THE NOVA SCOTIA MEDICAL BULLETIN

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Material should preferably be typed on one side of paper 8½ x 11 inches, with wide margins. Carbon copies are not satisfactory. Any table, illustration etc. quoted from another published source must have the permission of both author and publisher.

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Bigger and . . .

All too many times, from the extinction of the Triceratops on to the present day, has increased size, so tempting for its apparent advantages, proved to be the death-knell of some otherwise successful organism. We can think of more than one Medical text that after twelve or more editions has become so cumbersome that it is replaced for the next generation of students and physicians by an upstart volume claiming to present the sum total of medical knowledge in smaller compass, and yet with no loss of useful clinical detail. Indeed *The Times* of London, perhaps the epitome of responsible and detailed journalism, is proud to trace its descent from a halfpenny paper that was little above the gutter press of 1840.

We on the Editorial Board have not been unmindful of the attendant dangers of a mere physical increase in size of our *Bulletin* if it is not accompanied by real growth, both in scientific stature and in its value to you, the Members of the Medical Society, who make up the vast bulk of our readers.

Still, we believe that the changes that have brought about the present issue, the first in the New Series, were well conceived. This change has not been achieved without much work, and to produce it twelve times a year will entail more labour than in the past. To our successors on the Editorial Board we offer our apologies.

Of the new style few things are finally fixed, beyond the actual page size, the quality of the

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* * * *

It is with great pleasure that we can welcome the great new **Sir Charles Tupper** Medical Building which is projected for Dalhousie University. On another page* is an article in the new series of Dalhousie Notes describing this building, with illustrations of the Architect's Plans. While the mere possession of a fine new home will not of itself make a greater School out of Dal., since the Faculty is of far greater importance than is the fabric, it cannot help being a stimulus to the present Faculty, and a drawing card for new members.

The completion date, set for the Fall of 1967, is another cause for satisfaction. The terms of the Grant permitting construction as a Centennial Project would seem to go a long way towards guaranteeing that there will be no great delay in the actual completion.

Let us hope that completion of the extension of the Victoria General, as the principal Teaching Hospital in the Medical School, will not be far behind, so that Dalhousie can start the second century of Confederation with the equipment to do the job demanded of it, the teaching of coming generations of doctors and allied professions. □

*Page 5

J.F.F.

Cecil Edwin Kinley

AN APPRECIATION

Cecil Kinley had all the attributes of a great surgeon: broad vision, benignity, deft hands, the courage to do all that was needed, the prudence to risk no more.

He had outstanding teachers: Carl Hammond, of Cleveland, with whom he worked in his surgical training years, George Murphy, of Halifax, whose assistant he became at the Victoria General Hospital. That these men, and his other mentors, helped mould his surgical future so well was because of his innate gifts and his firm resolve.

It was my good fortune to come under him when my father retired from the Victoria General, and we reversed the names of *Murphy-Kinley* to *Kinley-Murphy* on the surgical locker door. I came as assistant, grew up to be associate and friend. From him I learned that every living tissue, every cell, deserves the same gentle care as the patient host. What St. Francis D'Assisi found to love in the lesser animals, Cecil Kinley found in human tissues. That respectful love was, I believe, the basis of his surgical prowess.

Through his most productive and stressful years he was blessed with the love, the support and counsel of Bea, wife and devout mother to his daughter, and his two sons who follow his way. On this earthy sphere who can ask more?

If Henley had known Cecil Kinley as he did Joseph Lister I am sure he would have written about him the same lines:

His brow spreads large and placid, and his eye
Is deep and bright, with steady looks that still.
Soft lines of tranquil thought his face fulfill -
His face at once benign and proud and shy.
If envy scout, if ignorance deny,
His faultless patience, his unyielding will,
Beautiful gentleness and splendid skill,
Innumerable gratitudes reply.

His wise, rare smile is sweet with certainties,
And seems in all his patients to compel
Such love and faith as failure cannot quell.
We hold him for another Herakles,
Battling with custom, prejudice, disease,
As once the son of Zeus with Death and Hell. □

A.L.M.

The Sir Charles Tupper Medical Building

J. PHILIP DUMARESQ AND ASSOCIATES, ARCHITECTS

PHOTO BY MAURICE CROSBY

Dalhousie Notes

C. B. Stewart, M.D., Dean

II. THE SIR CHARLES TUPPER MEDICAL BUILDING

In the last issue I described how the obsolescence of the Forrest Building and the overcrowding of the other medical buildings had reached unmanageable proportions at Dalhousie. The shortage of doctors in the four Atlantic Provinces and the rising tide of applications from prospective students add to the urgency of the problem. The present edition of the Dalhousie Notes was to have dealt with the factors which will influence the future size of the School. However, the preliminary plans of the new building have now been completed and this would seem to be an appropriate time to describe it, leaving the background data for the next issue.

The view shown in the first illustration is from University Avenue looking north. For those acquainted with the present campus, the west end of the present Public Health Clinic Building shown at the extreme right of the picture will serve as a point of orientation.

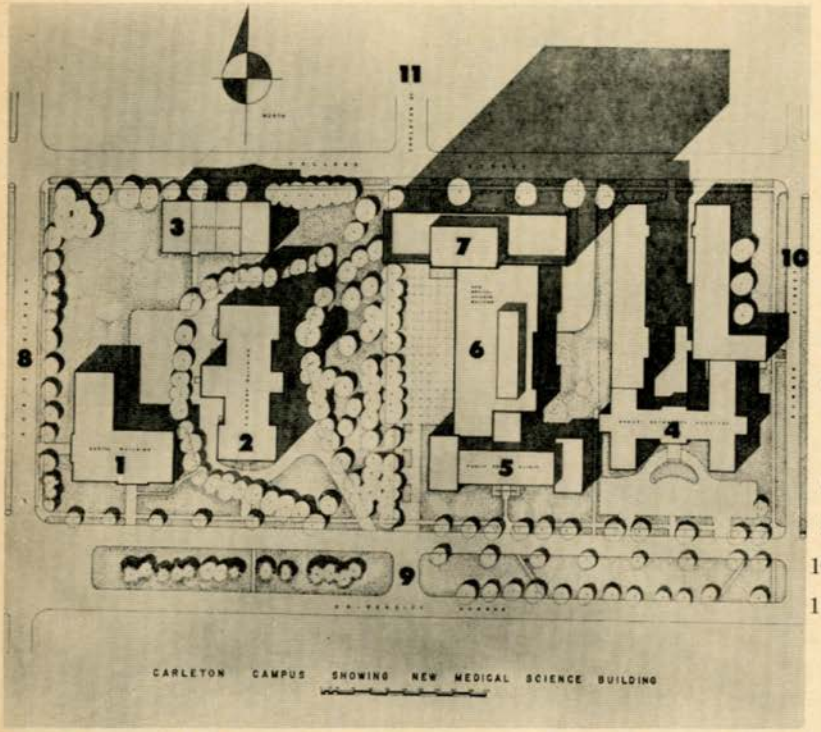
The Sir Charles Tupper Medical Building, designed by J. Philip Dumaresq & Associates, Architects, will be a high-rise, fifteen storey structure with a parapet at the sixteenth level surrounding various roof-top ventilators and elevator equipment. The exterior of the building will be faced with precast stone panels of various shapes and textures. The exact colour has not yet been decided upon, but it will be of a light shade. The major section of the building will be 227 feet by 62 feet, located on the northeast corner of Carleton Campus backing on College Street and facing University Avenue. The windowless section on the south face is the area which houses the elevators, stairways, washrooms, chimney and ducts. The second element in the new construction will be a two-storey annex connecting the fifteen-storey "tower" with the present Dalhousie Public Health Clinic Building. This annex runs approximately north and south on the east side of the existing roadway, formerly Carleton Street.

The location of the new building was recommended by the campus planners, a Montreal firm of architects, Marshall & Merrett, engaged by the University to advise on the total building programme on both campuses. The choice of this site makes it necessary to move or demolish the present Medical Library Building. The option was to build between the Medical Sciences Building and the Library, but this would have placed the new structure very close to both the Forrest Building and the Medical Sciences Building. It would, in the opinion of the campus planners, have given a very cramped and crowded appearance to the campus, but more importantly, it would have placed the new building in such a position that future expansion to the west would have been blocked, even when the Forrest Building was demolished. The planners strongly favoured locating the new building near the northeast corner, allowing room for another large building to the west of it, in the north-south axis, after the Forrest Building is removed. The feasibility of this can be seen in the second illustration, which shows the ground plan of the campus and the location of the new building.

The possibility of moving the present Medical Library was thoroughly investigated and for a time appeared feasible. However, the heavy cost and probable damage to it led regretfully to the decision that its transfer to another site was not practical. It was already too small to serve the library needs, but it would have made a fine 450-seat auditorium and examination hall had it been possible to save it.

The Public Health Clinic Building will become the clinical research wing of the new complex. It has already been partly converted to research laboratories and offices for the Departments of Medicine, Surgery, Paediatrics and Preventive Medicine. Other clinical departments will also have research space in it when the remaining outpatient clinics are moved to the new Children's Hospital.

School, the provision of some off-street parking is essential and the alternative is the acquisition and clearing of very high cost land in this area. The paved court provides access from University Avenue to the raised entrance podium under the open west end of the main building. There is also access from the north off College and Carleton Streets. All of the fine trees in front of the Forrest Building will be preserved.



1. Dental Building
2. Forrest Building
3. Medical Science Building
4. Grace Hospital
5. Public Health Clinic
6. Annex
7. Sir Charles Tupper Medical Building
8. Robie Street
9. University Avenue
10. Summer Street
11. Carleton Street

J. PHILIP DUMARESQ AND ASSOCIATES, ARCHITECTS

PHOTO BY MAURICE CROSBY

The annex or "link" joining the present Clinic Building to the new "tower" will house experimental animals in the basement, with access at either end to the clinical and pre-clinical research units. The ground floor has a wide corridor along the west side connecting the clinical and preclinical buildings and giving access to two large lecture rooms of 200 seats and to the student lounge and cafeteria. Other lecture and seminar rooms are located on the east side, and the library is adjacent to it on the main floor of the "tower". The third illustration shows the ground floor plan.

The two-storey annex is 164 feet long and 116 feet wide. Its colonnaded front faces west on a paved forecourt below which is a two-level parking garage, where Carleton Street now crosses the campus. This will provide space for 75 to 80 cars. Drillings show that 12 to 14 feet of overlying soil make this feasible at relatively low cost. With the enlargement of the hospitals as well as the Medical

In the second floor of the annex will be student study rooms. Several newer medical schools have provided small individual study cubicles for each student. We are providing such cubicles for approximately half of the students as well as an additional reading room. Each cubicle has a coat locker, a small desk, a chair and bookshelf. Rows of these cubicles occupy only a little more space than would be required for the older style locker rooms and the large library reading rooms. It will also allow the study areas to be left open during the evenings without keeping the library staff on duty.

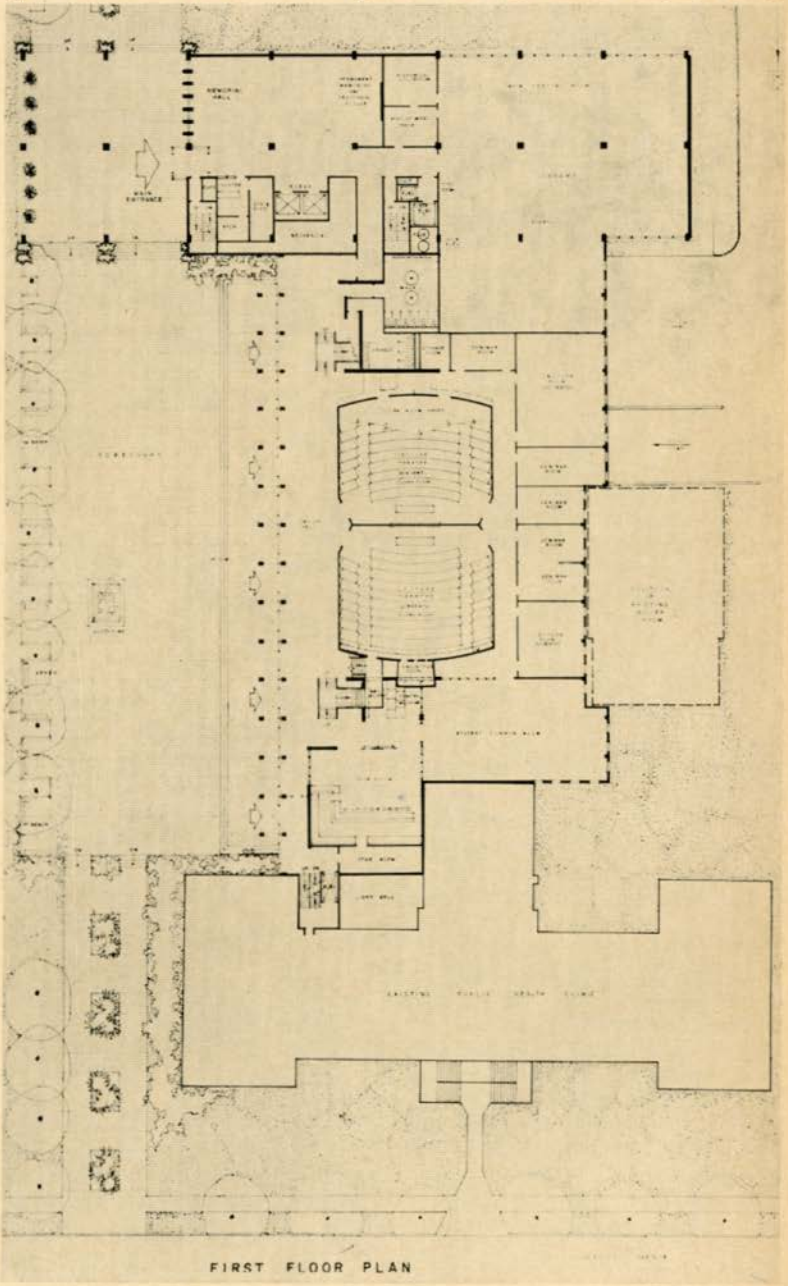
The area on the second floor of the annex, adjacent to the clinical research units in the Public Health Clinic, will be for additional clinical research. The location of these various areas is an example of the type of elasticity in the future uses of this building that we have tried to incorporate in the plans. If the students do not make use of the study cubicles and prefer to work in their own

rooms, or if more university residences are eventually built, the adjacent library stacks and the clinical research units on either side will have room for expansion. If, on the other hand, the study area proves too small, the library stacks and research units may be reduced. Library science is developing rapidly and the use of microfilm, of TV transmission, and of computer searches of the literature may allow a considerable saving of space which is now devoted to the storage of bound volumes of periodicals.

The fifteen-storey north wing will have a two-level basement, containing the heating plant, incinerator, anatomy morgue, repair shops and service and storage rooms. An electron microscope unit will also be housed there to avoid vibration and magnetic interference. Special research units using radioactive agents and requiring heavy shielding will also be below ground.

The main foyer will be a Centennial Memorial Room with a permanent plaque commemorating Confederation, as well as a memorial to Sir Charles Tupper. It will also have facilities for public displays of historic archives and other matters of interest to the public and to the students. The main entrance to the Library will be off the east end of the foyer. The second floor of the main building will house the stacks and work space of the Library.

The third to fourteenth floors will house the preclinical departments. Each floor is of approximately 13,000 square feet. Most departments will have two floors, one primarily for teaching the medical, dental and paramedical students and one for research laboratories, offices and facilities for science students and graduate students. However, there will be some overlapping of the two functions. The teaching floor (Figure 4 p. 24) will have one laboratory with a capacity of 96 students. It will be capable of being separated into four subunits for 24 students by the use of folding doors. A first year class of 96 medical students will be



FIRST FLOOR PLAN

J. PHILIP DUMARESQ AND ASSOCIATES, ARCHITECTS PHOTO BY MAURICE CROSBY

admitted, it is hoped, in 1967. The present system of holding combined classes of medical and dental students will probably be discontinued in most departments. The two groups might then have their lectures together, but would have separate laboratory sessions. This will permit the teaching to be more specifically directed toward the needs of each professional group. The Faculty of Dentistry at Dalhousie will soon have to enlarge its clinical facilities in order to admit a larger class. This may reach an enrolment of 60 to 70 per year. The preclinical teaching laboratories in our new building will be sufficient to permit this enlargement in dental enrolment. Laboratory classes will be scheduled separately for 96 medical students, for up to 72 dental students (occupying three of the four subunits of the large laboratory) and for the other health professions estimated at the following figures:

Pharmacy 48, Physiotherapy 36, Bachelor of Nursing 24, Dental Hygiene 24, Occupational Therapy 16.

In addition, certain courses are given to some of the diploma nurses and there may in future be courses for laboratory technicians. Most of these groups will have their practical work in the medical sciences in the 96-unit teaching laboratory. The purely professional aspects of their training will be in their own schools. Probably some of these will take over the present Medical Sciences Building.

Thus the large teaching laboratory will be in almost continuous use every day of the week. In addition, each Department will have another laboratory for 24 science students, and two of the Department's, Biochemistry and Bacteriology, will have two such units. Junior and senior students in the Arts and Science Faculty who are studying toward a B.Sc. degree may elect to take some of their Biology credits in a Department of the Medical School. At least three classes for 24 students each, with two laboratory periods per week, can be accommodated in each Department, together with a number of M.Sc. and Ph.D. students. It is estimated that the enrolment of graduate students may reach 200.

The staff of each Department will have to be increased to take care of the larger enrolment in all of these faculties. Provision is made on the teaching and research floors for offices and research units of varying size. The area required depends upon the type of equipment needed and the number of technicians and graduate students working with a staff member. The planning has been based on the assumption that each member of the teaching staff will have an average of two graduate M.Sc. or Ph.D. students under his day-to-day guidance, and each Department will have two to four medical research associates or career scientists who will devote almost full time to research and the supervision of five graduate students.

The teaching and research floors will be arranged so that related Departments will be near to each other. However, there is so much overlap in medical sciences today that it is not possible to take care of all of the possible interrelations. The Department of Anatomy will have two separate teaching floors, one for Microanatomy and one for Gross Anatomy, as well as one research floor. Adjacent to Microanatomy will be the research floor for the Department of Pathology. The next floor will be Biochemistry because of the joint interest of the two Departments in cancer research and clinical biochemistry. Bacteriology, Pharmacology and Physiology will be on the lower floors.

The top floor of the building will have the offices of the administrative staff, the Faculty Council Room and Faculty Lounge. This site was the choice of the architect and the Building Committee, not of the Dean. (His previous career in aviation medicine would have made him prefer the ground level!)

This building and the annex and parking garage will have a total floor area of about 300,000 square feet. Five years ago, when initial planning was begun, we estimated our needs at 200,000 square feet and the cost at five million dollars. At that time applications for admissions to medicine were at a low ebb in all Canadian and American schools. We based our plans then on a combined class of 96 entering students in Medicine *and Dentistry*. It is now clear that we must provide for 96 in Medicine alone and take care of a further doubling of the dental class as well as great increases in the paramedical groups. In addition, in 1959 we did not plan for an enlarged library nor provide any space for the Departments of Pathology and Bacteriology. The addition to the Pathology Institute had just been completed. It is now clear that this will only take care of the medical and dental students. The teaching of the science students and paramedical groups together with the research facilities must be provided in the Sir Charles Tupper Building. These Departments will each have one floor as compared with two for the others.

These increases in enrolment and the additional departments and the library account for the larger building and the higher cost. There is no grandiose expansionism in this project and the furnishing and decoration will be utilitarian. In fact, some may criticize the limitation of the medical class to 96 students. The basis for this decision will be presented in the next issue. □

The Hyperkinetic Circulatory States

Part One - Normal Cardiac Physiology

R. W. Young, M.D., C.M., F.R.C.P. (C)*

St. John's, Nfld.

The Hyperkinetic Circulatory States are characterized by a raised cardiac output with an increased systemic blood flow.

They may be recognized clinically by the following features:

The skin is warm and flushed and the forearm veins are distended.

The normal digital throb is increased, and there may be capillary pulsations.

The brachial pulse is bounding and its volume is increased. A tachycardia of varying degree is the rule and the pulse pressure is usually increased.

The jugular venous pressure is likewise usually increased, and may reach three to four centimeters above the sternal angle.

The cardiac impulse is forceful and may be displaced a little to the left.

A systolic ejection murmur is commonly heard at the apex or the base and is due to the increased blood flow through the aortic and pulmonary valves. Functional mitral and aortic diastolic murmurs may also be heard.

The mitral presystolic and diastolic murmurs are uncommon and are probably due to the increased blood flow; the mechanism being the same as that responsible for the mitral diastolic murmurs in ventricular septal defects and patent ductus arteriosus.

The hyperkinetic states of fever, pregnancy and exercise have a purely physiological basis and will not be discussed further. In addition to these, a hyperkinetic circulatory state may be seen as an integral part of the clinical picture in the following states:

1. Anemia
2. Anoxia Cor Pulmonale
3. Hepatic failure
4. Beri-beri
5. Arteriovenous fistula
6. Paget's disease of the bone
7. Thyrotoxicosis

This list does not include aortic incompetence, patent ductus arteriosus, or rupture of the sinus of valsalva as causes of a hyperkinetic circulatory state. The volume of blood ejected from the left ventricle each minute in these conditions is of course increased, but as a result of the proximal run-off, the volume which circulates in the systemic system is normal. The findings at clinical examination are however similar to those mentioned above. In addition, there are the classical murmurs, and in the case of the last two, there is evidence of increased blood flow in the pulmonary circulation.

Physiology of Cardiac Output

Before considering the various causes of a hyperkinetic circulatory state, the physiology of the cardiac output and the nature of cardiac control will be considered.

Among the pioneers of the study of the circulation and cardiac output was Stephen Hales, who in 1733 made casts of the left ventricular cavity and assuming that each stroke emptied it completely, calculated the cardiac output. His results were erroneously high as the ventricles do not empty completely during systole.

The first lead to a quantitative measurement of cardiac output that could be applied to man was contained in a brief note by A. Fick. In 1870 he called attention to the fact that if we know the oxygen difference between the systemic arterial and pulmonary arterial bloods, the cardiac output could be calculated.

This subject was introduced well ahead of its time because contributions to the field were few and far between for 50 years. It was not until the 1920's that there was a revival of interest in the cardiac output.

With the introduction of cardiac catheterization in 1929 by Forssman, who incidentally first catheterized himself, the principle, first enunciated by Fick, could at last be utilized to determine cardiac output in humans. Prior to this, it was possible to measure the oxygen consumption and the oxygen content of arterial samples, but there was no means of obtaining a mixed venous sample from the right side of the heart. Cardiac catheterization however made this possible and since its introduction a vast amount of accurate work on the cardiac output in health and disease has been carried out.

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A second well established method of determining cardiac output is the Dye injection method. This was introduced into the literature in 1897 by Stewart, and later perfected by W. F. Hamilton. The cardiac output is determined by this method from the dilution of a dye. Initially Evan's blue was used but since the several other dyes which remain in the cardiovascular system, including Cardiogreen and Coumassie Blue, have been introduced. An example will illustrate the point. Fifteen milligrams of a dye is injected into a vein. A series of samples is taken from an artery and the dye concentration is plotted. After the lapse of a few seconds the dye concentration begins to increase and to reach peak and then to descend exponentially until it rises again as a result of recirculation. From the nature of the dye curve the duration of the primary circulation may be determined. If the dye concentration curve persists for 30 seconds and its average height is 5 mg. per liter, the 15 mg. injected has been diluted by three liters of blood in 30 seconds. This is equivalent to a cardiac output of 6 liters per minute.

This method has been repeatedly checked against the Fick method and it tallies remarkably closely, the average difference between the two being only 0.2%.

An ear oximeter or a cuvette densitometer may be used to directly record the time concentration curves instead of direct arterial sampling at two second intervals.

The cardiac output calculated from Fick's formula under basal conditions is around 4 to 6 liters per minute. It is one liter higher in the horizontal than in the erect position. Paul Wood found the normal value ranged from 5.8 to 12.8 liters per minute during cardiac catheterization. These figures are not basal, but they certainly represent what is actually found under the conditions inevitably associated with catheterization.

At this point the cardiac index should also be mentioned briefly. It is determined by dividing the cardiac output by the body surface area. This has the obvious advantage of correlating the cardiac output with body size. The normal range is 3 to 4 liters per minute per square meter of surface area.

The cardiac output per minute is the product of the heart rate per minute times the stroke volume which is the volume of blood ejected from the ventricle with each beat. The stroke volume is determined by subtracting the volume of blood in the ventricle at end systole from the volume of blood in the ventricle at end diastole. The output can be increased either by increasing the heart rate or by increasing the stroke volume. The latter may be increased by either increasing ventricular filling during diastole or by emptying the ventricle more completely with each systole.

The heart is capable of varying its output between very wide limits in remarkably short periods of time. Thus, a young healthy adult may achieve a cardiac output of 20 liters per minute within seconds of commencing exercise. This increase in the cardiac output is achieved by both an increase in the heart rate and by an increase in the stroke volume. Olympic athletes can achieve even higher cardiac outputs and may reach 35 liters per minute. This further rise in cardiac output is achieved solely by increasing the stroke volume, for the maximum heart rate in both cases is about 180 per minute.

Starling's Law of the Heart

The earliest work on the mechanism of control of cardiac output was performed on the mammalian heart by Frank. He showed that the stretched heart muscle, within limits, contracts more forcibly than does the unstretched. Starling's work along the same lines using the now famous heart preparation, is better known. Briefly, Starling proceeded as follows. The thorax of the anesthetized animal was opened and artificial respiration begun. The aortic arch was tied beyond the innominate artery. By means of a cannula the blood was led from the innominate artery to an artificial resistance. The output of the heart was measured directly by a timed collection of the blood which was passed through the peripheral resistance. The heart was no longer controlled by the vagi and sympathetic nerves as the centers controlling these nerves were disrupted. The responses measured then were those of the totally denervated heart.

The venous pressure and venous return were altered by changing the height of the reservoir. The arterial pressure was modified by adjusting the peripheral resistance,. The effect of these manoeuvers on the cardiac output was measured.

Starling found that if he increased the height of the reservoir above the heart, the cardiac output was increased. He attributed this to the increased venous pressure and increased venous return. Likewise if he decreased the height of the reservoir the cardiac output decreased.

On the other hand, if the arterial resistance was raised by increasing the peripheral resistance the cardiac output showed an initial drop but soon the heart overcame the effects of the increased peripheral resistance and succeeded in restoring the cardiac output to its previous level. These results of Starling lead to his formulation of his Law of the Heart. He stated it in these terms "The mechanical energy set free on passage from the resting to the contracted state depends on the area of chemically active surfaces." This can be more simply stated as 'The energy of contraction, however measured, is a function of the length of the muscle fiber.'

In his famous Linacre Lecture, delivered at St. John's College, Cambridge, in 1915, Starling without hesitation leapt from the isolated heart to intact man. Physical exercise was the theme around which he built the lecture. The inference from the beginning was that the heart is able to meet the increased cardiac output demanded by exercise by virtue of the operation of the Law of the Heart. He surmised that "If a man starts to run his muscular movements pump more blood from the heart. As a result the heart is overfilled during diastole and is impeded from emptying itself during systole by a rise in the arterial pressure induced by exercise. Its volume enlarges progressively, until by lengthening of the muscle fibers the energy of the contraction becomes sufficient to drive out into the aorta during each systole the largely increased volume of blood entering the heart from the veins during diastole. In these circumstances therefore the heart is dilated. It very soon, however, returns to its normal size with the cessation of exercise."

Even before Starling delivered his Linacre Lecture, however, one important objection to his theory was already known. The Starling hypothesis requires an increase in end diastolic length and, hence, in end diastolic volume, prior to an increase in ventricular stroke volume and cardiac output. Yet von Aurep had already shown in 1912 that epinephrine caused a decrease in end diastolic volume while at the same time it increased the cardiac output. Later work by Liljestrand was also not in keeping with the extreme Starling view. He showed that the cardiac volume is maximum when the human subject is supine and that with exercise it actually diminishes in size. All this notwithstanding, Starling's Law of the Heart came generally to be accepted as the cardiac control mechanism in the heart. Counter reaction finally began in the early 1950's.

At that time Rushmer suggested that the Starling principle requiring increased venous return to the ventricle as the chief initiating mechanism for an increase in cardiac output was largely invalid. He proposed that an increase in stroke volume played little or no part in the increase in cardiac output which results from exercise. He suggested that the primary factor was an increase in heart rate. This, if true, would be powerful support for the primacy of neural control of cardiac output and would virtually eliminate a myogenic factor, which of course, is the basis of Starling's Law. At that time, as a result of Rushmer's work, there was a tendency to consider Starling's Law as a property solely of the isolated heart, with little or no applicability in the intact animal.

In 1955 Chapman considered Rushmer's contention that stroke volume plays little or no role in the increase in cardiac output in response to exercise. Rushmer's work was done mainly in dogs and involved low levels of exercise. Chapman's studies, however, involved very large exercise loads which caused cardiac output to increase to five times the resting output. In all subjects the stroke volume was calculated by dividing the cardiac output by the pulse rate. With heavy exercise loads the stroke volume was double that obtained at rest in either the standing or supine position. Chapman believed it fair to say that the normal human subject cannot obtain maximum cardiac output without utilizing an increase in stroke volume along with an increase in pulse rate. Chapman's work refuted Rushmer's contention that an increase in stroke volume played no part in increase in cardiac output which occurs with exercise. This work then gave a new lease on life to Starling's Law of the Heart as it established the myogenic factor in the increase in cardiac output. The possibility remained, however, that the increased stroke volume was the result of mechanisms other than an increase in muscle fiber length.

In 1956 Chapman et al adopted the biplane cinefluorographic technique in the measurement of left ventricular volume. Studies using intact anesthetized dogs, showed quite clearly that the end diastolic volume of the left ventricle usually decreased during exercise in spite of the fact that the cardiac output and stroke volume increased. As the end diastolic volume decreased, it is obvious that the increased stroke volume is not due to an increase in end diastolic fiber as is suggested by Starling's Law. Also as the end diastolic volume decreased, the increased stroke volume must be the result of more complete left ventricular emptying with each contraction. This investigation lent support to the contention that the innervated mammalian heart is capable of increasing its cardiac output by mechanisms other than Starling's Law of the Heart.

Denervation experiments, however, show that myogenic factors may be involved in response to exercise. In these experiments, after first carrying out studies of cardiac output on the intact dog, bilateral sympathectomy and vagal section were performed and the dog allowed to recover fully. The cardiac output was then determined both at rest and during exercise. In this condition of complete denervation of the dog's heart there was no longer any response of the heart rate (it was 125 per minute both at rest and after exercise) but stroke volume rose 21% over resting figures. This increase in stroke volume after exercise comes about solely by means of a myogenic factor.

How in denervated dogs is this myogenic response to exercise mediated? One obvious possibility is that exercise increases the adrenal medullary secretion of catecholamines. The direct effect of epinephrine on the ventricles is well documented. It induces the heart to beat faster and usually causes a diminution in diastolic volume

along with increased forces of contraction. However, neither an increase in pulse rate nor a decrease in end diastolic volume was observed. It is unlikely then that the myogenic response is the result of increased catecholamine secretion during exercise in these denervated dogs. The other possibility is that denervated heart in otherwise intact dogs reacts more or less like the heart in the original Starling isolated preparation, and that an increase in return of blood to the ventricle is the factor that initiates an increase in cardiac output and stroke volume. The fact that end diastolic volume in the denervated animal increases during exercise instead of decreasing as it usually does in normal dogs supports this view. It is fair to say then, that buried within the group of mechanisms responsible for cardiac control in the mammal is a definite myogenic factor however it is mediated.

In 1959 Braunwald et al, began their investigation of the applicability of Starling's Law of the heart to man. To date they have published six papers on their studies. Three of these will be mentioned briefly.

First of all they attempted to determine whether or not left ventricular end diastolic segment length and left ventricular end diastolic pressure were important controlling factors in ventricular contraction. Systemic arterial pressure and left ventricular pressure were measured in patients with rheumatic mitral valve disease and atrial fibrillation. The length of a segment of the left ventricle muscle was recorded simultanously in 13 of these patients by means of a resistance gauge sutured to the surface of the left ventricle. The variation in duration of diastole resulted in beat to beat alterations in ventricular filling which resulted in variations in end diastolic segment length and pressure. The peak systolic ventricular pressure, the systolic period and the systemic arterial pulse pressure were utilized as parameters of left ventricular function. In every patient increases in end diastolic segment length and end diastolic pressure correlated closely with the increase in the three parameters of left ventricular function. These results suggest that Starling's Law of the Heart operates in patients with mitral stenosis and atrial fibrillation on a beat to beat basis. It is also consistent with a view that the character of subsequent ventricular contractions is determined by the end diastolic segment length and the end diastolic pressure.

In a second experiment Braunwald determined the end diastolic and end systolic volumes of the left ventricle in 8 patients using angiocardiograms taken in two planes. The stroke volume was then obtained. In four patients large beat to beat variations in left ventricular end diastolic volume occurred during the injection of contrast media. This was accompanied by changes in stroke volume which vary directly with the preceding left ventricular end diastolic volume. In four patients the end diastolic volume remained constant and in these patients the stroke volume showed little or no change. From these observations it might be concluded that the ventricular stroke volume is a function of the end diastolic volume and therefore also the end diastolic fiber length and that Starling's Law is applicable to man at least on a beat to beat basis.

In the third investigation changes in left ventricular end diastolic pressure was determined during trans-septal catheterization. The activity of the autonomic nervous system was reduced with an infusion of Arfonad. Measurement of cardiac output and stroke volume was carried out before, during the course of, and upon completion of a transfusion of 1500 mls. of the subjects own blood. The transfusion resulted in a significant elevation of left ventricular end diastolic pressure in each subject. As the end diastolic pressure rose, left ventricular performance also became augmented as evidenced by an increase in cardiac output and stroke volume. This data is consistent with the hypothesis that the end diastolic pressure is an important determinant of the characteristics of ventricular contraction, and that Starling's Law of the Heart is applicable to man at least under conditions of this experiment.

The least controversial and most easily supported theory which would explain these findings seems to be as follows: Cardiac output in exercise is initially increased by the influence of the sympathetic system. At low levels of exercise it is increased primarily by an increase in the heart rate. However, with more strenuous exercise, the output is increased by both an increase in heart rate and an increase in stroke volume. As initially, the end diastolic heart volume during exercise is smaller than at rest, the increased stroke volume must result from more complete ventricular emptying during systole. In severe exercise the sympathetic influences which increase the cardiac output and keep the heart small work to their maximum but are not sufficient. The heart then enlarges due to an increase in end diastolic volume and falls back on the Starling mechanism and the increased end diastolic volume results in a further increase in stroke volume and cardiac output. □

TO BE CONCLUDED

Acquired Orthopaedic Anomalies in Children

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The purpose of this article is to discuss the clinical features of some of the commonly seen acquired orthopaedic anomalies in children.

Birth Palsy

This is a flaccid palsy of an upper limb secondary to the injury of the brachial plexus. It is caused by forcing the head away from one shoulder during the delivery. A fracture of clavicle or humerus, dislocation of the shoulder joint or torticollis may be associated. If only C5 and C6 nerve roots are injured the upper arm muscles are involved (Duchenne-Erb type), if only C-8 and T-1 roots are injured the intrinsic muscles of the hand and the wrist flexors are involved (Klumpke's type). In more extensive injuries the whole arm may be involved.

The changes which take place within the nerves vary from mild edema or hemorrhage to the complete avulsion of the nerve roots. If mild, the recovery usually starts within a few days. If the recovery has not begun within four months it may be assumed that it will not take place.

Clinically the baby tends to favour the involved limb and may not move it at all. Slight local swelling is present on the involved side of the neck. If the clavicle or the shoulder joint is injured too the local swelling is more obvious. The arm is held internally rotated at the shoulder. Atrophy of the involved muscles follow and usually the development of the involved limb does not keep pace with the normal one. Later on the shoulder joint may dislocate posteriorly.

The treatment in the early stage consist of holding the arm externally rotated and abducted at the shoulder, flexed at the elbow, forearm being supinated and dorsiflexed at the wrist. This position relaxes the injured nerves and prevents the development of contractures. This can be done with a splint or by fixing the baby's sleeve overhead. Daily passive exercises of all joints through their full ranges should be carried out to prevent the development of contractures in the position held. It is continued till the baby is able to raise the arm and to flex the elbow actively. If the initial treatment was delayed the internal rotation contracture at the shoulder will need to be overcome surgically. Muscle transfers are done at the same time to reinforce the external rotation. Also different reconstructive procedures may need to be done according to the type and the degree of the residual deformities.

Scoliosis

Scoliosis is a lateral curvature of the spine. The great majority are of unknown etiology. Around 80% of the patients are girls and in great majority of them the convexity of the primary curve is toward the right side. If no structural changes of the vertebrae have taken place and the curvature corrects itself on lying down or bending forward it is called 'functional scoliosis'. If some wedging and rotational deformities of the involved vertebrae have developed it is called 'structural scoliosis'. The functional scoliosis is secondary to a true or apparent short leg or to the muscle spasm due to some painful condition of the spine. In structural scoliosis the primary curve is the chief deforming curve, compensatory curves develop above and below it.

The deformity is usually the first thing noticed. One shoulder is held higher, the ribs and the scapula are more prominent posteriorly on the side of the primary curve, chest is flat on the same side anteriorly. The severe deformities cause displacement of the heart and lungs interfering with cardiopulmonary function and is known to reduce the life span of the patient. Later they start to complain of back pain and weakness.

The primary curve tends to increase till the growth of the vertebrae is complete, around the age of 15 years in girls and 16 years in boys. Therefore the earlier the onset of the curve the greater is the eventual deformity, if not treated. The exercises alone do not influence the progress of the deformity but improve the posture and the muscle power. The accepted treatment now consists of the applications of corrective casts or a "Millwaukee's brace" and keeping the child under observation. If the primary curve is already severe (over 50°), unstable, painful or rapidly progressing the fusion of the primary curve alone is done after adequate correction.

Legg - Perthe's Disease

This is a disease affecting the hip joint secondary to the avascular necrosis of the capital epiphysis of the femur. The age of onset varies but

is predominantly from four to ten years old. 85 to 90% of the patients are boys and in about 15% the involvement is bilateral. The initial changes consist mainly of synovitis of the hip joint causing pain often radiating to the knee, limp and stiffness. The radiographs at this stage are negative except maybe some widening of the joint space. Then dense areas appear in the epiphysis which in turn are followed by rarefaction. If the weight bearing continues the anteverted epiphysis becomes compressed and fragmented by the pressure of the anterior edge of the acetabulum. Eventually after three to four years or more the process heals, leaving the scars behind as flattened and deformed femoral head, shortened and widened femoral neck and an incongruous hip joint. The involved leg is shorter by one quarter to one-half inch. The incongruity of the joint leads to the development of osteoarthritis.

The essential feature of the treatment is to protect the femoral epiphysis till adequate healing takes place. Bed rest with traction applied on the involved leg is mandatory at the initial painful stage which last three to four weeks. In the healing stage the child can be ambulated by double long leg walking casts with a cross bar keeping the hips abducted around 40° - 45° and internally rotated. The crutches are used for balance. This is shown to decrease the weight bearing stresses on the anteverted femoral epiphysis and keeps the head molded inside the acetabulum preventing the destructive effect of the anterior edge of the acetabulum. Apparently it also hastens the healing, the treatment lasting an average 10 months. The other alternatives are complete bed rest for prolonged periods, a Sam Browne belt with crutches which is less reliable in children, or a Thomas walking brace with elevated shoe on the normal side. If treated so gradual weight bearing is allowed when adequate healing takes place as shown by the radiographs.

Slipped Femoral Epiphysis

It consists of a gradual slipping of the capital epiphysis of the femur over its metaphysis. It occurs much more commonly in boys than in girls (5/1) and in up to 40% the involvement is bilateral. The age of onset varies from 10 to 17 years, the average age being 11½ years in girls and 13 years in boys. The body build is either obese with underdeveloped genitalia (Froehlich's) or thin and long with a history of a rapid growth in height. The displacement of the epiphysis is usually downward and backward resulting in varus of the neck and retroversion of the head of the femur.

The process starts with synovitis causing pain, limping and stiffness. The pain in the hip region increases when slipping occurs, it gradually subsides with healing. The ranges of flexion, abduction and internal rotation movements of the hip joint are decreased. If the slip is moderately severe on flexing the hip the thigh rolls into external rotation and some abduction. The involved leg is shorter.

The principle of treatment in the preslipping synovitis stage is bed rest with skin traction on the leg, for the weight bearing stress is the cause of the slip. Theoretically it would heal if the rest is continued long enough, however, even at bed rest further slippings may take place. Therefore the treatment of choice is the internal fixation of the epiphysis. In slips up to one third of the diameter of the neck it is pinned in situ using two or three Knowles pins. As an alternative procedure an epiphyseodesis can be done to speed up the closure of the epiphyseal plate. In the more severe slips a corrective osteotomy should be done. The closed reduction should be attempted only if there was a sudden severe slip. It should be followed immediately with the pinning to prevent its recurrence.

Osgood - Schlatter's Disease

It is characterized by pain and swelling around the tibial tuberosity. On radiographs the tuberosity looks to be enlarged and fragmented. It is considered to be traumatic in origin secondary to the forceful contractions of the patellar tendon. Often it is bilateral. The complete healing as seen in radiographs takes place around the time of the completion of the bony growth.

In its acute stage a knee cylinder cast is applied for three to four weeks. Other alternative is the injection of hydrocortisone locally. If the symptoms do persist in spite of these measures a longitudinal incision of the patellar tendon and currettage of the bone fragments gives relief.

Osteochondritis Dissecans

This consists of a focal necrosis of bone with degeneration of its overlying cartilage near to a joint surface, with partial or complete separation. It occurs mainly in the bones making convex joint surfaces like the head of the femur, femoral condyles, talus at the ankle joint and the condyles of the humerus.

The symptoms consist of local joint pain, limp and some stiffness. Some atrophy of the muscles controlling the joint develops secondary to the disuse. If it is not detached it is shown that it heals with protection from weight bearing. If the bony fragment with its overlying cartilage separates completely becoming a loose body within the joint it should be removed. □

The Characteristics of Patients in the Long Term Care Institutions of a Metropolitan Area of Nova Scotia*

by

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Health and welfare services "should be so organized and administered as to meet more precisely the varying needs of special groups and even of different individuals."[1] Those with long-term illness constitute one of the largest of these "special groups." The planning of institutional facilities for their care should be increasingly sensitive to their specific needs and individual characteristics. Therefore, the intelligent planning of future long-term care institutions providing appropriate services and facilities depends, in part, on relatively detailed information regarding the characteristics of those likely to occupy these institutions. This paper, based on one of the first surveys of its kind to be reported in Canada[2], describes the characteristics of one such group, namely, the patients and residents in the long-term care institutions of a metropolitan area of Nova Scotia.

Method: -

A one-day survey of long-term care facilities was conducted in the Atlantic Hospital region of Nova Scotia, which includes the metropolitan area of Halifax and Dartmouth and the surrounding County of Halifax, with a total population of 225,723. The survey extended over the period from March 5 to July 16, 1963.

This study was planned and supervised by G. H. Hatcher, M.D., D.P.H., Head of the Department of Preventive Medicine, Dalhousie University, and by J. M. Wanklin, Ph.D., Assistant Professor.

The institutions included all those providing care alternative to general hospitals. The institutions upon which this report is based, together with their auspices, bed complement and the number of patients present on the census days, are listed below. One purely domiciliary home, with only nine residents, and two chronic mental hospitals were included in the survey but are omitted from this report.

In total then, the data to be presented are based on 617 persons housed in 17 institutions.

Seven institutions were classified as Professional Nursing Homes and five as Professional - Domiciliary. All these, operating under a variety of auspices and with various names (which were not necessarily related to their true function) existed not so much as clearly-defined types but rather as highly individual institutions, offering a wide spectrum of services, which actually arrayed themselves in a continuum. They were divided into two categories on the following basis: Those homes which accepted or maintained bedfast patients as their predominant function were classified as Professional Nursing Homes. In fact, however, only one was licensed as a Nursing Home under the Nursing Homes Act of Nova Scotia. Those homes which offered domiciliary, or simple custodial care as their predominant function, but which, in addition, accepted an occasional bed patient and provided care for their residents when they became ill and required prolonged care were classified as Professional - Domiciliary; that is, they accepted the responsibility of providing two levels of care. Most of these were commonly referred to as Rest Homes, Homes for the Aged, Convalescent Homes, etc.

Information was obtained by field interviewers who visited each facility, and using prepared forms, collected data which included the basic characteristics of each institution and the services offered. These will not be dealt with in this report. A patient census form was completed on each person present on the census day, the information being obtained from the patient's records and by asking specific questions of the personnel most familiar with the patient's condition. The items included basic demographic data, date of admission, diagnosis, nature and extent of disability, amount charged, source of admission, etc.

It is recognized that the method used is subject to certain inadequacies. First, there is the danger that a one-day survey may not be truly representative. This is especially true in the hospitals where there is a relatively high turn over of

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patients. The patient population in the other facilities, however, is subject to relatively slow change and thus a recent cross-section survey can more adequately portray the current status of their long-term care patients. Second, as no attempt was made to examine or interview the patients, the data cannot go beyond what was obtained in the records, or known and reported by the personnel interviewed. The principal inadequacy, in this respect, is incompleteness and lack of specificity in some of the diagnoses. Ideally, one should repeat the survey on carefully selected days throughout the year and have each patient, or at least a representative sample, examined by a team consisting of a physician, nurse and social worker. This has been done in certain centres in the U.S.A., but our resources did not permit this expensive approach.

Results: -

Selected characteristics of these persons will now be described.

The sex distribution of the 617 patients varied from institution to institution, being predominately female in the Professional Nursing Homes and Professional - Domiciliary Homes and predominately male in the remaining institutions. Overall, men accounted for 338 or 55% but when the Geriatric Section of Camp Hill Hospital with a male population of 97% is excluded, women form the major group, accounting for 68% of the patients in the remaining facilities.

Age and Marital Status

Persons 65 years of age and over accounted for by far the majority in all facilities with the exceptioh of the Convalescent Hospital and Rehabilitation Centre. In fact, in the Professional Nursing Homes and Professional - Domiciliary Homes over 90% were 65 years or over and approximately 30% were 85 years of age or over. The Rehabilitation Centre with 84% under 65 years had the youngest population. This is consistent with its policy of giving priority for admission to younger persons with severe traumatic injuries.

By far the majority of persons in all institutions were either single or widowed. The Professional Nursing Homes and Professional - Domiciliary Homes, with the highest proportion of older persons, had, as expected, the highest proportion of widows.

In general, then, the majority of patients in the long-term care institutions were elderly, single or widowed. The fact that so many were old and widowed is probably due, to a large extent, to the lack of a spouse, or the inability or unwillingness of another family member to care for them at home. However, the fact that so many are single suggests that additional health, social, mental and perhaps economic factors were responsible for their institutionalization. (Example: - in the Municipal Homes and Geriatric Section only 23% were under 65 yet 43% and 34% respectively were single.)

INSTITUTIONS SURVEYED

INSTITUTIONS	NUMBER OF INSTITUTIONS	AUSPICES	BED COMPLEMENT	NUMBER PATIENTS
PROFESSIONAL NURSING HOMES	7	PROPRIETARY	113	99
MUNICIPAL HOMES	2	MUNICIPAL GOVERNMENTS	194	188
GERIATRIC SECTION OF CAMP HILL HOSPITAL	1	DEPT. OF VETERANS AFFAIRS	163	145
PROFESSIONAL - DOMICILIARY	5	RELIGIOUS, VOLUNTARY, PROPRIETARY	121	117
CONVALESCENT HOSPITAL	1	MUNICIPAL GOVERNMENT	53	49
REHABILITATION CENTRE	1	NOVA SCOTIA REHAB. COUNCIL	19	19
TOTALS	17		663	617

Length of Stay

Generally, the length of stay was related to the type of patient accepted for care and the services offered by the institution. In those facilities offering primarily domiciliary care - the Municipal Homes, the Geriatric Section, and the Professional - Domiciliary Homes, approximately 60 to 70% had been there 2 years or more on the census days. The fact that these institutions are providing a permanent *home* for a large proportion of their residents is thus important to the planning of facilities with appropriate services. At the other extreme, length of stay in the Convalescent Hospital and Rehabilitation Centre was measured in days, or at most months, as expected in institutions operating as hospitals rather than "homes". However, 40% of the patients in the Rehabilitation Centre have been there 60 days or more, indicating the time involved in the intensive rehabilitation of the severely disabled.

Bed Status and Ability to Walk

These characteristics were taken as indices of severe physical impairment. All the institutions had a considerable number of patients who were in bed all the time or in bed except when put in a chair. This might have been expected in the Professional Nursing Homes and the two hospitals which are primarily intended to care for the more severely impaired. However, in the Municipal Homes and Geriatric Section approximately 30% were in bed all the time or except when put in a chair. This suggests that the original function of these institutions to provide primarily domiciliary care is changing, and they are now caring for a large number of severely impaired and disabled persons requiring extensive nursing, medical and rehabilitative care. On the other hand, whether a person is put in a chair or allowed to remain in bed all day is not only related to the extent of his physical impairment but to the interest, training and availability of the staff.

Mental Status

Those with relatively severe mental disturbances were also distributed throughout the institutions. In the Municipal Homes only slightly over 1/3 were stated to be always clear and well oriented, and in the Professional Nursing Homes and Geriatric Section only about 1/2 fell into this category. The large number of persons with mental confusion and disorientation probably is at least partly the result of their advanced age. It is probably also due to social isolation and inactivity. As pointed out below, for example, senility was a common diagnosis.

Diagnoses*

The general impression of disability and infirmity gained from the fore-going data was reinforced by the diagnoses most frequently encountered. Multiple diagnoses were common, these being 1050 diagnoses for a total of 617 patients.

Impairments led the list of diagnostic categories accounting for approximately 1/3 of the total. Generally, diseases of the Circulatory System, Mental, Psychoneurotic and Personality Disorders, and Senility were next in importance.

Impairments*

Specific impairments, which, in most instances represent residuals of pre-existing acute disease or injury, include the cerebro-vascular accidents, the old inactive arthritic, the amputees, the fractured hips, the blind and the deaf. Paralysis accounted for 124 or 1/3 of all impairments.

Persons with severe impairment or disability were distributed throughout the institutions. Even in those institutions without any organized rehabilitative services, the Professional Nursing Homes, the Municipal Homes and the Professional - Domiciliary Homes, there were many patients with paralyses, absence of one or more extremities and various severe orthopedic impairments.

Discussion

The characteristics of the persons in the long-term care institutions in this area were essentially the same as those reported from more sophisticated surveys in various areas of the U.S.A. These data reveal that our long-term care institutions are occupied by a predominately old, single, or widowed population most of whom are afflicted with long-term illness, severe impairment or disability. For many the institution has become a permanent home. On the other hand, many are relatively well, able to be up and about and attend to their personal needs. Some of this latter group might well be maintained outside of an institution through the use of such programs as Co-ordinated Home Care, Meals-on-Wheels, and Friendly Visitors, designed to bring needed services to the home and thus preserve, or restore, relatively independent living.

However, for the majority, permanent institutional care will be required. What information of importance to the planning of future long-term care facilities can be obtained from the characteristics of the persons just described?

It is obvious that the data presented demonstrate multiple needs. Thus to meet these needs, multiple services and facilities are required. For

*Morbidity data were coded in terms of the International Statistical Classification of Diseases, Injuries and Causes of Death, 7th Revision, W.H.O., Geneva, 1955, except for "Impairments" which were coded in terms of the Classification of Impairments (X-Code) Division of P.H. Methods, U.S. Dept. of Health, Education and Welfare.

example, a facility providing a home-like atmosphere, in a stimulating social environment, where activity and recreation are encouraged is appropriate for those making the institution their permanent home. This is especially important for the older, single, or widowed person if we are to prevent, or at least alleviate, the general debility, senility and mental depression which largely results from social isolation, inactivity, and an environment devoid of hope.

Skilled nursing, medical, psychiatric and psychological care and treatment may be required at varying levels of intensity for those with physical or mental impairments. These levels of care will vary from the long-term active treatment hospital to the skilled nursing home.

For all, the prime objective should be to prevent their impairments, whether these be social, economic, mental, emotional or physical, from developing into total disabilities. This implies that each impaired person should have the benefit of a full medical and social assessment, preferably prior to admission. Realistic goals for rehabilitation can then be established for each individual and the appropriate program instituted. Selected patients should benefit from intensive rehabilitation programs designed to return them to the community. One must keep in mind, however, that for the older person maximum rehabilitation may mean an adjustment to the demands of daily living and psychosocial adjustment rather than a return to gainful employment. The goal, in many cases, will be to prevent further deterioration and to encourage the individual to make the maximum use of his remaining potentials. Thus, all institutional personnel should be aggressively oriented towards habilitation and rehabilitation. To achieve this, active educational and training programs for such personnel will be mandatory.

What we are discussing then is the need for multiple services and facilities to care for the many and changing needs of the long-term ill. To provide this type of institutional care, there are two basic approaches.

First, one can develop separate and relatively specialized facilities, each designed to care for particular categories of persons or particular stages in the course of long-term illness.

However, long-term illness, by its very nature, is a changing process; the patient slowly deteriorates, perhaps has acute episodes, improves for a time and has relapses. One cannot, therefore, categorize the patient, on any one day, or during a specific stage of his illness, into a Domiciliary patient, a Nursing Home patient or a Chronic Hospital patient and expect that he will remain in this category for very long. Nor can facilities with neatly defined and specialized functions, no matter how carefully the patients are selected for admission, expect to provide the comprehensive services required for the multiple and changing needs of long-term illness. Indeed, the more narrowly defined its function is, the more difficult it will be for the institution to provide appropriate care for more than a very short episode in the course of the patient's illness. This has been amply demonstrated here and elsewhere where one finds patients who, on admission, met all the requirements necessary to receive proper care but, after a time, deteriorated or improved to the level where the facility was no longer equipped or staffed to provide for their needs. We have seen that persons with severe impairments were distributed throughout the institutions regardless of the primary intended functions of these facilities.

Thus, if one has a system of strictly categorized facilities each specializing in a particular and narrow level of care, then in order to keep them functioning appropriately, their patients must be constantly assessed, and moved from one to another and back again. The difficulties in transfer and the breaks in continuity of care are obvious.

The alternative is to combine these various specialized institutions into multiple purpose, comprehensive care units. The case for such caprehensive care facilities has been clearly presented by Edna Nicholson, who, in referring to the continuous shifting of patients from one facility to another stated "the fewer changes the patient must make throughout the entire period of his diagnosis, treatment and care, the less suffering he will experience, the fewer duplications and gaps will exist in community services, and the lower will be the cost of providing care".[3]

The comprehensive facilities can provide the desired segregation of patients according to the level of care they need and the specialized services required by each, by separating their residents and patients into appropriate wards, sections or wings of the centrally administered institution. Comprehensive facilities of this type have been developed in other areas. For example, in Toronto the Jewish community operates a centrally administered complex including a General Hospital, a Chronic Disease Hospital and a Nursing Home.[4] Again, throughout Ontario, the Department of Welfare is developing institutions, available to all income groups, which provide three levels of care, each in a separate wing of the one institution. Patients are transferred from one wing to another in keeping with their changing status.[5]

Comprehensive care facilities and services need not necessarily be provided under one roof. Various specialized facilities may be constructed physically independent of each other and still provide comprehensive care. These, however, should be closely integrated administratively, each must thoroughly understand the function of the other, patients should be regularly assessed to determine their appropriate location and prompt transfer of

patients must be assured by mutual agreements and affiliations. McKeown[6] has referred to this concept as the "balanced hospital ommunity" and advocates the construction of multiple buildings on a common site, served by a common staff and providing appropriate and complementary services for all categories of patients. Close integration of these facilities not only provides comprehensive care but, equally important, continuity of care.

The development of these closely integrated and balanced facilities is hampered by the fact that no one agency is primarily responsible for the planning and provision of the various levels of care involved in such an institutional complex. Legislation pertaining to the operation of the various levels of care is administered by several, separate, departments of Government. General hospitals and long-term active treatment hospitals operate under the regulations of the Nova Scotia Hospital Insurance Commission, and various community organizations and church groups are intimately involved in the financing and administration of the hospitals. Chronic Mental hospitals and nursing homes are subject to the regulations of the Provincial Department of Health; Welfare homes are administered by municipal departments of welfare under a cost sharing agreement with the Provincial Department of Welfare; homes for the aged or domiciliary homes are not regulated by an official agency at present. Thus, the planning and development of balanced facilities for the provision of comprehensive institutional care can be best accomplished through the close, co-ordinated, efforts of the various governmental and private groups involved. The varying needs of this special group of citizens can only be met through this co-operative effort.

Summary

A one day survey was conducted of the patients and residents in the long-term care institutional facilities in the Atlantic Hospital Region of Nova Scotia. Older, single or widowed persons, who were afflicted with long-term illness, severe impairment or disability constituted the majority of persons in these institutions. Most had spent 2 years or more in these facilities. Methods for providing appropriate institutional care to meet the multiple and changing needs of these persons are discussed. The importance of providing comprehensive, balanced, facilities, through the co-operative efforts of all groups involved is stressed. □

References

1. Health & Welfare: The Development of Community Care. London, Her Majesty's Stationery Office, 1963.
2. Gordon, P.C., Long-Term Care Facilities in the Atlantic Health Region - A Survey. Welfare Council (Halifax-Dartmouth Area) 253 Barrington Street, Halifax, Nova Scotia, 1964.
3. Nicholson, E. E., Planning New Institutional Facilities for Long-Term Care. New York, 1956.
4. Liswood, S., Ruth, S. A Program of Integrated Medical Care, Canadian Hospital, Sept., 1957.
5. Stewart, C. K., Institutional Care of Ill & Disabled Elderly Persons in Ontario, Journal of the American Geriatric Society, 11 : 1160, 1963.
6. McKeown, T. A Balanced Hospital Community, Hospitals, 33 : 40, 1959.

FORTY YEARS AGO

From The Medical Society of Nova Scotia Bulletin, January 1925.

The diagnosis of tuberculosis is beset with pitfalls which can only be avoided by maintaining the point of view that tuberculosis may be present as a cause of illness at all age periods and in people of most varied social conditions, and that it may only be recognized by the conscientious use of painstaking methods of investigation. It is recognized that infections take place throughout the years, as shown by Opie, from the X-raying of lungs of people of all ages dying of other diseases, and by well attested cases of recent adult infection described by various English writers; but the long established conception that tuberculosis is acquired in comparatively early life, that such early infections can be demonstrated in the great majority of the population, and that clinical tuberculosis results from a lowered resistance to the already present infection, affords a working hypothesis well supported by fact. Tuberculosis, therefore, is a physical incubus which must be reckoned with as possible in everyone, but the tuberculosis patient is also subject to all the other ills that flesh is heir to. Desirable as it is to have a single cause explain all symptoms of disease, one diagnosis will frequently prove insufficient and the recognition of tuberculosis may too readily stop further investigation. □

Part of an address given by Dr. C. D. Parfitt to the Annual Meeting of the Society, July 1924.

Correspondence

Health Services

To the Editor,
The Nova Scotia Medical Bulletin
Sir:

The Report of The Royal Commission on Health Services is too important a document to remain a closed book. It is with the hope of stimulating an interest in some of the economic aspects of its contents that the following observations are recorded.

The Commissioners see a necessity for compulsory coverage of physicians' services. To this the Nova Scotia Division is still officially opposed. The Society's position is based on the sound principle that Government should help those who are unable financially to help themselves, and not commit itself to expenditures, the monies for which could be spent more wisely on those other essentials enumerated in order of priority in the Society's Brief.

In the Foreword, of the Report, p. XX it is stated that one of the factors that threatened to overshadow the broad purposes of the Commission's inquiry was "the over-emphasis given to 'medicare' ", which was defined as the payment of medical bills.

On page 14 of the chapter on Basic Concepts the statement that, - "The first requirement is sufficient trained personnel," is seemingly qualified by the view that, - "while we are aware the shortage of physicians, dentists, nurses, and other paramedical personnel will make it difficult to establish the full Health Services Programme the Charter envisages, none the less the fact that there are shortages must not be used as an excuse to delay initiating programmes and plans." One is left with the impression that the Commission would not be disturbed if payment for physician services were to come first. This impression is further strengthened on page 19 of the Recommendations. It reads: "The programmes should consist of the following services with the provinces exercising the right to determine the order of priority of each service, and the timing of its introduction." Medical Services are then listed first.

On page 42, Recommendation 62 advocates the preparation and issuing of a National Drug Formulary. This is a cause of concern if one of its objects, "to minimise the cost of prescribed drugs," should become an over-riding factor. If this were to happen, it could result in the physician's freedom to prescribe and the patient's right to receive a drug, being based on relative cost alone, rather than on factors of its efficacy. This concern would appear to be borne out by the statement on P. 516 that the economic benefits are to be the determining factor in the allocation of monies and health expenditures, in the reduction of various illnesses.

Indeed the economic overtones are very insistent in the report, - so insistent that at times one has the thought that rather than being a Health Charter, the report of the Commission, at its foundation, is an economic thesis. It is a thesis in keeping with The Galbraithian philosophy that the substitution of public funds for private funds is a good thing.

It recognizes (Pages 787 & 861) that sizeable amounts will be diverted for services and not for the production of private goods. On p. 857 it predicts that the per capita outlays on health care will rise to $67 by 1971 in any case. The additional costs, if the Commission's recommendations are adopted, will be $17 in 1971. This is not enough, the Commission thinks, - "to generate inflation of any sizeable amount." It is the Commission's optimistic view that the necessary tax to meet the costs of its programme will withdraw funds from the private sector, reducing the pressure upon prices, while the expenditure of the proceeds will have the opposite effect. Thus the potential inflationary effect of the government expenditure, it believes tends to be offset by the tax.

On page 857 there is a bald statement of economic purpose. I quote: "Expenditures on good health may well be as efficient a device for equalizing the distribution of income as any subsidy can possibly be." This thought is continued farther on, that though there may result fewer yachts and elaborate houses, a reduction of private savings and capital formation, this will be balanced by government expenditure of the funds yielding a larger output over time than the private savings foregone.

These are the Commission's economic views and purposes. They are sincere views. But to those of us of a more conservative economic bent who look upon their basis as economic nonsense they are disturbing views. Having said this, I would express the clear opinion that the approach of organized medicine should not be negative, but positive. We should stress the areas in which we are in agreement, and the order of priority in the introduction of the elements of the Recommendations. We should not simply oppose and reject. We should not wait in the mistaken hope of changing political action, but in the intervening time press forward in the optimistic hope of influencing political action before it is taken. □

Yours sincerely,

A. A. Giffin, M.D., C.M.
Kentville, N. S.

Personal Interest Notes

While most of us are sloshing our way through the rain, sleet or snow of a winter which has already unleashed its fury upon us, those of our colleagues, who sailed on the Easter Island Expedition, which left Halifax on November 16, on the Cape Scott, are nearing the island which they are due to reach on December 14th. Enroute before reaching Puerto Rico, by a combined effort of many from Captain C. A. (Tony) Law, the well known artist, the yeoman of signals, the ladies of the company with manicure scissors, and by **unanimous** decision, a new flag was at their masthead. It bore the letters of the expedition's title - METEL (Medical Expedition to Easter Island) - vertically on a white background. It will be a dry Christmas for them as the Rev. Sebastian Englert, for a long time Roman Catholic missionary on the island has tabooed liquor. No cigarettes either, because the expedition doesn't want to throw present balances out of kilter - smokes are the island's substitutes for hard cash.

Division Society News

Welcome to the new Branch Society - the EASTERN SHORE MEDICAL ASSOCIATION.

The following slate of officers was elected in October of this year:

President: Dr. J. A. MacPhail, Sheet Harbour, Halifax Co.

Vice-Pres.: Dr. D. MacMillan, Sheet Harbour, Halifax Co.

Sec.-Treas.: Dr. C. A. Murchland, Sheet Harbour, Halifax Co.

Branch Secretary nominee to Executive Committee of Medical Society of Nova Scotia: Dr. P. B. Jardine, Musquodoboit Harbour, Halifax Co.
alternate: Dr. E. A. MacKenzie Musquodoboit Harbour, Halifax Co.

Nominee to Nominating Committee of Medical Society of Nova Scotia: Dr. T. E. Earle, Middle Musquodoboit, Halifax, Co.
alternate: Dr. A. C. Marshall, Upper Musquodoboit, Halifax Co.

Nominee to Board of Directors of Maritime Medical Care: Dr. P. S. Mathur, Moser's River, Halifax Co.

Antigonish - Guysborough Medical Society

(1). Dr. and Mrs. J. E. MacDowell after their nine months of question were answered with their 5th child, the fourth girl.

(2). Dr. Emmerson Dunphy attended the Clinical Congress of the American College of Surgeons in Chicago, Oct. 5-9, 1964, and then joined his wife in Montreal for a short holiday.

(3). Dr. and Mrs. O. C. MacIntosh spent September touring the British Isles, the greater portion of their time spent in Ireland.

(4). Dr. J. R. Greening spent two weeks in the woods of northern New Brunswick. During his sojourn, he lays claim to an 8-point buck - and that's no bull.

(5). Dr. and Mrs. C. N. MacIntosh spent the last week of October holidaying in Montreal, Quebec.

Cape Breton Medical Society

(1). Dr. H. R. Corbett, Radiologist for the City of Sydney Hospital, has resigned to assume full-time duty on the staff of St. Rita's Hospital in Sydney. Dr. Corbett has given many years of faithful service to the City of Sydney Hospital and his departure is felt with keen regret.

Dr. and Mrs. Corbett were honored when a testimonial dinner on their behalf was given by the City Hospital Commission and the Medical Staff on October 2, 1964. As a tribute to their esteem, a set of travelling bags and a French Provincial needlepoint occasional chair were presented to them. Dr. Corbett for many years has ably carried the radiological service in this area and both the medical doctors and lay public owe a great deal of gratitude to him. We look forward to his continued fine work in his full-time capacity at St. Rita's Hospital.

(2). The new Medical Centre on King's Road in Sydney is nearing completion and will accommodate approximately nine doctors' offices.

(3). We welcome to the medical scene Dr. Donald E. MacKenzie, a native of Glace Bay who has announced the starting of practice in the specialty of Internal Medicine.

(5). We welcome back Dr. Thornton Mosher who has returned to general practice in Louisburg. For the past four years he has practised in Kentville.

The Nova Scotia Division of The Canadian Cancer Society held a District Institute on November 14th at the Isle Royale Hotel in Sydney, as part of its educational programme. It was conducted by Dr. Margaret E. B. Gosse, Halifax, president of the Nova Scotia Division, and Dr. C. M. Harlow provincial chairman of the Education Committee. The Institute was composed of delegates from the nine units in Cape Breton as well as units from

Antigonish, Pictou, and Guysborough County.

Valley Medical Society

On November 9th, 1964, took place the official opening of the $1,900,000 addition and renovated section of the Blanchard Fraser Memorial Hospital at Kentville. The new hospital has 138 beds as compared with the old building of 66. It is one of the largest in the province outside of Halifax and is already filled to capacity so the administrator reports.

Over $40,000 has been left to Acadia University by the will of the late Mrs. Lucy F. Anderson of Wolfville to endow the **Alexander L. Anderson Bursary** Fund in the name of her late husband. The income is to assist students of superior ability in need of help who are majoring in Chemistry or Biology, preferably, but not necessarily proceeding toward Medicine.

Dr. Paul E. Kinsman of Aylesford attended the 1964 Refresher Course under the Postgraduate Board of the Royal Victoria Hospital, Montreal. This annual event for the last 15 years is specifically designed for the general practitioner.

Halifax Medical Society

The 38th Annual Dalhousie Refresher Course was held during the first week of November. Small group clinics were held each morning in five Halifax teaching hospitals with panel discussions in the afternoons.

The sixth Annual Dinner and Business Meeting of the Dalhousie Medical Alumni was held on November 3rd and attended by 200 doctors. Dr. Clarence L. Gosse was elected President, and Dr. R. A. MacLellan, long time general practitioner on the Noel shore and graduate of Dalhousie in 1908 was elected Honorary President.

Three Dartmouth doctors are on the newly elected Board of Management of the Dartmouth Community Concert Association. Dr. D. A. Wier succeeds Dr. Max Brennan as President. On his Board are Drs. F. J. Barton and R. A. Wentzell.

Dr. J. J. Hazel, a graduate of Dalhousie in 1952, lately with the Department of Radiology, Royal Victoria Hospital, Montreal, is now with the Donner Radiation Laboratory, University of California, Berkley.

The Bulletin announced at the time of Dr. B. K. Doane receiving his McLaughlin Travelling Fellowship, that he would be spending a year at the Maudsley Hospital, London, in **child** psychology. Rather is he to be engaged in **Clinical** Psychiatry and research.

Dr. H. B. Colford, Director Maternal and Child Health of the Provincial Department of Public Health and Dr. G. B. Wiswell medical director of the Central Registry of Handicapped Children of Nova Scotia were pleased to show Dr. Jean Webb, Chief Maternal and Child Health, National Health and Welfare, the complete facilities of the unit now conveniently located at Anderson Square, on Dr. Webb's visit to Halifax recently.

Dr. M. Jean Whittier has recently retired after years of service as medical missionary in India and is now giving freely of her time to various church groups to tell them of the conditions under which she worked.

To Dr. Claude F. Keays, Halifax; Dr. James H. MacLeod, Liverpool, and Dr. Melvin G. Feener, Middleton, go congratulations for receiving Fellowships in the American College of Surgeons at the clinical congress of the college held recently in Chicago.

To Drs. Clarence L. Gosse and Gordon Mack go congratulations for winning eight different awards for their pure bred cattle at the recent Winter Fair. Mr. Cyrus Eaton needs must look to his laurels.

St. John Ambulance Awards

Province wide awards were made recently to doctors who have given of their time and energy over the years in training candidates in First Aid both in classes and by examination.

At Ottawa, Dr. Robert Mathieson of Sydney, N. S., was invested as Serving Brother of the Order of St. John by Governor General Vanier at Government House.

At Government House in Halifax, Lieutenant-Governor McKeen invested Dr. J. J. Quinlan of Kentville as Serving Brother, while Dr. Helen Holden (Quinlan), his wife, was made a Serving Sister.

Priory Votes of thanks at the same ceremony went to: Dr. J. W. Barteaux, Dartmouth, Dr. C. P. Miller, New Waterford, Dr W. J. Lamond, Sydney Mines, Dr. L. A. Skinner, North Sydney, and Dr. F. W. Morse, Lawrencetown.

A 22-Year Brigade Service Bar went to Dr. C. B. Weld, Nova Scotia provincial President-Commissioner of St. John Ambulance.

Universities

Dalhousie University has established a Department of Otolaryngology in its Faculty of Medicine. Dr. James S. Hammerling has been appointed professor and head of the department.

Dr. Hammerling has been on the staff of the University and the Victoria General Hospital since 1948. He is a native of Philadelphia and obtained his medical degree from New York Medical College. After serving with the US Army Medical Corps during 1939-45, he took postgraduate training at the University of Pennsylvania, New York Polyclinic and the Postgraduate Hospital in New York. He is a member of the Canadian Otological Society, the Nova Scotia Society of Ear, Eye and Nose and Throat and the American Academy of Ear, Eye, Nose and Throat.

His wife is herself a medical graduate of Dalhousie, (Dr. Anne Linder), and one of his daughters, - Judith, is in her fifth year in Medicine at Dalhousie.

University of King's College recently installed **Dr. Robert H. Morris** as Chancellor in succession to Dr. H. R. Milner. Dr. Morris is a native of Shelburne, son of Canon W. S. H. Morris, long time parish priest in Nova Scotia. He is a graduate of King's and of Toronto where his medical career was interrupted by war service so that he graduated in 1922. Since 1925 he has practised Orthopedic Surgery in Boston. He has been on the teaching staff of Harvard Medical School and the Orthopedic Staff of the New England Deaconess Hospital and the Children' Medical Centre in Boston. He is President of the staff of the New England Baptist Hospital.

BIRTHS:

To Dr. and Mrs. Clive Macdonald, (née Shirley Eagles), a son, Shane Louis, at Eastern Kings Memorial Hospital, Wolfville, on October 24, 1964.

To Dr. and Mrs. Leslie Slipp, (née Jean MacPhee), of Hubbards, a daughter, at the Grace Maternity Hospital, Halifax, on November 11th, 1964.

To Dr. and Mrs. B. D. Grover, a son, Peter Michael, at the Grace Maternity Hospital on November 15, 1964.

OBITUARIES:

Dr. W. I. Bent, Secretary of the Lunenburg-Queens Medical Socoety writes as follows:

"I regret to record the death on November 5th at the Dawson Memorial Hospital, Bridgewater of **Dr. Clarence Bain Cameron,** age 76 years, a general practitioner in Lunenburg County for many years.

Dr. Cameron was born in New Glasgow, the son of the late James A. and Mrs. Cameron. He received secondary and high school education in New Glasgow, and graduated from Dalhousie Medical School in 1911. From 1911 to 1915 he practised at Head Chezzetcook and Tangier. From 1915 to 1917 he served with the R.A.M.C. in Egypt and Greece. He was invalided out in 1917. Dr. Cameron practised at Mahone Bay following his army discharge until 1919 when he moved to Petite Riviere, Lunenburg Co., where he practised until the time of his death. Surviving are his wife, the former Elizabeth Davies; a daughter, Mrs. Donald Kempt, Toronto; a sister, Mrs. Charles Walker, Montreal and two grandchildren. Interment at Riverside Cemetery, New Glasgow. A Memorial Service was held on November 10 in St. Michael's Anglican Church, Petite Riviere.

Elsewhere in this issue is a moving tribute to the late Dr. Cecil Edwin Kinley who died in Halifax on November 12th, written by one of his confrères.

CANADA'S 21ST ANNUAL NATIONAL HEALTH WEEK

For the 21st consecutive year a week in March has been designated, "Canada's National Health Week". The week for 1965 will be **March 14th to March 20th.**

For almost a quarter of a century the Health League of Canada has been teaching that it is better to prevent than to cure, that 50% of all illness is preventable and that the enormous amounts of money spent on care of the sick and loss of income could be put to better use.

The Bulletin willingly makes this announcement and urges its readers to promote the observance of this week. Our jobs won't suffer. □

BOOK REVIEW

MEDICAL CARE! PROGRAMS AND ISSUES. By W. P. Thompson. Clarke, Irwin & Co. Ltd., Toronto. 1964. 173 pages. $4.00.

A most valuable exposé of first the various types of Medical Insurance being used throughout the world and secondly a number of questions discussed concerning Medical Care.

As chairman of the committee set up by the Provincial Government of Saskatchewan to advise the Government he has had a great opportunity to familiarize himself with all the pros and cons of this important issue. After reading the book, I still feel that a man should be paid for the work he performed and at a fee commensurate with his experience and its value to the recipients.

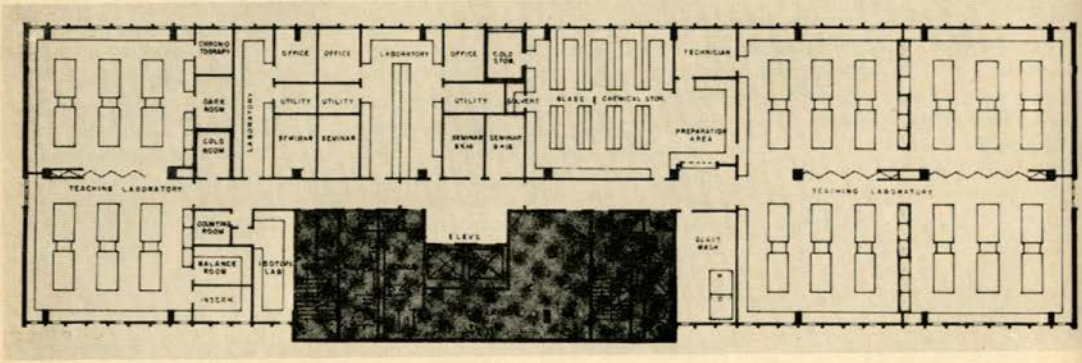
Other issues, such as cost and administration are adequately dealt with and tables giving the statistics from other countries help to give a more complete picture. Government assistance to the profession in caring for those, unable to shoulder the cost of medical care is to-day recognized as essential to our way of life. How it can best be carried out was and still is questionable. The profession has ideas which have been instilled over the centuries and it may be non ethical to many doctors to abandon them.

A book with information that all medical men should read concerning a vital and important subject. □

A.R.M.

As soon as there is enough snow for skiing, many summer cottages become winter ski lodges. Since many of these buildings must be heated by coal or wood burning stoves, it should be remembered that there is danger from carbon monoxide fumes. Whatever the fuel, it should be allowed to burn through before the stove is checked. There should also be adequate ventilation until the top of the fuel is quite red and the gases burned through. □

DALHOUSIE NOTES (Fig. 4) Continued



J. PHILIP DUMARESQ AND ASSOCIATES, ARCHITECTS

PHOTO BY MAURICE CROSBY

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