

## Editorial

Your Editors for the past two years wish to bid you farewell. Their resignations will come before the Annual Meeting to be dealt with. They feel that their efforts during the past two years have not yielded the results they deserved or that the Society should expect in its official Journal. New blood is needed and a new formula required to produce the goods.

At the last Annual Meeting they placed the situation clearly before the members: you cannot run a journal without material. They urged the cooperation of the Branch Societies, and of individual members to send news and contribute articles. At their request the Society offered a handsome prize for the best article published during the year by a member exclusive of the Editorial Board. The response has been totally disheartening.

Your Editors have no sense of having failed to try. By letters and constant personal solicitations they have sought to get the material needed from month to month. When all else failed they write articles themselves.

They believe the Bulletin is eminently worthwhile. Every Society should have a voice, and the Bulletin is the voice of The Medical Society of Nova Scotia. It reflects the standards of that organization in terms of its published content. In terms of money it added over seventeen hundred dollars last year to the coffers of the Society. Because they believe in it they individually pledge their support to it in future and to its Editors.

Finally they wish to thank those who did help most sincerely. Especially would they express their gratitude to Mrs. Muriel Currie, whose efforts in the business of advertising and publication assured its financial success.

THE EDITORS.

# Maternal, Infant And Stillbirth Mortality In Nova Scotia\*

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**M**OST doctors are not very much interested in statistics, but these are a "home-grown" Nova Scotia product, and some readers may find them intriguing. They show certain unusual features of the infant and stillbirth rates of this province. Frankly I do not know the significance of some of these figures, and I present them in the hope that the practitioners who are nearer to the problem will help the epidemiologist to ferret out the explanation.

The Survey of Health Facilities and Services in Nova Scotia in 1949-50 pointed out the relatively high infant and stillbirth mortality in this province. These two, when combined to give an index of the total infant loss, ranked second only to deaths from cardiovascular diseases. The Survey Report recommended that a programme of infant and maternal hygiene should be given first priority in any expansion of public health services in this province.

In 1952 the Department of National Health and Welfare provided three new Health Grants to the provinces, one of them for the expansion of Child and Maternal Health programmes. Certain recommendations had been made in the 1949-50 Survey as to methods by which the facilities for maternal, infant and child hygiene might be improved in Nova Scotia as funds became available. Some data had been presented at that time to support these recommendations, but in view of the lapse of time and also the general nature of some of the data presented in the survey, a further statistical review seemed desirable. Maternal, infant and stillbirth rates were therefore analyzed in an effort to evaluate the magnitude of the problem, to determine the areas of the province and the population groups most affected, and to obtain leads as to possible methods for improving the facilities and services for child and maternal care in Nova Scotia.

The Provincial Department of Health established a Division of Child and Maternal Care and appointed a Director in 1954. An active programme is being developed to improve infant and maternal health in this province. These figures may therefore have some interest in future as the base line from which the new programme started.

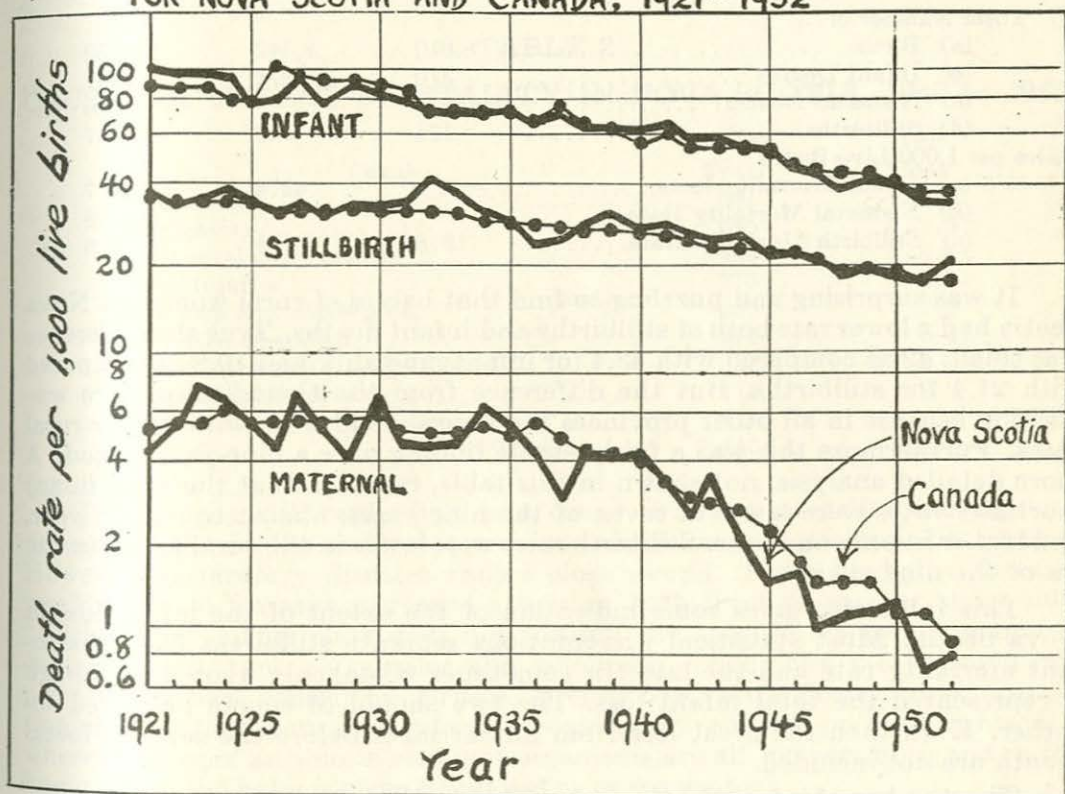
Figure I compares the trends in the infant, stillbirth and maternal mortality rates of Nova Scotia with the Canadian average from 1921 to 1952.

Little decrease in maternal mortality occurred until after 1934 and the major fall was after 1943. An association with the development of antibiotics is suggested, but this period also saw a marked shift toward hospital deliveries, greater use of blood transfusions, improved anaesthesia and other advances



affecting obstetrics. Maternal mortality is no longer a major problem, although there is still some loss of life and the rate can no doubt be reduced still further.

FIGURE 1  
INFANT, STILLBIRTH AND MATERNAL MORTALITY RATES PER 1,000 LIVE BIRTHS FOR NOVA SCOTIA AND CANADA, 1921-1952



The Nova Scotia rates for infant mortality and stillbirths have also paralleled the Canadian figures closely since 1921, but this cannot be accepted as indicating a satisfactory state of affairs, since the Canadian rates are themselves well above those of some fourteen other countries. To state it bluntly, Canadian infant and stillbirth rates are disgracefully high. Many of these deaths are preventable by the better application of present knowledge. Nova Scotia has done as well as the Canadian average, but must do a great deal more to achieve something nearer the ideal.

It is customary to blame the high infant mortality in Canada on the preponderance of rural population. Less prenatal care is said to be available to rural mothers. The Nova Scotia rates for rural and urban mothers were therefore calculated as shown in Table 1. Neonatal deaths (under one month) are shown separately, as well as infant deaths (the total for the first year).

TABLE I

INFANT, NEONATAL AND STILLBIRTH RATES PER 1,000 LIVE BIRTHS BY RURAL AND URBAN RESIDENCE OF MOTHER, NOVA SCOTIA, 1944 to 1952

	Nine-Year Averages (1944-1952)	Rural	Urban	Total
Total Number of				
(a) Births.....		8,810	8,542	17,352
(b) Infant Deaths.....		370	371	741
(c) Neonatal Deaths.....				396
(d) Stillbirths.....		174	183	357
Rates per 1,000 Live Births				
(a) Infant Mortality Rate.....		42.0	43.4	42.7
(b) Neonatal Mortality Rate.....				22.8
(c) Stillbirth Mortality Rate.....		19.8	21.4	20.6

It was surprising and puzzling to find that babies of rural women in Nova Scotia had a lower rate both of stillbirths and infant deaths. True the difference was small: 42 as compared with 43.4 for infant mortality and 19.8 as compared with 21.4 for stillbirths. But the difference from the Canadian picture was striking because in all other provinces the reverse held true, with higher rural rates. Furthermore this was a fairly stable finding over a nine-year period. A more detailed analysis, not shown in this table, revealed that the rural infant mortality rates were lower in seven of the nine years, almost equal one year, and higher in only one year. Stillbirth rates were lower in the rural areas during six of the nine years.

This table also gives some indication of the extent of the infant loss in Nova Scotia. Most statistical presentations separate stillbirths from the infant mortality rate and the latter is sometimes mistakenly quoted as though it represented the total infant loss. The two should of course be added together. Even then the great loss from miscarriages before the seventh foetal month are not included.

The number of infant deaths and stillbirths in both rural and urban populations was 741 plus 357, or a total of 1,098 per year. Only heart and circulatory diseases exceeded this with an average of 1,714 deaths per year during the same period. Cancer averaged 855 and tuberculosis 165 deaths per year during the last five years. There can be no doubt of the terrific toll in infant deaths and its relative importance as a health problem.

It is also seen that neonatal deaths, i.e. in the first month, comprise more than half of the deaths of the whole first year of life, 396 of the total of 741. The factors responsible for these neonatal deaths almost all relate to the pre-natal condition of the mother and baby or to the obstetrical experience. Deaths from infections, accidents, etc. bulk larger in the next eleven months, but contribute little to neonatal mortality. The 357 stillbirths and the 396 neonatal deaths, or a total of 753 should be the target for an improved pre-natal and obstetrical programme. The remaining 345 who die in the last eleven months of the first year of life stand to gain from the paediatric, nutritional and immunization programmes.



The relative importance of an infant hygiene programme should be clear from these figures, and prenatal and obstetrical services would seem to require most emphasis. However, the puzzling difference between rural and urban rates as compared with the rest of Canada is not explained.

Table 2 shows the causes of infant deaths in Nova Scotia during the five-year period 1948 to 1952. An examination of these may indicate what measures should be taken to reduce the rate.

**TABLE 2**  
**CAUSES OF INFANT MORTALITY IN NOVA SCOTIA, 1948 to 1952.**

Cause	5-Year Total	Per Cent
Prematurity.....	651	19.4
Respiratory.....	645	19.3
Congenital abnormalities.....	447	13.4
Birth Injuries.....	270	8.1
Asphyxia and Atelectasis.....	265	7.9
Digestive Disorders.....	215	6.4
Others Peculiar to 1st year of life.....	332	9.9
Infectious and parasitic.....	111	3.3
Others.....	411	12.3
Total	3,347	100.0

Prematurity still ranks first as a cause of infant mortality causing 19.4 per cent of the deaths under one year and should receive continued attention. However, respiratory diseases rank a close second. These air-borne diseases would seem to warrant increased attention both from physicians and public health officers. This class does not include the specific air-borne communicable diseases, such as measles and whooping cough, but the common respiratory diseases caused by viruses, streptococci, staphylococci, etc. Protection of the infant from such infection requires more attention both in hospital where carriers of antibiotic-resistant organisms are all too common and in the home where the baby is often displayed to every visitor.

Congenital abnormalities rank third. The attempt to control virus infections in early pregnancy may offer some little hope here, although practical results have still to be demonstrated.

The number of deaths from birth injury and asphyxia and atelectasis, together totalling 16 per cent, indicate the importance of good obstetrical technique, anaesthesia and resuscitation.

Mortality from infectious diseases and digestive diseases is relatively low, and has decreased markedly even in the last five years. However, they still constitute together 9.7 per cent of the total infant deaths, and require continued effort for their reduction. Education of the mother in the care of the baby's food, encouragement of breast feeding and immunization at three months or earlier are some of the methods to reduce this group.

The most striking feature of this table is the fact that every specific group here listed, with the possible exception of congenital abnormalities, should be amenable to a large measure of further reduction by adequate pre-natal programmes of both clinical and educational type, by good obstetrics, good postnatal care of the infant and medical supervision during the first year of life. No doubt that is why fourteen countries have achieved much lower rates than Canada.

Further statistical tabulations were made in an effort to determine what areas of the province had the highest rates, and whether these were consistently above the average. Preventive programmes might then be improved in such districts. Table 3 shows the infant and stillbirth mortality rates by county for rural and urban mothers in the five-year period 1948 to 1952.

**TABLE 3**  
**INFANT AND STILLBIRTH MORTALITY RATES PER 1,000 LIVE BIRTHS BY COUNTY AND BY RURAL OR URBAN RESIDENCE OF MOTHER FOR THE PERIOD 1948-1952.**

County	Infant Mortality Rate			Stillbirth Rate	
	Rural	Urban	Total	Rural	Urban
Annapolis.....	36.5	36.5	36.5	14.5	19.5
Antigonish.....	29.7	30.7	30.0	21.5	10.8
Cape Breton.....	42.8	47.5	46.3	19.2	23.0
Colchester.....	30.9	35.0	32.4	20.1	19.8
Cumberland.....	40.4	43.3	42.1	19.8	28.6
Digby.....	48.4	38.3	47.1	19.9	14.7
Guysborough.....	38.8	50.8	41.5	19.4	12.7
Halifax.....	36.4	28.9	31.8	18.3	18.4
Hants.....	39.3	24.7	37.3	17.5	17.9
Inverness.....	44.0	52.7	45.7	20.7	22.3
Kings.....	39.4	45.2	40.7	15.3	14.4
Lunenburg.....	37.6	34.6	36.9	14.4	21.8
Pictou.....	32.8	42.0	38.8	19.7	18.9
Queens.....	40.4	47.8	42.9	14.7	20.3
Richmond.....	35.4	—	35.4	21.8	—
Shelburne.....	37.5	25.1	34.5	19.4	14.6
Victoria.....	37.4	—	37.4	30.9	—
Yarmouth.....	23.2	33.3	27.1	12.2	17.1
Total	37.6	38.6		18.3	20.5

When urban and rural infant mortality rates are combined, the five-year average varies from a low of 27.1 in Yarmouth to a high of 47.1 in Digby. It is surely worthy of study to determine why two adjacent counties differ so widely, and why others also show such a wide range.

One county only, Yarmouth, had an average rate (rural and urban) below 30, four were between 30 and 35, six were between 35 and 40. Seven counties were above the Canadian and provincial average. Four had rates between 40 and 45, Cumberland, Guysborough, Kings and Queens. Excessively high rates, over 45, occurred in three counties, Digby, Cape Breton and Inverness.

The neonatal mortality rates were also analyzed but are not shown here. They closely paralleled the total infant mortality rates. The high rates in



some counties are therefore almost wholly due to deaths in the first month of life. They must therefore be related to prenatal or obstetrical factors, and not to the hazards encountered by the infant in the last eleven months of the first year.

Sixteen of the 18 counties of Nova Scotia have both rural and urban population, Richmond and Victoria having no towns. Of the 16 counties, ten had a higher infant mortality rate in urban than in rural populations and in one other the rates were exactly equal. As already stated, this is contrary to the usual experience in Canada. How is it to be interpreted? Do rural women in Nova Scotia have more effective prenatal care than their urban cousins? Or are their babies protected because of better maternal nutrition, exercise habits or general health? Or is there some hitherto unrecognized harmful element in city and town life that affects the health of the infant? These are surely important questions to find answers to.

The urban rate was lower than the rural in Halifax County (including the City), in Digby County (which had the highest total rate) and in Hants, Lunenburg and Shelburne. Differences in the latter three were not very significant because of the small numbers in the urban class. It appears that the Digby rural rate is excessively high and the urban about average. The reasons are not known. The Halifax urban rate is low, probably because of the more extensive prenatal and other preventive services.

Stillbirth rates are also shown in Table 3. In 9 of the 16 counties the rural rates were somewhat lower than the urban. Rural and urban differences were particularly striking in Cape Breton and Cumberland.

Since most births now occur in hospitals, it was thought that the differences between counties and between rural and urban populations might be further investigated by studying the stillbirth rates of various hospitals. Table 4 shows the proportion of babies born in hospitals in 1952 and the stillbirth rates among them.

TABLE 4

**NUMBER AND PER CENT OF BIRTHS OCCURRING IN NOVA SCOTIA HOSPITALS IN 1952 BY REGION AND HOSPITAL STILLBIRTH RATES**

Region	Total Births	Births in Hospital	Per Cent in Hospitals	Stillbirth Rates in Hospital-Born Babies
Halifax County and City.....	5,052	4,999	98.9	16.4
Lunenburg and Queens.....	996	712	71.5	14.5
Shelburne, Yarmouth and Digby.....	1,406	975	69.3	27.7
Annapolis, Kings and West Hants.....	1,751	1,714	97.8	22.2
Colchester and East Hants....	1,095	765	69.9	22.2
Cumberland.....	1,025	826	80.6	23.0
Pictou.....	1,156	1,115	96.4	19.7
Antigonish and Guysborough.	754	649	86.0	38.5
Cape Breton, Inverness, Richmond and Victoria.....	4,716	4,255	89.6	29.6
Nova Scotia.....	17,951	16,010	89.2	23.1

The percentage figures shown here are subject to some error since they are the ratio of births occurring in the hospitals of a region related to all reported births to residents of that region. Corrections have not been made for residents of one region admitted to a hospital in another region. The overlap of hospital regions was shown to be very small during the 1949 hospital survey and hospitalization of residents in another region was usually balanced by a counterflow. However, it is suspected that the 1952 figures shown here for Halifax County are too high and for Colchester and East Hants too low. More maternity patients of Colchester and East Hants are probably being admitted to Halifax County hospitals than at the time of the hospital survey in 1949. The percentages were then 89.8 in Halifax and 81.8 in Colchester-East Hants. However, in spite of some error in the figures of these two regions, the remainder are believed to be reasonably correct. In any event the provincial total is accurate; 89.2 per cent of all births in 1952 occurred in hospitals. This represented a 10 per cent increase from 1948, when the figure was 79.6. Less than 20 years ago only 25 per cent of babies were born in hospital.

Table 5 shows the stillbirth rates of hospitals with large obstetrical units and Table 6 shows those of hospitals with intermediate sized units.

TABLE 5

**HOSPITAL STILLBIRTH RATES PER 1,000 LIVE BIRTHS FOR THE 5 1/3 YEAR PERIOD NOVEMBER, 1947, TO MARCH, 1953, IN HOSPITALS WITH 500 OR MORE BIRTHS PER YEAR**

Hospital	No. of Births in Period	No. of Stillbirths	Rate per 1,000
Grace Maternity.....	11,010	229	20.8
Halifax Infirmary.....	11,615	205	17.6
Aberdeen.....	4,915	100	20.3
Colchester County.....	3,783	81	21.4
Sydney.....	3,783	77	20.4
St. Rita.....	3,058	93	30.4
St. Martha's.....	2,931	86	29.3
St. Joseph's.....	2,888	94	32.5
Total	43,983	965	21.9

Data on the small hospitals are so variable that they cannot be readily interpreted. These are omitted. The average stillbirth rate for all hospitals in Nova Scotia was 22.0 per 1,000 live births. It was highest in the small hospitals, with a rate of 26.3. Among the larger hospitals, St. Joseph's in Glace Bay, St. Martha's in Antigonish and St. Rita's in Sydney had rates significantly above the average, and Aberdeen in New Glasgow slightly above. In the intermediate group of hospitals with 100 to 499 births per year, Highland View, New Waterford and Isle Madame Hospitals had definitely high rates. Payzant Memorial and Blanchard Fraser had low rates.

Why do certain hospitals have a high stillbirth rate? Several hospitals in Nova Scotia have rates over 30 and four were over 35, almost twice the aver-



age provincial rate. Is this difference from one hospital to another due to the same factors which result in higher urban rates? An analysis of the data on urban and rural women delivered in the hospitals that have high stillbirth rates is very revealing. It indicates that the major contribution to these high rates is from the urban women. The immediate reaction on seeing that one

TABLE 6

**HOSPITAL STILLBIRTH RATES PER 1,000 LIVE BIRTHS FOR THE 5 1/3 PERIOD NOVEMBER, 1947, TO MARCH, 1953, IN HOSPITALS WITH 100 TO 499 BIRTHS PER YEAR**

Hospital	No. of Births in Period	No. of Stillbirths	Rate per 1,000
New Waterford.....	2,421	82	33.9
Dawson Memorial.....	2,318	38	16.4
Yarmouth.....	2,187	52	23.8
Hamilton Memorial.....	2,119	46	21.7
Glace Bay.....	2,000	59	29.5
Soldiers Memorial.....	1,877	31	16.5
Payzant Memorial.....	1,791	17	9.5
Blanchard Fraser.....	1,694	20	11.8
Highland View.....	1,609	59	36.7
Digby.....	1,516	34	22.4
Eastern Kings.....	1,226	28	22.8
All Saints.....	1,143	19	16.6
Western Kings.....	1,088	22	20.2
St. Mary's.....	941	16	17.0
Sutherland.....	879	23	26.2
Sacred Heart.....	848	16	18.9
Roseway.....	841	11	13.1
Annapolis.....	831	11	13.2
Queens.....	692	15	21.7
Isle Madame.....	623	17	27.3
Total	28,644	616	21.5

hospital has a higher stillbirth rate than another is to compare the obstetrical services. However, it would appear from these data that the prenatal environment may be far more important than the obstetrical event itself.

Look at this fact. Table 3 showed that Cumberland County had a high urban stillbirth rate of 28.6 and a low rural rate of 19.8. But 80 per cent of both urban and rural women of this county went to hospitals for their delivery. There was no appreciable difference in the proportion of rural and urban women delivered in hospital. They went to the same hospitals and were cared for by the same obstetricians and nurses, but the urban women lost more babies. Defects in the obstetrical service would not explain it. Cape Breton County also had a somewhat higher urban rate of 23.0 as compared with the rural rate of 19.2. Ninety per cent of both rural and urban women were delivered in hospital. The same physicians give both prenatal and obstetrical care to both urban and rural women. Yet the urban women lost more babies. In other words two groups of women with essentially the same medical and hospital

care had different stillbirth rates. It would seem therefore that it is something in the prenatal environment of the woman that makes the difference between rural and urban stillbirth rates. This also explains, at least partially, the differences from one hospital to another.

What noxious influences cause urban women to lose more babies still-born, or what protective factor aids the rural woman? Table 7 suggests that nutrition should be considered as one possible factor to explain the differences between rural and urban rates and perhaps also the differences from one area to another.

TABLE 7

PERCENTAGE OF COMPLICATIONS OF PREGNANCY IN WOMEN  
ON ADEQUATE OR INADEQUATE DIETS—(EBBS, TISDALL  
AND SCOTT—J. OF NUTRITION, NOVEMBER, 1941)

	Poor Diet	Supplemented Good Diet	Good Diet
Number of Women . . . . .	120	90	170
Percentage with Compli- cations . . . . .	28.6	16.1	21.6
Preeclampsia . . . . .	5.0	5.7	4.8
Toxaemia . . . . .	7.6	3.4	3.0
Haemorrhage—Prenatal . . .	5.9	5.7	2.4
Threatened Miscarriage . . .	8.4	1.1	2.4
Miscarriage . . . . .	6.0	0.	1.2
Premature Birth . . . . .	8.0	2.2	3.0
Stillbirth . . . . .	3.4	0.	0.6
Haemorrhage (During Labor) . . . . .	11.2	10.3	7.7
Endometritis . . . . .	9.0	3.4	6.1
Mastitis . . . . .	4.5	2.3	4.8
Breast Abscess . . . . .	3.0	1.1	2.0

Ebbs, Tisdall and Scott provided supplementary food for 90 of the women attending prenatal clinics in Toronto. This table shows clearly that the 120 on a deficient diet had a higher rate of stillbirths, abortions, threatened abortions, and premature births than the 90 on a supplemented diet and the 170 whose diet was rated as good without any supplement.

It has also been suggested that the high rate in New Waterford and Glace Bay might be a result of the larger families there. I am told that the citizens of these towns are very prolific. I am not certain whether Amherst falls into the same category. A higher stillbirth rate has been reported in the literature as being associated with multiparity. But this would still seem to beg the question. It is not an explanation. Why is the sixth pregnancy more likely to end in a stillbirth or abortion than the second? Is it perhaps a nutritional effect? Can it be corrected by adequate prenatal care?

In studying this matter one feature on which the medical staff of a hospital might keep a useful check is the accuracy of statistical reporting. The of-



ficial statistics of the province come from the Registrar General's office and are based on the birth, death and stillbirth certificates prepared by the physician concerned. The hospital administrator also reports on births and stillbirths in the annual report to the Dominion Bureau of Statistics. Unfortunately these two sources of information do not always agree with each other. The hospital-reported stillbirths are often higher. This suggests either a failure of the physicians to report all stillbirths or an over-reporting of stillbirths by the hospital administrator by the inclusion of abortions prior to 28 weeks of gestation. Hospitals with high stillbirth rates might therefore check on the accuracy of their reporting.

These figures open up a number of interesting lines of thought and investigation which, if followed up, might permit Nova Scotia doctors to make a valuable contribution to medical knowledge on the factors influencing stillbirth mortality. In any event it is a good thing to look at our own record occasionally to see how we rate with our confreres. The medical profession of this province can look with some satisfaction on maternal, infant and stillbirth rates below the Canadian average, but we would have even greater reason for pride if we could learn why some of our hospitals have rates only half of this average, and then proceed to pull the others down to these low figures.

# Lesions Of The Oesophagus\*

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THE oesophagus, like other parts of the alimentary tract, has a longitudinal and circular muscular layer. It is innervated both by the sympathetic and parasympathetic nerve supply, as well as having the intrinsic nerve plexus of Meissner and Auerbach. As a result of this latter innervation there is considerable muscular function of the oesophagus even in the absence of autonomic nervous system supply. The arterial blood supply is not nearly as critical as was previously thought and oesophageal surgery is practical and is advancing dramatically in recent years. The venous supply is liberal, and at the lower oesophagus there is an anastomosis with the portal system. Varicosities in this region are seen in portal hypertension, such as in cirrhosis of the liver.

The function of the oesophagus is relatively simple, in that it merely conveys food from the mouth to the stomach. However, this entails a complicated neuromuscular co-ordination that is initiated by the voluntary act of swallowing which forces a bolus into the upper oesophagus. From here a primary wave of peristalsis carries it towards the cardia, although when a patient is in the upright position the relaxation preceding the peristalsis allows the bolus to drop to the lower end of the oesophagus. A secondary wave is initiated by oesophageal distension and usually arises at the level of the aortic arch. There is a third type which is less well known and called "Curling" or tertiary wave. These are seen occasionally, especially in elderly people, and often without symptoms and their significance is not known. They demonstrate an unco-ordinated and, apparently, purposeless activity and they may be related to early cardiospasm.

## Cardiospasm

Mikulicz, in 1882, first used the term "cardiospasm" and Einhorn suggested, shortly after this, that the condition might be failure of relaxation of the muscle rather than spasm. In 1913 Hurst introduced the term "achalasia" to stress the failure of relaxation, rather than the suggested aspect of spasm in the term cardiospasm. Various workers, noticeably Rake, Etzel and Lendrum have done noteworthy studies demonstrating a destruction of nerve supply of Auerbach's plexus. However, whether this is the cause of achalasia or whether it is a secondary result of the stretched muscle is still not certain. Recent workers, notably Ingelfinger and Kramer, have enlarged this concept by showing the pharmacological results in such nerve damaged muscle. They have shown that the tone and motility of the distal half of the oesophagus is markedly disturbed in such cases of cardiospasm. Furthermore, they have shown the dramatic effect of a cholinergic drug such as "Meeholyl." This gives an exaggerated response which implies an impairment of the parasympathetic innervation, as suggested on the aetiological grounds referred to above. These findings support Cannon's law:—"when a in series of efferent neurones, a unit



is destroyed, an increased irritability to chemical agents develops in the isolated structure or structures, the effect being maximal in the part directly denervated."

There has been very loose thinking about the concept of cardiospasm and Ingelfinger has stressed the necessity of the condition being clearly reserved for a disorder of disturbed physiology and pharmacology, with a clearly shown deranged peristalsis of the lower half of the oesophagus. In this condition, the distal end of the oesophagus shows a narrowing which extends over a distance of two to five cms. On oesophageal examination there is relatively little resistance to mechanical dilation in this area. The lack of fibrosis or evidence of inflammation is in contrast to findings to a similarly placed lesion of oesophagitis with stricture formation.

There appears to be considerable confusion as regards the anatomical relationship of the lower oesophagus and the diaphragm, and it seems most likely that this is not a constant relationship.

It is concerning the distal part of the oesophagus that some of this confusion exists, and it is hard to reconcile the anatomical, physiological, radiological and oesophagosopic evidence concerning the junction of the stomach and the oesophagus. In many people there is a characteristic, well marked saccular dilatation called the vestibule. There may, or may not, be gastric mucosa in this region. This vestibule is what the radiologists call the ampulla, and it is frequently mistaken for a diaphragmatic hernia. It is suggested by Ingelfinger that this area is the appreciable length of the oesophagus which does not relax in cardiospasm.

In the concept of Lerche there is a physiological sphincter between the lower oesophagus and the gastro-oesophageal vestibule, or, for short, the vestibule; and this is called the inferior oesophageal sphincter. Recent studies have suggested that in some cases of dysphagia there is an annular oesophageal constriction 0.5 to 2.5 cms. above the diaphragm which may trap a bolus of food and cause an obstruction. It is suggested that this may be an overactive inferior oesophageal sphincter. It appears important to differentiate this condition from cardiospasm, hiatal hernia, neoplasm or stricture.

There are frequent references to psychological disturbances giving rise to difficulty in swallowing. This has led some to advance the theory of psychogenic causes of cardiospasm; there is no doubt that emotional factors may cause a delay in passage of food through the oesophagus. These delays may be associated with some spasm in the oesophagus, but these are irregularly placed and temporary ones. Clinical experience teaches us that emotional factors may aggravate cardiospasm. It seems likely that in such a diseased oesophagus, a response to endogenous hormonal factors may resemble the exogenous Mecholyl response referred to above.

The above remarks should emphasize the need for a clearer understanding of the use of the term "cardiospasm," and the necessity to distinguish various forms of dysphagia on a more rational anatomical, radiological and pharmacological basis. It is only by this clearer understanding that we shall advance our knowledge of this condition.



The aetiology of cardiospasm is unknown. Rake, from a study of cardiospasm in vitamin deficient population in Brazil, suggested thiamin deficiency may be responsible for the observed ganglion degenerative changes.

In true cardiospasm we do not see spontaneous recovery. Treatment follows three main lines, bougie dilation, open operation or the use of a hydrostatic dilator. The use of a mercury bougie, when the patient learns to pass it, is often satisfactory and allows the passage of food, but this has to be repeated frequently and some people do not become proficient in such sword swallowing acts. There have been a number of operations devised in an attempt to overcome this problem, but a reflux regurgitation and resultant oesophagitis with the possibility of fibrous stricture formation, has been the main complication. A popular, and apparently satisfactory procedure, is a modification of the Heller operation. This is a myotomy and resembles the Ramstedt procedure for congenital pyloric stenosis. The technique now recommended is to divide the muscle fibres by parallel incisions at the gastro-oesophageal region down to the mucosa. The trans-thoracic approach is preferable. Other surgeons, with a wide experience in this condition, prefer the method of placing an anchored hydrostatic dilator, such as a Negus dilator, and forcibly stretch the achalasic area and produce essentially the same result. It is unusual for this to have to be repeated and the results compare favourably with the open operation.

### **Pulmonary Complications of Cardiospasm**

It is most important for the physician to be aware of the pulmonary complications of this condition. About ten per cent of cases of cardiospasm have pulmonary symptoms or signs. In many cases the presenting symptoms are pulmonary and little mention may be made of oesophageal trouble. A case example:—J.N.C.D., 50 year old male presented with a chronic cough, increasing breathlessness with bilateral chest pain, and general weakness. Investigation revealed evidence of marked pulmonary fibrosis with, as would be expected, a marked reduction in ventilatory function. There was no evidence of an industrial cause of his fibrosis, and the discovery of gross cardiospasm offered the most probable explanation of his repeated pneumonitis. On further questioning it would appear that he had had dysphagia for many years, and the X-ray films showed a very gross cardiospasm in a patient presenting few complaints of dysphagia. It was important to note how high up the oesophagus was filled, and what a large residue was present at the end of five hours. It needs little imagination to see what a danger is the ingestion of a high lipid meal, especially at bedtime, in such a patient. The fat, which rises to the top, is easily aspirated and may produce a lipid pneumonitis. Some of the lipid pneumonitis cases that in the past have been attributed to mineral oil taken for constipation, may well have cardiospasm as an associated condition. Indeed, any unexplained pulmonary suppuration or infiltration, especially in the older patient, should warrant a study of the oesophagus.



## Peptic Oesophagitis and Stenosis

Like peptic ulcer in other parts of the intestinal tract, there are probably various aetiological factors and their relative importance is difficult to assess. It is most important to remember that the normal cardia exerts little resistance to food in its downward passage, but there is considerable resistance to reflux from the stomach to the oesophagus. In oesophagitis it would appear that a major feature is regurgitation of acid gastric contents into the lower oesophagus, causing inflammation and the end result may be a fibrous stricture causing increasing dysphagia. In hiatal hernia of the sliding type, the resistance to reflux into the oesophagus is, to a considerable extent, lost and regurgitation occurs, and as a consequence there is a greatly increased incidence of oesophagitis in such cases.

Although at present there is inconclusive evidence to prove the value of a repair operation as a prophylactic measure, it seems logical that early correction is indicated in such cases as do not respond to medical measures.

Other general measures, that should be encouraged, are the use of bland diet, the use of antacids if there is excess acidity in the gastric juice, the avoidance of vomiting and the avoidance of excess recumbancy, as well as the correction of obesity when it is present. Some cases appear to have an ulcer diathesis and this was shown in one of our cases who had a gastrectomy for duodenal ulcer, but subsequently developed peptic oesophagitis. This is the type of evidence that mitigates against advocating a sub-total gastrectomy for peptic oesophagitis.

Some of these patients do very well with mechanical dilatation and the correction of other factors that are probably of aetiological significance. Case W. J. M., age 74. This man was first seen in 1952 for dysphagia and there was X-ray evidence of narrowing of the lower part. Oesophageal examination was attempted, but postponed as he developed auricular fibrillation. Symptoms cleared somewhat, but recurred two years later. This variability suggests some functional disturbance apart from the organic lesion. On the second occasion he had an oesophagosopic examination and ulceration was found, stricture dilated and improvement noted in the repeat examination several months later. Case Mrs. MacP.: This 83 year old lady had equally satisfactory results with oesophageal dilatation.

At times, one may find a secondary oesophageal lesion, such as a diverticulum, which appears to be unrelated and not giving rise to symptoms. However, such dual lesions suggest to some that the innocent diverticulum is reflexly causing disturbances in the lower oesophagus with the consequent reflex oesophagitis and stricture. Case Mrs. H. B., had such a combination, and had dilatation with satisfactory results. In a recent admission for appendicitis, she did not mention dysphagia.

## Hiatal Hernia

It is not intended to discuss this subject in detail, but from the above remarks it is obvious that hiatal hernia is of importance when considering diseases of the oesophagus. It is equally important that we have a clear idea of what is an oesophageal hernia. Many cases in the past have been considered an

oesophageal hiatal hernia in which a normal ampulla has been visualised. From the point of view of oesophageal diseases, it is to be noted that it is the sliding type of hernia that causes most of the reflux and resulting oesophagitis. The paraoesophageal or rolling type hernia appears to have less disturbance on the reflux preventative mechanism of the cardia.

In considering such a hernia, one must remember that patients may have relatively few symptoms and may present with other manifestations. Case J.A.M., age 76 referred for angina and dyspnea. He was found to have a hypochromic anaemia with haemoglobin of 51 per cent, PCV 29 per cent. Investigations were negative, apart from a large sliding type hernia. It seems likely that this anaemia was the result of bleeding from this, and he made an uninterrupted recovery with iron therapy—with the loss of previous symptoms.

The purpose of this paper was the presentation of more recent, as well as controversial aspects of oesophageal diseases and disturbances. Purposely omitted has been the important field of cancer—which we must always keep in mind since surgery now offers a much more hopeful outcome than in comparatively recent times. Discussion of oesophageal varices, diverticulum, congenital stricture and oesophageal bronchial fistula are beyond the scope of this limited presentation.

In conclusion, it should be emphasized that although cardiospasm, oesophagitis, stricture and cancer can frequently be distinguished and clearly diagnosed by clinical and radiological means, however, oesophagoscopy examination and biopsy at the same time, should be carried out in any doubtful case.



# The College Of General Practice Of Canada And Future Medical Practice

## History and Background of World-Wide General Practice Movement

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WE all know the situation at the turn of this century. Other than a very few reserach workers and a few full time teachers of basic science in universities all doctors were general physicians. Certain of them developed special skill as diagnosticians, general surgeons and so on but these skills were secondary to that of general practice. I am thinking of a renowned name, for whom there is named a yearly lecture, associated with the Montreal General Hospital, who held the posts of Professor of Anatomy, Professor of Surgery and Dermatologist but certainly he had been a general practitioner.

This then was breadth of medicine at its very best when it was possible to develop through family and general practice into a special part of medicine for which the individual disocvered a special aptitude.

Apparently about the turn of the century it was realized that a need existed for another form of training. Men like Sir William Osler led the movement for the training of physicians in special departments. He developed as you know the famous team of four in the beginning of the John Hopkins School of Medicine. This we can term "depth of medicine." There is no doubt that there was then and still is a need for this type of training and it has made a great contribution to medical service.

The result of this development is interesting. Organization like the Royal College of Physicians of England, Edinburgh, and Royal College of Surgeons that had been, shall we say, clubs of those praetitioners who had banded together to improve their standards of practice in their special skills, slowly evolved so that instead of first doing general practice they could become a member by academic means alone. Therefore depth of medicine developed without the benefit of breadth of medicine. It might be mentioned that the history of the American College of Surgeons was somewhat between these two methods.

This development spread throughout the free world as we know it and each group split into multiple branches. One important difference should be mentioned. The former men were truly consultants, the latter fellows are specialists. Sir Henaige Ogilvy, noted English surgeon, makes the following observation, I quote, "The consultant was a man whose interests covered the whole of medicine or the whole of surgery and who earned his position by some special aptitude of knowledge, wisdom or technical skill. Today the term specialist is usually used in place of "consultant." The specialist knows a great deal about a small aspect of medicine or surgery. In acquiring knowledge he has lost

\* President's Address delivered to Sessions of the College at Red Deer, Alberta, April 14th, 1955.



breadth of vision; in fact he has become a technician to be employed rather than a wise man to be consulted."

Sir James MacKenzie who developed all his research of the heart in general practice and therefore became one of the first cardiologist and for whom a cardiac Institute was created in London, was probably the first to speak out against this trend he saw developing. He likewise advocated leadership in the field of general practice.

Nevertheless we must appreciate that this trend of training of depth in medicine was necessary and that it has made a great contribution. However, it is like so many things in life, it had its complications. The chief complication being that the basic general service was forgotten for many years. Leadership went entirely towards departmentalized medicine with little or no leadership in the basic service of general and family practice. One of the greatest complications of this trend was the loss of prestige of the general practitioner and inversely the greater prestige of the now known specialist. This resulted in a very large percentage of graduates going into special field not necessarily because they so preferred but because of lack of prestige in the field of general medicine.

Like so many things in life and especially so in democracy, we muddle along and until conditions become very, very serious before the tide turns. One might ask when the tide turned and why. I believe that it came during World War II. The effect of military medicine, the tremendous shortage of general practitioners and the complaints of the public because of this shortage; then the fear of state control of medicine chiefly in the United States and finally the effect of the very large experiment of the British under the National Health Service. These and others were the reasons for the change.

Be that as it is the tide has turned. It seems that the Americans led the field. The American Academy of General Practice was formed in 1947. They have over 17,000 members. In Britain the College of General Practitioners was formed in 1952, with much the same ideals, aims and objects. They now have over 3,000 members. We were the third organization of like kind inaugurated in June, 1954, after about eight years of development work in Canada. We hear that there is a similar organization in Mexico and there are branches of the British College in Australia and New Zealand.

I would like to report one rather important part of our history. With the Americans and the British they both attempted to act under their parent organizations and failed. It appeared in Canada for about four years that we were travelling the same road. With great patience and due largely to the prestige, diplomacy and wisdom of some of our leaders and also leaders of the Canadian Medical Association it did not happen here. While of necessity because of constitutions we had to form a separate organization, we were created and financed during our days of gestation by the Canadian Medical Association. This fact will mean a great deal in the long distance unity of Canadian medicine.

One last item of history. In the United States and Great Britain a tremendous amount of work has been done in the way of general surveys of general practice. This can only mean one thing and that is that the leaders in our



profession and representatives of government have realized the need of this primary physician. One primary basic principle that has caused this movement of the western world is that the general medical service cannot be obtained without the service of the primary physician.

The tide has turned because in the free world leadership has developed for the general practitioner. Leadership such as the specialist portion of our profession has had for at least 50 years.

In Canada we are only starting and while we know that as the years unfold and with changing conditions ideas will change. However, it is important that at this time in our development that we have fundamental principles of policy. It is important that the ten provincial chapters should know this policy and therefore we think that it is important that I should express our ideas about that policy to you tonight.

## GENERAL PRINCIPLES OF POLICY OF THE COLLEGE OF GENERAL PRACTICE OF CANADA

### I. That we benefit by all previous advances in medical service.

We are not trying to turn the hands of the clock back to horse and buggy medicine. Research, specialization, depth in medicine have made marked gains towards medical service, are here to remain and we wish to benefit by them and add them to breadth in medicine. We believe that breadth of medicine has been neglected because of lack of leadership and that we can co-operate with the leadership of depth of medicine and that the total medical service will benefit.

Medical service may be likened to the Trans-Canada highway; 50 years ago it was only a mud track. Today there are long stretches of broad and straight highway but there are yet some undeveloped mud tracks, there are many, many side roads still undeveloped. There are still political hills to climb and rivers to span. While these are being developed we are ready to assist in making this highway of medical service as straight and broad as possible, overcoming, if not all, many of the obstacles that are present.

### II. The second principle might be termed simplification of medicine.

Specialization and depth of medicine has resulted in the concept being left with the younger graduate that medical practice is more difficult than formerly. This concept is wrong. The horizon of medical practice have been pushed away back. Diagnosis and treatment with even limited auxiliary equipment is vastly more easy and effective than years ago. We have become bogged down in details when we should be sticking to the basic fundamentals.

I do not want to tire you with examples but wish to state one or two. In the diagnosis of the acute abdomen it is the history that counts and not whether the white blood cells have shifted to the right or to the left. That is a nice detail which is auxiliary. In the management of diabetes the consultant in metabolism is a very useful individual but the management of 95% of cases should or can be taken care of by the practitioner. I cannot believe that there is a



better example in the whole of medical service for the need of simplification of medicine than in obstetrics. In this day of supermedicine our citizens cannot find other than a high priced obstetrician.

### III. Unity.

A most important principle in the development of this broad highway of medical service is that of professional unity.

In the development of the College over the past eight years, those who resisted our effort stated that we would cause disunity, when we insisted that union was no longer present.

I would now refer to this B.M.A. Journal of September, 1953, on the Hadfield survey conducted by the British Medical Association on general practice. It is very definitely acknowledged that in Britain that complete division into two camps has occurred. It is true that it hasn't occurred to that extent in Canada but it was coming. It is our policy to reunite where division has occurred.

This unity must start in the undergraduate student days. The teachers of the future medical men must have the vision of a comprehensive medical service. We must develop this unity in the professional personnel of our hospital staffs. We are searching for and will find a way to lead the practitioners back into the hospitals of Canada. This lack of unity, the individualism of practitioners and their unwillingness to share the load of organized medicine and staff medicine, has been and still is the millstone about the neck of a progressive medical service.

The leaders of the College of General Practice are not just idealistic fools when we say that this principle can be developed. In our post-graduate endeavours our members must share this load if they are to benefit by that membership.

This principle of unity takes us into broad fields. It opens up the question of group practice in which you, of the western provinces, have been so progressive. We all know many of the benefits of group practice to the physician and the patient. We also know many of the difficulties. One thing is certain, that if we are to find the compromise between breadth of medicine and depth of medicine, if specialization and general medicine are to find a common meeting ground it must be by way of group practice either on the staff of hospitals or outside in clinic practice. There is a vast amount of experience already gathered about this type of service. The College of General Practice will be in a position to make it available to its members.

This principle of unity as it extends to the non-university hospitals across this country in a co-operative effort is a subject of vast importance that I can only mention. The possibilities of having a co-operative teaching day-to-day program within these hospitals, so that the experience of staff members will be available for all, are very great. This is almost a new field which is so necessary and the results so great that the members of the College have work for years to come.



There is another part of unity that I would like to draw your attention. It is in connection with the two primary races in Canada. We haven't disunity but we do have separation. Since it is possible that membership in the College of General Practice by membership in either the Canadian Medical Association or l'Association des Medecins de Langue Française du Canada and since each Provincial Chapter has its own autonomy, we believe that this separation may be arrested and a lasting benefit be derived to Canadian medicine. The vision of Governors Carleton and Murray nearly two hundred years ago has been a great contribution to national unity and we believe that in our small way we may support that principle.

#### IV. Educational principle.

I would now like to speak to you about the corner stone of the College of General Practice of Canada. It is our educational program. In our development we promised to leave economic and political problems to our mother organizations. Our main interest will always be educational.

May I again quote to you the words of Dr. J. W. Reid, "What is the future of medical practice and medical education? Can the medical schools anticipate the trend and train the youth to meet the changed conditions or must they like the politicians, follow the mob because they are their leaders? There is a challenge to medical educators today—a challenge which all are fearful to accept, the challenge of complete and drastic revision of the medical curriculum."

We realize that the statement "complete and drastic revision of the medical curriculum" is very strong language and might be misunderstood by the university leaders across Canada. We do not wish to be misunderstood. As yet we are not too certain how this revision should be made. We are anxious to consult. We believe that the viewpoint and attitude of the general practitioner should be given to the undergraduate in equal quantities with that of special departments. We wish to emphasize the importance of general diagnosis and that diagnosis and investigation for a very large percentage of cases can take place outside of hospital and in the doctors' offices and clinics. We likewise think that depth in medicine should be a post-graduate duty. We hope to re-develop the method of post-graduate training in general medicine of apprenticeship and assistantship. We also think that the education of the practitioner is a life long endeavour extending throughout his career.

Allied to this principle of education is the necessity of leadership. If our program of education is to extend into all the hospitals of Canada and further into many individual practices then we will require accredited leaders. In one survey in the United States it was revealed that 35% of medical service in that country could not be supplied by the present system of departmentalized medicine. Therefore, if we are to have quality service in that part of our country we must have a continuous educational program and leaders will be required. It is with this in mind that our post-graduate degree of Fellowship of the College will be essential. We have an active committee under the chairmanship of Dr. Glenn Sawyer studying this situation. They are making a very thorough survey of the whole problem. A high percentage of about 500 men



who have been contacted, and these have included the university leaders of Canada, are in favour of the establishment of this type of post-graduate degree from the College; one very interesting suggestion has come from one university professor that this degree should be called Master of General Practice.

#### V. Research.

We believe that there is a field for research in General Practice. I would refer you to this book by Sir James MacKenzie, published 35 years ago, in which he outlines what he believes can be done in the way of research in general practice. His work was an example of what can be done. In the intervening years, because of lack of leadership this principle has been forgotten and we hope to revive it. In the C.M.A. Journal of April 1st, 1955, is an account of the beginning of this revival in Britain.

#### VI. Cost of medical care.

While it is true that economic problems will be handled by other branches of organized medicine, it is inevitable that we must be interested in the cost of medical care. Since we believe that 90% of preventive and curative medicine falls into the field of general practice it is easy to understand how important this subject is in the welfare of the nation and to our profession.

First of all, let us appreciate the fact that if we increase the quality of our general service and it is customary that the general physician will be consulted by 15 to 20 patients per day in place of 50 to 100 as has happened in state medical bureaucracy, then we must expect this service to cost more, but since the beginning of time the family doctor has been very conscious of the welfare of his patients and no better agent can be found.

There is, however, another side to this question which has been brought out very clearly in the National Health Service of Britain. The hospitals of Britain are being filled with people who should be cared for by the practitioner in the home, his office or clinic. In this country with our prepaid medical plans the same thing is happening. The result is a great shortage of beds. More and more expensive institutions are being built. We believe that with our program of post-graduate education of the family doctor and general practitioner and when insurance agencies realize the importance of the economy when many patients occupying expensive beds can be efficiently investigated and cared for outside of hospital, that this should be a most important fact.

These, then, are the primary principles of policy that we believe to be important. We think that they will form a solid foundation for the College. As the years unfold and our Chapters show leadership as you have at this meeting, as our members accept their rightful responsibility and become masters in their own house, then the superstructure of the College will take shape. One thing is certain: We will be closely allied to all parts of the profession that are interested in a good medical service. There will be no locked doors between the College of General Practice of Canada, the Canadian Medical Association, l'Association des Medecins de Langue Francaise du Canada, the medical



faculties, the hospitals, the Royal College of Physicians and Surgeons of Canada. This unity of action will ever be kept before us, since our College has taken upon itself the special duty of educational leadership to that part of the profession that are to render 90% of medical service.

Now, in the title given to you it was implied that I should say something about the trends of future medical practice. That could be an extravagant ambition. Since we have taken on that extremely onerous task of leadership of those who will deliver 90% of preventive and curative medicine for 15 million people it surely is necessary that we endeavour, if only dimly, to look towards the future trends of medical practice. It is therefore without apologies that however wide from the mark I may be, that a few remarks about the future seem to me to be in order.

First, let us consider what we may expect with reference to our membership.

It has been our ambition to give aid and assistance to the younger generation of medical practitioners. We believe that 75% of medical graduates will look forward to a career in general medicine and that our help and assistance will be so valuable that 75% of those will be members of the College. It is our hope that through the co-operation of medical faculties, university and non-university hospitals that the viewpoint of the practitioner of the future will be that of a comprehensive medical service.

We expect that following graduation that two years at least will be spent in post-graduate preparation for practice and that during this time they will be paid a living wage. Each member in addition will be required to carry on a continuing post-graduate educational program throughout his career.

A certain number, possibly 10%, of energetic progressive members may so develop their skills, their abilities to teach through further post-graduate endeavours during practice so as to become a Fellow or Master of General Practice. These physicians by these same characteristics and energies have the right to rise to any level in the profession, whether or not they belong to a special department.

At the present time in less than one year we have approximately 12% of the practitioners of Canada as members. It is not without reason that in 10 years we will have 40 to 50% of the practitioners. The impact of this upon the medical service of Canada should be remarkable.

I would now for a few moments ask you to contemplate the change that has taken place and is taking place in medical practice. The fact that the average span of life has increased by more than 20 years in this century is of great importance. Those who died before birth, in infancy and in early life now survive to propagate the diseases and weaknesses of the human race. They survive to create the need of geriatric medical care in all its parts. We are inclined to think of geriatrics as that part of medicine associated with senility when in reality it is a very large part of medical and surgical practice.

A reliable authority, a student of these social problems, has estimated that because of these facts and that if complete health insurance comes to Canada



that it will require 55% more medical services than at present. This being the case it is not hard to realize the need of the primary physician and his place in the distribution of the art and science of medicine.

Health insurance and prepaid medical care are words on the lips of all leaders—political, economic, medical and social—throughout the whole world. Huge experiments are taking place involving millions of people trying to find the answers to the problem of distributing medical care to all of mankind. The contrast between the National Health Service of Great Britain and the prepaid medical services of North America is extreme. Sometime in this century we should evolve a workable system but at the present time there is great doubt as to what that will be. One thing is certain. The part of the profession that distributes 90% of this service not only will be affected most by these changes but also should have the most influence upon this change.

There is one trend which is suggested by Sir Henaige Ogilvie for Britain, because of their difficulties there, which appears to already be happening in this country. He suggests the creation of a large number of small and medium sized hospitals where the general practitioner may attend his patients. These hospitals would be present in urban as well as rural areas. From these smaller units the difficult and special cases would be referred to specialized departmentalized hospitals.

Another trend which is coming rapidly and one in which the western part of this country has given leadership is the development of group practice. It is hoped that the groups of the future would contain a much larger number of general practitioners so that the family practice may be adequately cared for. This should result in amalgamation of breadth and depth of medicine. It can reduce the cost of medical care and at the same time increase the efficiency and quality.

These thoughts about these trends of the future are partly speculative but might not be too unreasonable. Those of who have practised for a generation or more and have witnessed the creeping paralysis of bureaucracy throughout the world can only ponder what may be the situation in another generation. It is reasonable to ask what part, if any, the College of General Practice might have among the many forces and factors that will be acting in this evolution.

It is my sincere belief that distribution of all the benefits of the arts and science of medicine to all the people is the key to the answer to this question. If such is the case, then the general practitioners control the use of this key. It is therefore the duty of the College to see to it that it is used efficiently.



# Fluid And Electrolyte Balance In Surgery

## Part II

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### Treatment

**P**ROBABLY no major surgical procedure requires as meticulous and thorough preparation and aftercare as do operations of the stomach and upper intestinal tract. Although the proper selection of cases for surgical treatment and the choice of the type of operative procedure are of prime importance, the steady decline of the morbidity and mortality rates following this and other types of surgery has been largely due to improvements in pre- and post-operative care. Physiological disturbances and the resultant biochemical disturbances secondary to vomiting, diarrhoea, burns, surgical shock etc., are now much better understood. By proper application of this recently gained knowledge, the patient is prepared, not only so that he will be better able to withstand the trauma of operation, but also so that the technical operative procedure will be less difficult. Prior to the operation, the patient must be evaluated in the following respects: (1) the presence or absence of obstruction in the gastro-intestinal tract; (2) the state of hydration; (3) the electrolyte balance; (4) the body stores of protein; (5) the total daily caloric intake; (6) the vitamin intake; and (7) the presence or absence of anaemia.

### Fluid Therapy During Preoperative Period.

In the preoperative state, one evaluates losses sustained and estimates total requirements to which are added current needs, and initiates a plan of treatment subject to change as the situation changes. As previously noted, losses of gastric contents have predominating acid losses with particular emphasis on chloride, the base loss being largely potassium; duodenal and jejunal losses are characterized by about equal losses of anions and cations; ileal losses are predominantly cation or basic; colonic losses are mainly base losses.

An estimate of the probable loss of both sensible and insensible perspiration is made, as well as probable loss by vaporization of exhaled air. The hyperpneic patient will have lost more insensible water via the lungs, which should be taken into account. It is to be remembered that insensible losses should be calculated as water only because electrolytes in such losses are negligible. However, sensible perspiration is derived from the serum and is essentially a hypotonic ultrafiltrate of plasma. For each liter of sweat, a liter of water is lost from the body and because the excess of electrolyte left behind cannot remain in the tissues without water to render it isotonic, it is excreted by the kidney. Thus with normal renal function, one must consider a liter of sweat to involve approximately the same water and electrolyte losses as a liter of plasma though the sweat itself is a hypotonic solution. Approximate urinary volumes are estimated for the few days prior to the patient's admission and an estimate is made of anticipated urinary losses; this allowance is usually 1500 ml. of water and 50 to 60 mEq. of chloride.



Thus the kidney will have a satisfactory volume for waste product excretion and can still protect electrolyte structure. This is subject to alteration in the individual case. In the presence of oliguria or anuria, one would not provide this volume of urinary output and it might in certain cases become necessary to provide for more than 50 mEq. of chloride loss in patients whose kidneys conserve sodium chloride poorly.

Next, one may add estimated total losses and current requirements and decide upon approximate solutions to repair the electrolyte structure in as specific a manner as possible. If no losses have been sustained, then current water and electrolyte requirements are provided coupled with caloric requirements such as glucose and amino acid solutions.

Fluids for the prevention of shock should never be overlooked, for unrecognized shock mechanism may be rendered irreversible by the additional trauma of surgery when a few hours of corrective fluid administration will turn the balance favorably. Fluid and electrolyte by mouth is the most physiologic of all methods and should be utilized as much preoperatively as is practicable and as soon postoperatively as possible. There remains enough unknown about fluid and electrolyte balance by parenteral means to make it necessary to provide insofar as is possible calories, water and electrolyte in the most physiologic manner we know, and a return to a full and normal diet should be stressed. The preoperative nutritional preparation of the surgical patient can best be accomplished physiologically by the oral route.

If the caloric and protein requirements must be met entirely by the parenteral route, this may be accomplished by using protein hydrolysate, whole blood, glucose solutions and human serum albumin; alcohol has recently been added to add to caloric needs. The vitamins, particularly ascorbic acid, thiamine hydrochloride, nicotinic acid, riboflavin and vitamin K, should be provided. Ascorbic acid is necessary to wound healing and the B complex members are essential to carbohydrate metabolism. The precursor to prothrombin, vitamin K, is required in patients with hepatic damage or gastrointestinal disease resulting in vomiting, diarrhea or obstructive jaundice. Hypoprothrombinemia has been observed in patients receiving sulfathalidine and streptomycin, due to the inhibitory effect of the antibiotics on intestinal flora which participate in the synthesis of vitamin K in the intestine. Parenteral therapy is always second best and is to be used either when the oral route is contraindicated or as an emergency measure.

When proper evaluation and estimated losses have been made, one is ready to choose appropriate solutions designed for the particular patient at a particular time and calculated to coincide with his state of renal function, respiratory reserve and rate of current gastrointestinal losses. If the patient is in negative water balance preoperatively, 5 or 10 per cent glucose in water is the solution of choice in furnishing water. If there is a question of minimal sodium and chloride deficit, one may mix 500 ml. of dextrose solution and 500 ml. of isotonic sodium chloride and thus give hypotonic saline and glucose. Isotonic sodium chloride solution should be considered the basic repair solution for electrolyte replacement. The fact that it contains relatively more



chloride than extracellular fluids should not be overlooked. A solution consisting of three parts of isotonic saline and one part of 1/6 molar sodium lactate has an electrolyte pattern approximating that of extracellular fluid. If the deficit of sodium is greater than that of chloride, 1/6 molar sodium lactate may be used. Because of the danger of producing alkalosis and consequent tetany in treating metabolic acidosis with associated potassium deficit, one should include potassium in the repair solution. When the concentration of serum potassium is low, the clinical symptoms and signs of tetany do not occur at calcium levels usually associated with tetany, and restoration of serum potassium to normal levels may result in tetany if the calcium concentration remains low. Calcium gluconate by mouth or in the solution may become necessary.

Potassium deficits in preoperative and postoperative patients are probably more common than is realized. The principal danger in potassium administration is in producing hyperpotassemia and cardiac arrest. It is particularly dangerous if the potassium concentration is not known prior to administration. In an emergency, while awaiting definite laboratory studies, sodium and chloride can be more safely given than potassium without previous knowledge of their serum concentration. In the case of potassium, however, the serum concentration may be high although cellular deficits exist. Patients with a deficit of potassium intracellularly transfer the administered ion to the cells, displacing sodium to the extracellular space. Potassium administered to a non-depleted patient with normal renal function is rapidly excreted by the kidney.

Patients with renal decompensation rid themselves of potassium poorly, if at all, and are especially likely to develop hyperpotassemia whether they have a deficit or not. Any patient with oliguria or anuria should only cautiously receive potassium, if at all, until more satisfactory renal function has been restored, and then the deficit may be safely corrected. Patients with renal disease per se (not a part of shock or dehydration) and consequent renal insufficiency who have a low serum potassium may be given potassium in small amounts to keep the level at the lower limits of normal. The dosage of the potassium cation, unfortunately, is empirical and there is currently no way of exactly estimating the deficit. The normal average daily potassium requirement is estimated at 50 to 100 mEq. An average diet contains 45 to 135 mEq. and average daily excretion is 1 to 90 mEq. of potassium. A daily dose of 75 to 150 mEq., the amount depending on the urgency of the disturbance, will in all probability replace the deficit in three to twelve days.

Potassium chloride is the simplest salt to use and it has the advantage of producing no change in pH of solutions to which it is added. There are 13.4 mEq. of potassium in 1 gm. of potassium chloride. Therefore, 5 gm. of potassium chloride in 1 liter of solution will provide a concentration of 67 mEq. per liter, and higher or lower concentrations may be readily calculated.

The acquisition of electrolyte knowledge in recent years has made understandable a rather frequent postoperative syndrome that deserves special mention. The occurrence of postoperative lassitude, asthenia, hypochloremia



and abdominal distention has long been observed. In the past, this syndrome with the chemical findings of hypochloremia and alkalosis has not improved or has worsened with the administration of glucose and presumably satisfactory or excess quantities of glucose and saline solutions. On resumption of a diet, the symptoms have been seen to disappear. In more recent times, the syndrome has reversed itself to normal upon administration of potassium chloride. Pearson and Eliel described the syndrome in fifteen postoperative patients who manifested hypochloremia, metabolic alkalosis, hypopotassemia and electrocardiographic changes characteristic of potassium depletion. All of these patients showed a reversal to normal body chemistry on administration of potassium-containing solutions.

Hypochloremia and elevated serum carbon dioxide combining power in the presence of potassium deficit are resistant to treatment with large amounts of isotonic sodium chloride solution. The chloride in such states is either excreted via the kidneys or is retained in the body with water. On resumption of a diet containing potassium or the parenteral administration of potassium salts, the chemical pathology returns to normal limits.

The mechanisms of potassium depletion are several in number. Intracellular potassium depletion is produced by a large oral or parenteral intake of glucose and sodium chloride solutions, the latter solution causing relatively greater losses. Loss of gastric secretions containing chloride and potassium may be a significant and frequent etiology. Dehydration itself may result in potassium losses. The malnourished patient is more likely to manifest potassium deficit. When potassium intake is suddenly stopped, there continues to occur a loss of potassium in the urine in greater increments than one would predict from nitrogen losses. Hyperadrenocortical function produces decreased serum and intracellular potassium, hypernatremia, hypochloremia and metabolic alkalosis. The administration of adrenocorticotrophic hormone and cortisone have been observed to result in metabolic alkalosis and hypopotassemia.

The recognition of potassium deficit and its correction or prophylactic treatment become of great moment when it is realized that death may occur from cardiac arrest, respiratory paralysis, ventricular fibrillation or paralytic ileus resulting in a second operation for misdiagnosed mechanical intestinal obstruction. Provision of adequate quantities of potassium will prevent death in each instance. The more traumatic the surgery, the greater the urgency for potassium therapy and prophylactic provision of potassium in anticipation of deficit. Potassium should be used only in the full knowledge of the conditions under which potassium intoxication from overdosage may occur. Potassium in a dosage of 80 to 100 mEq. per twenty-four hours will meet daily requirement in major operative procedures, such as gastrectomy or abdominoperineal resection. A dosage of 50 mEq. per twenty-four hours will meet daily requirements in such elective procedures as herniorrhaphy or cholecystectomy. The urinary potassium losses reach their greatest magnitude in the first few postoperative days and hence the need is greatest at this time. As the deficit increases the urinary losses decrease. In patients with oliguria, azotemia or



extensive dehydration, potassium should be withheld in the absence of low serum potassium, and even then should be given cautiously and in smaller increments. Only small quantities of sodium chloride should be given in the immediate postoperative period because at this time there are transient suppression of renal function and retention of sodium in the extracellular water and hence the probability of development of edema is greater. Water and sodium chloride requirements are minimal in the immediate postoperative period. The depression of renal function occurs in the first twelve to forty-eight hours after operation and satisfactory selective excretion of electrolytes is for that time disturbed. The magnitude of the oliguria is directly proportional to the degree of operative trauma and unrelated to the volume of fluid that is given. Water requirements at this time seldom exceed 1500 to 2000 ml. and sodium chloride requirements are only rarely more than 1 to 2 gm. per twenty-four hours to replace insensible losses, urinary output and whatever gastrointestinal losses occur.

### Therapy During Operation

During the operation, repair solutions for either replacement or maintenance may be given. Attention to the blood volume is quite important before and during the operation and this becomes of very vital importance in the aged. In elderly surgical patients, information may be gained that will point to therapy providing protection against cardiopulmonary failure and peripheral vascular collapse by blood volume study, hematocrit, plasma protein determination and careful clinical following.

Solutions for the prevention and treatment of the shock mechanism before, during and after surgery include whole blood, plasma and human serum albumin. Whole blood is probably the most useful in that it sustains red blood cell volume, hemoglobin takes part in buffer systems, plasma volume is maintained and the oxygen carrying capacity of the vascular compartment is enhanced.

Ideally, during the operative period blood should be replaced at the same time it is lost. In general, blood loss is greater than the volume usually estimated, but there are existant no laboratory tests by which one might determine accurately the volume of blood lost during the operation. It is not possible to protect the patient against the effects of hemorrhage by raising the blood volume above normal levels preoperatively as a prophylactic measure. Blood is most effectively replaced simultaneously with its loss.

### Fluid Therapy During Postoperative Period.

A frequent error in the immediate postoperative period is the administration of excess amounts of sodium chloride and water. In the first twelve to forty-eight hours postoperatively, renal function is depressed in degree proportionate to the magnitude of the operative procedure. The renal tubule does not selectively reabsorb electrolyte in the normal manner during this period, and sodium chloride and water are retained within the extracellular compartment. Oliguria is the rule, the degree of lowered urinary volume being de-



pendent upon the severity of the surgical procedure. The magnitude of the oliguria is not at all related to the volume of fluid administered to the patient, which is a frequent error in management of fluid and electrolyte during this period. The tubule develops peculiarities of permeability and reabsorbs in a non-selective manner, and if the trauma has been excessive and anuria results, the tubule may behave like a dead membrane, reabsorbing the total glomerular filtrate, the situation seen in lower nephron nephrosis. The administration of sodium chloride in the immediate postoperative period adds a further burden to the kidneys. On the operative day and until urine volume rises postoperatively, it is best to replace obvious losses and provide for insensible losses with 5 per cent glucose in water.

The postoperative period has been the time interval when parenteral fluids have been most frequently used. The solutions chosen should be carefully calculated to replace losses and maintain balances for the twenty-four hour period involved. In the absence of abnormal losses or shock, the electrolyte requirement is small.

In general, patients who have had no abnormal electrolyte losses and who are taking nothing by mouth may be maintained on 2.5 to 3.5 liters of 5 or 10 per cent glucose in water with amino acid solutions to bring it up to caloric requirements. Large doses of the B complex vitamins and ascorbic acid to 1 gm. should be included in the solution. Hypotonic saline may be indicated for minimal sodium chloride losses. The suggested program provides water enough for a urinary output of 1500 ml. per day and 1000 to 2000 ml. for insensible losses. The majority of surgical patients may be thus treated provided they have normal renal function and have sustained no abnormal losses of body fluids and electrolytes.

Patients who have sustained abnormal deficits of calories, sodium, chloride, potassium, phosphate and water require more complicated management which may include water, electrolyte, nutritional fluids and solutions for the treatment and/or prevention of shock. The fluid to be chosen will vary a great deal depending on the historical and physical findings, the initial serum electrolyte values, the changes in acid-base equilibrium, the volume and type of abnormal losses and the age of the patient.

In the postoperative patient with clinical manifestations of circulatory disturbance and shock, the initial solution should be isotonic saline, 1500 to 2000 ml. in most adults. Darrow recommends 30 ml. per kilogram of body weight. A mixture of one part of isotonic sodium lactate and two parts of isotonic saline solution is more effective in metabolic acidosis than is saline alone because it provides relatively more of the depleted cation sodium. Blood should be administered as early as possible in severe cases. If blood is not promptly available, plasma may be substituted. Metabolic alkalosis demands the same general plan except that isotonic saline may be used instead of the lactate mixture. One should not include potassium in the repair solutions for patients with either acidosis or alkalosis initially, but when the circulatory state has improved and urine formation has been definitely reestablished, potassium may be added to the repair solution in appropriate amounts.



One should always be aware of the importance of early oral feeding and return to partial or complete diet as soon as possible postoperatively. It is true that in the presence of water and electrolyte deficit, the oral intake of food may induce vomiting, but frequently after the severe deficit has been corrected, electrolyte solutions may be taken by mouth rather than parenterally and this has much to recommend it. This procedure may precede by hours or days the satisfactory tolerance to food ingestion. Frequently the tendency to continue parenteral feeding may prolong and make more difficult the maintenance of normal body water, electrolyte, caloric and nitrogen balance when simply the shifting to partial or total feeding by mouth will return the patient to physiologic homeostasis. Certainly we have no means of correcting and maintaining homeostasis that is nearly as satisfactory as the physiologic ingestion of food and liquid.

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\*Most of the material for this Paper was taken from this monograph.



# Some Canadian Women In Medicine

Muriel G. Currie

Halifax, N. S.

In former years there were relatively few women practising medicine in Canada. However, a sketch of the careers of some of these pioneers may be of interest to readers of the Bulletin.

**D**OCTOR Margaret Ellen Douglas was born at Stanley, N. B. in 1878. She was educated at Edgehill in Windsor, and at the University of New Brunswick, and graduated in Medicine from the University of Toronto in 1905, following which she studied in Baltimore, New York and London.

She started practice in Saint John, N. B., and went to Winnipeg in 1909, where she practised continuously save for the war years. In the First World War she became an officer in the Royal Army Medical Corps, and served overseas with the Women's Army Auxiliary Corps.

In addition to an extensive medical practice she took a leading part in women's organizations. She was President of the Canadian Federation of Business and Professional Women's Clubs and represented that body at an international meeting held in Budapest in 1938. She was President of the Winnipeg Women's Canadian Club, and in 1950, was made a life member of the University Women's Club. In 1946 she was elected Honorary President of the Federation of Medical Women, and in 1948 while serving as provincial commissioner of the St. John's Ambulance Brigade, she was given the title of Commander Sister of the Order.

She died on July 11, 1950.

Doctor Maria T. Angwin of Dartmouth, graduate of the Woman's Medical College of the New York Infirmary in 1892, was the first woman student to enter the Rotunda Hospital in Dublin, Ireland, and also took post-graduate work in Edinburgh. She was the first woman to practise in Halifax. Her father was minister of Grafton Street Methodist Church in whose Sunday School she taught regularly. She first opened an office in Dartmouth, later had one on Sackville Street, and then built the house later occupied by the late Doctor C. S. Morton on Spring Garden Road.

Doctor Annie Isabel Hamilton from Pictou County graduated from Dalhousie in 1894. She practised in Halifax until 1903 and then went to China, and there is not any record of her return.

Doctor Blaylock, who was born in 1860, and died in 1933, was the first woman to obtain a degree in Surgery in Quebec in 1887, from Queen's University.

Doctor Mary Mackay from Pictou County graduated as one of the first women graduates in Medicine from Trinity College, University of Toronto, in 1888, at the age of twenty-four. For forty-seven years she and her husband, Doctor Buchanan, practised in India, where she died in 1935.

Doctor Jane Hartz Bell was born in Bridgewater in 1870, and received her premedical education at Mount Allison University, and her medical edu-



education at the Woman's Medical College of the New York Infirmary for Women and Children, established by Elizabeth Blackwell, the pioneer medical woman of that age. She graduated in 1893, and then took post-graduate study at Johns Hopkins under Sir William Osler and from there she went to Chicago, where she practised for five years, much of her time being spent in clinical practice. She came to Halifax in 1898 and bought the house and took over the practice of Doctor Maria Angwin. Despite her marriage in 1903 she carried on a general practice with special emphasis on the care of women and children, until she retired in 1929.

Having always been interested in art, Doctor Bell, after her retirement from active practice, took up painting, studied under the late Miss Elizabeth Nutt at the Halifax College of Art, and has several good canvases to her credit.

On June 23, 1950, during the week of The Canadian Medical Association Convention at Halifax, Dalhousie University had a special convocation to honour certain members of the medical profession whose work had been outstanding throughout their careers. At that time Doctor Bell received the Degree of Laws, *Honoris Causa*.

Doctor Maude Elizabeth Seymour Abbott was born on March 18, 1869, at St. Andrews East Quebec. Her grandfather was the Rev. William Abbott, Rector of that parish and brother of the Rev. Joseph Abbott, first bursar of McGill University. She entered the Arts Faculty at McGill in 1886, and received her B.A. in 1890, Valedictorian of her class, and was awarded the Lord Stanley Gold Medal. On being refused admission to McGill, she entered Bishop's College at Lennoxville, Quebec, from which she graduated in 1894. In 1928 McGill bestowed upon her an Honorary M.D. degree, and in 1936, an LL.D. degree.

In 1899 the Montreal Medical Journal published the first recorded article by Doctor Abbott on "So Called Heart Murmurs." This paper was based on a five-year review of the Royal Victoria Hospital records that the Dean had invited her to make from the date the hospital opened, in 1894, to 1899. At this time Doctor Abbott had no hospital appointment, and women were not admitted to membership in the Medico-Chirurgical Society; however, one of the men members, Doctor James Stewart, recognized the value of her paper and read it before the Society: it was then accepted by the Medical Journal. At the close of the discussion on her paper, her name was proposed for membership and was carried, with one member only voting against it.

In 1899 she was appointed to the curatorship of McGill's Medical Museum. In particular she fell heir to Osler's great assemblage of fairly well labeled, but completely unorganized and uncatalogued, pathological specimens. These had been collected by him from some 750 autopsies he had performed at the Montreal General Hospital during his years from 1689 to 1884. at McGill University. In this Museum, Doctor Abbott found sufficient to satisfy her fermentingly restless and brilliant mind for her whole lifetime, and it was here that she became particularly interested in cardiology.

In 1905 Sir William Osler invited Doctor Abbott to write a section on congenital cardiac disease for his new "System of Modern Medicine." She



spent two years of intensive statistical review and then sent her monograph to him. In return she received a very generous letter saying ". . . I knew you could write a good article, but I did not expect one of such extraordinary merit. It is by far and away the very best thing ever written on the subject in English—possibly any language."

In 1934 after many years of painstaking work Doctor Abbott assembled an exhibit demonstrating congenital heart disease that attracted much attention in London at the Centennial Meeting of the British Medical Association. In 1935 this exhibit was reassembled in Atlantic City for the joint meeting of the American and Canadian Medical Association and was received with great enthusiasm.

Doctor Abbott died in Montreal on September 2, 1940.

Doctor Clara May Olding, from Pictou County, graduated from Dalhousie in 1896, and practised first in Saint John, where she was Secretary of the Saint John Medical Society, and later in Chester and Halifax. She was an exceptionally fine person and doctor. She married Doctor A. M. Hebb, and their son, Doctor Peter Olding Hebb, now practises in Dartmouth.

Doctor Mary Lelia Randall graduated from Dalhousie in 1899, and practised as a paediatrician in Sydney for at least five years.

Doctor Helen MacMurchy, Companion of the Order of the British Empire, was a graduate in Medicine from the University of Toronto in 1900, and the first woman physician admitted to the staff of the Toronto General Hospital in 1901. For many years she was Chief of the Division of Child Welfare, Department of Health, Canada, and taught obstetrics and gynaecology in the Faculty of Medicine of the University of Toronto. In 1949 she received the Elizabeth Blackwell citation given by Hobart College.

Doctor Victoria Sara Ernst graduated from Dalhousie in 1900, a small, but determined woman who had "big eyes like an owl." She made her professors remember her for her questions. Her classmates used to say "Victoria, by the Grace of God, Miss Ernst." She had taught school, to earn money to fulfill her ambition as a doctor. Twice she had given that money to her father when he was burned out. She led her final year, but because she was a woman, she was not allowed to interne. On her graduation day, as she went up to get her degree, her classmates rose in a body and sang, "God Save Our Gracious Queen." She practised in Bridgewater and vicinity for thirty years, and when she died, the local paper said she was the largest taxpayer in town. She owned forty houses. She never married, but adopted several boys. In one case, at least, she asked for the worst boy in the orphanage. Always in black, her long skirts and loose, cape-like coat became well known in the town.

Doctor Florence Maude O'Donnell (later Mrs. W. H. Piers) graduated from Dalhousie in 1901, and Doctor Minna May Austen in 1903, and both spent one term in China under the Women's Missionary Society of the Methodist Church. Doctor Austen died in Halifax before World War I. Doctor Martha A. L. Philp graduated from Dalhousie in 1902, and married a fellow missionary, Doctor Frederick Joseph Bradshaw, and they spent years of service in China, afterwards living in California.



Doctor Jemima MacKenzie from Pictou County, taught school before going to Dalhousie, from which she graduated in 1904. After post-graduate work in the States, she went to India. In Cawnpore, beside practising medicine, she directed an orphanage of 170 girls. For the next fifteen years, assisted by her sister, Doctor Mary, who graduated from Dalhousie in 1905, she led a busy life. She built hospitals and outlying dispensaries. She returned to Canada for a time, but after her father's death went back to spend almost another twenty years in the work. In 1919, the Indian Government conferred upon her the highest honour obtainable by a woman—the Kaiser-I-Hind Medal. While in India, Doctor MacKenzie adopted ten Indian children and supported them until they obtained a good education. She also brought two English boys home with her to Pictou where she now lives.

(To be continued)



## Dalhousie Notes 1955, 34:272-3

Apologies are in order for the lack of Dalhousie Notes in recent issues. However, the contribution of an editorial and two articles was all that time permitted during the busy spring season.

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Another academic year has been completed and forty-eight candidates for the degree of M.D., C.M., were successful in the final clinical examinations. Heartiest congratulations and best wishes to all!

Wilks, Helen Margaret, Riverside, N. B.  
Archibald, Gerald William, Truro, N. S.  
Armstrong, Francis Benedict, Little Bay, Newfoundland.  
Bell, Frank Graham, Caledonia, Queens County, N. S.  
Brennan, Charles Francis, Bath, N. B.  
Cameron, Sheldon Rubin, Albany, P. E. I.  
Campbell, Donald Robert, Bridgewater, N. S.  
Carson, James Donald, Saint John, N. B.  
Chesley, Arthur Evans, Saint John, N. B.  
Davis, Albert John, Conception Bay, Newfoundland.  
Delory, Maurice Eugene, Georgetown, P. E. I.  
Drysdale, Alan Alastair, Halifax, N. S.  
Edgett, Judson Thomas, Moncton, N. B.  
Elliott, William Ord, Saint John, N. B.  
Goldberg, Benjamin, Saint John, N. B.  
Gordon, Peter Campbell, Halifax, N. S.  
Gorelick, Max, New Waterford, N. S.  
Heine, Henry, Saskatoon, Saskatchewan.  
Henderson, Erland Edgar, Conway, P. E. I.  
Inglis, Frederick Graham, Halifax, N. S.  
Jebson, Clifford Edwin, Halifax, N. S.  
Kanter, Bernard German, Saint John, N. B.  
Kerr, George Roderick, Halifax, N. S.  
Lee, Richard William, Fredericton, N. B.  
MacDougall, Daniel Angus, Lakevale, Antigonish County, N. S.  
MacKenzie, Lloyd Daniel, Mount Stewart, P. E. I.  
MacKinnon, John Roy, Sydney, N. S.  
MacMillan, Charles Ian, Charlottetown, P. E. I.  
MacRae, William MacLean, Halifax, N. S.  
Marshall, Ernest Bertram, Halifax, N. S.  
May, Jack Raymond, McAdam, N. B.  
Millard, Oliver Harris, Liverpool, N. S.  
Mosher, Devere Thornton, New Glasgow, N. S.  
Mullen, Gower Murray, Charlottetown, P. E. I.  
Murray, Donald Osborne, Chipman, N. B.  
O'Brien, Milton William, Yarmouth, N. S.  
Parsons, Melvin Leon Webster, Catalina, Newfoundland.  
Prossin, Albert, Glace Bay, N. S.  
Samuels, Hieme Simon, New Glasgow, N. S.  
Shane, Aubrey Murray, Halifax, N. S.  
Smith, Clarence Blakeney, Shubenacadie, N. S.  
Smith, John Arnold, Hantsport, N. S.



Stickles, Lea Edward, Plaster Rock, N. B.  
Swan, Matthew Henry, Harvey Station, N. B.  
Trask, Beverley Campbell, Hebron, N. S.  
Vaughan, Erid Garth, Windsor, N. S.  
Verge, Wylie Foster, Bridgewater, N. S.  
Vincent, Merville Oulton, Saint John, N. B.

Twenty-four graduates were from Nova Scotia, fourteen from New Brunswick, six from Newfoundland, three from Prince Edward Island, and one from Saskatchewan.

# Tentative Programme – Annual Meeting

## Tuesday, September 6th,

- 9.30 a.m. Executive Meeting.  
2.30 p.m. Executive Meeting.  
7.00 p.m. Registration.

## Wednesday, September 7th.

- 9.00 a.m. Registration.  
9.30 a.m. Welcome by His Worship, The Mayor of Amherst.  
9.45 a.m. "Modern Concepts of Physical Medicine"—Doctor G. J. H. Colwell, Halifax, N. S.  
Discussion to be opened by Doctor G. M. Moffatt, Springhill, N. S.  
10.30 a.m. "Hip Conditions from Infancy to Old Age"—Doctor J. G. Petrie, Orthopaedic Surgeon, Royal Victoria Hospital, Montreal, Quebec.  
11.30 a.m. Time out for visiting Exhibits.  
12.00 noon "Problems of Old Age"—Doctor J. A. McDonald, Glace Bay, N. S.  
1.00 p.m. Luncheon.  
2.30 p.m. "The Comatose Patient"—Doctor Edward Brooks, Chief of Medicine, St. Michaels Hospital, Toronto, Ontario.  
3.30 p.m. Time out for visiting Exhibits.  
3.45 p.m. First Business Session.  
7.30 p.m. Second Business Session.  
Special session to deal with the Report of the Committee on Revision of By-Laws.  
10.00 p.m. Dance.

## Thursday, September 8th.

- 9.00 a.m. Meeting of the Nova Scotia Society of General Practitioners and the College of General Practice.  
11.00 a.m. "Vertigo"—Doctor Edward F. Brooks.  
11.45 a.m. Time out for visiting Exhibits.  
12.00 noon Panel Discussion—Subject to be announced.  
1.00 p.m. Luncheon.  
2.30 p.m. "Tendon Injuries of the Hand"—Doctor J. G. Petrie, Montreal, Quebec.  
Discussion to be opened by Doctor G. W. Bethune, Halifax, N. S.  
3.30 p.m. Time out for visiting Exhibits.  
3.45 p.m. Third Business Session.  
6.30 p.m. Reception by Doctor and Mrs. D. M. Cochrane and Doctor and Mrs. J. E. Park.  
7.30 p.m. Annual Dinner.  
Presidential Address—Doctor D. M. Cochrane.  
Special Speaker—Doctor T. C. Routley, President, British Medical Association and The Canadian Medical Association.

## Friday, September 9th.

- 9.00 a.m. Fourth Business Session.



# Defence Medical Association Of Canada Nova Scotia Division

On June 9th, 1955 the Nova Scotia Division of the Defence Medical Association of Canada held a Mess Dinner at H. Q. Eastern Command Officers Mess (R.A. Park) Halifax, by kind permission of Major General E. C. Plow C.B.E., D.S.O., C.D., G.O.C. Eastern Command.

Lt. Col. H. C. S. Elliot, E.D., the president, was in the chair with 38 members and 6 guests present.

Major C. G. MacKinnon acted as P.M.C. for the dinner and Capt. J. M. Burris as Vice-President. Arrangements for the dinner were made by Lt. Col. J. E. H. Miller, Secy.-Treas. assisted by the executive.

Col. J. A. Noble, O.B.E., introduced the guest speaker Lt. Col. F. C. Pace. Col. Nobel and Lt. Col. Pace have been firm friends since they served in action together during the last war and the introduction was very interesting.

Lt. Col. Pace is now retired from the R.C.A.M.C. and is with the National Civil Defence school at Arnprior, Ontario. Lt. Col. Pace is probably better known as the former C.O. of the A.B.C.D. Wing at the R.C.A.M.C. School where many hundreds of interested persons have taken Civil Defence courses since the close of the war.

The address for the evening covered very adequately the recent thoughts on ABC weapons and their effect on Civil Defence measures. The speaker impressed all present by the eloquence of his talk and his grasp of his material.

Col. Victor Mader, on behalf on the Association thanked Lt. Col. Pace for his interesting talk and for coming to our dinner as principal guest.

Guests present at the dinner were: Major General E. C. Plow, C.B.E., D.S.O., C.D.; G. O. C. Eastern Command; Air Commodore Martin Costello, C.D., A.C.C. Maritime Air Command; Major E. J. Vickery, Director of Civil Defence for Halifax; Dr. J. S. Robertson and Dr. G. G. Simms of the Nova Scotia Department of Health.

This was the first formal dinner to be held by the Nova Scotia Division, but the outstanding success of this venture makes a repeat performance next spring a certainty.

Members of the Association are Doctors of Medicine, who are Officers of the Armed Forces Medical Services of Canada on the Active, Reserve, Supplementary Reserve or the retired lists of the Navy, Army or Air Force.

The Association is much interested in increasing its membership and so widen its interest, but the dispersion of personnel makes it difficult to keep in touch. Any persons qualified to join are invited to contact the Secretary Lt. Col. J. E. H. Miller, 14 Armerescent West, Halifax for information. Annual Dues are \$3.00.

## The Annual Meeting

The success of the Annual Meeting of The Nova Scotia Medical Society of Nova Scotia for 1955 depends on your attendance.

Make your arrangements now so you can be with us in Amherst September 6th - 9th.

Please make reservations early. An active Housing Committee under Doctor J. A. Langille, M.L.A., is busy with arrangements to accommodate all who wish to attend.