JOHN GEORGE MacDOUGALL

M.D., C.M. (McGILL), F.A.C.S., F.R.C.S.(C.)

Professor of Surgery, Dalhousie University, 1928-1949
Professor Emeritus of Surgery, 1949-1950

1869-1950

IN MEMORIAM

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IT is a wonderful thing to be born poor—but not too poor. Not so poor that struggle as one may poverty cannot be overcome, but poor enough to be required to struggle for the better things of life and take joy in securing them. It is good to be born in the country where people have a common interest and common ties, and where man sees from season to season the fruit of his labours. Best of all it is good to be born into a good home where peace and harmony prevail, where there are other happy children, where learning is respected and God is loved and worshipped. With all these advantages offered him John George MacDougall arrived in this world at Blue Mountain, Pictou County, on March 3rd, 1869.

His grandfather had arrived in Pictou County less than forty years before, from Glen Urquhart in Scotland, and finding that the days of free grants of land had passed purchased one hundred acres in the Wentworth Grant for a few pounds and proceeded to take possession. While he had to clear his land like the other settlers, the pioneer days having passed, there was help available for this task, willingly provided. The land was stony and not very fertile, requiring unceasing toil to make it productive. For all that he prospered, and his son Roderick, known as "little Rory", could count himself a reasonably well to do farmer when his family began to arrive.

Blue Mountain today is not essentially different from the days when John George was a boy. Climbing one of the longest hills in Nova Scotia from the shores of Northumberland Strait you suddenly come upon a cemetery, then a church, a school and store in rapid succession; a millpond, an "S" turn in the road, and you are leaving Blue Mountain for Moose River. For young John life centred about home, school and church. At home there was plenty of work for a boy and ample opportunity to see the pioneer skills in their declining years. Flax was grown, prepared, spun and woven into cloth. Every farmer had his flock of sheep from whose wool yarn was spun and knitted into garments for the family. Shingles were split by hand from blocks of pine. A community mill sawed lumber, made oatmeal and flour from home grown grain. Every home was nearly self-sustaining and the store was patronized for luxuries or the necessities which could not be readily produced at home. Every boy grew up with mechanical aptitudes fully develop-

ed. John made his own traps for taking mink and muskrat in the brook nearby, and graduating from these to higher achievements spent his apare time one whole winter in making a fiddle. It was nothing of which Stradivarius would be proud but it would play and give expression to the music flowing in his blood from his Highland ancestors. School was an adventure in learning and in competitive games. Church was an esteemed privilege by the older folk, a somewhat awesome experience to the youngsters. John was introduced to both and emerged with a ground work of sound learning, an acquired skill in competitive games and a thorough indoctrination in Presbyterianism by way of the Shorter Catechism. It was a strong, sturdy cheerful lad, full of good humor, but serious in his purpose who was finally sent to New Glasgow High School to continue his education.

It was sometime during these years that he decided to go to college and study medicine. There was no thought of seeking financial help at home. It could be secured in only one way, by personal effort. Accordingly, as soon as the necessary high school work was completed, John began to teach. He taught from 1887 to 1893 at Westville, Albion Mines, and Stellarton, in succession. He used to speak of these years with much pleasure. Robert Macllellan was at Pictou Academy and a warm friendship sprung up between one of the finest teachers Nova Scotia ever had and a younger confrere destined to be equally distinguished in the field of surgery. The period at Stellarton was the happiest of his teaching years. He had achieved experience and confidence. In a day when school discipline was Sparton in character, John's classroom was distinguished as a place of freedom from its rigors. There was freedom to ask questions, individual abilities were recognized and appreciated, and when lessons became boring the young teacher resorted to his fiddle to relieve the tedium.

The second phase of his life had now passed. He had achieved maturity, education, and experience, as well as a modest amount of capital. In 1893 he entered McGill University Medical School whence two Pictou County youths had preceeded him the year before, William Roderick Dunbar of Abercrombie, and Henry Kirkwood MacDonald of Lyon's Brook.

H. L. SCAMMELL

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ONLY those of us who worked around the Victoria General Hospital in the roaring Twenties, can have any real idea of the tremendous impact of Dr. MacDougall's peculiar genius on the clinical life of this province. Every one of us in his heart of hearts recognized him as our unquestioned *primus inter pares*. Beyond our narrow circle, the men practising in the city and province, looked to him as the consultant of consultants. And beyond that again, the medical name that the laity everywhere in the province knew—almost as a household word—was his. Wherever one turned among the sick it seemed to murmur constantly through hospital halls and consulting rooms. "Dr. MacDougall . . . Dr. MacDougall . . . Dr. MacDougall . . ." To such an extent that those of us beginning surgical practice at that time, felt a continual sense of frustration about our futures, wondering how we could possibly compete with a prestige so ubiquitous and overwhelming.

Let me say at the very beginning, so there will be no doubt about the sin-

cerity of what I write here, that he and I did not always see eye to eye. Although as a surgeon he himself was a specialist, he was profoundly opposed to specialization, and pulled no punches in saying so. In many of the wider aspects of medical philosophy we stood at opposite poles, in the maintaining of which positions we both at times developed considerable antagonistic heat. Primarily, I believe, a good deal of our disagreement arose out of what I have called his "peculiar genius"; he was, in an outstanding way, the living embodiment of his own argument against specialization. Off the protean range of his own medical activities, any opposing arguments bounced like rubber balls. He had such an all-encompassing clinical curiosity, such a keen, razorlike intelligence, such a zest and capacity for study, such a tireless faculty for sustained effort, that he was able to enter and master all the common fields of practice. Not only was he an outstanding surgeon, he was a good internist, a pioneer urologist—having done the first cystoscopy in the province, and an excellent gynecologist and obstetrician. From time to time I have seen, since he retired from practice, cases upon which he had operated. I hope my own work stands up as well.

It has been easier since he retired to maintain the argument for the specialist: there has arisen no other MacDougall—perhaps there never will. The several characteristics that gave him preeminence, are not often combined in one individual. Nor is the physical hardihood to maintain them at the highest pitch as was the case with him. It tires one even to recall his ordinary day when he was at the height of his career. A car drive to Truro, with two or three major operations that morning; back to Halifax to deal with a crowded and urgent consulting room; perhaps two or three consultations with other city doctors, an emergency appendix during the evening, and then an ectopic, or ruptured duodenal ulcer during the night—all this followed by a long confabulation in the surgeons' room afterwards—the while dragging on one of those fearsome pipes that gurgled with age and nicotine. And then, after a few hours sleep, up and off to Wolfville to begin the same sort of day again. It was an outstanding exhibition of human dynamism, and showed a physical and mental stamina given to few.

His influence on the course of medical education was very great. I was not so impressed with his public teaching in the classroom, where he often allowed himself to be pushed off into irrelevancies. I doubt, in fact, if his real educational contribution was made this way. My impression is that he taught us, his colleagues, far better than he taught his medical students. During his crowning years, hospitals were springing up in all the smaller provincial towns. He, more than any other, was called to these hospitals to operate: he set up in them the type of operating technique, clinical investigation, and surgical care, they were to follow for a good many years. One could say that he taught a whole generation of medical practitioners in these towns to be surgeons. That, in itself, was a very great educational contribution.

Then he taught us who were members of the staff of the Victoria General Hospital. He was such a student that there was hardly a week in those years of expanding surgical technique, he did not introduce some new treatment, or operation, or variant, or handy wrinkle. In order to exist, we had to keep up with him as best we could. In doing so we became indebted to him educationally. Like a sparkplug he was continually exploding ideas among us.

He was a great talker and loved to talk. I am sure we all found his con-

versation wearying at times. His mind was so full, he could go on and on until we, with lesser stamina, wilted under his words. But you never knew when some pearl of medical wisdom was going to drop from him, or how precious it might prove.

I well recall—as he himself would begin a tale—one noon I encountered him in the old Board Room. I had got a call to the hospital just as my wife was about to put lunch on the table and she had enjoined me not to be long. He had just finished a new type of aseptic intestinal anastomosis, and being full of it at the moment, and there being no other audience available, he buttonholed me.

We started over in the corner by the door. Presently we were sitting down at the table. Then he got pencil and paper to refine the details. "My God," my wife said when I got home, "You've been gone an hour and a half. What kept you?"

"John George!" I replied wearily.

Three days later I opened an abdomen on a diagnosis of right ovarian tumor and found advanced tuberculosis of the cecum. There wasn't a general surgeon in the hospital to turn the case over to, but it really didn't matter. All I had to do was excise it and make the anastomosis according to the still-dew-covered directions John George had laid down so eloquently while my lunch dried to unpalatability.

None of us at the V. G. but had similar experience of him: none of us but learned and expanded his clinical wisdom through contact with him in those many and varied dressing-room *conversaziones* that crowned most of his surgical procedures.

One thing about him that amazed me was the terrific confidence he inspired in the laity. I still don't understand its exact wellsprings. He was neither a big nor an impressive man physically. Many of his mannerisms were awkward. But a few moments under his spell and people seemed to melt into his hands.

In those days it was not always easy to persuade people to operations. The memory of an era that carried a high mortality still remained in the public mind. Today, most of us who are real surgeons, have to spend a lot of our time persuading people they *don't* need operations. In those days it was the other way around. Dr. MacDougall had a real flair for bringing even the most recalcitrant sceptic up the sawdust trail to surgical penitence.

Here is an instance that left me bug-eyed at the time. I was looking after an old Jewish lady for Dean Grant, whose patient she was, but who was away at the time. We had both tried to persuade her to an operation for her gallstones, as had several other previous attendants. Without avail. On this occasion, however, she developed an attack that refused to abate, and when she and her married daughter again refused the advice, I told them I couldn't accept further responsibility without a consultation. They agreed to this and asked for Dr. MacDougall.

That afternoon I met him there—he was only an hour late that day—and we went up to see the old lady in her bed. Here we are then in this upper bedroom overlooking the harbour of a fine old house on Brunswick Street. The old lady in bed, Dr. MacDougall sitting beside her with his hand on her abdomen, and the daughter standing at the foot of the bed. He talks to the old lady while she palpates, but of course she doesn't understand a

word. Then he gets to his feet and gazes out the window for a moment. Suddenly, he has his fey and Celtic flash of inspiration.

Turning to the daughter he asks: "Mrs. Blank, if your mother fell off Pier Two down there and you had a life preserver in your hand, would you throw it to her or not?"

"Oh, doctor, my poor mother—of course, I would!"

"I've got a life preserver for your mother—an operation. It's just as necessary to her now as a real life preserver would be if she were drowning."

I don't know how much of this the old lady got: I doubt if she got any of it. But suddenly she grabbed Dr. MacDougall's hand and began to kiss it. At the same instant the daughter cried out: "Of course, doctor, if you say so!"

As simply as that, the bill of goods was sold. He wasn't in the house ten minutes.

Perhaps the secret of his appeal in such cases was that, like Jesus, he brought his idea to the patient in their own language. Instead of talking pathology, he talked parables. But whatever was in that human touch of his that day, it seemed sheer magic to me.

There have been three outstanding surgeons in Halifax in my time. Dr. John Stewart, with the mantle of Lister enshrouding him, lent us an austere and difficult ideal. Dr. Murdock Chisholm, at a most critical time in our medical history, when other men refused the gage contemptuously, almost single-handedly kept alive the feeble flame of clinical education in Halifax, and set a noble example of self-effacing effort. And finally, Dr. MacDougall, who more than any other lifted us out of the ruck of tenth-ratism and forged the clinical side of that Grade A standing of which we today can be so proud. Who is there to say that, like Charity, the greatest of these three was not John George?

H. B. Atlee

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MY first acquaintance with Dr. MacDougall was in the summer of 1906, when I took over the practice of Dr. J. A. Sutherland of Springhill for a period of four months. Dr. MacDougall had been in Amherst for a few years and had already gained recognition as the leading consultant in the County of Cumberland. He came to Springhill frequently and gave me great help in my serious problems. I was much impressed by his ability both as a physician and as a surgeon and my association with him at that time served to establish a friendship which has lasted for over forty years.

Throughout his life, his "master word" was work. He prepared for matriculation without the advantage of college training and frequently referred to the help and encouragement which he received from Ebenezer MacKay, later Professor of Chemistry at Dalhousie University. He had a distinguished undergraduate record, winning in his final year the Holmes Gold Medal. It is worth noting that he took some interest in competitive sports and created a sensation by winning the hammer-throwing competition. He weighed 125 pounds and most of his competitors were heavyweights. Following graduation, he went two years as an interne at the Royal Victoria Hospital. At this time he intended to specialize in medicine and took all of his internship in the medical department. It is well known that he frequently slipped into the surgical

clinics and was a great admirer of some of the Montreal surgeons, especially Dr. James Ross. At this time he was fortunate in meeting Dr. Howard Kelly who came to Montreal to demonstrate his new instrument, the cystoscope. He prepared cases for Dr. Kelly who before leaving, presented Dr. MacDougall with a cystoscope which was part of his equipient when he came to Amherst.

Soon after beginning practice he had a lady patient, greatly exsanguinated, due to severe and repeated hematuria. She had sought help in vain in some of the larger clinics. With this cystoscope Dr. MacDougall was able to demonstrate a papilloma, cauterize it, and there was no further bleeding.

Dr. MacDougall's medical training at the Royal Victoria Hospital played an important part in his life for he was a good diagnostician and left no stone unturned when dealing with an unusual problems. Surgery, at this time, was in its infancy. Dr. MacDougall could not resist the temptation to undertake surgical problems, and he soon established a reputation as a bold and fearless surgeon. Early in his carreer, he attacked the major problems, appendicitis, gall bladder, thyroid, bowel resection, Caesarian section, mastoids, etc. It is on record that the first operation for appendicitis was done in Amherst by Dr. D. C. Allan in 1895. Dr. MacDougall adopted the practice of early operation at a time when there were frequent delays, sometimes disastrous.

One of his great surgical triumphs was a laryngectomy. A lady had a tumor of the larynx and was refused operation in Boston and Montreal. With the full consent of the patient, he removed the larynx with the tumor. Four years later he showed the lady in good health and also the specimen, at a meeting of The Medical Society of Nova Scotia held in Truro.

In 1914, Dr. MacDougall moved to Halifax and limited his work to surgery. His appointment to the staff of the Victoria General Hospital gave him the welcome opportunity to take a part in the teaching. My knowledge of his ability as a teacher comes mainly from the favourable comment of the students who attended his clinics and followed him in his ward rounds. I also learned much from a close association with him in clinical work and from his clear presentation of cases at various medical meetings. He used his intimate knowledge of anatomy and physiology very effectively. He always attempted to teach fundamentals. His usual procedure was to discuss the evidence to be obtained from a careful history, followed by the full use of the eyes, the ears and the fingers. Finally, he would supplement his picture by what he could obtain from special procedures, X-ray and laboratory. In this manner he carried the interest of the students through the various stages of investigation, leading to an accurate diagnosis. As a consultant his field was the Maritime provinces and I have often heard that his visits to outside points was the occasion for an interesting clinic.

His case of embolectomy, the first in Canada, may be taken as an example of his method. When the technique of embolectomy was perfected by workers in foreign fields, he made careful preparation and made himself familiar with the technique. When the opportunity came he was fully prepared to proceed without any delay. The opportunity came in 1926 when he successfully removed an embolus from the femoral artery a few hours after it occurred. The patient was saved from gangrene which up to this time was the inevitable result of a large embolus.

Few men have had such a busy and interesting life. He did an amazing

amount of work. Yet, he found time to take an active interest in the general problems of the profession. His influence was felt in matters of medical legislation, medical education and public health. Like many busy men, he had some hobbies. He was one of the best amateur geologists in the Province and was never at a loss to explain the geological features of Nova Scotia to those who were interested.

Times have changed. Specialism has developed to such a degree that the surgeon of the future must have a restricted field. The wide and varied experience of Dr. MacDougall cannot be repeated. He was a good physician as well as a surgeon. He was a pioneer in urology in this province. He was a gynecologist. He removed cord tumors and occasionally ventured into the cranial cavity. He did some mastoids well and removed cataracts. He measured up to the opportunities of the period in which he was active, the first half of the twentieth century. His experiences and his accomplishments are unique in the medical annals of this Province.

KENNETH A. MACKENZIE

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DOCTOR John George MacDougall was my mentor, my friend and my associate. This privilege was highly prized and these few words are but a meagre tribute to a great Master of Surgery who has gone.

In his own realm of endeavors and during the busy years of his life, he had few equals and no superiors. Indeed, it is doubtful if such a man shall again live amongst us. With his wide experience in the whole field of general surgery which included gynecology and urology he had trained himself well in the field of general practice. This phase showed continually in his summing up of a case and what course that particular patient should follow. Many times the pure medical or even the psychylogical part determined his line of action and the surgical operation postponed or definitely decided against. When this was done, it usually entailed considerable explanation and assurance, done with a choice of words and a manner that was most convincing and left the patient feeling that no one else could have advised him so well. His ability to create confidence seemed as natural as life izself.

The clinician must per force be one who can see, feel, hear and even smell some slight variance from the normal anatomy and physiology. As a teacher he was continually and forever emphasizing these points.

First of all, to make use of your senses in establishing a diagnosis which is well illustrated in the story: "Doctor MacDougall was operating late at night on a perforated duodenal ulcer which had been referred by a Doctor S. who was also an excellent clinician. The conversation between the two in the dressing room immediately preceeding the operation turned to the relative frequency of hypothyroidism and the value of giving thyroid extract for it. Doctor MacDougall said he had had a patient who had gained a lot of weight and with thyroid extract had lost 30 pounds in a month. 'Golly, you know' said Doctor S., 'I had a patient her hair was all falling out, had to wear a wig. Gave her thyroid extract and golly, you know, in a month's time she threw the wig away.'"

His surgery was never routine. Each case was studied diligently from every angle a careful history and clinical examination then if deemed necessary x-ray and other laboratory tests were used, but always the cliniel examination came first, and this he applied to his post-operative care as well. It is easier to prevent trouble than treat it when it has arrived. At times his diagnostic acumen was uncanny.

His operative procedures were solely dictated by the pathology found and his judgment of what the patient could stand. Never flustered or upset he could proceed in the face of great difficulties to a conclusion which would be as satisfactory as could be hoped for under the circumstances, e.g. opening an abdomen for what was thought to be an acute distended and probably gangrenous gall bladder on an old lady, he found an infected hydronephrosis in a kidney (the left one) situated immediately beneath the liver and overlying a normal right one; he proceeded to remove it. This was done satisfactorily. In such abnormalities he gloried.

An indefatigable worker with an extremely strong constitution he would operate all day, drive to a nearby town in the evening to rest for the night, and operate there all morning and return in the afternoon to be at it again the next day. His services were sought throughout the whole province and always given willingly. At night he tried to keep up his medical records. This was an arduous task but in some things which were of special interest such as thyroids he had a record of case histories findings, etc., in over five hundred thyroid operations.

While his diagnostic ability was of the first order and his skill as an operator of equal merit, his understanding of human nature seemed to transcend all these qualities. No matter what the strata of human society the individual came from nor the nature of his complaints Doctor MacDougall seemed to be able to put them immediately at ease with a feeling of supreme confidence. Such a combination of technical knowledge and skill and "know how" with practical psychology is indeed not common. His experience and usefulness were always freely given to students and others who sought his wise council.

It is given to few men to have and develop so many talents both for his own benefit and satisfaction and that of the public whom he treated. His confreres will miss his wise council but always remember his fine achievements.

"Ah! but a man's reach should exceed His grasp, or what's a heaven for."

H. D. O'Brien

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"Let us now praise famous men.
"The Lord hath wrought great glory by them.
"There be of them—that have left a name
"behind them—that their praise might be
"reported.
"Their bodies are buried in peace,
"but their name liveth evermore."

THE above quotation is very applicable to the late Dr. John G. MacDougall. In his passing we have lost a great scientist, a great observer, a great thinker, a great surgeon, a great teacher, and a great conversationalist. But the man MacDougall was great in many other ways—as a friend, "True in heart, noble in spirit, and dauntless in courage." He had a high degree of practical wisdom and was able to put that wisdom into action.

As a result one pauses to consider how one can best render in mere words even a faint impression of one of the most inspiring and interesting of men. To many of us, there has been but one John George MacDougall, who stood unique in the medical profession of this province and Dominion.

It was my privilege to know him for fifty-six years, and consider him one of my oldest and best friends. That first impression of ineffable mental charm never lessened or became modified. Though older than the average when he entered on the study of medicine, he possessed one great advantage in that he knew something about human nature from his experience as a teacher, and what is of greater moment, he knew himself. He realized that a doctor's bottle contained more than drugs. He could be most interesting in the company of friends, and knew how to utilize his time to advantage when alone.

Whilst he excelled as a surgeon he had an intimate knowledge of the Humanities, History and especially Geology. Though an indefatigable worker, he knew how to live and enjoy life, and was an inspiration to many of his students and confreres. His fund of "accumulated experiences" was marvellous and apparently inexhaustible.

I do not intend to consider his career as a surgeon. Other and better pens can do that. None the less, one cannot entirely divorce his character from that of the surgeon. He was always cognizant that along with the knowledge he possessed, necessity called for keen observation and understanding of patient and others in general, and was not only observant, but tactful to a marvellous degree—versatile, charitable, understanding, honest, honourable, and tenacious of the right. He was endowed with "The spirit of a discoverer, the courage of the righteous, the heart of a champion, and the judgment of a sage." Decisive, yet resourceful; firm, yet gentle. His was a wonderful "bedside manner", not the type the public generally imply, with a sneer, as if there were something sinister about it. But it came of kindness, sympathy and gentleness, and his wonderful capacity to inspire confidence. He learned that at the bedside, to suffer fools gladly, to disagree and not be disagreeable, to listen quietly to most preposterous nonsense, to act as a confidential family lawyer, and as a priest hearing confession, all of which demands that the term "bedside manner" should be used as a term of respect, reverence, and even admiration.

As a member of the Provincial Medical Board for nearly fifty years and its President since 1922, Dr. MacDougall did yeoman service for the protection of the medical profession and the public.

During his professional life he was the recipient of many honours by the profession. He served as President of the Halifax Branch of the Nova Scotia Medical Association, and as President of the Nova Scotia Branch of the Canadian Medical Association, also as President of the Canadian Medical Protective Association and the Medical Council of Canada. He was also on the Council of the Royal College of Physicians and Surgeons of Canada.

When, as a vice-president of the American College of Surgeons he accompanied them on their South American tour, he found himself the senior ranking officer and as such was called upon to represent the College and preside at all social and professional functions, which he did with grace and dignity.

As a member of the Medical Council of Canada he was mainly responsible for the mutual understanding and cordiality which existed between the province of Nova Scotia and the province of Quebec. It was and remains an "entente cordiale"—which should be maintained and fostered, and an example to all Canadians who by thought and endeavour are desirous of seeing this Canada of ours a united people. The name "J. G. MacDougall" will for many years be one with which to conjure amongst our Canadian colleagues of French descent.

Perhaps the greatest and least recognized of all his accomplishments, was that which he by his eloquent and persuasive pleading upon the Carnegie Foundation people to allocate to the Medical School of Dalhousie some Six hundred thousand Dollars ($500,000 plus 20% premium), thus enabling Dalhousie Medical School to continue as a medical school and attain grade "A" rank. To him alone was this accomplishment due and this one achievement redounds not only to his credit, but to the benefit of hundreds of young men and women who have had the advantage of getting their training and graduating from this University.

One might go on indefinitely enumerating the many characteristics of Dr. MacDougall, but those most outstanding were those we have mentioned. Well and truthfully could he say:

"I have loved no darkness,
Sophisticated no truth,
Nursed no delusions,
Allowed no fears."

Long will he be remembered not only as a great surgeon but a gentleman and a debonair companion.

It is difficult to realize that he has left us, and his friends and associates will miss that genial smile and companionship, and other interesting characteristics so inherent in him.

So—

"Open wide the vaults of Atholl,
Where the bones of heroes rest.
"Open wide the hallowed portals
To receive another guest."

"Sleep in peace with kindred ashes
Of the noble and the true,
"Hands that never failed their country
Hearts that never baseness knew."

C. S. MORTON

Slit Lamp Biomicroscopy

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1. DEFINITION

Microscopic examination of the living eye by obtaining an optical section of the eye by means of a slit beam. This is equivalent to microscopic examination of histological tissue obtained by microtome section.

II. HISTORICAL

The modern biomicroscope is an adaptation of the Czapski corneal microscope with the slit lamp of Gullstrand. In other words, it is controlled brilliant illumination combined with higher magnification that can be obtained with a loupe.

For some years after the Czapski binocular microscope was devised, it was not very useful because only diffuse illumination was available.

In 1911, Gullstrand presented his first model of the slit lamp by which the illumination could be controlled so that a concentrated pencil of light could be thrown on the eye. Vogt's Modification on Gullstrand's gave a more intense illumination. Henker is given credit for being the first to assemble the two instruments into one by mounting both elements on a horizontal arm. The first light used was a Nernst lamp with a tungsten rod. This gave excellent illumination but had the disadvantage that the rod had to heat to 600C. to obtain the desired brilliancy and such a lamp was short lived. Later the nitra lamp was devised, which had a spiral tungsten filament in a nitrogen filled globe.

These lights last a long time and give sufficient illumination for ordinary work.

Carbon arc lights and mercury vapor lamps have been used, especially to study the vitreous, but are not practical for clinical work.

III. TYPES OF INSTRUMENTS

Two firms have produced most of the biomicroscopes in use today—Carl Zeiss, a German firm and Baush and Lomb.

Zeiss made two models. The first was a Czapski binocular microscope with three contact points which slide on a glass topped table. A later model, the Comberg, had the illuminating arm and mocroscope mounted upon the same base, Bausch and Lomb have marketed three models. The first was known as the Koeppi type in which the illuminating arm and microscope were mounted on the same base and both elements could be shifted laterally or forward and backward on a mechanical stage. The next model was the Universal in which the microscope slides on a glass topped table, while the illuminating arm swings free on a base attached to the table stand. The latest model, the Poser, has an illumingting arm and microscope mounted on the same base. Other instruments have been manufactured such as the Fincham (England) and the Lemoine and Valois (France).

IV. The Optics of the Poser Slit Lamp Consist of the following:

1. Light source—6 Volt 4.5 amp. lamp.
2. A pair of plano convex condenser lenses with their convex surfaces in apposition.
3. Slit aperture.
4. Prism.
5. Collecting or collimating lens.
6. Focal lens.

V. General Description of Poser Slit Lamp

Consists of a base, head and chin rest for patient, microscope and illuminating system.

The base contains the switch and intensity of illumination control. It carries the lamp and microscope support. By button action control, the whole base may be moved laterally.

The patient's head and chin rest have two adjustments—it may be raised or lowered and may be tilted.

The microscope is binocular. Various magnifications are possible but as magnification is increased, size and brightness of the field are decreased and over forty times magnification, the ocular oscillations become too exaggerated. Hence it is advisable to use a magnification which has the greatest utility. The microscope is equipped with low power paired objectives 55mm and number 10 paired eyepieces which give magnification of 15.5mm and 12.0 mm. field width. Also, standard equipment are 40.0 mm paired highpower objectives, which with the same eye pieces, give 31.0 magnification and 5.5 mm. field width.

It has been found that the lower power objectives (15.5x magnification) give the most satisfactory result in the greatest number of cases.

The microscope may be tilted back to permit placing the illuminating system on the right or left side.

On examining the right eye, the illuminating system is on the right and vice versa. The optics of the illuminating system have already been briefly described. It has a number of adjustments. The slit beam can be varied in width from 8.5mm. to the thinnest possible beam. The length of the beam may also be adjusted from 8.5 to 7.0 to 3.5 to 1.0 mm. The entire illuminating system may be raised or lowered and the beam may be focused on the patient's eye by another adjustment. The entire system may be rotated from side to side by swivel action.

The slit lamp and microscope may be locked together by tightening a screw and thus the object viewed may be seen from all angles as the two arms move as a unit.

4. Clinical Application

(1) **General Comment**

Slit lamp examination or biomicroscopy is today the only certain procedure by which a differential diagnosis may be made in many cases of eye pathology. Its two important uses are localization and biomicroscopy.

In modern ophthalmic practice, we wish to learn the answers of such following questions—Is pathology old or recent? Is it traumatic or non-trau-

matic? Is an incipient corneal process due to congenital syphilis or not? In the past answers to these questions involved a degree of uncertainty. Today, with the use of the slit lamp, certainty and precision may be had in diagnosis. Disease processes may be followed throughout their course in minute detail.

The narrow beam gives an optical section of the eye in any desired plane. It supplies the third dimension, particularly in examination of the cornea and crystalline lens. A wide beam gives what is called a parallelopiped or block of the cornea—curved rectangular section.

Twenty per cent of our illumination is used up in passing through the cornea—eighty per cent in passing through the lens and the remaining twenty per cent is left for examination of anterior one third of the vitreous.

The narrow beam or optical section is necessary to localize pathology in the cornea or lens, e.g. depth of ulcers, depth of penetration of foreign bodies and depth of scars of cornea may be determined accurately.

The depth of the anterior chamber, important in glaucoma, may be easily ascertained. The detection of a "flare" in the anterior chamber and floating cells in early sympathetic ophthalmitis is facilitated by use of slit lamp.

The nature and extent of a cataract is easily seen by the optical section through its substance.

Lesions in the lens may be chronologically dated, results of inflammation may be distinguished from embryological structures. This knowledge is important in medico-legal work.

The slit lamp is an indispensable part of every modern ophthalmologist's office equipment. It facilitates early diagnosis of eye lesions, gives better ideas as to prognosis and is a very important aid in directly establishing lines of treatment during the course of the disease.

(2) Methods of Illumination

As the beam of light passes through the various layers of the eye, it will be seen that there are apparent zones of discontinuity. When the light strikes a surface separating two media of different index of refraction, there will be a certain portion of the light reflected. Where the light passes through media that are optically homogeneous, there will be no light reflected. Where the light passes through media not optically homogeneous and that have small particles suspended in them, some of the light will be scattered and the particles will become visible. It is essential in biomicroscopy to illuminate the object properly in order that the best possible examination be made.

There are six methods of illumination.

1. Diffuse illumination.
2. Direct or focal illumination.
3. Trans or retro-illumination.
4. Specular reflection.
5. Indirect illumination.
6. Sclerotic scatter.

In some cases only one type of illumination is required and in others several methods may be used.

Briefly described and their uses, are as follows:

1. **Diffuse Illumination**: Used in initial examination of the eye to grossly inspect it. It is obtained when the eye is generally illuminated. The

slit lamp is focused with a wide beam on some other part not under examination. Valuable in locating faint corneal opacities.

2. **Focal Illumination:** The slit beam is focused on part directly under examination. It is this type of illumination which gives us thin optical sections and is most frequently employed in the study of the cornea, aqueous, lens and vitreous. With this type, individual structures become visible against a dark background. The microscope should be focused on the same level as the illumination. As the observer passes from superficial to deeper structures, the light and microscope must be refocused.

3. **Retro-Illumination, also called transillumination:** It is utilized by examining a transparent structure against an illuminated background, e. g. to inspect endothelium of cornea, microscope is focused at this level, while the illumination is focused on the iris. Used also for examination of faint deposits on Descemet's Membrane.

4. **Specular Reflection:** This method of illumination is the result of a light that is directly reflected from surfaces such as from cornea and lens. It is somewhat difficult to use. The reflected light is used and the microscope must be in direct line of axis of the reflected light and focused on the area from which the light is reflected, so that the light passes into the microscope.

Its chief use is for studying back of the cornea, especially endothelial cells and deposits. Also useful in studying anterior and posterior lens capsule. It is the most difficult part of microscopy to master.

5. **Sclerotic Scatter:** By this method, the observer looks to one side of the illuminated area. Useful in gross parnoramic examination of the cornea. The slit is focused on the limbus at an acute angle and entire cornea is diffused and lighted up for observation.

6. **Indirect Illumination:** This combines the features of sclerotic scatter and retro-illumination. The observer looks to one side of the illuminated area. Useful in bringing out faint corneal opacities.

3. General Technique of the Examination.

The examination does not have to be carried out in a totally dark room. In fact, it is better to have the room dim so that there is sufficient light to enable the examiner to see his way around. The patient should be able to see sufficiently to fixate on the examiner's forehead. The examiner and patient should sit on adjustable stools. The eye pieces must be adjusted to the height of the examiner's eyes and to coincide with his interpupillary distance.

The patient is seated before the slit lamp and his stool adjusted so that the patient's eye is at the proper level. The chin rest is adjusted to the correct level and the patient should keep his forehead firmly against the head rest. The patient should rest his arms on the table.

The examiner should use the slit lamp constantly so that he may make adjustments automatically. He should proceed rapidly to avoid fatiguing the patient.

The microscope is set in the central position while the lamp arm is placed temporarily to the eye being examined. When the lamp is turned on the illuminating lens should be adjusted so as to examine by diffuse light. From this examination the cornea and lens can be examined with focal illumination. Various slit widths and lengths should be tried in order to arrive at the best possible illumination.

4. Examination of Specific Tissue and Media of the Eye

1. **CONJUNCTIVA:** Offers no difficulty since it is easily accessible. Either diffuse or focal illumination may be used. For rapid survey, diffuse, and for a detailed examination of a localized area, focal illumination is used. With high power magnification, red blood corpuscles may be seen in small vessels close to the surface.

2. **CORNEA:** The cornea is a surface structure and therefore receives the full benefit of the illumination, whereas, the deeper structures lose some illumination through absorption and reflection.

All types of illumination may be used but direct focal illumination and retro-illumination are most frequently employed. A broad focal beam will outline the parallelopided of Vogt. Using a narrow focal beam we get a thin optical slice of the cornea extending from the epithelial to the endothelial edges. Starting anteriorly and going posteriorly, we see, (a) somewhat relucent surface fluid film, stained with 1 per cent fluorescin, appears green; (b) the less relucent and darker appearing epithelial zone; (c) brighter zone of Bowman's Membrane; (d) the stroma of a granular gray appearance exhibiting nerve fibres and arachnoid corpuscles under high magnification; (e) the endothelial zone again more relucent and of brighter appearance.

With accuracy of focus of the microscope and illumination, we will discover that the narrow optical section and wider parallelopiped have some advantages in common and other advantages possessed by one over the other. The narrow section enables us to discover thickening, thinning or distortions in contour more readily than with the wider beam. This section also makes more accurate the determination of depth of a foreign body or pathological change. The parallelopiped is more useful when we wish to observe a larger area of the endothelial surface or wider block of the substantia propria.

Also surface irregularity, resulting from epithelial edema or bedewing, is more readily seen with the wider beam, though it is much better seen in retro-illumination. Keratic precipitates (K.P.'s) are seen in more abundant numbers on the endothelial surface with the parallelopiped. The path of a permanent scar of a perforation track through the cornea may be observed.

Retro-illumination ranks second only to direct focal illumination in its usefulness.

Epithelial edema (bedewing) and invading vessels are more readily seen.

The characteristic orange peel or pigskin appearance of endothelial dystrophy is readily recognized. K. P.'s are quickly discovered. The fine granular opacities of early dystrophy are apparent. Corneal opacities which appear bright with direct focal illumination are dark in retro-illumination.

Specular reflection of the endothelial zone will provide us with significant pictures not discovered by other means; e.g. the mosaic pattern of the en-endothelial cells. In anterior uveitis or deep inflammatory infiltration of the cornea, the pattern is altered because of oedema and deposit of pus cells. Excrescences of Descemet's Membrane (Hassal-Henle bodies) may be seen prodruding backward into the endothelium and may be seen scattered over the posterior corneal surface following severe corneal inflammation such as interstitial keratitis. These Hassal-Henle bodies appear like black pits in the endothelial reflecting zone and are also seen in endothelial dystrophy (cornea guttata of Vogt) and are normally seen near the limbus in the aged.

The general pathological changes which may affect the cornea are: oedema, infiltration, alterations in Descemet's Membrane, loss of substance, vascularization, pigmentation and dystrophies.

1. Edema and Infiltration:

Oedema or bedewing is a frequent finding of the corneal epithelium, along with folds in Descemet's Membrane.

The epithelium serves as an important medium in controlling the passage of fluids and gas (the drinking and breathing of the cornea) and edema results whenever this function is disturbed. Such disturbance may be caused by abrasions, contusions, ulcers, foreign bodies, keratitis, dystrophies, glaucoma, uveitis and reaction to instilled drugs. The entire cornea may be involved as in glaucoma. Only localized involvement may be present as in ulcers and foreign bodies.

With duffuse illumination, the epithelial oedema appears hazy and gray. Using a parallelopiped, it appears irregular and granular. With retro-illumination, it is most striking. Fluid droplets are set into bold relief and look like rain drops on an automobile windshield at night.

Bedewing of the endothelium is more difficult to see—characterized by isolated droplets with keratic precipitates interspersed.

Edema of the stroma is not called bedewing. It increases the relucency and causes the cornea to thicken. Diffiicult to differentiate from infiltration, though the latter may appear more granular and relucent.

2. Alterations in Descemet's Membrane:

The development of folds, like epithelial edema, represents a frequent response to trauma or inflammation of the anterior segment of the globe. It is generally agreed that corneal edema causes these folds. Focal illumination will show these folds having two relucent parallel outlines which curve together and join in pointed extremities and which enclose a darker intervening space.

Tears of Descemet's Membrane appear as opaque, usually curving lines bordering a dark intervening space.

The endothelial surface is sometimes modified by excrescences—the previously mentioned Hassal-Henle bodies.

3. Loss of Substance.

Studied with the optical section.

Thinning only occurs if the stroma is involved. Epithelial tissue loss is always restored. It occurs in keratoconus and ectatic scars. Ulceration is a common cause.

4. Vascularization:

A sick cornea cannot always get well with increased nourishment derived from pericorneal congestion. Healing sometimes only begins when it is invaded with new blood vessels. These blood vessels may be superficially located, branching in various narrow or wide patterns as seen in acne rosacea keratitis or phlyctenular disease. May be deep as observed in interstitial keratitis.

Retro-illumination brings out vascularization the best, especially deeply situated vessels.

5. Pigmentation:

May be derived from the blood, from metals, or from migratory melanin. Finely granular deposits of melanin are commonly found on the posterior surface in the pigment epithelial layer of the iris.

Massive haemorrhage into the anterior chamber (hyphema), usually due to trauma, is a common cause. The pigment of the blood migrates into the deeper corneal layers. It is colored gray to brown.

Stromal pigment may result from a haemorrhage of an invading vessel. As the haemorrhage absorbs, pigment is deposited. The deep Kayser-Fleischer ring and superficial Stahli-Hudson line are considered to be derived from haematogenous pigment.

Metallic pigment deposits are commonly due to silver (argyrosis), copper (chalcosis) and iron (siderosis). Prolonged application of silver preparations will cause deposits in the conjunctiva and Descemet's Membrane. In the parallelopiped, the silver deposit appears as a bluish, a stippled opacity of the deepest corneal surface. Copper deposits have been seen following treatment of trachoma with copper sulphate. It is also deposited in deeper layers, and appears as greenish yellow. Pigmentation, due to rust, is commonly seen around the site of an iron-containing, embedded, corneal foreign body.

6. Dystrophies

They are considered to be hereditary, most of them dominantly and some recessively. They are bilateral, symmetrical, progressive, and characteristically non-inflammatory. Confusion exists in their classification as different observers have seen the same type of dystrophy in its different stages and have given them different names.

Some dystrophies affect the epithelium, some, the endothelium, and others, the entire cornea, and still others, only the stroma.

Endothelial dystrophy (cornea guttata of Vogt) always makes its appearance preceding the development of the epithelial dystrophy of Fuchs.

According to Duke-Elder and others, the typical course of development is from a primary endothelial degeneration to a later dystrophy of the epithelium to still later dystrophic changes in the stroma. The dominantly hereditary form of dystrophy usually begins its development after fifty years of age with incidence higher in females.

The dystrophies which involve the entire cornea begin their development usually within the first decade. They may be confused with congenital corneal opacities which are present at birth, do not increase in size or number and may be associated with other congenital anomalies.

In the group are included the following:

1. Dominantly hereditary nodular dystrophy of Groenouw type 1, also called granular or crumb-like.
2. The recessively hereditary macular dystrophy of Groenouw type 2, almost always associated with consanguinity.
3. The dominantly hereditary lattice-form dystrophy of Haab-Dimmer, also called reticullar or grill-like.

In his chapter on dystrophies, Berliner lists twelve types of localized circumscribed dystrophy of the corneal stroma not preceded by epithelial or endothelial involvement. They are (1) superficial vertical pigmentation of Fleischer; (2) Circular peripheral deep opacity of Biozzi and Lugli; (3) Tiny

white rings of Coats, located in Bowman's zone; (4) Keratitis numularis of Dimmer; (5) Cornea farinata of Vogt; involving the deep stroma; (6) Superficial and deep crocodile shagreen of Vogt (7) Primary lipid degeneration of which there are several types; (8) Dystrophy of keratoconus; (9) Marginal dystrophy; (10) White limbus girdle; (11) Primary form of band shaped keratitis; (12) Hyaline and calcareous degeneration.

3. Anterior Chamber

For studying the anterior chamber contents the direct or focal illumination and the oscillating beam are most useful. Observation of keratic precipitate deposits on the endothelial layer are best carried out with direct illumination or retro-illumination. The depth of the anterior chamber is determined with the narrow focal beam. The depth of the anterior chamber is measured by the distance between the outline of the anterior capsule of the lens or iris and the outline of the corneal endothelial surface.

The depth is often shallow in glaucoma, microcornea, subluxation of the lens, intumescent cataract, senility and accommodation. Depth normally varies between 3.5mm. in youth to 2.7mm in age.

The aqueous is optically empty and appears black or invisible with the slit beam. During inflammation accompanied by increased cellular and colloid contents, it becomes relucent or visible. Such relucency is known as the "flare."

The type of the aqueous contents is important in differential diagnosis of ocular pathology. After ocular contusion, red blood cells and pigment may be seen floating in a aqueous and deposited on the walls of the chamber. White blood cells in the aqueous or on the corneal endothelium indicate evidence of the anterior uveal tract inflammation. They may be discrete or conglomerate with fibrin to form K.P.'s and may be the first diagnostic sign of iritis or iridocyclitis. In cases of eye injury, both eyes should be examined with the slit lamp as appearance of cells in aqueous of the fellow eye may be the first warning of sympathetic ophthalmia.

Floating elements are best seen with a narrow beam in sharp focus within the anterior chamber. The angle of microscope to beam should be 40-45 degrees. They are both focused on endothelial layer and again focused 1-2mm. within the anterior chamber. Gently oscillating the beam will aid in picking out cellular elements. Red blood cells appear as reddish yellow dots. K.P.'s appear greyish. These latter are best seen with retro-illumination. They may appear as small clumps and stars. A profuse precipitation of large lardaceous clumps may indicate ocular tuberculosis or sympathetic ophthalmia. Smaller deposits may indicate syphilis, or leprosy. Fine dust-like deposits of white blood cells and fibrin are seen in the uveitis. Lens flocculi are seen in aqueous of following extra capsular extraction and in traumatic cataracts with torn capsule.

Luxation of the lens into the anterior chamber is readily determined. Foreign bodies are readily seen in the anterior chamber.

4. Iris

The iris has a posterior ectodermal pigment layer, a middle mesodermal layer extending from chamber angle to pupil and an anterior mesodermal layer extending from chamber angle for two-thirds of the iris width. The irregular circle, at which the anterior mesodermal layer stops, is termed the "collar-

ette" or iris "frill". It is here that one sees the attachment of remaining strands of the embryonic pupillary membrane. The mesodermal layers or iris stroma in blue eyes may be seen to consist of trabeculae containing radial blood vessels with so-called clefts of Fuchs between them. The pupil border is made up of the extension of the pigment in the form of ruff with small pigment mounds.

The iris may be examined by all the methods of illumination.

Congenital anomalies may be aniridia, aplasia of the mesodermal layers, coloboma, flocculus and persistent pupillary membrane.

Senile changes may be evident as depigmentation of the pupil border and posterior iris layer, dispersion of pigment into the iris stroma and endothelium and stroma atrophy.

In glaucoma, the iris shows pigment dispersion and trabecular atrophy may be present. In narrow angle glaucoma the peripheral iris may be apposing the cornea. The iris may show evidence of recent or old trauma, inflammation, new growth or hemorrhage. Trauma may be manifest by a pupil border or substance rupture, separation of the two mesodermal layers, a hole due to perforation, a foreign body in meshes, or iridodialysis (separation of ciliary-iris junction).

In addition to increased aqueous flare, fibrin, K.P.'s indicative of iritis or iridocyclitis, one may see dilatation of iris blood vessels. In certain types of iritis, so-called nodules are seen in its stroma. Some are discrete and some are conglomerate. Seen best with the oblique tangential focal illumination.

Associated with pellucid K.P.'s, they are usually present in severe uveal tuberculosis, in sympathetic ophthalmia, lues and leprosy.

Non-nodular exudates on the iris may indicate iritis of septic, gonorrheal or diabetic origin.

After prolonged inflammation and in advanced glaucoma, atrophy of stroma is usually present.

4. Retrolental Space

This controversial region has been definitely established with slit lamp and may be observed with direct illumination through a dilated pupil. This optically empty space is known as the space of Berger and is between the posterior lens capsule and the anterior surface of the vitreous. It is filled with aqueous and is subject to the same pathological changes as in the aqueous in the anterior chamber.

In Berger's space, one may often see a small spiral thread. This is the remains of the hyaloid vessels.

7. Vitreous Humor:

Only the anterior one-third of the vitreous is open to routine slit lamp microscopy. To study the deeper vitreous, a specially designed corneal contact lens with a flat anterior surface, is essential.

Examination is performed through a dilated pupil with the microscope slit lamp angle at 17 to 25 degrees. The smaller the angle, the deeper we may observe. Formerly considered structureless, the slit lamp shows the vitreous to possess an intricate gossamer or lace-like framework. It is of different degrees of density and visibility in various individuals.

In senility, the lacework shows some breaking down. In high myopia, this is even more pronounced. In retinal detachment or after severe inflam-

mation, there is extensive breakdown of the framework, with the appearance of string-like formation with small white nodes. W.B.C. may be readily seen in choroiditis, iridocyclitis, and sympathetic ophthalmia. They may conglomerate in clumps. They appear larger in the vitreous than in the aqueous due to the magnification of the lens.

Haemorrhage is recognized by the presence of R.B.C.

Hernia of the vitreous into the anterior chamber is usually present in traumatic subluxation of the lens. Vitreous strands may be seen passing across the anterior chamber and attached to the corneal entry wound following a discussion for a secondary cataract.

The structure of the vitreous shows marked destruction in synchysis scintillans with the appearance of small disc-like masses. These are crystals of fatty soaps and cholestrin.

8. The Crystalline Lens

This structure lends itself well to biomicroscopy. A major portion may be examined by dilation of the pupil. All methods of illumination are applicable.

Biomicroscopic Appearances of the Normal Lens

Viewed in direct focal light with low magnification, the anterior and posterior capsular boundaries are clearly visible as curved vertical bands of light. The height and width of the band are determined by the height and width of the beam respectively. Within the lens, we get a considerable amount of diffuse reflection of light. The light appears bluish to yellowish gray. Within the band of light, bright and fairly sharply outlined bands alternate with relatively darker and less reflecting bands. Zones of discontinuity have been chosen in describing the brighter bands. This is due to varying indices of refraction. Each zone of discontinuity in the anterior half has its counterpart in the posterior half. The two zones meet at the equator. In the anterior half the zones are convex and in the posterior half are concave toward the observer.

With increasing age, the zones of discontinuity increase in number and appear gradually to move away from the lens surface. The deposition of new lens tissue, as the patient gets older, occurs on top of the existent lens material, directly underneath the capsule and is more productive in the equatorial than in the axial portons. This growth of the lens is very similar to the growth of a tree trunk as viewed in cross section.

Vogt has proposed the following names for the typical zones found in the lens of the adult: (1) lens capsule, (2) zone of disjunction, (3) surface of the adult nucleus, (4) surface of the peripheral embryonic nucleus, (5) surface of the central embryonic nucleus. The term, "nucleus" is used in an optical sense to denote a portion of the lens set off against another by a difference in refraction index.

The cortex of the lens is considered that portion between the adult nucleus and the capsule. The boundary of the cortex cannot be definitely or accurately determined with the slit lamp. In individuals under 40, the sclerosed portion of the adult nucleus is smaller and in older people larger than the adult nucleus. The relative thickness of the various layers may be determined. At the age of 20, the cortex makes up one-fifth and at the age of 80, one-third of the whole thickness.

Compared with the growth of the cortex, the adult nucleus undergoes very little change in the thickness after the age of 25. The zone of disjunction, just beneath the capsule, appears in the adolescent and mature lens. It has no special significance. The development of the adult nucleus comes to an end at 20 to 25 years. With increasing age, the zones of discontinuity become more marked.

The zones of discontinuity are landmarks which serve to facilitate localization and orientation with regard to space and time.

The ends of the lens fibres join to form suture lines. On the surfaces of the central embryonic nucleus, these suture lines have the simple shape of a three cornered star or the letter, "y" and are nearly always clearly visible. In the anterior half of the lens the "y" is upright and is reversed in the posterior half.

A characteristic finding under specular reflection is the so-called shagreen particularly prominent on the surfaces of the anterior and posterior capsule. On the anterior capsule we see a yellowish area subdivided into irregular polygonal figures which glisten with broad ridges (honeycombed picture). The shagreen of the posterior capsule is similar to that of the anterior. Its color is more yellow—almost golden. The normal lens capsule is transparent.

The normal lens up to age 30 is almost colorless. From the third or fourth decade on it begins to show an apparent yellowish color of the deeper layers—due to sclerosis and a greater index of refraction.

The equator and zonules of the lens can only be visualized through a very peripheral coloboma of the iris. Viewed under high magnification with intense focal illumination, the zonules appear as delicate glistening threads.

The anterior surface of the lens may show remnants of the fetal pupillary membrane in the form of star-shaped pigment deposits delicate threads and membrane extending to the collarette of the iris. A constant landmark on the posterior surface is the normal remnant of the hyaloid artery.

Biomicroscopy of the Abnormal Lens

Biomocroscopy has facilitated the recognition of an anomalous placed lens.

In congenital ectopia, the zonular fibres are visible. In traumatic dislocations, the zonular fibres usually break and cannot be seen.

In aphakia, the anterior vitreous herniates into the anterior chamber.

With the use of the slit lamp, we have discovered a new disease, senile exfoliation of the lens capsule, characterized by flaky gray desquamations. Exfoliation of a whole lamella may occur, which is due to prolonged exposure to heat and not uncommonly found in glassblowers.

The main biomicroscopic findings in disease are: (1) opacities, (2) optically empty spaces, (3) abnormal constituents such as metabolic cleavage products and foreign bodies.

The opacities occur in two forms: (1) distinct, circumscribed, three dimensional areas of varying shape appearing in various shades of gray or white. They are visible in direct and reflected light. (2) Indistinctly outlined areas of increased internal reflection or opacity.

Sharp outline of the opacity and normalcy of the immediate vicinity are usually signs of a stationary course. Opacities of the second type are usually forerunners of nuclear senile cataract and therefore, are slowly progressive.

The development of fluid filled spaces is a characteristic feature of many types of cataract. There are three forms, water clefts, separation of lens lamellae and subcapsular vacuoles.

Waterclefts are due to fluid accumulation in suture spaces, appear as irregularly shaped and radially situated dark spaces within the lens cortex.

Accumulation of water between the lamellae reveal a system of alternating dark and light parallel straight lines in the cortex. Extensive vacuolization of the subcapsular layers is a sign of progressive cataract.

These fluid filled spaces are probably due to breakdown of lens protein, altering the osmotic pressure with entrance of water as a compensating mechanism.

Accurate localization of opacities is an important step in the examination and analysis. The biomicroscopic picture of a diseased lens permits classification as to type, etiology and prognosis of the pathology. It is helpful in, (1) classification of congenital cataracts, (2) distinction of various forms of postcortical cataracts, (3) recognition of true age of contusion cataract, (4) early recognition of hypermaturity, (5) early recognition of chalcosis and siderosis of the eye, (6) recognition of the truly glaucomatous cataract.

BIBLIOGRAPHY

1. Slit Lamp Biomicroscopy—Goar, Masters, Thorpe and Kronfeld, Manual, Section of Instruction—The American Academy of Ophthalmology and Otolaryngology.
2. Textbook of Ophthalmology Volume 2, Sir Duke-Elder.
3. Poser Slit Lamp—Bausch and Lomb.
4. Biomicroscopy of the Eye—Lecture Notes by Milton Berliner.
5. Biomicroscopy of the Eye—Berliner Volumes 1 and 2.

This paper was read before the Section of Ophthalmology and Otolaryngology of the Nova Scotia Medical Society during their annual convention at White Point Beach Lodge, Liverpool, Nova Scotia, September 7, 1949.

The Dalhousie Refresher Course will be held in Halifax the week of October 16th. Plan to attend.

DOCTOR WANTED

There is an opening for a good English-speaking doctor with surgical training in the town of Edmundston, N. B. This is a lumber town and an English-speaking doctor would step into quite a substantial practice almost at once. There is a new and very well equipped 200-bed hospital in the town; the doctor should be able to do ordinary surgery. The right man would have strong support from the management of the large lumber and paper industries in that area and would draw patients from the paper mill of Madawaska across the river in Maine.

Further inquiry could be made to Mr. Aubrey Crabtree, President, Fraser Companies, Edmundston.

Three Centuries of Medicine in French Canada*

Oscar Mercier†

Our medical history begins in 1606 at St. Croix near Quebec with the arrival of two doctors in New France, Deschamps de Honfleur, and (Maitre) Estienne, who accompanied Champlain and returned with him.

Bonnerne, a doctor of Dieppe, assisted at the founding of Quebec and is the first to practise medicine in Canada. He was involved in a plot, whose purpose was to poison Champlain, and was arrested. However he proved his innocence and was acquitted. He died of scurvy in Quebec in 1609.

A surgeon, Boyer de Rouen, dressed the wounds of Champlain when he was wounded in 1610 during a campaign against the Iriquois.

Robert Giffard, Sieur de Beaufort, originally of Montagne au Perche in France, was probably the first doctor of l'Hotel Dieu of Quebec. His name remains in the village of Beaufort, which seignory had been given to him by the Company of the Hundred Associates.

Among the first mayors of Quebec, we find the name of a doctor Jean Madry, who died in Quebec in 1669. He practised medicine from 1653 until his death. He was on the staff of l'Hotel-Dieu. He is the first doctor to hold a public office in Canada.

The first French Canadian to practise Medicine in our country was Louis Maheu, born in Quebec, December 12, 1650. He was the doctor of l'Hotel-Dieu in that city.

The famous tavern of Quebec, "The Golden Dog" had been built in 1693 by Thimothé Roussel in order to live there and to practise medicine. It was later that this private residence was turned into a tavern.

The outstanding name in medical history of the French Period in our country is that of Michel Sarrazin, born in Nuits in France in 1659. He was surgeon of the General Hospital and the Hotel-Dieu of Quebec from 1693-1734. He died September 8th, 1734. After his appointment to these hospitals he went away in 1694 to continue his studies in France. He is the first doctor in Canada to go abroad to continue his studies. On March 4, 1697, he was chosen a corresponding member of the Academy of Sciences of France, a signal honor, which his work deserved. His works are numerous. In 1689 he presented to the Academy of Science in France, a work on the anatomy of the beaver, in 1670 one on the muskrat, and in 1718 a study on the otter. In 1730 he made a study of the maple sugar tree and showed that in the spring the sap of this tree could be condensed into syrup. He thus opened the door to our maple syrup industry.

In the same year he discovered a plant known through Europe as the "Sarracenna Canadensis Purpurea"—pitcher-plant, which has the property of curing smallpox.

Dr. Sarrazin devoted himself to research as we may see by the long list of his communications to the Academy of Sciences in France. He was truly the first Canadian savant.

*Extract from "L'Union Medicale Du Canada" Tone 71: 801 (August) 1942.

† Doctor Mercier died in 1945 by drowning in a boating accident.

However, he seems to have had an excellent practice also. He operated for cancer on two nuns of Montreal, Sister Marie Barbier of the congregation of Notre-Dame and Sister Saint Anne of l'Hotel-Dieu.

Another distinguished doctor and scholar of the French period was Jean-Francois Gauthier, born in France in 1711. He was appointed King's physician in 1741 and was attached to the Hotel-Dieu of Quebec. He was the first to use the Reamur thermometer, and in 1745 made a report on the use of this thermometer to the Academy of Sciences in France. Interested in botany he discovered the medicinal properties of the plant "thé de bois" and an oil known as "Huile de Gaulterie" since known for its sedative properties for rheumatism.

The last doctors of the French period to practise in the city of Quebec were Andre Arnous and Philippe Badelard. The first dressed the wounds of Montcalm who died in his house in St. Louis Street. The latter was the surgeon of the French troops at the battle of the Plains of Abraham. He was taken prisoner, released after the conquest and practised medicine in Quebec until his death February 17, 1802. He left 12,000 pounds to l'Hotel-Dieu.

Here very briefly set forth is the history of the pioneers of medicine in the city of Quebec, let us now turn to Montreal.

The first doctor of Montreal was called Jean Pouffe. He assisted at the first mass that Father Vimont celebrated in the Island of Montreal and became the first doctor and surgeon of the little hospital which Mlle. Mance had constructed at the end of 1642. In the month of November 1648, we find again in the papers of the study of Jean de Saint Pierre, the signature of Jean Poufée, who assisted at the birth of the first child born to European parents in Montreal.

Meanwhile the little hospital became a reality. On January 12, 1644, the contract of the foundation of l'Hotel-Dieu was signed at Paris by Mme. de Bullion. Maisonneuve and Jeanne Mance began the work in 1645 and soon the construction of l'Hotel-Dieu became an accomplished fact.

The first doctor who had a contract with the authorities of our hospital was Etienne Bouchard. Arriving in 1653, he lived in Montreal until his death in 1676. Before his departure from France he was engaged by contract to live five years in Montreal. During this time he was to be fed and lodged, supplied with the necessary instruments to practise his art, and to receive 150 pounds, 20 sous a year.

It is interesting to note that the first priest of the Sulpucien order of Montreal, Abbe Gabriel Souart, who came in 1657, took care of the sick at l'Hotel-Dieu between 1660 and 1684. He had studied medicine and pretended that the Pope authorized him to practise if necessary . . .

The name of Rapin la Musette is included on the list of surgeons for our hospital from 1679-1886.

Two surgeons of l'Hotel-Dieu, Antoine Forestier and Jean Martinet de Fonblanche are engaged in building a hospital by an act dated July 13, 1681. The two doctors served the hospital, and went into the neighborhood to visit the sick at seven in the morning each day, and other hours if necessary, for a fee of 75 pounds each per year, the medicines being furnished by the hospital.

Martinet de Fonblanche has the distinction of being the first professor of medicine in Canada. He established a school. On February 15, 1674, he engaged his brother-in-law, Paul Prud'Homme. On December 16, 1681,

Francois Tardy was engaged for three years. Finally on November 19, 1686, Pierre Malidor, son of a surgeon, in Lyons, chose Martinet to teach him the art of surgery during a period of four years.

The first medical author in Montreal was a doctor of our hospital, J. C. Gaillard, who in 1667 wrote a curious report on the death of a consumptive at Point St. Charles.

Joseph Benoist is the first Montrealer to practise medicine in this city. Born in Montreal in 1712, he seems to be the pupil of Thaumur de la Sorce, surgeon of our hospital in 1689. He figures on the list of our surgeons between 1715 and 1726. He had the first dispute with the Irish doctors in Canada. In 1718 an Irish doctor Timothy Sullivan arrived in Canada. He established himself in Varennes, where he married Marie-Renee-Gauthier. Through the influence of Mr. Gauthier he obtained a licence of medicine. His disputes with the law and his unjustifiable quarrels with the other doctors were numerous. His name appears on the list of our doctors between 1725 and 1730, it is probable that the authorities of l'Hotel-Dieu kept him on their service only during five years because of his violent temper.

Time passed quickly and we come to the centenary of Hotel-Dieu. The surgeons and doctors of this institution were: Joseph Benoist (deceased 1742) Laboisiere, originally of St. Corentin and Charles-Joseph Alexandre-Ferdinand de Felty born at Rabstat in Austria.

From 1760 to 1860 the date of the establishment of the hospital on its present site, the following surgeons and doctors appear on our list. D. de Bonne, F. Auger, A. Vallière, Ed. Sym. W. Siebi, P. Beaubien, R. Nelson, celebrated in the Rebellion of 1837, W. Vallee, P. Munro, L. G. Bibaud, G. Pelletier, J. C. Coderre, E. H. Trudel, Thomas D'Orsonneurs, L. Boyer, J. P. Rottot.

At the beginning of the English domination until 1872 the English doctors are the only artisans of the profession. In 1832 the University of McGill was founded and in 1847 the College of Physicians and Surgeons, Quebec. In short French Canadian medicine is non-existent from the point of influence. l'Hotel-Dieu had indeed in 1860 built the most modern hospital in America. French Canadians doctors have no influence in medical policy.

The College of Physicians and Suregons of Quebec is directed by English doctors and only McGill teaches medicine in Montreal until 1872. About this time the school of Medicine and Surgery of Montreal, called Victoria School, founded in 1843 by English doctors, passed into the control of our confrères and took a decidedly French character.

Its personnel comprised doctors from l'Hotel-Dieu, namely Munro, Nelson, Bibaud, Pelletier, Bouer, Goderre, Trudel, D'Orsonneurs. In 1874 thanks to the generous aid of our hospital, a building was constructed on Pine Avenue to house Victoria School. The former until 1878 alone taught French medicine in Montreal.

On January 1st, 1872, the first number of the Union Medicale du Canada appeared. The majority of the godfathers were doctors of the Hotel-Dieu. Its editor in chief Dr. J. P. Rottot, left our institution in 1880, to found the hospital Notre-Dame. A. T. Brousseau who became surgeon in chief of our institution and E. P. Lachapelle, the future Dean of the Faculty of Medicine of Laval University accompanied him.

In 1877 the College of Physicians and Surgeons of Quebec, which had

been under English control since its foundation in 1847 passed under the control of our compatriots. Three doctors of l'Hotel-Dieu directed its destiny in 1877. Rottot is President, Dagenais, Secretary and E. P. Lachafelle, Treasurer.

Sir William Hingston who had cast so much fame on our institution is the second president from 1886 to 1889. In 1900 French Canadian medicine surmounted another step in its scientific perfection. The Medical Society of Montreal was established, and its first President was Hervieux, physician in chief of l'Hotel-Dieu. Meanwhile our institution had some share in the direction of the affairs of Montreal and Canada. Sir William H. Hingston was elected Mayor of Montreal and a member of the Senate. J. J. Guerin occupied the position of first magistrate of the city and is the member for Sainte Anne in the federal legislature.

From a scientific point of view the doctors of l'Hotel Dieu followed the course of their predecessors. Marien, imbued with the ideas of Pasteur returned from Europe in 1898 and installed the first aseptic operating room. Later we see several of our doctors leaving to spread scientific ideas or to found new hospitals.

J. E. Dube is the first President of the Medical Administration of the Hospital Sainte-Justine, that of the Sisters of Charity, prominent among whom is Madame Beaubien who founded it in 1907.

In 1911 the Bruchesi Institut is founded and later its vacation colonies.

After the Great War, a new hospital, St. John of Arc, was erected in 1919 to respond to the need for hospitals, its founder being Dr. Francois de Martigny, a surgeon of l'Hotel-Dieu. Finally the last hospital built in Montreal, St. Luke's has for its scientific organizer Prof. P. Z. Rheaume, Surgeon of our house from 1910-1932.

The hospitalization of the sick is one of the fruits of Christianity so that the first hospitals date from the Christian era. It was natural then that the first care of our ancestors in colonizing the country was to establish hospitals. The French wished to surpass the Spaniards who had built the Hospital of the Immaculate Conception in Mexico in 1524.

The first hospital built in Canada and the second in America is Hotel-Dieu of Quebec, built in 1639, with the generous aid of the Duchess of Aiguillon. In order to found the hospital the Duchess of Aigullon called upon the nuns of the Mercy of Jesus of Dieppe, known as the Augustine Nuns, a name which they have taken after their founder. The first Augustines disembarked at Quebec in August 1639 and were three in number, Sister Saint Ignace, Sister St. Bernard and Sister St. Bonaventure.

Three years after the founding of the hospital in Quebec Jeanne Mance arrived in Montreal with M. Maisenneuve, May 17, 1642. Her mission was to build a hospital in Montreal which would be called l'Hotel-Dieu. This plan was conceived by M. Jerome le Royer of Dauversiere and realized by the generosity of Mme. de Bullion who furnished 42,000 pounds. Until 1692 these were the only hospitals in New France.

In that year Mgr. de Saint-Valier, second bishop of Canada founded the General hospital of Quebec which was under the direction of the Augustine nuns. Until 1850 this hospital took care of the sick and aged. The same year the General Hospital was founded in Montreal under the direction of the Charron Brothers. At this time Mme. d'Youville founded the Community

of the "Grey Sisters" and took possession of the General Hospital. In 1880 this was built on its present site on the corner of Dorchester and Guy Streets, and ceased to care for the sick in order to look after the aged and foundlings. Until 1880 Hotel-Dieu in Quebec and that in Montreal were the only ones in Canada taking care of the sick.

Let us now look at the French Canadian medical activities outside l'Hotel-Dieu of Montreal. In 1847 Dr. Morin founded the Incorporated School of Medicine of the city of Quebec, which in 1852 became the Faculty of Medicine of the University of Laval after its foundation.

The first professors of this first faculty of French Medicine in America were: M. Fremont, James Sewell, Jean Nault, Jean Blanchet, Jean Etienne Gaudry.

It was in 1878 that Montreal had a faculty of Medicine. The University of Laval opened a branch in our city in that year. We cannot stop to develop the controversy between the School of Medicine and Surgery of Montreal and that of the Faculty of Medicine of Laval in Montreal. These disputes ended in the union of the School and the Faculty in 1890 and its first dean was Dr. J. P. Rottot. Finally in November 20, 1919 the University of Montreal was founded.

The first medical review founded in Canada was the Journal of Medicine of Quebec whose first number bears the date January 1826. Its editor in chief, was Dr. Xavier Tessier. It was published four times a year in French and English. Its life was ephemeral and it disappeared after two years of publication.

In 1872 the Union Medical of Canada was founded. Its founders were MM. Beaubien, Beaudet, Bibaud, Brosseau, Coderre, Dansereau, DeBonald, Deschamps, Desjardins, D'Orsonnes, Dubuc, Duchesneau, Dugas, Fortier Grenier, Himpton, Lachapelle, E. P. Larmee, Leblanc, McDonnell, McMahon, Rousseau, Nelson, Pettier, Rottot, Dagenais, Desrosieres.

L'Abeille Medicale (1879-1882) appeared in the interval. Then in September 1889, the Medical Bulletin of Quebec was published. Its first editorial committee comprised MM. Ahern, Catellier, Dussault, Fortier, Hamel, Mathieu, Simard, Belleau, Franche, Gauthier, Jobin Paquin, Rochus, Godin, Marois, Rousseau and Turcot.

Since 1924 l'Union Medical du Canada and the Bulletin Medical of Quebec are the only important publications. At this time there was started in Montreal, "Action Medicale, whose purpose is the defence of the interests of the profession. Its first editors and founders were MM. Henry Dorval, Godreau, Langevin, Robert, Louis Roux and Robichaud.

In January 1932 Le Journal de l'Hotel Dieu du Montreal commenced publication. Its founders were MM Mercier, Leo Parizean, Ernest Prud'homme and Ernest Trottier.

The latest French Canadian medical publications are Bulletin des Medecins de Language Francaise de l'Amerique du Nord, published in January 1937 which in 1939 joined with l'Union Medicale au Canada and l'Hospital, whose first number bears the date December 1936, and the last September 1938, whose founder and editor in chief was Dr. Romeo Boucher.

The history of medical societies in Canada begins with the foundation of the Medical Society of Quebec, December 4, 1826. Its President is Dr. Joseph Morin, Vice President, Dr. Charles Norbert Perrault, and Secretary

Dr. Xavier Tessier. It is interesting to note that the Canadian Medical Association had been founded thanks to the initiative of the Medical Society of Quebec which in October 1867 adopted a resolution asking for the formation of the Medical Association of Canada.

The Medical Society of Montreal was established in 1900 and the first President was Dr. Hervieux. Then in 1902 Dr. Brochu of Quebec established the Association of Doctors of the French Language in North America. The first officers were: President: Prof. Brochu, Vice-Presidents, E. D. Lachapelle, Montreal, Dr. Archambault, C. Provost, Ottawa, Secretary-General, Dr. Sinard, and Dr. Lepage, Treasurers, Dr. Marois, Dr. Cleroux.

Meanwhile numerous regional medical societies have sprung up. In 1922 MM. Desrochers, and L. P. Dorval have the idea of creating an organization to direct the different regional societies and they founded the Federation of Medical Societies of the Province of Quebec.

I have no ambition to create an historical work in briefly setting forth the course of the evolution of medicine in French Canada. In this year of the tercentenary we believed it would be interesting for you to return to the past to study and admire the work of our predecessors and to find in it the energy which will make us worthy of carrying on the high reputation of medicine in French Canada.

Oscar Mercier - Titular Professor of the University of Montreal.
Chief of the Urology Service of the Hotel-Dieu, Montreal.

Society Meetings

Western Nova Scotia Medical Society

THE Western Nova Scotia Medical Society met at Lakeside Inn, Yarmouth, on August 10th with twenty-one members present. Following a delightful dinner in the main dining room we adjourned to the Boat House for our business session, presided over by Doctor R. M. Caldwell.

We were very pleased to have a visit from the President of The Medical Society of Nova Scotia, Doctor E. F. Ross. Doctor Ross addressed the meeting on Society matters, preliminary to the Annual Meeting in Halifax next month.

Doctor P. E. Belliveau explained the organization proceedings of the General Practice Section of the Canadian Medical Association. He has given considerable time and thought to the matter and is to be congratulated on his efforts.

The Guest speaker, Doctor Martin Hoffman, newly appointed Research Professor of Medicine at Dalhousie University, gave one of the most able addresses we have been privileged to hear. He spoke on Diabetes Mellitus and his talk was intensely practical and of great interest to all members present. He is not only well informed but possesses that too rare ability to pass on his knowledge to others.

Election of officers resulted in the following:

President—Doctor J. E. LeBlanc, West Pubnico.

Vice-Presidents—Doctor D. S. Robb, Shelburne, Doctor E. R. Melanson, Meteghan.

Secretary-Treasurer—Doctor D. F. Macdonald, Yarmouth,

Members of Executive of The Medical Society of Nova Scotia—Doctor P. E. Belliveau, Meteghan, Doctor D. F. Macdonald, Yarmouth.

D. F. Macdonald,
Secretary-Treasurer.

DOCTORS WANTED

There is a practice vacant at West Bay Road in Cape Breton. Further particulars can be obtained by writing Mr. A. N. MacLeod, Post Master at West Bay Road.

There is a practice vacant at Guysborough, N. S. Further particulars can be secured by writing Doctor F. C. Hazen at Guysborough.

Correspondence

Halifax, N. S.,
Aug. 8, 1950.

Dr. Margaret Gosse,
Editor Nova Scotia Medical Bulletin,
Halifax, N. S.

Dear Dr. Gosse;

During my absence from the city, on a trip to Montreal, I was indeed shocked to hear of the death of my old friend Dr. J. G. MacDougall and his daughter Jean.

I recall an incident in reference to his work which I thought might be of interest to your readers of the Medical Bulletin.

One day the doctor came to the Pharmacy in the old Victoria General Hospital. In his hand was an open letter and under his arm a large red covered medical book. He informed me that the letter was from a doctor in Prince Edward Island who needed some advice. This doctor had a patient who had developed gangrene in his leg. He thought that the leg should be amputated but the man had a very bad heart condition and could not take a general anaesthetic.

Opening his book Dr. MacDougall drew my attention to a very interesting article on Spinal Anaesthesia using a 1% Sterile Aqueous Solution—Novocain, a method then being used in Europe and reported as particularly useful in cases of amputation of the lower limbs. The article stated "If (so many C.C's) of a 1% Sterile Aqueous Solution of Novocain—injected intraspinally, the limb of a patient could be amputated without pain and without loss of consciousness by the patient." Dr. MacDougall asked me to prepare the solution, pack it and mail it to his friend. This I did with a little prayer in my heart that the operation might be successful.

Days passed. Then one morning Dr. MacDougall came again to the Pharmacy, his countenance just beaming. In his hand was another letter from his friend in the Island explaining how he had carried out the suggested technique and reported that the operation was a complete success. He and his patient were expressing their sincere gratitude. From that time on Dr. MacDougall used Spinal Anaesthesia whenever possible.

Later we were able to procure from the manufacturers 5cc Ampoules of Sterile Novocain Solution, then came Spinocain and later Ampoules Novocain in crystal form.

This incident took place about thirty years ago and no doubt was the first time that Spinal Anaesthesia was used in the Maritimes.

Yours very truly,

Bertha O. Archibald,
Pharmacist (Retired)

4 Summer St.

Physicians' Art Salon 1950

HALIFAX was the scene of the 6th successful showing of the Physicians' Art Salon, an exhibition of photography and fine art created by Canadian physicians and undergraduates, and sponsored by the Montreal pharmaceutical firm, Frank W. Horner Limited.

This year, over 100 physicians and students submitted work in the three classes for consideration by a panel of judges composed of Donald Mackay, A.N.S.C.A., W. R. MacAskill, and Dr. J. W. Reid. The work was hung in the Nova Scotian Hotel, and was visited by hundreds of delegates to the Canadian Medical Association convention during the week of June 19th.

The 1950 salon was marked by the creation of a new section called "The Palette Club." In this class were physicians and undergraduates who had won a first prize in previous years' showings. The Palette Club included paintings, black and white photographs, and colour transparencies.

Prizes were awarded in all three classes and were fairly well distributed throughout Canada. The presentation of prizes took place at a Garden Party on June 21st with Mrs. Angus L. Macdonald awarding the prizes and certificates.

As in 1949, award winners will be reproduced by Frank W. Horner Limited, in full colour in the form of a desk calendar which will be mailed to all Canadian physicians. Next year's salon, the 7th, will take place in Montreal and will coincide with the annual meeting of the Canadian Medical Association.

LIST OF PRIZE WINNERS

FINE ART

1st Prize: D. G. Watson, Port Credit, Ont.	The Mill, Meadowvale
2nd prize: Dr. F. Dean Kemper, Toronto, Ont.	Cinderella
3rd prize: Dr. T. E. Brown, Lethbridge, Alta.	Snow Fence
Award of Merit: Dr. G. H. H. Booth, Agassiz, B.C.	Deserted Village Street
Award of Merit: Dr. Nathan Freedman, Montreal, Que.	Rockport Beach
Award of Merit: Dr. J. K. Moss, Dundas, Ont.	Newfoundland Scene
Award of Merit: Dr. James Calder, Edmonton, Alta.	Roche Miette, Jasper
Award of Merit: Dr. L. R. Morse, Lawrencetown, N. S.	Fishing Village, Port Lorne

MONOCHROME PHOTOGRAPHY

1st prize: Dr. A. L. Murphy, Halifax, N. S.	Crisis
2nd prize: Dr. F. E. Wait, Saskatoon, Sask.	Farm in Wales
3rd prize: Dr. E. V. Spackman, Lethbridge, Alta.	Morning Shadows
Award of Merit: Dr. W. K. Blair, Oshawa, Ont.	Tools of the Apothecary
Award of Merit: Dr. A. B. Walter, West Saint John, N. B.	Harvest Evening
Award of Merit: Dr. B. S. W. Brown, Granby, Que.	Silver Birches
Award of Merit: Dr. L. J. Notkin, Montreal, Que.	Snow Fantasy
Award of Merit: Dr. Wm. P. Goldman, Vancouver, B. C.	Mountain Majesty

COLOUR PHOTOGRAPHY

1st prize: Dr. H. S. Everett, St. Stephen, N. B.	Rainbow
2nd prize: Dr. R. Matiko, Port Alice, B. C.	Winter Quiet Storm Approacheth
3rd prize: Dr. Hugh Stanfield, Vancouver, B. C.	Promise
Award of Merit: Dr. E. A. Petrie, Saint John, N. B.	Seining a Cove
Award of Merit: Dr. R. E. Ives, Stayner, Ont.	Lune Moth
Award of Merit: L/C A. A. G. Corbett, Ottawa Ont.	Master Painter
Award of Merit: Dr. W. W. Hughes, Embro, Ont.	Oceans of Gold
Award of Merit: Dr. Harold D. Ames, Beaverton, Ont.	Poinsettia