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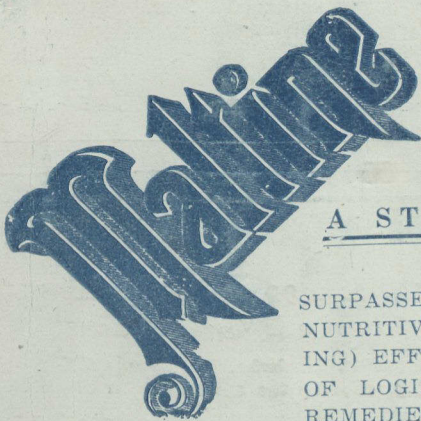
The Canada Lancet

THE OLDEST MEDICAL JOURNAL IN THE DOMINION

VOL IV

DECEMBER, 1921

NO. 4



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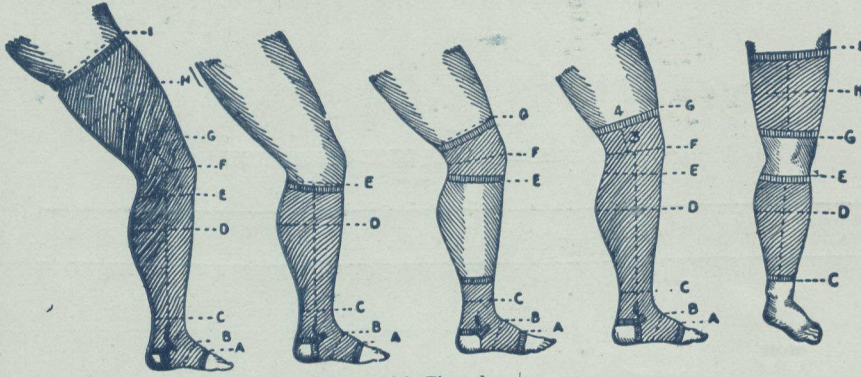
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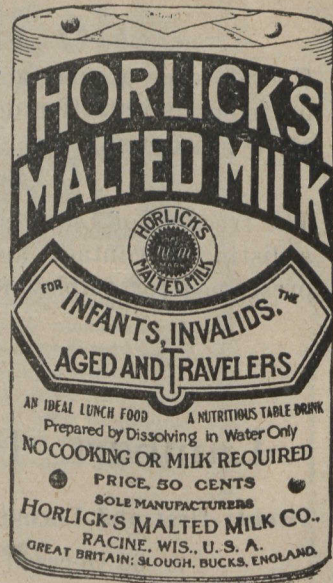
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A Monthly Journal of Medical and Surgical Science, Criticism and News

VOL LV

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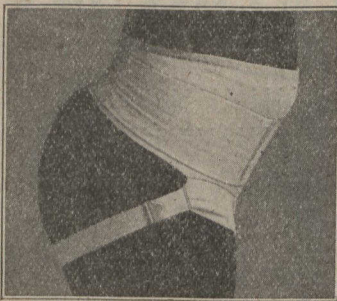
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The Canada Lancet

VOL IV

DECEMBER, 1921

NO. 4

WHITHER ARE WE DRIFTING ?

In December and January business men take stock.

They make an inventory of assets and liabilities, stock on hand, etc.

They lay particular stress on the progress of the year over previous years.

The Inventory of the Medical Profession

Where would this lead us as Medical men? Have you stopped to figure it out lately?

True we are busy, busy alleviating suffering. But what of the great organization to which all Medical men should belong?

Has the organized profession progressed month by month or year by year?

Now don't misunderstand the situation.

The science and practise of Medicine has developed leagues beyond the farthest dreams of the most enthusiastic follower of the profession.

What of our organizations of Physicians and Surgeons. Has that kept pace?

There is but one answer.

No.

While we have toiled hard, well pleased with the advance of Medicine, of Surgery, of Science, stran-

gers to science have encroached upon the domain that rightfully belongs to Medicine and Surgery.

What legislation has been obtained during the past year to protect the people of Canada from unqualified practise.

Cults deserving of no recognition beyond that of tradesmen have been enabled to flourish under present legislation that leaves them free to practise at will on a credulous public.

Shall we stand idly by and see these things go on? Shall we bury our heads ostrich fashion and permit our profession to suffer from lack of effort? Shall the present day non-effective legislation be continued?

The Eleventh Hour

You may not agree there is any danger. You may feel like many even up to Aug. 4th, 1914, there would be no war.

But men with their fingers on the pulse of the situation know that unless the Medical profession stirs itself today—now—much valuable time will be lost.

You know your local Member of Parliament. Talk to him. Show him the folly of present legislation that permits quackery to flourish—that condones, yes, encourages imposters flaunting "Doctor" before their name,

Through Your County Association

By the way, when did you attend your County Association last? Plan to attend the next meeting. You'll find it most worth while. For the Association represents you whether you are there or not.

Medical Men Should Take the Lead

Every Physician in Canada should be alive to the situation which is a vital menace to the public and further encroachments must be fought step by step so that no longer shall the Canadian Government countenance incompetence due to lack of proper training.

Does the country want any form of Nationalized Medical services—as that championed by Dr. Hett—No, you say.

Let us not be too sure. Changes in Government may bring strange consequences. The time to fight things is before they have gained too much momentum. To-day—and to fight for what we consider to be right in the interests of humanity we must be ready.

Organization Gives Results

How was the war won?

By organizing man power and machine power. By harnessing industry and Nations into one harmonized whole.

How does business put over big projects?

By organizing man-power, by concerted planning, by aggressive action.

How can Medical men meet the future?

By organizing the man power into one harmonious whole with one aim, namely, to get the best for the greatest number.

The Canadian Medical Association represents the Medical men of Canada. It's up to every man to get behind the Association and build from within and not knock from without.

Then and then only, will we accomplish our objects and retain for the profession the dignity and the respect that is rightfully ours and secure for the public proper protection.

CHRISTMAS

By the time this issue is in the hands of our readers our thoughts will turn to the festival season when men's thoughts are tempered by thoughtfulness and love for those that are near.

And it is well too there are such seasons. For the majority of men they come all to seldom. Perhaps it were better we should more often turn aside from the workaday world and play, and allow some-

thing of our real selves to come into our lives and those about us.

And it is in this spirit of quietly turning aside for a few moments that we stop to express the hope our readers will be happy on this Xmas tide, that there will be no loneliness and that during the coming year a great measure of happiness may come to all.

As Tiny Tim expressed it "God bless us every one."

An Adaptation of Witzel's Method for Relief of Intestinal Tension and Drainage.

Ernest A. Hall, M.B., Victoria B.C.

Those of us who have had experience to any extent in the surgery of the abdomen must realize that of all the post operative conditions we encounter we most often meet our Waterloo in intestinal toxæmia with distension following either obstruction or paralysis. It is not my purpose to discuss the origin and formation of the toxins which so rapidly develop within the intestine when the normal peristaltic current is interfered with, suffice it to say that we recognize its presence to the extent that in a case of obstruction with distension we no longer consider the freeing of the obstruction sufficient, but consider it necessary to do in addition an enterostomy in order to relieve the bowl of its toxins. We also not infrequently meet with operative cases in which it is incumbent that there should be no tension upon intestinal sutures. A case of this nature was referred to me by Dr. Sutherland of Salt Spring Island. In this case retro cecal abscess was present that so involved the head of the caecum that in the removal of the appendix a rent was made in the large bowel. You all know that in such a case on account of the devitalization of the parts, and infection, a cecal fistula is on the expectant list, despite the utmost care in suturing. Especially is this to be feared if there exist even temporary paralysis with distension. In order to avoid this possibility of intes-

tinal tension I inserted a catheter into the ileum by the Witzel method about an inch from the valve so that the end of the catheter would lie against the valve-fold stitching the catheter over two inches thus making a Witzel valve ileostomy. This completely controlled intraleum pressure and so far as could be determined also that of the caecum. Had there been any evidence of cecal distension I would have forced the catheter through the valve, but the fact that such procedure not being necessary my faith in the valve being effectual in preventing return of material from the caecum into the ileum was not intensified. However the case progressed most favorably, there was a great deal of gas passed through the tube for the first two days. When the normal intestinal contents began to pass the tube was clamped and allowed to remain in position a few days longer when it was removed, the valve like opening in the ileum closing by the normal intraintestinal pressure. No operative procedure was necessary.

Believing in the old proverb that prevention is better than cure, we should endeavor to apply this principle whenever applicable. Not infrequently while dealing with acute obstruction, resection, general peritonitis, kinks or bands, the impression is made upon us that the greatest factor of danger ahead of the patient is paralysis, obstruction, or both. In such cases it ap-

pears to me we have in this application of Witzel's method a simple safety method by which we can control intra-intestinal tension, determine the activity of the bowel, irrigate if necessary, and give nourishment directly into the bowel, as this operation was originally intended to introduce food into the stomach in cases of impassable stricture of the oesophagus, and with this advantage that

no subsequent operation is required for the closing of the opening since it automatically closes with the withdrawal of the tube.

Since writing the above I have used this method in acute obstruction following the removal of a large fibroid, in which after emptying the bowel inserted two tubes, some twenty inches apart, by this method with the most gratifying results.

Post-Graduate Lecture on Prognosis in Cardiac Affections.

By R. Oswald Moon, M. D. (Oxon) B. Ch., F.R.C.P. (Lond.)
Physician to the Hospital for Disease of the Heart.

Modern medicine has been so focused upon diagnosis and the minute investigation of every organ of the body together with the correlation of symptoms with the findings of morbid anatomy in that organ, that the importance of prognosis to some extent has till recently fallen somewhat into the background. Now I do not propose this afternoon to deal with advanced cases of heart disease, where there has been a serious breakdown and the patient is in bed and must obviously remain there for some considerable time. I think it will be more useful for us to consider what one would call the outpatient type of case, which though having a disease of the heart, is able to be up and about and to carry on work, though it may be in a minor key.

Let us consider first cases in which there is a definite and unmistakable valvular lesion. The late Professor Huchard used to

maintain that it was more important to diagnose whether a valvular lesion was due to an infective or degenerative process than whether it was the aortic or mitral valve which was affected. Now though this has been expressed somewhat paradoxically it does contain a fundamental truth, for, when the valvular lesion has been caused by some such disease as rheumatism, chorea or scarlet fever there is always a good chance that the diseased condition may, with reasonable care, remain fairly stationary. On the other hand, when caused by degenerative conditions, such as arteriosclerosis, there is always the probability amounting almost to a certainty that the disease will be progressive.

Aortic Disease.—It has been usual to regard the prognosis in aortic stenosis as very favourable indeed; in fact, it has been called the lesion of longevity. I am in-

clined to think that this is almost too sanguine a view to take, and arose probably at a time when any systolic murmur heard in the aortic area was regarded as evidence of aortic stenosis. We now realise that in elderly people a slight roughening of the valves, which is of no great significance, will give rise to such a murmur, and in younger subjects anaemia is a common cause of it. Aortic stenosis, therefore, should not be diagnosed unless, there is a definite systolic thrill accompanied by a harsh systolic murmur in the aortic area, with perhaps some smallness and retardation of the pulse. These cases of pure aortic stenosis are most commonly of infective origin, for when a general sclerotic process gives rise to the stenosis of the aortic orifice, it also renders the aortic valves incompetent so that we have the double lesion. This pure aortic stenosis of infective origin may remain stationary for years unless a further attack of rheumatic origin, which is always a possibility, damages the valves still further. In a young and otherwise healthy individual the left ventricle readily hypertrophies to satisfy the demand caused by the obstruction, and in some degree this hypertrophy advances *pari passu* with any increase in the obstruction. Consequently it is not surprising that cases of this type may live out the normal span of life, engaging in a fair amount of activity when tempered with a reasonable caution; but the early symptoms of a failing compensation, such as praecordial distress and dyspnoea, should be carefully looked for, because when once compensation has definitely failed in a case of aortic obstruction

our power of restoring it is less than in the case of other valvular lesions. It is well to remember, too, that this valvular lesion is not infrequently found associated with pulmonary tuberculosis, so that this cardiac affection may be regarded as favourable to the development of phthisis, possibly owing to the general malnutrition induced by the obstruction at the aortic orifice. Should there be any family history of tuberculosis this possibility should be taken into account when making a prognosis in a case of aortic stenosis.

Aortic regurgitation, when it is the result of rheumatic fever in young adults, admits of a prognosis, in my opinion, as favourable as that of any other valvular lesion—at least, from the point of view of capacity for work, not, perhaps, from the standpoint of longevity. During the war it was astonishing how often one encountered cases of aortic regurgitation which had slipped through the vigilance of the recruiting examination and had yet carried on successfully in the infantry, only having to go into hospital for some surgical affection or a fever, such as malaria, when the cardiac lesion was discovered; cases of this kind must have come before and impressed many of us. In civil life, too, one often meets with a man who has aortic regurgitation but has nevertheless carried on fairly laborious work for some years with apparent impunity. In all forms of heart disease it is well to realise that fairly hard work can often be done if it is steady and regular and the man has grown habituated to it, whereas he would prove quite unequal to work which was less intrinsically laborious but which was irregular

and spasmodic. Still, though compensation may be maintained, in spite of hard work, for quite a long time, continuance with such work can seldom be advisable; there must always be risk of a cardiac breakdown when the heart is so to speak, living fully up to its income, and no easy task and the compensation when obtained is at a lower level of cardiac efficiency. However satisfactorily a heart with aortic regurgitation may be working one must never forget the risks to which it is exposed from intercurrent diseases, such as rheumatic fever, influenza and pneumonia. Sudden death from syncope or inhibition may befall young patients who seem to be doing satisfactorily, but this, I am sure, is more rare than is commonly supposed. With regard to pneumonia, which always puts a severe strain upon the heart, and of which one would naturally feel most apprehensive in a case of aortic disease, I have been much impressed by seeing several cases of aortic disease coming successfully through a severe attack of pneumonia. On the other hand, a healthy heart is more often permanently damaged by an attack of pneumonia than is generally supposed, not that the valves are affected, but the myocardium seems often to be definitely weakened by such an attack. Thus many cases of soldiers invalidated out of the Army with D. A. H. give a definite history of pneumonia while in the Army and their cardiac weakness seems to have ensued from that time.

To consider now for a moment the degenerative or arterial forms of aortic disease; here the disease is almost necessarily progressive, though, with judicious treatment

the disease may remain stationary for a time it can never really improve, owing to the changes which are almost certain to take place in the coronary arteries. Now it is these changes in the coronary arteries which give rise to the most serious symptoms connected with aortic disease—namely, angina pectoris—which is serious not only on account of the very severe pain and alarming condition of the patient, but because it indicates the probability of considerable degeneration of the cardiac muscle and the consequent likelihood of sudden death. Now in the arterial forms of aortic disease which are of syphilitic origin, and these since the institution of the Wassermann reaction would seem to be increasingly numerous, one should be specially careful to give a guarded prognosis, for though the symptoms in these cases can be more readily alleviated by iodide of potassium than in other forms of the disease, there would seem to be a special liability to sudden death, probably owing to the fact that the myocardium, no less than the aorta, has been damaged by the specific poison.

As to the physical signs in connection with the prognosis of aortic disease, it may be said generally that the more collapsing the pulse the greater will be the regurgitation. Changes in the character of the murmur are generally not of much importance, alterations in the cardiac dullness are more valuable, an increase in the transverse area of dullness being usually a bad sign, whereas the increase vertically may be a good one. When the second sound in the aortic area and over the carotids is entirely obliterated by the

diastolic murmur, it undoubtedly indicates that the amount of regurgitation is considerable, and to that extent the prognosis is bad.

Mitral Disease.—To take first mitral stenosis. A special peculiarity of this lesion as opposed to mitral regurgitation is that though it is most commonly caused by rheumatism, it is more often found connected with the less pronounced forms of rheumatism, such as vague, indefinite pains in the limbs, stiff neck, etc. So much is this the case that it has seemed not improbable that in children endocarditis may often be the only manifestation of rheumatism. Seldom found in any pronounced form under the age of ten, anyone who sees much of heart disease is familiar with those cases of anaemic young women with no very special cardiac symptoms, in whom on examination one detects a quite obvious presystolic murmur without there being any history of a previous illness. It is cases such as these which has led French physicians to think that mitral stenosis may be a congenital affection, and it seems to me possible that there may be some congenital condition of the valves which may render them specially susceptible to some transient and indefinite febrile affection which passes unnoticed by the patient.

This lesion is much more common in women than in men, and for a long time may give rise to no serious symptoms. Possibly owing to the greater tranquillity and more sedentary character of the lives of women, they may be less affected by this lesion than men. When once the compensation has broken down it is not so easily restored as is that of mitral regurgitation; the narrowing

of the mitral orifice causes an imperfect filling of the left ventricle, consequently the heart obtains an insufficient supply of blood, so that cardiac weakness is thereby promoted. Mitral stenosis, when established in late childhood, has a more serious outlook than if it first occurs in adult life; this is partly owing to the constriction of the orifice which is more marked in early life, and partly owing to the fact that the stenosed orifice does not increase in size while the growth of the heart continues. Such cases can seldom reach the age of forty. An unfavourable feature is the development of catarrh of the bronchi, and the more extensively the finer branches are involved and the more diffusely the process has extended, the worse will be the prognosis.

Less common are the cases of mitral stenosis connected with arterio-sclerosis: they necessarily have a less favourable prognosis than the form we have just been considering, because the lesion is progressive. Such cases are not always easy to diagnose, for the physical signs are less obvious, in particular the accentuation of the second sound in the pulmonary area is less noticeable in this form of mitral stenosis because, though the blood pressure is raised in the pulmonary area owing to the stenosis, it is also raised in the aortic area owing to the arterio-sclerosis so that the accentuation of the second sounds at the base will be approximately equal. Thrombosis is most common in this form of mitral stenosis, whereas embolism is more characteristic of the rheumatic form, giving rise, if pulmonary, to infarcts and a localised pneumonia, while, if cerebral, causing hemiplegia.

Initial Regurgitation.— Though this lesion unassociated with stenosis is less common than was formerly supposed owing to the fact that regurgitation used often to be diagnosed when there was no other evidence beyond a systolic murmur at the apex, yet that such a lesion as initial regurgitation may exist alone there can be no sort of doubt. Speaking generally, young children under ten years of age readily succumb to this heart lesion, whereas in older children and young people the outlook is often most favourable. The main danger in early life is the liability to further attacks of rheumatism, any one of which may damage the already existing cardiac lesion, but with the lapse of years this liability becomes less. The most satisfactory thing about initial regurgitation is its amenability to treatment. Again and again the heart may temporarily break down with dropsy and all the signs of backward pressure, and again and again by judicious treatment the patient may be restored to his former condition of health; it is the power of recovery under treatment which gives to mitral regurgitation, when of infective origin, its favourable prognosis. In considering the outlook in a given case of mitral regurgitation, as indeed in other cardiac lesions, it is well to enquire carefully into the hereditary history. Assuming that the patient comes of a long-lived stock with no special liability to rheumatism, there is little reason why the fact of having mitral regurgitation should prevent his living out the full span of life. All that this lesion need imply is that the patient has a smaller amount of cardiac reserve to draw upon, and

the fact of knowing this, if explained to him in a sensible manner, will be sufficient to deter him from putting any excessive strain upon his heart.

Myocarditis.—Apart, however, from these various valvular lesions which we have been considering in detail, there lies the question of the condition of the heart muscle, for, in whatever way the valves become damaged, it is most unlikely that the myocardium will escape entirely unscathed. Now, of recent years, great attention has rightly been directed to the condition of the cardiac muscle in prognosis, but it is a mistake to think that this is an entirely new conception, though perhaps formerly undue stress was laid upon the importance of valvular lesions owing to the greater facility of recognising and classifying them after the discovery of the stethoscope. But Laennec himself had realised the importance of the cardiac muscle, regarding it as the key to cardiac pathology and, he might have added, to the prognosis of heart disease. Stokes, too, may be quoted as saying: "It is in the vital and anatomical condition of the muscular fibres that we find the key to cardiac pathology; for no matter what the affection may be, its symptoms mainly weakness, the irritability or the paralysis, the anatomic health or disease of the cardiac muscle." But the improvements in auscultation and percussion drew men's minds away from the study of the cardiac muscle, which is the arbiter of the situation, to the various mechanical lesions of the valves of the heart; obviously when the muscle of the heart has undergone degeneration, even the most favourable valvular lesions, such as

aortic stenosis and mitral regurgitation, must receive a bad prognosis, while with the muscle tissue sound and strong, even aortic regurgitation and mitral stenosis would obtain a better outlook.

Acute myocarditis may be followed by complete resolution in which no permanent changes supervene. More often there is organisation with the formation of connective tissue, which tends to contract as life advances, and which may occur in limited areas or may involve the whole myocarditis, of which the clinical features are those of chronic heart failure—that is, progressive dyspnoea on exertion, together with slight cyanosis of the face, giddiness, a sense of oppression in the praecordium, slight oedema about the ankles, specially at night. In estimating the prognosis of such a condition one should take into consideration the presence or absence of the pulsus alternans, angina pectoris and syncopal attacks. On the whole the outlook is serious, more particularly if syphilis is the basis of the lesion, as sudden death may readily occur; on the other hand, life may last from a few months to a few years.

Auricular Fibrillation.—The prognosis must be always serious, because fibrillation of the auricles almost invariably indicates myocardial changes. Then, again, though this lesion may start fitfully at first, with perhaps some short attacks of paroxysmal tachycardia, when once it has definitely set in it will continue for the rest of the patient's life. The condition being associated with a rapid and irregular action of the heart necessarily tends to embarrass the efficiency of that organ, and the prognosis depends on how far

the heart can carry on its work with a new rate and rhythm. The normal activity of the auricles is not essential to the action of the heart, but the fact of their being diseased implies changes in the muscle of the ventricles also, and it is this which eventually causes a fatal issue.

Fortunately, it is just in the case of this particularly serious lesion that digitalis and its allies prove most effective, and particularly when the auricular fibrillation is connected with the mitral stenosis of rheumatic origin, this drug seems almost like a specific. Consequently by a judicious use of this remedy, together with rest and generally restricted activity, cases with this type of auricular fibrillation will often live for some years, particularly if it has been found possible to avoid exhausting the myocardium by keeping down the ventricular contractions to about 70. On the other hand, auricular fibrillation occurs more frequently perhaps than is usually supposed in cases of arterio-sclerosis. Here, of course, we have the older type of patient and, as a rule, the fibrillation is of a more moderate grade and the patient may seem less affected by it. Unfortunately, these cases do not respond well to digitalis as do the others in younger subjects of rheumatic origin. In such cases then the prognosis depends rather on the cardio-sclerotic condition than on the auricular fibrillation per se.

In all these cardiac conditions apart from the actual cardiac lesion and the question of the physical signs which are helpful in framing a prognosis, we want to look at the patient as a whole. True as this may be in the case

of all diseases, it is especially so in the case of cardiac affections. In the general outlook of a given case, some of the most important factors are the age, temperament, state of nutrition, presence or absence of general obesity, habits and mode of life of the patient. Much will depend on how far "suitable treatment" can be carried out, at least on its negative side, such as refraining from alcohol, tobacco, strong tea and coffee, and the possibility of giving up hard work. Clearly a man who can select his place of residence and spend the winter in a mild, dry climate is likely, *ceteris paribus*, to have a longer life than one who is obliged to work for his daily bread.

Marriage.—One is often asked in cases of heart disease, in women about marriage and pregnancy. The question arises most frequently in connection with mitral stenosis. If the cardiac lesion is well compensated, matrimony may be permitted. If there have been

one or two previous breakdowns, when allowed at all, it must only be after giving full warning of possible dangers. Should the patient have reached the stage of pulmonary congestion with albuminuria, then marriage is clearly quite out of the question.

As an instance of how well these patients may pass through pregnancy and childbirth; a woman, aged twenty-four, came to me at this hospital suffering from mitral stenosis and regurgitation. She had had rheumatic fever at the age of twelve the dyspnoea and palpitation of the heart were severe. She improved greatly under treatment and compensation was restored. I did not see her again till five years later, when she came to the hospital by request. She had married three years previously and had given birth to a child, which she nursed for 13 months. The physical signs were unchanged, but she had no cardiac symptoms.

Iron as a Growth Factor in Infancy.

By Louis Berman, M. D.,
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Recent studies of the nutrition of young growing animals by means of synthetic diets have emphasized the importance of different food elements and constituents as growth factors. It has been shown that out of the thousand or more different substances found in the animal and plant foods the animal feeds upon there are necessary, in order to obtain satisfactory growth and health, a

sufficient minimum quantity of at least sixteen amino-acids, the carbohydrate glucose or one of its polysaccharides, at least nine inorganic elements: sodium, potassium, chlorine, iodine, calcium, magnesium, phosphorus, iron, and sulphur, and the vitamins fat-soluble A, water-soluble B, and water-soluble C. All of these growth factors are present in the milk offered by the properly fed

healthy mother to the suckling in the right proportions except iron.

Even under the most ideal of conditions, breast milk, cow's milk, goat's milk, and the other animal milks analyzed by the physiological chemist contain but traces of iron. Bunge was the first to stress the significance of the relatively small amount of iron in milk ash. He compared the composition of the ash of milk with that of newborn animals of the same species, and showed that, while the other inorganic elements, sodium, potassium, calcium, and so on, were present in nearly the same relative proportions, there was six times as much iron in the organism of the young animal as in that of the milk on which it was nourished. It followed that there must be at birth a reserve of iron in the suckling from which it could draw its supply for growth and to increase the amount of hemoglobin of its blood to keep pace with its increasing mass, besides making up for what it lost.

Certain results of chemical analyses of the organs confirm this assumption. The percentage of iron in the entire organism is highest at birth. During the suckling period the amount of iron in the normal remains constant, although the body weight increases constantly, as well as the amount of total hemoglobin. In other words, the reserve iron is converted into hemoglobin iron, or other forms necessary, and so the iron balance of the organism is maintained.

The amount of iron present at birth in the organism is three times as in that of maturity. How does this occur? The researches of Bunge, Hugounenq, and others, proved that the amount of the in-

organic elements fixed by the fetus in the last three months of pregnancy is twice as great as that fixed in the first six months. This applies also to iron. But as the amount of iron to begin with is greater, the percentage at birth is six times as great as the other inorganic constituents. Most of the reserve iron is deposited in the liver.

This storing up of iron is accompanied by a decrease of iron in the body of the mother. That has been proved in the guinea-pig by Charrin and Levaditi, and probably accounts for the predisposition of the mother to anemia during pregnancy. This storage of excess iron in the fetus at birth, it may, be assumed, is provided in order to make up for the lack of iron in the mother's milk.

If the amount of iron at birth is three times as great as at maturity, and there is a constant total iron, as Bunge showed, the percentage of iron, that is the amount distributed throughout the organism, will become about that of maturity when the birth weight is tripled. This is what occurs at about one year. At this time other iron-richer foods than milk are added to the food of the infant. We see in both the qualitative and quantitative iron relations of mother, milk, and infant, a mechanism of nature for guarding against iron deficiency in growth as a matter of prime importance. That this has been worked out for iron alone probably depends upon its enormous importance both in the provision of hemoglobin for the proper oxygen supply to the cells and its role in intracellular oxidations.

Much remains to be cleared up concerning the role of iron in metabolism. It certainly is important as the oxygen-retaining portion of the hemoglobin molecule, fundamental therefore as a carrier of oxygen for intracellular respiration. But it has also been shown by Spitzer that the oxidizing enzymes, the oxidases in cells, are always associated with the iron-containing constituent of the nucleus. Iron regularly accompanies nucleins and nucleo-proteins wherever they are found. In organs of greater oxidation more iron is found than elsewhere. Thus there is 0.02 per cent. in the liver and 0.01 per cent. in heart muscle, less in other muscles. Its position as an oxygen carrier and intracellular oxidation catalyst establishes its importance as a growth factor in infancy.

Effect of deficiency of Iron.—It follows from the above considerations that if there should be a deficiency of the reserve iron to begin with, or an increased loss during the suckling period, or a failure to supply iron from without when the iron reserve disappears, i. e., at about one year, certain effects upon the character of the blood and of intracellular oxidations, i. e., growth, should become manifest. As a matter of fact both of these disturbances, an anemia and failure to grow, have been observed following one of these three causes of iron deficiency in an organism.

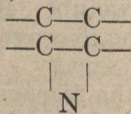
As might be expected, the type of anemia observed has been that resulting from an interference with the formation of hemoglobin, the so-called chlorotic type, from the resemblance of the blood picture, a low color index associated

with a fairly normal number of red blood cells, to that of the chlorosis long known to occur in girls at puberty. This chlorotic anemia, it is conceivable, may occur as a result of insufficient iron reserve in the liver. So it is observed regularly in twins, who have to share the mother's iron between them, and so are born into the world with only half the iron they ought to have; in premature infants, who being born before term, have not lived sufficiently long in the uterus to be supplied with the total amount of iron to which they are entitled; e.g., if born at the eighth month there will be 22 per cent. less of iron laid down in the liver than if delivered at term. To a less extent, the same applies to infants born with a low birth weight who may be assumed to be premature to that extent. A deficiency of the mother in iron could also account for a low iron reserve in an apparently normal infant at birth.

So much for the congenital deficiencies in the iron reserve. Such deficiencies may also be acquired. Ninety per cent. of the daily loss of iron from the body is by way of the colon. In certain cases of colitis in infancy, long continued, a great deal of iron may be so lost, because more iron is excreted by the irritated mucous membrane, and the iron reserve may thus be depleted. One thus sees a chlorotic anemia developing in infants with a normal family and birth history who have suffered a long time from a colitis. Besides this, keeping an infant upon a milk, i.e., iron poor, diet after the first year will result in the production of a negative iron balance and a consequent chlorotic type of anemia.

Not that every instance of chlorotic anemia in infancy must necessarily be traced to such a deficiency of the iron reserve. For into the construction of the hemoglobin molecule more factors enter than the iron content of the liver. In the first place there are the internal secretions which control the normal functioning of the bone marrow. Hemoglobin consists of globin, a histone protein precipitated by ammonia (for the formation of which a large amount of the diamino-acid histidin, not present in milk, is necessary), and the iron-containing pigment, hematin. Before hematin can be formed it is necessary that there be supplied the pyrrol ring containing substances which are its nucleus, and which the animal organism cannot synthesize.

This pyrrol ring, which is present in the aminoacids, prolin, oxyprolin, glutaminic acid, and tryptophan, of which there is little in the milk proteins, is just as much of an elementary requirement of animals as nitrogen and carbon itself, for lacking it they



will starve. The ring is contained in small amount in most proteins, and is an important component of chlorophyl, the green coloring matter of plants. Although chlorophyl is not digested by the intestinal juice, it may be split up by intestinal bacteria, and thus made available for absorption. In short the history of hemoglobin formation is complex, consisting of a series of events, a disturbance of anyone of which will result in anemia. Nevertheless, evidence points

to the iron factor as by far the most frequent and important in the production of the chlorotic anemia of infancy.

At birth about 40 per cent. of the total body iron is held as hemoglobin. As the infant grows the amount of hemoglobin increases, the non-hemoglobin iron decreases. Also, the reserve iron in the liver decreases. It follows that the source of the iron in the new-formed hemoglobin is the reserve iron which agrees with the facts already stated concerning the function of the reserve iron mechanism.

Iron in inorganic form has been used for centuries in the treatment of anemia. With the introduction of experimental methods controversy developed concerning the ability of the organism to utilize inorganic iron and the relative merits of organic and inorganic iron. Most of the experimental work done is valueless because no cognizance was taken of the importance of other food and growth factors as they affect nutrition and hemoglobin metabolism. This explains a good many of the contradictory results obtained. There are no experiments on record of a diet complete in every respect except as regards its iron content. Workers in the field of nutrition, however, now hold that inorganic iron may supply the organism's need of iron as much as inorganic calcium will supply its need of lime. Thus Osborne and Mendel, in their standard salt mixture, a mixture of inorganic salts intended to satisfy the inorganic needs of the organism, use iron in the form of ferric citrate. McCollum in his book on the Newer Knowledge of Nutrition states that the

iron present in drinking water "aids in some degree in preventing iron starvation in the infant," and also that "milk is therefore capable of nourishing the pig during many, many months, with no other modification or additions other than the addition of small amounts of iron," citing the case of a pig brought up on milk alone up to the reproductive age, and states that "there can be no doubt that the milk which she consumed was enriched to some extent with iron by being in contact with cans having part of the surface free from tin. City drinking water also was furnished, and this contained appreciable amounts of iron." In short, it is recognized that iron is a growth factor, that its minimum quantity in a diet is necessary to growth, and that inorganic iron may act as the sole source of iron in a diet.

In feeding the human infant up to the first year conditions would appear to be ideal for the settlement of the question. The milk or milk modifications fed contain all the necessary growth factors except iron. If there should be a deficiency of the normal reserve iron in the liver, as occurs in twins, prematures, low birth weight babies, and in those who have suffered from certain types of colitis, the effect of inorganic iron should be manifest and measurable. In this connection, however, it should be pointed out that not only does the reserve iron play a part in this anemia, but that also the state in which the iron is offered plays a role in determining whether or not it is to be utilized by the body. Thus the analyses of Krasnorgorsky showed that the iron in human milk is more easily retained than

that of the milk of any other animals, e. g., as compared with goat's milk four times as much relatively of the iron of human milk is retained. Besides, human milk contains about three or four times as much iron as cow's milk (4 mgm. per litre) and Soxhlet demonstrated that this was quite enough to satisfy the demands of the infant. Yet even in the breast fed the amount of iron gradually diminishes toward the latter periods of lactation and hence prolonged breast feeding is liable to cause anemia. It should be emphasized also that the chlorotic anemia of infancy may be observed at any time in the breast feeding period.

An interesting point relating to growth appears to divide the cases of the chlorotic anemia of infancy into two classes: one in which there is anemia of the oligochromemic type with or without pallor, and adequate layer of subcutaneous fat, firm tissues, and no apparent disturbance of growth; in the other class growth has ceased, the weight is stationary and below the average, the color is grayish or waxy or yellowish white, and the tissues are flabby. Those of this latter class are also weak and have frequent colds.

In a series of twelve cases, including two sets of twins, observed in private practice, periodic examinations of the hemoglobin and iron content of the blood as well as of the weight were made. These showed in all cases a resumption of growth with a return of the hemoglobin and iron content of the blood to the normal when inorganic iron was fed in relatively large amounts. No changes were made of the formulas

upon which these infants had remained stationary in weight and increased the poverty of their blood in the hemoglobin. The details, including the charts showing the iron hemoglobin and weight curves, will be presented elsewhere. They showed definitely that inorganic iron is a growth factor which may be observed as such and influences the entire nutrition of growth of the infant. In the case of some of them it had been attempted to relieve the condition by supplying the iron in the form of beef juice, orange juice, egg, oatmeal, and vegetable purges, but without result. It is not possible to conclude whether this ineffectiveness of iron present in these foods was due to its unavailability to the organism as such or whether it should be put down to the relatively small quantity present as far as these individuals were concerned. It is possible that the provision of iron in large quantities has the effect of accelerating a reaction in quasi-catalytic fashion, following the physico-chemical law of mass-action, according to which a reaction proceeds at a velocity proportional to the mass of the substances taking part in the reaction. Accordingly, much of the iron ingested is excreted in the stools. But the effect upon the growth curve and the hemoglobin and iron content of the blood is obtained just the same. If iron is fed in small amounts, not sufficient to appear macroscopically in the stools, the effect is not obtained.

The work of Abderhalden, who produced acquired form of the chlorotic anemia of sucklings in animals by prolonged feeding of new-born upon milk, showed that

the condition could be cured by the introduction of inorganic iron salts. In the words of Osborne and Mandel. "The fact that the growing animal can fully supply from inorganic sources its requirements for the elements specially discussed in this paper emphasizes anew that it is unnecessary to consider the presence of calcium, phosphorus and iron, for example, in natural foods to the degree that is currently believed. Any shortage of an essential inorganic element can be suitably remedied by the use of its salts."

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Protein Desensitization From the Point of View of the General Practitioner.

By J. FRANCIS WARD, M. D.,
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An increasing number of diseases are being recognized as of protein origin. Some of them have been very puzzling to the general practitioner and because the true character of the disease was not understood treatments have been hazardous and usually ineffectual. Among the disturbances which are frequently met with are various skin affections; infantile convulsions and epilepsy; digestive disturbances, such as autointoxication and conditions simulating gastric ulcer; and hay fever and asthma. In fact it is not uncommon to have a patient present symptoms of more than one of these disturbances, which are eventually found to be referable to one or more proteins poisoning the system.

After a brief review of the subject of protein sensitization and my method of desensitization, the disturbances mentioned will be considered in the order named.

Brown (1) believes that the undue reactions caused by the protein of food may take place in any tissue or organ of the body, and the symptoms produced do not depend upon the variety of the protein but upon the tissue in which the manifestation takes place. He, as well as O'Keefe (2), calls special attention to the evident hereditary tendency of protein sensitization, as it is not uncommon to find whole families sensitive to one or more protein foods. The source of the proteins is practical-

ly endless, including not only foods, but hair, dandruff, bacteria and pollens from many trees and flowers. The method of determining to what protein or proteins the patient is sensitive is comparatively a simple matter. It has been fully described by Blackfan (3), Walker (4), Coke (5) and others.

Of the several tests to determine a patient's sensitization to proteins, the one which has proved safe and most reliable is the skin test, performed briefly as follows:

The flexor surface of the arm is thoroughly cleansed and a number of small cuts, not deep enough to draw blood, are made, each about one eighth of an inch long. On each cut is placed a protein and to this is added a drop of decinormal (four tenths per cent.) sodium hydroxide solution. Proteins are permitted to remain on cuts for half an hour, after which they are washed off and the reactions noted always comparing the inoculated cuts with normal control on which no protein was placed, but to which a drop of the solvent was applied. A positive reaction consists of a raised white elevation or urticarial wheal. Generally surrounded by erythematous blush, the smallest positive (one plus) reaction must measure 0.5 cm. in diameter. Any smaller reactions are doubtful. Negative skin tests with proteins rule out those proteins as a cause of the symptoms. All the proteins which react posi-



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tively must be suspected. If the patient is sensitive to food proteins, such foods should be omitted from the diet for at least a month, following which it sometimes happens that the toxic food can be returned to the diet in gradually increasing amounts. Change in living habits usually is all that is necessary to avoid contact with toxic proteins whether foods or animal emanations.

In those cases where relief cannot be effected by change of daily routine, active treatment must be instituted. Reaction to pollens should be anticipated by pre-seasonal treatment. A course covering ten or twelve weeks and comprising at least twelve injections should be completed, if possible, before commencement of pollination. If, however, the pollinating season arrives before the completion of the necessary injections and continuation or repetition of the treatment is considered advisable, the initial dose must always be of such a high dilution that there is no skin reaction whatever and the increase of doses must be given more slowly than in the pre-seasonal treatment.

The majority of physicians treat cases of eczema by intestinal cleansing, such as calomel purges, intestinal antiseptic, and high enemas. Patients suffering from eczema are told by the dermatologist to eliminate red meats from the diet. Some of these patients are relieved, some cured, thus showing that they belong to the class which is sensitive to beef protein. Strawberries often cause urticarial rash almost immediately after ingestion. Sea food may act in the same way. It must be emphasized that no one food protein

is at fault in all patients; it depends upon the particular protein to which the patient is sensitive.

According to the experience of Ramirez (6), in only a small percentage of eczema cases are the patients anaphylactic, but when the skin condition is associated with asthma or hay fever it is usually so. It is therefore essential that patients be thoroughly tested for protein sensitization in order that they may be properly classified and treated. O'Keefe (2) has reported observations upon seventy cases of dietary eczema in children under four years of age. The tests were made by linear scarifications upon the back instead of the arm, as is usually done in adults. Although the mother in no case showed sensitization to the protein to which her child reacted, nearly twenty per cent. gave a history of asthma, eczema, or urticaria in some other member of the family. Elimination or modification of the offending food resulted in so markedly improving the children's condition that O'Keefe concludes that dietary regulation is essential in the treatment of eczema.

We know that attacks of infantile convulsions can be avoided or lessened by intestinal purging, enemas, and intestinal antiseptics. This directs attention at once to the food ingested. Formerly, teeth were considered as the inciting factor. Although some cases of epilepsy develop late in life, the great majority occur between the ages of two and seven. When we consider that this is the age when the child leaves his nursing mother to partake of adult diet, we witness an attack of convulsions which in a great many cases is a

forerunner of a later epilepsy. In most cases of epilepsy there is no pathological lesion, excluding of course, traumatism; the attack appears after a hearty meal. Such attacks are lessened or aborted by cleansing the intestinal tract thoroughly. In static seizures the accepted treatment is limited diet and intestinal cleansing by antiseptics and high colonic irrigations. Is it not reasonable to suppose that by this treatment we rid the body of all foodstuffs which contain the offending protein or proteins?

Dr. H. Geyelin, of New York, in a paper read before the American Medical Association in Boston, in June 1921, told how very effective had been his fasting method of treating epilepsy. In the discussion following the paper, Dr. Stanley Cobb, of Boston, and Dr. Tom A. Williams, of Washington, spoke very favorably of Dr. Geyelin's theory. The method consists of putting the patients on a series of fasting periods. During these fasting periods they had no attacks, showing that the foods containing the protein to which the patients were sensitive were probably the cause of the epilepsy. Dr. Frederick De Lue, of Boston, also discussed the paper and spoke highly of advocating a diet. In view of this testimony and my own experience, I believe that food is the dominating cause of epilepsy. I think that if epileptics, were tested and the foods containing the proteins which reacted positively were eliminated from the diet, we would see a great improvement in the patients, if not an actual cure of the disease.

I am inclined to believe that rheumatism and neuritis may also

be caused in some cases by protein sensitization, just as in the case of skin disease and epilepsy. This field needs further investigation, however, before positive statements are warranted.

In certain digestive disturbances, however, sensitiveness to certain proteins has been definitely shown to be the underlying cause. Recently the French pediatrician, Gruet (7), reported on the toxic property of cow's milk made evident by the injurious effect on very young infants. The protein is not enzymatic in nature, and is apparently heat stable to a considerable extent. It is only imperfectly attacked by the digestive juices of the infant and also is able to make its way through the gastroenteric wall and into the circulation, where it deranges the metabolism. Incidentally it often leads to nitrogen retention, and the symptoms of uremic intoxication become evident. The development of acidosis may also be seen. In general the condition invariably terminates in a wasting process.

Still more recently the experimental work on rats done by Hartwell (8) showed the extraordinary reaction which will follow upon the excessive ingestion of a specific protein. In this experiment caseinogen, added to the diet of the nursing mother, caused the death of the rats while the mother remained in apparently good health. The few rats which survived the lactation period were not successfully weaned. The young rats had fits, exhibited extensor and contractor spasms, and just before death extreme exhaustion was evident. While it is unlikely that a nursing woman would ever take so large a proportion of

a specific protein as was given in these experiments, it is clear that excessive protein in the mother's dietary may lead to metabolic and nervous trouble in the nursing child.

Case 1, reported at the end of this article, is typical of my experience with protein intoxication causing gastric symptoms. Ramirez (9) reports the case of a child of seven who had attacks of severe epigastric pain. The attacks came on three or four hours after eating and lasted thirty minutes. X-ray examination showed a decided pylorospasm. The protein test showed a strongly positive reaction to whole egg. Four months after the entire elimination of egg from the diet the child had only occasional attacks, but the skin test was still slightly positive. Ramirez believes the occasional attacks were due to the presence of some egg in the food. He has had four cases of pylorospasm with moderate increase in gastric acidity of definite anaphylactic origin in which the spasm completely disappeared on removal of the offending protein.

That hay fever and asthma may be cured by protein desensitization is probably more generally recognized than the diseases previously referred to. Undoubtedly this is due to the fact that individuals affected with these respiratory diseases noticed the connection with flowers and attention was directed into the proper channel. Among those who have done excellent work in this field are Walker (4, 10), Babcock (11), Thro (12), Donnelly (13), Cooke (14), Ramirez (9), Coke (5), and Luckie (15). Naturally a diversity of methods has been the result of

the various researches. Experience has shown, however, that essentially the treatment outlined at the beginning of this article has been most practical, as well as gratifying in results. Therefore no other methods will be detailed at this time and the reader is referred to the bibliography for the historical development of this treatment.

Ramirez (16) has reported a striking case illustrating an acquired anaphylaxis. A man was transfused with 600c. c. of blood with no immediate discomfort. Two weeks later, on going out for a drive, he was seized with violent asthma. He had never had any symptoms before. It was found that the donor of the blood was an admitted horse asthmatic, and on testing it was found that he was sensitive to a much higher dilution than the recipient. Another man who had received blood from the same donor presented no symptoms of asthma.

The following case reports are typical of my observations with the effect of protein sensitization:

Case I.—J. D. German, butcher, aged forty-two years. Chief complaint: stomach trouble for the past five years with symptoms typical of gastric ulcer. He had been to various stomach men who diagnosed his case as gastric ulcer of the pylorus and advised operation. As he refused this he was referred to me as possibly suffering from anaphylaxis. His radiograph was negative. Tested with the various proteins on his diet list, he showed four plus to beef, three plus to onion and two plus to cabbage. Without questioning the diagnosis of gastric ulcer, I told him to eliminate these three

foods from his diet and report back to me after a week. At his second visit he informed me that he had suffered from none of the symptoms during the past week. I then had him try eating a little beef, onion and cabbage for a week. At the appointed time he reported that he had had a return of the symptoms. He then completely eliminated these three foods for a period of six weeks and reported that he had had no return of the symptoms. He has now gone for four months without a recurrence.

Case II.—J. D., a boy of three years, had suffered from eczema for two years. He had been treated by various physicians without success and was referred to me for a protein sensitivity test. He showed three plus to white of egg and two plus to potato. His mother eliminated these two foods from his diet and by the end of a week the rash had entirely disappeared.

Case III.—Mrs. R. S., aged forty-nine years. Chief complaint: slight attacks of hay fever and eczema starting about the middle of August and continuing to the latter part of September, every year for the past ten years. She was sent to me in June, 1920, to be tested for the possible cause of the hay fever. She showed five plus to ragweed and two plus to daisy. I started treatment at once to immunize her and she passed through the fall season with no attack of hay fever and no sign of eczema. I believe the eczema was due to the ragweed.

Case IV.—R. H. a boy of nine years. Chief complaint: asthma for six years. He was referred to me for protein diagnostic tests. He was found to respond four plus to

chicken feathers. He lived on a farm where there were a number of chickens and he slept on a feather bed and mattress. A hair mattress and pillow were substituted with some relief. This was in January of the present year. I was about to start immunizing him against chicken feather protein when his aunt informed me that she dreaded the spring and fall because they seemed to aggravate his symptoms. I then tested him for the spring and fall pollens. He showed six plus to orchard grass and five plus to ragweed. I started treatments with orchard grass. I did not use feathers as he could partially avoid them. The twelve treatments for orchard grass were finished by the middle of June. During this period he had had but two attacks which were very slight. From the middle of June alternate treatments for immunization against ragweed and feathers were given.

Case V.—N. S., a man of twenty-eight years, a chauffeur, had suffered from asthma for twenty years. His mother told me that as a young boy he was in the habit of playing in a stable near their home. It was at that time that he first showed asthmatic symptoms and he was taken to a doctor. She supposed he had catarrhal bronchitis, but the doctor diagnosed a typical asthma. The boy had always lived near stables and he had noticed that he always had attacks when he came near horses. Of late years he had had symptoms when he drove the automobile into the country. Tests for horse dander and the spring pollens showed him to be four plus sensitive to the former and six plus to timothy grass. Alternate

treatments for the two proteins have effected a partial immunization. He has had four slight attacks since last February. The treatments for horse dander have not yet been completed.

Case VI.—Mrs. F., aged thirty-five years, a sufferer from asthma since she was sixteen years of age. Tests for all proteins were negative except for *Staphylococcus pyogenes aureus*. Twenty-two treatments brought about no immunization.

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By Sir Berkeley Moynihan, K. C. M. G., C. B. Leeds, England, Philadelphia and London, W. B. Saunders, Company 1921 Canadian agents, The J. F. Hartz Co., Ltd., Toronto.

This book contains a number of essays that have been published at various times during the last few years. A few alterations have been published at various times during the last few years. A few alterations have been made, and the statistical figures have been brought up to the end of the year 1920.

The publication, in a single volume, of addresses lectures, and essays that have appeared in different journals, and at varying intervals, of time, may find its justification in that it presents a consecutive train of thought and experience for final judgment. And I may truthfully plead that the wishes of many friends have led me to collect these scattered artic-

les in the present little book which I offer for their consideration.

It contains the following interesting essays:

The Murphy Memorial Oration; The Ritual of a Surgical Operation The Diagnosis and Treatment of Chronic Gastric Ulcer; Disappointments after Gastro-enterotomy; Intestinal Stasis; Acute Emergencies of Abdominal Disease; The Gifts of Surgery to Medicine; The Surgery of the Chest in Relation to Retained Projectiles; The Most Gentle Profession.

An American Text-Book of Gynaecology

Any text-book of gynaecology which appears with the imprimatur of Dr. John G. Clark obtains thereby a good send-off, and is certain to receive more than passing attention from those to whom Dr. Clark's name stands for all that is soundest in American gynaecology. Dr. Brooke M. Anspach is to be congratulated, therefore, not only upon having such a godparent for his new book but also upon his having made the book worthy of its sponsor. Founding on an accurate, full, and lucid description of the anatomy and physiology of the reproductive organs in woman, the author follows the usual procedure of discussing the causes in general of pelvic disease and the methods of investigating it. The examination of the urinary system is particularly fully dealt with, and includes catheterization of the ureters, pyelography, and the estimation of the renal function. In his description of the diseases and abnormalities of the different organs Dr. Anspach follows topographical classification, and while we may regret the sacrifice of strict scientific perspective which

this arrangement entails we cannot but admit that on the whole it makes the subject simpler to the student or practitioner who has not given special study to the subject; together they form the public for whom the book is designed. An attempt to redeem the sacrifice is made by devoting separate chapters to the special peculiarities of certain forms of infection, notably gonorrhoea, tuberculosis, and syphilis.

The last sections of the book are occupied with the description of therapeutic measures, operative and medicinal. Special sections of considerable value are devoted to the discussion of radium and x-ray therapy, and to the use of vaccines in gynaecology. The book is sumptuously illustrated by 526 figures, most of which are well designed and likely to prove helpful. At the end of each section is a short but carefully selected bibliography of the more important papers on the subject, culled from both the more classic sources and the most recent work. Dr. Clark in his introduction makes particular reference to this, and we agree that the author has exhibited great discrimination in his choice of references.

The general impression that the book has made upon us is that, without being encyclopaedic, it is full and complete, accurate, lucid, practical and throughout written with the restraint that is the hall mark of a well-balanced judgment accordingly. Not for a long time have we seen an American text-book so well calculated to become popular with students on this side of the Atlantic as well as in the land of its birth.—The British Medical Journal, June 18, 1921.—J. B. Lippincott Company, Philadelphia and Montreal.

Pollinosis, or Hay Fever.

By BEN CLARK, GILE, M. D.
Philadelphia.

In recent years the term pollinosis has come into general professional use to designate a widely distributed and prevalent disease, popularly known as hay fever, harvest catarrh, rose cold, autumnal catarrh, and vasomotor rhinitis. These titles either describe some symptom or have reference to one or another of the various theories held in regard to the etiology of the disease.

Examination of the older literature shows that clinicians had long observed manifestations of this disorder, but were confused in their interpretation, and classed such manifestations with a variety of other nasal affections. It was not until the nineteenth century that the disease was recognized, under the name hay fever, as a distinct pathological entity and segregated from all others. For this advance we are indebted to John Bostock, an English physician (1773-1840), who was himself a sufferer from the disorder, and who in 1819 published a monograph upon its clinical history; a monograph so comprehensive and accurate that subsequent writers have made no additions to the symptomatology therein given.

In 1873, Dr. Charles Blackley, of Manchester, England, using as a basis the study of his own case and the opinions current in his time regarding the causation of hay fever, demonstrated that the pollen of nearly all grasses and plants, either fresh or dried, was capable of producing the symptoms of this disease. He also showed that symptoms did not appear until a certain number of pollen

granules were present in the atmosphere, and that the intensity of the symptoms was in direct proportion to the prevalence of the pollen granules. Blackley's admirable research was lost until 1903 when Professor Dunbar, of Hamburg, inspired by the success of the diphtheritic antitoxin administered to horses a substance derived from the pollen of many plants, and then from the equine blood produced a serum called pollantin, which was given both as a preventive and as a cure for hay fever. This attempt to find a serum treatment being in accord with the trend of therapeutic investigation of the time excited considerable interest and elicited some hopeful reports; but with the discovery of anaphylaxis and some of the laws governing its manifestations, the toxin-antitoxin theory of Dunbar was found to be fallacious. It was he, however who demonstrated that the active principle in pollen was an albuminous body which could be extracted from the pollen granules by salt solution; although it remained for other investigators to show that symptoms of hay fever were manifestations of hypersusceptibility in the individual to the albumen of certain pollens of atmosphere and reaching the nasal mucosa in the act of inspiration. The pollen, coming thus into contact with the sensitized mucous membranes, causes a local intoxication which results in irritation of the terminal nerve fibrils. In this way the symptoms of hay fever are developed.

During an attack of hay fever there is a peculiar form of intranasal inflammation with great vaso-

motor relaxation, so that blood-vessels are turgid, and there is edema, soreness, itching and profuse leakage of serum. The conjunctiva is affected in a similar way, presenting a bright red congested aspect, and there is copious lacrymation. The sensory nerves share in the disorder, becoming so hyperesthetic that irritation of the most trivial kind will excite violent and persistent sneezing. A psychic element is frequently present manifesting itself in a restlessness and irascibility out of proportion to the physical discomfort, great as that is. Persons whose selfcontrol is habitual, may, during an attack, display an excitability almost hysterical. Another sign of psychic involvement is the fact that at least some of the symptoms may be produced by subjective sensations. In sufferers from rose cold, the neural phenomena are excited by inhaling the fragrance of a rose; and some of these patients will sneeze violently if a rose, which they think natural is brought close to their nostrils, although the flower may be artificial and devoid of odor.

Hay fever is especially prevalent in the latter half of August when the pollen of ragweed is most abundant and gradually subsides with the passing of the season. In making a diagnosis of the disease the season during which the symptoms occur should receive due consideration; as, for instance, rose cold occurs when roses are in bloom—the end of May and the month of June—although, strange as it may seem, hay fever is usually due to the pollens of the common grasses, rarely to the pollen of the rose.

As hay fever is prone to attack unhealthy mucous membranes, careful search should be made for any nasal lesion that may have proved a causative factor. Abnormalities of the septum should be corrected, hypertrophies of the turbinals reduced, and polypi removed. Hyperesthetic spots upon the nasal mucosa should be destroyed with chromic acid, or with the galvanocautery under local anesthesia. In addition, every effort should be made to build up the patient's health by the restriction of stimulants and excitants, and by the use of nourishing food, exercise and a hygienic mode of life.

The best material for making the intradermal tests of hay fever is the dried pollen of each individual species of plant, which should be free from admixture with the granules of any other variety. With the point of a scalpel a slight scarification of the skin is made on the anterior surface of the fore arm, care being taken that no blood is drawn. Place upon the scarified areas a drop of salt solution, and upon the drop of saline a small portion of pure pollen which should be carefully worked into the open scarification. Although the dermal reaction may take place within a few minutes, it is best to allow the pollen to remain for an hour, when it may be washed away without interfering with the result. When the reaction is intense, there is at the seat of the inoculation a raised white centre resembling a bee sting, which is surrounded by a reddish areola measuring from one half to three inches in diameter. This reaction is accompanied by more or less itching and burning. Negative reactions may show an immediate

area of redness but this does not increase and the positive tests act as controls.

When making an inoculation a careful record is kept of each variety of pollen used in every individual scarification. The positive tests show the pollens to which the individual is susceptible, and from them a vaccine of definite strength is exhausted. The dose is noted in terms of the protein nitrogen content of the extract.

The prophylactic treatment of hay fever is of paramount importance and may be begun two or three months before the expected attack. The initial dose of pollen protein nitrogen is 0.0025 mg., which will reduce some immunizing response without producing disagreeable effects. The subsequent doses are gradually increased until 0.02 mg. are reached; although in some instances larger doses are necessary to relieve symptoms.

The intervals between injections are usually from five to seven days.

During an attack of hay fever the injections of pollen extract are given daily in ascending doses until relief is obtained. At this point the dose is usually about 0.02 mg. although larger amounts may be given, and from then on the intervals between injections are gradually increased until they are given from five to seven days apart. If the injections are required often-er than every five days the data upon which the diagnosis is based should be carefully reexamined. If the symptoms persist, notwithstanding a carefully reviewed diagnosis and specific treatment, injections of an autogenous bacterial vaccine should be alternated with the pollen extract. This vac-

cine should contain the bacteria found in the nasal fossa, and which may grow vigorously, exerting a toxic effect upon the mucous membrane whenever the secretion is modified by the irritating action of the pollen. The dose of this bacterine is gradually increased until at the point of injection a slight local reaction appears.

The results of treatment so far recorded have been highly encouraging. More than eighty per cent. of those treated have been entirely relieved or markedly benefitted by the specific injections. The immunity obtained is relative; that is, an overwhelming exposure to the pollen may produce symptoms but as a rule they are much less severe and disappear more rapidly than those experienced by patients who have not been desensitized.

To our Readers

Comments we receive indicate the new policy of the Lancet is being noticed—Some are highly complimentary some, are mildly critical, We ask ourselves are we on the right track—are we giving the medical profession what they want.—Frankly we are honestly endeavoring to do so, the message we want to get to our readers is—this, make it your paper criticize it, write us, offer us suggestions on what you want and we will publish it for you.—Canada and Canadian Medical Men, can use a high class Medical Journal. The Lancet can be that journal with your cooperation.

Why Quackery ?

In a copy of a Vancouver Daily were two advertisements, one telling of a doctor who was giving "health talks" in the first Methodist Church. His subjects as announced covered the usual hunting ground of mendicants. Of course the lectures were free, but nothing prevented the purchase of literature nor paying a fee for class instruction upon "How to breath" and "how to drink". This man who by the way, is supposed to be a D. D. and a prominent member of a southern conference, has extended the scope of the ministry to include more than mans psychic activities and has capitalized the same. The other advertisement was that of a Doctor, "America's Greatest Orator", a specialist in "applied psychology" who is prepared at a handsome fee per head to fill one of the city theatres nightly. Now what have we in these two men, the one filling a down-town church with a hungry crowd of half-starved religious dyseptics and nurasthenics the other filling a theatre with a motely crowd who are captivated by the word "psychology", and are anxious to know something of what modern psychology has to say with respect to themselves.

Now it may be easy for the ultra orthodox to hold aside his garments as he passes by and pass a trite remark attributed to Barnum, but that gets us nowhere Newton saw an apple drop and thought it over. We have seen this crowded church and theatre. Let us think over it.

In the first place the probability is that neither of these speakers states anything but the truth possibly a little embellished at times to suit the temper of the

audience. At least in investigation popularized up to date. The public are anxious to learn. They find that neither from their pastor, nor their family physician can they get the desired information. Why then should they not patronize the medical and psychological show if they can there obtain knowledge which they are unable to procure from other sources?

The public thirst for information relative to both our physical and psychic nature is increasing. If the orthodox custodians fail in the dissemination of such, it will be secured from other sources, and the clergyman and the physician will sink in public estimation in direct proportion to their neglect of this ever increasing constituency. We of the regular profession must be awakened to the *raison d'être* of the rapid growth of this public appetite as expressed in the multitude of modern cults. They are but the evidence of a deep seated thirst for truth, and are the distorted expression of a perfectly legitimate desire to know. When we have digested this fact we must be prepared to supply the demand, for until it is cared for by the regular profession, it will not be neglected by the irregular certificateless stranger who does the work we should do, and departs with a full wallet to other fields "ripe unto the harvest."

The policy of exclusiveness followed by the medical profession must give way to one of taking the public into our confidence, if ever we hope to stem the ever-growing tide of the cults that have recently entered into the medical competitive field. The public are

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grossly ignorant of the great advance which medical science has made; they know little or nothing of what has been accomplished in lessening epidemics and prolonging life. We must come to their rescue and capture the constituency now held by Christian Science Chiropraxy and the host of minor paths. This can be done by educating the public. It cannot be done by ridicule. All of these modern medical mushroom growths contain a modicum of truth, which we have largely neglected, and upon this fraction is built a system as absurd as it is partial. Yet can we blame the truth seeker for his enthusiasm in the discovery of a star, while we who have seen the universe have heretofore offered him no facilities even for the observation of that one orb?

It is incumbent upon us to swing open his vision to show him that what he thinks is new, is old; and what he cherishes as the whole truth while it may be relatively true is but a small fragment of world information that is ours to present.

Not until the clergyman and the physician take their proper place and accept their position as educators can they expect society to extend to them the respect and honor due their high office. We have ourselves, and only ourselves to blame for the onslaught of quackery that is flooding the public mind, capturing the attention of many of our former clients and making easy money.

I question seriously if this matter can be satisfactorily dealt with through legislation. It matters not what reasons we urge for action against uncertified practitioners. Such reasons will be accepted by the public as but camo-

flaged jealousy, and will add laurels to the reputation of the quacks, and dollars to their credit. Since their success is dependent upon the fact that the public think they have what we do not possess, we must correct that error by a campaign of education and convince the public that our education has not been wholly useless.

How is this to be accomplished? First I would suggest that this matter be made a subject of discussion in the medical society. A perfect agreement can never be reached, but some enlightenment must necessarily result. That it should be recognized that every medical man should feel free to speak upon any medical subject of popular interest without feeling that in doing so he is violating any point of agreement among his fellows, or transgressing any point of medical ethics. Further, I would suggest that a course of public addresses be given by selected members of the medical society. This would bring the profession and the public into closer touch, and would go far towards accomplishing the purpose for which this paper has been written.

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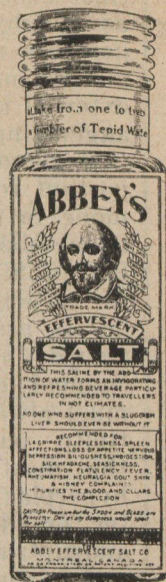
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Dr. Simon Levin.

The writer has examined, 1,783 unselected individuals living in his own community (which lies distinctly in the Great Lakes goiter belt), in their relations to enlargements of the thyroid. In the district chosen there happened to be three different water supplies—spring water, Lake Superior water, and well water which is also spring water. The people were Americans, above the average in intelligence and in living conditions. There were 790 males 993 females, with 242 full family single; 1,243 were born there, and records; 714 married and 1,029 538 born elsewhere; 341 of the

latter having lived there 15 years or more.

He has studied in detail the influence of goiter, the different water supplies, the influence of age and sex on the incidence of goiter, the different types of goiter, the parental relationship of goiter, and has reported four specific cases, and also studied the liability of development of goiter and the relation of infection. Summarizing his findings, he concludes:

In a zone in which thyroid enlargements occur, there is a normal physiologic hypertrophy, and this should not be called goiter,

All adenomas, cystomas and distinct colloid goiters are classified as nonphysiologic. Simple enlargements may be only a physiologic response to internal needs or external influences—the latter exaggerating the former. The thyroid gland, no doubt, plays an important role in the endocrine hormone in maintaining the balance of metabolism in the body and being prominently located, exhibits its response more markedly than do its associates. But long continued hypertrophy means permanent enlargement, and one must always keep in mind the definite pathologic potentiality of this most active tissue. When hyperplasia occurs in simple goiter, or adenoma, whether fetal or adult, true exophthalmic goiter and hyperthyroidism may follow.

In the whole group examined for enlarged thyroid—ranging in age from new-born to sixty-one years—there were 682 simple goiters, giving no symptoms, except a homogeneous enlargement of both lobes and isthmus that was small, moderate, or large; there were 420 adenomas with a circumscribed mass, or masses, occupying any portion or portions of the gland, simple or multiple; or cystomata, which could not always be differentiated macroscopically from adenomas, as the living surgical pathological specimens demonstrated; and 44 colloids, an enlarged thyroid gland, firm, symptomless, except for pressure, all the gland involved.

The incidence curve showed that goiters increased in both sexes during puberty, dropping to a small degree after the growth of the individual was attained. The curve remained in the female for the child-bearing period, going

down at about thirty-eight to forty years, when it rose again for the menopause. In the male, the curve gradually dropped till thirty-five or forty years, when there was a small rise due to the growths in the glands asserting themselves, the male having no special metabolic change to influence the enlargement.

\$15,000 Grant for Extension Work

The Red Cross Society of Canada has set aside \$15,000 for the carrying out of medical extension lectures through the provinces. Notification to this effect has been received by the local Institutes of Public Health, which will thus be enabled to send lecturers to speak on different health topics.

All of the money, which comes in three installments of \$5,000 a year, will be handled by the Ontario Medical Association. It will in turn make appropriations to other branches so that as many lectures as possible may be given this fall and winter. Neither the association nor any community will thus be asked to contribute toward the expenses of the lectures, as they were obliged to do last spring.

It is planned that a number of communities shall be visited by members of the association this year. Several requests have already been received and as these are increased a series will be arranged that will cover the entire fall and winter months. Dr. Hill of London, intimated that no less than 22 medical men throughout the province will be engaged in this extension work.

High Blood Pressure

Hypertension is directly responsible for many ailments occurring during and past middle life. The troublesome spells of vertigo, and the possibility of an attack of angina pectoris or apoplexy renders it of vital importance to keep the blood pressure within normal limits.

The treatment productive of clinical results and subjective comfort must not only include a consideration of hygienic and medicinal measures but also a careful supervision of the food and drink of the patient.

Just as it would be the height of folly for a subject of hypertension to run after a moving trolley car, so it is very unwise to continue taking beverages containing such a stimulant as caffeine. Indeed, a cup or two of tea or coffee may be sufficient to precipitate a crisis in such cases.

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Jaundice

Doctor John B. Deaver,

Jaundice is but a symptom and may occur in conjunction with obstruction of the larger bile passages by gall-stones, cicatrices, neoplasms; obstruction of bile passages within the liver; or from localized inflammation. It may occur low fever, malaria or other infectious conditions that have no apparent connection with the liver. Toxic poisons such as arsin, phosphorus and others often produce yellow pigmentation of the skin. Icterus neonatorum is a type traceable to physiological condition. The psychic element appears in what is known as emotional jaundice.

The commonest type is due to absorption of bile through calculous obstruction of the common bile duct; less frequently, as in catarrhal and infectious jaundice bile absorption occurs in the liver without duct obstruction; while in the hemolytic type discoloration of the skin is due to disintegration of the red corpuscles, through diminished resistance of which the gall bladder loses its color and its walls thicken so that bile is not excreted by pressure action of the liver and is forced into the lymphatic system and blood stream.

Special tests to determine presence of bile retention demonstrate probable affection of the liver cells in milder types of catarrhal jaundice, the lesions being slight and recovering easily. Special attention has been devoted to study of bile elements in the plasma in dissociated jaundice. This term refers to the dissociation of the bile salts and pigments in the plasma. By using collodion sacs with spectroscopic analysis it has been demonstrated that bile salts found in the liver may be sent separately into the blood though bile pigment may not. The existence of dissociated jaundice of hepatic origin has been determined. The term "complete jaundice" has been proposed for cases showing presence in the blood of bile pigments and salts, "hepatic dissociation jaundice" when bilirubin or bile salts are found separately in the blood, while "hemolytic jaundice" indicates presence of bilirubin, when found exhepatically, in the blood without bile salts.

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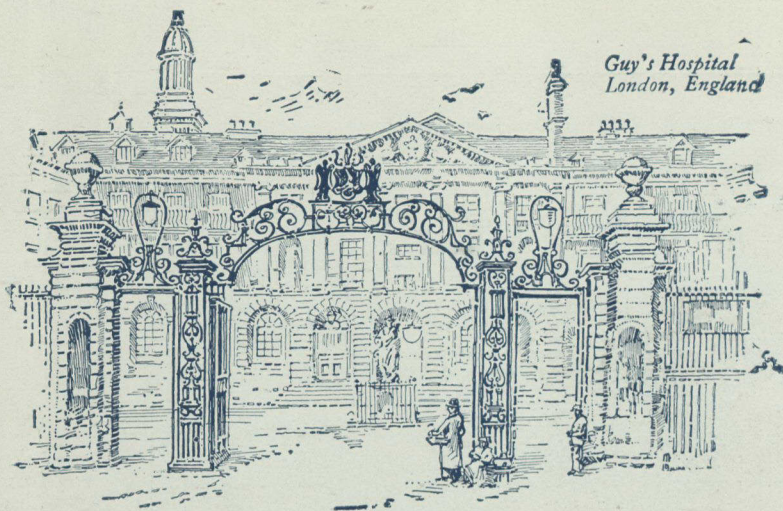
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