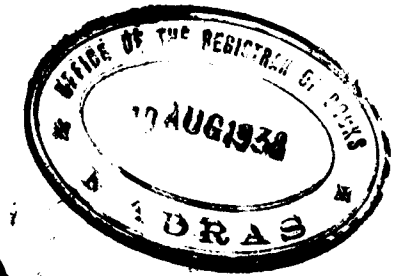


THE MISCELLANY

OF



THE TRICHINOPOLY DISTRICT MEDICAL ASSOCIATION (REGISTERED)

Editor : DR. M. C. CONDILLAC, M.R.C.S., L.R.C.P., M.M.

APRIL

1938

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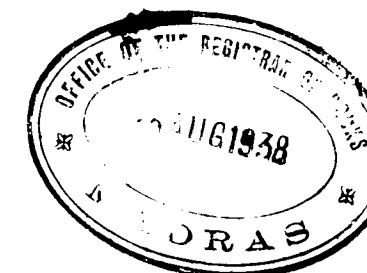
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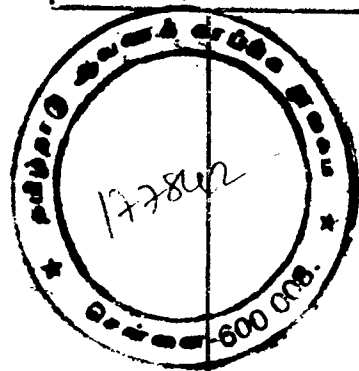
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MISCELLANY of :: ::
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April 1938

The Editor requests contribution on Medical, Topical and News Subjects from Members of the Association and other medical men. Contributions should be sent typed in duplicate and signed by the contributor. In case where it is desired to write under a nom-de-plume the signature must be included for the information of the Editor as a token of good faith.

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Editor : Dr. M. C. CONDILLAC, M.R.C.S., L.R.C.P., M.M.

Vol. V]

APRIL 1938

[No. 4

The Value of Temperature Charts in the Diagnosis and Prognosis of Pulmonary Tuberculosis

BY

DR. K. VASUDEVA RAO, M.D.

Superintendent, Govt. Tuberculosis Hospital, Madras

TEMPERATURE plays a very important part in diagnosis of active tuberculosis. In places where clinical diagnosis has not attained a sufficient standard of efficiency, very frequently the temperature chart is misjudged and erroneous conclusions are drawn and diagnosis of the true condition of the patient is not infrequently delayed, thus losing a lot of precious time.

The temperature in cases of pulmonary tuberculosis is varied in manifestations and unless, great precautions are taken the common practitioner is misled.

In the early stages of pulmonary tuberculosis, the temperature is so slight that it is difficult to notice it by means of touch. Very often, I have seen patients coming to me and saying that they have no temperature and when I put a thermometer in their mouth, it registers a temperature of 100 to 101. Though it is very frequently said that even very small rises of temperature could be made out by the patients

themselves by such signs as burning of the eyes, burning of palms and soles of the feet etc., yet a large number of these do not experience this. The only other disease in which a patient does not feel the temperature even though it is high, is Kala Azar. Hence it is essential that the word of the patient should not be taken as gospel truth and it must be tested by regular recording of the temperature.

The temperature in pulmonary tuberculosis is usually taken in two places, rectum and by mouth.

There are two schools of thought each recommending that the temperature should be taken in a particular way. My experience has been that in institutions where very many patients are crowded together, enough privacy may not be present for taking rectal temperature. But in institutions, where there is certain amount of privacy, it is possible to take temperature per rectums. The temperature taken by mouth is liable to changes due to various causes. The temperature of the atmosphere will have its effect on the mouth temperature. The temperature will vary with either a hot or cold drink. The temperature will also vary according to whether the mouth is kept closed or engaged in talk.

The rectal temperature is very rarely influenced by the above mentioned conditions. Though occasionally during periods of local irritation, the rectum may register a little higher temperature than usual. I follow the rectal method of registering temperature at the Tuberculosis Sanatorium, where there is not much crowding of patients, and in the Royapettah Tuberculosis Hospital, I have been following the old method of taking the temperature by mouth.

The rectal temperature certainly gives us a better idea of the exact condition of the patient. Wherever possible, I would recommend its use in preference to the oral temperature.

By whichever route the temperature is taken I would insist on the following conditions being satisfied.

1. That the thermometer that is in use has been compared with a standard one.

2. The thermometer should be kept in the mouth under the tongue for at least 3 to 5 minutes even though the thermometer is said to be a half a minute.

3. When mouth temperature is taken, precautions should be taken that there is no drink or food taken at least half an hour before the temperature is to be taken.

4. The mouth must be kept closed throughout the 3 to 5 minutes and the practice of patients to take out the thermometer every few seconds and then put in again after seeing the temperature should be deprecated.

5. Where there is any local irritation in the rectum there is no good persisting to take the temperature by rectum but it must be taken by mouth or P. V. in women.

The temperature taken by rectum in a normal individual will register a reading varying from 98 to 99.4. Any rise of temperature about 99.4 must be considered as pathological.

In mouth the normal temperature may vary from 97.8 to 98.8—very occasionally 99. Hence any temperature about 99.4 by rectum and 99 by mouth should be considered to be pathological and it is fever. There are certain types of people in whom the temperature never reaches the normal point of 98.4 and in these even though the temperature is roundabout normal, they feel feverish. In those people the normal temperature is somewhere about 97.8. It is therefore necessary to have a preliminary idea as to what the normal temperature of the particular individual is for assessing the value of the rise in temperature.

In the early stages of pulmonary tuberculosis, the rise in temperature is very small going up to 99.6 to 99.8. As the disease advances, various modifications of this temperature take place depending upon the condition of the patient.

As told before, the type of temperature that met with in early stages is one of the intermittent in character; the highest temperature being 99.6 to 100 and the lowest being from 97.4 to 97.8. The highest peak is reached most frequently between 4 and 6 in the evening according to some people and according to others by about 2 in the afternoon.

I personally believe that it is not safe to be under the impression that the highest peak is reached at these two hours. I have seen many cases where the temperature has reached its maximum at odd hours in the night. This rise in temperature when it occurs and specially when it is exaggerated and ushered by a rigour, is frequently mistaken for Malaria; septic conditions and Filaria depending upon when the rigour occurs. It is very often seen that in a fair number of people the temperature keeps at the raised level only for a very short time and if that period is missed the case may be taken as apyrexial. For this, we have to be on our guard not to miss this, hence it is necessary that in cases of suspected tuberculosis, the temperature should be taken every two hours both by day and by night so that any slight rise in temperature that may be present at any time may not be missed.

The second type of temperature that frequently occurs is a remittent in type, where there is a difference between the maximum and minimum temperature but the temperature never touches the normal. This occurs in a little more advanced cases of pulmonary tuberculosis—passed the first stage.

The occurrence of this type of temperature in a case which was intermittent is always a bad omen. In more acute cases, we get almost continuous temperature where there is very little remission and it is almost a continuous line. The occurrence of this type of temperature either by itself or changing from remittent to a continuous one is always bad and prognosis is extremely grave and when it does happen we will have to search for symptoms of three conditions 1—Miliary Tuberculosis, 2. Meningial Tuberculosis, and 3. Tubercular Lobar Pneumonia.

When on the other hand a continuous temperature shows a tendency to become remittent or intermittent—the prognosis in those cases is better.

When the patient is getting better the drop in temperature always keeps in proportion to the pulse rate. In the ordinary type, where the patient is improving and the temperature has dropped down, there is always an improvement in general condition of the patient as well as in the pulse rate, whereas

in the case of advanced disease it is not infrequent to see the temperature drop down to below normal and the pulse rate keeping up 120 and above. It always means that there is very little resistance in the individual and there is no reaction as shown by the temperature. The chart is no guide to the exact condition of the patient. It is the pulse that should always be looked upon as a better guide.

The other characteristic of temperature in pulmonary tuberculosis is that the thermal centre is exceedingly irritable. The temperature is easily disturbed by small external stimuli, which in an ordinary person will produce little or no effect at all. Thus if a patient suspected to be suffering from pulmonary tuberculosis is asked to take a little walk—about half a mile there will be an appreciable increase in the temperature and the increased temperature keeps up for more than half an hour.

In a healthy individual, there is a slight increase in the temperature after any exertion but it drops down to normal within half an hour after rest. Whereas in the case of tubercular patients the temperature rises to a higher degree and does not drop down to normal within half an hour. It takes an hour or more.

In cases of doubt this provoked temperature is a very valuable data in coming to a definite conclusion. Not only bodily exercise but even mental excitement is capable of producing a definite rise in temperature in these tubercular patients. Things like a ride in a motor car, the coming of an unexpected visitor or news either good or bad has its effect on the temperature. These are called provoked temperatures and provoked temperatures are always characteristic of pulmonary tuberculosis especially in the active stage.

As the disease gets better, the thermal centre becomes more and more stable and less and less excitable. You do not get the same rise in temperature after the patient has sufficient treatment and no patient should be pronounced to be fit unless the regulated exercise given to him proves to be afebrile.

In certain other conditions of advanced pulmonary tuberculosis the temperature chart shows an inverted type; the

morning temperature being highest and the evening temperature low instead of the evening temperature being high and the morning temperature low. The occurrence of this condition is due to the fact that during early hours of the morning there is a slight amount of resistance in the individual and this is shown by a rise in temperature and as the day grows, the resistance wanes and towards the evening it is practically nil and hence there is little or no resistance at all and the temperature naturally comes down. The occurrence of an inverted type of temperature is always a bad omen, and prognosis in these cases is extremely bad—patient very rarely living for more than a month after that.

Occasionally the inverted type of temperature may be a manufactured one instead of real. It is most frequently due to the administration of coaltar preparations for purposes of reducing the temperature. Drugs like, aspirin, Pyramidon, Cryagenin are frequently used and when they are given one or two hours before the onset of the maximum temperature, they have a tendency to lower the temperature. The moment these drugs are withheld, the inverted type of the chart changes and you get the usual remittent or intermittent type.

In certain other cases, instead of getting an intermittent, remittent or continuous temperature, we meet with what is called a cyclic type of temperature. What happens in this condition is this; the patient is apyrexial for a period of 10 or 15 days. Then the temperature is ushered in by a rigour and keeps up raised for about 4 or 5 days and then drops down to normal again and then the patient is apyrexial for 2 weeks or so. This goes on periodically. If the patient is caught in one of these apyrexial periods, it is quite possible that the true condition of the patient may be missed and hence when the patient is suspected to be suffering from tuberculosis and if the temperature is roundabout normal at the time of your examination, it is always safe to insist on the patient keeping a temperature chart for at least a month. The temperature in these cases of cyclic bouts is practically the same as is found in cases of relapsing fever, malignant malaria, bacillus coli infection and it is very frequently diagnosed as one of these

when the true condition is pulmonary tuberculosis. This relapsing type of temperature may occur either in the acute stage or during treatment. In pulmonary tuberculosis, there is waxing and waning of the immunity in any affected person and during periods of increased immunity there is no fever and during periods of reduced immunity, the toxic element predominates or in other words, you get periodical relapses or short duration in between periods of fairly normal condition. During treatment, when large cavities are present, occasionally it happens that the secretions get accumulated in these cavities and they are not easily expelled. During this period of retention of secretions the temperature which was found about normal rises and the quantity of sputum brought out decreases. The patient often complains of a certain amount of distress over the region of the cavity and that he is not able to expel the sputum as easily as he was doing before. This state lasts for about 3 or 4 days or for a week and all at once, the cavity empties itself, large quantity of sputum is brought out after a hacking cough and the temperature drops down and keeps round about normal for some time and again the same thing repeats. The occurrence of this condition always pulls down the patient and makes him weaker and when this occurs frequently, attempts to close the cavity must be made.

In certain other cases, the temperature chart shows double rise, the first being between 10 and 12 in the morning and the second rise between 8 and 10 in the night. Double rise in temperature frequently occur in malignant malaria and Kala Azar. In the latter it is said to be always Pathognomic. When the occurrence of this condition in Pulmonary Tuberculosis is not thought of, it is quite possible to miss the diagnosis of this case and take it to be one of Kala Azar or malignant malaria. This double rise in temperature could also be caused by the administration of drugs like aspirin, pyramidan etc. Later when caseation and cavitation progressing rapidly, the temperature takes on a hectic form. The morning temperature being subnormal say 96 and the evening temperature being 103 or 104. Very frequently there is a sense of chill or rigour. The causation of this hectic temperature in Pulmonary Tuberculosis has been accounted for in various ways. It is thought that

when caseation and breaking down of the lung tissue is taking place, micro-organisms that are in the naso-pharyngeal regions travel down and as these caseated matters are good media, develop there—in other words—the hectic temperature is an indication of secondary infection of the lung tissue by septic organisms.

This is not frequently correct as no new organisms are found and it is more frequently taken to be due to tubercular condition and not due to secondary infection. This is likely to be mistaken to the other conditions which give rise to this type of temperature such as malaria, cystitis, bacillus coli and septic conditions whereas the true condition has been missed and treatment given for diseases other than for tuberculosis.

Occasionally in early stages of Pulmonary tuberculosis, temperature sets in with very little or no remissions, particularly akin to typhoid cases. It is very frequently mistaken for typhoid with the result that the patient is put on starving diet and the true nature of the disease is missed. In all cases where the typhoid type of temperature is present with a negative Widal or a negative blood culture, careful attempts should be made for eliminating tuberculosis, especially the typhoid type of miliary tuberculosis. If available radiographic examination of the chest, examination of sputum and if that is not available, mirror test as well as examination of the stools for tubercle bacilli should be made.

Certain cases of pulmonary tuberculosis are ushered in with a typical picture of acute lobar pneumonia. There is pain in the chest, a slight amount of dyspnoea, high temperature in fact all the symptoms of lobar pneumonia. Examination of the chest may not be of much value as in both you get signs of consolidation but what I found to be useful in distinguishing this condition from pneumonic tubercular condition are the following:—(1) the temperature never reaches normal by crisis in cases of pulmonary tuberculosis and it often takes long time for the temperature to touch normal. (2) the rusty sputum that is characteristic of lobar pneumonia is also present in cases of pulmonary tuberculosis, pneumonic type but with this difference—that the quantity of blood is increased, (3) that

sputum shows a tendency to be positive by the end of the second week, the pulse rate is not in proportion to the temperature. It is very frequently higher. The other condition to which, I attach great amount of importance is the appetite of the patient. Very frequently, a tuberculous pneumonic patient craves for more food, whereas a pneumonic patient has often an aversion for food.

These are some of these few types that occur in pulmonary tuberculosis.

A tubercular patient is also a human being and his flesh is liable to diseases like malaria, influenza etc. The occurrence of any temperature in a case of pulmonary tuberculosis should not be attributed solely to his lung condition. The most important diseases which have to be borne in mind are malaria, typhoid, Bronchiectasis, dysentery and malignant growth, acute bronchitis etc. But no case in whom the necessary data for diagnosis of any one of these conditions is not present, it ought not to be diagnosed as one of these conditions. It must also be remembered that any of these conditions may be present as a complication of pulmonary tuberculosis.

A great amount of value has been attached in recent years to the amplitude of the temperature. The normal amplitude is less than $1\frac{1}{2}$ degree. In other words the difference between the maximum and minimum temperature recorded in any normal individual during 24 hours is less than $1\frac{1}{2}$ degree. The greater the amplitude, the worse the prognosis, even though the maximum temperature may not be more than 99 or 100. Cases in whom the amplitude is large, the first thing that will be noticed when the patient is improving is the reduction in the amplitude.

During treatment of pulmonary tuberculosis by different methods, modifications of temperature occur and I shall try to show you how these temperatures behave. (1) During the periods of artificial pneumothorax treatment in a good number of cases, there is a high rise in temperature on the day of induction of primary pneumothorax which is explained by the fact that when by putting air into the pleural cavity, the lung

becomes collapsed, the secretions contained therein should naturally be poured out into the general circulation, thus giving rise to a high rise in temperature. This temperature usually drops down to normal during 24 to 48 hours.

Unless this precaution is given, the patient and his relations may be frightened and infer that these injections make the patients worse rather than better and that there is every possibility of the patient not coming to the second injection. When on the other hand the occurrence of this contingency has been explained to the patient and his relations previously, there is very little to fear and the patient will not give up the treatment.

In a case, progressing in a classical way, the temperature chart is very characteristic. Within about 3 or 4 injections i.e. about 10 days after starting Artificial Pneumothorax, the temperature drops down dramatically and keeps down in a satisfactory way, e.g. temperature which was ranging between 101 to 102 reaches to below 99 and keeps to that level, until the treatment is finished unless some complication occurs.

In other cases where artificial pneumothorax treatment does not work as dramatically as above, 4 types of modifications of the temperature may take place: (1) the temperature may drop down gradually, the period taken being nearly a month, (2) the temperature does not drop to normal at all and the starting of pneumothorax treatment does not make any difference in temperature, (3) the temperature may become worse and go higher than before pneumothorax treatment was started and (4) the temperature may become irregular.

The first contingency arises when the collapse is insufficient or unsatisfactory. In a certain number of these cases of unsatisfactory collapse, the clinical symptoms of the patient certainly shows a definite improvement even though the collapse is unsatisfactory. The second types occur in conditions where the collapse is exceedingly poor and has made little or no effect on the focus of the disease. The third occurs when A. P. has activated or spread the disease either in the same lung or in opposite lung. The last type occurs in all conditions where all these factors are occurring.

During the process of this method of treatment, various complications may occur which disturb the temperature chart. These complications are pleural effusions, haemoptysis, spread of tuberculosis to the other organs of the body like tubercular peritonitis, tuberculosis of the intestines and tuberculosis of the meninges etc. When these occur, the temperature chart also gives a forewarning.

Effusion occurs in 30 to 35% of the cases which are undergoing treatment by means of artificial pneumothorax. The occurrence of effusion in these cases may be ushered in, in 3 types, viz., acute type, the chronic type and the innocent type. The nature of the temperature chart differs with the nature of the onset of this complication.

When the effusion sets in an acute condition the picture presented is as following:—The patient is acutely ill, breathless, has to be propped up in bed, is breathing 40 to 50 per minute, the temperature which was normal shoots up to 103 or 104 and keeps up at that level with very little remissions for 7 or 8 days. Physical examination reveals a hyper-resonance on percussion over the area. Breath sounds are weak and a metallic tinkle is heard when the patient is asked to cough. The so-called bell sound is also heard at this juncture. There will be no suction splash heard. After about a week's time, or earlier, suction splash appears and a certain amount of dullness in the dependant area and the temperature drops down by crisis and henceforth the patient improves more rapidly than before.

In the second type where this complication sets in i.e. in a chronic condition, the temperature which was previously roundabout normal shows a tendency to be irregular with the maximum going up to 100 or 101. The irregular temperature lasts for about 6 or 7 days and then settles down to its original level. The chronic irritation that is produced in the pleural cavity is the cause for this irregular temperature. As soon as the presence of fluid is made out by physical examination, the temperature also drops down.

In the third type when effusion sets in, as an innocent one, there is practically no indication of it in the temperature

chart. The temperature as usual is round-about normal. The patient does not complain of any fresh symptoms nor does he complain of any difficulty in breathing. The presence of this effusion is detected only at the usual periodical examinations.

When the other complications mentioned above set in, there is no definite temperature chart, attributable to each but what happens is this: When any spread of tuberculosis occurs, it shows itself by a sudden rise in temperature and keeping up at this raised level till the lesion has healed or healing.

There is only one other condition i.e., haemoptysis. In many cases of pulmonary tuberculosis, when haemoptysis sets in, it always produces a condition of broncho-pneumonic spread due to the filling of the infected lung. Due to this broncho-pneumonic condition, the temperature very frequently rises and shows an undulating form. It takes nearly 2 to 3 weeks after the haemoptysis has stopped for the temperature to settle down to its original level.

All cases of haemoptysis are not accompanied by this rise in temperature. Prognosis is certainly better in cases where there is no rise in temperature than in other cases.

Certain physiological conditions which are frequently present in an individual become exaggerated during the active stage of pulmonary tuberculosis. One such condition which I wish to place before you is the menstruation in women. In healthy women there is always a tendency for a rise in temperature during the periods of menstruation. If the patient is tuberculous, this manifests itself to a greater degree. The rise in temperature that accompanies the period may occur either premenstrual—just before the flow sets in—menstrual during the period of flow or postmenstrual. This occurrence of high temperature during any one of these periods must raise the suspicion of the practitioner and he must subject the lungs to a thorough examination. The temperature may rise as high as 102 or 103 in exceptional cases but in the majority of cases, the temperature rises by at least a degree above its original level. Various workers attach importance to the rise in temperature during these periods. I personally believe that menstrual and post-menstrual periods are of worse prognosis than premenstrual rises.

No patient should be discharged as cured unless the alteration of temperature is in normal limits say 99·4 to 99·6 by mouth or 100 by rectum.

While examining these cases in large numbers, one occasionally meets with cases who malingers and the temperature is a manufactured one. I remember a case in the hospital whose history is as follows. The patient is a tall man, fairly well nourished but giving a history of cough of 3 months' duration. The temperature was ranging 102 to 103 every day. Physical examination of the chest and X Ray did not reveal any abnormality and for a complete overhaul, he was admitted into the hospital. He stayed in the hospital for nearly three months during which period his general health improved. His weight increased every week by a pound or two and his pulse rate was normal. But the temperature still kept up to 102 to 103 before 4 and 6 in the afternoon. Every possible investigation was made to exclude other diseases. All these investigations were negative. I was at my wit's end as what to do and how to treat him. While going round the wards the patient was accommodated, I made another attempt to examine him carefully to see if I can make out any thing new. I asked the nurse to take his temperature not the usual hour that is followed in the hospital and the patient should not know when the nurse was coming to take his temperature. When on three days this was done, I found his temperature was absolutely round about normal and the cat came out of the bag. Fearing his discharge from the hospital if his temperature was normal as there was nothing in him, he provided himself with a Thermo's flask which contained hot water. He used to take a drink of this water, the moment he saw the nurse was coming to take the temperature. A similar thing happened in a lady patient who played the same mischief. The best I can do was to discharge the patients forthwith.

Interrelationships Between The Endocrine Glands

*Increasing Knowledge of Endocrine Function Reveals Many
Complex Physiologic Mechanisms*

IT is generally recognized that a hormone does not directly influence the endocrine gland from which it originates. On the other hand, the active principles secreted by a given gland may markedly influence certain other endocrine glands. It follows, therefore, that *indirectly* a gland might be affected by its own hormone; this can be illustrated best by an example. The ovarian follicular hormone does not affect the ovary directly, exerts its effect upon the secondary sex organs. On the other hand, the ovarian hormone is known to exert a restraining effect on the anterior pituitary and appears to inhibit production of the gonadotropic principle, thus indirectly acting as a temporary check on ovarian activity. Such "balanced" actions may be the rule rather than the exception in Nature's plan, and obviously the conception of an "anti-hormone" is not needed to explain the results.

Substitution Therapy

The most obvious use of glandular products is in the treatment of disorders due to insufficiency or absence of the glands themselves. Such use is known as "substitution" or "replacement" therapy. As typical examples might be mentioned the use of desiccated thyroid for the treatment of thyroid deficiency, and the use of ovarian hormones for the relief of menopausal symptoms or the more serious glandular imbalance which follows castration.

Unfortunately, glandular therapy cannot offer a *cure* for conditions due to a natural deficiency; it is replacement therapy only, and at best can give only temporary relief. For example, every one recognizes that in spite of the spectacular and beneficial effect that insulin exerts upon carbohydrate metabolism, especially in the treatment of juvenile diabetes

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mellitus, regular and continuous treatment is usually necessary. Neither in this instance nor in any other endocrine application has the administration of a given hormone led to regeneration of the deficient gland tissue. Fortunately, the response reaction does not occur; in other words, such glandular tissue as may be functioning does not shirk its duty even though partial relief is supplied by replacement therapy.

Stimulation Therapy

In view of the situation as portrayed it is only natural that the endocrinologist should seek substances capable of stimulating endocrine glands to secrete their own hormones, an effect which logically might be expected to be superior to temporary substitution. Hopes for such "stimulation" therapy emerged with the demonstration of interrelationship between certain endocrine glands. Such a recognition also revealed the possibility of checking certain glandular overactivities by means of "repression" therapy.

It is true, unfortunately, that sound laboratory investigations were not available in the early days of endocrinology, and the endocrinologist was not then able to secure the services of the physiologist, the pharmacologist and the biochemist in following up his theories; today he has all of these, together with the zoologist, pathologist, and even the psychologist, to help him. Ten years ago it was considered a disgrace to theorize on the possible interrelationships between the endocrine glands, but today the subject lies in the province of everyday research and some of the most accurately demonstrated facts of organotherapy are being developed in this field. A decade ago the endocrinologist was forced to base his theories primarily upon clinical observations, and so, naturally, they were not accepted by the physiologist and by those clinicians who demanded laboratory proof. Today it is generally admitted that the endocrinologist has established his view. Far more has been accomplished in the laboratory than he predicted, but, even so, one must recognize that only a good beginning has been made in an exceedingly complex field of research, and that great care must be taken in its application. Prolonged clinical tests

are essential before the latest spectacular laboratory demonstrations can be accepted as having therapeutic significance.

Thyroid and pituitary

It was known almost a century ago that persons and animals with endemic goiter develop hypertrophy of the anterior pituitary. Only recently, however, has it been demonstrated that the administration of desiccated thyroid prevents this pituitary effect and furthermore that the acidophilic granules of the anterior lobe produce a thyroid-stimulating principle.

It was demonstrated by Marie in 1886 that the pituitary is related to the production of acromegaly; and subsequent work, particularly in the study of cases of Simond's disease, showed that it possesses an important control over other organs of the body and apparently upon other endocrine glands. As a result of the researches of Cushing and his co-workers, the relation of the pituitary to sexual control was fairly well established. Such work received laboratory substantiation in 1927 through the work of P. E. Smith, who demonstrated that hypophysectomy in young animals leads to a condition of infantilism, whereas if performed after puberty the estrus cycle ceases and the ovaries atrophy. It was shown also that such disturbances could be corrected and the experimental animals restored, at least temporarily, to a normal condition, by implants of pituitary gland tissue.

Gonadotropic Principles

Aschheim and Zondek demonstrated the effects of the anterior pituitary and of the anterior-pituitary-like principle of pregnancy urine on the ovaries of rodents, and proposed the well-known A-Z pregnancy test; and Friedman demonstrated that the anterior-pituitary-like principle of pregnancy urine causes ovulation in the rabbit in a manner so definite that the method is adaptable for diagnostic and standardization purposes. Other workers have shown that anterior lobe extracts likewise possess ovulation activity. The effect of the anterior pituitary upon the ovary is thus well established.

Carbohydrate Metabolism

Perhaps the most striking laboratory demonstration of the interdependence of certain endocrine glands was supplied by the Argentinian scientist, Houssay, who showed an interdependence between the pancreas and the anterior pituitary. The pancreas is essential to life and so is the anterior pituitary, although the loss of the former leads to the development of earlier and more acute symptoms. Pancreatectomy in the dog results in death within a few days, but Houssay and his co-workers were able to demonstrate that the loss of the pituitary counteracted to a considerable extent the loss of the pancreas. In other words, removal of two essential glands produced less disturbance of carbohydrate metabolism than the loss of the pancreas alone.

The interrelationship between the pancreas and the anterior pituitary apparently is not as simple as has been assumed, for the latter at least can be influenced by other endocrine glands. It has already been shown that ovarian activity can act as a check on the anterior pituitary, particularly on its diabetogenic activity; hence the administration of the ovarian follicular hormone can partially substitute for the loss of the pancreas, so that Houssay's operation is, after all, not essential in order to maintain the life of the pancreatectomized dog. More recently that work has been repeated on the monkey.

It is evident that carbohydrate metabolism is an extremely complex physiologic process; in fact it is known that, in addition to insulin and the diabetogenic principle of the anterior pituitary, the hormones of the posterior pituitary and the suprarenal medulla also influence blood-sugar level. When insulin was made available in 1923, one had reason to expect a rapid elucidation of the mechanism whereby the body utilizes sugar. The intervening years have shown, however, that much remains to be learned and that insulin is only one link in the chain. It has even been suggested that insulin might be merely a "brake" which regulates the diabetogenic activity of the anterior pituitary, but no doubt its function is somewhat more fundamental than that. The anterior pituitary in turn affects the suprarenal medulla, and thus influences sugar mobilization. A recent study of the

problem demonstrates that, although the adrenals respond normally to insulin hypoglycemia by liberating adrenalin into the blood stream, yet in the absence of the pituitary adrenalin is unable to raise the low blood-sugar level in spite of the presence of ample reserves of liver glycogen. In other words, the anterior pituitary and the adrenal medulla work together in balancing pancreatic activity. Here again it is demonstrated that Nature has provided multiple control over an important physiologic function.

The Ovarian Cycle

Studies with the corpus luteum hormone show that it is active in bringing about progestational changes only after the uterus has been properly sensitized by the ovarian follicular hormone.

The effect of posterior lobe secretion upon the motility of the uterus is inhibited by the corpus luteum but increased by the ovarian follicular hormone.

In the ovarian cycle, normal transformation of the primordial follicle to the corpus luteum phase is brought about by the anterior pituitary gonad-stimulating hormone. Other influences than those of the pituitary probably play a part, particularly during pregnancy when the corpus luteum phase is prolonged and the follicular phase inhibited. During the cycle of the ovary, this organ brings about certain cyclic changes in the uterine (and in many animals in the vaginal) mucous membrane. Uterine endometrial growth and degeneration are evidenced not only by estrus and menstrual histologic alterations but by physiologic changes in the nature of the endometrial structure; so nidation of fertilized ova may occur only at definite times. The estrogenic principles act on other structures in the body; for example, theelin inhibits the anterior pituitary as shown by histologic studies as well as by the rate of sex hormone production in the gland. No doubt theelin and progestin are important in the development of the mammary gland preparatory to the onset of lactation initiated by liberation of anterior lobe lactogenic hormone at the time of parturition.

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The thyroid-stimulating principle of the anterior pituitary causes hypertrophy of epithelial cells of thyroid vesicles, with an increase in thyroid activity. Although the effect is transient, basal metabolism is markedly increased.

The adrenotropic hormone of the pituitary induces hypertrophy of adrenal cortical tissue. There is some evidence that medullary function is also altered by anterior pituitary extracts.

The growth hormone seems to act on all tissues. Increase in body weight is the resultant of proportionate growth of not only the bony framework but of other body structures as well.

These comments present only a few outstanding demonstrations of the inter-relationships between the endocrine glands, but enough has been presented to demonstrate that the subject is a complex one and that a fertile field for investigation is before us. It is apparent, moreover, that endocrinology of the future is bound to become a highly specialized field of clinical knowledge. Its importance is such that it deserves a place in the training of the medical student, since the general practice of medicine can no longer be divorced from endocrinology.

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Palpitation

BY

REGINALD HILTON, M.D., F.R.C.P.,
Physician in Charge of Out-Patients, St. Thomas's Hospital.

THE normal subject is conscious of the heart beat only after a considerable effort or a lively emotion. The term "palpitation" is not commonly used unless the sensation is unduly intense or painful, or if it is too readily produced, but it must be realized that since palpitation is a symptom and nothing more, the threshold of complaint differs considerably from subject to subject. Thus, in young and nervous persons, palpitation of some degree may be regarded as physiological. Indeed, it may happen that in certain cases examined during an attack, the examiner may be quite unable to detect any basis for the symptom. More commonly, however, it will be found that the heart is actually beating with undue force or rapidity, or in other cases, that there is an actual irregularity, such as premature beats or auricular fibrillation. On the other hand, it sometimes happens that a perfect salvo of premature beats, or even auricular fibrillation itself, is noticed by the physician when the patient is quite unaware of any disorder of the heart.

If an excuse is needed for making a detailed study of such a common symptom as palpitation, it is that palpitation may attract too much attention to the heart, and cause a fear of heart disease which is usually quite unjustified. The commonest causes of palpitation have nothing to do with heart disease. This is brought out in one of Potain's aphorisms:—

"Tout malade qui consulte pour les palpitations doit être présumé exempt de maladie de cœur."

"Toutes les fois qu'un malade se plaint du cœur, recherchez l'état de son estomac et de son intestin."

To do Potain justice, it must be added that he emphasized the paradox in another place by saying that "les palpitations doivent nous inciter à examiner avec soin l'état du cœur."

Classification

The following classification of palpitation is not meant to include all possible causes, nor is some overlap entirely avoidable, but it may be of use in recalling the commoner varieties. The word "causes" is used in the sense of associated conditions, since the appreciation of a symptom lies in the central nervous system, and there are various peripheral stimuli which can give rise to it.

Causes of Palpitation

Digestive:

Flatulent dyspepsia is probably the commonest single cause.

Circulatory:

(1) Cardiovascular:

(a) Valvular and myocardial diseases, especially mitral stenosis and aortic regurgitation.

(b) Rhythm disorders (auricular fibrillation, premature beats).

(c) Hypertension and arteriosclerosis.

(d) Cardiac displacement in pleural effusion and fibrosis of the lungs.

(2) Blood:

(a) Anaemia.

(b) Acute infections.

(c) Drugs—coffee, tobacco, digitalis, morphine.

Nervous:

(1) Fright.

(2) Hyperthyroid states, menopause and other endocrine disorders, including thyroid medication.

(3) Neuro-circulatory asthenia.

(4) Epilepsy.

Note.—Nervous conditions may lead to disordered rhythm: e.g. Hyperthyroidism and auricular fibrillation. Paroxysmal tachycardia may likewise have a nervous origin.

History

A glance at the above classification will show the lines on which inquiry may be directed. The history should elicit

details of the effect of exercise and of meals. It is a common thing to find, both in hypertension and in mitral stenosis, that the palpitation when it first appears is brought on by exercise. The occurrence after food comes distinctly later. In what might be called the "innocent" form of palpitation—that associated with flatulent dyspepsia—the palpitation frequently occurs after food only. If palpitation is produced by exertion, the doctor must decide if the symptoms are excessive for a given degree of exercise. If there is the slightest suspicion of undue dyspnoea after effort, in addition to a careful examination of the heart and cervical veins, an exercise-tolerance test should be made, with observations on the pulse rate and its settling time. Practically all cases of heart disease sooner or later have dyspnoea on effort.

Inquiry should be made as to the duration and frequency of "attacks." The patient may be sufficiently observant to be able to say if the palpitation is regular or irregular. In milder cases of palpitation caused by premature beats, the patient may describe a sensation "as though the heart turns over"; or "the heart gives sudden and painful thumps." Sometimes the sensation is referred to the throat. Careful questioning as to onset and offset may elicit the typical history of certain changes of rhythm, such as paroxysmal tachycardia or paroxysmal auricular fibrillation.

Patients with hypertension sometimes give a history of palpitation only when first lying down at night; this is often associated with a sudden spontaneous acceleration of the heart rate. Such attacks may also occur after a meal or an effort, but the nocturnal attacks are characteristic. This symptom is quite apart from the throbbing which is felt or heard when the head is laid on the pillow. A history of headaches and insomnia will also lead to the suspicion of hypertension. A past history of rheumatic fever is common in palpitation of cardiac origin, but it is striking how often this is missing in mitral stenosis, especially in the poorer classes. A history of loss of weight in spite of an excellent appetite, together with a rapidly beating heart and, perhaps, a raised pulse-pressure on examination, may be the only indication of hyperthyroidism. In an other-

wise unexplained case of auricular fibrillation, such a history may be very helpful. The use of thyroid extract to produce slimming is a not uncommon cause of palpitation.

In middle-aged women who complain of the symptom, an inquiry should be made about the occurrence of "flushing," and of changes in the catamenia. Menopausal palpitations are sometimes associated with hypertension, often in the absence of arteriosclerosis or of cardiac hypertrophy.

Palpitation in Cardiovascular Disease

The following analysis was undertaken with the purpose of discovering the frequency of palpitation in cardiovascular disease, and, in particular, its numerical relationship to auricular fibrillation, mitral stenosis, and hypertension.

The following figures bring out some interesting points. For example, whereas about three-quarters of the patients with mitral stenosis complained of palpitation, only about a half of them had auricular fibrillation. In hypertension, 58 per cent. complained of palpitation, but only 20 per cent. had auricular fibrillation. Palpitation appears to be three times commoner in the whole series than auricular fibrillation itself, but among the patients with the latter condition by no means all (73 per cent.) suffer from palpitation, even when mitral stenosis and auricular fibrillation co-exist.

PALPITATION IN CARDIOVASCULAR DISEASE.*

Analysis of 564 cases.

	Number of cases studied.	Percentage of total.	Number found to have auricular fibrillation.	Number complaining of palpitation.
Heart disease in all forms (children excluded) ...	564	—	123 = 22	387 = 63
Number of hypertensive cases in above ...	156	28	31 = 20	90 = 58
Number with mitral stenosis (alone or in combination) ...	144	26	79 = 54	105 = 73
Number with auricular fibrillation ...	123	22	—	90 = 73

* The majority of patients included in this analysis have attended the National Hospital for Diseases of the Heart, and the writer wishes to acknowledge with thanks the permission of Dr. Parsons-Smith and Dr. Parkinson to quote their records.

Diagnosis

It would not be possible nor is it necessary in an article of this scope to mention in detail the methods of examination used to differentiate the causes of palpitation, nor the treatment of the condition, which must depend on the cause. The first and most important step is to determine the presence or absence of cardiovascular disease. Included in this group will be not only valvular disease but also enlargement of the heart, raised blood-pressure and arteriosclerosis. If irregularity is present, its nature must be determined. It is usually, but not always, easy to differentiate between multiple premature beats and auricular fibrillation. The distinction is of the greatest importance, because both the treatment and the prognosis are different. Mild exercise usually removes premature beats by raising the pulse rate, whereas, in auricular fibrillation it makes the pulse more obviously irregular. Unfortunately, it is not rare in arteriosclerosis to find that exercise makes premature beats more numerous, so that this simple test may fail when it is most needed. On the other hand, auricular fibrillation may be present with an infrequent pulse (apart from the use of digitalis), which may be so nearly regular as to deceive anyone who is not well trained; exercise will bring out the irregularity. Generally speaking, an experienced observer is readily able to determine if an irregularity is due to premature beats: the fundamental rhythm underlying the interpolated beats makes itself evident. Occasional cases of tumultuous premature beats require the use of instrumental methods.

The electrocardiograph is essential to the full understanding of disorders of rhythm, and, at the same time, gives information otherwise unobtainable as to the condition of the myocardium. Like certain other special methods of investigation, the electrocardiograph can oftenest be dispensed with by those who are most familiar with its use, but there is no doubt that apart from its use in the rarer disorders, such as heart-block or auricular flutter, it is considerably altering the older views as to the significance of certain cardiac cases of palpitation, as, for example, in the case of multiple premature beats arising from different foci. It is generally accepted that isolated premature beats are of no significance in the absence

of cardiovascular disease; when the latter is present, the prognosis is that of the associated lesion. Premature beats arising from multiple foci, on the other hand, are apt to be associated with other instrumental evidence of myocardial degeneration. When palpitations first occur after acute infections, and especially when convalescence is slow, the electrocardiograph not infrequently shows definite evidence of myocardial involvement. This possibility should be borne in mind when a patient who has, for example, recently suffered from a streptococcal sore throat, or from "influenza," complains of undue fatigue and palpitations on resuming work. Such conditions usually clear up completely, but may require prolonged rest.

Summary.—In the majority of patients complaining of palpitation, no organic disease is discoverable. In a series of 564 cases of cardiovascular disease, palpitation was complained of in 387 (68 per cent). Auricular fibrillation was present in 123 (22 per cent). An analysis is presented to show the frequency of auricular fibrillation in mitral stenosis and in hypertension, and its relationship to palpitation.

The Trichinopoly District Medical Association
TRICHINOPOLY

Statement of Accounts from 13-2-1938 to 31-3-1938

Dr.	Cr.
RECEIPTS	EXPENDITURE
Rs. A. P.	Rs. A. P.
By Cash at Urban Bank 131 15 8	To <i>Establishment</i>
By Cheque by Ex. Secy. & deposited in Trinity Bank ... 154 12 0	Pay of present clerk for part of Feb. 10 -
By Subscriptions col- lected ... 107 0 0	Pay and bonus of previons clerk 25- 35 0 0
By sale of Member List. 0 4 0	To Stamps 14 8 6
	To <i>Rent</i>
	Part of Feb. & March 7 8 0
	To Office Expense Stationeries &c. 7 14 9
	To <i>Madras Trip</i>
	Secretary 10 0 0
	Treasurer 5 0 0 15 0 0
	To <i>Miscellaneous acct.</i>
	Type-writer repair 7 8 0
	Cycle „ 5 0 0
	Do. licence 1 1 0
	Other equip- ment & sun- dries 3 5 6 16 14 6
	To Printing Charges up-to 31-12-1937 110 0 0
	To Cash on hand 0 14 3
	To Cash at Urban Bank 121 7 8
	„ „ Trinity 64 12 0
Total ... Rs 393 15 8	393 15 8
	Total Balance Rs. 187 1 0

Excerpts

Local Anaesthesia in the Repair of Torn Perineum

Technique

THE patient having been placed in the lithotomy position with sterile towels in place and the vulva thoroughly cleansed and painted with such antiseptic solution as the operator is in the habit of using (Bonney's blue, flavine, etc.), a 5-c.cm. syringe is filled with 4 per cent. novocain solution. The skin edges of the tear are infiltrated throughout their entire length. The infiltration should be done internally, and the skin not punctured at all. This is usually all the infiltrating that is necessary, since the torn deeper structures are as a rule insensitive to pain. In tears involving the levators, however, I have found that the muscles are sensitive, and I recommend their infiltration. About 4 c.cm. of 4 per cent. novocain solution is sufficient for the average repair. The largest amount that I have used was 10 c.cm. for a complete tear involving the whole of the posterior vaginal wall, the rectum, and external sphincter. I recommend the repair being done within two hours of delivery, as at the end of this time sensation begins to return to the deep structures.

Results

All the patients have expressed their gratitude for not having been "put to sleep," and some who have had previous repairs have compared this method very favourably with the others they have had with general anaesthesia or with no anaesthetic at all.

The healing has in all cases been most successful, and I have had none which have broken down or gone septic. It has been suggested to me that the novocain might cause soddening of the tissues in this potentially septic area, and therefore the procedure might be considered risky. Such quantities of novocain which would cause this are never necessary to produce the required anaesthesia, and no ill effects have

followed its use in any of my cases. These observations are based on over 100 cases in hospital and on the district.

Conclusions

1. Suture of perineal lacerations is essential, and unless done thoroughly is useless.
2. The anaesthetic of choice is local infiltration.
3. Infiltration of the skin edges is usually all that is necessary, and should be done internally and the skin not punctured.
4. It is an extremely practical method for general practitioners.
5. It is very much pleasanter for the patient.
6. The use of general anaesthesia for the repair of even large tears is both undesirable and unjustifiable.

STANLEYWAY, M.R.C.S., L.R.C.P.,
Late Senior Resident Medical Officer,
General Lying-in Hospital, Lambeth.

A Physical Sign in Perinephric Abscess

It is notorious that perinephric abscess is often missed till, in a patient worn out and wasted with fever, a large collection in the loin demands attention. The reason is that in many, probably most cases, urinary signs and symptoms are absent, and so examination is not directed specifically to this area. Is the condition is borne in mind diagnosis can be made at an early stage by means of the following test:

The patient is placed prone and quite straight, and attention focussed on the angle between the last rib and the erector spinae. Inspection may detect a slight fullness on one side, but even before this change is visible palpation will reveal an increase in muscle tone. On the sound side the fingers can be dipped deeply in towards the kidney, and on the other there is a demonstrable difficulty in doing so. There may be present to the examining fingers the sense of a deeply placed mass, but this represents a relatively late stage of the disease. Tenderness is sometimes present. It is surprisingly inconspicuous.

Guarding of the muscles in the loin is not, of course, confined to cases of perinephric abscess. It may be seen, for instance, after injury to the spine, in osteo-arthritis of the spine, and in perinephric infiltrations of other types, such as haemorrhage. These are all as a rule easy to exclude. Pyonephrosis may give rise to some difficulty, but the enlarged kidney is usually palpable and recognizable as such, and it is possible to eliminate this lesion, if there be serious doubt, by routine urological methods.

Operation in a case diagnosed thus early shows the kidney sheath rigid and pale in colour. When it is opened pus may be found at once, but if not the finger swept round the kidney will soon locate it.

In the second edition of Mr. Hamilton Bailey's valuable book, *Physical Signs in Clinical Surgery*, reference is made to examination of these cases in the sitting posture. I believe that if the patient is prone diagnosis will be made even earlier and more certainly. In this position the muscles in the loin are completely relaxed upon the normal side. And, further, the kidney tends to fall away from the examining finger, thus accentuating the difference between the normal and what is found when we are dealing with a rigid and adherent kidney sheath, as in cases of perinephric abscess.

Liverpool.

JOHN T. MORRISON, F.R.C.S.

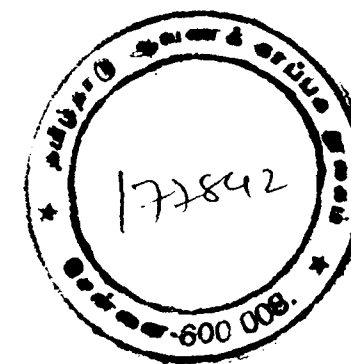
A New Idea in Asepsis

No surgeon escapes occasional disasters due to the infection of clean operation wounds. This danger is all the more to be guarded against the greater the extent of the operation site, and since advances in surgery often increase this an increase in the precautions taken to prevent such infection becomes ever more desirable. Thoracic surgery now leads the way in exposing really extensive tracts of tissue to possible infection, and thoracoplasty seems to have been the chief

problem in asepsis which led Hart¹ to investigate the sources of accidental contamination and their possible prevention. The wound infections which it was hoped to prevent were mainly due to *Staphylococcus aureus*, and although these are commonly attributed to organisms previously present in the skin itself Hart denies this. He found by exposing culture plates that the air of an operating theatre contained staphylococci in considerable numbers, supposedly derived from the throats of the occupants, since carriers, as might be expected, were often present; and although their numbers could be diminished to a certain point by reducing the theatre personnel, by excluding known carriers, by masking, and by alterations to the system of ventilation, the air was still contaminated and wound infections still occurred. He therefore persuaded a firm of electrical engineers to construct a multiple lamp emitting bactericidal light rays. The constructional details of this lamp are not divulged, a fact for which the manufacturers can hardly be blamed, since it is said to kill staphylococci at 5 feet range within one minute and at even greater distances in longer periods, although the rays are harmless to skin and to wounds. By using this lamp the air of the theatre was kept almost completely sterile within a radius of eight feet from the operation site, and wound infections were entirely prevented. This device evidently has a considerable future. At the same time one may wonder whether the mechanism by which air becomes contaminated with cocci is fully understood, and whether some precaution other than what will doubtless be a very expensive piece of apparatus might not serve to prevent this. Do these cocci, which are said to re-invade the air soon after the lamp is switched off, really come from the upper air passages, and, if so, how?—assuming that an impermeable type of mask is being used. No one has ever suggested that mere breathing can expel bacteria; if silence were enforced and mouths kept shut, would the air remain free? The author's investigations have been exhaustive, and nothing stands in the way of accepting his conclusions except the difficulty of believing that "droplet" infection can wholly account for the rapid pervasion of air by bacteria when every known precaution is taken to prevent it. That nose and throat carriers of haemolytic strep-

¹ Arch. Surg., Chicago, 1937, 34, 874.

tococci, and no doubt of staphylococci, can be a serious danger there is no denying, but the impunity with which they are sometimes employed or disregarded suggests that there is something still to be found out about how their bacteria reach the patient.



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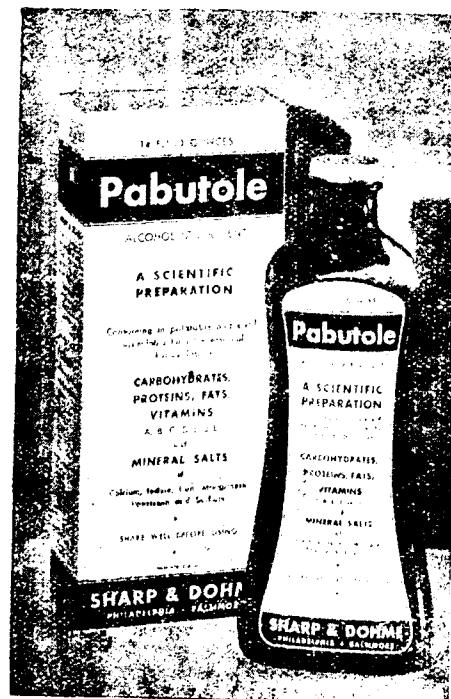
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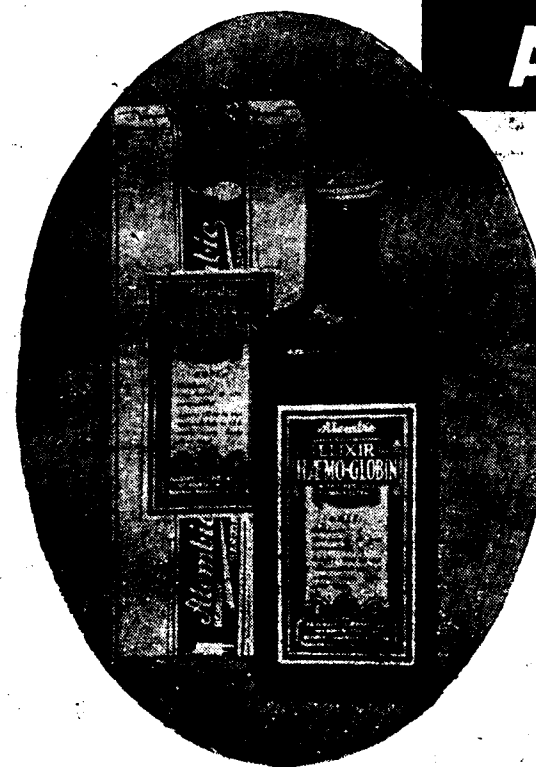
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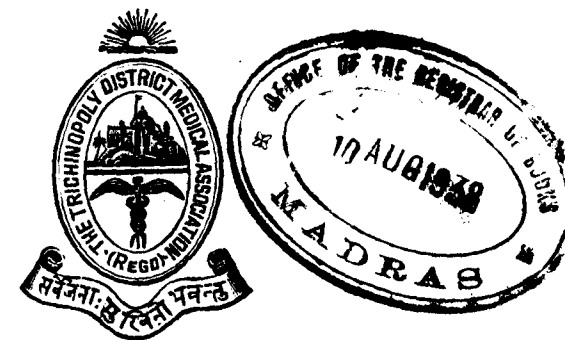
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OF



THE TRICHINOPOLY DISTRICT MEDICAL ASSOCIATION
(REGISTERED)

Editor: DR. M. C. CONDILLAC, M.R.C.S., L.R.C.P., M.M.

MAY

1938

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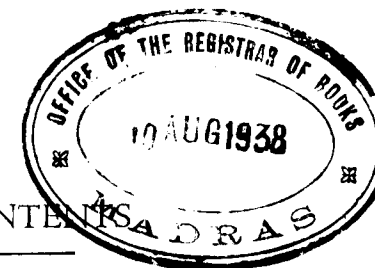
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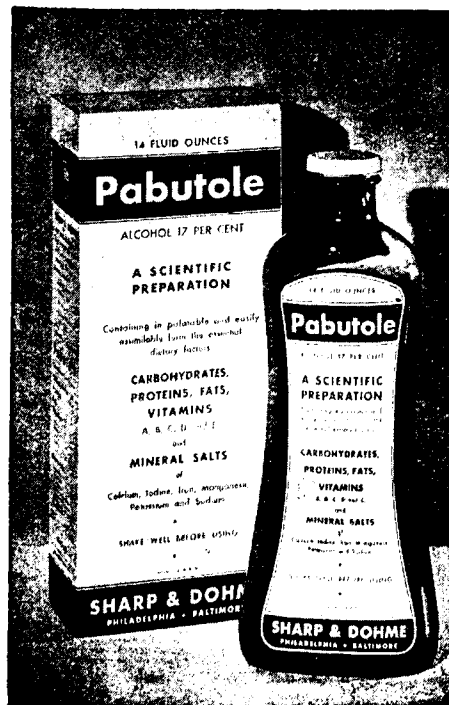


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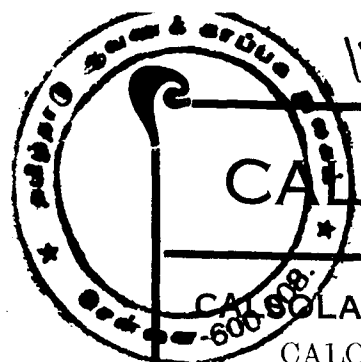
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Editor: Dr. M. C. CONDILLAC, M.R.C.S., L.R.C.P., M.M.

Vol. V]

MAY 1938

[No. 5

Puerperal Sepsis

BY

Dr. P. RATNASWAMY, B.A., M.D.,
Government Hospital, Tanjore

[Read at the Annual General Meeting, January 1938]

Incidence

COMING to the subject proper I shall place before you a few statistics regarding the incidence of Puerperal Sepsis.

Type of delivery.	Total No. of deliveries Cases.	Percentage of Septic Cases.	Mortality Cases.
Natural	1930	3%	Nil
Abortion completed by natural powers.	150	4%	
Tedious labour lasting more than 24 hours and completed by natural powers.	68	4.5%	
Incomplete abortion evacuated.	120	10.8%	4
Breech extraction	50	14%	
Int. Podalic version	14	17%	1
Forceps	295	23%	2
Cesarian section	19	26.3%	1
Manual Removal of placenta.	13	53.8%	2
Craniotomy	9	66.9%	1
Complex-anæmia eclampsia ...	817	5%	4

The above statistics relate to the year 1932 in Government Hospital for Women and Children, Egmore. An analysis of the above shows that the greater the interference, the greater is the risk of sepsis. Meddlesome midwifery must pay its penalty and in no branch of surgery "masterly *inactivity*" is rewarded so much as in this. In the last group of cases you will notice a greater mortality. A condition of profound anæmia—primary or secondary—accounts for a great majority of cases in this group. It is a matter of common observation that working class and village folk come out of severe traumatic sepsis comparatively easily than their urban sisters; the reason being the excellent general condition of the rural folk. On the other hand some of our delicate urban sisters, who resemble hot-house plants, develop sepsis even when there has been no interference at all; this certainly lends colour to the theory of auto-infection and the lack of formation of antibodies in the body itself.

Classification

1. Sæpraemia with slight or marked subinvolution.
2. Endometritis with laceration and sepsis of lower part of uterus.
3. Infection spreading to adnexa and pelvic cellular tissue along with gross or minimal involvement of uterus.
4. Septicæmia.

Investigation of cases of sepsis

The first rule to be observed is to eliminate other common causes of fever during puerperium before arriving at the diagnosis of Puerperal sepsis. I do not however say that sepsis may not be present in a majority of cases but what I would emphasise is, do not run away with the idea that every case of fever during puerperium must be due to sepsis—much time, anxiety and money is often wasted by omitting to take elementary precautions. Some of the commonest causes of fever during the puerperium are 1. Malaria, 2. Mastitis, 3. Concurrent fevers as influenza, exanthemata, typhoid Filarial fever, 4. T. P., 5. Pyelitis. This last mentioned condition is so common that an investigation was carried out by me along with Dr. Billimoria

of the Indian Research Fund Association. The following are figures of this investigation:—

Total number of cases in which urine was sent due to febrile puerperium.	69	
Total number infected— all organisms.	35	1:2
Total number Septic out of this do. non-septic.	27 42	} 69
Total B. Coli	21 cases.	
		1:3

You will find from the above data that pyelitis is a common occurrence in interfered cases and also in non-interfered cases.

Again, a latent infection of T. P. lights up after the puerperium. It is a very important but insidious cause of fever during puerperium. During pregnancy the metabolic alterations in the maternal organism and the compression effect of a rising uterus on the lungs, all these control the spread of infection. During puerperium, these factors are suddenly removed with the result that a latent or a quiescent infection flares up producing more often than not untoward results. Consequently a thorough clinical and laboratory examination of the patient is essential before arriving at a diagnosis in doubtful cases. Urine and blood examination, X-rays must all be done, if facilities are present to arrive at a diagnosis, the nature of the temperature chart, the enlargement of spleen, all should be reviewed. The local examination of the genital tract should always be done by the attending doctor either by himself or if there is any objection to this, by the midwife. Too often this is omitted for reasons of delicacy either on the part of the doctor or of the patient with disastrous results to both—life to the one and reputation to the other. I know a case, in which the case was treated as a septic prolapsed cervix while it was a case of inversion of uterus—an error which could have been easily avoided by a little examination of patient. As far as possible try to visualize the nature of the lesion—otherwise we might be treating what is apparently an intractable septic diarrhoea that which is really a perineal tear which has involved the anal sphincter, with resultant incontinence.

Treatment

In cases of sapraemia, the local treatment is that of a plain infected wound: keeping the injured and lacerated perineum clean with some lotion and keeping up the strength of patient is all that is necessary; probably these types of cases do not generally come under the care of the doctor as the midwife feels she is competent to tackle this herself. But there is just a snag in these types of cases. God in His wisdom created all things to perfection but the anatomical relationship between the vagina and the rectum is far from satisfactory; the perineal wound generally gets infected with *B. Coli* and we all know how easy it is for the infection to gain access to the blood if the general condition of the patient is below par. It is easy now for us to understand why in anaemia and eclampsia, cases so easily get septic and end fatally, though the injury or interference may not be much. The small abrasions get infected with *B. Coli* and produce septicemic condition because of the lowered vitality. It is here again that a great pitfall awaits us. We are likely to believe that one of the first things to be ordered in a case of sepsis is a vaginal douche. In the simple sapraemic cases where the sepsis is confined to the perineum, the douche acts as a medium to convey the organisms into the raw vagina, cervix and endometrium and infect them. A vaginal douche is not therefore an unmixed advantage; it may be abused and endanger the life of the patient.

In cases of laceration of cervix with endometritis as local treatment one combines locally a vaginal douche and some form of drainage. Apart from posture, it is here that the treatment of Remington Hobbs i.e., glycerine drainage has maximum scope. You may drain the uterus once or more a day or leave in a continuous drain. For this, the patient is brought to the table, the perineum is cleaned, vagina douched, and the cervix is cleaned with Hydrogen peroxide and snabbed with mercurochrome 10% or Tr. Iodine. The Budin's tube is passed into uterus and pus drained off. Sterilized glycerine is then run into the uterus through the Budin's tube or a rubber catheter which is removed. This procedure is repeated once or

more during the day. But I prefer the continuous drainage and the following method is used. After cleaning the cervix a self retaining rubber catheter is passed into the uterus and the glycerine about 1-2 ozs. is left in and the patient sent back to bed with the catheter in situ. Glycerine is squeezed by the Sister of the ward every six hours. This method disturbs the patient least and the uterus is continuously drained by the catheter in situ. It is in these types of cases on the advice of Dr. A. Lakshmanaswami Mudaliar I tried cod-liver oil gauze drain. Here after cleaning the perineum and a vaginal douche sterilized strips of gauze soaked in raw cod-liver oil were left inside the uterine cavity and vagina and the patient sent back to bed with a diaper. The plugs were removed after 24 hours and fresh plugs were left in without douching the patient. I can tell you from the little experience that I had, that this did not give any more untoward results than the Remington Hobbs; but had the additional advantage that the patient was spared repeated douching and cleansing. The only drawback was the smell of raw cod-liver oil. Sometimes an alarming complication occurs in this type of case i.e., secondary hæmorrhage. The forceps track ulcers along the lateral wall of the vagina slough deeply exposing the obturator vessels in the recess which sometimes bleed profusely. I have had two cases of this type and they were controlled by tight plugging with hydrogen peroxide gauze. In very bad cases of injury with sloughing discharge continuous irrigation of the vagina by the Carrel Dakin method with the woman in the Fowler's position offers the best chance for the local condition to heal provided the general condition of the patient is good. Hysterectomy is mentioned in very bad cases of endometritis and it was done in a few cases. I am afraid it is neither rational nor expedient; the present disrepute in which it has fallen is well deserved and I hope the few cases that were lost will deter some of our enthusiasts. Lastly I would mention a line of treatment which was in vogue sometime ago but which has been given up for good. I would not mention it but for the fact that as late as in 1936 cases were admitted which had undergone that treatment. I mean the curettage of a septic uterus. Nobody thinks of scraping an acutely inflamed septic

wound in surgery; why should the uterus be exempt from that rule? We will certainly be inviting mischief if we scrape an acutely septic uterus, we will be exposing fresh areas to infection and sepsis with all its attendant dangers.

Now I come to another type of case in which the adnexa and the (pelvic) cellular tissue is involved. Here the accompanying pain and tenderness and rigidity of the abdomen should put one on guard. On vaginal examination one feels the typical plaster-of-paris pelvis. One may occasionally encounter a parotitis which points to the oophritis as the primary cause. The toxemia is well marked and the patient is ill. If the inflammation is primarily an extension along the lymphatics we will get a continuous type of temperature and few rigors while if the extension is along the vein, i.e., a phlebitis we will get repeated rigors with intermittent temperature suggestive of malaria. It is in these types of cases that we get minute infarct in the lung with attendant Bronchopneumonia due to the dislodgment of clots from the infected veins. The local treatment consists of hot douches and tampons but the main consideration is to combat the toxemia and keep up the general condition of the patient. Do not attempt to disturb the local condition too much for the greater the movement of the part the greater is the risk of infraction. Phlegmasis alba dolens is always present in these types of cases and an added element of danger in the shape of pulmonary embolism should always be borne in mind.

I now come to the last group of cases i.e., septicemia. Here the general toxic condition of the patient dominates the picture. There is little or nothing to do locally—perhaps there is just a slight laceration and a brown offensive scanty discharge—the local treatment is practically nil perhaps a wash and a change of diaper is all that is necessary and possible.

Before I go to the general treatment of the above conditions I would like to say a word regarding incomplete abortion and retention of placenta. The first point I would like to emphasize is that septic incomplete abortion need not be evacuated as soon as you see the case. Too often the ubiquitous curette has been used on a case of febrile septic

abortion with fatal results. If there is a high temperature, and the general condition of patient not satisfactory do not be in a hurry to curette and try to remove the shreds of the ovum; if we do it we will certainly open up fresh avenues of infection in the endometrium and invite trouble. Treat first the fever and try to improve the general condition of the patient. When once the temperature is under control then remove the septic ovum, with a finger or a blunt scoop after dilation of cervix if necessary. I have always used my gloved finger; and I have never used the curette and I was never at a loss to complete the abortion, utmost, I have had only to use a sponge holding forceps to remove the detached pieces of ovum. Similarly, cases of retained placenta whole or partial need not be removed in a hurry if there is high fever and sepsis. Twice I have left the whole placenta inside the uterus when the patient was admitted with high fever and sepsis. They were both delivered at home and the placenta was retained. They were admitted after 24 hours with high fever and septic discharge. As the general condition of patient was not too good I decided to leave the placenta alone and I informed the authorities so. They let me go ahead; whether you believe it or not the temperature subsided under general treatment and in one case on the seventh day the night nurse kept for me a specimen which was passed by the patient and which turned out to be the whole placenta, perhaps it was the luck of the patient; in the other case large chunks of decomposed placenta were expelled daily till on the 10th day a large mass nearly $\frac{2}{3}$ was expelled spontaneously after the usual morning douche and $\frac{1}{2}$ cc. pituitrin. Needless to say that in other cases of retention of pieces of placental tissue no active steps were taken to remove them on admission, they were treated on conservative lines and I have had no occasion to regret the procedure followed. Therefore let us by all means try the patient on conservative treatment before we actively interfere in those cases in which there is high fever and low general condition. In the above cases locally nothing more than hot vaginal douches were given with two objects i.e., to stimulate the uterus to contract and expel the pieces of placenta and also to clear away any septic discharge from vagina. Small doses of pituitrin also were given in addition to general treatment.

Now I come to the general treatment of the septic patients.
Diet.

Unless there is diarrhoea they are allowed to take nourishing diet—milk, ovaltine, broth, congee, fruits, biscuits, butter; if there is no fever—liver, bread, eggs, minced meat and later rice etc. The diet is regulated according to the abilities of the patient to assimilate it. If there is diarrhoea and not mere incontinence the appropriate diet like Bengers Eledon is prescribed.

Stimulants.

Glucose and Brandy is certainly indicated where the patient is toxic with dry, coated tongue and high fever.

Medical.

A puerperal anti-streptococcal serum. The maximum benefit of serum treatment lies in giving it as a prophylactic. Every case that undergoes any sort of obstetric interference including evacuation of an abortion should receive serum and the serum should be given on two successive days to derive the maximum benefit. I do not believe that serum is of any use when once the sepsis is over 72 hours old perhaps I may be dogmatic but that is what I think. So far as vaccines are concerned I do not think they do any good given under the circumstances under which we see the patient. It may certainly be tried when the storm is over and has left the sequelae in the shape of a pyo-salphinx with a low temperature that does not respond to any treatment. To administer vaccine in the acute phase of disease is not rational and in our investigation has not given us any benefit to the patient. Cylotropin injections and alkaline diuretic mixture certainly helps the patient if there is an accompanying cystitis or pyelitis which is usually due to B. Coli. Cylotropin is almost a specific for B. Coli pyelitis. Mental Iodine, Manganese Butyrate, Omnadin are all indicated where the pelvic cellular tissue and adnexa are involved. The usual diaphoretics, cardiac stimulants are all serviceable under appropriate conditions. The treatment of septicemic cases with all sorts of intravenous injections ranging from N. A. B. to Merchrochrome and Eusol was unsatisfactory

till "Prontosil" was introduced into the market. The indications of Prontosil are definite. It is indicated where you suspect that infection has invaded the blood. When you decide to give it give it in large doses; do not stint, give the maximum to get the best results; do not give small doses and expect miracles. On the other hand do not prescribe Prontosil for every case of sepsis—the mild cases will recover in spite of Prontosil or rather without Prontosil. By prescribing it indiscriminately we create a large demand unnecessarily and thus help to make the prices go up. Mr. Coleman once said that he made his money not from the mustard that people used but from the mustard that people wasted. Let us not make the manufacturers rich by the "Prontosil" that we waste. Blood transfusion is an invaluable help in certain cases. Cases of anaemia and severe P. P. H. which have become septic are best helped with blood transfusion. Perhaps it may be the turning factor in the course of treatment for a particular case. Lastly the concomitant diseases have to be treated to get the results especially anaemia. Here again let us not waste the patient's money by making him buy costly liver extracts; perhaps yeast, marmite and iron are all that is necessary in a majority of cases and a few may need liver either orally or parenterally. Vitamin A in the shape of Adexlin or similar preparation will be indicated according to the condition of the patients.

Now I come to a very important phase in treatment i.e., Preventive treatment. In no branch of preventive medicine do you get more gratifying result than in this. In fact antenatal care has become a necessary adjunct to every maternity institution. The examination of the mother during the last two months of pregnancy may reveal a pelvic disproportion, a pre-eclamptic state or a very bad anaemia. Education of the expectant mother in proper hygienic rules and proper treatment instituted at the stage will save us all much worry and loss of life during the puerperium. As matters stand we are far, yes very very far off. However, the Public Health Minister has promised us an honorary system wherein the Rural Medical Practitioner will be anything from a Magistrate of peace to a friend, philosopher and guide; let us hope that with his advent there will be a reduction in maternal

Minor Rectal Pathology and its Treatment by Injection

BY

S. McAUSLAND, B.A. (Lond.), M.D., Ch.B., M.R.C.S., L.R.C.P.

(From the Medical Press and Circular, 1st September, 1937, p. 188)

I. Introduction

HAEMORRHOIDS are of much commoner occurrence than is generally supposed. Patients do not generally consult their medical attendant about this complaint until they have tried all the patent advertisements, followed the advice of all their friends, used a variety of ointments and suppositories, and even consulted osteopaths.

They avoid consulting their regular doctor in the earliest stages, fearing that he will make the dreaded suggestion of 'operation'. Fortunately the lay population is beginning to be aware of the curability of piles by a painless injection which involves no lying-up, no loss of working hours, no nursing home fees, no operation, and no anaesthetic. Thus some patients are tending to consult their doctors in the earlier stage of what they conceive to be piles. This is all to the good—for in this way sometimes an early cancer can be discovered while it is still operable; and if the condition be only one of piles, piles are more easily cured by injections when in their early stages than when in the 'third degree'. Fissures and pruritus ani are now also amenable to injectional methods.

There is, however, among many practitioners a lack of knowledge of the minor defects of the anus and rectum—so that everything is labelled 'piles'. Many patients have been sent to me with a diagnosis of piles and with a promise of a cure by injection; and when seen, there are no piles, but there is found instead a polyp or a fissure or an external thrombosed pile, etc.

It is the object, therefore, of this paper most briefly to describe (a) minor rectal and anal pathology, and (b) the technique of the injections of internal hæmorrhoids.

II. Necessity for and value of thorough rectal examination

(A) Symptoms are of great value

(a) *Bleeding*.—Internal hæmorrhoids may cause slight to copious bleeding. A fissure only causes 'a streak of blood on the paper'. A cancer may cause slight (or rarely) excessive bleeding. Black, tarry stools do not emanate from piles.

(b) *Prolapse* at stool or on exercise, is diagnostic of internal piles or of a polyp.

(c) *Constipation*: habit time: is stool hard and lumpy? (a cause of fissures).

(d) *Pain*—real pain is diagnostic of a fissure—beginning at stool and lasting for a few hours. Prolapsed piles are only 'uncomfortable'. Of course an external thrombosed pile or a strangulated gangrenous internal pile (either with or without prolapse) is painful.

(e) *Itching*—a symptom of pruritus ani, or of external skin tags, chronically soiled with faeces. Hence the necessity for adequate washing after stool.

(f) *Mental depression* is a very common symptom—especially in males—of internal bleeding or prolapsing piles.

(B) Examination

(1) *Inspection of anus*.—A good light is essential. I find it best to lay the patient on his left side with his head low on a pillow, knees drawn up and buttocks well to the edge of the couch.

Gently separate the buttocks. The following (if present) will be obvious: pruritus ani (perianal dermatitis), external skin tags, internal prolapsed piles, external thrombosed piles, mouth of fistula. If the patient will 'press outwards', and if the operator will gently separate the sides of the anus, a posterior fissure in ano (sometime with pus in it, sometimes with an associated 'sentinel pile') will be seen, if present.

(2) *Digital examination*.—This can easily be done with a thin finger-stall and a lubricant—provided there be no spasm (spasm is frequently present in fissure in ano). The finger

must be inserted upwards and forwards, and then upwards and backwards. The insertion of the finger is more easily accomplished if the patient press outwards.

A digital examination will *not* reveal the presence of uncomplicated internal piles, but it will reveal a fissure in ano, a polyp, a strangulated or thrombosed internal pile, and a cancer. The finger should be gently inserted as high as possible.

Much care must be used in *gently* inserting a finger or proctoscope, as otherwise a fissure can thus be caused or aggravated.

(3) *Proctoscopic inspection of rectum.* Do not use a proctoscope with a bevelled ridge. I use a Kelly's Sphincteroscope, $2\frac{1}{2}$ inches long and $\frac{7}{8}$ inch diameter at its 'inspection' opening. An electric headlight is necessary and is, I think, better than having the light in the proctoscope itself: for the latter may become soiled by faeces or blood following the first injectional prick.

I insert the well-lubricated proctoscope to its full length and withdraw the obturator. Faeces can be wiped out with wool on forceps. Gradually withdraw the empty tube: if internal piles be present, they will prolapse into the speculum and can be injected (see IV below)

(4) *Barium enema, and* (5) *Sigmoidoscopic examination.* — If a cancer be suspected, but is above the area disclosed by the above rectal examination, then methods (4) and (5) should be practised. The symptoms of blood and small calibred stools are important. Loss of body-weight is generally not noticed until late in cases of cancer.

III. Rectal and anal pathology

In this short paper I can only enumerate the conditions that may be found, without elaborating their distinctive features. If the foregoing examinational routine be carefully carried out, there will be no difficulty in making a correct diagnosis.

I shall just indicate the lines of treatment, fuller details of which can be found in my own book.

(1) *External skin tags.*—Unless painful or grossly 'in the way', these should be left alone. Scrupulous cleanliness after stool is essential.

(2) *External thrombosed hæmorrhoids.*—A round oedematous swollen 'reddy-blue' lump will be seen external to the anus covered by *skin*. If small (*e.g.*, not larger than a pea) leave alone and direct the patient to bathe with cold water. Nature will absorb the clot (due to the bursting of the small perianal vein). If large or painful, clean the skin, infiltrate with 2 per cent novocaine (1 or 2 c.c. should suffice). Cut down over clot, evacuate clot, stop bleeding (if possible with pressure forceps alone); partially approximate skin edges, but do *not* stitch. Leave a small, raw, triangular area (devoid of skin) to granulate; thus acting as an efficient drainage area, apex of triangle at anus. Apply pressure; bed for 4 to 8 days. Cleanliness. Healing by first intention will result. Obviate future straining at stool by prescribing paraffin, T. D. S.

(3) *Pruritus ani.*—If there be associated internal piles, inject them. In all cases of pruritus ani, adopt the following: (a) washing after stool and at night, especially into the rugose folds of skin around the anus, which are always present; (b) application of either (1) calamine lotion made with one grain of ichthyol to the ounce, and made with 25 per cent witch hazel liquor; or (2) Percainal (Ciba), or (3) ung. phenolein; (c) avoidance of causes of localized sweat by bracing trousers and pyjamas *low*, and by wearing silk or cotton locally.

In mild cases the above should suffice. In severe cases the infiltration all around the anus superficially and deeply with 2 to 5 c.c. of proctocaine (or even more) will succeed. Occasionally artificial sunlight (locally) helps. Mental worry is a frequent concomitant and should be removed. I personally have not seen great results from the application of x-rays, but this is a personal opinion.

(4) *Mouth of fistula.*—This must be investigated. No injection treatment will help. The whole fistulous track must

be laid open by operation. If the fistula be small and unimportant, this is no contra-indication to the concomitant injection of internal hæmorrhoids.

(5) *Fissure in ano.*—Symptoms and signs: pain, beginning at stool, and lasting for half to many hours afterwards; slight bleeding, possibly also a sentinel pile and pus (if the fissure be infected). A fissure often occurs in a neurotic nulliparous woman, but also in all classes. It is due to the passage of a hard scybalous mass which either stretches the anus (tearing it) or tears down a small piece of mucous membrane from inside the anus, which finally hangs outside, thus causing the sentinel pile. In nine cases out of ten a fissure is posterior.

(a) *Type without the sentinel pile.*—If early, this can be cured by the patient himself: soft stools to be secured by petrolagar with phenolphthalein—a small dose thrice daily before food; insertion of glycerine suppository before stool; washing gently with cotton after stool; insertion of Sanusin semoule (British Drug Houses) after stool. Explain to patient nature of trouble and advise him not to overstretch his anus.

If these measures fail, sterilize the outside skin, freeze posteriorly to fissure, insert gloved left index finger into anus and inject—about half an inch behind the anus—2 c.c. of Proctocaine deep to fissure and all around posterior sides of anus. The presence of pus is no contra-indication. The Proctocaine oil must be evenly distributed, not leaving large masses in any one place. The fissure will heal in nine cases out of ten.

(b) *The type with sentinel pile.*—The foregoing may be tried, and frequently (although the 'ditch' of the fissure and the sentinel pile remain) it will heal over and the patient have no more pain. He will, however, always have to keep his stools free from scybalous masses and pass soft stools, using paraffin.

In a good many old-standing cases of this type of fissure, Gabriel's operation will be necessary.

(6) *Polyp.*—Quite frequently these can be caught with forceps, pulled upon and ligatured round their base and cut off

without any anæsthetic—provided they can be pulled down outside the anus. Otherwise an operation must be performed under an anæsthetic (general, local, or low spinal).

(7) *Cancer.*—If discovered a surgeon's advice must be sought.

(8) *Strangulated and prolapsed gangrenous internal piles.*—If possible replace, and get patient voluntarily to 'suck in' and 'keep in'. Suppositories are very helpful (Proctoids). In a vast majority of cases these entirely subside in two weeks; nature absorbing the clots. Rest in bed is essential. Cold water bathings are helpful. After their subsidence the remaining ordinary piles may be injected. If, however, the mass be large, operative removal is safe and advisable.

(9) *Internal hæmorrhoids.*—These are covered by mucous membrane, are formed by varicosity of the lower hæmorrhoidal veins, and contain running blood. They are found for a distance of about two inches above the anal folds. When large they prolapse, and when the mucous membrane is thin they bleed. Their symptoms are bleeding, 'protrusion' and discomfort. They are only painful and they remain prolapsed for any length of time. Severe pain is almost always diagnostic of fissure or cancer. As stated above, mental depression is very commonly associated with internal piles, particularly in males.

IV. Technique of injection of internal hæmorrhoids

(a) *Instruments required.*—Sphincteroscope—already described above. Two long Spencer-Wells artery forceps, for holding swabs or for the control of the very rare bleeding. Long narrow Lane's tissue forceps, for gripping a polyp. Electric headlight and battery in one's side pocket. A movable trolley, a small enamel basin, a dish of cotton-wool swabs, each about the size of a grape, sterilizer, and couch. Ten c.c. graduated syringe—Record type, eccentric nozzle. To the piston is attached a ring for the thumb, and to the cap of the syringe two rings for the index and middle fingers.

The needle is $4\frac{3}{4}$ inches long, it is bent at an angle of about 10 degrees 3 inches from the nozzle. The terminal inch

and its point are gold; the remaining part of the needle is corrugated for a revolving screw cap, which, when screwed back, regulates the depth to which one can plunge the needle into the pile; and, when the syringe is not in use, the cap can be screwed forward so as to protect the point of the needle. The needle is affixed by a bayonet catch, so that on pulling the needle outwards (after injection) the needle does not become disconnected from the syringe. (My syringe can be obtained from Messrs. Alfred Cox and Sons, 152, White Chapel Road, London, E. 1.)

(b) *Fluid to be injected.*—Pure carbolic acid crystals 5 per cent in pure almond oil. The dose is $\frac{1}{2}$ to 2 c.c. into each pile, and not more than 5 c.c. at any one sitting; usually not more than 3 c.c. at one sitting. Other workers have used other fluids, *e.g.*, quinine and urethane, but I have had far greater success with the above almond oil and 5 per cent carbolic.

(c) *The actual injection.*—Instruments must all be sterilized; care must be taken especially that the point of the needle does not touch anything unsterile. An electric headlight is donned, and the patient is put on the couch, lying on his left side with his knees well drawn up, his buttocks (under which are placed cotton wool and a mackintosh) are well to the edge of the couch.

It is only necessary for the patient to expose his buttocks; he may be suitably covered from unnecessary exposure with a towel or rug—attention to such a small point of etiquette is pleasing to a patient, especially of the female sex.

The well-greased sphincteroscope is introduced to its full extent and the obturator removed. Then the sphincteroscope is somewhat withdrawn, pushed in slightly again, and so on, until the piles are in view, having prolapsed in the speculum. The rectum should be empty or swabbed until empty. With forceps in the right hand, swab the field with cotton-wool dipped in lukewarm water (to which is added a drop or two of lysol), holding the sphincteroscope all the while in the left hand. Then pick up the sterile syringe, ready loaded with the fluid, and insert the needle into the lowermost pile. It is better to inject first the bottommost pile in the speculum and then

the other piles, if indeed it be intended to inject all at one sitting. If the biggest be injected it will occupy the whole lumen, blocking the others from view; personally I consider that not more than three places should be injected at one sitting.

The needle must be inserted into the pile, *i.e.*, a bulging part covered by mucous membrane; if this be done the patient should not feel the needle prick. Avoid any obvious vein. It is essential that the needle be inserted into the centre of the pile mass; the feeling to the operator should be like plunging the needle into the midst of a jelly. If anything harder be encountered the needle should be withdrawn. Then inject slowly; gradually the piles will go whitish and swell up; it is much better to inject too little (especially at the first sitting) than too much. Stop when the pile begins to swell and to go 'whitish', or even before that.

An average injection per pile will be from 1 to 2 c.c. of the oil, but experience in time decides each case; $\frac{1}{2}$ c.c. is a safe small dose. Hold the needle in position for one to two minutes, then withdraw it slowly. On the removal of the needle sometimes a slight ooze of oil from the puncture will be noticed; a slight bleeding may also occur. These cease when the speculum is removed.

It is very rarely (especially with the oil treatment) that bleeding is troublesome; very rarely a bleeding point has to be squeezed by the long artery forceps, and pressure for one minute suffices in all cases without any ligature. This pressure is not felt by the patient, who does not, in fact, know what is going on, for his pile is anaesthetized by the carbolic. The injections having been made, the sphincteroscope is removed, preferably by first re-inserting the obturator; and after the patient's external anal region has been cleansed, and after two or three minutes on the couch, he can get up and go home.

The whole operation is performed in less time than it takes to describe. There is no pain to the patient, his only slight discomfort is the introduction of the speculum; and, if it be well lubricated, its introduction is no more painful than putting one's finger into one's mouth.

The essential practical points are, therefore, do not inject too much, do not inject too low, and only inject into an internal pile, and not into healthy rectal wall. Always inject through the speculum, and never inject an internal pile while it is prolapsed.

(d) *After-effects and results.*—It is best for the patient to rest in the recumbent position for about three hours on his return home. About 85 per cent of patients experience an aching in the rectum which lasts for three to four hours; 10 per cent have no discomfort at all; and in about 5 per cent of cases the pain is severe—lasting for twelve hours. Patients should be directed to ‘draw inwards’, and to keep their piles inside. If they should prolapse after injection they should be bathed with cold water and replaced by the patient. I generally insert a ‘Proctoid’ suppository after injection. The patient can do his usual work on the day after the injection but unnecessary or strenuous exercise should be interdicted for three or four days. Patients should take paraffin or Agarol three times before meals during treatment; bowels may be moved on the day after injection.

In 90 per cent of cases the patient will return for the next injection (in a fortnight’s time), stating that there has been no bleeding and no protrusion, and with marked signs of gratitude.

Injections should be continued until no more prolapse can be seen within the inserted speculum. An average case of *first* degree piles (which bleed but do not prolapse) can usually be cured in three visits: a case of *second* degree (piles which bleed and prolapse, but which can be replaced and kept replaced), in four or five visits. *Third* degree piles are sometimes better operated on, but even here great improvement can be effected by injection. Experience here will decide: there are really exceedingly few cases that need operation.

If the patient will always henceforward attend to his after-care and rectal toilet and hygiene, the cure by injection is as permanent as with surgical removal. The patient must be directed to practise quickly, ‘pressing in and out’ several

times daily for the rest of his life (beginning a few days after injection). Regular habit time. Soft stools—secured, if possible, by brown bread and fruit and exercise, otherwise by paraffin or Agarol. Washing after stool.

V. Summary

In this paper rectal pathology has been described, together with a simple but exhaustive method of rectal examination. Apart from the treatment of cancer and certain cases of fistula and fissure which need operative treatment, all cases can be dealt with by injectional and other means—all within the scope of general practice.

In particular, an injectional method is described whereby bleeding or prolapsing internal piles can be cured safely, quickly, painlessly and cheaply; with no lying-up on the part of the patient, no risk of anæsthetic, no loss of wages, no nursing home fees; and the gratitude of the patient is extreme.

The Moral Aspect of "Birth Control"

BY

Dr. R. A. JOHNSON, M.B., B.Ch., D.P.H.

District Medical Officer, S. I. Ry., Golden Rock

(Being a lecture given before the Trichinopoly District Medical Association, on 23-4-1938)

A short time ago Dr. A. P. Pillay, of Bombay, delivered before the Trichinopoly District Medical Association what purported to be a lecture on "Some Aspects of Birth Control". The lecture, in point of fact, did not deal with any aspects of Birth Control, but was merely a demonstration of contraceptive methods and appliances. There was no opportunity for a discussion at that meeting, and this short paper of mine merely contains some of the remarks which I would have made at that meeting had I been given the opportunity.

I make no apology for the fact that my remarks deal with only one aspect of Birth Control, namely, the moral aspect. To me it is abundantly clear—and I think it should be equally clear to all right-thinking men and women—that if Birth Control fails to pass the moral test, then no other aspect of the question need be considered. We do not discuss the advisability, the technique, or other aspects of murder or suicide or forgery because we do not admit the moral right of these things.

Before considering any aspect of Birth Control it is necessary that we get perfectly clear on our terminology. Unfortunately, much confusion of thought exists on account of the misuse of terms. The term "Birth Control" is one of those unfortunate modern and popular phrases, like "Free Love" and many others, which does not mean what it says. Somebody has very truly remarked that Birth Control is so called because it means no birth and no control! Just as the term "Free Love" is used in popular language to denote something which is very far removed from both freedom and love, so the term "Birth

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Control" is popularly used to denote something, namely the use of contraceptives, which is equally far removed from both birth and control. If these two phrases were used in their proper and literal sense there would be no confusion. We would at once see that Free Love is a most laudable thing and is the basis of all religion and all morality. Equally clearly would we see that Birth Control, also in its literal sense, not merely does not offend against any moral law but is in some cases a moral obligation. Among the unmarried Birth Control is an obligation imposed by the ordinary law of ordered society; but Birth Control in this case means nothing more nor less than self control.

Unfortunately, it is not always possible to escape from the popular use, or misuse, of terms. Hence when I speak of Birth Control in this paper I use the phrase in its more popular sense, namely the use of contraceptives.

The fundamental fact about Birth Control is that the several function was given to man by nature for a specific purpose, i.e., the propagation of the race, just as the function of eating and digestion was given for the special purpose of preserving the life of the individual. To exercise either function for a lower purpose, i.e., personal pleasure, while at the same time deliberately defeating, or attempting to defeat, nature's object is an offence against the natural law. This is exactly what is done in using contraceptives. Pleasure becomes the primary motive, nature's plan is deliberately frustrated and a primal law of nature is violated.

A parallel case can be imagined in the case of eating. It is said of some of the ancient Romans that at their banquets they would gorge themselves with food till they could eat no more, then take an emetic so as to get rid of what they had eaten, and then start the process of eating once more. Such a procedure is fundamentally in the same category as contraception in that the natural object of eating is not only disregarded but is deliberately frustrated by man's wilful act while the entirely selfish pleasure of the individual is made the object of primary importance—a position which nature never intended it to occupy.

It is quite true that both the sex act and the act of eating have been made capable of pleasure. This is a wise provision of nature for the preservation of the race in the one case and of the individual in the other. If these pleasures were not provided man might neglect both functions and nature's plan for the propagation of the race might fail. Nature does not forbid so the reasonable enjoyment of the pleasures which she has provided as long as we do not make pleasure our primary object while at the same time violently interfering with *nature's* primary object. For this reason intercourse during pregnancy or during other "safe periods" is not an offence against the natural law because (even though pleasure may be derived from such act) there is no deliberate interference on our part with nature's plan. It is merely a case of taking advantage, so to speak, of a natural law. There is a vast and fundamental difference between co-operating with nature and doing violence to nature for the sake of personal pleasure.

I have purposely confined myself to basic facts which should be of universal appeal. I have avoided every thing in the nature of religious dogma, because I maintain the simple facts of the natural law should be sufficient for everybody. If we bear in mind the *nature* and the *end* of the functions concerned there should be no confusion of thought. The *end* of the sex function is not to give individual pleasure. The pleasure (or urge) is incidental and was given by Nature so that the real end (i.e., procreation) might be fulfilled. To prevent this end by our free will is to offend against a very clear and basic natural law.

Puerperal Sepsis

THE high death toll from puerperal Sepsis continues in controlled and outside practice. The bigger figure of those who recover but are condemned to a life of chronic ill health, escapes our immediate attention; but is no less a menace.

Much extolled treatments come and go, but the figure remains high. If there has been any reduction in recent years it can be traced to the growing importance of antenatal prophylaxis. Improved general health and diminished intra-partum interference are the main contributions that have helped to lower this figure.

The one big factor remains—the etiological. Infection from the attendants' mouth and rarer from his or her hands; and auto-infection, are definitely established as causal factors today; and one cannot overstress rigorous attention to the prevention of infection from these sources. The segregation of throat cases; the prohibition of a doctor or nurse with a 'throat' attending a maternity case; the restrictions on midwives attending a 'sepsis' case; and lastly the use of masks by the attendants, are the tedious, but only effective steps in this direction. That Streptococcal infections are cured only by prevention, was never more truly said.

Minor Rectal Pathology

The pathology of conditions in and about the rectum and anus is the pathology of chronic states. This chronicity is brought about by three main factors, viz., local disturbances in circulation; renewed sepsis; and lack of rest to the parts. In reviewing a series of such cases one cannot help being struck by the fact that attention to these points has definitely aided healing and shortened the period of treatment and convalescence.

Most of these conditions call for major or minor surgical interference, and it is to the prolonged and careful pre-operative and post-operative treatment that success is traceable.

Improving the local circulation by passive hyperaemia; irradiation of chronic congestion; and attention to general health, form the first steps. Sepsis is got over by local application of weak antiseptics sufficient to destroy faecal organisms and yet not strong enough to produce a coagulation necrosis and the resulting sinuses. Sepsis is best treated by confining bowel action for some days before and after operation. Purgatives; enemas and rigorous Starvation, for two days before; and the use of morphia and Dover's powder at least three days after operation, achieve this. Rest to the part can be given by restricting the bowels; by resting up the patient in bed; and if one may include this last important cause under this head, prevention of the spasm of the sphincters. This last is responsible for no little delay in healing, and can be remedied by the injection of A. B. A. or anaesthesin; or the radial excision of the muscle.

Another cause for delayed healing is the popular large incisions, and the hope that they will granulate from below. If one has opened up freely and completely excised chronic granulation tissue close apposition with sutures invariably produces quicker and complete healing.

Association Notes

Extraordinary General Body Meeting

23rd April '38.

AN extraordinary General Body Meeting of the above Association was held at 5 p.m. on Saturday the 23rd April 1938, in E. R. High School, Trichy, when 31 doctors were present. After Tea, and Distribution of Bourne Vita by Dr. T. N. Subramania Iyer, Dr. T. S. Balasubramania Iyer was proposed president for the day by the Secretary and unanimously seconded by the members present. After the President's preliminary remarks, Dr. Johnson, District Medical Officer, Golden Rock, delivered an interesting lecture on "Moral Aspects of Birth Control".

After the President's concluding remarks the business on the agenda was taken up. For want of a quorum, however, the matters were discussed without being put to the vote.

I. Dr. R. A. Johnson's resolution regarding the non-undertaking of Medical Examination for Life Insurance of similar work unless they are paid the full fee, was brought by the Secretary and after discussion, it was proposed unanimously to send in a copy of the same to the Chairman of the Association of Life Insurance Companies.

II. The Committee recommended to the General Body that the resolution passed at the Annual General Body Meeting with regard to this Association becoming branch of the Indian Medical Association be held in abeyance till the financial position of the Association improves.

For want of a quorum the matter was put off till the next General Body Meeting.

With a vote of thanks to the Chair and the Lecturer the meeting terminated.

The Trichinopoly District Medical Association
TRICHINOPOLY

Statement of Accounts for April 1938

Dr.				Cr.			
RECEIPT				EXPENDITURE			
	Rs.	A.	P.		Rs.	A.	P.
By Balance on hand on 1-4-38 ...	0	14	3	Clerk's pay for March	18	0	0
„ Balance at Bank on that date ...	186	3	8	Stamp Account ...	10	8	0
„ Subscriptions from members ...	60	0	0	Stationery ...	3	3	6
„ Interest from Urban Bank ...	0	13	0	Cycle seat	0	9	0
„ Subscription from Advertisers ...	6	0	0	Do. stitching	0	1	6
				Do. repair	0	4	0
				Oil for cycle lamp	0	0	6
					0	15	0
				Baksheesh to E. R. H. School peon for meeting arrangements	1	0	0
				Balance at Bank on 30-4-38	214	8	8
				Balance on hand on 30-4-38	5	11	9
				Total balance ...	220	4	5
Total ...	Rs. 253	14	11				
					253	14	11

30-4-38

O. R. BALU, Secretary.

Excerpts

Diagnosis of Pulmonary Tuberculosis

U. GAD (*Nord. med. Tidskr.*, May 22, 1937, p. 815) has undertaken gastric lavage on two consecutive mornings, using 300 c. cm. of water, in 271 patients admitted to a Danish hospital for tuberculosis. All these patients presented no radiological evidence of active pulmonary tuberculosis. In as many as thirty-four cases tubercle bacilli were found by this means, and the patients were classified in five groups. Out of ninety-seven patients in the first group who were admitted to hospital for observation, although the radiological picture was perfectly normal, there were eleven in whose stomachs tubercle bacilli were found. In the second group of sixty-six patients there was a history of pulmonary tuberculosis earlier in life, but the radiological picture showed no sign of active disease. The gastric lavage, however, yielded tubercle bacilli in five of these cases. In the third group of seventy-five patients suffering from pleuritis there were twelve whose stomachs contained tubercle bacilli, although in none of these cases was there any radiological evidence of a tuberculous focus in the lungs. In the fourth group of ten cases in which the radiological findings were indicative of hilus tuberculosis, but in which there was no sign of any infiltration of the lungs, there were as many as six whose stomachs contained tubercle bacilli. In the fifth and last group of twenty-three patients, representing a great variety of morbid conditions such as erythema nodosum, spontaneous pneumothorax, emphysema, bronchitis, etc., there was not one case in which gastric lavage yielded tubercle bacilli. Thus it was only in this last group that the radiological and bacteriological tests agreed in being invariably negative. The author concludes that the radiological examination of the lungs often fails to detect active pulmonary tuberculosis, and that in many cases gastric lavage repairs this diagnostic failure.

Treatment of Rheumatism

E. SCHLIEPHAKE (*Zbl. inn. Med.*, July 10, 1937, p. 577) is of the opinion that all sources of focal infection must be removed before any other treatment of rheumatic conditions is instituted. The teeth, tonsils, gall-bladder, and the urogenital system may require attention, after which shortwave therapy may be started. The author does not advocate temperatures higher than 38° C.: more treatments are required than when higher temperatures are used, but improvement is more lasting. The condition may temporarily become worse and improvement only begin at the end of the course. The author had good results in 80 per cent. of cases, usually of chronic conditions in patients who had previously received various treatments without result. His criterion of improvement is restoration of function and relief of pain. Anatomical changes could not be influenced. About one-third of his patients were treated with short-wave therapy alone, but the author believes that if medical measures are added treatment is less drastic and is shorter, and for this purpose he uses gold preparations, salicylates, and atophani. A diet poor in carbohydrates is also given for five days after the temperature has become normal.

H. SEEL (*Fortschr. Therap.*, July, 1937, p. 391) points out that in spite of the advances in the study of rheumatism and in the increase of therapeutic adjuvants the place of the salicylates is still recognized. They are of value (1) because of their bactericidal, antiseptic, and desensitizing properties, (2) because of their central analgesic action and their ability to inhibit inflammation, (3) because they increase metabolism and lower temperature, and (4) because they can be absorbed locally and stored in the tissues. When applied locally they induce hyperaemia by enlarging the lumen of the capillaries, by their absorption and storage in the diseased tissue, by their local analgesic action, and by changing the reaction of diseased tissue. The pharmacological action of salicylates on the rheumatic organism is not yet clear, however. In afebrile local conditions the inunction of salicylate derivatives is of value. In febrile affections, especially of the joints, oral and cutaneous therapy is indicated. Local inunction is contraindicated when

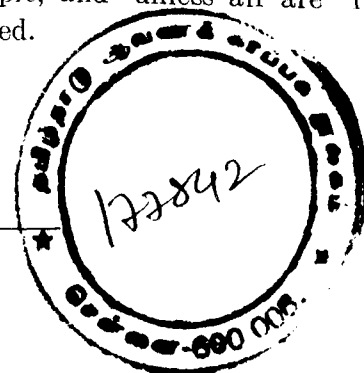
heat in the form of fomentations or diathermy is applied, because physical hyperthermia in combination with chemical hyperthermia often results in local burns. In certain severe cases such a reaction may be made use of in order to increase the effect of salicylates.

Toxic Foci

Dr. Sydney Pern (Ballarat, Australia) writes:—

It is an astounding thing that after so many years of knowledge of this subject so many of these foci are overlooked. I would like to mention a few traps that many fall into. First as regards apical infection of teeth, X-Ray films are not reliable evidence of infection. It has been shown that 98 per cent. of all dead teeth, with no signs of apical infection of the film, show definite infection on culture; in other words, all dead teeth can be accepted as infected. This fact ought to be known to all medical men and dentists. The only evidence of gingival infection that can be relied on, if in doubt, is to take cultures from pockets, however small, with a platinum wire. Unerupted wisdom teeth are often overlooked, and are always infected. Broken roots, usually infected, are found with surprising frequency in edentulous jaws, as are granulomas which have broken off from extracted teeth, the finding and removal of which often yield astounding results. As regards tonsils a casual glance at an anaemic-looking tonsil is usually enough to pronounce it uninfected, when it often contains virulent organisms. Frequently no attempt is made to retract the anterior pillars, and if no tonsil is visible it is passed as not being a source of infection. If there is any tonsil tissue visible cultures should be taken from the centre, preferably with a capillary glass tube, and if this is done sufficiently often it will be found that practically all tonsils are infected, because if not infected they naturally atrophy. Sinus infection is more often overlooked than any other. I found that in my out-patient clinic 25 per cent of the patients were so infected. It is comparatively easily diagnosed by a chronic dropping of mucus from behind the palate, because where there is pus there must be infection. Morning headaches and liability to

frequent colds are usually present; X-Ray films can be misleading. Bad head-aches, often occipital, without any discharge may mean locked-up pus. Infected gall-bladders are often the cause of many troubles, and may present very few symptoms. Pyelitis is commonly overlooked, as is prostatic infection. Cervical infection in women does not get nearly the attention it should. These are the usual sources of infection, and if carefully examined will nearly always yield results. It is very unwise to be content with finding only one focus of infection, as they are frequently multiple, and unless all are removed improvement cannot be obtained.



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(REGISTERED)

Editor: Dr. M. C. CONDILLAC, M.R.C.S.

Vol. V]

JUNE 1938

[No. 6

Blood Transfusion

BY

K. S. RANGANATHAN, M.R.C.S. (Eng.), L.R.C.P., (Lond.)

R. M. O. Government Hospital, Tanjore

[Being a Lecture delivered at the Annual Meeting
of the Trichinopoly District Medical Association, June 1938]

I am thankful to have this opportunity of giving you an account of one of the most wonderful advances in surgical practice during the present century--I mean Blood Transfusion--and the part it plays in Modern Medicine. It is a very fascinating study to learn the stages by which the present standard of perfection of the technique has been attained over a period of about 300 years, the value of Blood Transfusion to the Medical Profession the extent to which the practice has grown and the diseases to the cure or alleviation of which it has been applied. It is essential that I should first review briefly the History of Blood Transfusion in order that the reasons for its extraordinary growth may be understood.

As for the practical side of the operation I am not going to say much as it can be mastered only by observation and practice. I shall however conclude this talk by a demonstration of the technique of Blood Grouping and of the apparatus commonly used.

The obvious value of Blood Transfusion from a healthy to an ailing person, has been recognised by the Medical Profession

in the West from the earliest times. But difficulties of technique have rendered it impracticable until quite recent years. The principal obstacles have been sepsis, occurring both to the donor and to the patient, coagulation of blood between the operations of extraction and injection, and incompatibility of patients to receive the blood of donors provided. This last resulted in serious reactions which frequently terminated in the death of the patient. These difficulties have now been overcome, sepsis by the researches of Pasteur and Lister, coagulation of blood by defibrination and subsequently by the addition to the blood of citrate of soda. The problem of incompatibility was got over by the discovery of Blood Groups by Jansky and Moss (1907-10).

Attempts to do blood transfusion had been made for over 300 years, but they were usually unsuccessful, chiefly because it was so hard to prevent blood from clotting. A definite description of a technique was made by Libavius of Halle in 1615. Translated it was as follows:—"Let there be present a robust healthy youth full of lively blood. Let there come one exhausted in strength weak, enervated, scarcely breathing. Let the master of the art have little tubes that can be adapted one to the other; then let him open an artery of the healthy one, insert the tube and secure it. Next let him incise the artery of the patient and put into it the feminine tube. Next let him adapt the two tubes to each other and the arterial blood of the healthy one, warm and full of spirit will leap into the sick one, and immediately bring him to the fountain of life, and will drive away all languor."

It is now assumed that the above was only an idea and had not been put into practice because William Harvey's theory of the circulation of blood had not been published till 13 years later in 1628. Harvey's discovery is regarded as the first landmark in the history of Blood Transfusion.

In the earliest experiments the blood of animals, *e.g.*, calves, dogs, sheep and horses, was used. These were started in England by Sir Christopher Wren, the scientist and architect. The credit of the first successful transfusion upon a human being is generally given to Jean Baptiste Denys, of Montpellier, Physician to Louis XIV, who in 1667 successfully transfused

nine ounces of sheep's blood to a young man, who was suffering from a violent fever which obliged his physicians to bleed him twenty times. Similar experiments were carried out in England and one of these was actually witnessed by Samuel Pepys, the diarist, in 1667. The subject of the experiment was a poor Bachelor of Divinity, of whom Pepys remarks 'that he was a little cracked in the head'.

Meanwhile Denys in France continued the transfusions with varied success until serious controversy arose around the operation. The opponents of the operation even predicted the growth of horns on a man after transfusion from a sheep. The operation was banned in France by a decree which provided that 'no transfusion should be made upon any human being, but by the approbation of the Physicians of the Parisian Faculty'.

For more than a hundred years Blood Transfusion was almost entirely neglected. In 1818 James Blundell, Lecturer in Physiology and Midwifery at St. Thomas's and Guy's Hospitals published a paper on Experimental Transfusion on dogs with a special syringe invented by himself. He then recorded his results of Blood Transfusion on man. It is reported that in half the number of cases the operation was successful. Fatalities that occurred were attributed to the introduction of air bubbles. Blundell's work in 1818 is considered another landmark in that it marked the real beginning of the clinical application of Blood Transfusion.

Bischoff in 1835 took a great step forward by using defibrinated blood. This was adopted by many surgeons. Mention is made of Sir Thomas Smith, who in 1873 transfused a case of Malaena neonatorum with defibrinated blood at St. Bartholomew's Hospital.

Blood transfusion has made rapid advances since the beginning of the present century. Crile in 1907 devised an effective method for direct transfusion by which an end to end anastomosis was made between the artery of the donor and the vein of the recipient using a short silver tube. These operations often failed. Even if successful, one was unable to measure the

amount of blood that was transfused. The discovery of agglutinins and iso-agglutinins in the blood was made by Landsteiner and Shattock in 1901. In 1907 the four blood groups were determined by Jansky and the work was repeated and confirmed by Moss in 1910.

Improvements in technique were rapidly effected, the syringe, anastomosis of blood vessels and the paraffin tube being tried. The year 1913 marks the beginning of indirect blood transfusion by means of Kimpton and Brown's method. The last of the discoveries to be made was the use of citrate of soda as an anti-coagulant by Hustin of Belgium in October 1914. The first transfusion on record with the aid of sodium citrate was performed by Prof. Agote of Buenos Aires on November 14, 1914. This came just in time to save many thousands of lives on the battlefields of Europe, although the possibilities of the operation were not known during the first two years of the Great War. By 1917 the arrival of the American Army Medical Corps brought the possibilities of blood transfusion to the notice of the Allied Army Medical Staff and it began to be used with most beneficial results in cases of Haemorrhage and Wound Shock. Donors were obtained by an unofficial reward of a fortnight's leave in England. The Supply of donors, it is said, was therefore unlimited!

Knowledge of Blood transfusion thus gained during the War has been turned to good account in civil medical practice. At first the operation was used for cases analogous met with in Army Medical Practice *i.e.*, Haemorrhage and Wound Shock, but year by year fresh cases have been found capable of cure or amelioration by Blood Transfusion. In the new kind of warfare that has now arisen in the streets of big towns, the warfare between Traffic and pedestrians, blood transfusion is often the means of saving many lives. The comparative safety of the operation at the present time has led to a rapid expansion of the clinical condition for which transfusion could be used.

Indications

What may these conditions be? *Haemorrhage* is the prime indication. Here blood transfusion acts by increasing the volume

of circulating fluid and by supplying red blood cells which are oxygen carriers. In haemorrhage, therefore, blood transfusion can be considered curative, while in most of the other conditions in which blood transfusion is indicated, it serves as a palliative measure helping to prolong life. There are many types of acute haemorrhage which have been successfully treated. I have mentioned street accidents already. One of the most remarkable cases thus treated is reported by Geoffrey Keynes, Assistant Surgeon, St. Bartholomew's Hospital. The patient 'before transfusion could only be described as moribund. He was almost unconscious, absolutely blanched, and his radial pulse imperceptible; his jaw was relaxed and his breathing had become a series of fish-like gasps such as are only associated with imminent dissolution. His heart would certainly have ceased beating within a few minutes. Yet his condition improved after transfusion that an hour later with the help of a second transfusion, it was possible to amputate his leg above the knee. The patient ultimately recovered having been as near death as it is possible to be and yet remain alive'.

Mention should here be made of obstetric haemorrhages, such as, ante-partum and post-partum haemorrhages and ruptured ectopic pregnancy, conditions which can exsanguinate the patients in the course of a few minutes. In ruptured ectopic pregnancy the blood in the peritoneal cavity can be used for transfusion if suitable donors cannot be obtained. It is collected into sodium citrate solution, filtered through a double layer of sterile gauze, warmed and used immediately. It should be remembered that this is an emergency method. The above obstetric emergencies being of the gravest urgency, to save time in obtaining blood donors of the right group, Titus in 1920 advocated the grouping of the blood of all pregnant woman well before the expected time of confinement and having compatible donors available.

Haemorrhage from gastric and duodenal ulcers and from typhoid ulceration are sometimes amazingly benefited by blood transfusion. It is quite a common thing in London to transfuse patients before, during and after operation. By this means the patient is fortified against a severe operation, the blood lost is at once replaced, shock is diminished, mortality reduced and

convalescence shortened. I may here mention the cause of a post-anastamotic jejunal ulcer which was operated by Mr. T. P. Dunhill (Now Sir Thomas Dunhill). The patient who was anaemic had received a blood transfusion before the operation. During the operation which consisted in the undoing of the anastomosis, partial gastrectomy and making a fresh anastomosis, all of which took about an hour and a half owing to frightful amount of adhesions, the patient was transfused again. He made a good recovery in spite of the shock and haemorrhage entailed by such a severe operation. In acute haemorrhage to quote Geoffrey Keynes, 'the efficacy of blood transfusion is only limited by the actual cessation of the patient's heart beats'. Finally it needly hardly be reminded that blood transfusion can be of avail only if the condition giving rise to the blood loss can be arrested.

Next in the order come the *Anaemias*, of which Addisonian Anaemia heads the list.

In Pernicious Anaemia blood transfusion used to play an important part in the past. In 60% of cases definite improvement followed. It had the effect of initiating or prolonging the remissions so characteristic of the disease. The remarkable effect of blood transfusion in a case of Pern. Anaemia has been reported in Norway. "A man aged 33, was dyspnoeic, semi-conscious and moribund when admitted to hospital. His red cells were 850,000 and his Haemoglobin percentage 19. Immediate improvement followed the transfusion of 900 cc. of citrated blood, the red cells rising to 2,000,000 and later to 3,000,000. Twelve days later he was walking about." Since liver therapy has become the chief therapeutic measure, blood transfusion plays but a minor part. It is nevertheless a useful standby in emergency cases.

The haemolytic anaemia of pregnancy responds promptly to blood transfusion after emptying of the uterus.

Secondary anaemias. Lethiby Tidy briefly gives the indication for transfusion in sec. anaemias as follows "In patients with Hb. below 30% transfusion is indicated and below 25% it is imperative". In these cases blood transfusion may serve to

swing the balance in favour of the patient while time is gained for the search and treatment of the underlying cause.

In haemorrhage of the new-born blood transfusion is a lifesaving measure. Mother's blood is usually used. About 20 cc. is withdrawn from the mother and injected into the buttock of the child.

Haemorrhagic diseases. Haemophilia. Here it is a specific for the particular haemorrhage. It does not cure. It arrests the bleeding by supplying pro-thrombin. Even small amounts of blood are enough to arrest the bleeding.

Jaundice, it is well known, lengthens clotting time. Blood transfusion during or after operations on jaundiced patients is beneficial. *Septic conditions* also respond to transfusion probably because of the associated anaemia. No effect on septicaemic conditions e.g., blood transfusion has no effect on Malignant endocarditis, in which the organism is of a very low grade of virulence, *Strep. viridans*.

In septic conditions, such as Pyaemia, blood of immunised donors is used. (Immuno-Transfusion). Not much used at the present day.

Carbon monoxide poisoning. Common examples are charcoal stove poisoning and motor exhaust gas poisoning in closed garages. Here the gas forms a stable compound with the Hb. carboxy-haemoglobin which becomes useless as an oxygen carrier. So blood is withdrawn and a transfusion given (Exsanguination-transfusion).

Besides indications shown above, blood transfusion has been advocated and given in other pathological conditions as far apart as encephalitis and Bronchial asthma with questionable success. These may be grouped under 'miscellaneous indications'.

The following is a classified list of diseases or injuries for which transfusion was given in 1927 in the London Hospitals.

Abortion	4	Gastric ulcer	58
Anaemia Pernicious	103	Haematemesis	45
" other	56	Haemorrhages, other	18
" Splenic	13	Haemophilia	4

288	MISCELLANY	JUNE
Black water fever	2	Post operative shock 30
Burns	2	P.P.H. 10
Carcinoma Stomach	36	Pre-operation 33
„ other regions	13	Puerperal septicaemia 12
Colitis	11	Purpura 10
Crushed limbs	10	Septicaemia 23
Duodenal ulcer	30	Uterine Haemorrhage etc., 18

The extent to which blood transfusion is carried out in London can be appreciated from the fact that during the year 1927-31 no less than 7,696 transfusions were done by 190 institutions. If a minimum of 50 transfusions were laid down, 33 Hospitals can be included in the list. Some of the highest figures are contributed by Guy's (872) and St. Bartholomew's Hospitals (686).

The question that next suggests itself is 'how were donors obtained for such a large number of transfusions? The answer to the question is a long story. Donors are generally obtained from among the volunteers maintained by the London Blood Transfusion Service. The growth of Blood Transfusion in London is closely linked with that of the London Transfusion Service and I have no hesitation in saying that but for the facilities afforded by this organisation, blood transfusion will not be used as a therapeutic measure in London as it is today. I shall therefore attempt to outline at some length the start, development and working of this wonderful voluntary organisation which, thanks to Mr. P. L. Oliver O. B. E., the Hon. Secretary, I have been enabled to study in detail.

The London Blood Transfusion Service has been in existence for over 16 years. It undertakes to supply blood donors at short notice. The volunteers are willing to leave their work or their recreation and frequently their beds in the small hours of the morning to go to any hospital where they are required. The story of the inception of this service is an unique one. One day towards the end of 1921 the Hon. Secretary of the Camberwell Divn. of the British Red Cross Society was asked if he could provide a volunteer for blood transfusion at the local Hospital. Four members of the Division at once volunteered, and to that request the London Blood Transfusion Service owes its inception.

Mr. P. L. Oliver, seeing that this work was eminently suited for the Red Cross Society, seized this opportunity to prepare a list of members who were willing to volunteer for future cases. As time went on and fresh institutions learned of the existence of the Service, the calls grew so fast that the Camberwell Divn. could not meet all the demands for donors, and recourse was had to the Press. The response was very good. This brought in the London Rover Scouts, the Y. M. C. A., and a large number of unattached volunteers. The London Rovers have since adopted blood transfusion as one of their forms of service.

TABLE 1
Analysis of Volunteers for 1931

	Members	Transfusion
Rovers and Scouts	... 517	664
Toc H members	... 125	209
Ladies	... 228	296
Other organisations	... 429	644
Cancelled calls		265
Total	... 1,299	2,078

It will be seen that one out of every five volunteers is of the gentler sex.

In 1925 the British Red Cross Society took over the organisation at its Headquarters. To assist in its work, a committee was set up consisting of representatives of the Red Cross Society London Rover Scouts and of the Hospitals Association. The Office is at the private house of the Hon. Secretary and it is open day and night. It is staffed by his wife and himself and two clerks. These latter are the only two who receive any remuneration whatever.

The chief work of the Service consists in maintaining a sufficient body of volunteers spread all over London to cope with the constantly increasing demands for donors, and to fill vacancies caused by resignations. To this end, lectures and demonstrations of blood transfusion by means of a film are given by the Hon. Secretary two or three times a week to interested organisations such as Y. M. C. A., Rovers, Leading Insurance

Offices, Banks and large Commercial houses. Even if no eligible donors be present at these addresses the Hon. Secretary is glad to have an opportunity to dispel any fears that may exist as to the dangers of the operation to the donor. He impresses on them how great are the benefits they would confer and how little they would themselves suffer by the operation. Mr. Oliver is about 65 years now and has served as a donor nearly ten times. He is none the worse for his generosity. At the end of the talk he leaves a few enrolment forms for the use of intending volunteers. The volunteers has to fill therein particulars of his or her name, private address, his telephone number or that of his neighbours who would accept a message for him, his business firm and address, hours of duty, times when he would be available and special times when he would not be available and return it to the Hon. Secretary's office. Finally he has to give a statement offering himself as a donor for blood transfusion and undertaking to proceed, on receipt of instructions, to any hospital indicated. Just imagine the encroachment on one's leisure and the amount of the sacrifice of personal convenience called for.

The volunteer has next to get himself grouped, Dr. H. F. Brewer, Medical Officer to the service, is in attendance at St. Bartholomew's Hospital daily except Sundays to group and test the volunteers and also to examine existing donors who may wish to be satisfied as to their suitability at the time for blood transfusion. Besides grouping the blood, Dr. Brewer gives the volunteer a thorough physical examination. After a Wassermann test is done a report of the blood group and suitability of the volunteer is sent to the Hon. Secretary. The technique of blood grouping is very simple and I shall be demonstrating it in a moment. Donors are classified according to the size and prominence of their veins as volunteers with poor veins or with a thick layer of fat which will render the introduction of a large bore needle a matter of some difficulty, are not accepted. Dissection of the veins for withdrawal of blood is strictly forbidden, the object being not to cause any pain or injury.

Donors are drawn from all classes of the community—independent professional men and women, barristers, journalists,

shop men and girls, labourers, apprentices, maidservants etc. The number of members on the official roll on the 31st April 1932 was 1295 more than a third of whom belonged to the London Rover Scouts.

The Secretary maintains a classified list of volunteers according to their blood groups. Distinctive coloured cards are used for each group. Each card shows all the particulars contained in the enrolment form. On the reverse page of the card are noted the dates and hospitals of the donor's previous services.

There are certain conditions under which blood donors are supplied to the hospitals:—

1. No application is to be made unless there are no relatives of the right blood group.
2. The blood group is to be specified, Gr. 4 should be used for a Gr. 4 patient only.
3. Each hospital should undertake a share of the testing and grouping of the volunteers for the general list free of charge.
4. Within 14 days of the transfusion a report for statistical purposes to be sent to the Hon. Secretary.
5. The expenses will be borne by the Fund raised by the Service.
6. No charge will be made for voluntary hospitals but any spontaneous donation made shall be paid into the above Fund.
7. The needle method of extraction should alone be used. Dissection of the vein is forbidden and donors are instructed to refuse to serve unless this condition is observed. The operation is to be carried out by a skilled surgeon and not by students.

We shall now suppose that a patient has been admitted to a hospital in London in an exsanguinated condition after a street accident. What happens is this:—the surgeon, if no suitable donors of the right blood group are available, at once telephones the blood Transfusion Service asking for a donor specifying the blood group of the patient. Such calls come in

at the office at all hours of day or night. Occasionally appeals for blood donors are picked by the British Broadcasting Corporation and transmitted to the Service by telephone. The remarkable increase in the demands upon the Service may be seen from Table 11.

TABLE II.

1921	...	1	1927	...	1,298
1922	...	13	1928	...	1,333
1923	...	12	1929	...	1,360
1924	...	62	1930	...	1,627
1925	...	428	1931	...	2,078
1926	...	737			

By reference to the card index and distribution list it is possible in a minute or two to choose a donor of the right group in the neighbourhood of the hospital calling. Most donors are called up by telephone to their business office by day. After office hours express messages are telephoned to the donor's nearest Post Office. After 8 P.M. when Post Offices are closed, a number of Y. M. C. A., T. H. Hostels and private persons accept and convey messages to donors living near. As a last resort the Police are asked to call for a donor, but most people have an objection to a Police Constable hammering at their door at dead of night. For donors in the neighbourhood of Dulwich, the Hon. Secretary cycles out to call them. The record number of calls was 14 in twelve hours between 9 A.M. and 9 P.M. on the 23rd September 1929. Five calls were received in the course of an afternoon that I spent in Mr. Oliver's Office.

Immediately upon receipt of instructions, the volunteer proceeds by taxi, if required, first telephoning the Hon. Secretary that he is doing so. The Secretary should know within half an hour whether he is going or not as it will make all the difference between life and death. The Service is so well organised that it rarely takes more than half an hour by day or an hour by night to get a donor of the right group to the institution calling. Donors are instructed to spare no expense to get to their destination in urgent cases. Occasionally they have been sent over 40 miles by taxi.

I have observed volunteers thus supplied acting as donors at St. Bartholomew's Hospital, London. A direct grouping test of the donor's cells with the recipient's serum is done immediately before the Transfusion. If no agglutination be present, the transfusion is proceeded with. Anything from 400 to 700 cc. of blood is withdrawn from the vein by means of a large bore needle, the site of the puncture having been previously anaesthetised by novocaine. The arm is dressed in the usual way. The donor rest for about an hour, takes a cup of tea or black coffee and the next hour he is at his work as if nothing had happened. The Service guarantees donors against any ill effects from transfusion and the Eagle Star and British Dominions Insurance Co. have presented a free policy indemnifying donors against any injury from Transfusion up to 50% of any claim from £100 to £500. The total amount paid in the past ten years has been £82, in every case due to secondary causes, such as inflamed arms, or iodine burns and 75% of this has been refunded by the Hospitals concerned.

As soon as possible after the operation the donor is requested to report by letter or telephone all the expenses incurred including loss of salary or wages, if any, and these are at once refunded. He is also required to report any delay, discourtesy or difficulty that has been met with. The Committee takes prompt action by bringing to the notice of those responsible anything that appears to them to indicate either lack of consideration to the donors or a failure to make use of the latest and most approved methods. One general hospital in London has now been made to run its own service because no volunteer could be persuaded to serve at that hospital.

A Certificate of Honour is issued to each volunteer after undergoing the operation together with a copy of the surgeon's report on the case. A Badge is awarded to any member who has served ten times. 161 members or 12½% of the total personnel have qualified for this. A Bar is added to the Badge for every ten additional services. Seventeen members have the bar for 20 services, 3 for 30 and one for 40 services.

Donors of Group 1, 2 and 3 are usually called about once a year but the demand for group 4 is so great that some are

serving regularly every 3 months or less. A limit of 3 months has been fixed as the minimum between two donations by the same individual, more to prevent too frequent dislocation of private and business engagements than for health reasons.

After a transfusion a questionnaire is sent to the Hospital asking for the following information: Surgeon, name of the patient, sex and age, blood group, disease or injury, amount of blood taken and the result of the transfusion. This is filed and a copy is sent to the donor. An Analysis of the figures for 1928 shows the following results:—

Excellent (life undoubtedly saved)	610 cases or	52%
Satisfactory	304 „ „	26%
Improvement but followed by death	203 „ „	17%
No improvement	62 „ „	5%
Cancelled or no report received	154	
Total ...	1,333	100%

Blood transfusion is now recognised as a life-saving measure particularly in cases of urgent haemorrhage, that it should be possible in every general hospital to give a blood transfusion to a patient within half of an hour of his arrival on the premises.

The Service is entirely voluntary and donors receive nothing beyond their bare expenses which are defrayed by the committee upon receipt of the claim. Started primarily for the benefit of the patients in Voluntary Hospitals who were unable to obtain a suitable friend or relative to serve as a donor, and were not in a position to pay for a professional donor, the service nevertheless supplies donors for private patients in private houses or nursing homes, without any fees being charged. At the same time the Secretary expects medical men to explain the position to their well-to-do patients and any donations that may be forthcoming are added to the Fund. But, reports the Hon. Secretary, "gratitude in terms of cash, works out very curiously at times and we have had as small a donation as half a crown from quite a well-to-do man as the presumable value of the life we had saved. The one

millionaire who made use of our service did not even refund the travelling expenses of the two donors who were sent 40 miles to minister to him."

I have now outlined the working of the London Blood Transfusion Service at some length to emphasise the most outstanding points in favour of such an organisation for the supply of blood donors:—

1. No time is lost in testing prospective donors, several of whom in succession may be found unsuitable.

2. In urgent cases, there may be no time or facility for blood grouping.

3. Uncertainty as to how or where to obtain a blood donor will result in the postponement of the transfusion till the patient has passed to a more or less hopeless condition.

4. The interests of the donors are safeguarded by a careful preliminary examination and laying down certain conditions as to the technique to be adopted by institutions. The volunteers are usually Wassermann negative.

5. The Volunteer, unlike a relative, usually approaches the operation with the conscious heroism that he is helping to save a life and therefore with equanimity, which is a great help to the surgeon.

I have already dealt with the indications for blood transfusion. Are there any contra-indications for it? Yes. They are:—

1. Cardiac decompensation.
2. Arterio-sclerosis.
3. Pneumonia.
4. Hypertension.
5. Conditions with severe respiratory embarrassment.
6. Kidney disease. Always examine urine before transfusion.

It will be seen that all the above are conditions in which blood letting may be indicated at some stage or other, and as such blood transfusion is obviously bad treatment,

May I, before I conclude, plead for an extended use of blood use of blood transfusion in our part of the country? Besides the surgical, medical and obstetrical conditions which are common to both the Temperate and Tropical climates, we here have a large field for the use of blood transfusion, I mean Tropical-diseases. Almost every tropical disease causes a more or less severe secondary anaemia for which blood transfusion could be advantageously tried. Sprue and Ankylostomiasis are examples. A beginning has already been made. Transfusion has been used for intestinal haemorrhage in Typhoid. Attention has been called to the anaemia of pregnancy. Black-water fever has been treated by blood transfusion. Manson-Bahr has reported excellent results of blood transfusion in Sprue. Further research is needed to show the possibilities of blood transfusion in other Tropical diseases.

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Constipation and its Treatment

BY

A. F. HURST, M.A., D.M., F.R.C.P.

CONSTIPATION is generally regarded as the most common of all maladies and the cause of innumerable ills. I believe on the contrary that it is an uncommon and unimportant disorder, which rarely gives rise to symptoms. It is unusual to be consulted for constipation by a patient who is not already treating himself. The aperient habit generally begins for one of two reasons. The normal rhythm of the bowels may have been upset by an illness or accident confining the patient to bed or by a period of stress in which he had no time to give to the calls of nature; medicine given for a temporary condition continued to be used when it was no longer required. Alternatively, the aperient was first taken by the patient for symptoms which he had been led to believe were caused by auto-intoxication resulting from constipation. But whatever the origin of the habit the patient regards himself as constipated because he *takes* aperients, which is a different thing from needing them. When eventually he seeks medical advice for his 'constipation', he generally does so because he believes that any symptoms from which he may be suffering are a result of constipation. On inquiring about the state of his bowels, however, one learns that he is passing two, three or more large unformed motions a day—that he is in fact suffering from self-induced diarrhoea, and not from constipation at all. One is often told that he has not passed a solid stool for months or years and yet he ascribes his symptoms to constipation, although constipation means the passage of hard dry, and infrequent stools.

Physiology of the colon and defaecation

When the colon is watched with the x-rays no movement can be recognized under ordinary conditions, as the propulsive movements produced by the muscular coat occur only three or four times a day, and the churning movements produced by

the muscularis mucosæ are so slow that they can be recognized only by comparing plates taken at intervals of a minute or more. The contents of the ascending colon are propelled to the pelvic colon by 'mass peristalsis' in response to the gastro-colic reflex which occurs when food enters the stomach. The ascending colon is thus emptied in order to make room for the contents of the terminal ileum, in which most of the digestion and absorption of food takes place. The fæces are conveyed as far as the pelvi-rectal flexure, where their further progress is prevented by the valvular fold of mucous membrane which separates the movable pelvic colon from the fixed rectum. The pelvic colon, which gradually fills from below upwards, thus act as a storehouse of the fæces, whilst the rectum remains completely empty.

Infants are trained to open their bowels when they are put on a chamber, no mental process being concerned in the act. In the course of time an elaborate dressing, breakfast, and finally sitting down with a conditioned reflex develops, in which getting up, a bath, newspaper and a pipe in the familiar lavatory take parts. As a result of this the biggest wave of mass peristalsis of the day occurs; the whole colon is involved and the pelvic colon empties its contents into the rectum. Distension of the pelvic colon produces discomfort in the lower abdomen, but distension of the rectum produces a perineal sensation which is the normal 'call to defæcate'. When, as a result of this conditioned reflex the fæces, collected in the pelvic colon during the previous twenty-four hours, enter the rectum, which is always empty except just before defæcation, they give rise to the call to defæcate. The diaphragm and abdominal wall are then voluntarily contracted; and the rise in pressure within the rectum calls forth the final reflex, which results in contraction of the rectum as a whole with relaxation of the anal sphincter, through which the fæces are evacuated.

Causes of constipation

Constipation may result from delay in the passage through the colon--colonic constipation, or incomplete evacuation of the pelvic colon and rectum in the act of defæcation-dyschezia.

Many cases of constipation formerly regarded as colonic are caused by inefficiency of the conditioned reflex, which should result every morning in the partial evacuation of the contents of the proximal part of the colon into the pelvic colon as well as of the contents of the latter into the rectum. In the more obvious and common cases of dyschezia the conditioned reflex is unimpaired, but is not followed by the defæcation reflex proper in which the rectum contracts and the anal sphincter relaxes, so that the rectum is found to be packed with fæces at whatever hour it is examined. This form of dyschezia often originates from neglecting to respond the call to defæcate owing to laziness, insanitary conditions of the lavatory or false modesty. The double reflex is progressively impaired; the rectum dilates so that an increasing quantity of fæces is needed to attain the adequate internal pressure required to produce the call to defæcate, and finally the sensation is lost completely. The patient, however, is still capable of emptying his rectum if he tries, but by now he has generally convinced himself that he cannot get his bowels opened unless he takes enemas, or such enormous doses of aperients that the fluid fæces act as enemas and require no effort for their evacuation.

Dyschezia may due to other causes, such as weakness of the voluntry muscles of defæcation, the assumption of an unsuitable posture during defæcation, and voluntry inhibition from fear of pain in diseases of the anal canal. But whatever the primary cause, the final result is the same. The defæcation reflex is lost, and the incomplete evacuation of the rectum results in the accumulation of fæces and consequent dilatation of the rectum.

Symptoms

A great number of symptoms has been ascribed to the auto-intoxication caused by constipation. But under normal conditions little undigested protein, carbohydrate and fat reach the cæcum; the small amount of toxic products of bacterial activity absorbed from the colon and ascending colon is rendered innocuous by the liver or is rapidly excreted by the kidneys. In the comparatively rare cases of constipation, in which there is a considerable degree of stasis in the proximal part of the colon,

bacterial activity is hardly greater than under normal conditions, as the quantity of food which escapes digestion and absorption in the small intestines is not increased. In dyschezia the faeces in the pelvic colon and rectum are solid, so that there is very little bacterial decomposition however long they are retained; moreover absorption can take place only from that part of the surface of the scybala which is in contact with the mucous membrane. This is in contrast with what occurs in the proximal colon, where the churning caused by the activity of the muscularis mucosae bring all the contents into intimate contact with the mucous membrane. On the other hand, most aperients hasten the passage of chyme through the small intestine so that an abnormal quantity of undigested food and water reaches the colon, which is consequently filled with fluid or semi-fluid material. Here putrefaction and fermentation are active and the more or less toxic products are readily absorbed by the mucous membrane. Fortunately, in most healthy people the liver and kidneys are able to deal with the absorbed toxins so efficiently that toxic symptoms do not occur. If, however aperients are taken in excess for long periods, symptoms of auto-intoxication appear, especially if the liver or kidneys are inefficient.

In dyschezia the retention of solid faeces in the rectum, which is normally empty, may give rise to a number of reflex symptoms, such as headache and general malaise, which disappear immediately the bowels are opened. The instantaneous relief proves that these symptoms cannot be due to auto-intoxication. Moreover, experimental distension of the rectum with a large plug of wool produces indential symptoms. The pressure on the surrounding parts by the retained faeces also gives rise to hæmorrhoids, to perineal discomfort, and occasionally to pain which may spread to the sacral region and even down to the back of the legs.

Diagnosis

A patient complaining of constipation should be instructed to take no aperient and to make an effort to open his bowels every morning after breakfast, even if he feels no inclination to do so. If he succeeds it is clear that he was not constipated

at all and that both the local and general symptoms of which he complains are the result of purgation. If, on the other hand, the bowels are not opened, the abdomen and rectum should be re-examined. An empty colon and a full rectum indicate the pressure of uncomplicated dyschezia: an empty rectum indicates the presence of inability of the colon to empty its contents into the rectum, and an attempt should be made to ascertain where the retained faeces are collected. If hard scybala can be felt in the pelvic colon through the anterior rectal wall, pelvic colon dyschezia is present. If the caecum and ascending colon are distended with soft faeces and little or no accumulation is felt elsewhere, the comparatively rare condition of ascending colon constipation is probably present. In doubtful cases the diagnosis should be confirmed and amplified by an x-ray examination carried out while the patient is not taking an aperient, but the colon should be completely evacuated by an enema the evening before the opaque meal is taken.

Treatment

In a large proportion of cases constipation can be cured by restoring to activity the defæcation reflex, which has been allowed to become inefficient by neglect and by constant interference with its normal performance through the habitual use of aperients. Simple explanation of the physiology of defæcation and encouragement is often all that is required, but it may be necessary to reduce the work the muscles of defæcation have to perform by giving liquid paraffin or an unabsorbable vegetable mucilage to increase the bulk and soften the faeces, together with a diet containing plenty of fruit and green vegetables.

The vast army of hypochondriacs, who are never happy unless their stools conform to an ideal which they have invented for themselves, can be cured only by making them realize that faeces have no standard size, shape, consistence or colour. They must learn to follow the example of the dog instead of the cat—and never look behind them.

When there is a genuine tendency to constipation, the patient should be instructed to take some kind of fruit, fresh

or preserved, raw or cooked, with each meal, and green vegetables or salad with both lunch and dinner. Stewed prunes for breakfast are particularly useful. Proprietary foods containing large quantities of roughage should be avoided, as their coarse ingredients are a common cause of gastritis and they have no advantage over fruit or vegetable.

All patients with constipation, and especially those with "greedy bowels", whose faeces are deficient in bulk, benefit from the use of substances which pass through the alimentary tract without being altered by the digestive juices or bacteria and which by their bulk and consistence render the stools sufficiently large and soft to be easily propelled along the colon and expelled from the rectum. It is essential, however, that they should be of an unirritating character. For this reason psyllium seeds should never be used; they burst in water which becomes slightly syrupy but no jelly forms, and their ends remain so sharp that they lead to considerable irritation of the gastric and intestinal mucous membrane. They may suit canaries, but ought never to be given to human beings. Liquid paraffin and certain vegetable mucilages, which are unaffected by the digestive juices and by bacteria but absorb water to form a syrup or jelly, fulfil the required conditions. Liquid paraffin which has the disadvantages of some times causing flatulence and sometimes leaking from the anus, can be given in doses varying from one teaspoonful to one tablespoonful after breakfast and at night. Among the vegetable mucilages which may be prescribed are agar-agar, and the proprietary preparations isogel, coreine and normacol, all three of which form a uniform jelly with water. The usual dose is a teaspoonful once or twice a day. It is important to avoid the numerous preparations in which the beneficial effects of liquid paraffin and vegetable mucilages are more than outweighed by the irritant action of phenolphthalein and other purgatives which have been added to them.

A small proportion of patients with constipation cannot be cured without the aid of drugs. The most generally useful aperient is senna, which has the advantage of increasing the activity of the colon without affecting the small intestine. The

requisite number of pods should be infused with cold water for three hours. The infusion should be drunk on going to bed or in individuals in whom it acts slowly, after dinner or even earlier in the day, and if experience shows that it causes any discomfort, between 5 and 15 minims of tincture of belladonna should be added to it. The number of pods should be varied from day to day till the proper dose is found—one which produces a single-formed stool after breakfast. An average initial dose is six pods. An attempt should be made from time to time to reduce the number by one at a time. By this means it is often possible to re-educate the colon to act without artificial help; a dose of ten or more pods may in this way be gradually reduced to zero.

It is necessary to warn against the indiscriminate use of every new purgative pill introduced from abroad. One of the latest to gain popularity is a preparation which is said to contain extract of intestine and extract of bile with lactic acid ferments and 0.05 gm. of agar-agar! Not one of these ingredients can have the slightest effect on the bowels. The published constitution acts on the imagination, but there must also be some active ingredient which acts on the bowel. Senna pods have the advantage over pills of all kinds in that the dose can be more accurately adjusted to the needs of the patient from day to day.

The majority of cases of dyschezia can be cured by simple re-education of the defæcation reflex, but it is sometimes necessary to begin the treatment by giving graduated enemas. When the patient is unable to evacuate his rectum by a simple effort of will although it is loaded with faeces, an enema of one fluid ounce of glycerin should be given each morning if a voluntary effort has again proved unsuccessful. The strength of the enema should be gradually reduced by replacing one fluid drachm of glycerin by an equal quantity of water every other day until only water is used. As a rule the normal defæcation reflex and with it the tone and contractile power of the rectum quickly return, but it is sometimes necessary to continue to use a dilute glycerin enema for a few weeks. When dyschezia is due to inability of the pelvic colon to

empty its contents into the rectum six fluid ounces of liquid paraffin should be injected on going to bed and retained during the night; the bowels are generally opened without difficulty in the morning, and they gradually regain their normal activity so that the paraffin enemas are no longer required.

Regular exercise in the open air helps to keep the bowels active. For people who are busy all day five minutes' walk just before or after breakfast is often enough to call forth a defæcation reflex which would otherwise not occur. Exercises for the abdominal muscles, and especially of the muscles of the pelvic floor, are of great value for patient in whom dyschezia is in part due to weakness of the voluntary muscles of defæcation.

The Problem of the Enlarged Heart in General Practice

BY

R. G. ANDERSON, M.D., M.R.C.P.

(Abstracted from the *Medical Press and Circular*,
Vol. CXCHII, 30th December, 1936, p. 517)

IN the examination of a heart the estimation of its size is a point of considerable importance. The efficient action of the heart depends on the state of the myocardium and abnormal enlargement of the heart is a definite indication of organic myocardial disease.

Normally the visible cardiac impulse is situated inside the mid-clavicular line, and is not larger than the size of a penny. A more diffuse cardiac impulse may be due to dilatation of the heart or to hypertrophy of the right ventricle, but it may also occur in association with fibrosis or collapse of the left lung, or pericardial effusion. On the other hand, it may merely indicate an overacting heart. It is not uncommon in nervous patients to see diffuse pulsation outside the nipple line yet to find the apex beat in its normal position. Pulsation in the epigastrium may indicate enlargement of the right ventricle, but may also occur in normal subjects.

The position of the apex beat is important. Dilatation of the heart displaces the apex beat outwards and hypertrophy displaces it downwards. It is defined as the point furthest outwards and downwards at which the direct impulse of the heart can be distinctly felt.

The distance of the apex beat from the mid-line of the chest should be measured. It is usually 3 inches to 4 inches, but varies, of course, with the size of the chest. Its relation to the mid-clavicular line is more informative. It should be situated just internal to this line. Displacement of the heart will also cause displacement of the apex beat, but error will be avoided by percussion of the area of cardiac dullness. In

examining children in the standing position, the apex beat is frequently found in the fourth intercostal space outside the nipple line. If the child lies down the apex beat returns to its normal position. In these cases x-rays show no enlargement of the heart. It may be impossible to feel the cardiac impulse on account of emphysema or a fat chest wall. If these can be excluded, and if the heart is definitely enlarged, a weak cardiac impulse indicates dilatation, whilst a forcible or heaving impulse indicates hypertrophy. In the latter case it may be possible to decide which ventricle is principally involved since hypertrophy of the left ventricle gives a maximum impulse at and just internal to the apex beat, whereas hypertrophy of the right ventricle produces a heaving impulse behind the lower sternum.

Percussion of the left border of the heart usually confirms the position of the apex beat found by palpation. It is of no value in the presence of emphysema. Dullness to the right of the sternum indicates that there is already considerable enlargement of the right auricle.

Radiology provides the most accurate method of estimating the size of the heart during life. With emphysema or a thick chest wall it may be the only method.

Enlargement of the heart may be due to hypertrophy or to dilatation, or, as is usually the case in chronic heart disease, to the two conditions combined. Hypertrophy alone gives rise to no symptoms but dilatation to any appreciable degree is always accompanied by evidence of congestive heart failure, *e.g.*, dyspnoea, cyanosis, fullness of the veins in the neck, râles at the bases of the lungs, enlargement of the liver, œdema of the legs, or albuminuria.

Hypertrophy of the heart results from a demand for increased work. The sequence of events is as follows: obstruction to the outflow of blood from the ventricle leads to dilatation. The muscle fibres are stretched and become capable of increased work, thus tending to overcome the obstacle. If the demand for increased work persists, the ventricle undergoes hypertrophy. The three principal causes of great hypertrophy of the heart are hypertension, aortic valve disease and adherent pericardium.

Of valvular disease, that affecting the aortic valve causes most hypertrophy. Aortic stenosis produces pure hypertrophy of the left ventricle and aortic regurgitation produces dilatation in addition. Mitral regurgitation leads to some hypertrophy and dilatation of the left ventricle, whereas in pure mitral stenosis that chamber is typically normal in size or even smaller than normal. The left auricle, however, becomes considerably dilated. In the more severe cases it extends to the right behind the great vessels, pushing the œsophagus to one side, but seldom giving rise to dysphagia. Very rarely, what may be described as an aneurysmal dilatation of the auricle occurs. In both mitral stenosis and mitral regurgitation, but especially in the former, the right ventricle hypertrophies to overcome the increased pressure in the pulmonary circulation, so that there is a heaving impulse behind the lower sternum. Because the right border of the heart is relatively fixed by the venae cavae, this enlargement of the right ventricle results in the apex beat being pushed over to the left. Later, the right auricle may dilate with a corresponding outward displacement of the right margin of the area of cardiac dullness.

It must be pointed out here that it is often difficult clinically to distinguish between hypertrophy of the right and left ventricles. As a matter of fact in chronic heart disease one ventricle is seldom hypertrophied alone.

The only two causes of mitral valve disease are rheumatism and infective endocarditis, though relative incompetence may result from dilatation of the left side of the heart. The aortic valve may be affected by rheumatism, syphilis, atheroma or infective endocarditis. Syphilis never leads to aortic stenosis. Aneurysm of the aorta does not cause enlargement of the left ventricle unless the aortic valve is incompetent.

Congenital valve disease and abnormalities of the septa usually cause enlargement of the right ventricle. There is usually a loud musical systolic murmur, and frequently a systolic thrill. Other evidences of congenital heart disease, such as cyanosis and clubbing of the fingers, may be found if there is mixing of venous and arterial blood.

Adherent pericardium tends to be associated with the largest hearts. Adhesions between the parietal and visceral pericardia may be present without any cardiac enlargement, but if, in addition, there are adhesions between the parietal pericardium and surrounding structures, such as chest wall and diaphragm, then the action of the heart is embarrassed and all its chambers become hypertrophied. The two most reliable signs which may help in the diagnosis are fixation of the apex beat and systolic recession of the left chest wall along the line of attachment of the diaphragm.

Lung diseases obstructing the pulmonary circulation, such as emphysema and fibrosis, cause hypertrophy and, later, dilatation of the right ventricle. A cause of hypertrophy of the left ventricle which may be overlooked, unless one has it in mind, is coarctation of the aorta.

In thyrotoxicosis cardiac hypertrophy is frequently diagnosed clinically. The clinical appearance of cardiac enlargement in these cases is deceptive, and that it is due simply to the tumultuous action of the heart.

Cardiac dilatation occurs when the heart cannot expel the blood as rapidly as it receives it. It is always due to inefficient beating except in those cases in which valvular disease or hypertension has developed so rapidly that the muscle has not had time to undergo hypertrophy.

Excessive physical strain may cause transient dilatation of the heart even when that organ is perfectly healthy. This is more liable to occur in people who are untrained. The heart returns to its normal size after a few hours or days. If any healthy person runs for a sufficient length of time he will develop breathlessness, giddiness, precordial pain, nausea and perhaps faintness. These symptoms occur in some people with normal hearts as a result of very slight exertion such as would not inconvenience a healthy person. It is to this condition that the term 'effort syndrome' is applied. It occurs as a rule in young adults of sedentary habits when they attempt to lead strenuous lives without previous training.

If the heart beats very rapidly, it beats inefficiently and becomes dilated. This is seen to occur during a prolonged attack of paroxysmal tachycardia and in auricular flutter and fibrillation. The commonest clinical condition causing acute cardiac dilatation is the onset of auricular fibrillation. Here there is a second factor leading to inefficiency. This is the presence of some heart beats which are not strong enough to produce a pulse-wave in the radial artery, so that there is a pulse deficit. These weak beats do not empty the heart completely.

The other important cause of cardiac dilatation is weakness of the muscle. This may be due to bacterial poisoning, *e.g.*, in rheumatism, diphtheria, influenza or pneumonia, or it may be the result of malnutrition such as occurs in anæmia and in coronary artery disease.

With regard to diagnosis the position may be summed up as follows: If the heart is found to be definitely enlarged, one may be sure that there is organic myocardial disease. An attempt may then be made to assess the degree to which hypertrophy or dilation is responsible for the enlargement, and which chamber or chambers of the heart are principally involved. With a knowledge of the possible causes of hypertrophy and dilatation, and by taking into account the history and the accompanying physical signs, one can usually determine the cause of the enlargement in a given case. It cannot be said dogmatically that the heart which is not enlarged is normal. For instance, in early mitral stenosis and in angina pectoris there may be no appreciable enlargement. In the former case error may be avoided by finding the characteristic murmur which, if not present at rest, may be brought out by examining the patient lying on his left side after exercise; in the latter by the characteristic history, which is more important than any physical signs. If a heart is normal in size, vague systolic murmurs at apex or base are of no account.

The prognosis in cardiac enlargement depends essentially on the cause of the enlargement. The state of the myocardium may be judged by the exercise tolerance test. If the patient already shows evidence of congestive heart failure, no such test

is necessary. In rheumatic valve disease the exercise tolerance may be remarkably good because the coronary arteries are not affected so that the nutrition of the myocardium is not impaired. It can, therefore, undergo hypertrophy and thus counteract the mechanical defect of the valves. The degree of hypertrophy may vary enormously in two patients showing similar valve lesions and similar exercise tolerance. The prognosis is worse for the patient with the larger heart, because, little further hypertrophy being possible, failure may develop rapidly and because the larger the heart the more liability there is for cardiac irregularities and intracardiac thrombosis to occur. Syphilis and atheroma involve the coronary arteries and give a correspondingly worse prognosis. In paroxysmal tachycardia the heart rapidly regains its former size with the return to a normal rate of beating. In auricular fibrillation, also, a considerable diminution in size may be anticipated when the irregularity is controlled by digitalis. The toxæmias seldom cause gross dilatation of the heart, and in the acute stage the prognosis depends more on the effect of the toxæmia on the peripheral circulation. Diphtheria may cause degenerative changes in the heart muscle, but the ultimate prognosis is good as, if the patient recovers, no permanent damage ever results.

With regard to treatment, little need be said. The amount of exercise which may be allowed depends on the exercise tolerance. With slight enlargement and good exercise tolerance only the more strenuous types of exercise need be forbidden. With moderate enlargement the exercise tolerance is seldom good, and activity must be correspondingly restricted. The cause of the enlargement must be treated if possible. Digitalis therapy is required only in the presence of congestive heart failure or auricular fibrillation.

The Trichinopoly District Medical Association TRICHINOPOLY

Statement of Accounts for May 1938

Dr.			Cr.		
RECEIPT			EXPENDITURE		
		Rs. A. P.			Rs. A. P.
By Cash balance	...	5 11 9	To Establishment		
„ Bank balance	...	214 8 8	Clerk's pay for April	18 0 0	
„ Stamp balance	...	0 12 0	To Room Rent for April and Sweeping charges	...	5 9 3
„ Members' Subscription	...	37 8 0	„ Stamps	...	13 15 9
„ Subscription from Advertisers	...	22 0 0	„ Cycle License April to Sept. '38	...	1 1 0
			„ Jegam & Co., for printing Miscellany Dec. 37 and printing Notices etc., January to April 1938	...	56 6 0
			„ Purchase of old B.M.Js. & I.M.J.	...	1 9 0
			„ Office Shifting charges	...	2 0 0
			„ Cartage for Miscellany from Printers	0 7 0	
			Bank Commission	...	0 6 0
			„ Cash Balance	...	36 13 9
			„ Bank Balance	...	144 4 8
Total	...	Rs. 280 8 5			280 8 5

Total Balance at the end of this Month is Rs. 181—2—5

Arrears of Subscriptions upto end of the month is Rs. 746—8—0

Costs of Printing of Miscellany for Jan., Feb., March, April and May have not been shown, as amounts due from Advertisers for this period have not yet been received. As the running of the Miscellany has just been reorganised, these details of receipts and payments will be shown by June or July 1938. It can however be confidently expected that there will be an appreciable credit balance from the Miscellany Account, by the end of the year.

M. C. CONDILLAC,
Treasurer.

Excerpts

Oedema in Pregnancy

W. C. NIXON (*Chin. med. J.*, September, 1937, p. 317) discusses the aetiology and treatment of oedema in pregnancy unassociated with signs and symptoms of toxæmia. He considers that in many cases oedema may be due to malnutrition and a consequent reduction of plasma proteins. There may also be a deficiency of vitamin B₁, causing an endocrine imbalance, which affects particularly the posterior pituitary. An excessive production of the vasopressor and antidiuretic hormones by the posterior pituitary is likely to induce oedema. In the treatment of these cases he uses the following routine: (1) for the first twenty-four hours he gives 20 oz. of 30 per cent. glucose by the mouth, and on subsequent days the amount of fluid given is 2 oz. less than the urinary output of the previous twenty-four hours; however, if there is oliguria the daily fluid intake is 20 oz.; (2) diuretics, such as euphyllin, are given intravenously; (3) 50 to 100 c cm. of a 50 per cent. solution of glucose are injected four-hourly intravenously; (4) some preparation of vitamin B₁ should be given; (5) cardiac stimulants—for example, coramine—are administered. The weight of the patient gives the best evidence of a decrease or increase of oedema.

The Menstrual Cycle

J. BJORNSSON (*Nord. med. Tidskr.*, October 2, 1937, p. 1613) reports from the University Hygiene Institute in Oslo observations conducted between September, 1932, and June, 1933, on 321 probationer nurses, 180 of whom, with an average age of 23.6 years, had conscientiously filled in certain forms giving information about their illnesses, their weights, and their menstrual cycles. The average age at which menstruation began was between 14 and 15, the extremes being 11 and 18. The average duration of menstruation was 4.5 days. By the menstrual interval the author means the time between the first day of menstruation and the first day of the next menstruation. The length of this interval varied greatly, not only in different

nurses but also in one and the same nurse. Indeed, there were only eleven nurses each with a difference of five days or less between the longest and shortest interval. There were seventy-one nurses each with a difference of ten days or less between the longest and the shortest interval, and there were as many as 104 nurses each with a difference of over ten days. In other words, the menstrual cycle of nearly 60 per cent. of all the nurses was quite irregular. The author finds that the new and strenuous conditions under which these nurses lived and their comparatively high sickness rate account only in part for this irregularity, which he regards as "an expression of a normal variation in the length of the menstrual interval." The disagreement on this score between his own observations and text-book dicta reflects, he maintains, on the inaccuracy of the hearsay information on which text-book writers have based their conclusions.

Sternal Puncture

S. GREIF (*Med. Welt*, June 19, 1937, p. 847) advises sternal puncture by means of a special needle passed through the anaesthetized skin into the sternum at the level of the second or third rib; 0.1 ccm. of marrow is then withdrawn by a syringe and placed in a watch-glass for examination. Sternal puncture is safe and painless provided anaesthesia is complete, and the special needle prevents a passage through the posterior cortex into the mediastinum. The external table of the sternum is rarely too thick, and there are hardly ever osteosclerotic processes to prevent the marrow from being extracted. The author advocates the use of the first and smallest possible drop of marrow for quantitative estimation. He found that from 45 to 150,000 cells are found in normal marrow. The difference in cell content in marrow taken from the same place at different times is slight, but is great when obtained from different levels in the sternum. In pernicious anaemia megalocytes, megaloblasts, and promegaloblasts are found in the sternal marrow, and in secondary anaemia there is a proliferation of normoblasts. In achylic chloranaemia the marrow is rich in cells, and there is hyperplasia of the erythropoietic system and especially an increase of erythroblasts and macroblasts. In

haemolytic icterus normoblasts are increased. In leukaemias all leucocytes are increased; in aleukaemic myelosis the myelocytes are increased; in agranulocytosis leucocytes and myelocytes are absent, but lymphocytes and reticulocytes are increased in fatal cases; in milder cases myelocytes and reticulocytes are increased; in cases with rapid remissions the myelocytic elements are increased; the segmented elements decreased; in mononucleosis there is no change in the bone marrow. When myeloma is suspected sternal puncture is the diagnostic method of choice. In cases of secondary bone tumours puncture at the site of maximum pain is useful. A large-cell type occurs in adenocarcinoma and a small-cell type in simple carcinoma. Aleukaemic conditions and myelomata can be diagnosed by sternal puncture alone. This method is an important aid to the prognosis of cases of agranulocytosis, secondary anaemia, and pernicious anaemia.

H. FLEISCHHACKER and R. KLIMA (*Münch. med. Wochr.*, December 11, 1936, p. 2051) state that with the help of sternal puncture it is possible to recognize changes in the haemopoietic system which cannot be diagnosed by investigation of the peripheral blood or other measures. In most cases it is easy to aspirate marrow from the sternum, and the material is often rich in cells giving a clue to the diagnosis. They describe in detail two cases of Gaucher's disease and eight of secondary deposits from occult neoplasms thus diagnosed. When tumour cells are present they can be easily recognized if the morphology of marrow cells is known. The tumour cells are differentiated by their size, their immaturity, the occurrence of degenerative forms, and mitosis. The cells show definite morphological characteristics which with increasing experience may in the future be helpful in establishing the differential diagnosis of the primary neoplasm.

'Prontosil' and Allied Compounds

AMONG the advances in Therapeutics, during the past decade, pride of place goes to the various Sulphamylamide compounds.

Acute Streptococcal infections have lost much of their terror and the outlook seems much more hopeful as controlled and judicious use continues to prove the truth of early claims. There has been a wave of setbacks of complications and disasters. All these can be put down to the overenthusiastic who rushed to experiment, and try out the drug, in quantities, and on cases in which there was no justification.

Confidence in their use has returned. Their efficacy has been established. Further research is interested in the dosages to be employed, the methods of administration; and the discovery of more efficacious compounds.

Benzyl derivatives administered orally have proved very useful. Prontosil given by intramuscular injections has similarly satisfied.

Dosage has often been unduly large and treatment prolonged. A week's trial should convince us of its value in the particular case and decide its continuance.

Temperature, pulse and a leucocyte count and daily assessing of kidney function form the safe and scientific guides to the efficacious and correct use of the drugs. Sulphamylamide compounds have helped surgeons to make use of early surgery in streptococcal infections. Latest reports speak highly of their value in B. Coli infections.

In obstetric practice, prontosil and allied compounds have given splendid results both in treatment of the septicaemia; and in preventing a spread from the local uterine or parametric lesion.

In concluding one may stress that the sulphamylamides have proved their case—Treatment with these drugs in accepted doses, with systematic appreciation of temperature, pulse, with blood counts and kidney function, should continue to give gratifying results.

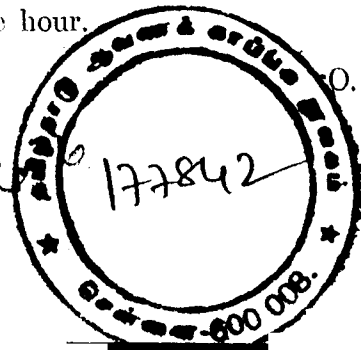
The Trichinopoly District Medical Association

Minutes of the General Body Meeting

held at 5 P.M., on 21-5-1938 at the Central Hospital, Golden Rock.

A Monthly Meeting of the above Association was held at 5 p.m. on Saturday the 21st May 1938 at the S. I. R. Central Hospital, Golden Rock, when about 40 doctors were present. Dr. C.E.R. Norman, the President of the Association, presided. Dr. M. C. Condillac, District Medical Officer, Golden Rock and Treasurer of the Association, was AT HOME to the Members. After the President's Preliminary Remarks, the Secretary read the Minutes of the Previous Meeting. The following cases were shown by Dr. M. C. Condillac, Dr. C. S. Sundaram and Dr. C. Rajagopalan:—(1) Two cases of intra-abdominal ectopic pregnancies, (2) skin grafting of finger by an auto-pedicle graft from the thigh, (3) caries of the mandible, secondary to mercurial poisoning, and the result after four sequestrotomies, and (4) several skiagrams. Discussions on the subject by Dr. Raman Menon, Assistant District Medical Officer, Hd. Qrs. Hospital, Trichinopoly, followed. An interesting lecture and Film on Gall Stones and Gall Bladder Surgery was shown by Dr. M. C. Condillac, with the help of Messrs. A. M. S. Chettiar & Company, Agfa Dealers, Trichy, through the courtesy of Messrs. Agfa Limited. Dr. C. E. R. Norman pointed out that there would be a regular Committee Meeting on the first Thursday; and a General Body Meeting on the penultimate Saturday of each Month. Further the General Body Meeting on the Penultimate Saturday of the month of June (18-6-1938) will be an extraordinary General Body Meeting. Dr. Raman Menon, Assistant District Medical Officer, Head Quarter's Hospital, Trichinopoly, requested that the next General Body Meeting may be held in the Head Quarters Hospital, Trichy. With a vote of thanks to the chair and the lecturer, the meeting terminated at a late hour.

O. R. BALU,
Secretary.



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JUNE 1938

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and News Subjects from Mem-
bers of the Association and
other medical men. Contribu-
tions should be sent typed in
duplicate and signed by the
contributor. In case where it
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must be included for the in-
formation of the Editor as a
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