in Charlottetown, P.E.I.: "On Thursday, the 29th of May, Mr. Robert McKay of St. Peter's Bay, having been suddenly attacked with Strangulated Hernia, underwent the important operation for that perilous accident, which was performed by Mr. Mackieson — it consisted in bringing into view, by means of an incision, the incarcerated portion of the intestines, removing the constriction with the knife, and afterwards returning them to their proper situation in the abdomen. This is the third instance in which the above operation has been performed in the Island, and by the same operator. Mr. McKay is recovering rapidly."

Again, on June 19, 1868, this item appeared in The Islander: "On Thursday, the 11th instant, Mr. Joseph Acorn, miller, Glen-Stewart, having overtaxed himself in elevating a saw log, unfortunately, received the injury known as strangulated inguinal hernia. By six o'clock the next morning, he sent for Mr. Mackieson, operative surgeon, who found it necessary to operate immediately in order to rescue him from his perilous condition... It is now over forty years since the same operator performed a similar cure on an individual still living in the City, which was then done for the first time in this Province; and the present case is the seventh instance of the kind since that period, in which he has been called to avert impending death. The operation, though sometimes performed in large hospitals, demands no trivial acquaintance with surgical anatomy, as a slight deviation of less than half an inch would inevitably induce most fatal consequences. We understand Mr. Acorn is going on favourably."

In the same manner that newspapers of today bring to public attention accounts of great surgical triumphs and pay tribute to those master surgeons who perform them, so too did the newspapers of 100 years ago and more, report on the surgical achievements of the day, and laud the man who performed them. As these clippings indicate, the man who could relieve the agony of a strangulated hernia was regarded with much the same awe and respect as is today afforded those who perform the miracles of modern surgery.

What was there about a strangulated hernia that made its relief an item of such importance as to merit this attention? The operation for its relief is one that has been performed countless times and is today considered a matter of routine by surgeons. The answer may be found by recalling the life of a pioneer, isolated perhaps in some remote community, whose days were those of toil and hardship which made him prone to the development of this disaster with its inevitable threat to his very existence. His life was one of hard work, lifting, pushing, heaving and pulling, as he went about his work of clearing his land, and sowing and harvesting his crops. It is little wonder that the development of hernias was a relatively common occurrence and one can well imagine the magnitude of the disaster that confronted the pioneer when he found that he had a hernia that he could not reduce himself. Without medical aid the inevitable end-result was but a matter of time and unfortunately, in our pioneer society, medical aid of any kind, and particularly medical aid capable of dealing with an emergency of this nature, was not readily available. Few of the doctors in practice in the colonies had settled in rural areas, and of these, few indeed would have had the skill, courage or determination to tackle a strangulated hernia. One of those who did possess these necessary qualities was John Mackieson, a study of whose records reveal that he richly deserved the public
acclaim accorded him by these newspaper accounts. The fact that these operations were performed before the development of anesthesia makes the achievement of Dr. Mackieson and others like him all the more notable.

John Mackieson was a remarkable man. His skills and attributes would have ensured him a place of honour and respect among his confrères in any age in which he might have practised. Skilful and resourceful, he was proficient in all aspects of practice, medicine, surgery and obstetrics, judged by the standards of his day. Treatment then was energetic, if not to say violent, and for every problem that presented itself he was ready with some active form of therapy. This was the high noon of the days of medicine when bleeding and purging were the foremost agents in therapeutics. The application of oysters, blisters and sinapis was considered a vital part of treatment for many conditions and much of a doctor's reputation rested on his ingenuity in their use. Bleeding was resorted to in a high proportion of cases, and careful note was taken of how the patient reacted to the procedure. The comment, "He exhibited only slight faintness", or "He withstood the bleeding well", is frequently made. Careful note was also taken of the condition of the blood, and a comment was made that it was "cupped" or "buffed". Great prognostic significance was attached to those observations. The state of the bowels was a matter of great concern in practically every case, and heroic efforts were made to ensure rapid and copious evacuations. It would appear that a strong constitution was needed to withstand the effects of treatment. While later knowledge completely discards much of this therapy, in the light of then current medical standards, John Mackieson was a good and successful doctor.

He was born in Scotland in 1795 and graduated in medicine from the Medical and Surgical Pharmacy of Glasgow in 1815. Six years of dispensary practice in Liverpool followed before he came to Charlotte-town in 1821. Here he remained and carried on an extensive practice from which he retired only a short while before his death in 1885, at the age of 90. Among his many professional duties, he was superintendent of the local insane asylum (Fig. 1) for several years after its founding in 1840.

Dr. Mackieson was unique in his day, and perhaps in any age of medicine, in that he kept the most meticulous and precise records of his cases. These are of interest in that they provide an intimate day-by-day account of the life of a pioneer doctor. A study of his case reports and of the application of the then current medical theories to his practice makes the medical texts of that day, which are now museum pieces, come alive. From such a study we gain greater insight into the problems and methods of our medical forefathers, and as our knowledge of them and of their work increases, so too does our respect for their contributions to the advancement of medicine.

In 1826 he began to record accounts of cases of interest in a book which he entitled "Sketches of Medical and Surgical Cases, Exhibiting a Concise View of the Characters, Causes, Symptoms, Morbid Appearances and Method of Treatment Adopted in the More Important Cases of Disease, with Notes and Practical Remarks". In the frontispiece he has inscribed the following statement of principle, "I believe that knowledge of the correct history of disease, and of the most effectual method of removing it would be best attained by entering down at the bed-side of the sick a summary of the rise, progress, and issue of maladies which come under my notice by marking with care the changes which take place, the medical means prescribed, the effect produced by the prescription, so far as it was discernible, and by adding as often as leave was obtained to open the dead body, remark on the traces left in organic structures by the form of action which the disease constitutionally or casually affected."

He attributes this statement to a Dr. Jackson whom he does not further identify. His records make it obvious that this principle was the guiding star of his long professional career, and that he succeeded in the highest degree in living up to the philosophy here enunciated. This statement of principle could well serve those embarking on the practice of clinical medicine in any day or age.
His "Sketches" contain a detailed account of eight cases of strangulated hernia that he attended. All of the patients were treated before the advent of anesthesia, and at no time does he mention any measures to ease or prevent pain. How these cases occurred, how he was called and reached the bedside of the patient, what he thought and said, how he dealt with each and what the outcome was, are all set down just as it happened almost 150 years ago.

"Case 1.—Memorandum of an operation of Strangulated Inguinal Hernia, June 22, 1826.

This occurred in an elderly man who was Second Mate in a timbership in Charlottetown Harbour who had strained himself on lowering a piece of timber in the hold and now laboured under strangulated inguinal hernia. Immediately on his being carried ashore, I attempted reduction three different times by the usual method and with cold applications but without effect. I then administered a dose of castor oil which was rejected by the stomach in less than an hour, the belly remaining obstinately bound. I then gave 12 grains of Calomel but with no better effect. June 23, called in Dr. de St. Croix. As the symptoms were moderate and the pulse did not exceed 100, he deferred the operation until the next day. Tenderness and pain in the belly a little easier. Took an Anodyne draught. June 24, administered an injection which came away immediately, took two Opiate pills. June 25, operated at 8 a.m. and reduced the bowels, and closed the incision with the interrupted sutures and adhesive straps with soft compresses over them. Distressing symptoms much relieved, hiccuping gone, and felt easy but much weakened for want of sleep and nourishment, but everything was vomited as soon as taken, drinks especially. June 26, took an Anodyne draught which seemed to give relief but gets weaker every hour. 27th of June, died this morning quite exhausted.

Remarks: Had I operated on this subject when I was first called in, I have not the slightest doubt that he might have lived and done well, as the operation, though my first for Hernia, was adroitly performed and little might have been dreaded from the inflammation as he seemed to sink more from exhaustion and inanition than from any other cause.
Case 2.—May 26, 1834. Robert McKay, Age 40, of St. Peter's, subject to a small inguinal hernia which he could always easily reduce himself, being engaged in carting and piling manure, had used rather more exertion than usual and felt an additional portion of the gut protrude. He tried to reduce it by the usual means, which proved ineffectual and he was advised to take to his bed. This happened on the afternoon of Monday about 4. Shortly after the accident, he had a fit of retching and sickness which was not repeated but nothing had passed through his bowels since the accident. I arrived late on Wednesday night a distance of thirty miles and found him rather uneasy from pain about the umbilicus. No headache, considerable thirst. Skin cool, no vomiting, had had no sleep. Pulse 80. A taxis had been attempted by Mr. Jardine, a Surgeon in the neighbourhood, with enemas of Infus. Nicotianæ and he had been bled without any apparent benefit. To relieve his thirst, I ordered him frequent effervescent draughts of soda while I attempted a reduction by the hand but could effect nothing, the stricture was so tight, though I elevated his heels over an inverted chair and bent the thigh to an acute angle with the body. As the symptoms were not very urgent, I wished to delay the operation till daybreak but the patient becoming very uneasy about 3 a.m. on Thursday, I was obliged to operate by candlelight. The patient's brother was my only assistant. The bowels had been down for 59 hours. The hernia was in the right groin and comes down alongside of the scrotum, size about as large as the fist. I commenced the incision about half an inch above the neck of the tumour and continued it downwards to within an inch of the bottom of the scrotum, dividing in the first place the skin and fat with the external pudendal artery which I tied. It was situated just over the neck of the tumour and was small. In the second film was the tendinous aponeurosis of the external oblique muscle, then the membranous sheath of the cremaster thus exposing the spermatic cord and finding the sac of the peritoneum. When this last was punctured a considerable quantity of discoloured serum slightly tinged with blood escaped and I became alarmed lest I had punctured the intestine but the fluid having escaped, the sac became puckered and showed the intestine in two large convolutions within, in length about six inches. Into this puncture of the sac, I introduced a director and ran a straight bistoury along it quite up to the ring. When I could feel the stricture it was very tight so that I could not as yet introduce the protruded portion without dividing a number of the fibres of the ring, till I could with difficulty introduce the tip of my little finger. This I enlarged with the crooked bistoury and stuffed in the intestine piece by piece elevating his breech and thighs as before. The intestine was all over a dark chocolate colour and shining like brown dulse. The wound was stitched with the interrupted sutures and Plast. adhesive, over which I put a soft compress of wool and a spring truss. Pulse 76 and good spirits. Had two stools within three hours after the operation.

Case 3.—Operation for Bubonocele or Strangulated Hernia.—Mr. Ralph Thompson, Age 40, a merchant in Charlottetown, requested my attendance on January 18, 1827, at three o'clock in the morning. He was a stout man in a state of excellent general health but was supposed at present to be labouring under a fit of colic. He received an injection with a syringe containing a solution of Sulph. Magnesia and OI. Olivate which operated immediately with effect, also an antispasmodic draught of Aether Sulphuricus and Tinct. Opia from which he seemed to obtain considerable relief with abatement of the pain. On returning at 8 a.m., I found he had experienced a relapse of the pain with restlessness and vomiting of a thin, yellowish bilious matter exceedingly offensive to the smell, with increased headache and general soreness over the abdomen. I was now informed for the first time that he had been subject to a slight protrusion in the right groin for which he had lately been wearing a truss, but being called up suddenly the night previous and having incautiously used some exertion without this guard being applied, (it) had protruded farther than usual and could not, as before, be returned. On examination with the hand, this was found to be the case, and I accordingly attempted reduction, having previously repeated the injection which was returned without any benefit. The patient being in bed, his right shoulder was elevated with clothes and thrown forward toward the left side while his right leg was half bent upon his thigh and rotated inward to relax the external oblique muscle, femoral fascia, etc., to facilitate the dilation of the abdominal ring. Attempting the taxis, the manual pressure was directed upward and outward in the direction of the ring and a small portion was reduced with a gurgling sound which returned as oft as the pressure was removed without any visible diminution in the general size of the tumour. It was attempted four or five different times, two hours intervening betwixt
each effort which was continued for the space of five minutes at a time without any advantage. During which intervals, he was bled to the extent of 20 ounces, made use of the slipper bath for 25 minutes, had pounded ice applied to the tumour in a bladder for the space of an hour whilst injections of Infus. Nicotianae (made with one ounce to a lb. of water) were thrown off the rectum without affording any advantage or producing a single ejection.

The operation then appeared to be the only alternative. The hair of the pubis on the right side of the scrotum being shaved with the razor, I commenced the incision about an inch above the neck of the tumour and midway in the lateral space situated betwixt the crest of the pubis and the groove formed by the groin. Entering the same by one continuous sweep of the knife to within an inch of the most dependent part of the swelling, dissecting the skin and fat contained in the cellular substance with the external pudendal artery and two of its smaller branches which I successfully took up and were secured by an assistant; this incision brought into view the fascia of the external oblique muscle which was raised with a pair of dissecting forceps, into which a small opening was made sufficient to admit a director upon which a straight bistoury was run as far as the head of the first incision and downward to its termination. This next exposed the cremaster muscle which was laid open exactly in a similar manner. The sac itself was now brought into view having its surface covered with thin layers of cellular substance of a webbed appearance to which it adhered firmly. The sac being raised with the forceps an opening was made into its dependent part. A director was introduced with a straight bistoury with which the sac was divided to within an inch of the ring and downward as far as the external incision. The intestine appeared of a dark, red colour but free from livid spots. A single twist or convolution was all that had protruded which I attempted to return but the aperture of the ring was so contracted as scarce to admit the tip of the little finger. After causing acute pain, I succeeded in introducing the little finger and retaining it as a director, passed along its front a curved probe-pointed bistoury and divided the internal portion of the neck of the sac and a few of the fibres of the abdominal ring directly upward and to such extent only as to admit the finger with ease.

The intestine being returned, on introducing the finger the epigastric artery was felt apparently of the size of a goose quill, throbbing strongly within the external margin of the ring, that is, on the side next to the cresta ili.

The wound, consisting of about three inches and a half in length, was brought together and secured at three or four places by the interrupted sutures and the edges kept in perfect apposition by strips of adhesive plaster which closed in the course of four days after by the first intention, the ends of the ligatures being left out and the wound dressed with a compress and the plaster bandage. A week after the operation he was able to walk about as usual, yet never after without the precaution of using a truss.

CASE 4.—Operation for Strangulated Hernia 1836.—Mrs. Thomas Hardy of Little York, Age 66, of a thin habit and much reduced with hard labouring, had a small tumour in the left groin for 20 years about the size of a pullet's egg which caused her little uneasiness but it never was reduced. On Saturday, the 22nd of October, 1836, having strained herself a good deal in assisting to raise an ox, she felt the tumour suddenly become painful, tense, and somewhat enlarged. This was shortly followed by pain across the pit of the stomach with occasional retchings, dryness of the mouth, and constipation. This state of things continued until Wednesday, the 25th, without any alleviation. I was requested to visit her. Swelling in the left groin is about the size of a large hen's egg and very tense and she complained of pain when handled. I tried reduction by the taxis, elevating the breech over an inverted chair and placing her head low in bed. By these means in the course of 20 minutes, I reduced it to the size of a large nutmeg and it felt quite soft and she felt easier for a short time but tumour returned and with it the pain and restlessness. I stated to the patient and her friends the true nature of the case, that she could not expect relief without an operation and that though the bowels had not yet suffered from obstruction of their circulation, yet so long as their contents were mechanically obstructed, I could hold out to her no method of assisting her to health without an operation. To this, she objected that the tumour in her side had been of twenty years' standing and it had occasioned her no uneasiness and that all the pain she now suffered seem to proceed from the stomach and if possible would thank me for any palliative that might give her a little ease. Remonstrating on the illusiveness of such hopes, I administered first a purgative enema which brought away an evacuation of hard
faeces. On Saturday, the 29th at 4 p.m., I visited her as I was told she had made up her mind to undergo the operation. Being for a whole week deprived of nourishment, the bowels impacted, at her advanced age and with the rapid pulse indicating the commencement of inflammation under such odds hoping there might still remain a chance I commenced the operation. After the operation, she felt relief. Had no return of the vomiting, and after an enema had a stool. Pulse 120. She continued free of pain all Sunday but I was told appeared flushed and feverish. Took her nourishment freely, and retained it, and it was not until Monday evening when I received a messenger stating that her strength was rapidly failing, she had suffered from excessive purging which still continued unabated and was prostrating her fast. I saw her at five p.m., her pulse was 130, weak and thready. Countenance flushed, face and brow beaded with perspiration. Tumour of abdomen had totally fallen and was now concave and empty; passing everything involuntarily. Skin cold, mouth dry, took a little sago jelly and a dose of chalk mixture with Tinct. Laudanum, strength sinking rapidly. Died that night at 12 p.m.

Case 5.—Inguinal Hernia, December 4, 1836.—Mr. Shadwell, Sr., St. Peter's Road, Age 68, of a rather spare habit, had been subject to a small tumour about the size of a pigeon's egg in the right groin which never caused him uneasiness till this morning when he arose out of bed when an uneasy pain attacked him in the seat of the tumour accompanied by frequent retching. Scarce aware of the nature of the malady, he took an ounce of Epsom salts with a little rhubarb which he rejected shortly afterwards and when the vomiting was repeated at frequent intervals which made him anxious and he sent for me about 4 p.m. I saw him at 5 p.m. He was sitting by the fire, but did not appear to be in very much pain. I ordered him to bed, then inverted a chair, and elevated his hams over the back with his head low on the bed. In that situation he was retained by a stout man standing at his feet and holding his thighs. I made him cross his right leg over the left knee and bend it a little up, the hernia was on the right side. I then caught the neck of the hernia with my left thumb, middle and forefingers and made gentle but constant pressure with the right. In the course of half a minute, the tumour first became sensibly smaller then gently rumbled and suddenly disappeared through the abdominal ring. As soon as the reduction was effected, he felt perfectly relieved and never vomited after. All that I deemed necessary to administer was a dose of Seidlitz to settle his stomach and remove the thirst and dryness of his mouth. As soon as the inguinal tumour was reduced, I fitted a plain spring steel truss with the pad over the abdominal ring, with strict instructions to wear it afterwards constantly.

In reducing this case, I considered that the facility of the reduction was in a great measure attributable to the position of the patient and the short period that had elapsed since the accident happened.

Case 6.—Operation for Exomphalos (Umbilical Hernia).—On Thursday morning early the 21st of February, 1837, Mr. Crisp, a Malterer, Age 48, was attacked with all the symptoms of strangulated hernia. Being out of the way when he was first attacked, Dr. de St. Croix was called in, who attempted reduction by the usual methods, by the hand, by pressure with a plate, by enemas, castor oil combined with croton oil, etc. which yielded no relief, at last he gave Calomel pills, as he observed, to tranquilize the stomach! and moderate the vomiting. The symptoms continued thus pretty uniform until the morning of Thursday when he became worse and his medical attendant observed as it was all over with the poor fellow, they would send for Mackieson. I found him in bed and vomiting frequently a thin watery fluid mixed with bile. Pulse 105, quick and small, great thirst, soreness at the umbilicus over which there was situated a large tumour the size of two men's fists containing the hernia. I attempted reduction by the hand by elevating his breech, etc., cataplasm of snow to the tumour accompanied with pressure but all to no purpose. Several enemas were repeated with equal effect. I then proposed the operation, not withstanding the extreme danger of it in general and I might add the desperate symptoms of the present case as it was but too evident that inflammation of the bowel had made some progress. The patient was resigned and willing to submit but strange to relate the doctor had yet to make up his mind fruitlessly trusting to better symptoms and favourable results as in former attacks for he had attended over him before, and it was not until ten p.m. that night after using the tedious operation of the slipper bath that I could obtain his consent. Soon after the operation he vomited and obtained no relief either by stool or from pain. This was a bad omen and he continued bound in the bowels with frequent vomiting until eleven o'clock the following evening, about 21
hours after the operation, I gave two enemas but they did not operate with relief until shortly before his death when he felt easy and had three stools.

Case 7.—Operation for Femoral Hernia, 1850, Friday, March 1st.—Mrs. Robert Sanderson, Widow, Age 62, on rising from her bed this morning was attacked with symptoms of strangulated femoral hernia. She vomited all her food and the bowel remained obstinately costive. She was attended by Mr. Jardine, a Surgeon in the neighbourhood who could afford her no effect or relief and recommended her friends to send for me to perform the operation. At ten at the same day of the attack, I arrived at her house and found her still vomiting with anxious countenance, pulse 80, but the skin was not hot nor did she appear feverish. I discovered a small tumour at the top of the right thigh which I tried to reduce. After a few minutes’ trial, I found the size of the tumour became considerably smaller and softer from the evacuation of the contents but I could reduce it no further. Mr. Jardine had previously tried the taxis, a tobacco clyster and warm bath with no beneficial effect. Of course, there was but one alternative, viz.: the operation. The hernia was situated in the right thigh. I commenced a perpendicular incision over the neck of the tumour just over the ligament of Poupart by pinching up a fold of the integument with one finger and cutting down upon it with a scalpel, keeping as close as possible to the pubis, the femoral vessels being on the outside. By this incision, I divided the skin and cellular tissues, the superficial fascia, secondly, the fascia propria, the sheath of the femoral vessels and thirdly, the sac of peritoneum, closely investing the protruded bowel which was a portion of the small intestine. I introduced a grooved director into the upper angle of the wound and ran a small curved, blunt-pointed bistoury along it quite up to the stricture caused by the ligament. Having thus exposed the peritoneal sac and by pinching up a small fold of that membrane, I made a small opening with a scalpel, introduced the director, and slid it up as before with the bistoury, guided by it until it arrived close to the stricture. I then introduced the little finger, felt for the stricture which was exceedingly tight and feeling a few thin fibres near the outlet divided them by raising the handle of the bistoury without any difficulty. I again cautiously introduced the little finger as far as I could penetrate within the canal to discover the pulsation of any arteries such as the epigastric or obturator but found none. I then cautiously extended the incision with the director and bistoury the whole length of the canal so that after the bowels were reduced, I could introduce the ring finger into the cavity of the abdomen. At first, the stricture was so tight that I could scarcely introduce the director. The constricted bowel appeared normal except in one link which appeared of a brown chocolate colour and this apparently was the cause of future mischief for although the pulse fell immediately after the operation, the rate to 60 a minute, the vomiting shortly afterwards returned and although large enemata brought away two copious stools and the croton oil was given in five-drop doses combined with castor oil and turpentine and Calomel, still no decisive amendment was effected. I stopped with her until Monday morning at ten a.m. when I left her very ill with pinched features and a scarcely perceptible pulse, beating about a hundred in the minute and vomiting everything, strongly tinged with bile and smelling like faeces. She died on Wednesday at 2 a.m. P.S. The wound was closed with three sutures in the skin and strips of adhesive plaster with a compress over it and a bandage. Note: In operating for strangulated femoral hernia, it is of the utmost consequence to raise up the sac of the peritoneum which sometimes invest the bowels very closely, introduce the director and open it over a narrow bistoury up to the strictures which stricture itself must also be completely cut open so as to liberate the bowels before they are returned into the abdomen.

Case 8.—Strangulated Hernia, February 8, 1857.—John Burns, Age 60, an Irish labourer, had been subject to chronic pains for the last two months, now complained of costiveness and finds that no medicine he has taken will operate in his bowels. He has tried croton oil, castor oil, salts and injections to no purpose. He lives at a distance of ten miles and sent for me today to attend him. I found him in bed, pulse 80. Skin cool, no tension in the abdomen but he is troubled with vomiting and hiccups and foetid eruptions with great thirst and constantly calls for cold water to drink. I happened to enquire if he was subject to rupture or had any tumour in his groin when he immediately acknowledged that he had, in his right groin and which I discovered to be the size of a hen’s egg. I reduced it by the taxis in ten minutes, gave him a strong purgative enema of salts, turpentine and table salts dissolved in a glass of warm water. This he retained for only a few minutes which
brought away only a small indurated ball of faeces. I then gave him croton oil drops two in sugar and ten grains of Calomel mixed in molasses at the same time and left some black draught and powder of Calomel and talop to keep a free state of his bowels, with orders to procure a truss without delay. When I left him, I also repeated the injection and a purgative medicine which operated in about two hours. I subsequently understood that he died on the night of the 11th when the temperature was 24 below zero, probably from sheer exhaustion as he had been too long affected before medical advice was obtained for his bowels continued to act freely and the vomiting had never returned after I left him."

Statistically, the results of Dr. Mackieson's surgery do not appear impressive by our standards for he operated on six cases of strangulated hernia, of whom four subsequently died. Of the two that he managed to reduce without operating, one died. These results, however, do not tell the whole story. It is apparent that operation was resorted to only in the most extreme circumstances, and was consented to in many instances only after any chance of saving the patient's life had long since gone. Further tipping the scales against any chance of success was the debilitating effect of all the purging and bleeding and of all the other measures resorted to in an attempt to avoid the necessity of operating. Added to this was the shock that must have resulted from an operation of this magnitude performed on an unanesthetized patient. In any day and age, surgery under these handicaps would have been attended by a very high mortality rate.

One cannot fail to be impressed by the fullness of his clinical descriptions, and by the excellence of his knowledge of anatomy. His care in posturing the patient to facilitate the reduction of the hernia could scarcely be improved upon today. The same, of course, cannot be said for the auxiliary methods of treatment used both before and after operating, and although this was based on the practice of the foremost authorities of his day, the only result could have been to add further insult to an already very ill patient.

It is apparent that Dr. Mackieson considered the sole purpose of operating to be the relief of the obstruction and the return of the herniated parts to the abdominal cavity. When this was accomplished, the skin was closed with no attempt being made to repair the defect in any other structures. Indeed, the patient was probably left with a larger hernia than before, and the application of a truss was an integral part of the immediate postoperative care. However, since saving the life of the patient was the major concern, the operation was considered a success when this was achieved. When we consider all the factors involved, we cannot do otherwise than agree.

Not only by his clinical comments does Dr. Mackieson shed an illuminating light on our past, for scattered throughout all his case reports we glimpse interesting sidelights of pioneer life. The elderly woman "helping at the raising of an ox", the miller "straining to lift a sawlog", the farmer "carting and piling manure", the seaman "piling lumber in the ship's hold" are all vignettes from a life that is long past. His similes and descriptions are all drawn from the life about him, the tumours were as large as "a pigeon's egg", "a pullet's egg", "a hen's egg", or "a large nutmeg". "The bowel was the colour of brown dulse", the fluid "was the colour of port wine", "the artery was the size of a goose quill". One patient was "of thin habit much reduced with hard labouring", and another was a "stout man in a state of excellent general health".

Dr. Mackieson was very close to the people he served and knew well their problems, their difficulties and their fears. When Mrs. Hardy objected to the operation "and would thank me for any palliative that would give her a little ease", he "remonstrated on the illusiveness of such hopes", but did not press the issue, instead did his best in deference to her wishes.

As his experience in practice grew and he gained confidence in his own ability, his attitude and his response to the challenge presented by a strangulated hernia underwent a change which is evident in his notes. In his first case, he remarks that he was kept from operating when he wanted to by the advice of an older doctor, and rightly attributes the unfavourable
outcome to this delay, after satisfying himself that he "performed the operation adroitly". In later years he is able in his notes to poke gentle fun at the same doctor for failing to call him until the case was considered hopeless, and at the same time to direct our attention to this man's naivety in attempting to "tranquilize the stomach!!" (The exclamation marks are his.) When he speaks of the bowel "rumbling gently on being returned to the abdomen", he succinctly reveals his satisfaction at successfully completing a difficult and dangerous task. In his later cases he appears to spend much less time in attempting non-operative reduction, and to display a readiness to operate that was not apparent in his earlier cases. From his comments it is apparent that he has profited from the lesson learned in earlier cases, of the dangers of unduly deferring the operation.

Dr. Mackieson occupies no hallowed niche in the annals of Canadian medicine. His name is not recalled when the great surgeons of other years are remembered. Despite his great interest in the subject he made no original or significant contribution to the technique of relieving a strangulated hernia. His reputation rests on much simpler grounds — the grounds that throughout his long professional life he used his abundant skills to bring to people in remote communities medical care to equal that available in the large cities and towns of the day. So in doing he earned his rightful place among that great company of Canadian doctors throughout our history, who, by turning from the attractions of the great medical centres, have ensured that medical care of the highest order has been available throughout the whole country. But not by his surgery alone has John Mackieson earned the regard of succeeding generations of doctors. He gained this by faithfully following throughout his long life the practice adopted as a young doctor of careful clinical observation and of carefully kept records. The value of this has not lessened since Dr. Mackieson's day, and his meticulous care in this is his great legacy to us, 143 years after his arrival in this country.


This is the fourth of a useful series of multiple-author reviews of topics of current interest in anesthesia.

The main subject, nitrous oxide, is well covered in nine chapters, beginning with an unusually interesting precis of the history of this gas, and ending with a discussion on the industrial uses thereof ("no laughing matter" — the authors claim). Anyone sharing the current interest in the prolonged use of nitrous oxide will find the definitive chapter on its toxic effects on the bone marrow worth studying. The final chapter is a short but complete survey of the pharmacology and clinical use of ethylene.

The chapter on the general pharmacology of nitrous oxide is well presented, and underlines the distinction between the effects of hypoxia and those of the drug itself, which latter are primarily restricted to the obtundation of pain perception and of other cortical functions. Despite marked analgesia (which is responsible for its continuing acceptance as "the basic inhalation ingredient in general anesthesia"), the use of nitrous oxide alone rarely produces satisfactory operating conditions or safe anesthesia, and three clinically oriented chapters are therefore devoted to the use of various adjuvants (narcotics, barbiturates, inhalation agents, local anesthetics and relaxants).

The most important chapter in the book is that by E. I. Eger on the uptake, distribution and elimination of nitrous oxide; this provides a lucid basis for the clinical management of induction and maintenance with nitrous oxide, as well as emphasizing the likelihood of "diffusion hypoxia" on emergence from anesthesia.

This book has a good deal to offer — to the anesthesiologist a wealth of clinical common sense, stemming from the clarification of basic concepts hitherto, for such a common agent, curiously neglected, and to the surgeon, possibly new understanding of the uses to which nitrous oxide can (or cannot) reasonably be put.