# Whole Wheat Bread and the Absorption of Minerals

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IT has been known for years that the composition of white wheat flour differs considerably from the composition of the flour which is used to make whole wheat bread. As an example of white flour may be taken flour which, from the whole wheat berry enough has been removed in the milling process to leave in the flour 69% of the original grain. An example of a flour which would make so-called whole wheat bread would be one which contains 92% of the original grain. The 92% flour is known to contain considerable of the vitamin B complex (Thiamin, Riboflavin, Nicotinic acid, etc.) and bran, which are lacking in 69% flour, and the concentration of other ingredients is given in Table I.

**TABLE I.**

| | | 92% Flour | 69% Flour |
|---|---|---|---|
| Water | | 15. % | 13. % |
| Starch | | 61.5% | 67.5% |
| Nitrogen | | 2.5% | 2.1% |
| Fat | | 3.1% | 1.4% |
| Minerals | Fe | 3.6 mg.% | 1.4 mg.% |
| | Ca | 34.8 mg.% | 18.5 mg.% |
| | Mg | 127. mg.% | 38. mg.% |
| | K | 376. mg.% | 147. mg.% |
| | P (total) | 287. mg.% | 83. mg.% |
| | P (phytic) | 214. mg.% | 56. mg.% |

It is clear that the extra protein, fat and minerals as well as the presence of vitamin B would seem to indicate the nutritional superiority of whole wheat flour and this knowledge has led practically all nutritionists to advise the eating of whole wheat bread. The presence of bran may also be an advantage to some individuals in that it unquestionably increases the bulk of faeces but for others it might be inadvisable. Indeed it seems difficult to understand why millers and bakers should not have been wholeheartedly behind the nutritionists in their endeavour to increase the use of these flours. However this type of flour does not keep as well as white flour; whole wheat bread (because of its greater water content) yields some 10-15% less calories than white, and it is said that the public will not be persuaded to buy it freely.

In this country our vitamins and minerals are mostly obtained from sources other than flour. However with diets becoming more restricted and rationing becoming more prevalent, as is already the case in Great Britain, wheat products become increasingly important as dietary constituents and the proportion of calories in the daily ration supplied by wheat rises considerably. Under these conditions wheat may become a significant and valuable source of vitamin B and perhaps of minerals in addition to its importance as a source of fat, protein and calories. It is to be remembered that flour is used not only to make bread but also biscuits, cakes, pastries, sauces, etc. In the experimental findings reported below the 69% flour or the 92% flour was used for all these purposes. Whole wheat flour (Graham Flour) makes a brown bread of course but commercial brown bread need not be made of whole wheat flour. Indeed

it is apt to consist of white flour, the colour being derived largely from added ingredients such as molasses. Even if the bread is labelled "Whole Wheat Bread" one suspects at times that it does not consist wholly of whole wheat flour. Certainly a proportion of coarsely ground bran is often incorporated in order to give this bread the rough consistency sometimes desired; this bran fraction yields no calories even though it may be filling and possess laxative properties.

McCance and Widdowson* of Cambridge have recently carried out very careful studies on the mineral metabolism of normal human adults who were receiving between 40% and 50% of their total caloric intake in the form of wheat flour. This high level of flour consumption, perhaps double that which would be common in the better of our diets, is not so uncommon in the more restricted of British diets to-day. The intake of milk was restricted, cheese was forbidden, and other foods conformed to the rationing regulations. Only one table (Table II) showing their individual results will be reproduced, but this Table is typical of all their many sets of results.

**TABLE II**

**Absorption of Calcium from White and 92% Flour Diets**

| Subject | 69% Flour | | 92% Flour | |
|---|---|---|---|---|
| | Ca. Intake mg./day | Absorption mg./day | Ca. Intake mg./day | Absorption mg./day |
| E.B. | 500 | 307 | 530 | 169 |
| N.K. | 482 | 130 | 560 | 27 |
| R.M. | 720 | 181 | 676 | 20 |
| C.B. | 557 | 178 | 630 | 64 |
| B.A. | 380 | 121 | 495 | 46 |
| A.M. | 416 | 127 | 516 | 74 |
| E.W. | 450 | 118 | 550 | 50 |
| K.W. | 475 | 133 | 520 | 70 |

It is obvious from the figures of Table II, that despite the greater quantity of calcium ingested in the 92% flour diet there is a much smaller absorption. Indeed, all but one of the subjects were in pronounced negative calcium balance on this diet, whereas the same individuals on the white flour diet were found to absorb more calcium and the majority were in metabolic equilibrium. A similar trend was found with regard to magnesium and probably would have been found in the case of iron, if iron had been determined.

The failure of calcium, magnesium, etc., to be absorbed from the whole wheat diet was believed to be due to the phytic acid content of the 92% flour. This is known to produce an insoluble precipitate with these elements, and it is not hydrolysed by the human digestive juices. That this is the true explanation seems fairly clear because if phytic acid is added to white flour then the absorption of calcium from the white flour diet is greatly reduced; in fact in the majority of the individuals tested in this way, more calcium was found in the faeces than was ingested. Thus we have a picture of the whole wheat flour diet containing more calcium and other minerals than the white flour diet but because of the phytic acid content of the 92% flour, the absorption of the minerals is actually markedly reduced. This statement does not apply to potassium which does not form an insoluble precipitate with the phytic acid. Vitamin D administered to these subjects in doses of 2.000 I.U. per day failed to improve the absorption.

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The flours were then fortified by the addition of calcium carbonate. At first calcium carbonate and calcium phosphate were both tried but it was found that there was little advantage to the calcium phosphate as far as calcium or phosphorus balance were concerned, whereas there was great advantage to the calcium carbonate with regard to appearance and palatability of the bread. The absorption of calcium is sharply increased when fortified flour is used but still there was less absorption from the 92% diet than from the 69% flour diets. Evidently the phytic acid in the 92% flour prevents the absorption not only of the calcium of the flour itself, but also the calcium ingested in other foods. Not until enough calcium is present to combine with practically all the phytic acid is there much left over available for absorption. To maintain the subjects in positive calcium balance, it was necessary to fortify white flour to the extent of 65 milligrams calcium per 100 grams flour whereas it was necessary to add 200 milligrams to whole wheat flour to bring about the same result.

The British government has adopted as a standard flour, one from which 15% of the grain has been removed in the milling thus giving an 85% flour. This flour lies between two types discussed in the phytic acid content and presumably would have to be fortified with 120 milligrams of calcium per 100 grams flour to bring about calcium balance. Our own government has also adopted as an approved white flour one similar to the 85% flour. It makes a bread which is almost white and it is an "All Purpose Flour" designed to be used successfully for pastry as well as bread. The advantages of this flour are that it contains a good concentration of the "B" vitamins in their natural form and little bran. It seems much more logical if one desires to increase the vitamin B content of bread and other flour products, to do so by leaving some of the vitamins in the flour rather than to remove them all and then artifically to add them later, as has been done elsewhere. Nevertheless, in so far as minerals are concerned such a flour may have the effect opposite to that originally expected and that it (and whole wheat flour is a worse offender) actually prevents the absorption of some of these minerals rather than serving as a source. The problem is probably not a serious one in Canada because nutritionally our supplies of minerals are not quite as critical as in the diets discussed, but in individual cases, and if war-time restrictions are to be much more severe, the problem may well become important.

The daily requirements of Thiamin (Vitamin $B_1$) as accepted by the Council on Food and Nutrition of the American Medical Association is nearly 2 mgm. per day. If flour makes up 40% of the daily caloric requirement, whole wheat flour will supply about 1.6 mgm. thiamin, the new Canada Approved Vitamin B White Flour will supply about 1.2 mgm., while ordinary white flour only about .14 mgm. As flour normally supplies 20%-40% of our calories, it is clear that it is potentially an important factor in supplying our thiamin needs, and the prevalent use of white flour is partly responsible for the common reports of thiamin deficiency. To ensure an adequate dietary content of thiamin, the use of whole wheat or of the Canada Approved Vitamin B White Flour must be advised. Nevertheless, when much of this flour is used, care is needed to ensure adequate mineral absorption. The recommended daily allowances to an adult of 800 mgm. calcium and 12 mgm. iron (Committee on Food and Nutrition) is presumably adequate anyway, but if the intake of these minerals happens to be on the low side, the deficiency will be accentuated if much whole wheat is used.

# *A Plea For Public Health

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AT the very beginning of this paper—incidentally, forgive me for granting this effort the title of a paper—I should like it to be clearly understood that this is not meant to be propaganda for a government department, but rather a brief discussion of preventive medicine or public health as a specialty of medical practice. More particularly is there in mind that part of preventive medicine which can be made an integral part of every doctor's routine.

No apology is made for the wording of the title. Recollection of lectures in preventive medicine brings back, to me at least and probably to others as well, the thoughts of a tedious triumvirate of public health, history of medicine and psychiatry—the three subjects that as medical students we treated as necessary evils—usually afternoon lectures through the medium of which the sleep lost on previous nights could be regained. Until very recent years, and sometimes not even now, the lecturer in public health could never hope successfully to compete with the demonstrator in clinical surgery, who showed perhaps an obscure abdominal case for diagnosis and operation.

There is, too, something about a medical course that tends to produce individualists, and the trend of medical practice in most places certainly does not conduce to a change in this outlook. Therefore, combined with the lack of interest is the antipathy that some doctors exhibit to anything which seems to them in the smallest way to interfere with what is loosely termed the relationship between the physician and his patient. Any type of official interest along these lines almost always puts the doctor in a mood of belligerent defensiveness, which influences his judgment in a way antagonistic to the development of preventive medicine. It is because of this comparative lack of interest in preventive medicine and, in some cases, the feeling against it, that one feels it to be necessary to plead this cause.

Another reason for doing so at the present time is that the changes that are shortly to occur in our community will probably in many ways end our isolation and bring us in closer touch with the problems of neighbouring countries, and incidentally with the methods that others have successfully utilised to solve their problems. While we are afforded every protection from germ diseases that might be expected to appear, while we are guarded against diseases so far more or less unfamiliar to us, such as poliomyelitis and malaria, we must in return do our part in inhibiting the gonococci of our waterfront, the spirochaete of our secluded corners, as well as our ubiquitous tubercle bacillus. Sudden increases in population must, of necessity, bring new problems in medicine, problems which the practitioner cannot dismiss as being of no concern to him, because even barbed wire and sentries provide no obstacle to bacteria. Bacteria are not the only things to be considered in these changing conditions. It may well be that this country, along health lines as well as in other vital ways, stands on the threshold of a new era. In matters of health the medical profession should not be content, either as a group or as individuals, to stand

*An address delivered before the St. John's Clinical Society, February 13, 1941.

on the sidelines and cheer (or jeer), but should be prepared to put the weight of whatever influence they may yield into the struggle for improved conditions.

The speaker is very well aware that facilities for public health in Newfoundland are not all that is to be desired, and also that some of the most notable advances have been greatly assisted, if not actually effected, by doctors in private practice. Outport medical practitioners have gone to great lengths to assure safe water supplies for their communities; city practitioners have taken an active part in campaigns against tuberculosis. Many doctors include standard health procedures as part of their office routine. What this paper is concerned with is the application of all the principles of public health in such a way that they will become part and parcel of every medical practice.

What can the doctor do about public health? Perhaps it would be better at first to try to answer the question, "What is public health?" Winslow's definition reads as follows—"Public health is the art and science of preventing disease, prolonging life and promoting mental and physical efficiency through organised community effort." This is a tall order, and in its broadest sense this definition includes everything done in the practice of medicine. It is, however, usually taken to have special reference to the preventive side of the picture, and in this respect can be divided, for purposes of clarification and discussion, into five main branches as follows:

1. Sanitation.
2. Control of Communicable Diseases.
3. Public Health Education.
4. Individual Health Protection and Promotion.
5. Research.

These headings cannot, of course, be kept separate and distinct. There is considerable overlapping; the problems of one branch are often equally those of other divisions. The doctor is more concerned with some than with others, but let us spend a few minutes seeing what they all include. What can the doctor do about these things? How can he do them?

1. Sanitation includes water and food supplies, disposal of waste, housing, safety regulations, etc., etc. It will be seen at once that most, if not all, of these sub-headings definitely are included in the duties of officialdom and cannot be successfully attacked by individual practitioners. Every doctor can, however, take a sympathetic interest in the betterment of community conditions and is in an advantageous position to create and influence public interest in these things. If, for example, a doctor has reason to believe that a typhoid patient under his care contracted his disease by eating at some special place, he can at least pass his suspicions along to the health department.

In the second heading "Control of Communicable Disease" we come up against what often proves to be one of the most popular battle grounds for doctors and officialdom. The doctor in private practice looks upon the case of diphtheria primarily as his patient, the public health official thinks also of the possible effects upon other members of the community. Without entering into the disputed section of the field, it is felt that there are certain things that constitute the duty of the practitioner in the field of communicable diseases. They include the routine immunization of his patients and their families at least against smallpox and diphtheria, and, in some cases, typhoid and whooping cough; the reporting to the authorities of cases of communicable disease as they occur in his practice; the protection of other members of the affected household; and assistance in the efforts to trace the source of the disease.

Perhaps it might be worthwhile at this stage briefly to review the present status of immunization against communicable diseases generally, with a word about the local situation with respect to them.

1. Smallpox vaccination is still the most satisfactory of these procedures. Its efficacy is practically one hundred per cent. Few young adults in Newfoundland are being vaccinated nowadays, and it is rare to find a young child with the scar. Intradermal vaccination has been tried, but has not come into general use anywhere.

2. Diphtheria immunization is next in line of effectiveness. It is almost, but not quite, as efficient as in the case of smallpox. Large percentages of school children in Newfoundland have been immunized, but the procedure is not as general as is necessary to wipe out the disease completely. The poorest classes of the community show higher percentages of toxoiding than the other groups. Multiple doses of plain toxoid are still considered to be better than a single dose of alum toxoid.

3. Typhoid—vaccination is considered to be necessary in special groups only. Not as efficient as in the two previous cases.

4. Whooping Cough—recent large scale experiment have given satisfactory results. In the recent local epidemic thirty-eight deaths have occurred so far in the city alone. As far as can be ascertained, no deaths occurred in any child properly protected by vaccine, and cases who had the vaccine even after exposure seemed to do better than others. Still far from perfect, it is felt that in a few years this procedure will be generally recommended.

5. Scarlet Fever—immunization procedures against scarlet fever have, so far, been generally unsatisfactory, although some workers claim excellent results. It is not recommended as a general procedure.

6. Measles—the use of convalescent serum and of placental extract as a protection for babies and sick children or in institutions is now generally recognised as being worthwhile.

Procedures to protect against Tetanus, Cholera and other diseases must also be borne in mind, but time prevents more than the mention of them.

There are two communicable diseases that deserve a little more discussion —Tuberculosis and Syphilis. Is it too much to say that the doctor called to see a case of pulmonary tuberculosis should consider part of his job the examination of contacts? In this connection might I just mention the facility with which child contacts can be examined through the medium of the tuberculin patch test? May we say that the doctor treating a patient with a primary chancre owes it to the community to help in tracing the source? There is a school of thought which contends that any doctor would be better off if he considered cases of tuberculosis and syphilis to be a state responsibility. Considering the costs of adequate treatment in these cases, there is much to be said in support of this position. If, however, the doctor undertakes the care of such cases, he should see them through, or at least see that his patient gets the benefit of whatever facilities that exist for their care, even although these facilities may not be perfect. A doctor who abandons to his fate the untreated or partially treated sufferer from one of these chronic diseases is being fair neither to himself, his patient, his community nor to the health department. As long as all possible is being done for the patient, health authorities are not interested in his identification. If, however, for any reason available treatment is not being used, then it is necessary for this to be disclosed.

These statements are made only after repeated evidence that such cases exist, and because it is felt that neglect is perhaps not too strong a word to apply to such treatment or lack of treatment.

The Public Health Laboratory, providing as it does facilities for diagnosis and in some cases for treatment, should be one of the strongest links between the profession and public health officials. Although concerned with other aspects as well, this service is most closely related to the control of communicable disease. In return for the service thus afforded, it is only expected that the profession will make all possible use of the facilities offered for the greatest benefit to their patients.

Vital Statistics again are concerned with all angles of public health effort, but in Newfoundland, at least, the communicable diseases are most important. In the city, where all deaths must be medically certified, much depends on the care with which the cause of death is assigned. Progress, or lack of progress, in health matters can best be measured in terms of total deaths. As you are aware, the tuberculosis death rate is usually given in terms of deaths per hundred thousand of population. Thus, in a city with an approximate population of forty thousand every death makes a difference of 2.5 in the death rate. Four deaths incorrectly certified as being due to tuberculosis would drive the death rate up by 10 points. Similarly, if a couple of cases of chronic tuberculosis die and the deaths are certified as being due to asthma or to myocarditis, the death rate is five lower than it should have been. Numbers of cases are also useful information, because it is only with these and the number of deaths can we deduce and compare mortality rates in different epidemics, and thus measure progress.

Health education is the next large division of public health. The doctor cannot advertise his wares, but it is a well recognised duty of the health authority to tell the public what can and what cannot be done to prevent disease and to prolong life. In a similar category can be placed the dignified method adopted by such organisations as reputable drug houses and insurance companies. The effort of Parke Davis and the Metropolitan Life are worthy of special mention in this regard. In some places medical organisations themselves sponsor publicity as a group. The main purpose behind all this is to narrow the gap between available scientific knowledge and available methods of prevention and treatment of disease on the one hand, and on the other hand the extent to which such knowledge and methods are availed of by the members of the public. The surgeons among you will readily admit that your knowledge and skill is of little benefit in relieving a cancer patient who has delayed consulting you until his disease is far advanced. Similarly will the internist admit his skill to be of little or no benefit if far advanced tuberculous disease or diabetic gangrene has been allowed to develop before his patient seeks medical advice. To reduce this delay is one of the tasks of health education. While the doctor as an individual cannot take an active part in such efforts, he can at least welcome and not resent it if these efforts are made by somebody else. The methods used include the popular article in the press, or in well known magazines, the radio, pamphlets and posters.

Next comes what is called the protection and promotion of the health of the individual. It will be readily seen that this is very closely linked up with what has been said so far, but here we are facing the problems from a slightly different angle. To protect the individual's health, the group approach has been used. Thus public health includes child welfare or well baby clinics,

school examinations, antenatal clinics, cancer clinics and many others. In some cases these are instituted largely for those who cannot afford medical attention, in others patients of private doctors attend, with no interference of the relationship between that patient and doctor. Thus a baby can be a regular attendant at a clinic for weighing and advice, but still be seen by the family physician in case of illness or where preventive treatment is necessary. That school children are examined as a routine should in no way interfere with the practice of the family physician, except perhaps to increase the calls made to him.

Antenatal supervision is generally admitted to be very necessary. Large sections of the population, even in the city, do now receive such care. Monthly comparisons show definitely that stillbirths and neonatal deaths are higher in other groups than in the indigent. Here is a field for group supervision by medical practitioners, preferably in association with a maternity hospital. Routine blood tests for syphilis in prenatal cases are well worthwhile, when one looks at some of the results obtained from such procedures. During the past three years in one group of antenatal patients positive Kahn tests have varied between seven and ten per cent. In some cases we have known patients who suspected their condition to seek care elsewhere and thus avoid the blood test. Very few medical men are in the happy position that they can say that no expectant mother in their care has a luetic infection.

The last division is headed "Research" and is mentioned only to note that any practitioner's records concerning treatment and its results in reality constitute research. Many of the most noteworthy of medical discoveries have originated in the observations and records of the man doing a general medical practice.

There is one large and extremely controversial field that must be at least mentioned here. It is a problem that has rocked the foundation of medicine in many places—the matter of the adequacy of medical care. It must be admitted that large sections of the population, for example, in St. John's cannot afford to pay for adequate medical care. They can pay for a casual call, but prolonged illness either drives them from doctor to doctor by unpaid bills or leaves them without adequate care. Such people are not destitute in the usual sense, they pay their way in matters of rent, clothing, food. What is to be their programme for medical care? This is certainly a problem that concerns every doctor. In some places it has been solved by officialdom alone, and in some by doctors and officials, in some by group practice and insurance schemes.

And now you will be glad to hear that we approach the end. Modern medicine must not be content with having on the one hand the uniformed patient, on the other the well skilled and qualified doctor. Public health is one of the things that can bring them together, but only if the doctor and the public health worker can occasionally see fit to take a look on the other's side of the fence and be sympathetic towards what he sees.

Preventive medicine is very different from curative medicine, in that the members of the public seek out the latter while the former, the preventive branch, must be sold to them. The public must be told by somebody. The doctor must be prepared to participate in both divisions. Only thus can the best interests of his patients be safeguarded, and it is, after all, these interests that we practise medicine to preserve.

# Hypertrophic Stenosis of the Pylorus

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*Definition.* This disease is also called congenital pyloric hypertrophy. It occurs during the first few weeks of life. It is characterized by marked hypertrophy of the circular muscle of the pylorus which causes obstruction of the outlet of the stomach. This causes forceful and persistent vomiting, and death results from starvation unless adequate treatment is instituted. The disease is of unknown origin.

*History.* This condition was first described in the year 1777. By 1898 twenty cases had been collected. About 1902 the first cases were treated by surgery.

*Aetiology.* The disease is most often found in boys, about 80%. About 60% are first children in a family. In some families there is more than one case. There are many theories to explain the disease but none are altogether satisfactory. Pyloric spasm is probably a factor as also is some degree of neuro-muscular incoordination.

*Pathology.* The outstanding feature is the hypertrophy of the circular muscle of the pylorus. The pylorus becomes a dense hard cylindrical tumour about three-quarters of an inch to one and one half inches long, and about the size of the distal phalanx of an adult little finger. The lumen is so small that it barely admits a probe. The tumour ends abruptly at both ends. The peritoneal coat is tense, while the mucous membrane is in longitudinal folds. On section the circular muscle is white, hard and grates on cutting. The cut surfaces tend to spring apart. The stomach is always secondarily thickened and gastritis is always present. It is greatly distended and may often hold ten ounces. Even the oesophagus may show some dilatation. The duodenum is normal. The vessels of the pylorus are compressed; the larger the tumour, the more avascular it appears.

*Clinical Picture.* The baby begins to vomit. At first this is occasional, but later becomes more often and forceful, and finally it becomes projectile in type. Practically all the food is lost. Bile is never present in the vomitus. The child begins to lose weight and, if prompt treatment is not instituted, becomes emaciated. Constipation is a constant feature. Rarely diarrhoea occurs and is regarded as a serious complication. The child has a worried and drawn expression but does not appear to suffer severe pain. Visible peristalsis is an important sign. It is best seen after feeding and appears like a ball rolling across the upper abdomen from left to right. Sometimes a peristaltic wave can be started by a sharp tap, or the application of a cold object to the abdominal wall. Care must be taken not to mistake irregular contractions of the abdominal muscles for a peristaltic wave. The most important sign is the palpation of the pyloric tumour. This usually feels like a hard moveable nodule about the size of a large marble, to the right and above the umbilicus.

*Prognosis.* Untreated cases almost always result in death. The disease is progressive, and death results from starvation, alkalosis and ketosis.

*Diagnosis.* When projectile vomiting occurs in a young baby, visible peristalsis is detected, and a pyloric tumour can be felt there is no difficulty in diagnosis. An X-ray investigation following a barium meal can be used in doubtful cases and gives an absolute diagnosis. It should be used however with great caution because it throws an added burden on an infant in no condition to stand it. Pyloric spasm often simulates pyloric stenosis but the vomiting is not projectile and yields to treatment with antispasmodic drugs.

*Treatment.* Routine medical treatment with its diversity of special formulae and drugs yielded a mortality rate of about 80% and even at this some of the apparent cures were not proven cases. It is doubtful if any case in which the pyloric tumour could be felt, was ever cured by medical treatment. Surgical operation by Rammstedt's method is the standard treatment and since this came to be universally used, the mortality rate has fallen below 8%. All cases should have gastric lavage before operation. Loss of body fluids can be overcome by means of 5% glucose solution given by rectal, subcutaneous, or intravenous means. After operation warmth, fluids, and protection from every possible source of infection is imperative.

*Rammstedt's Operation.* Most operators prefer to use novocaine or gas-oxygen anaesthesia. The abdomen is opened in the midline above the umbilicus. The pylorus is delivered. The peritoneal and muscular coats are divided in a line corresponding to the lesser curvature of the stomach. The deeper part of the circular muscle is separated by blunt dissection until the mucous membrane bulges into the gap. Sutures or ligatures are rarely required. The abdominal wall is closed in the usual layers.

## CASES

The following are two cases which I believe are of interest. They are the only two children in the family so far. One is a girl and the other a boy. Both had typical Rammstedt operations under open ether, and made uneventful recoveries.

**Case 1.** Baby girl born on June 11, 1940—normal labour. Child weighed six pounds, twelve and half ounces at birth, and weighed six pounds fourteen ounces when discharged from hospital nine days later. At this time she was nursing well on the breast. After being home for two to three days she began to vomit. This became gradually worse and she was readmitted to the hospital when twenty-three days old. She then weighed five pounds thirteen and one-half ounces. Visible peristalsis was present but no mass could be felt. A typical Rammstedt's operation was done, a marked pyloric tumour being present. Her weight dropped a little following the operation, the lowest point reached being five pounds eleven and one-half ounces on the third day. From then on she gradually increased in weight and had no upsets of any kind.

**Case 2.** Baby born on June 21, 1941. Mother now aged 22. Normal labour. Child weighed seven pounds and one-half ounces at birth. It nursed poorly from the start and after five days was taken from the breast and put on a formula of evaporated milk. It vomited after every feeding. Baby was left in hospital when mother was discharged. When the baby was thirteen

days old, the weight had fallen to six pounds two ounces. Visible peristalsis was present and the pyloric mass could be felt. Rammstedt's operation was done. The weight fell a little reaching its lowest point, five pounds two ounces, six days following the operation. From then on the weight gradually increased and the convalescence was uneventful.

At the present time, August, 1942, both children are in excellent health and in every respect normal for their age. They have had no illnesses or gastro-intestinal irregularities.

# Preparing the Doctor for the Services

AN article entitled "Doctor, and Soldier Too" by T. P. Buist, M.A., B.Sc.,M.B.,Ch.B., Lieut. Colonel, R.A.M.C., Chief Instructor, No. 1 Depot, R.A.M.C., in the August 22, 1942 edition of the *British Medical Journal* is worthy of perusal by all doctors either in the R.C.A.M.C., or who are about to come in. In this article, Lieut. Colonel Buist discusses particularly the function of the Army Medical Officer in the Royal Army Medical Corps. With reference to the Royal Canadian Army Medical Corps, many of the points raised by this R.A.M.C. officer are analogous to ours. Let us take the case of an officer who has entered the R.C.A.M.C. as a specialist or graded specialist:

It is understandable that, knowing nothing of the Army, he may tend to assume that his work will be much the same as it was in civil life and that knowledge of such things as map-reading, medical boards, organization, military law, soldiers' affairs, and so on will not concern him. He may be sent to work in a C.C.S. or a military hospital and spend most of his time in his specialty. But it is unlikely that this will occupy him fully all day or every day, and in a military hospital there are many other duties in which he will be expected to bear his share when he is free. Not a few of them will require military as well as medical knowledge. He may, on the other hand, be sent to join a mobile surgical unit as its anaesthetist, perhaps to replace another who has become a casualty. He may find himself reporting for this duty somewhere in the desert, informed that his unit is at "Point X", 30 miles away, given a truck and a driver, and expected to carry on, perhaps in the dark. If he does not know how to find his way about, he is likely to get lost;he may cause his driver and possibly others to lose their lives; and the mobile surgical unit may continue to be short of an anaesthetist. Even the specialist must be a fitted piece in the military machine. If not, he may be a potential spanner in the works.

## The Preliminary Course for R.C.A.M.C. Officers

Doctors share with chaplains a privilege which is at the same time a disadvantage, in that they normally enter the Army as commissioned officers without any previous service or experience in the ranks. All other officers are now commissioned only after a period of service in the ranks followed by a training in an Officers' Training Centre. An untrained newly commissioned medical officer cannot avoid feeling a notable greenhorn in any congregation of officers. The additional training he receives, should make him much more valuable to the Service, even in his own specialty.

The preliminary course of instruction for R.C.A.M.C. officers is designed to reduce the acuteness of this disadvantage. It comprises five weeks' training in the Training Centre of the R.C.A.M.C., followed further by the training to be established at the Army School of Hygiene. A description of the course will be published shortly in this section and may be accepted as typical. During the course the metamorphosis is performed under expert and sympathetic guidance. The domestic change, shared with others at the same stage, becomes less drastic: the change of sphere, with new understanding, comes naturally;

the change of horizon begins to develop. The officer emerges from the metamorphosis a fledgeling perhaps but not a self-conscious greenhorn, with a growing instinct of how to find his way about in his new work, with an increasing tactical sense, and feeling and looking fitter physically than he has done for years.

It has been argued repeatedly that it is possible for a doctor to turn himself into a competent Army medical officer without attending a preliminary course of instruction; that, in fact, many have done so; and that such a course is a waste of valuable professional time. An analogous argument can be advanced that it is theoretically possible for a suitably gifted individual to become a competent doctor without attending a medical school. The medicine we practise to-day began with the work of such men. In both cases the process is hard on the aspirant and unfair to the patients. The path is long and rough and inevitably strewn with unnecessary casualties. That this is so in the case of the Army medical officer, those who have had to start work without a preliminary course are usually the most ready to admit.

Finally, let it be said that the preliminary course is not a creaming course. Its aims are: to define the objects and principles of the medical care and management of soldiers; organization with close-ups of various aspects of a medical officer's life and work; to teach the new medical officer how to start to find the answer to "What does A do now?" in various circumstances. It is in essence a reconnaissance; and to quote a well-known military axiom, "time spent in reconnaissance is seldom wasted."

### Enlistment of Medical Students

In a recent issue of the C. M. A. Journal, reference was made to the accelerated course in our nine medical schools. This was done following a meeting between the Deans of the Medical Faculties and the Adjutant-General, early in July, 1942. Canadian Army Routine Order 2391 explains in detail the regulations covering enlistment of medical students:

### Adjutant-General's Branch

2391—Enlistment of Medical Students (September 26, 1942)

1. Students attending Canadian Medical Schools may be enlisted into the Canadian Army (Active) at any time during the last academic session or sessions at university prior to interneship and during the period of interneship whether graduate or undergraduate in character. The period of interneship is not to exceed eight months and is to be included in the total period of enlistment which in any event is not to exceed twenty-four months. During this period students so enlisted will be granted Leave, with pay and subsistence allowance, to enable them to complete their course, obtain a license to practise and become eligible for appointment as medical officers in the armed forces of Canada.

2. The following regulations and instructions will govern the enlistment of the students attending medical schools at Canadian Universities:—

(a) Enlistment:

(i) Provided students are physically fit (categories A, B or C) in accordance with the required medical standards and have been accepted by the District Medical Officer, they may be enlisted in the Canadian Army (Active) as privates at any time during the last academic session

or sessions at university prior to interneship and during period of interneship whether graduate or undergraduate in character.

(ii) As medical officers are required for the Navy, Army and Air Force the medical students, upon enlistment, will be afforded the opportunity to express their preference for the service to which they prefer to be appointed after obtaining a license to practise. No assurance can be given that appointment to the Service selected will be possible. The preference is to be expressed in the following pro forma which will be affixed to the M.F.M. 2:—

"Providing a vacancy exists I prefer to be appointed to:—

| | |
|---|---|
| The Royal Canadian Navy<br>The Canadian Army (Active)<br>The Royal Canadian Air Force | upon becoming licentiate of Medical Council of Canada or receiving a license to practise the profession of medicine in one of the Provinces of Canada. |

.....

Regtl. No. Name"

(iii) The D.M.O.'s should ascertain from Deans of Medicine the names of students volunteering for enlistment who are not considered likely to pass final examinations. Such students should not be enlisted.

(b) SERVICE:

(i) Students in Medicine will be enlisted into the R.C.A.M.C. or C.W.A.C. (as applicable) placed on strength of a District Depot or C.W.A.C. Coy., for all purposes, and granted Leave of Absence with pay and subsistence allowance, except as provided in sub-para. (c) (i) below.

(ii) The total period of enlistment during which Leave of Absence with pay and allowance will be granted is not to exceed 24 months.

(iii) It will be the responsibility of District Medical Officers to maintain close liaison with the faculties of medicine of universities within their respective Districts. They will familiarize themselves with the professional and scholastic qualifications and exercise general supervision in so far as Army matters are concerned, in regard to all students enlisted under these regulations.

(iv) D.M.O.'s will maintain a nominal roll of students enlisted and attending universities within their Districts and submit periodical confidential reports as directed by the D.G.M.S.

(v) During such time as the medical school is not in session students shall be liable to do duty with their unit, or be detailed for such military or professional duty as may be directed by the D.M.O.

(c) PAY AND ALLOWANCE:

(i) All students duly enlisted will receive pay of Private plus subsistence allowance at the authorized rate with the following exception:

Medical students serving their interneship in a hospital from which they receive free board and lodging will not receive subsistence allowance.

(ii) Dependents' allowance will not be paid to students enlisted under this scheme.

(d) Dress:

Students will wear uniform at all times except when in performance of duties connected with their studies, such as hospital interne duty, for which other dress is necessary, or as provided in dress regulations.

It will be seen by this Routine Order that students of the third, fourth and fifth sessions in the medical schools in Canada, where the interneship is done in the final session, will now be eligible for enlistment in the Army if they pass the physical examination test and are acceptable by the Dean and the District Medical Officer concerned. This applies, likewise, to female medical students. In the medical schools where the interneship session follows their graduation, then these students will be accepted for their two final sessions, plus their eight months' interneship session. This interneship session is not to exceed eight months, and is to be included in the total period of enlistment which, in any event, is not to exceed twenty-four months.

## War Medicine

The R.C.A.M.C. needs doctors, needs them immediately. There is a definite emergency, and this can best be filled by the enlistment of keen, young physicians who have completed their interneship and who are anxious to take their place in the Medical Service at once. Fifteen per cent of the total number of physicians in Canada at the present time can be spared for military service, and still provide 65% of the total number of physicians registered in Canada to carry on civilian medical practices.

A sincere effort is already being made by the R.C.A.M.C. to place men in the same type of work for which they received training in their civilian medical practice. The papers of every medical officer appointed are carefully examined by the Directorate of Personnel, N.D.H.Q., Ottawa. Those individuals who have had special training in any field of medicine can best serve their country doing their own special line of work. It is intended to put the round pegs into round holes; the R.C.A.M.C. does not wish to have general surgeons doing radiology, nor trained internists carrying on indefinitely as Unit Medical Officers. Therefore, if you are a qualified specialist, you can be assured that every effort will be made to continue you in an assignment in keeping with your qualifications and experience. This will keep the level of military medicine on a high plane, and at the same time further the education of the individual concerned and increase the standards of medical care for the soldiers in the front lines.

It is proposed to see that young graduates in medicine are not allowed to go to seed. They are to receive refresher courses, and after a proper term of service in Units, to be posted to hospitals where they can participate in direct clinical work under the supervision of well-trained internists, surgeons, radiologists and pathologists.

But we must have young men now! They are needed for Overseas service, and with this call from the Nation for action we feel that the young doctors in Canada will gladly respond to the call and enlist immediately. Our Army is a young Army; it needs young doctors; doctors of troop age, forty-five years or younger; men who can work in the field hospitals, mobile hospitals, ambulances, medical units and other medical installations. Older doctors can

fill the establishments of our home war establishments, while still older doctors with the assistance of men whose medical category makes them fit for practice, but unfit for medical service, will carry on the civilian work and see that civilian institutions and practices are maintained to function efficiently.

Young doctors will never regret their service in the Army. In this age they need the Army to round out their experience; while, on the other hand, the Army badly needs them.

# Society Meetings

## COLCHESTER-EAST HANTS MEDICAL SOCIETY

The fall meeting of the Colchester-East Hants Medical Society was held in the Scotia Hotel at Truro, with the President, Dr. H. B. Havey, of Stewiacke, in the chair.

Those present were Doctors J. B. Reid, F. D. Charman, E. M. Curtis, H. R. Peel, P. R. Little, W. J. MacDonald, R. E. Pugh, R. F. Ross, H. R. MacKean, D. F. MacInnis, D. S. McCurdy, S. G. MacKenzie.

Dr. R. A. MacLellan of Rawdon expressed his inability to be present: "I'm afraid that time, which, according to the poet 'Takes in trust our youth, our hopes, and all we have, and pays us but with age and dust,' has been playing its tricks on me too, and the roads look somewhat longer and the nights darker than they did 15 years ago."

This attendance shows that 100% of the Truro doctors were present, and four out of seven from the County. In addition, Col. MacKim, Head of Surgery, at Debert Military Hospital, Capt. Ross of Debert, Dr. H. B. Atlee, and Dr. H. G. Grant of Halifax were special guests.

After serving dinner, the meeting proceeded with the regular business and program.

Dr. H. G. Grant spoke briefly of Health Insurance, a bill for which will be introduced by the Government this fall, and although the medical men will not know the detail of this bill before that date, yet ample opportunity will be given at a later time for discussion before it becomes effective.

In Nova Scotia we have some 410 practising physicians, and of these 300 are members of the Nova Scotia Branch of the C.M.A. as well as the C.M.A. itself.

In reviewing the Colchester-East Hants Medical Society we find that 12 out of 16 are members, and it seems that by a little effort these four may also become members, which will make 100% membership, as it should be.

A criticism of our efforts before a Government is that our Society is not 100% strong. Through the Dominion, many physicians are not members, but since our annual meeting of the N. S. Branch at Sydney last summer, the thought has been growing that if we could formulate a plan such as Alberta has, where every physician to practise must be a member of the College of Physicians and Surgeons, then our executive would truly speak for the profession.

A resolution was therefore passed "That this meeting recommend that an annual fee be collected from every practitioner in Nova Scotia by the Provincial Medical Board, which fee will include Provincial Medical Board, N. S. Division of the C.M.A. and the C.M.A. membership."

Through Dr. J. V. Graham, Chairman of the Dalhousie Refresher Course, a scientific program had been arranged, and Dr. H. B. Atlee gave a practical and much appreciated talk on accipito posterior positions, accompanied by screen slides. Following this, he spoke on "Hormones"—Estrogenic, Corpus Luteal and Gonatropic, giving his experience in their uses in many cases, but in the final analysis, they have quite a limited sphere of usefulness.

The Colchester-East Hants Medical Society expressed its appreciation of the fine arrangements, and co-operation of the Refresher Course Committee of Dalhousie, and to the guests of the evening, Dr. H. B. Atlee, and Dean Grant, of Dalhousie Medical School.

D. S. McCurdy
Secretary
Colchester-East Hants Medical Society

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## PHYSICIAN WANTED

**There is a physician urgently needed at Advocate. Further information may be secured from the Rev. Harold K. Wright, The Parsonage, Advocate, N. S.**

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### EXIGENCY OF WAR

Oleum Percomorphum 50% is now known as Oleum Percomorphum 50% with Viosterol. The potency remains the same; namely, 60,000 vitamin A units and 8,500 vitamin D units per gram. It consists of the liver oils of percomorph fishes, viosterol, and fish liver oils, a source of vitamins A and D in which not less than 50% of the vitamin content is derived from the liver oils of percomorph fishes (principally Xiphias gladius, Pneumatophorus diego, Thunnus thynnus, Stereolepis gigas, and closely allied species).—Mead Johnson & Co., Evansville, Ind., U. S. A.

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Abbreviations used:—Ab. for abstract; anon. for anonymous; biog. for biographical note; C. for correspondence; C.R. for case report; diagr. for diagrams; Ed. for editorial; illus. for illustration; Pers. for personal item; port. for portrait.


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# Personal Interest Notes

THE marriage took place in Halifax on December 12th of Miss Lucy Claire Nickerson, daughter of Mr. and Mrs. A. W. Nickerson of Halifax and Dr. Stephen Borden Bird, son of Rev. and Mrs. H. S. Bird of Saint John, and formerly of Brooklyn, Queens County, and Mulgrave, N. S. Dr. Bird graduated from the Dalhousie Medical School in 1940, and for a time practised in Liverpool, and is now stationed at Halifax with the Royal Canadian Army Medical Corps.

Dr. Arthur S. Burns, who formerly practised in Kentville, has returned to Kentville to re-open his practice with an office in the same residence he formerly occupied.

The BULLETIN extends congratulations to Dr. and Mrs. J. R. McCleave of Digby on the birth of a daughter, Judith Kathleen, on November 28th, and to Dr. and Mrs. E. A. Brasset of Little Brook on the birth of a daughter.

Twenty-eight young women and three men received diplomas at graduating exercises of the School of Nursing, Victoria General Hospital, Halifax,on December first.

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## OBITUARY

DR. FREEMAN SIMEON MESSENGER of Middleton, died after a lengthy illness at his home on November 24th. A son of the late Alfred Messenger and his wife, Susan Daniels, Dr. Messenger was born in Tupperville on December 9, 1866. He was educated at Horton Academy and Acadia University, and received his degree in medicine from the University of New York in 1893, and was married the same year to Miss Minnie E. Borden of Canard. He went to Petite Riviere in 1903, taking over the practice of Dr. George E. Drew, who moved to Westminster, and remained there until 1911 when he moved to Middleton. He was keenly interested in local affairs and served two terms in 1930 and 1931 as Mayor of Middleton, and was long a member of the Town Council. He was Coroner of Annapolis County and was a member of the Provincial Medical Board. He was for some time president of the Liberal Association of Annapolis County, a member of the United Baptist Church, and a Commissioner of the Soldiers' Memorial Hospital.

Surviving are his widow and two sons, Charles of the American Institute of Finance, Boston, and Dr. Carl F. Messenger, who succeeded to his father's practice and is the present Mayor of Middleton. A brother, Edward, resides in Bridgetown.

The death occurred on December 2nd at New Germany of Dr. William Hallett Cole after an illness of about seven weeks, five of which were spent at the Victoria General Hospital, Halifax. Dr. Cole was born at Mill Village, Queens County, on September 10, 1855, and was a son of the late Major Caleb Cole and Catherine Parker Cole. He attended the University of New York, 1881-2, and graduated from the Bowdoin College, Maine, in 1883, and took a post-graduate course in New York in 1894. Previous to going to New Germany he practised at Caledonia, Boston, Calgary and Springfield, Annapolis County. His wife, the former Louise A. Mack, and three daughters and three sons, all predeceased him. Dr. Cole was an honorary member of the Medical Society of Nova Scotia, a member of the Baptist Church and a P.D.D.G.M. of the Royal Arch Masonic Lodge.