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CANADIAN MEDICAL ASSOCIATION NOVA SCOTIA DIVISION.

DECEMBER 1943

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The Treatment of Benign Uterine Bleeding*

H. J. STANDER, M.D.

(From the Department of Obstetrics and Gynaecology, Cornell University Medical College and the New York Hospital)

MENORRHAGIA and metrorrhagia are among the most common complaints encountered by the gynaecologist as well as by the general practitioner. In the gynaecological service of the Woman's Clinic of the New York Hospital over 40 per cent of 10,994 patients admitted during the past ten years had a history of abnormal vaginal bleeding and of these one-half, or 2,150 women, were hospitalized because of the chief complaint of menorrhagia or metrorrhagia.

Before considering the treatment of benign uterine bleeding, it is advisable that we briefly review the causes of abnormal vaginal bleeding. Among these are, of course, myomata, carcinoma of the uterus, both cervical and fundal, polypi, vaginal and cervical erosions, ovarian tumors, ectopic pregnancy, abortion and certain complications of pregnancy, such as placenta previa and premature separation of the placenta.

Abnormal vaginal bleeding may occur from early childhood, through puberty, at any time throughout the childbearing period, at the menopause and thereafter. No age group is immune. Withdrawal of the mother's estrogen may cause bleeding in the baby girl shortly after birth. During the early years of life tumors of the ovary, adrenal, pituitary or pineal can be responsible for uterine bleeding. During the last ten years we have encountered ovarian tumors in several young girls ranging in age from 4 to 8 years. The outstanding finding in each case was abnormal vaginal bleeding or precocious menstruation. We speak of precocious menstruation usually when the menses appear before the age of 9 years. Granulosa cell carcinoma of the ovary is one of the causes of precocious puberty. This is one of the feminizing tumors of the ovary, resulting in estrogen production. The precocious menstruation resulting from this tumor is accompanied by axillary and genital hair growth, mammary development and a maturing of the body as indicated by a change from its angular to its more rounded outline. It is well to bear in mind, however, that other tumors or lesions may cause precocious puberty, such as tumors of the adrenal cortex and of the mid brain, usually in the hypothalamic area. With lesions of the adrenal cortex there is invariably great increase in body growth, obesity and heterosexual manifestations. The teratomas of the pineal gland reported in the literature were almost wholly confined to males. Lastly, there is a group of precocious puberty cases in which one finds no demonstrable cause. Some of these patients have been followed for many years.

During the period of sex development, that is, in the second decade of life, we encounter endocrine imbalance as the chief cause of menorrhagia. Inflammatory lesions and benign ovarian tumors come next in order of frequency, while malignancy and myomata are very rare. It is in this age group that abnormal vaginal bleeding is so often due to a functional disturbance, which has resulted in the use of the term "functional uterine bleeding," which will be discussed later in this paper.

*Read at Dalhousie Refresher Course, Halifax, N. S., October 12, 1943.

In the third and fourth decades of life, the childbearing period of from twenty to about forty years of age, abnormal bleeding may be due to a variety of causes, such as pregnancy, myomata and polypi, benign tumors of the ovary and malignancy of any part of the genital tract. Here also, as in the second decade of life, we encounter endocrine dysfunction. Menopausal bleeding is a common finding in the fourth decade and may occur as late as in the fifties.

It is in the fifth and sixth decades of life that malignancy of the genital tract takes predominance over other causes of bleeding. Carcinoma of the cervix has a special preference for the fifth and carcinoma of the fundus for the sixth decade.

In a recent study, published this year, of our patients suffering from benign uterine bleeding, Stander, Javert and Kuder analyzed a series of 3,468 cases and it is from this paper that most of the following statements are taken.

In every patient complaining of abnormal vaginal bleeding, a thorough search for the cause must precede any and every attempt at treatment. During recent years, with the development and growth of "endocrine clinics" in almost all departments and specialties of medicine, it has become very evident that this important prerequisite of thorough examination, including pelvic examination by a competent gynaecologist, including wherever indicated vaginal smears, biopsy or curettage, is not followed. How often these days do we not see women who had had all types of indiscriminate "endocrine therapy," without a correct diagnosis of the cause of the bleeding?

In order to establish a correct diagnosis we must obtain a careful history of the character and amount of bleeding; to be followed by a thorough pelvic examination, under anaesthesia if necessary; inspection of the cervix uteri, with biopsy if in the least suspicious; vaginal smears and examination of the endometrium, by either biopsy or curettage. By such means, cervical and uterine polypi, chronic cervicitis and endometritis, myoma uteri, hyperplasia of the endometrium, salpingitis, cysts and tumors of the ovary and malignancy of the cervix and corpus may be diagnosed if present. The treatment of each of these, with the possible exception of endometrial hyperplasia, is specific, although unfortunately not always curative.

The employment of the vaginal smear method is now a routine procedure in our clinic, being used in dispensary patients whenever indicated and in all patients scheduled for operation. The technique followed is that described by Papanicolaou and Traut, who for several years studied a group of our patients in order to determine the value of the vaginal smear as an aid in the early diagnosis of genital tract carcinoma. This particular phase of their work has been concluded with the publication by The Commonwealth Fund of their recent monograph on the subject.

In our recent study, in only three-quarters of our gynaecological patients with abnormal vaginal bleeding was a definite diagnosis established, while in the remaining one-quarter, or 865 women, we were unable to determine the aetiology of the bleeding. Of the known causes, myoma uteri accounted for the haemorrhage in 854 women, or 24.6 per cent of the total series, while hyperplasia of the endometrium ranked next in order of frequency, being responsible for 15.3 per cent of the cases.

Causes of Vaginal Bleeding in Gynaecologic Patients

	Number	Per Cent
Undetermined.....	856	24.9
Myoma uteri.....	854	24.6
Hyperplasia endometrium.....	534	15.3
Polyp, endometrial.....	344	9.9
Cervicitis and erosion.....	221	6.4
Polyp, cervical.....	210	6.0
Irregular shedding.....	135	3.8
Adenomyoma.....	102	2.9
Carcinoma cervix.....	75	2.2
Carcinoma uterus.....	72	2.0
Endometritis.....	52	1.6
Sarcoma uterus.....	4	0.11
Total.....	3,468	99.6

Total number of patients.....8,216

Patients with bleeding.....3,468 or 42.2 per cent

The term "functional bleeding" has been used with different interpretations. I believe it should be limited to those patients in whom no organic lesions, such as malignancy, myomata, polypi or inflammation, are present. If used thus, "functional bleeding" would include the groups "cause undetermined," "hyperplasia" and "irregular shedding," and thus account for 44 per cent of all our patients with abnormal vaginal bleeding. It may be that as we gain more information about hyperplasia of the endometrium, we should further limit the use of this term, and confine it to the group of "causes unknown." In only slightly over one-third of our patients with functional bleeding, was hyperplasia of the endometrium found at operation, while irregular shedding of the endometrium accounted for less than 10 per cent. The diagnosis, therefore, was undetermined in over half of these patients.

The treatment of the gross pathological causes for bleeding, such as myomata, infection and carcinoma, will not be discussed. It must be emphasized, however, that no treatment of abnormal vaginal bleeding should be undertaken unless and until a thorough investigation of the patient has been made, benign as well as malignant tumors ruled in or out, and a diagnosis, if possible, established.

If the menorrhagia, metrorrhagia or polymenorrhoea is disclosed by the history and physical examination, vaginal smears and endometrial biopsy may reveal a hyperestrin condition. Granting that organic causes are not present, dilatation and curettage will often effect a cure. It is, of course, essential that any thyroid deficiency, as shown by the basal metabolic rate, be corrected. This applies likewise to the body weight and anaemia. Should dilatation and curettage, often repeated once or twice, prove of no avail, endocrine therapy may be tried. Our treatment of these patients is seldom radical.

In 94.1 per cent of the patients with hyperplastic endometrium, the operative treatment was minor, i.e., a dilatation and curettage. In only 5.9 per cent of these patients was a major operation performed, and in most of these the hyperplasia was a secondary finding. This likewise is true for the patients who showed irregular shedding of the endometrium. In the majority (66.6 per cent) of our gynaecological patients with abnormal bleeding, dilatation

and curettage alone, was performed. Furthermore, a striking comparison was noted between the organic and "functional" bleeding cases, minor operative procedures being performed in about half of the former and in 80 per cent of the latter.

Not infrequently, no gynaecologic pathology can be found to explain the bleeding. This occurred in about 25 per cent of our patients. It must be borne in mind that hypertension may be an accessory factor in abnormal uterine bleeding. It seemed to us desirable to investigate other known causes of bleeding elsewhere in the human body, i.e., skin purpura and bleeding gums. The reason for this is represented by a small group of 20 patients with uterine bleeding, ranging from 15 to 47 years of age. These patients were investigated from the standpoint of deficiency in vitamins C and K. There is no doubt as to the relationship of these vitamins to the bleeding and clotting mechanism. Vitamin C and prothrombin determinations were performed on the 20 patients; the average value for vitamin C was 0.43 mgs., and the range varied from .00 to 1.1 mgs., with 70 per cent of the patients below the normal range of 0.5 to 1.2 mgs. The few cases with normal values invariably had a low prothrombin concentration.

The role of vitamin K in maintaining a satisfactory prothrombin concentration is well established. It is possible that the onset of bleeding precipitated by a normal menstrual cycle might be prolonged if an adequate amount of prothrombin or vitamin C are not available.

The use of vitamins C and K was limited to the 20 patients referred to above. Cevitamic acid, 100 mgs. daily orally, and 100 cc. of orange juice were given until the vitamin C level in the blood was normal. Vitamin K was given hypodermically until a satisfactory prothrombin concentration was obtained, to be followed by oral administration of K. Of eight cases treated with vitamins C and K following curettage, six were definitely improved, as shown by follow-up for 3 to 15 months. The beneficial value of the curettage alone is, of course, to be borne in mind. Since the publication of the paper by Stander, Javert and Kuder, from which the above statements are taken, we have accumulated more evidence to substantiate the importance of maintaining adequate vitamins C and K intake in patients suffering from functional uterine bleeding and in whom there is no demonstrable cause, such as hyperplasia of the endometrium.

It would, then, appear that an accurate and complete history, including dietary habits, is of great importance. Likewise, pelvic examination is imperative in addition to the general physical examination.

It has been our policy to admit patients with abnormal vaginal bleeding to the hospital for a diagnostic curettage regardless of age or underlying gynaecologic pathology before instituting medical treatment. Occasionally a patient with an obvious tumor is subjected to laparotomy without the preliminary curettage.

Many patients come to us after having had unsuccessful treatment with endocrines or X-ray irradiation, and without having had a preliminary curettage. Of these, many had a malignancy. Such practice cannot be condemned too strongly.

In 1938 we studied 495 patients with functional bleeding. We have completed a follow-up study on these patients, and the results with the various types of treatment form the basis for our conclusions. Each of these patients

had an initial curettage, primarily, of course, as part of the diagnostic procedures. Thereafter, a certain number (15.9 per cent) passed through an uneventful menopause; 8.9 per cent had subsequent pregnancy which was undoubtedly of assistance in effecting a "cure;" endocrine therapy was given to 4.4 per cent; and 13.5 per cent (over 40 years of age) had radical treatment. The radical treatment consisted of intracavitary radium, or hysterectomy or X-rays.

In the follow-up results in 372 of the 495 patients, we found that curettage alone gave a "cure" rate of 71 per cent. The number of patients treated with hormones is too small to permit of any definite conclusion. The small percentage of our patients treated with endocrines is to be explained on the basis of the unsatisfactory results we obtained during the early years of the period studied, 1932 to 1938. In those days we relied primarily upon antuitrin-S and pregnancy urine extracts. It is only fair, therefore, to state that as the newer preparations (progesterone, stilbestrol, etc.) have appeared, an increasing number of patients with functional bleeding have received endocrine therapy. Since then, a sufficient period of time has not elapsed for a final evaluation of our end-results in endocrine treatment.

Hysterectomy is, indeed, radical treatment for abnormal vaginal bleeding of the functional type. It is necessary to stress the dangers as well as the sequelae of such radical treatment, especially in the woman in her second or third decade of life.

Summary of Treatment in "Functional" Bleeding

Curettage. In the treatment of functional bleeding the first step is curettage. This is essential to the diagnosis of the condition and is often followed by improvement. In 495 cases of functional bleeding, we found that curettage alone resulted in cure or definite improvement in 71 per cent. The other methods of treatment involve the use of thyroid, snake venom, hormone and vitamin administration, radiation and hysterectomy.

Thyroid. A low basal rate is at times associated with uterine bleeding, due to the close interrelationship of the various endocrine glands, pituitary, thyroid, adrenals and ovaries. It is, therefore, evident that any hypofunction of the thyroid gland should be corrected. However, these cases of hypothyroidism with menorrhagia occur very infrequently.

Vitamins. We believe that a deficiency in vitamins C and K may play a role in the production of excessive uterine bleeding in certain patients in whom there are no other causes of bleeding. It is advisable that where endocrine therapy is of no avail, the blood levels of vitamin C and prothrombin be determined. Should a definite deficiency be present, an adequate supply of C and K, in the form of cevitamic acid (100 mgs. daily), orange juice and synthetic K (from 5 to 50 mg. orally or intramuscularly) be administered to the patient.

Snake Venom. Snake venom acts upon the walls of the arterioles, decreasing or controlling bleeding in certain cases. Moccasin venom in 1:3000 dilution is given subcutaneously in daily doses starting with 1/2 cc. and increasing slowly to 1 cc. We have had many failures with this method, but still use it in a few cases where other therapy has failed.

Radiation. I believe that X-ray treatment should be used only in women beyond the childbearing period, and in whom other forms of therapy are of no avail. It is not our practice to attempt to regulate menstruation in girls or young women by radiation, because of the uncertainty of the relationship between dosage and result. Where we have used radiation, it has been confined to those past the childbearing period and in dosage sufficient to cause cessation of ovarian function, usually 1500 mg. hours of intracavitary radium. If X-ray radiation is used for the production of permanent amenorrhoea, the dosage is usually about 400 R through two portals, one suprapubic and one sacral. We do not use radiation of the pituitary for the control of functional bleeding.

Endocrine Therapy. There is evidence to support the conclusion that a hypersterin condition or a deficiency of progesterone is associated with certain cases of functional bleeding, and thus there exists a rational basis for endocrine therapy in this condition.

This type of therapy may be briefly grouped as follows:

1. Anterior pituitary extract.
2. Chorionic gonadotropic hormones obtained from pregnancy urine and pregnant mares' serum.
3. Sex hormones, the estrogens and progesterone.
4. Androgens.

Experience with anterior pituitary extracts is too limited to allow any concrete statement at the present time. A few authors, including Severinghaus, Mayer and others, have reported short series of cases with encouraging results. Our own experience has been disappointing and at present we are not using these extracts.

In our hands, the chorionic A. P. L. hormones of pregnancy urine have not given very satisfactory results in the treatment of functional uterine bleeding. After Novak and Hurd recommended the use of these pregnancy urine hormones we employed this form of therapy over a period of five years, but in many instances our experience was disappointing. However, there are some patients who respond to this treatment, which, according to Novak, should consist of daily injections of 200 to 500 units with the onset of bleeding. These daily injections should be continued until the bleeding ceases or up to 6 or 8 doses. Experience with pregnant mares' serum is still too limited to permit definite conclusions, although the results reported do not sound very encouraging.

The best results with endocrine therapy appear to have been obtained with the female sex hormones, estrogen and progesterone. The natural estrogens (estrone, estriadol, estriol) and also the synthetic drug stilbestrol, and the corpus luteum hormone progesterone, have been used in combinations by some, while others rely mainly on the latter. Estrogens, or stilbestrol alone, likewise have been employed, as we feel, misguidedly.

The combined or cyclic therapy consists of a course of estrogens followed by progesterone. The procedure, in general, is to start 6 or 7 days after the cessation of bleeding with 10,000 to 20,000 I.U. of estrogen daily for a period of two weeks, after which progesterone (5 I.U.) is given daily for one week, or until bleeding occurs. This type of treatment, supportive in character,

tends to bring about normal menstrual cycles and so may control the excessive bleeding.

Several reports have appeared on the use of stilbestrol in the control of functional bleeding. Palmer advises 1 mg. diethylstilbestrol daily for 7 days, then 5 mg. daily for 7 days, and then smaller amounts (0.3 mg.) daily for 10 days, or until bleeding starts. Some authors prefer larger doses of this drug given over longer periods. We have had many patients admitted to our hospital with the complaint of profuse menorrhagia and a history of virtually continuous stilbestrol therapy and are as yet not convinced that this type of treatment is always without danger. We have relied more on progesterone treatment in these cases of estrogenic (anovulatory) bleeding. It is our practice to give 5 mg. of progestin daily for several days before the expected period.

During the past few years several reports, dealing with the male hormones, have appeared in the literature. The androgenic hormones undoubtedly exert an inhibitory effect on the growing follicle and so interfere with estrogen production and proliferation of the endometrium. They perhaps also augment the action of progesterone. As a result of these experimental findings, the androgenic hormones have been tried in the treatment of functional uterine bleeding and some very encouraging results have been reported by several investigators, among them Geist and his coworkers and Novak. Testosterone propionate is given intramuscularly in 10 mg. doses three times a week, while in severe cases Novak recommends 25 mg. twice a week. As the effects of the androgens are due to their stopping or overriding of ovarian function, the danger of virilization should be borne in mind.

Conclusions

1. A correct diagnosis as to the cause of vaginal bleeding is essential before proper treatment can be instituted.
2. A complete history, thorough physical examination, vaginal smears or endometrial biopsy or curettage are essential steps in the establishment of a correct diagnosis.
3. Vitamin C and K deficiencies may be a factor in excessive vaginal bleeding. In such cases these deficiencies must be corrected.
4. Hypothyroidism may be a cause of menorrhagia.
5. Proper treatment must be directed to the aetiology of the bleeding. Cervical erosions, polypi, myomata, genital malignancy and pelvic infection must be treated if found to be the cause of the bleeding.
6. In functional bleeding caused by hyperestrin conditions, endocrine therapy, either complementary cyclic treatment (estrogens and progesterone), progesterone alone or testosterone propionate is indicated.
7. In the control of functional bleeding, radiation therapy must be reserved for women past the childbearing period (40 years of age).
8. Hysterectomy must be a last resort in the control of functional bleeding and, like radiation, should be used only in the older group of women.
9. The employment of endocrine therapy for the control of uterine bleeding, without an accurate diagnosis as to the cause of the haemorrhage, cannot be too strongly condemned.

Fractures of the Carpal Scaphoid.*

LIEUT. COL. L. P. MCKIM, R.C.A.M.C.

Officer i/c Surgical Division—Debert Military Hospital
FRACTURE of the Scaphoid is the most common of Carpal injuries.

Non-union is a complication seen in many cases and may be very disabling when it occurs. Various forms of treatment have been recommended for non-union. These include:

1. Excision of the Scaphoid.
2. Bone grafting.
3. Simple drilling of the fractured bone.
4. Prolonged fixation.

The author believes:

1. That non-union does *not* occur if proper and sufficiently prolonged fixation is carried out.
2. That many cases of non-union will heal perfectly if treated in the same manner.
3. That the use of the hand during treatment has an important bearing on the process of healing.

Plaster of Paris or "Castex" is used as a method of fixation. The hand is placed in the "position of function", with the thumb fixed in a position of opposition to the fingers. The terminal phalanx of the thumb and the meta-carpo-phalangeal joints of the fingers are left free. The wrist is held in moderate dorsi flexion and slight ulnar deviation. Prolonged fixation in this position may be continued many months without danger of loss of wrist function. No case of non-union has been reported in cases so treated from the time of injury.

Lantern slides were shown to prove that, with prolonged fixation, union may occur even after a lapse of two and one-half years following injury.

*Summary of Address by Lieut. Col. L. P. McKim, R.C.A.M.C., at the Dalhousie Refresher Course, October 14, 1943.

Presidential Address

C. L. MACMILLAN, M.D., C.M.

Medical Health Officer

Baddeck, N. S.

FELLOW Health Officer and visitors: as president of the Provincial Medical Health Officers' Association, it is my duty now, and might I add, pleasure, to give the presidential address. In thinking over the various subjects which I might have used for a presidential address I thought the subject of nutrition to be an important one, and just at this time a hot subject; as since the first of January of this year, the nutrition branch of the Department of Pensions and National Health have been putting on a Dominion wide drive to educate the people of Canada as to why they must eat for health. Their aim is to make Canadians healthier through the application of well established principles of nutrition. In part, what I have to say on nutrition, I have derived from the pamphlets put out by the Department of Pensions and National Health.

Quoting from Foreword in one of these pamphlets "Recent dietary studies among certain urban groups in Canada, clinical studies on smaller numbers, and the examination of men called up for defense training show clearly that poor diets and malnutrition are common in Canada. The condition is sufficiently serious, especially in the present emergency, to demand national attention and co-operative action. Since the malnutrition common in Canada is not immediately obvious in its effects, there is less concern over it than some other public health problems. Its harmful effects are none the less serious when all results are considered.

"Nutrition is a particularly complex field. It is not only a complicated medical problem in which much remains to be discovered, but also an economic, social and psychological problem, involving agriculture, industry, labor and other groups. Yet in this field of conflicting interests there are some well established nutritional principles. These principles are being used for the benefit of our fighting forces, but they should also be applied to all workers in industries, especially if related to defense, and also to the civilian population as a whole. This application of sound nutrition is important directly and immediately and also more remotely for the whole future of Canada. By its present effects on men, women and children, Canada will be building for the peace and for the future."

Nutrition is not the only factor in the maintenance of health and vigor in a population but is the most important factor. Overcrowding in poor houses, lack of sunshine, lack of exercise, lack of fuel and clothing, poor hereditary and other factors all contribute to suppress the potentiality for well being. Lack of enough of the right kinds of food outweigh all these. An experiment in England correcting overcrowding at the expense of having less to spend on food led to an increase in morbidity and mortality.

Physical exercise will strengthen muscle and increase performance, but without attention to nutrition exercise may do more harm than good. At the beginning of the war a group of eight hundred young men in England, who were classified as unfit for military services were put in a camp, fed a proper diet

*Paper delivered at the annual meeting of the Nova Scotia Health Officers' Association, Kentville, N. S., July 6, 1943.

and given proper exercise for two months. At the end of this time seven hundred were accepted into the army.

Health experts report that 90% of the time lost from illness in Canada enough working hours lost in one year to add 2,000 bombers to our R.C.A.F., could be prevented by proper nutrition and that this grim picture of our undernourished Canadian race is caused by our poor eating habits not to the lack of money or food.

Appetite may be a guide to enough food to fill you up but there is a hidden hunger to which neither appetite nor inclination is a guide. This hidden hunger or lack of certain food constituents is apt to produce chronic fatigue, vague aches and pains stunted growth, sore eye, make you nervous, apathetic or sluggish and a greater tendency toward disease. It is not how much you eat but what you eat. The slogan is eat right to feel right.

Experiments on rats have showed that extra amounts of various types of foods above current standards have actually prolonged life, and this prolongation is not at the end of life but an increase in the prime of life. The food elements are:

(1) Carbohydrates, for the production of energy, found in cereals, cereal products, sugar, honey, molasses and syrups, etc. All foods have energy value, some are rich sources of energy, some moderate, some poor. Those that contain the largest amount of carbohydrates and fats are the most efficient energy producers.

(2) Proteins: found in milk, cheese, meat, fish, poultry, eggs and certain dried vegetable such as peas and beans. Proteins are the builders and repair material for body tissues. The body tissue must be maintained and constantly renewed.

(3) Fats, as found in butter, cream, vegetable oils and fats.

(4) Minerals, as found in milk and milk products, fruits, vegetables, salt water fish and heart. The body requires some fourteen of these food substances, but of particular importance are calcium, phosphorus, iron and iodine.

Calcium is necessary for the formation of bone and teeth. It is also essential to such vital processes as digestion, clotting of blood and the beating of the heart. It is next to impossible for an adult, it is entirely impossible for a child, expectant or nursing mother to get enough calcium without using cheese and milk in their daily meals. Phosphorus is also necessary for the formation of bone and teeth.

Iron is necessary for the formation of red blood cells which carry the oxygen to all parts of the body. Women and children need more than men. Too little of this mineral for any child, or adult results in certain types of anemia.

Sources of iron are liver, kidney, heart, dried vegetables, molasses, lean meats dark green leafy vegetables, dried fruits, egg yolk, potatoes, whole grain breads and cereals.

Iodine in small amounts helps to prevent simple goitre, salt water fish and cod liver oil supply iodine but where iodine is lacking in water and soil as in many inland districts iodized salt is necessary as well.

(5) Vitamins—As found in green and yellow vegetables, fruits, whole grain cereals, citrous fruits, tomatoes, eggs, liver and fish oils. Vitamins are

organic food substances, necessary in small quantities for life. If food fails to supply adequate amounts of even one vitamin, there may be varying degrees of ill health, retarded growth in case of children, lowering of efficiency, lowering of resistance to disease.

Vitamin A popularly known as the blackout vitamin as it protects the eye from certain types of night blindness and is required by everyone, especially children of normal growth and health. It tends to reduce susceptibility to infection and keeps the skin soft and smooth. There is no great loss during ordinary cooking so that clinical deficiency of vitamin A is not likely to be as common as deficiency of other vitamins.

Experimentally young animals deprived of vitamin A ultimately cease to grow, develop night blindness, inflammatory conditions of eye and membranes with atrophy, producing abnormally dry and lusterless condition of the eye ball. In addition infections of the membranes of the alimentary, respiratory and urinary tracts have been shown to be prevalent in animals deprived of vitamin A.

Vitamin A will not prevent colds but by keeping the tissues of the respiratory tract healthy we are less susceptible to infection and any illness we may suffer as a result of infection is likely to be less severe.

Our best and easiest and also cheapest way to get vitamin A is from carrots. One carrot per day will give more than half the total needs. One teaspoon of cod liver oil provides more than one day's requirements. Green vegetables, such as spinach and lettuce and yellow vegetables such as carrots, sweet potatoes, squash contains large amounts of this vitamin.

There are a number of members of the vitamin B family. The best known of these are Thiamin, riboflavin and nicotinic acid.

Thiamin deficiency is evidenced by a vague and non specific mental symptoms such as irritability and depression followed by weakness and marked tenderness of the muscles. Later neuritis in the lower extremities makes its appearance with burning of the soles of the feet as one of earliest complaints. In extreme cases of Thiamin deficiency the heart rate becomes fast followed by general swelling, right sided heart failure, dilatation of the heart and a tendency towards sudden circulatory collapse.

The usual signs of riboflavin deficiency are inflammation of the lips and skin condition of the folds near the base of the nose.

The lips are red and denuded at the line of fold. They are fleshless at the corners of the mouth and the tongue becomes purplish red and deeply fissured. The patient complains of soreness and burning of the tongue and difficulty in swallowing. The skin over the nose becomes rough and dry, the skin glands become plugged with secretions especially on the upper lip and the sides of the nose, more rarely around the eyes, forehead and ears. Abnormal tolerance to light, burning of the eyes and dimness of vision are frequent symptoms.

An article on nutrition in a very recent issue of "Health" refers to riboflavin as the rollicking riboflavin. It goes on to say that it is an interesting vitamin in that the more you take, the more good it does. Most vitamins are needed in certain amounts by the body and any great excess is probably not made use of. The more riboflavin one takes, the higher the level of general health will be, and the longer people will live. The prime of life is extended and the signs of old age appear later if optimum amounts of riboflavin is taken,

and there is a feeling of well being and buoyant good health which is not the same as average good health.

Nicotinic Acid—When the predominant deficiency is nicotinic acid clinical findings are related to the skin, mucous membrane or nervous system. An inflammation of the mouth is the most common sign of a mild deficiency. The tongue is sore, red and smooth especially on the sides and tip. In severe cases there is a fiery red inflammation of the mouth, swollen tongue, swollen, red painful gums and salivation in conjunction with the skin condition and often mental symptoms as well. The skin condition is bilateral and symmetrical consists of a redness followed by pigmentation of the backs of the hands and wrists, elbows and neck. As this deficiency progresses there is a peeling and cracking of the skin with secondary infection. The early mental symptoms are apathy, depression, apprehension or irritability. Severe manifestations include hallucinations often associated with fear, memory defects, disorientation and at times maniacal states.

These B vitamins are found in wheat germ, liver, bean pork, whole grain breads, cereals, bread and flours Canada approved. Milk, eggs and green vegetables.

Eight out of every ten Canadians are apparently not using enough of the foods giving the B vitamin, according to the Canadian dietary surveys. Excessive use of starch and sugar in foods increases the need of B¹-Thiamin and is one of the causes of this deficiency in Canada. Due to this deficiency in the Canadian diet vitamin B flours were produced to make Canada approved flour. Millers working in cooperation with the various government and private agencies are using a milling and mixing process which retains much more of the natural B vitamin and minerals of the whole wheat berry, than does the ordinary white flour. When the creamy white flour so milled has retained four hundred international units of B¹ per pound, it is labeled "Vitamin B white flour Canada Approved." When the flour is somewhat darker and retains 550 units of B¹ per pound, it is labeled "Vitamin B flour Canada Approved." Ordinary white flour contains only forty or fifty units of B¹ per pound. Canada approved flours the natural B vitamins of wheat are all increased over ordinary white flours even though only B¹ is specified in amount.

Vitamin C is necessary for healthy gums, teeth and blood vessels. Its sources are: tomatoes, fresh or canned; citrus fruits such as oranges, grape fruit, lemons or their juices, raw strawberries, potatoes, cooked in their skins, raw turnip, raw cabbage, etc.

Vitamin D—The sunshine vitamin. It is necessary because bone and bone building substances, calcium and phosphorous cannot work effectively without it. Vitamin D is therefore important in the diet of growing children and expectant and nursing mothers. Other adults especially those who get little or no sunshine may need more vitamin D than is supplied in food. The sources are egg yolk, summer butter, cream and milk and fat fish. Halibut and cod liver oils are rich sources, lard and other pig fats are deficient in this vitamin. Plant fat contains none.

(5) **Water.** As the body is made up largely of water it is vital to get enough for carrying on such important activities as digestion, circulation and illumination. Liquid foods such as soup, fruit juices, tea and coffee may count as part of the water.

(6) Bulk is essential for keeping the digestive organs functioning properly. It is supplied by the fibrous indigestible parts of such foods as vegetables, fruits and whole grain cereals.

The following are Canada's official food rules. These are the health protective foods. These must be eaten every day in at least these amounts.

Milk—Adults one-half pint. Children more than one pint and some cheese as available.

Fruits—One serving of tomatoes daily or citrous fruit or tomatoes or citrous fruit juices and one serving of other fruits, fresh, canned or dried.

Vegetables—In addition to potatoes of which you need one serving daily—two servings daily of vegetables preferably leafy green or yellow and frequently raw.

Cereals and bread—One serving of a whole grain cereal and four to six slices of Canada approved bread, brown or white.

Meat and fish—One serving a day of meat or fish or meat substitutes, liver, kidney or heart once a week.

Eggs—At least three or four eggs weekly.

Some source of vitamin D such as fish liver oils is essential for children and may be advisable for adults.

Meals must be built around these protective foods to provide us with essential food substances in amounts needed. Surveys carried out in 1939-40 showed that six out of every ten persons were not eating enough of the protective foods.

One evening last winter while glancing over some government pamphlets on nutrition and opening my mail at the same time I found a letter in the mail from a mother away down in the country. She said one of her children, Mary, a girl of seven years had not been well for some time. Her complaints were weakness and pains in the muscles and other vague symptoms. The mother wanted me to mail down some medicine and call and see her the first time I was down in that part of the country. I was at a loss just what to send, something was expected of me so I copied out the Canadian official food rules and in a note explained to the mother that what the child needed was this special diet.

About two months later I called at the house, the mother greeted me by saying, "O Mary is fine now, we had a terrible time trying to get all the different foods you ordered for her but she is alright now." The child was by far the healthiest one in the house.

The matter of the lunch box in industries has received considerable publicity of late and is a matter I will skip over being from a rural community where the industries are for the most part only farming.

About five years ago the health nurse of the district brought to my attention the inadequency of the lunch carried by the school children. She made a practise when doing rural schools to carry her own lunch and eat with the children at noon time and in this way studied the matter first hand. Ninety per cent of lunches consisted of bread and jam or bread and butter sandwiches and a bottle of milk or tea. After this whenever I had the opportunity, when in some of these homes I brought the matter up and found that frequently the same children who carried the poor lunch also ate a poor break-

fast. The parents seemed to think this alright as they ate a full dinner in the evening.

A good lunch should:

1. Give balance to the day's meals.
2. Have variety and appetite appeal.
3. Contain foods that have good keeping qualities.
4. Overcome fatigue and renew energy.

Lunch for the school child should be planned and packed with as much care as any war work. It has been shown that the school child will learn more readily, play more happily and generally fit into the scheme of things when it has been properly fed.

With a few exceptions every school in the district now makes some attempt to see that the children who carry a lunch are better fed at noon especially during the winter months. Some schools serve the children with hot cocoa, other schools the children bring also dishes of food such as beans which they warm on the school stove. In Baddeck school this past winter the children carrying lunches were organized and taxed themselves three cents per day and bought food which was prepared by the older girls in the Domestic Science room under the supervision of the Domestic Science teacher. The children were asked to bring their lunch as usual and this food was served extra.

We found that in this matter of school lunches that a great deal depends upon the cooperation the health nurse could obtain with the teacher. Very often in sections where we were doing famously with school lunches, there is a change in the teacher and we were back to where we started.

I would like to take this opportunity to recommend that each and every class of teachers going through Normal School, be given a few lectures directly by the Department of Public Health, where, among other things they could be taught what would be expected of them in the way of cooperation with the health officer and health nurse.

In closing I would like to say that every health officer in his own district could do more in teaching the principles of nutrition and that the population should not be left to get their information, however valuable entirely from the advertising in the press and radio.

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The Editor's Column

THE FUTURE OF THE COLLEGE*

American Survey

(By a Correspondent in Maryland)

Annapolis, May 17.

By the end of 1942, the United States faced the interesting problem of how liberal education at the college level might be kept alive while the nation fought a war. The average young American who goes to college has completed either seven or eight grades of grammar school and four years of high school by the age of seventeen and a half. But now he faced military service at eighteen. If he were deferred, the college would be considered a hiding place from the hardships and hazards of war for those who had money to pay the fees. If the Selective Service authorities declined to defer him, the colleges faced financial ruin, and in the event of a long war the country itself might face a dearth of educated men to train as officers. Confronted with this dilemma, the matter of liberal education was allowed to go by default.

The Army and Navy allowed Selective Service to operate, choose the boys they thought most worth educating, and made contracts with the colleges to teach them mathematics, physics, and an assortment of subject matters known as the humanities. There were loud protests from the academic world that the liberal arts were being dangerously neglected and that a horde of young barbarians were being furnished technical training without education. Judging by the published protests, the ancient term "liberal arts," which once included mathematics, had come to mean "the humanities;" and there was also evidence that the humanities now meant whatever was useless but urbane. Given these misapprehensions, the Army and Navy may be pardoned for "writing their own ticket."

The British reader must be reminded that the American college, whether it be independent or a part of a university (the other parts being professional schools like law and medicine and engineering, entrance to which may or may not presuppose graduation from college) has undergone the most profound changes during the past century. It once furnished the sort of liberal education that the British public school or French lycee or German gymnasium furnished. The only utility it recognised was the utility of an educated citizenry, particularly the utility of educating those citizens who would enter the learned professions. By the turn of the century, chiefly under the influence of the "elective system" whereby the undergraduate elects those subjects he wishes to study and whereby to an increasing extent he has been permitted to black-ball those subjects he found "uninteresting" or positively boring or merely difficult, the college had become in large measure the purveyor of information deemed either useful in making a living or ornamental to those whose livings were assured. As the purpose of the college became more confused, there sprang up in college communities an extraordinary undergrowth of "college activities" (the curriculum itself by this time being pretty passive) that included

* *The Economist*. July 3, 1942.

social events, editing undergraduate periodicals, and above all intercollegiate athletics. The last had by the 1920's become what we Americans call big-time business, involving the expenditure of vast sums of money, high salaried athletic coaches, and too often cash payments to players.

By the year 1942 the average American college possessed such a hazy idea of the liberal arts—the arts of reading, of writing, of translating, of interpreting, the arts of manipulating the symbols, whether words or numbers, through which human beings think—that they were hard pressed to demonstrate to the armed forces that their function would contribute substantially to officer training or for that matter to civilized living after the war was over. As a matter of fact, the armed forces were busy discovering that neither a high school diploma nor a college degree guaranteed anything very interesting about a candidate for officer training. The Army Air Forces were complaining of “limited vocabulary, and a lack of precision and exactitude in the use of words.” Admiral Nimitz was complaining that 68 per cent of a total of 4,200 college freshmen who applied for officer training failed an arithmetical reasoning test. These candidates came “from twenty-seven leading universities and colleges.” It was discovered that several states no longer required any mathematics in high school, although 250 subjects are now taught in the high schools of the United States. Many colleges require no mathematics for a bachelor's degree.

The schools and colleges tried to meet the crisis by setting up technical courses in subjects like aviation, whereupon the army promptly retorted that if the schools would only teach elementary mathematics and physics, the army would have some men capable of learning aviation.

Perhaps the most eloquent comment on the debacle was the frequency with which college and university heads announced in the press that “business as usual” had been abandoned by their institutions for the duration. This was an interesting, if wholly unconscious, confession that our “colleges of liberal arts” had not been teaching the liberal arts (which activity is not a business) but had been peddling supposedly useful information to those who could pay for it, and stood ready to give a course in almost anything, provided—to use a well-worn bit of American academic jargon—there was enough “student demand.” Hence the amazing conglomerate of courses in uncorrelated subject matters that leads the average American undergraduate to the degree of bachelor of arts. The final insult to the existing system was supplied by the Army when it announced that the soldiers it would send to the colleges might not engage in intercollegiate athletics—when the colleges had been explaining what a splendid preparation for war intercollegiate athletics had furnished the American people. Apparently, somebody in the Army remembered how few people play on the team and how many cheer from the grandstand in unison. Even the Navy announced with unconscious humour—or malice?—that the “country club attitude on the campus is out for the duration at least, as far as the Navy is concerned.”

Army and Navy contracts have now saved the college's budget, along perhaps with its face. But these contracts have done two more things that may have revolutionary consequences. They have substituted hard, grinding work in rigorous subject matters like mathematics and physics for the adolescent ballyhoo and muddy superficiality of the average undergraduate community. Classrooms are being used again for work, and sometimes for very hard work indeed. It is true that under the pressure of war these subjects

are being studied too fast and almost wholly from an operational point of view, without the intellectual dimensions they would contain in a genuine liberal arts curriculum. But they themselves are genuine as far as they go; there is always with mathematics the happy risk that the student may see the point, in addition to getting the theory. It may prove an immense gain to American education that, over the protests of the educators, the rigours of intellectual labour have been temporarily substituted for the soft, for the inchoate, for mere opinion, and for the "country club attitude."

The second possible gain is that, for the first time in American history, economic status has nothing whatever to do with entrance to college. For many years now, American youth has had access to twelve years of schooling without fee. True, it has not been very good schooling, and on the whole it has been getting less good. But the "public school" means in the American language instruction without money payment. Now the colleges are temporarily "public schools" in the American sense of the word. After the war, will the American people sit by and see them become once more institutions which, despite scholarships and despite the small fee paid in State-owned colleges by citizens of the State that does the owning, are primarily for the economically privileged? There have always been tens of thousands of young Americans who would have gone to college but for the accident of poverty. Shall this again be the case?

If the colleges become democratized, instead of remaining the preserve of the white-collared class and of those who hope to climb into that class, it is just possible they may ask themselves what sort of basic education is a common necessity for all the citizens of a free society. Or—and we must face it—they may make the choice the public high school made and offer to teach anything that anybody believes will enable him to make money. In any case, it will be a momentous choice.

**DALHOUSIE UNIVERSITY MEDICAL SCHOOL
DEPARTMENT OF SURGERY**

The Course in Operative Surgery was resumed on December 1st, and will continue during the winter. Applications should be made to

The Secretary to the Dean
Dalhousie Medical School
Halifax, N. S.

THE WILLIAM OSLER MEDAL

OF THE

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

In order to stimulate interest and research in medical history among students of the Medical Schools of the United States and Canada, the American Association of the History of Medicine has established a Medal that will be granted annually to the author of the best student essay submitted to the Association.

The Medal has been named in honor of William Osler, who more than any other academic teacher succeeded in creating among students enthusiasm for the history of medicine.

The Association will consider unpublished essays by men or women who were students in Schools of Medicine and had not yet obtained their doctor's degree at the time the essay was written.

Essays that are the result of original research will be given preference but the Association will also consider essays which, without being the result of original research, show an unusual appreciation and understanding of historical problems.

Essays must be sent before June 1st to

DR. HENRY E. SIGERIST
Institute of the History of Medicine
1900 East Monument Street
Baltimore 5, Maryland

who will submit them to the Committee on Medals of the Association.

Obituary

The death occurred at Cheticamp on November 30th of Doctor Leo John LeBlanc from injuries received in a car accident during September while on a call from Inverness to Pleasant Bay. Doctor LeBlanc was born at Margaree Forks in 1888, graduated from St. Francis Xavier University, taught school for a few years and graduated from Dalhousie Medical School in 1921. Dr. LeBlanc's services to the community will long be remembered. In January 1938 he made a trip over the Cabot Trail by dog-team to give medical attention to two persons seriously ill at Dingwall. He often donned snowshoes to reach his patients, and travelled over blocked roads in the worst kind of weather. Besides his wife, the former Louisa Terrio of Arichat, he is survived by three daughters, Clara, at the Provincial Normal College, Truro, Patricia of Ottawaa, Edith and a son Edgar at home.

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