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# The Problem of Prematurity

G. B. WISWELL, M.D

Halifax, N. S.

## Introduction

A PREMATURE baby is one born three weeks or more before term, weighing less than  $5\frac{1}{2}$  pounds, and less than 18" in length.

An immature baby weighs between 5-6 pounds. The minimal viable age is 28 weeks, with an average weight of  $2\frac{3}{4}$  pounds. The pre-viable baby weighs  $2\frac{1}{2}$  pounds or less.

The normal birth rate for prematures in women entirely well, with a normal pregnancy, is 5.5% or 1 in 20 normal births.

The care of the premature is of great interest and concern to all of us.

Less than 2% of full term babies die in the neo-natal period—as compared with 50% of the prematures. These figures would, I believe, be considerably greater if babies dying under other headings, although also premature, were included. 50% of the total neo-natal mortality is due to prematurity. Any attempt to reduce mortality must include a vigorous attack on the problem of prematurity. The explanation of the high mortality rate is understandable on physiological grounds, with their pathological consequences, but the most important factor is, however, the state of maturity of the infant.

There are two important types of prematures—those that are normal for their fetal age, and those that, in addition, have pathological changes influencing their survival.

The handicaps by which both groups are influenced are listed in the accompanying table. (1).

TABLE I

### HANDICAPS OF THE PREMATURE INFANT

Physiologic Manifestations	Pathologic Exaggerations
1. Difficulties of respiration	Asphyxial attacks; aspiration pneumonia
2. Difficulties of circulation	Cyanosis of extremities, edema
3. Faulty control of body temperature	Hypothermia and hyperthermia
4. Diminished alimentary tolerance	Gastrointestinal upsets
5. Increased capillary fragility	Haemorrhage
6. Impairment of renal function	Dehydration and acidosis
7. Inadequate antenatal storage: Minerals and vitamins Immune substances	Rickets, scurvy, anaemia Infections
8. Defective hemopoiesis	Anaemia
9. Hepatic immaturity Bilirubinemia Hypoglycemia Hypoproteinemia Hypoprothrombinemia	Jaundice Shock Edema Haemorrhage
10. Increased content of body water	Infections, edema
11. Retrolental fibroplasia—infants under 1,500 gms.	Blindness
12. Incomplete development of enzyme systems	Faulty metabolism of aromatic amino acids, impaired formation of hemoglobin, reduction of carbonic anhydrase.

\*A paper read at the Dalhousie Refresher Course, October 10, 1947.



**TABLE II**  
**CAUSES OF PREMATUREITY**  
**FACTORS OF STATISTICAL IMPORTANCE**  
**Prenatal and Natal**

**1. MATERNAL BLEEDING:**

- (a) Mild—14%.
- (b) Placenta Praevia—with anoxia—30%.
- (c) Abruptio and traumatic—53%.

**2. MATERNAL DISEASES:**

- (a) Acute illness—infections, heart, lung and kidney diseases.
- (b) Chronic illness—nephritis, T.B., syphilis, diabetes, malnutrition, endocrines, toxaemia.
- (c) Psychological—emotional, e.g., illegitimacy.
- (d) Poisons—alcohol, heavy metals.
- (e) Obstetrical—twins, premature rupture of membranes, breech and disproportion with anoxaemia, oxytocics, analgesic drugs.
- (f) Congenital defects.
- (g) Advanced age—over 40 years.

**TABLE III**  
**CAUSES OF PREMATUREITY—PERCENTAGES**

Toxaemia and nephritis . . . . .	17%	Congenital defects	}	36%
Twins . . . . .	16%	Advanced age		
Haemorrhage . . . . .	8%	RH factor		
Trauma . . . . .	6%	Anoxia		
Ruptured membranes . . . . .	3%	Analgesics		
Syphilis . . . . .	4%			
Tuberculosis . . . . .	2%			

**TABLE IV**  
**CAUSES OF DEATH**

NORMAL MORTALITY (NEONATAL) . . . . .	2%
50% of this is due to prematurity	
PREMATURE MORTALITY . . . . .	50% +
With care . . . . .	15% to 3%
Without care . . . . .	30% +
70% of deaths occur in 1st 24 hours	
90% in first 48 hours	
Trauma and atelectasis . . . . .	24%
Pneumonia (all types) aspiration, etc. . . . .	15%
Diarrhoea . . . . .	12%
Cerebral injury . . . . .	11%
Prematurity alone, lungs, kidneys, brain, etc. . . . .	22%
Congenital defects—RH factor—Infection, Syphilis, Narcotics (less than 4 hours before delivery—with associated anoxaemia) . . . . .	17%

The lower the weight—the higher the mortality, eg.:

85%	1000 gms. or less
52%	1250 gms. or less
40%	1500 gms. or less
15%	2000 gms. or less

Mental deficiency occurs in 15% of survivors.

### GENERAL CARE

#### FOUR AXIOMS:

1. Maintenance of body temperature.
2. Prevention of infection.
3. Good medical and nursing care.
  - (a) Treatment and management of emergencies.
4. Proper feeding methods and good nutrition.

#### 1. Maintenance of Body Temperature

Our aim is to keep axillary temperature between 96-98°, or the rectal at 97-99°. The temperature is taken q.l.h. until it is stabilized at 2-3 days, then q.4.h. and finally twice a day.

The temperature is controlled by artificial heat, and governed by environment. The best environment is a room with a temperature of 80-82° F., and a relative humidity of 65. A lower humidity requires a higher temperature, and vice versa.

The smaller the baby, the more heat it requires to maintain its temperature. Therefore, babies from 1½-3 pounds are more satisfactorily handled in some form of incubator, where temperature and humidity are automatically controlled, and oxygen can be piped in. Babies under three pounds may require a temperature of 90-95° in the incubator. Babies from 3-4 pounds can be maintained in a specially heated room in a hospital. These conditions can be approximated in the home by the use of boxes and baskets, hot water bottles or other sources of heat, as electric light bulbs or heaters, with some source of steam for increasing the humidity. Water can be evaporated in various ways, as by the use of bath towels hanging out of a tub of water.

It is very difficult for nurses to work in an atmosphere of a relative humidity of 65, so we often have to compromise and be satisfied with 55, with the smaller babies in incubators. As the baby's weight increases, he is gradually transferred to lower temperatures, and finally at 4½ to 5 pounds he can be cared for in the ordinary nursery, or a room with a temperature of 68-72° F.

Baby temperatures of over 99.6° are dangerous if allowed to continue, more dangerous than temperatures below 97°. Wide fluctuations are to be avoided and the heat regulation must be very carefully watched, particularly during the first few days. Chilling must be prevented at all times, and from the moment the baby is born, when fatal chilling may occur if preparations are not made for its reception into a warm receptacle.

How much clothing babies need is a disputed question. In the incubator the baby needs no clothing to speak of, possibly a shirt. The diaper is placed



under the buttocks, and these babies are not removed from the incubator for nursing care and feeding. Babies outside the incubator require a shirt and stockings, and warm light blankets, so that the heat of the room reaches the baby easily, and too much of its own heat is not lost.

Clothing merely keeps the heat in the body, but, as these babies do not produce sufficient heat, clothing merely aggravates the loss of temperature. We must get the heat to the baby—and too much clothing prevents this. The old cotton wool jackets are therefore not used, except for the larger babies. The psychiatrists tell us that the baby benefits from the stimulus of clothing in contact with the skin, that it improves his tone and stimulates him to activity—followed by relaxation, and comfort we all seem to get from being rolled up in a blanket.

The premature baby is handled as little as possible, especially during the first week or two, and again depending on his weight. He is bathed with oil on the first and ninth days, and once a week thereafter, with daily care to the buttocks. He is weighed every second day, beginning on the third or fourth day, depending on his condition.

Oxygen is indispensable in the care of these infants. It should be used continuously during the first few days, whether cyanosis or other evidence of distress is present or not. The closed incubator requires an atmosphere of 80% or 4 litres per minute, down to 35%, depending on the baby's condition. Outside the incubator, oxygen tents are necessary with a 50% concentration, and an inverted funnel may be used during nursing care, feeding, or examinations. Nasal catheters are too irritating, and may cause vomiting, which is dangerous. Later, oxygen is given for fifteen minutes before and after feeding, and at all times when the baby is restless or fatigued, or becomes cyanosed. Oxygen with CO<sub>2</sub> is only used for short intervals, to improve the respiratory rate, and when the excursion is of a small amplitude.

## 2. Prevention and Control of Infections

TABLE V

### PREDISPOSING FACTORS INCREASING SUSCEPTIBILITY

1. Deficient immune bodies to begin with from mother.
2. Defective formation of granulocytes.
3. Impaired production of immune bodies as a result of
  - (a) hepatic-immaturity.
  - (b) deficient enzymes.
4. Increased hydration.
5. Anaemia—lowering resistance.
6. Bacteria involved—haemolytic staphylococci.

The prevention of infection must begin at birth. The birth of a premature should be looked upon as an emergency and its birth can be anticipated, and preparations made to protect it. If born outside a hospital, its transfer should be carefully arranged, preferably in a portable incubator, and certainly with adequate artificial heat. So many babies arrive at the hospital badly chilled. Any exposure to cold make it less resistant to contacts with infections—and all exposures to infection decrease its chances for survival. If the baby is carefully protected against infection, the mortality may be reduced as much as 50%.



The nursing personnel are responsible for the occurrence of most infections. They should not be changed more often than necessary, and one nurse should not care for more than four babies each eight hour period. Adequate nursing personnel is more important than equipment in preventing epidemics. All nurses with respiratory or gastro-intestinal infections, or skin infections should be excluded from the care of the premature.

Nursing technique standards must apply for 24 hours, night as well as day. Wearing of masks is always debatable. If worn they should not be touched by the hands at any time, and should be changed every two hours. Casual visitors such as doctors, should wear masks and gowns. Very strict technique is important.

The hands and arms to the elbows should be washed in soap and warm running water without scrubbing. They should be washed on entering the nursery, between the care of each infant, after diapering, before and after feeding, and between nursing care of upper and lower parts of the baby, and after touching the mask. The upper part of the baby may be considered as clean and the lower dirty.

Close observation of the color is most important, as a change in color, pallor or cyanosis, may be the first indication of infection. Changes in respiration, abdominal distention, changes in the stools, may also herald the onset of morbidity, and morbidity is always potential mortality. As a further means of preventing infection, all premature babies should be given 5,000 units of penicillin intramuscularly, or 25,000 units orally, twice a day for one week after birth.

### Specific Infections

#### *Eyes:*

These apparently become easily infected, often with a virus, near the seventh or eighth day, later complicated by staphylococcic contamination. Penicillin ointment or drops may be introduced several times a day, and penicillin also given intramuscularly every three hours. A cure results in 24-48 hours. We do not use sulfa locally on account of the possibility of sensitizing the baby to it.

#### *Skin:*

Impetigo is the most troublesome, and dangerous if due to the streptococcus. Painting the affected parts with gentian violet 1% aqueous solution and exposing the skin to the air, and keeping it dry has given the most satisfactory results. No ointments, particularly ammoniated mercury, are used, nor are soap, water, or oil allowed. Penicillin intramuscularly or orally is a very valuable help. The same treatment is used for the ordinary pyodermitis. All abrasions of the skin are carefully sterilized.

#### *Diarrhoea:*

All intestinal disturbances are considered to be serious. Loose stools at the seventh to tenth day may be considered normal. Diarrhoea may be a symptom of infection elsewhere, in the respiratory tract, and especially pyelitis. Infection of the gastro-intestinal tract, with the salmonella group, or virus infections, particularly epidemic diarrhoea of the newborn, is always serious, and requires everything at our command to overcome it. Main-



taining the fluid balance is most important, using sodium molar lactate solutions, protein, plasma and even blood, intravenously and subcutaneously. Streptomycin and sulfasuxidine by mouth seem to have a favorable result. Penicillin intramuscularly prevents complicating infections. In severe cases, no food is given orally until the bowels have stopped moving. Maintaining fluid and food requirements with parenteral therapy, then a high protein, low fat, and low carbohydrate formula is given.

#### *Pneumonia:*

This disease may be present with very few of the ordinary symptoms, no temperature, slight cough with a nasal discharge, and usually an increase in the respiratory rate. Prostration and even stupor may be marked, and loose stools with abdominal distention occur frequently. The loss of weight is often severe.

Treatment should not be overdone, every effort being made to support the patient. The position is changed frequently. Strict aseptic nursing is imperative. The feedings are reduced, and fluids increased, as in diarrhoea. A dropper is used instead of gavage. Oxygen is indispensable. Whisky, 5-30 drops, or aromatic spirits of ammonia, 1-5 drops, can be given in the milk feedings as stimulants. Adrenalin, 1-1,000, one to three drops, caffeine  $\frac{1}{2}$  gr. are additional stimulants. Penicillin and sulfa play an important part.

### 3. Management of Emergencies

90% of the mortality occurs in the first 48 hours.

#### *Before Birth:*

Guard against anoxia and the effects of the anaesthetic. The mother needs a free supply of oxygen. Anoxia is most common with placenta praevia and abruptio.

Delivery with low forceps and an episiotomy are the best safeguards against trauma and cerebral haemorrhage. The membranes should be preserved intact as long as possible.

#### *At Birth:*

Clear air passages with suction. Be ready with oxygen. Artificial respiration with closed system and positive pressure is best. Mouth to mouth to distend the lungs with gentle pressure for deflation, 8-10 times a minute, is worth trying. A slow heart means damage to the respiratory or cardiac centres. Caffein is the best stimulant, better than coramine or alpha-lobeline. The clinical signs of cerebral haemorrhage may be slow in appearing. Do a lumbar puncture if in doubt.

#### *At 24-48 hours:*

If it continues to be anoxic, the baby has probably been injured or has some congenital mal-development. Congestion and edema and haemorrhage may be present in any part of the body, brain, lungs, kidneys, adrenals. If in brain, lumbar puncture should be repeated as often as necessary to relieve pressure. Oxygen continuously is routine. No fluids are given in the presence of edema for 3-4 days.



After 48 hours:

*Edema*—Caused by anoxic damage to the capillaries. Omit fluids for 24-96 hours—as above—until edema improves. Edema of lower extremities is not true edema.

*Atelectasis*—Generally there is evidence of respiratory distress with retraction of chest margin. Oxygen is required. If color is good, prognosis is excellent. The lungs do not normally fully expand for 3-4 days. As the condition is the result of anoxia with congestion and edema, fluids are withheld.

*Cyanosis*—is caused by changes in heart, lungs or brain. If in the brain, lumbar puncture is performed freely, until the fluid is clear. If bleeding vessel is large, allowing pressure to remain may help to stop bleeding, but these cases usually die anyway. The anterior fontanel may be distended, but disease located below the tentorium may not make itself evident until it is too late. Pulmonary changes show the ordinary physical signs and congenital heart disease may be accompanied by a murmur, and the cyanosis is increased by crying.

*Apnoea*—usually is associated with abnormal spinal fluid. After being apparently normal, the baby suddenly stops breathing, and quietly dies if someone is not present to administer artificial respiration, oxygen and stimulants. The withdrawal of the irritating xanthochromic fluid relieves the symptom, and a second or third tap may be necessary.

*Convulsions*—These infants are treated by lumbar puncture. Although usually due to anoxic or traumatic damage the possibility of infection must not be forgotten—as with the meningococcus. It is also necessary to exclude subdural haemorrhage, which may require aspiration.

*Vomiting*—Conditions included in the differential diagnosis are congenital abnormalities, intracranial pathological changes, infections and faulty feeding technique. Here again we may find abnormal spinal fluid pressures, and the vomiting is relieved by withdrawal. Vomiting infants may aspirate food into their lungs, setting up a chronic infection. Aspiration may be sudden and result in death. Constant observation and care in feeding will prevent this accident, and when it occurs immediate treatment by suction and drainage may prevent a fatality. Gavage feeding reduces the danger of aspiration of food. The dangers of aspiration of oily vitamin preparations is so real that water soluble products should be used.

*Acidosis*—It is important to recognize this condition, as it may be present without symptoms. Gasping respiration is an important sign. 1/6 molar lactate solution, 1/3, with normal saline 2/3, may be administered daily by clysis—20 cc. per pound. A total of 75 cc. per pound in 24 hours is the minimum maintenance requirement for fluids. The total amount given by clysis will depend on how much the baby has ingested. We used to add plasma, but it is now found to have no effect on the serum protein or edema in amounts that can be used. Acidosis is a frequent accompaniment of diarrhoea, and may be present at the onset. Estimation of the CO<sub>2</sub> level in the blood assists in the diagnosis. Acidosis is always a problem in dealing with premature infants.



#### 4. Feeding Methods

The problem of feeding may be considered under three headings:

- (a) Problems during the first week.
- (b) Problems after the first week.
- (c) Problems on discharge to the home.

(a) During the first week, when the baby is making all the numerous physiological adjustments incident to his birth, (Table I) the problem is to meet his maintenance requirements without exceeding his ability to ingest and retain the food offered. We have then two considerations: technic of feeding, and a correct estimate of maintenance requirements.

*Technic of feeding:* The method is important, i.e., from nipple, medicine dropper or gavage, whichever is indicated by the baby's strength. If nurses trained in the use of gavage are available, larger individual feedings can be offered at longer intervals. If such service is not available, it may be necessary to give smaller amounts more frequently, as every two hours, by medicine dropper. The chief dangers of feeding too large amounts are regurgitation and vomiting with aspiration, and abdominal distention, which are always serious for the infant. The more mature infants, of  $4\frac{1}{2}$ -5 pounds, can be fed with a small nursing nipple, or can nurse directly from the mother's breast.

*Maintenance Requirements*—These are low for energy and fluid during the first week because

- (1) basal metabolism is only 20-25 cal. per pound.
- (2) expenditure for energy is minimal.
- (3) the allowances for fecal loss and specific dynamic action are small.
- (4) no calories need be supplied for growth.

**TABLE VI**  
**PREMATURE FEEDING SCHEDULES**  
**AMOUNTS—UNDER  $3\frac{1}{2}$  LBS.**

24-48 hrs. . . . .	$\frac{1}{2}$ -1 dram	5% Gluco-saline
2 hrs. later . . . . .	2 drams	" "
2 hrs. " . . . . .	4 "	" "
4 hrs. " . . . . .	6 "	" "
4 hrs. " . . . . .	8 "	" "
4 hrs. " . . . . .	2 drams Formula	4 drams Gluco-saline
4 hrs. " . . . . .	4 " "	2 " "
4 hrs. " . . . . .	6 " "	0 " "
48-72 hrs. . . . .	1 oz. formula q. 4. h. x 6	
3rd day . . . . .	30-40 cal. per lb. =	
	1 oz. formula q. 4. h. x 6	
7th day . . . . .	$1\frac{1}{2}$ oz. formula q. 4. h. x 6 =	
	50 cal. per lb. per day	
14th day . . . . .	2 oz. formula q. 4. h. x 6 =	
	60-70 cal. per lb. per day	
Additional fluid to supply $2\frac{1}{2}$ to 3 oz. per lb. per day		



**TABLE VII**  
**PREMATURE FEEDING SCHEDULES**  
**AMOUNTS—3½ TO 5 LBS.**

## 1st Day:

12-24 hrs. . . . .	2 drams	Gluco-saline
4 hrs. later . . . . .	4 " "	"
4 hrs. " . . . . .	6 " "	"
4 hrs. " . . . . .	8 " "	"

## 2nd Day:

4 hrs. later . . . . .	2 drams formula	6 drams Gluco-saline
4 hrs. " . . . . .	4 " "	4 " "
4 hrs. " . . . . .	6 " "	2 " "
4 hrs. " . . . . .	1 oz. "	0 " "

Gradually increased until 60-70 cal. per lb. are supplied at 14th day—enough fluid to allow for 3 oz. per lb.

Example: 4 lb. x 60 cal. per lb = 240 cal.

Formula: 20 cal. per oz. =  $\frac{240}{20}$  = 12 oz. per day = sufficient fluid to 3 oz. per lb.

**TABLE VIII**  
**FORMULAS**

1. 4% Evaporated milk		1 oz.	=	30 cal.
Dextri Maltose 1/8 oz.	=	2 teaspoons	=	15 cal.
Water		2 oz.		
		Caloric Value—15 cal. per oz.		
		Feed 3 oz. per lb.		
2. Evaporated milk		1 oz.	=	40 cal.
Dextri Maltose 1/8 oz.	=	2 teaspoons	=	15 cal.
Water		2 oz.		
		Caloric value—18 cal. per oz.		
		Feed 3 oz. per lb.		
3. ½ Skim milk powder (Dryco, alacta)		1 tablespoon	=	35 cal.
Dextri Maltose 1/6 oz.	=	3 teaspoons	=	20 cal.
Water		2 oz.		
		Caloric value—18 cal. per oz.		
		Feed 3 oz. per lb.		
4. Evaporated milk		1 oz.	=	40 cal.
Dextri Maltose	=	4 teaspoons	=	30 cal.
Lactic acid		6 drops		
Water		2 oz.		
		Caloric value—25 cal. per oz.		
5. Skim milk		20 oz.	=	200 cal.
Dextri Maltose	=	1 oz.	=	120 cal.
Lactic acid		1 teaspoon		
		Caloric value—16 cal. per oz.		
6. 4% Evaporated milk		1 oz.	=	30 cal.
Dextri Maltose 1/8 oz.	=	2 teaspoons	=	15 cal.
Water to make		2 oz.		
		Caloric value—22 cal. per oz.		



Fluid needs to be supplied only for maintenance, as there is no loss from sweating and from the lungs. Initial stores of water usually permit some delay in the giving of fluid. "*The baby will not starve during the first week.*"

The schedule of initial and subsequent feedings is given in the accompanying tables (Tables VI, VII, VIII).

The premature requires more protein than the normal baby, and he is unable to digest fat in average quantities. In fact, if the weight remains stationary, we reduce the fat, and by so doing the baby will begin to gain weight again. The formula is made up on the basis of high protein, low fat and average carbohydrate. This schedule is only used as a starting point varying the amounts up or down, according to the size and tolerance of the baby. If fluid in sufficient quantity cannot be taken by mouth, the necessary difference is made up by clyses, such as lactate-saline solution subcutaneously. We are satisfied with  $2\frac{1}{2}$  oz. per pound per day, total fluid.

Because of the greater tendency of premature infants to spontaneous haemorrhage, 2 mgm. of Vitamin K should be given parenterally as soon as the baby is born, and this is repeated in 24 hours, 48 hours and 72 hours if the infant is not doing well. Similarly, prematures have low stores of Vitamin C, and it is advisable to give ascorbic acid, 100 mgm. soon after birth.

#### *B. After first week:*

When the physiologic adjustments have been made, the problem is to supply sufficient food. Laboratory investigation has shown that the premature has defects in the storage of nitrogen, calcium and phosphorus, and defects in the absorption of fat. He also has peculiar needs, conditioned by his rapid rate of growth. The need therefore is for a concentrated food of moderate total calories, high in protein, calcium and phosphorus, and low in fat.

Breast milk does not fulfill these requirements as it is relatively dilute, low in protein, high in fat. We therefore are no longer attempting to feed these babies on breast milk—and we have found and proved by using other infants as controls, that a partially skimmed cow's milk mixture will produce more satisfactory weight gains, particularly under modern hospital conditions, with cleanliness, good refrigeration and careful supervision. Psychologically, bacteriologically and economically, breast milk is better if the baby can nurse from the breast. Breast milk for babies unable to nurse is as artificial as cow's milk. In the case of the larger infants,  $4\frac{1}{2}$  pounds, we offer breast milk directly from the breast as the food of choice, and these babies and their mothers are better off psychologically, and they also can be discharged home earlier, and with the mother.

The 2% skimmed mixtures are continued until the baby weighs 5 pounds, when it is given the ordinary evaporated milk mixtures, and with a value of 60-70 calories per pound.

On or before the 20th day, 15 grains of calcium gluconate are given daily. Vipenta vitamin drops 10, or percomorph oil drops 30, are added as well. On the 21st day, the baby is getting in addition 30-100 mgm. of ascorbic acid, 5-15 cc. of orange juice, and possibly thyroid, grs.  $1/20$  per pound, and ferrous sulphate  $\frac{1}{2}$  gr. per day. Transfusions are used at any time to give the baby a push, correct anaemia, and supply all the important elements of blood.



*C. Discharge to the home:*

Discharge from hospital is considered when the baby is  $5\frac{1}{2}$  to 6 pounds. Babies on the breast, and babies in good health, going to homes with satisfactory conditions, and homes that can be supervised by a visiting nurse, may be discharged at  $4\frac{1}{2}$  to 5 pounds. The feeding and care of all premature infants must be individualized on the basis of the facts available concerning his handicaps and vigor.

Anonymous thanks are gratefully given to these authors, from whose textbooks and papers a large amount of the material for the above has been collected. A detailed list of references will be gladly given by the author.

186 Robie St.



# \*Has Canada Enough Doctors

JOSEPH W. WILLARD

PROVIDING adequate health services for all Canadians is a goal about which most people agree, but few realize the difficulties involved in finding a solution. One of the main problems is how to find trained health personnel. It will be discussed in two articles. The one below deals with the question of physicians while another to be published in the subsequent issue will treat the problem of dentists and nurses.

Much discussion has taken place, particularly during and since the war, concerning the introduction of a health insurance scheme in Canada. At times, too, little attention has been given to the fact that the implementation of such a medical care program needs to be complemented by sufficient health personnel and adequate hospital facilities.

Any priority list of the health services requirements for Canada to-day must rank hospital facilities and health personnel as two of the most urgent needs. While they are intimately related to each other, it has been necessary, because of space limitations, to consider only the latter question and to limit discussion on medical manpower to the three main professional groups, physicians, dentists and nurses.

## 1. PHYSICIANS

### Supply of Physicians

Canada ranks as a most favoured nation with respect to the number of physicians relative to the size of its population. Only two out of 21 American Republics in the western hemisphere, on which such data are available, have a lower population-physician ratio than Canada. Countries in Asia and Africa, for the most part, do not even remotely approach Canadian standards. In Europe to-day, only Switzerland and the United Kingdom are in a more favourable position than Canada. Canadian needs for additional personnel are dwarfed when set beside those of China, India, many war-torn European countries and numerous Latin American States.

New Zealand has a slightly lower population-physician ratio than Canada and also a smaller geographical area in which to provide medical services. On the other hand, Australia, which is similar to Canada in that it is a geographically large country with a relatively small population, had 1,139 persons per physician<sup>1</sup> in 1945 compared with 960 persons per physician<sup>2</sup> in Canada in the same year. Our position, therefore, is more satisfactory than that of a host of other nations, but falls a little short of matching the United Kingdom and New Zealand and does not even approach that of the United States.<sup>3</sup>

Although it is a common misapprehension that the supply of physicians in Canada has declined in recent years, the number of physicians in relation to population has rarely been more favourable than at present. However, while this is true, it cannot be overlooked that the long-term rate of increase in medical manpower has been only *slightly* greater than that of the general population. For instance, in 1901 and 1911 there were 972 and 907 persons

\*Reprinted from PUBLIC AFFAIRS, December, 1947.



per physician, respectively, compared with 947 in 1947. By 1921 there was an unfavourable rise in this ratio which was extended further during the succeeding decade. However, since 1931 the population-physician ratio has improved encouragingly, dropping from 1,034 persons per physician in 1931 to 968 persons in 1941 and again to 947 in 1947.

Further, the effectiveness of physicians has increased considerably. One illustration is the improvement in transportation facilities which has been important—particularly in rural areas—in enabling a physician to accomplish more in a given time. The increased number of nurses employed by physicians in their offices and the greater scope given specially qualified nurses in hospital treatment have led to a greater economy of the doctor's time. Advances in modes of treatment, such as the use of penicillin and sulpha drugs, have tended to reduce the number of days of medical care required in the case of many types of illness. Also the general raising of living standards, increased health education and improved nutrition have tended to lessen demands for medical care.

Cognizance should also be taken of the fact that the output of Canadian medical schools has greatly increased. It is estimated that about 4,000 graduates will leave the ten Canadian medical schools in the next six years. This represents an annual average of 667 physicians which is considerably above the annual average of 517 physicians graduating in the 20-year inter-war period 1920-1939. A large part of this increase is due to expanded facilities in Canadian medical schools and the opening of a new medical school at Ottawa University which will have its first graduating class in 1951. Also, there is the possibility in the future that the two-year pre-medical training at the University of Saskatchewan may be extended to a complete medical course and also that British Columbia may establish a medical school.

Deaths of physicians have been rising steadily. The average annual deaths for the five years 1926-30 were 170 but rose to 195 in 1933-37 and increased again in 1940-44 to 22.8. In 1945, the latest year for which information is available, there were 236 deaths. In the years ahead we may expect a gradual increase in the number of deaths of physicians partly because of increase in total numbers, and partly because of the aging of physician population committant with that of the population as a whole.

The National Health Survey estimated that in the pre-war years the loss due to repatriation of foreign-born graduates amounted to between five and ten per cent of the total output of Canadian medical schools. Although the number of alien medical students in Canada has been reduced somewhat in the last few years, in order to permit admission of larger numbers of Canadian veterans, to the courses, there will still be a substantial wastage of trained personnel because of this factor. However, while Canada loses in the training of these undergraduates she gains substantially in the post-graduate training afforded Canadians in other countries.

The possibility of a heavy loss of medical manpower through migration is real. Our principal adverse drain of trained personnel is to the United States and the latest figures from the Immigration and Naturalization Service of the United States are not very heartening. In the ten years, 1931 to 1940 an annual average of 112.8 physicians were admitted to the United States as immigrant aliens. Some of these took graduate training and returned to Canada but many did not come back. In the year ended June 30,



1947, 206 Canadian physicians entered United States as immigrant aliens. How many will return we cannot predict. It will depend on many factors not the least important of which will be attractive opportunities in the United States. This migration has been one of the main sources of wastage of our medical manpower resources in the past, and present indications are that it will continue to be a most serious loss. It is not possible at present to predict the extent of general immigration into Canada nor whether there will be any balancing immigration of physicians to maintain the present relationship between the supply of physicians and population.

### **Demand for Medical Services**

The nation's demand for medical care is affected by a number of variables, including the level of national income and employment, the attitude of the public toward medical care, the size and age distribution of the population, the birth and death rates, the prevalence of disease, etc. The post-war demand for physicians is much greater than in pre-war years because of a number of factors, such as the increase in population, the extensive program of the Department of Veterans' Affairs for medical care for veterans, the larger armed forces, the broader appreciation generally of health services and the greater financial capacity to pay for such services. In order to overcome war-time depletion of medical personnel and to meet the greatly expanded post-war demand and need for better public health protection, federal, provincial, and local health departments have placed very heavy demands upon the limited medical manpower trained for this type of health service.

The post-war patient load has been particularly heavy in a number of specialties. For instance, Canada has never had sufficient psychiatrists to serve its patients in mental institutions and persons needing psychiatric treatment, a need which has been augmented by mental disturbances induced by modern warfare. There is also a demand for more physicians with training in obstetrics and paediatrics and a need for specialists in industrial medicine.

Geographically, post-war needs for general practitioners appear to be greatest in the provinces of New Brunswick, Saskatchewan and Prince Edward Island. The provinces with higher percentages of urban population and higher provincial incomes are the ones more adequately served with physicians. The relative position of the provinces, as shown by population-physician ratios, has not altered appreciably in several decades. Ontario, British Columbia and Manitoba occupy the most favoured positions, while Quebec, Alberta and Nova Scotia occupy intermediate positions. From a regional point of view the Maritime Provinces face the greatest shortage. The population-physician ratio of the three provinces of the Maritimes are among the four most unfavourable.

### **Maldistribution of Physicians**

But while regional and provincial comparisons have a certain significance rural-urban disparities are really the crux of the problem. A study of the population-physician ratios for counties and census divisions for Canada reveals that, for the most part, the proportion of active physicians to population is more unfavourable in the more rural areas than in the highly urbanized areas. Added to this is the fact that it takes more time for a rural physi-



cian to visit his patients. If rural people are to enjoy parity of services, the rural physician should serve fewer people than the urban physician. Also, the disproportionately large number of older doctors in rural practice affects rural areas adversely.

During the war the shortage of physicians in rural areas was critical. The Canadian Medical Procurement and Assignment Board in a number of instances temporarily alleviated the situation by seconding medical officers from the armed forces to serve in some of these rural communities. But this was a war-time stop-gap measure designed to assist in only the most urgent situations. Since the end of the war the shortage of doctors in rural areas has been relieved to some extent by the return of service doctors to civilian life but it has by no means disappeared.

The disparity in the supply of physicians between rural areas and urban centres has been with us for many years but the disturbing fact is that it has been increasing. Canadian experience corresponds very closely with that of the United States in this regard and for this reason it is important to note a few of the conclusions of a study of the location and movement of physicians from 1923 to 1938 in that country. "The combined effect of physician migration, recruitment and losses from the profession, over the period 1923-38, resulted in gains for both large and small cities and in losses for rural communities. Moreover, comparison of physician totals with population data indicates that the tendency for physicians to concentrate in large urban areas somewhat parallels, but exceeds in magnitude, the trend for the population as a whole. Failure of rural localities to attract and retain a proportionate share of new registrants has resulted in a distribution heavily weighted with old physicians. In 1923 the median age of rural physicians was four years above that for physicians in large cities; by 1938 the difference was ten years."<sup>4</sup>

A recent illustration of the need in rural areas and small communities in one province is given in the report of the Special Select Committee of the Manitoba Legislature on Health which stated that Manitoba needs another 130 general practitioners and an additional 75 specialists for practice outside Greater Winnipeg before medical services would be up to standard.<sup>5</sup>

In contrast, the urban centres, and the metropolitan areas in particular, are very well served with physicians. For instance, the seven largest cities in Canada contain roughly 28 per cent of the population but about 46 per cent of the physicians. The population-physician ratio for these seven centres is well below 600 persons per doctor.

This rural-urban maldistribution is one of the most fundamental problems in the consideration of a more equitable allocation of the services of Canadian physicians. There are several cogent reasons why physicians generally, and graduates from medical schools in particular, tend to locate in cities. In these centres they have access to modern hospital facilities, professional contacts and the opportunity of more easily keeping abreast with advances in medical science. Also they can enjoy a better standard of living both economically and culturally.

Two useful approaches through which this faulty distribution might to some extent be adjusted suggest themselves. Firstly, the economic status of the physician in these areas might be improved by some method of supplementing his patient-income. In other words, financially it should be to his advantage rather than his detriment to serve in a rural community. Secondly,



rural practice might be made more attractive through the construction and improvement of hospital facilities (wherever the population is sufficient to warrant such facilities). One might observe also that these suggestions would apply whether or not there is a health insurance scheme which provides general practitioner service.

As many medical students return to their home community after completing medical training, it might be helpful also to provide some encouragement by means of "medical scholarships" to young persons with the necessary ability and aptitude who live in small towns and rural localities. This would have the further advantage of helping to offset the differential in the cost of medical education between students whose homes are in the same centres as medical schools and some of those students living outside such localities.

### Medical Care Needs

The extent of unmet needs for medical care for the people of Canada is not known. In this regard a recent study of the rural needs of the population in Michigan is of interest both from the point of view of the survey method used and of the results. "The basic element of the method is a list of symptoms which, if any one is present, indicate need for medical attention. The findings of a survey using the list of symptoms and certain additional questions showed that 584 individuals, 47.9 per cent, of a sample of 1,219 persons had one or more symptoms which should receive medical attention and that among the 584 individuals there were 314, or 27.7 per cent of the 1,219, who had not seen a doctor. The need for medical care increased with the age of the population and with a decline in the gross income of the family."<sup>6</sup>

Why were these people with unmet medical needs not availing themselves of medical attention? "The reasons given most frequently for not seeing a doctor were: (1) 'ailment not serious enough,' (2) 'don't have the necessary funds,' (3) 'don't have time to see a doctor' and (4) 'doctors can't help you much anyway'."<sup>7</sup>

That the amount of unmet need for medical care is considerable and that two important reasons for this are lack of appreciation of and an inability to pay for medical services is corroborated by other studies. One of the most pressing problems concerning the health of our people is how to reach these unmet needs for medical care. In whatever manner this is achieved, it will involve some extension of the present health services which in turn will depend upon the supplementation of existing personnel and the effecting of a fair and equitable distribution of all such personnel.

The medical manpower situation might be summarized as follows: international comparisons show Canada to be one of the most favoured nations; the present population-physician ratio is perhaps the most satisfactory in Canadian experience; there has been a steady improvement in the effectiveness of medical services; and the output of medical schools has been greatly augmented. On the other hand, the number of deaths of physicians is rising slowly; some loss of trained personnel will continue because of the number of foreign-born students being educated in Canada; there will be a further wastage of medical manpower through emigration with a possibility that this may become a very heavy loss. Further, the demand for medical services has been greatly augmented and there still appears to be a sizeable amount of unmet needs for medical care.



The prospects of more favourable population-physician ratios for several years ahead are good provided the net loss of emigration over immigration of physicians does not become too serious. However, some areas continue to face an acute shortage of physicians. The crucial problem at the present time appears to be not so much an overall shortage, although this does pertain in some specialties, as a maldistribution of physicians. Any public medical care programs that propose to adequately serve rural areas in Canada must give prime consideration to this difficulty.

1. Based on estimate of Commonwealth Statistician for June, 1945.
2. Based on estimate of physicians from "Statement of Supply and Distribution of Physicians in Canada, July, 1945," of Canadian Medical Procurement and Assignment Board, p. 3, and Dominion Bureau of Statistics Intercensal Estimate of population.
3. Population-physician ratio of 713 in 1946 in United States.
4. Location and Movement of Physicians, 1923 and 1938, by Mounten, Pennell, and Brockett, Public Health Reports, United States Public Health Service, Vol. 60, of Feb. 16, 1945, No. 7, p. 183.
5. Public Health Economics, published by Bureau of Public Health Economics, School of Public Health, University of Michigan, Vol. 4, No. 8, Aug., 1947, p. 586.
6. "Medical Needs of the Rural Population in Michigan," by Charles R. Hoffer. Rural Sociology, University of North Carolina, Vol. 12, June, 1947, No. 2, p. 162.
7. Ibid., p. 164.

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### POSITIONS VACANT

The Dartmouth Medical Centre, 180 Portland Street, Dartmouth, Nova Scotia, invite applications for the following positions) (1) Eye, Ear, Nose and Throat Specialist. (2) General Practitioner. To work in association with established group.

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### Indications for Protolysate

Protolysate is a readily available hydrolyzed protein for the patient with impaired digestive functions. When absorption is decreased, as in diarrhoea-disease, or when enzymes are deficient, as in pancreatic insufficiency, Protolysate will aid in provision of sufficient protein nourishment to avert protein starvation.

For literature and professional samples of Protolysate, write Mead Johnson & Co., Evansville 21, Indiana.



# Society Meetings

## Colchester-East Hants Medical Society

Recently a meeting of the Colchester-East Hants Medical Society met at "The Open Kitchen," Pictou Road, three miles from Truro, where a large attendance of the members enjoyed a turkey dinner followed by a professional programme.

Doctor D. F. McInnis, Shubenacadie, the President, occupied the chair, and introduced the special speaker, Doctor Charles M. Harlow of Halifax, who spoke on "Some Endocrine Problems in Gynaecology." This partially known and confusing subject was placed before us in a clear and logical manner with many lantern illustrations on the screen, especially showing the changes in vaginal mucosa by using or omitting sex hormones. By these tests the function of the sex glands may be measured.

Many slides were shown of vaginal mucosa smears containing cancer cells which had come from higher up in the vaginal tract thus affording a method, if positive, of diagnosing cancer.

Some of the deductions from this paper were:

1. Sex hormones—with a few exceptions—are disappointing in their results. They are too highly advertised and too many claims made for them.
2. Sex hormones in animals do not always give similar results in persons as their action changes in species and results in one may be different or absent in another.
3. Progesterone from the corpus luteum is expensive, cannot be synthesized and is usually used in too small a dose to be effective.
4. Conodotropins, which stimulate the pituitary gland which in turn stimulates the production of estrogen and progesterone are used in inadequate doses and probably the effect on the ovaries is small.

Doctor Daniel Murray of Tatamagouche presented a case of a girl, age 11 years, who had the symptoms and pathology of patent ductus arteriosus. She was sent to the Massachusetts General Hospital where she was operated on and she is apparently cured. The case was presented for examination and all the physical signs and symptoms of the original congenital condition had disappeared. The following is Doctor Murray's excellent report.

### CASE REPORT

#### Patent Ductus Arteriosus

L. C., white female. Age 11 years.

*Family history:* Non-contributory.

*Previous history:* When living in another part of the province, some years back, she had measles and scarlet fever, and apparently made a complete recovery from both.

*Present illness:* In May, 1946, she suffered a gastro-intestinal disturbance and it was noted by her mother that the precordial region was quite prominent and pulsating vigorously.

*Physical Examination:* Temperature 98.2. Pulse 85. Respirations 20. Patient was normally developed but slightly underweight. The neck showed abnormal pulsations and the thorax was prominent with precordial pulsations over the left side anteriorly and some prominence of the left 2nd rib. The



point of maximal impulse was seen and felt in the 6th left interspace outside the nipple line. The heart appeared enlarged with normal rate and regular rhythm but with a loud machinery like murmur and thrill maximal in the 2nd interspace to the left of the sternum but audible posteriorly and all over the precordium. The blood pressure in the arms was 118/42 and in the legs 153/48. There was no evidence of peripheral edema and the veins were not particularly distended. There was no clinical evidence of abnormality in the lungs, and no pathology was discovered in the abdomen. The extremities showed no clubbing or other abnormality. The urine and blood were essentially normal.

From the above clinical findings it was felt that this was a case of Patent Ductus Arteriosus without co-existing congenital abnormalities. It was pointed out to the parents that the average life expectancy in these cases was approximately 34 years if left untreated; that subacute bacterial endocarditis would probably supervene in which case the chance of surviving the operation would be approximately 50%, whereas, if done before complications arose, the chance of surviving would be upwards of 90%. After due consideration it was decided to submit the child to operation, and since they had relatives in the vicinity of Boston, she was taken there and entered the Massachusetts General Hospital.

The following is the report of the "Hospital Course."

Because of previous culture of Beta hemolytic streptococci from the throat the patient was started on penicillin preoperatively. On 4/4/47 a left thoracotomy was done and an intercostal approach through the left 5th. interspace made. Exposure of the region of the aortic arch was made by incising the parietal pleura and a large bulging aorta, on the medial side facing the pulmonary artery, was seen. The pulmonary artery approached this and came within about 1 c.m. of it where there was a connection of a patent ductus arteriosus not more than 2-3mm. in length but approximately 8.9 mm. in diameter. The remainder of the vascular system in this region seemed normal although the left innominate artery was rather large. With some difficulty the dissection was carried around behind the ductus and two ligatures of No. 4 Deknatels silk were passed about it and tied with the vessel in continuity. The chest was then closed. Post-operatively the patient did extremely well and though on the 7th of April there was evidence of some fluid in the chest, this was not sufficient to require tapping and reabsorbed without further trouble. She was up and about on the ward without any difficulty and was finally discharged home on the 15th of April, two days after her sutures were removed. A post-operative electrocardiogram again showed a normal tracing with T<sub>1</sub> being slightly lower and T<sub>3</sub> being slightly higher than the preoperative tracing. Examination after ligation showed a slight murmur still to be present but the thrill and the machinery character of the murmur was no longer present.

Diagnosis: Patent Ductus Arteriosus.

Operation: Closure of patent ductus.

Result: Good.

Complications: None.

Prognosis: Good.

Disposal: Home."

At the present time, nine months after operation, this child is carrying on the usual activities of one twelve years old and is entirely free from symptoms. Recent examination of the chest and heart shows nothing abnormal. Whether or not re-canalization of the ductus will occur can be determined only by future investigation.

I wish to acknowledge, with thanks, the report from the Massachusetts General Hospital, which I have used freely in the presentation of this case.



### Antigonish-Guysborough Medical Society

The annual meeting of the Antigonish-Guysborough Branch of The Medical Society of Nova Scotia was held at Antigonish, October 19, 1947, Doctors J. S. Brean, E. A. Brasset, R. C. Griffin, R. H. Fraser, J. A. MacCormick, O. C. MacIntosh, J. A. MacDougall, K. J. C. MacKinnon, T. B. Murphy, and J. J. Carroll being present. The President, Doctor J. C. Brean was in the chair. The minutes of the previous meeting were read and adopted.

There were five new members welcomed to this Branch by the President. These were Doctors R. H. Fraser, O. C. MacIntosh, J. A. MacCormick, K. J. C. MacKinnon and J. A. MacDougall.

The President reported on the last annual meeting of The Medical Society of Nova Scotia held in October at which meeting the question of prepaid medical services under the auspices of The Medical Society of Nova Scotia was discussed and passed unanimously.

It was felt by the President that the next meeting of this Branch should be a dinner meeting and an effort be made to have an outside guest speaker.

A letter of sympathy and a mass card was sent to Mrs. R. J. MacDonald at the time of Doctor MacDonald's death and an acknowledgment was received.

A letter was received from the Nova Scotia Registered Nurses' Association asking our support for an eight hour day for special nurses and graduates on hospital staffs. This letter was received sympathetically and as eight hour duty is the general rule here no action was taken.

The report of the Treasurer was accepted and the usual assessment of two dollars was levied.

The election of officers for the following year was held and the present slate was re-elected and Doctor J. A. MacDougall was elected to the executive to fill the vacancy caused by the removal of Doctor B. K. Coady who has left here. The present slate of officers is:

President—Doctor J. S. Brean, Mulgrave.

Vice-President—Doctor E. A. Brasset, Antigonish.

Secretary—Doctor J. J. Carroll, Antigonish.

Executive—Dr. W. F. MacKinnon, Antigonish; Dr. J. J. Stanton, Canso;  
Dr. J. A. MacDougall, Antigonish.

Executive members of The Medical Society of Nova Scotia—Dr. J. S. Brean, Mulgrave; Dr. J. J. Carroll, Antigonish.

The question of fees was taken up. It was noted by Doctor Murphy that the scale of fees of this branch was the lowest in the Province. It was considered that the D. V. A. scale of fees would be more acceptable. It was moved by Doctor Murphy that this Branch adopt as our scale of fees the D. V. A. scale as revised August, 1946. This was carried. It was moved by Doctor Brean, seconded by Doctor MacCormick that a copy of the D. V. A. scale of fees be printed and sent to those members of the Branch not in attendance and that any objections to this scale of fees should be noted and returned within one month for consideration. This was carried.

Meeting adjourned.

J. J. Carroll, Secretary



# Correspondence

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## DEPARTMENT OF THE ARMY

Office of the Surgeon General

Washington 25, D.C.

21 January, 1948

Nova Scotia Medical Bulletin  
Halifax, Nova Scotia

The U.S. Army Medical Corps now has a number of excellent positions which can be filled by physicians who have completed their formal board requirements (residence phase) but who need one or two years of practice limited to their specialty.

We feel that some of your subscribers will be interested in occupying these positions; therefore, we will greatly appreciate your bringing to their attention the contents of the enclosed circular.

Sincerely yours,

William H. Amspacher  
Colonel, Medical Corps  
Chief, Procurement Branch

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EDITOR'S NOTE: This circular is in the Editorial office and can be seen by anyone interested.

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February 7th, 1948.

The Editors  
The Bulletin  
Medical Society of Nova Scotia  
Halifax.

Dear Sirs:

Permit me to call your attention to an article in the January number of the Journal of the Association of American Medical Colleges. It is by Dr. Tresidder, President of Stanford University, and is entitled "The Aims and Purposes of Medical Education." It was an address given before the Association in October last.

It is a very excellent article and one which probably has application to the teaching in all of our Medical Schools—not excepting our own.

It is chiefly because of the last section of the address, however, that I call it to your attention. This section, while still directed to Medical Faculties, pointing out the duty of making Medical Students more than "well trained technicians," also has a message for the rest of us.

The message will not be difficult to extract from the subjacent passage which you are asked to reproduce, especially just now when the Medical Profession of this province is moving in the direction of assuming the responsibility



which is here indicated, and when we are thinking more of the social significance of what is proposed.

I have left the most important consideration of all to the last. Our fortunes are inextricably linked to those of our society. All our little plans will fail if we do not inculcate in our doctor for to-morrow an insight into the problems of our free society and the extent to which his own future activities will be fraught with public interest. Our generation has witnessed the culmination of an industrial revolution fully as significant to civilization as the one which followed the invention of the art of writing five thousand years ago. As a result, we now have on the one hand the power and knowledge to enrich mankind beyond all our dreams. On the other hand, it is clearly evident that by the misuse of this same power and knowledge we can destroy ourselves.

It is particularly important for us to understand the economic and social ailments which have accompanied our industrialization. Extensive social disunity, mass unemployment, widespread confusion and frustration are characteristic of the times. Largely in response to these acute difficulties, Americans have adopted certain social aims which they are determined to realize even at the cost of state coercion if no voluntary means can be found.

Americans demand security in old age, fair pay, steady employment, healthful working conditions and adequate medical care. In these undertakings the doctor is cast in a significant role. The treatment of disease has always been his function. In the future, he will have a growing concern with its prevention, with the establishment of healthful working conditions, and with improving the physical vigor and health of all our people.

We have been highly successful in teaching the public the value of expert medical care. We are also responsible for their belief that in sickness the hospital is the only place to be. Notwithstanding the great advances in medicine, there is altogether too wide a discrepancy between what the individual can afford to pay for medical care and what it actually costs. We can predict with complete assurance that medical benefits in the future will be more evenly distributed and that need, not ability to pay, will be the criterion. There is, however, all too little evidence that our medical profession as a whole has grasped the implications of this fact. If we persist in ignoring the clear signs on the horizon, statism is inevitable.

I have the strongest conviction that the first aim of medical education, aside from the development of professional competence should be to give the student a clear understanding that from first to last he will have a great concern with social problems. He will be called on again and again to subordinate his own private interests to the public interest. The doctor, of all people, will require social skills and insight into social problems of the highest order. The acquisition of these skills cannot be left to chance, nor can they be acquired in medical schools alone. As medical educators, we must be concerned with education at all levels and lose no opportunity to participate in the broad purposes of our entire education system to the end that we produce competent doctors who are above all else responsible citizens.

Norman H. Gosse, M.D.

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### FOR SALE

Complete set (10 volumes) of Tice: Practice of Medicine, including three volumes of International Medical Digest. Kept right up to date, unmarked and in brand new condition. A bargain at \$85.00 (Cost new \$130)

M. G. Whillans, M.D.  
Department of Pharmacology  
Medical Science Building  
Halifax, N. S.



## Personal Interest Notes

THE annual meeting of the Nova Scotia Branch of the Canadian Cancer Society was held at the Nova Scotian Hotel on February 11th, when the following officers were elected:

President	- - - -	Mr. Justice W. F. Carroll, Halifax
First Vice-President	- -	Dr. Norman H. Gosse, Halifax
Second Vice-President	- -	Mr. W. H. Cuzner, Sydney Mines
Treasurer	- - - -	Mr. Harvey E. Crowell, Halifax
Secretary	- - - -	Miss Elizabeth E. Hartling, Halifax

Doctor N. H. Gosse and C. H. Brown of Windsor were appointed representatives to the Grand Council.

The following were appointed to the Board of Directors: Frank Rowe, Mr. Justice Carroll, Doctor N. H. Gosse, W. H. Cuzner, Doctor C. M. Bethune, Harvey E. Crowell, Judge K. L. Crowell of Bridgetown, Doctor S. R. Johnston, Charles F. MacKenzie, Gerald J. Redmond, Herbert R. Snuggs, Robert L. Stanfield, Mrs. H. H. Marshall, Mrs. A. McD. Morton, Doctor W. T. McKeough of Sydney Mines, Doctor F. J. Barton of New Waterford, Doctor L. P. Churchill of Shelburne, A. L. Harrington, John Ross of Canning, Mrs. Guy A. Little and Roy D. Miller of Carleton, Yarmouth County.

### British Doctors Reject Government Programme

Britain's doctors have overwhelmingly rejected the Labor Government's programme of socialized medicine, the British Medical Association disclosed on February 18th.

A doctors' strike against a parliament measure authorizing free medical service for every Briton was believed almost certain. A formal decision will be taken by the British Medical Association's representative assembly on March 17th.

The Association said that a poll of its members showed 25,340 doctors against the law in its present form and 4,084 in favour. The Bill was passed last year, but does not become effective until next July 5th.

The doctors were also asked if they would abide by a majority decision to refuse to enter the state medical service programme. To this question, 24,066 members said yes. Only 4,494 of those voting declined to take such a pledge, the Association said.

The doctors' opposition to the Health Bill was three-fold:

1. They dislike the provision against buying and selling of practices. This brings large sums, especially to specialists and consultants, whose work earns high fees.
2. They are against establishment of a basic state-paid salary of £300 a year. They say it is an entering wedge for a full salaried state medical service. They want payments only on the basis of patients treated. The law provides this kind of pay in addition to the salary.
3. They oppose a provision in the law barring a doctor from appealing to the courts from dismissal by the state service.

The Bill provides free medical, dental, hospital services and even false teeth for all Britons. Part of the funds for the programme come from a portion of social security deductions from workers' pay cheques. The rest comes from the Treasury.



### Dalhousie Professor to Research Post

Important Canadian Government work has claimed the services of a Dalhousie University Faculty member with the appointment of Doctor M. G. Whillans, Professor of Pharmacology in the Medical School, as director of biological research with the Dominion Defence Board. In his new post, which he will assume July first, Doctor Whillans will come under the jurisdiction of the Minister of National Defence.

Doctor Whillans has been a member of the Dalhousie Faculty since November 1, 1945. During the war he was with the Royal Canadian Air Force, engaged in aviation medical research. A native of Manitoba and a graduate of the University of Toronto, Doctor Whillans before the war was neurological consultant for the Ontario Department of Health. He also studied in England, where he began his medical course.

Doctor Whillans' new work, in which a number of laboratories across Canada will be associated, will include bacteriological, physiological, pharmacological, psychological and biochemical research as related to national defence.

Doctor C. B. Stewart of Halifax gave a talk before the Commercial Club early in February on "Healthful Housing;" and Doctor H. B. Atlee of Halifax gave a talk before the annual meeting of the Nova Scotia Society for Mental Hygiene on February 23rd

The BULLETIN extends congratulations to Doctor and Mrs. G. B. Shaw of Shelburne on the birth of a son on February 3rd, and to Doctor and Mrs. C. N. MacIntosh of Dartmouth on the birth of a son, Kenneth John, on January 16th, and to Doctor and Mrs. W. J. Dyer of Halifax on the birth of a son on February 15th.

The BULLETIN is very sorry to learn that Doctor S. R. Johnston of Halifax is a patient in the Victoria General Hospital.

Doctor M. J. Carney of Halifax who has been undergoing treatment at the Victoria General Hospital is now convalescing at his home, and is much improved in health.

Early in February Nova Scotians marked the centenary of Responsible Government, the first such government established in the British Empire overseas. Unheralded in the acclamation of that day one hundred years ago was the centenary of another great event in Nova Scotia history.

On February 5, 1848, just one hundred years ago, a small group of people were gathered in a room in the old Halifax Poor House. An aged lady lay on a rude operating table, apparently in a deep sleep. With deft hands a surgeon amputated a badly injured finger from the woman's hand. She slept on without giving evidence of pain.

This was the occasion of the first use in Nova Scotia of chloroform as an anaesthetic in surgery. The surgeon was a Doctor Almon and witnesses were Doctor Parker of Halifax and Doctor Brown of Horton.

It is believed, according to Doctor H. L. Scammell of Dalhousie University, that the chloroform used, was produced by James D. B. Fraser of Pictou. Chloroform was first used in Edinburgh, Scotland, by Doctor James Y. Simpson in November, 1847. He published the results of his experiment and method of preparation of the chloroform, and within three months it was being produced in Nova Scotia and was available as an anaesthetic.