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The Scientific Trend of Modern Medicine*

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ON September 22, 1924, I gave my first physiology lecture in English to the students of Dalhousie University. It was one of the greatest days in my life. I lectured for many years in my native language in Russia, so I had no difficulty in preparing a lecture. But it was a daring adventure to face an audience of English-speaking students, critically minded as students usually are, with the rather poor knowledge of English which I possessed. True, I was helped in the preparation of this and many other lectures by Miss Joyce Harris, at that time secretary to President Mackenzie. Miss Harris kindly went over some of my lectures with me and corrected my style and tried to improve my pronunciation, which was anything but good. Nevertheless my nervousness on this occasion was quite comprehensible.

The students did not hiss me after my first lecture and the President did not call me to his office and propose that I should resign. I considered this very encouraging and bravely continued my lectures. Everything went smoothly in the classes and it seemed that the students followed me. But how well they understood my English was a question that worried me greatly.

After two months of lecturing I decided to test my English. I told the students of the senior class that on a certain date there would be a one-hour written class examination. Great was their surprise when, after giving them the examination question, I told them that, if they wished, they might use their notes. My remark created much hilarity, and certainly many of the students thought, "What a fool of a man this Russian professor must be!" As a matter of fact it was *they* who were fooled. I gave them a question which was hardly referred to in the text-books of Physiology and they had to rely on the notes that they had taken during my lectures. They did not realize that they were then nothing more than experimental objects. The experiment was a success because the answers showed that the class had followed my lectures well.

To-day it is again a day in September and another great day in my life. For almost twenty years I have participated, as a university teacher and research worker, in the life of your beautiful country, which adopted me. My presence here, on this platform, gives me the greatest satisfaction, since it shows that my work is recognized by one of the oldest Canadian Universities, which to-day becomes also my Alma Mater.

I intend on this occasion to say a few words about the part played by the theoretical sciences in the development of medicine. Although this is not a new theme, it seems to me to be quite a suitable one, because this is graduation day for the medical and dental students, and also because I myself represent a theoretical science—physiology. The reason why I have chosen this subject for my address is that during some forty years, since I graduated at the very beginning of this century, I have witnessed an astounding progress

*An address given at the Convocation of Dalhousie University, Halifax, N. S., on September 1, 1943.

in scientific medicine. Every day medicine is becoming less empirical and more scientific. One may reasonably hope that half a century hence, that is, during your life-time, if the present pace of scientific progress is maintained, medicine will have become much more a science than an art.

It must be remembered that medicine had already made most remarkable progress in the three or four decades before I began my medical course in 1896. But to have a clear picture of the changes which have taken place in medicine since then, let us compare a text-book on diagnostics of fifty years ago with the present text-books on the subject.

X-rays were discovered at the end of the nineteenth century (in 1895). In my student days departments of radiology did not exist in the hospitals. Occasionally X-rays were used for the diagnosis of bone fractures. Hardly any attempts were made to employ this method for the diagnosis of diseases of the lungs, heart, gastro-intestinal tract, kidneys, or brain. Not very much therefore was to be found on X-rays in our text-books. Radium, of course, was not known at this period, and the atom was still an indivisible unit of matter. The string galvanometer had not yet been invented and the electrocardiogram was unknown. Rehfuss invented his gastric tube and introduced fractional analysis of the stomach contents in the second decade of the twentieth century. Previously for gastric analyses we used a thick, heavy rubber tube which was more liable to choke the patient than to find its way into his stomach. Nobody was interested in the so-called "sugar-tolerance curve" because diabetes was then regarded as one of those dreadful diseases for which there was no cure, and the diabetic and his doctor could only wait patiently for the mournful end. Graham's tetraiodophenolphthalein test for the diagnosis of diseases of the bile passages, by means of which the passages are rendered opaque to X-rays, was not yet in existence, and not seldom patients with cancer of the liver were mistakenly operated on for gall stones, with disastrous results. The science of nutrition had not yet come of age, vitamins were unknown, and in prescriptions of diet for children or patients no discrimination was made between so-called protective foods and foods supplying energy to the body. Endocrinology was in its infancy and to most of the ductless glands one could apply the old dictum: "*Organum plenum mysterii.*"

These few examples, which might be multiplied many times, clearly show that many highly important scientific methods for the examination of the sick, which are in common use to-day, simply did not exist fifty years ago. Correspondingly, the type of physician has greatly changed during the same period. You will not meet nowadays, as formerly, doctors whose chief title to fame is as diagnosticians. In the old days such men possessed a fine capacity for observation, which they developed to the highest perfection. They investigated their patients most carefully, making a point of not missing any external or internal sign of a suspected disease. Their power of observation was astounding. Stories were handed down from one class of students to another of some famous doctor who diagnosed a disease by merely glancing at the patient.

How different things are at the present time! You have probably all heard the story, which is often retold by patients, about the husband who goes to a doctor to consult him about the illness of his wife. The busy doctor misunderstands the situation, thinking that it is the patient he is talking to, and without even asking him to take off his overcoat, he tells him: "Have all your teeth pulled, your tonsils and your appendix removed, and your

eyes, nose, throat, and ears examined; have your metabolism tested, and gastric and gall bladder analyses performed, and then report to my office . . ." Of course there never was such a doctor, but there is some truth underlying this anecdote. The comparatively few gifted or lucky diagnosticians of the old days have already to a great extent been replaced by an army of physicians and surgeons, who by the systematic use of scientific methods for the examination of their patients in most cases arrive at a correct interpretation of the diseases. All this is greatly to the benefit of sick people, especially as in the old days only a few fortunate patients could afford the advice of famous men. Nevertheless the present generation of medical men and surgeons are perhaps inclined to place too much reliance on modern methods of investigation. It would be a great loss if the fine old methods of observation were abandoned altogether by the new generations of physicians, because a sharp observational capacity is as essential in science as in art. Medicine, whether empirical or scientific, will always be taught and learned at the patient's bed-side, where the ability to observe is of paramount importance.

I do not want to take up too much of your time, and will mention only two or three examples which will give factual support to the ideas suggested in this address.

It may be seen very strikingly in the case of cardiology, for example, how a purely theoretical investigation led to most practical results. In my student days most physiologists taught nerve- and muscle-physiology with some kind of apology. And, indeed, with the exception of a few facts which had relation to actual events occurring in the body, this chapter of physiology seemed to have been invented by professors solely for examination purposes. Then came Einthoven, a physiologist and physicist, who applied this purely theoretical electrophysiology to the study of heart function. The string galvanometer, which he invented, is a marvellous instrument with a quartz fibre about four millionths of an inch in diameter, capable of registering extremely frequent electric oscillations. Einthoven also worked out a method for recording heart sounds. With the help of this apparatus the heart of a patient, as it were, itself writes down its complaints for you on a photographic film. Can you pass by such an achievement of science and neglect this new method of investigation? Certainly not. Every patient with heart disease must be investigated with the help of the string-galvanometer. Many of you will have a portable instrument for use in your practice.

Another example. When we were students we had only a vague idea about the intermediary metabolism. You are in a much more fortunate position. You certainly know that as a rule the endocellular enzymes consist of a protein part and a non-protein part—the so-called prosthetic group. Only a combination of these two parts acts as an enzyme. It is a striking fact that some of the vitamins or their components play the part of a prosthetic group for certain intracellular enzymes. For instance, thiamin (otherwise vitamin B_1 or the polyneuritic vitamin) acts in the capacity of a prosthetic group for some oxydative enzymes concerned in the breaking-down of peruvic acid. Peters observed that the capacity of minced brain of avitaminous pigeons to oxydize peruvic acid was below normal. The addition of thiamin to the minced brain, even in an exceedingly small concentration, restored the oxydative power to the brain tissue. We know what happens when there is a lack of vitamin B complex in food, how the nervous system suffers, and how

the digestive, absorptive, and other functions of the body are impaired. What will you do when you are in practice and you feel that you have to prescribe vitamin B complex or other vitamins? I am certain that you would want to know how this or that vitamin acts on the body—in other words, to think over the problem scientifically and not to follow the advice given by some radio-announcers, who after a half hour of inferior music and voiceless singing admonish you to use the preparation which they advertise as a remedy for a variety of different diseases.

I turn now to the most complex and most obscure phenomena which may take place in the body—I mean the abnormal functioning of the nervous system, as exemplified by neuroses and psychoses. Even into this darkest corner of medicine there has been a gradual penetration of strict scientific methods. The light is still dim; nevertheless the outlines of the paths leading to this mysterious domain can be discerned. We have witnessed the experimental production of neuroses in animals—dogs, sheep, and pigs—by Pavlov in Russia and by Liddell and Dworkin in America. These studies have given us an idea of the mechanisms which participate in the formation at least of some of the less complicated neurotic conditions. We may reasonably hope that the experimental method will help us to extricate ourselves from the psychological jungle into which, though no doubt with the best intentions, the psychiatrists and Freud have led us.

I might add just one more point. There is no doubt that the new electron microscope, which is able to magnify not 1,000 but more than 70,000 times,and through which even molecules may be seen, will revolutionize morphology, physiology, and pathology. It is like a new and powerful telescope that opens up new universes to the view.

I should now like to address my new colleagues directly.

What deductions can we make from all that I have just said? Medicine is a science and at the same time an art. The art in medicine, which started as a pure art, is based on empiricism. For centuries, at first exceedingly slowly, then more rapidly, science little by little has been replacing art in medicine. This process went on steadily, but its pace increased tremendously with the general growth of scientific knowledge in the second half of the nineteenth and in the twentieth century. All sciences, with their exact methods of investigation, have contributed to the progress of medicine, but an exceptional role in that respect has been played and will continue to be played by the experimental method as it is used in physiology, biochemistry, pharmacology, and experimental pathology, that is, in those sciences which are the foundation of medicine and surgery. Especially with the development of endocrinology, which may be considered a truly twentieth-century science, the face of medicine is likely to change substantially in the next few decades. The physician and the surgeon of the future will become more and more scientifically minded and at the bedside of the private patient and in the hospital ward they will think more physiologically than they do now. Whether you want to or not, you must follow the future development of scientific medicine. Otherwise you will be in great danger of falling into a routine and of basing your judgments on obsolete theories and inexact observations, which in the meantime will have been replaced by new and correct facts. Develop the habit of reading not only medical but also physiological journals. Make this your hobby. How much time people spend in reading novels and detective stories, or playing

bridge, for enjoyment, not realizing that scientific literature, or still more, the actual performance of experiments can give an enormous amount of pleasure, hardly comparable with that derived from any other source. Perhaps it is interesting to follow the story of how an unfortunate John loved a cruel Mary, who did not respond with the same feeling, but how much more fascinating it is to follow the account of an experiment or, even better, to watch its performance! Science always gives you something new, opens up unexpected vistas, offers some new spiritual adventure! On the other hand, it is astonishing how seldom even fine literature or poetry, beautiful and exciting as it may be, teaches us anything. We may read a dozen novels and still find ourselves in the position of unlucky John!

The next thing that I would like to do to-day is to congratulate you on the completion of your formal medical education. Medical education is one of the best educations and gives the student the widest and deepest insight into the world in which we are living. Medicine is based on exact sciences—physics, chemistry, and mathematics, which are the foundation of the so-called theoretical medical sciences—physiology, biochemistry, and so on. Pathological phenomena in the majority of cases are merely the result of quantitative changes in the course of a normal physiological process. At the other extreme, medicine comes into close contact with psychology. When a medical man deals with the normal or abnormal functioning of the brain, he is observing the manifestations of the highest activity of living matter. In normal persons these functions of the brain are extremely complicated but regular; in disease they are distorted and grotesque. But they are equally fascinating, whether in an "ordinary" man, a genius, or a lunatic. The importance of a medical education has been recognized by many outstanding people, among them the great physiologist and physicist, Helmholtz. In the famous address which he gave in 1877, "On Thought in Medicine" (see the *Bulletin of the Institute of the History of Medicine*, volume VI, page 121, 1938), he said: ". . . I consider the study of medicine to have been that training which preached more impressively and more convincingly than any other could have done, the everlasting principles of all scientific work; principles which are so simple and yet are ever forgotten again; so clear and yet always hidden by a deceptive veil."

But even here your acquisition of knowledge does not end. Every day your work will bring you into contact with the most intimate sides of human life, with human sorrow and human joy. You will witness the greatest tragedies, about which even the nearest relatives of the patient will know nothing. Moreover, you will be called upon to settle some educational problems, or problems which may affect the well-being of large sections of the population.

How will you use this wealth of knowledge and of extraordinary experience during your life?

Of course, you are in a different position than medical graduates in peacetime. You will all probably join the army, navy, or air force, and so will fulfil your duty to your country. But one day the war will be over and an enduring peace, for which we hope and pray, will come. After you return from your war service, you will probably take some refresher or additional courses in medicine or surgery, and will then begin your own professional life.

Don't make your life ordinary in the literal sense of the word. Make it interesting and fruitful through love of your work and devotion to it. Then only you may be happy, because then you will be able to satisfy that spirit

of adventure which we all possess. If, on the other hand, one day, when you are in your forties, you suddenly realize that you have only followed a routine in your work without loving it and getting inspiration from it, it will be clear to you that you have failed to achieve anything and have lost the chance of attaining a full and happy life.

What is the best preventive of such a disaster? I have no doubt that it is *idealism.*

A great Russian novelist, Tourgeneff, once (1860) wrote an article in which he compared Hamlet and Don Quixote, as typifying the two main groups into which humanity may be divided. According to Tourgeneff, Hamlet and Don Quixote represent the two extreme and opposite types of human nature. Every man belongs to one group or the other, or rather, in every one of us in different proportion there is some of Hamlet and some of Don Quixote. Pure, unmixed examples of either type are rare.

Both Hamlet and Don Quixote are noble characters. But Hamlet is self-centred and introspective; he lives in an imaginary world of his own and is unable to make the world which surrounds him seem real. When he finds himself in a situation which requires a decision, he begins to think it over, instead of acting, and quickly glides from the hateful outside world into his own intimate, secret, and sacred domain. He finds there only hesitation and doubts, which lead to indecision; thus his will is paralysed. The mental energy of this unparallelled sceptic is dissipated uselessly and his heart and soul become sterile. In Hamlet analysis kills action; he acts only when he is driven by passionate impulse. As he himself says:

> . . . conscience does make cowards of us all,
> And thus the native hue of resolution
> Is sicklied o'er with the pale cast of thought.
> (Act III, Scene 1)

Hamlet's sufferings are extreme. We sympathize with him deeply, chiefly because Hamlet is akin to many of us.

What do we find in Don Quixote? Let us forget for a moment the ludicrous side of Don Quixote and go to the very core of his nature. Don Quixote has no doubts, because he has a high ideal in which he believes absolutely. He strives after it with all his might, without any hesitation or any consideration of difficulties or danger. His vision at times may be false, or even ridiculous, like the windmills which he mistook for giants, but it is always of the noblest character. The Don Quixotes often make mistakes, not seldom they fall, but they rise again and continue the march towards their goal. It is not the Hamlets, clever though they may be, but the Don Quixotes who build the life of humanity by their deeds.

Perhaps there is a third type of people, who were not described by Tourgeneff. They have none of Hamlet's doubts and none of the idealism of Don Quixote. Their nature is egotistic, dry, and practical; their aims are purely materialistic. They consider dreaming a weakness, and idealism foolishness. Of course, they are usually far more successful in life than the Hamlets and the Don Quixotes. But what value and object has life if there is no high ideal in it? Don't you think that it is worth while to have vision in your life and to strive after your ideal with all your strength, because only then will your life acquire meaning? Medicine probably affords more opportunities for this than any

other profession. I strongly believe that idealism, which does not neglect analysis altogether, pays far better in the end than any purely practical attitude towards life.

Permit me to finish my address with a few words about myself. The four years which I spent at Halifax and Dalhousie were among the happiest in my life. Why then did I leave Dalhousie and accept an appointment at McGill University? I am sure it was this spirit of adventure, about which I have spoken to-day, that was urging me towards "pastures new". Happy as I have been in another University, yet I very often remembered Dalhousie and Halifax. How could I forget them? Dalhousie restored to me the position which I had lost in Russia during the Revolution. My laboratory activity, interrupted by the events of 1917 to 1922, was resumed in the Medical Science Building. New plans for further work were formulated there. Dalhousie and Halifax gave me life-long friends.. Even my Canadian citizenship was given me in Halifax, so as a matter of fact I may be considered a Haligonian. And to-day I am graduating from Dalhousie. Dalhousie and Halifax will always have my deepest affection and gratitude.

Summary of two papers delivered at the annual meeting of The Medical Society of Nova Scotia, Kentville, N. S., July 7th and 8th, 1943.

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THE PRESENT STATUS OF SURGICAL PROCEDURES ON THE BILIARY TRACT

A SURVEY of clinical cases was undertaken to attempt an evaluation of the present status of surgical procedures on the biliary tract. It is interesting to reflect that in the early efforts of surgical therapy, only the most desperate cases were operated upon, with a very high mortality, and a distressing morbidity. Following this there was still a great deal of debate as to when the gall bladder needed operation, and if operated upon, whether it should be drained or excised. The very marked improvement in results following the removal of a definitely diseased, calculous gall bladder was followed by one of the unfortunate periods in the history of surgical procedures for intra-peritoneal disease, namely the wholesale excision of non-calculous gall bladders, with a resultant morbidity greater than that which was present before the operation. In this dark era the Graham-Cole cholecystogram was introduced, and this had a very marked deterrent effect in preventing surgeons from removing gall bladders without definite disease, but it also had its repercussions in leading a large group of patients, and indeed often members of our own profession, to the erroneous conclusion that the X-ray was able to make an accurate and absolute diagnosis of biliary disease. As a matter of fact, it is simply an index of one of the functions of the biliary apparatus. Such function can be disturbed by factors other than intrinsic biliary disease.

A survey was made at the Toronto General Hospital of a series of 201 cases in which the clinical diagnosis, the X-ray diagnosis, and the pathological diagnosis were co-related. It was interesting to note that in this group 95.5% of the X-rays had reported a mal-functioning, and therefore pathological gall bladder. More amazing was that they reported stones present when they were found at operation, in 61.1%. This would seem to support the contention that the X-ray was infallible: yet this high degree of accurate co-relation between radiological and clinical diagnosis is explained by the fact that the surgical staff of the Toronto General Hospital is made up of clinicians. The diagnosis of cholecystic disease is made on analysis of history, in conjunction with physical examination, and if the X-ray supports this diagnosis, operation is undertaken. If, however, the clinical diagnosis is uncertain and the X-ray reports a mal-functioning gall bladder, such a patient is not submitted to operation. Therefore we have come to believe that there is no short-cut to a carefully-taken history and thorough physical examination with an accurate interpretation of the symptoms and a correct evaluation of the signs.

We were impressed, in studying this group of cases, with the very great infrequency of calculous cholecystic disease in unmarried women, and further

the disappointing results in most instances when a non-calculous gall bladder was removed. Therefore after arriving at the diagnosis of the presence of gall stones, repeated colics and recurring attacks of acute inflammation and jaundice indicate operation. However, if one sees the patient as an emergency in the presence of an attack of acute cholecystitis, we believe that operation need not be undertaken at two o'clock in the morning. The patient can be prepared with intravenous fluid, morphia and rest, and if the improvement with this therapy in hospital is not satisfactory, then operation can be undertaken as an operation of election, without undue delay. The practice of our staff is not to do emergency operations for acute cholecystitis, because we feel this is not necessary to save life. The mortality with this type of management in 164 cases was 4.2%.

One must be on guard in assessing the presence of jaundice, to exclude causes other than biliary disease. Furthermore, it was brought out that 17% of the patients with stones in the common bile duct never had jaundice, and that just a little more than half the patients who have jaundice and biliary disease have a normal common bile duct.

In the preparation of jaundiced patients now, the "bete noire" of haemorrhage has gone (the use of vitamin K has solved this) we have been impressed with the value, not only of a high carbohydrate diet, but of a high protein diet. The addition of protein is of great value in such patients.

In assessing our bad results, we found that error in diagnosis was probably the greatest contributing factor. This error is due to carelessness in taking the history or in making the physical examination, or in accepting the X-ray diagnosis of a mal-functioning gall bladder without doing either. Even when one tries to correct these human frailties, there was still a group in which the morbidity was distressing. In our own cases we found that we were missing stones in the common bile duct, and we have, in the last ten years, raised the incidence of common bile duct stones from 4.5% which it formerly was, to now, in 427 cases, we have removed stones from the common duct in 17.5%. It is true that in this group we have explored the common duct many times and found no stones; indeed we explored it in 41.2% of these patients. However, an analysis of our mortality, if assessed on the basis of calculous gall bladder patients, is only 2.1%. This I think convinces us that we are not increasing the operative risk by exploring the common bile duct, and furthermore, we have never seen a stricture of the common bile duct following the drainage of this structure by a T. tube.

In short, the management of gall bladder disease is going to be determined by an accurate diagnosis, advising the patient to be operated upon when the diagnosis is definitely substantiated and stones are believed to be present; not to procrastinate when jaundice has occurred, and not to do precipitate operations in the middle of the night on patients with acute cholecystitis; to explore the common duct when there is gross calculus disease in the gall bladder, and thereby remove stones when they are present in the common duct. This type of management of patients suffering from biliary disease will be rewarded with a low mortality, a minimum morbidity, and a restoration of the economic efficiency of the patient.

Carcinoma of the Caecum and the Left Colon

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THERE are two fundamental truths which are so obvious that it seems absurd to mention them, but which if fully appreciated, probably constitute the foundation of the understanding and diagnosis of all gastro-intestinal ill health:—First, all symptoms referable to the gastro-intestinal tract are due to normal physiological processes acting abnormally: Second, as a result of this upset in the normal physiological process, there is a resultant disastrous change in the biochemical and biophysical functions of the individual. These two facts explain why we do not lump carcinoma of the colon into one clinical problem, because carcinoma of the caecum does differ from carcinoma of the left colon in many fundamental respects. This is due to the different physiological function of the right and left colon. Because ninety per cent of the fluids absorbed from the gastro-intestinal tract are absorbed from the caecum to the splenic flexure, the content of the right colon is always, in health, fluid or semi-fluid, whereas the content of the left colon is solid. The right colon has a very rich blood supply, with free anastomosis between the major arterial supply. The left colon not only has a scanty blood supply in comparison, but the anastomosis between the middle and left colic and between the left colic and sigmoid branches is very scanty.

Caecal carcinoma is a non-stenosing, ulcerating, cauliflower carcinoma, most often arising on the posterior wall of the caecum, producing no disturbance of normal physiological function, but because of the ulceration there is a continuous bleeding, which will result in one of the most profound secondary anaemias which is encountered in clinical practice. Therefore if a patient presents a secondary anaemia of the iron-deficiency type, and the usual investigations have failed to reveal a cause, such a patient should always have the stool examined for occult blood. It is unfortunate that if this is not done, the patient will respond to iron and dietetic therapy, but this response cannot be maintained, as it would be if the anaemia were nutritional in origin, but the recognition of the anaemia being due to a blood loss of a subtle but continuous character into the large bowel leads to a more thorough investigation, and the diagnosis of a caecal cancer. There is one pitfall in the presence of blood continuously in the stool in a patient with an iron-deficiency anaemia, if such a patient is known to suffer from a duodenal ulcer. A duodenal ulcer does not produce continuous occult blood in the stool—it is intermittent.

Carcinoma of the left colon, on the other hand, is an entirely different pathological lesion. It is a small, annular, stenosing carcinoma, which interferes with the normal physiological process of the onward movement of content of the colon, and therefore the problem of left large bowel carcinoma is the problem of intestinal obstruction. Dr. Norman Taylor, working in the Department of Physiology, the professor of which was your own Surgeon-Captain Charles Best, made a very outstanding contribution to the problem of intestinal obstruction in 1933, in pointing out the importance of distention. However, it was not until Miller and Abbott introduced the double lumen tube in some physiological experiments, that clinicians realized the role of distention in intestinal obstruction. The following diagram, which was prepared by one of my senior students, I think epitomizes distention and its disasters:

INTESTINAL OBSTRUCTION

Intestinal Stasis

DISTENSION

Increased Intra-enteric Pressure

Increased	Decreased	Increased
Secretion	Absorption	Peristalsis
Intestinal Juices	From Bowel	

Increased Intra-enteric Pressure

SERIOUS DISTENSION

	Violent Peristaltic Activity	Increased Pressure in Wall
Danger line	Venous Stasis	Arterial Stasis
	Haemorrhagic Infarction of Wall	Necrosis Gangrene
	Impaired Viability	Loss of Viability
	Blood Loss	Increased Permeability of Bowel Wall — Rupture of Bowel Wall
	Shock	

To Toxins — To Bacteria — Peritonitis

Transperitoneal Absorption

DEATH

Therefore if the distention be in the large bowel, it cannot be relieved by a double lumen tube, as it can if it be in the small bowel, but a blind caecostomy without any exploration of the local lesion, carried out through a split muscle incision and sewing the caecum to the skin without any sutures between the bowel and the layers of the abdominal wall is most efficient in accomplishing this. It need not be opened until twenty-four hours, post-operatively and then can readily be opened with a cautery. If one cannot stay his curiosity in acute obstruction of the large bowel, but insists on doing a laparotomy to confirm the diagnosis, it becomes necessary to handle the local lesion, which is surrounded by oedema, particularly in the distended proximal colon. There is not only fluid, but organisms outside the lumen of the bowel contained in this exudate. As long as it is left alone, natural defence mechanism keeps it within bounds, but just as if one touches the inside of a wet tent in a rain storm it begins to leak, so does the natural defence of these mechanisms fall down. The incidence of peritonitis following laparotomy and manipulation of the local lesion in the presence of acute obstruction of the left colon is appallingly high, and the mortality is correspondingly disastrous. Thus may we urge a blind caecostomy, in which the caecum is sewn to the skin. It will have to be closed later by an operation, but it will function at a time when it is necessary to relieve the distention. All other types of caecostomies, which are designed to close without a formal surgical procedure, have in our hands been unsatisfactory during the acute emergency.

We have therefore carried out in this disease the principle of decompression. If we find, having overcome the emergency, that the degree of stenosis is very high, then we know that the extent of the oedema and ulceration about the lesion will be very great, and we can go one step farther and do a de-functioning operation by carrying out a transverse colon colostomy of the Mickulicz type, which was first advocated by David Cheever of Boston, and later popularized by Devine of Australia. This de-functioning of the left colon will permit a complete disappearance of the oedema, and a subsidence of the infection about these lesions, and furthermore in some instances will have the delightful effect of converting what appeared to be a hopelessly inoperable lesion into one in which operation may be undertaken. It also permits a very radical dissection in the area of the recto-sigmoid junction, and it is possible to safe-guard the patient's future by a resection and an end to end anastomosis, where without this de-functioning procedure one would be forced to do an abdomino-perineal excision, as such an extensive dissection in a bowel not de-functioned, would result in too high an incidence of peritonitis and too high a failure of anastomotic union.

If, on the other hand, the lesion be in the splenic or high descending colon, one then is anastomosing a portion of the bowel, with fluid content—namely the transverse colon—to the sigmoid following the resection. This may be carried out as an end to end anastomosis after a preliminary caecostomy, or as a Mickulicz procedure. We favour the former. We have been impressed with the fact that it is possible, by means of utilizing the apparatus and technique developed by Dr. F. I. Lewis of our staff, to handle a transverse colon colostomy with as great ease as one handles an iliac colostomy. This has been a surprise to us, and contrary to our previous belief.

Because of the fact that in the operative treatment of lesions of the caecum and right colon we are dealing with a bowel which has a fluid content and a rich blood supply, it is possible to do a one-stage resection with an end to end anastomosis of the terminal ileum to the transverse colon, incorporating in the anastomosis a rubber tube, which prevents any oedema stenosis during the process of healing of the anastomosis. The use of the double lumen Miller-Abbott tube immediately post-operative following a one-stage right colectomy prevents distention, and has materially added to the safety and comfort of this procedure.

In conclusion: In all secondary anaemias a routine examination of the stool should be part of the investigation.

Carcinoma of the caecum is usually a non-stenosing lesion, free from obstruction, which can be dealt with by a one-stage operation.

Carcinoma of the left colon, in addition to being a problem in carcinoma, is primarily a problem in intestinal obstruction.

A left colon lesion in our hands is much safer dealt with by multiple stage operations. If acute obstruction is present, a blind caecostomy: if following a caecostomy the obstruction is still great, a de-functioning transverse colon colostomy, followed by an adequate resection and an end to end anastomosis. Carcinoma arising distal to the mid-transverse colon and between the middle of the transverse colon and the junction of the descending colon and sigmoid we believe is best dealt with by means of a caecostomy as the first stage, and an end to end anastomosis as the second stage, or by a Mickulicz type of resection, which may be carried out without a preliminary caecostomy.

Decompression Sickness

Wing Commander C. B. Stewart

THE tremendous increase in the number of men flying at high altitudes and in high speed aircraft during this war has resulted in a marked increase in the incidence of certain clinical conditions which result from the abnormal environment to which these airmen are subjected. Most of these clinical conditions were met with only occasionally prior to 1939 although they were known to the medical profession and in some cases had been studied in considerable detail on relatively small groups of men.

For example, divers' bends or caisson disease is a condition which is well-known clinically to only a relatively small number of medical men engaged in the care of divers and compressed air workers. To most it is simply a text-book term. The occurrence of decompression sickness, a similar condition, in men flying at altitudes over 25,000 feet attracted the attention of those engaged in aviation medicine some years ago, but only during this war have studies been made on large groups of men, both during flights at high altitude and during exposures to simulated high altitude in low pressure chambers.

Decompression sickness is the term used to designate those disabilities which are encountered during or after exposure to high altitude which result from the effect of lowered atmospheric pressure on the tissues or blood stream, but excluding those conditions which are presumably due to the low pressure of oxygen in the air or expansion of pre-existing pockets of gas in the body cavities. It has sometimes been defined as a condition caused by the formation of nitrogen bubbles in the tissues or blood stream and at one time the term "aero-embolism" was used to describe it. However, this term is no longer in general use since there is now considerable doubt that it is an embolic phenomenon, although nitrogen supersaturation or bubble formation in the tissue fluids is probably the exciting cause of the various syndromes.

Everyone is acquainted with the theory concerned in the development of caisson disease or divers' "bends." A diver is exposed to increased pressure and more nitrogen than normal dissolves in his blood and tissue fluids. On ascent this has to escape or the fluids become supersaturated and bubble formation may occur. If the man comes up slowly or in stepwise fashion, he may not experience discomfort. If he comes up rapidly or the pressure is decreased more than one-half its original level, he may develop the "bends." In the same way, decompression sickness may be expected to develop when the pressure is reduced to one-half an atmosphere, namely at 18,000 feet. In practice, however, the condition does not ordinarily occur until above 25,000 feet except in extremely susceptible men.

Decompression sickness has a number of different syndromes which on the surface appear to bear little relationship one to another. The most common and the most disabling is limb pain, although it is probably not the most dangerous. It may occur at as low an altitude as 25,000 feet after a fairly long flight or it may come on quite early at an altitude of 35,000 or 40,000 feet. The onset of the attack is characterized by a diffuse dull ache near

*Paper delivered at the 90th annual meeting of The Medical Society of Nova Scotia Kentville, N. S., July 7, 1943.

one of the joints with an occasional sharp stabbing pain extending for some distance along the limb. The dull ache persists, gradually becoming more severe, and the sharp stabbing attacks become more frequent until almost continuous. There is no tenderness over the joint area, but there sometimes is a tender spot somewhere along the course of the large vessels of the limb and pressure over this area will aggravate the limb pain. The areas around the shoulder and knee are the most frequent sites of the pain, which never occurs in relation to a joint in any other part of the body except a limb. The upper extremities are affected one and a half times more frequently than the lower limbs. Increased exercise of the legs or of the arms tends to increase the incidence of pain in those areas, but after its onset it is not made worse by movement.

This limb pain does not always progress in intensity. Sometimes it may disappear and not recur. Occasionally it persists for the total duration of a flight of several hours as a mildly irritating, but not disabling, condition. In most cases, however, it progresses in severity, sometimes with extreme rapidity. The sharp pain becomes more frequent and severe and the affected limb becomes weak and incoordinate until it is almost wholly useless. This at first appears to be due to a lack of desire on the part of the individual to move the affected limb, but movement does not increase the pain and there is no evidence of the well-known "splinting" which occurs in an area made painful by movement. On the contrary, the muscles of the limb become flaccid. If the arm is affected, it is difficult to grasp an object or to carry out any of the finer movements. If the leg is affected, the person is wholly unable to walk from one station to another in the aircraft or low pressure chamber or to apply pressure on the rudder bar to control the aircraft. The localized weakness of the affected limb is therefore a more serious disability from the service standpoint than the pain, unpleasant though the latter may be. Unless descent is made to relieve a severe pain, signs and symptoms of collapse eventually develop, pallor, perspiration, weakness and occasionally nausea, and the individual will become unconscious unless relieved by descent.

The altitude at which the pain disappears on descent depends upon its severity. Mild pains are gone at 30,000 feet, but very severe ones may persist to 20,000 feet or lower. There is very rarely any residual effect on reaching ground level unless the man remains up for a long time with an extremely severe pain. There may then be a slight soreness in the affected limb for a day or so and some residual malaise for a few hours.

After limb pain and the associated weakness the second most common symptom complex is substernal irritation and interference with respiration. This may occur in an individual who is already suffering from limb pain or one of the other symptoms of decompression sickness, but it frequently occurs alone as the only manifestation of decompression sickness. Its onset is heralded by the complaint of dryness in the throat or of tightness in the chest. If the individual can avoid all movement and exertion his discomfort may diminish and even disappear, but in most cases it progresses fairly rapidly, particularly if any exercise is carried out. The airman experiences a marked sense of constriction in his chest and an uncomfortable burning sensation behind the sternum on inspiration. The irritation has been described as similar to the sensation one gets following intense exercise to the point of exhaustion, such as running while breathing cold air. The irritation is increased by taking a

deep breath, which usually also precipitates an attack of coughing. As the substernal irritation increases the airman involuntarily limits the depth of his inspiration to avoid the pain and this rapidly leads to collapse from anoxia.

This is therefore a severe, dangerous and disabling symptom requiring quick descent for relief. It diminishes during descent but may not be fully relieved until 30 to 60 minutes after reaching ground level.

Another severe symptom complex which is much less common, occurring in approximately 1% of cases, is a visual disturbance usually followed by headache. This mostly occurs in individuals who are highly susceptible to other symptoms and quite often follows a severe attack of limb pain, chest irritation or both. Occasionally, it occurs alone and the first complaint is blurring of vision. Ordinarily, however, it is noted during descent or after reaching ground level, following a severe attack of decompression sickness. Objects are described as "wavering as if seen over the top of a hot stove." The periphery of the field of vision is usually affected and in 80% of cases it is bilateral. It persists for about 30 minutes after arrival at ground level. Just about the time that the visual disturbance begins to disappear a mild headache is noted and this rapidly progresses to a severe stage, persisting ordinarily from three to six hours, and in a few cases, for several days. It is almost always an excruciatingly severe headache for which ordinary analgesics provide little relief. Sometimes it is associated with nausea and vomiting or collapse. During this period of visual disturbance contraction of the visual fields can usually be demonstrated, and in some cases, a scotoma. The attack is very much like one of migraine, but in only 6% of cases in a large series was there any personal or family history of migraine or headache. This does not, however, rule out the possibility that the severity of the conditions to which the body is exposed during severe decompression sickness might precipitate an attack of migraine in an individual who had not previously experienced it. It is a very dangerous symptom, mostly complicating an unusually severe attack of decompression sickness. It also persists to ground level, where a pilot with such a marked interference with peripheral vision would run a definite hazard in landing a plane—peripheral vision being most important in judging height and speed.

Cutaneous paraesthesias are quite common at high altitude, presumably resulting from nitrogen in the subcutaneous fat or nerve endings. They are rarely more than a mildly irritating itching, prickling, formication or hot flush. Occasionally, however, there is considerable irritation, usually over an area with a heavy subcutaneous pad of fat. A marked erythematous rash develops with small ecchymoses. The irritation disappears during descent and the erythema within 30 minutes to one hour, but the ecchymoses persist and there is considerable residual tenderness in the subcutaneous fat for several days. This symptom usually occurs in individuals who have an excess amount of subcutaneous fat and the chief locations are on the anterior abdominal wall, pectoral area, thighs and upper arms.

As has been mentioned, collapse may occur with any of the severe symptoms of decompression sickness, but in a few cases it occurs with no associated pain or other symptom. Presumably some central or reflex effect of the nitrogen bubbles causes an upset in the vasomotor control, although it is difficult to rule out anoxia as a complicating factor. These cases are characterized by a marked slowing of the pulse rate, usually to 40 or lower. Recovery is complete within a few hours.

A few cases have been reported of neurological involvement, but these are quite rare. During many thousands of ascents to simulated altitudes of 35,000 feet in the low pressure chambers we have noted only six cases. One had a flaccid paralysis of the right arm, an anaesthesia over the right side of the body from mid-thorax to knee and clonus of the right leg. A second had a marked numbness of the right arm and partial paralysis of the tongue. A third developed a temporary paralysis of both legs with a positive Babinski reflex persisting for one hour after descent. Two cases also have been noted of marked mental confusion, in one case associated with loss of ability to appreciate the meaning of words although the individual could hear conversation clearly. In the sixth case an area of regenerated nerve over the dorsum of the right hand was apparently damaged with a recurrence of complete anaesthesia in an area which had recovered full sensation for one year prior to ascent in the low pressure chamber after having been anaesthetic of one year following an injury.

This clinical picture has of necessity been much abbreviated due to lack of time for detail. It covers, however, the main clinical features noted in personal observation of many thousands of airmen on low pressure chamber tests. It will be noted that it differs in certain respects from the text-book picture of divers' bends, particularly with respect to the incidence and severity of certain chronic disabilities. We have had a number of medical officers and technicians engaged in low pressure chamber work for the last three years and have not yet seen any serious chronic effects from repeated exposures to high altitude or repeated attacks of decompression sickness. None of the chronic conditions described in divers have ever been noted. In this connection, a few practical differences may be pointed out between the conditions to which a diver and an airman are subjected. The diver who develops the "bends" is relieved by recompression in a suit or in a compressed air tank so that the nitrogen re-dissolves. He therefore must be exposed to the abnormal environment for relief. The flier who develops decompression sickness is completely relieved by descent to about 20,000 feet and does not usually have any residual effects on reaching ground level. The diver may develop symptoms only after several hours on the surface and the flier only after several hours' flight at high altitude since the effects of nitrogen supersaturation or bubble formation are not always immediately apparent. The diver may be at some distance from the place where he can obtain proper treatment and frequently severe attacks may be suffered for a prolonged period. As a result, chronic disabilities associated with definite tissue damage are reported. On the other hand, the flier is usually able to descend to a lower altitude and get relief very shortly after the symptoms become severe.

The treatment of decompression sickness is by return to a lower altitude. Reascent cannot be made for several hours without an immediate recurrence. Since the causative factor is nitrogen dissolved in the tissues, decompression sickness can be prevented if the nitrogen can be eliminated prior to ascent. This can be done by breathing 100% oxygen for several hours, but it has not proved very practical in most military flying because of the time required for desaturation before a flight. However, it has been shown that susceptibility to decompression sickness varies a great deal and a practical method of prevention, therefore, is the selection of individuals for high altitude duties who are relatively insusceptible to decompression sickness. Susceptibility can be determined by several tests in low pressure chambers.

Decompression sickness is a painful, disabling and sometimes dangerous condition which occurs in some individuals on exposure to low atmospheric pressure. The exact mechanism by which the symptoms are produced, is not known, although it is believed to be related to the formation of nitrogen bubbles in the tissues. It is characterized by a number of clinical syndromes, the most common of which are limb pain, substernal irritation, visual disturbances and cutaneous irritation.

Minutes of Special Meeting of the Executive of the Medical Society of Nova Scotia, 1943.

A SPECIAL meeting of the Executive of The Medical Society of Nova Scotia was held at the Dalhousie Public Health Clinic, Halifax, N.S., on Friday, September 10, 1943, at three o'clock.

Dr. J. C. Wickwire of Liverpool presided. The following representatives of the Executive and members of the Council of the Canadian Medical Association attended: Dr. H. J. Pothier, Dr. D. F. Macdonald, Dr. H. B. Whitman, Dr. H. K. MacDonald, Dr. David Drury, Dr. P. S. Cochrane, Dr. D. F. McInnis, Dr. W. G. Colwell, Dr. W. J. MacDonald, Dr. D. M. MacRae, Dr. W. L. Muir, Dr. H. G. Grant, Dr. H. E. Kelley, Dr. W. F. MacKinnon, Dr. K. P. Hayes, Dr. A. E. Blackett, Dr. H. W. Schwartz, Dr. J. P. McGrath, Dr. J. G. B. Lynch, Dr. J. R. Corston, Chairman of the Division Medical Advisory Committee, Dr. H. L. Scammell, Registrar of the Provincial Medical Board, Dr. M. G. Burris, Medical Adviser to the National War Services Department, and Lt.-Colonel Edgar W. Mingo, Divisional Registrar of National War Services Department.

The President called the meeting to order and stated that it was called at the request of Colonel W. C. Arnold of the National Selective Service Department and Lt.-Colonel Edgar W. Mingo, Divisional Registrar of National War Services Department. The request came to him by telephone, but he was promised a formal letter to present to the meeting. Such a letter, however, did not materialize and consequently the telephonic request from Colonel Mingo was dealt with. This was that the present system of the examination of draftees by the private physician should be in great part done away with, and that medical boards be established at several points throughout the province to conduct the examinations from now on. Several of the members asked whether these boards would be expected to deal with the examination of patients who had applied for change of vocation, but this point was never properly cleared up.

The Secretary told about a meeting called on the night of September first at the request of Colonel Arnold from Ottawa. At this meeting there were present Colonel Arnold, Lt.-Colonel Mingo, Dr. M. G. Burris, Dr. H. L. Scammell and Dr. H. G. Grant. Colonel Arnold stated that the Department of Labor wished to change the machinery for the examination of draftees from now on. He said that they wished to use the reception centre at Halifax to its fullest extent, and that in addition they would like boards set up at Bridgewater, Digby, Liverpool, Kentville, Amherst, Springhill, Truro, Inverness and Yarmouth. He said the number of doctors appointed to each board would depend on the number of examinations which would have to be carried out at that point. He estimated that there were about seven thousand draftees to be examined, and that they should be examined in five months time, or preferably in three months time. It was at this meeting that the Secretary suggested that the matter should be placed before the Executive of The Medical Society of Nova Scotia, and that a formal letter stating clearly the request should be sent to President Wickwire. It was promised that this letter would be sent.

Colonel Mingo was then called upon. He first explained that the situation in Nova Scotia had been most satisfactory, although in other provinces this was not so. The Army undertook to assist in the examination of recruits, and their idea was sound as far as it went. Halifax was the centre for examination of recruits in Nova Scotia and Prince Edward Island. There will be boards at Sydney and Shelburne, and they have promised medical personnel from the Navy and the Air Force, and that will take care of the great body of men yet to be examined. The Department of Labor has requested that panel doctors be named for the National Selective Service. Colonel Mingo said that he would like to take the opportunity of expressing his thanks to the physicians of Nova Scotia and read the following letter.

Halifax, N.S.
Bank of Nova Scotia Bldg.,
September 9, 1943.

Dr. J. C. Wickwire, President
Nova Scotia Medical Association
Liverpool, N.S.

Dear Dr. Wickwire:

For some time I have been looking for an opportunity to say a word of thanks to the members of the medical profession in this Province. It is now three years since this office was first opened. In that time over 65,000 individual examinations have been made by private physicians. We have found these to have been handled promptly, fairly and thoroughly. The men have been met with the sincerity that they would have received had they come to the doctor's office for medical advice. I am satisfied that the reports presented here have been prepared with the same care that we would expect had we asked for an opinion in cases of serious illness.

In addition to the examinations we have frequently been indebted to the doctor for a report on the home conditions with which he alone could be familiar. This information has enabled the Board to give consideration to some compassionate cases which if brought into the Army would have caused unnecessary hardship.

It is now proposed to examine as many men as possible in the first instance by Standing Medical Boards. This will not prevent the family physician from reporting to this office when he is consulted. The ordinary form may be used. It is thought that the new plan will to some extent relieve many, now overworked, of routine examinations in which they have no special interest.

While transportation conditions permit and accommodation is available as many men as possible will be directed to these Boards. Others will, as heretofore, be examined by the nearest physician. There have been changes in address of which we have not been informed and it can be expected that consequently some men will receive Notices Medical Examination directing them to report to places that would be inconvenient. Should such instances be brought to the attention of a local doctor it will be greatly appeciated if he can proceed with the examination and forward a Medical Examination and Certificate Form direct to this office with a short statement giving us the man's present address, occupation and such further information as may be thought necessary or helpful.

To every doctor in the Province I am indebted for personal assistance given in this work. I trust that it may be found possible to, in some way, convey to them my appreciation.

Yours very truly,

(Sgd.) Edgar W. Mingo
Registrar, Administrative Division "G"

Dr. Burris advised that when this change had been decided upon it had been proposed that the selection of the panel be done by Dr. Grant and himself, but they felt that it was responsibility which should not be placed upon them. He knew that it had been a lot of trouble for the men to come to this meeting from all over Nova Scotia.

Dr. Corston stated that he had not had much to do with the examination of recruits. He understood from Colonel Mingo's remarks that what was asked was not the examination of recruits, but that the Department of Labor wants The Medical Society of Nova Scotia to nominate the men to act as medical referees in transferring a civilian from one occupation to another.

Colonel Mingo said there would be a dollar fee for the examination and that the panels would be for the duration of the war.

After further discussion Dr. W. J. MacDonald moved that The Medical Society of Nova Scotia reject the appointment of panels at the present time, and ask for more informaton and clarification of the position and duties of the doctors composing the panels, including hours, remuneration and necessary laboratory work to aid in the classifying of cases, which was seconded by Dr. MacKinnon. Dr. Grant thought that Colonel Arnold should be written to that we had fully expected a clear cut statement at this meeting from the Department of Labor, and that we were disappointed in not having it.

After further discussion Dr. W. J. MacDonald withdrew his motion, and Dr. Lynch moved that "The Medical Soiety of Nova Scotia are anxious to co-operate in any way to make this war effort more efficient, but before coming to a definite decision on the verbal request put by Colonel Mingo we would have to have more information from the Department of Labor in writing; and in the interim the doctors in the different counties will act as in the past." This was seconded by Dr. McGrath, with the addition that this be sent to the Department of Labor, and a copy to Colonel Mingo. Motion carried.

The President: "The next thing is when this request comes in do we want another meeting of the Executive, or shall we appoint a committee now?"

Dr. Lynch moved that a small committee be appointed by the President, which was seconded by Dr. W. J. MacDonald.

The President stated that it was customary to have a semi-annual meeting in November or December, and instead of calling this meeting the semi-annual meeting he would like to have another meeting at which time the request from the Department of Labor could come up.

It was decided to pay the doctors who had attended the meeting from out of town ten cents a mile, one way, towards their expenses.

Meeting adjourned at 4.50 p.m.

Minutes of a meeting of the Committee called by President Wickwire to consider the request of Colonel Arnold of the Department of Labor regarding the examination of draftees and also the advising of Selective Service Replacement Officers.

On the authority given him at a meeting of the executive of The Medical Society of Nova Scotia held on September 10, 1943, Doctor J. C. Wickwire, the President, called together a committee on Sunday afternoon, September 26, 1943, at the Dalhousie Public Health Clinic, Halifax, to meet with Colonel W. C. Arnold.

There were present Colonel W. C. Arnold of the Department of Labor, Lt.-Colonel Edgar W. Mingo, Divisional Registrar of the National War Services Department, President J. C. Wickwire, Doctor P. S. Cochrane, Doctor H. G. Grant, Doctor W. G. Colwell, Doctor K. A. MacKenzie, Doctor M. G. Burris and Doctor J. V. Graham.

Doctor Wickwire called the meeting to order and asked Colonel Arnold to state his request. Colonel Arnold requested that the committee should appoint throughout the Province panels to examine within the next three months the balance of draftees to be called up, and also that these panels should advise the National Selective Service Placement Officers regarding the fitness of individuals for certain types of work. Colonel Arnold explained that the military have arranged to do this work at Halifax, Sydney, New Glasgow and Shelburne. He suggested that panels be set up at Bridgewater, Digby, Liverpool, Kentville, Amherst, Springhill, Truro, Inverness and Yarmouth. There was considerable discussion regarding Colonel Arnold's request, especially the amount of work to be done, how much of this would be the examination of draftees, and also how much would be the advising of replacement officers of the National Selective Service regarding the fitness of individuals for certain types of labor. Atfer a thorough discussion of the matter, and with full information from Colonel Arnold it was moved by Doctor P. S. Cochrane and seconded by Doctor W. G. Colwell that this committee recommend certain physicians to constitute panels at the places named by the Department of Labor. This recommendation was adopted unanimously by the committee and the following recommendations were sent forward to Colonel Mingo, Divisional Registrar of the National War Services Department.

Bridgewater	Dr. W. W. Bennett
	Dr. C. A. Donkin
Liverpool	Dr. J. C. Wickwire
	Dr. D. K. Murray
	Dr. G. M. Smith
Digby	Dr. A. B. Campbell, Bear River
	Dr. W. R. Dickie
	Dr. J. R. McCleave
Kentville	Dr. J. H. Buntain
	Dr. V. D. Schaffner
	Dr. T. A. Kirkpatrick

Amherst	Dr. R. E. Price
	Dr. A. E. Mackintosh
	Dr. David Drury
Springhill	Dr. J. H. L. Simpson
	Dr. M. J. Wardrope
	Dr. D. H. Archibald
Truro	Dr. S. G. MacKenzie
	Dr. W. J. MacDonald
	Dr. D. S. McCurdy
	Dr. J. B. Reid
Inverness	Dr. J. A. Proudfoot
	Dr. H. A. Ratchford
	Dr. F. J. MacLeod
Yarmouth	Dr. D. F. Macdonald
	Dr. L. M. Morton
	Dr. G. V. Burton

At the close of the meeting Colonel Arnold expressed his appreciation of the action of The Medical Society of Nova Scotia and their prompt action regarding the request of the Department of Labor.

Meeting adjourned at five o'clock.

Correspondence

184 College Street
Toronto 2B, August 24
1943

Doctor H. G. Grant
Secretary
The Medical Society of Nova Scotia
Halifax, Nova Scotia

Dear Doctor Grant:

On behalf of the Association I want to express appreciation to the members of the Nova Scotia Division for their generous contribution of $200.00 toward the Officers' Mess of Camp Borden and the other Medical Officers' training camps of the Armed Forces.

This is very much appreciated and will help materially in providing certain things which are desirable for the Officers at these centres.

Yours sincerely

T. C. Routley
General Secretary

Dalhousie Medical and Dental Library

The following is a list of books that have been added to the library since the list which we published in February:

MEDICAL SCIENCES:

Adolph, E. F.	Physiological regulations	1943
Bernheim, F.	Interaction of drugs and cell catalysts	1942
Davenport, C. B. and others.	Medical genetics and eugenics	1940
Evans, E. A., ed.	Biological action of the vitamins	1942
Harris, R. S. & Thimann, K. V.	Vitamins and hormones	1943
Hadfield, G. & Garrod, L. P.	Recent advances in pathology	1942
Levinson, S. A. & MacFate, R. P.	Clinical laboratory diagnosis	1943
Zoethout, W. D.	Laboratory experiments in physiology, 3d ed.	1943

MEDICINE AND THERAPEUTICS:

Bennett, G. A. and others	Changes in the knee joint at various ages	1942
Comroe, B. I.	Arthritis, 2d ed.	1941
Cowdry, E. V., ed.	Problems of aging, 2d ed.	1942
Kampmeier, R. H.	Essentials of syphilology	1943
Lewis, Sir Thomas	Pain	1942
Muller, G. L.	Clinical significance of the blood in tuberculosis	1943
Lowsley, O. S. & Kirwin, T. J.	Clinical urology, 2v.	1940
O'Hara, Dwight	Air-borne infection	1943
Sulzberger, M. B.	Dermatologic allergy	1940
Sutton, D. C.	Physical diagnosis	1937

SURGERY:

Bowman, F. B.	Everyday proctology	1941
Ladd, W. E. & Gross, R. E.	Abdominal surgery of infancy and childhood	1941
Mudd, S. & Thalhimer, W.	Blood substitutes and blood transfusion	1942
Harkins, H. N.	Treatment of burns	1942
Bailey, Hamilton, ed.	Pye's surgical handicraft, 13th ed.	1942
Treves, Sir Frederick	Students' handbook of surgical operations, 7th ed.	1943
Wright, Sir Almroth	Pathology and treatment of war wounds	1942

GYNAECOLOGY AND OBSTETRICS:

DeLee & Greenhill	Principles and practice of obstetrics, 8th ed.	1943
Greenhill, J. P., ed.	1942 yearbook of obstetrics and gynaecology	1943
Titus, Paul	Atlas of obstetric technic	1943
Vaux, N. W. & Castallo, M. A.	Mechanics of obstetrics	1943

NEUROLOGY AND PSYCHIATRY:

Kraines, S. H.	Therapy of the neuroses and psychoses, 2d ed.	1943
Monrad-Krohn, G. H.	Clinical examination of the nervous system, 1st ed.	1921
Strecker, E. A. & Ebaugh, G. F.	Practical clinical psychiatry, 5th ed.	1940
Wechsler, I. S.	Text-book of clinical neurology, 5th ed.	1943
Weiss, E. & English, O. S.	Psychosomatic medicine	1943

PUBLIC HEALTH, TOXICOLOGY, ETC:

Dack, G. M.	Food poisoning	1943
Glaister, John	Medical jurisprudence and tosicology, 13th ed.	1942
Hamilton, Alice	Exploring the dangerous trades	1943
Henderson, Y. & Haggard, H. W.	Noxious gases	1943
Williams, J. H.	Chemotherapy of malaria	1942
Kessler, H. H.	Accidental injuries, 2d ed.	1941
Marsh, L. C., ed.	Report on social security for Canada	1943

SPECIALTIES:

Jackson, C. & Jackson C. L.	Diseases and injuries of the larynx, 2d ed.	1942
Williamson, Bruce	Handbook on diseases of children, 3d ed.	1942

GENERAL:

Ham, A. W. & Salter, M. D.	Doctor in the making	1943
Jackson, A. Y.	Banting as an artist	1943