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THE DIAGNOSIS OF KALA-AZAR*

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I

KALA-AZAR is a disease which occurs endemically in various parts of the world, especially in the Tropics. It is particularly prevalent in India, Indo-China, China, and the Sudan. An infantile variety of the disease is widely distributed around the shores of the Mediterranean Sea.

In India, the disease is practically confined to the eastern half of the Peninsula. It has a high incidence in Bengal, Assam, the eastern parts of the United Provinces, Bihar, and certain districts of the Madras Presidency. It is unknown in the Punjab, the Central Provinces, the Bombay Presidency, and the Malabar Coast.

The disease is very prevalent in the city of Madras. Hospital statistics show that from 2·5 to 5 per cent of the patients admitted into the medical wards of the city hospitals are victims of this disease. It has a higher incidence in certain parts of the city than in others. It is particularly common in Washermanpet, North George Town, Royapuram, Choolai, and Chintadripet. Most of the cases we have seen came from these divisions of the city. The disease is endemic also in certain places lying outside the city: Villivaukam, Perambur, Vyasarpady, and Tiruvatyoor, on the northern outskirts, have furnished several cases in our series.

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As regards the sex incidence of kala-azar, both sexes are equally liable to the disease. In hospital practice, however, more male cases are seen. This is to be accounted for as due to more men than women getting admitted into hospitals.

The disease may occur at any age. The greatest number of cases in our series occurred between the ages of 15 and 25. The disease is by no means rare in childhood. There were 18 cases in this series (of 150 cases) in persons below the age of 10. We have not seen any in infants. The youngest of our patients was 3 years and 9 months old. The disease is seldom encountered in persons above 50 years of age. The oldest patient we have had was aged only 43 years.

Kala-azar affects persons of all classes. Circumstances of race, colour, and occupation have no bearing on the liability to the disease except their influence in preventing or promoting exposure to infection. In the endemic areas, the European population is as liable to contract the malady as the Indian population. Further, both the rich and the poor suffer from the disease. But, in hospital practice, we see mostly, for obvious reasons, patients belonging to the poorer classes. It is interesting to note that many cases of the disease occur among Anglo-Indians.

Kala-azar is caused by a protozoan parasite, *Leishmania donovani.* In affected persons the organism is present in the spleen, the liver, the bone-marrow, and the peripheral blood—situations where cells of the reticulo-endothelial system are found. It is oval in shape, and measures in the long axis from 2 to 3 microns and in the short axis from 1·5 to 2 microns. It contains a *nucleus*, which lies against the periphery, and a *kinetoplast*, placed almost at right angles to the nucleus. In films stained with Leishman's stain (or any of the Romanowsky stains), the nucleus can be seen as a red granular mass and the kinetoplast as a deeply stained compact rod.

It can be grown *in vitro* in such media as the Novy-McNeal-Nicolle (N.N.N.) medium and Roy's medium. In cultures it grows into a flagellate. The development into a flagellate is a phase in its life-history which occurs outside the human host. This phase has been noted to occur in the sand-fly, *Phlebotomus argentipedes*, which is, according to present evidence, its insect vector (or intermediary host). The endemicity of kala-azar in particular areas has been ascribed to the presence of the sand-fly in those areas.

II

CLINICALLY, *kala-azar is characterized by long-continued irregular pyrexia, enlargement of the spleen and liver, marked leucopenia with relative mononucleosis, anæmia, pigmentation, and progressive weakness and emaciation.* But in its early stages, the disease presents few distinctive features by which it can be recognised, the characteristic clinical picture becoming evident only when the malady is well advanced. It is, however, extremely important to be familiar with the early symptomatology of the disease so that it may not be overlooked in the early stages.

To define the EARLY CLINICAL PICTURE of kala-azar, we made a careful analysis of the clinical histories of 100 cases of the disease. The results of our analysis are summarised below.

(1) The ONSET of kala-azar may be *insidious* or *abrupt.* The insidious mode of onset was noted in 70 per cent of the cases; in the remaining 30 per cent the onset was abrupt.

(a) *Cases with insidious onset:* The illness begins with slight fever, headache, and general malaise. The temperature is seldom raised beyond 100° F. on the first and second day of the illness, and the patient does not feel ill enough to stop away from work. The bowels may be regular, or there may be slight constipation. Profuse sweating is often noted especially at night. In three or four days, the temperature shows rises to 102° or 103° F. In some cases, however, the rises in temperature are never beyond 101° F. Remissions of 2° or even 3° are by no means infrequent. The pyrexia may sometimes be of the *continuous* type. Constitutional symptoms are conspicuous, in the majority of instances, by their absence. The tongue is clean, and the abdomen soft and flaccid. Sometimes, however, there may be gurgling in the right iliac fossa. The skin is cool to the touch, and occasionally moist. The pulse shows no special features. Some of these cases are diagnosed as *enteric fever*, others as *influenza*, and a few are labelled P. U. O. (*pyrexia of unknown origin*).

(b) *Cases with abrupt onset:* The illness begins often with chilliness, and sometimes with actual rigor. The temperature rises rapidly, and in one or two hours it may reach 103° or 104° F. Headache and malaise are usual accompaniments. Thirst is often complained of. Anorexia is present in some cases. Defervescence sets in in a few hours, and the temperature falls down rapidly. As the temperature comes down the patient perspires freely. The temperature may reach the normal in

some instances, but often it does not do so. The remission is, however, so great that the patient is led to believe that the fever has left him, There may be another rapid accession of temperature, with or without shivering, in a few hours of the remission. Even triple rises have been noted in the twenty-four hours. In some cases, the pyrexia is of the *intermittent* type; but it is scarcely ever regularly intermittent, the febrile attacks occurring as a rule, only at irregular intervals. Patients often describe their illness as "ague," and even physicians of experience diagnose it as *malaria.* It cannot be denied that the clinical picture in many of these cases resembles, superficially at least, that of malaria, especially of the sub-tertian variety.

(2) The CLINICAL COURSE of early kala-azar is by no means uniform in every case. At least three types may be recognised. We may divide all early cases of kala-azar into three groups on the basis of the different types of clinical evolution.

(i) In *one* group, comprising approximately 30 per cent of the cases, the clinical course resembles very closely that of *mild enteric fever.* The pyrexia is more or less continuous in type, slight tumidity of the abdomen and bowel disturbances may develop towards the end

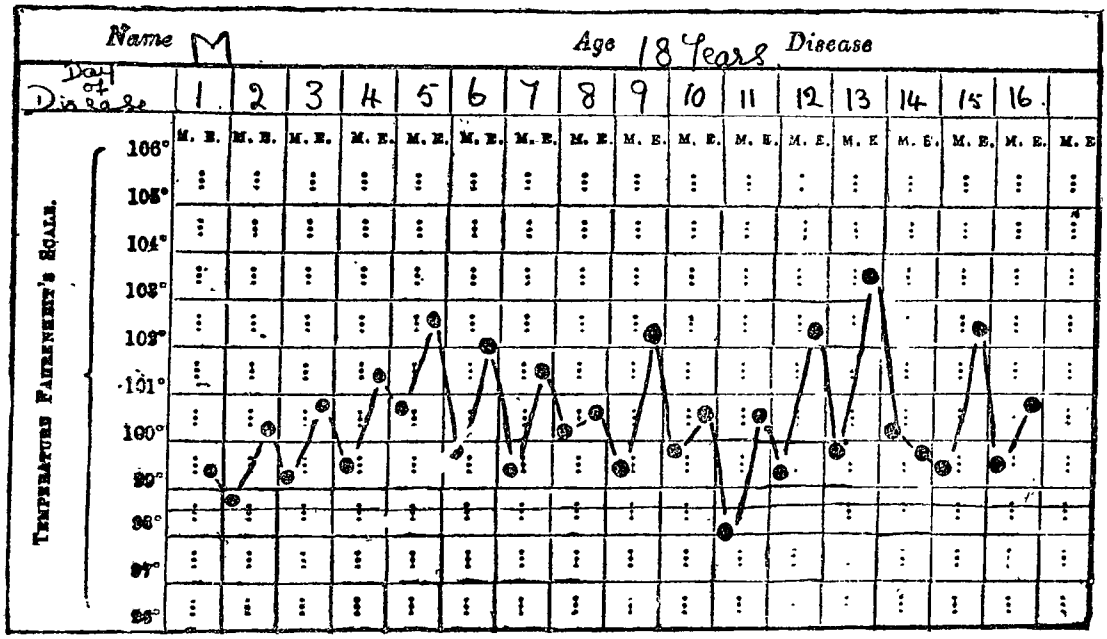

CHART I. M., 18 years, diagnosed clinically as kala-azar on 20th day of illness. Note the insidious onset, the gradually increasing pyrexia of the first week, and thc irregularly remittent pyrexia of the second week. Blood culture negative. Widal negative 1 in 25. Blood —slight mononucleosis and leucopenia. Initial diagnosis: Enteric fever.

of the first or the beginning of the second week, and the temperature attains the normal in three or four weeks. In the majority of these cases, slight rises in temperature occur daily, either in the evening or at some other period of the twenty-four hours, after "convalescence" has set in. Rarely, a short period of apyrexia (of not more than a week, or at most a fortnight) may follow. This is succeeded by irregular pyrexia of a remittent type which continues till the patient is given the proper treatment for kala-azar.

(ii) A *second* group is constituted by about 60 per cent of the cases. In these, the pyrexia is irregularly remittent from the early days of the disease. The fever of the onset, which may have been continuous, remittent, or intermittent, is replaced in a few days by irregular rises and remissions in temperature. Apyrexial periods are seldom noted. Even if they occur, they are of short duration. Many cases show double rises in the twenty-four hours, and in a few even triple rises occur. Night sweats are noted in many cases of the disease. Wasting becomes evident in two or three weeks. The appetite is surprisingly good and the tongue remains quite clean. Diarrhoea many occur in some cases, but usually the bowels are regular or constipated. Some of those cases are diagnosed as *acute miliary tuberculosis.* If a bronchitis is present, the diagnosis may read *acute pulmonary tuberculosis. Malta fever* is sometimes thought of, especially when the pyrexia is of the low remittent type.

In a small proportion of cases belonging to this group, the clinical picture is highly suggestive of *malaria.* The rises in temperature may reach 103° or 104°F., they are ushered in by chills or rigors, and they may occur with surprising regularity. The remissions are accompanied by profuse sweating. Further, the spleen may become enlarged in a fortnight of the beginning of the illness. A bitter taste in the mouth and loss of appetite also may be noted.

(iii) In the *third* group, which comprises about 10 per cent of the cases, the initial period of pyrexia is short, usually not more than 10 days in duration. This is followed by a prolonged period of apyrexia, which may be two, three, or even four months in length. The patient says at the time he comes under observation that he had some months previously a short attack of fever from which he recovered completely, that this fever was associated with chill, but it was irregular, and that he has been keeping quite fit and going about attending to his work till quite recently when

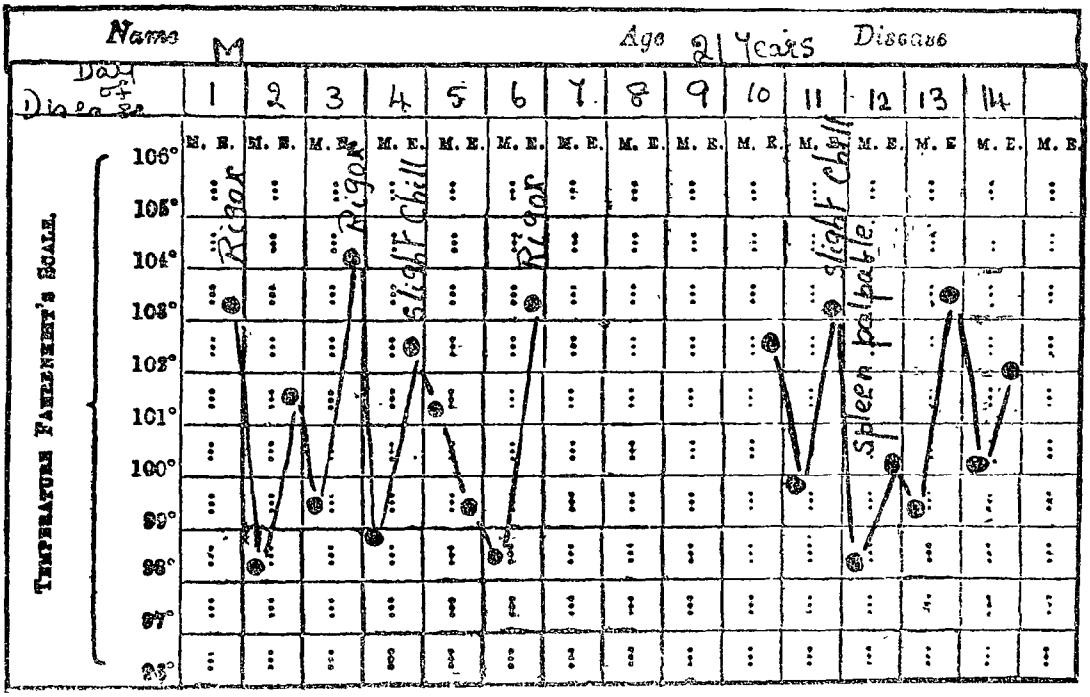

CHART 2. Case of kala-azar, clinically diagnosed, on 18th day of illness. *Initial diagnosis*—malignant tertian malaria. Note the occurrence of chills and rigors. The spleen was palpable on the 12th day. Onset—sudden with rigor.

he noticed a mass or swelling in his abdomen. It is possible that in many of these cases pyrexia of a low type has always been present, but the patient has been unaware of it.

(3) The characteristic CLINICAL FEATURES of kala-azar are usually slow in developing. In the great majority of cases, they can be noted only after the disease has run a course of three or four months. In a small proportion, however, they become evident earlier. We have seen four cases in which the clinical picture was fully developed by the end of the second month. It should be noted also that some of the clinical features develop much earlier than others.

(*a*) FEVER.—We have described earlier the types of fever occurring in the early stages of the disease. It is, indeed, a prominent symptom at all stages of the malady. In the later stages, it is irregularly remittent in character, and in the majority of cases, double rises in temperature occur during the twenty-four hours. These double rises can be best made out on recording the temperature at two-hourly intervals. Sometimes they may be noted in the four-hourly records also.

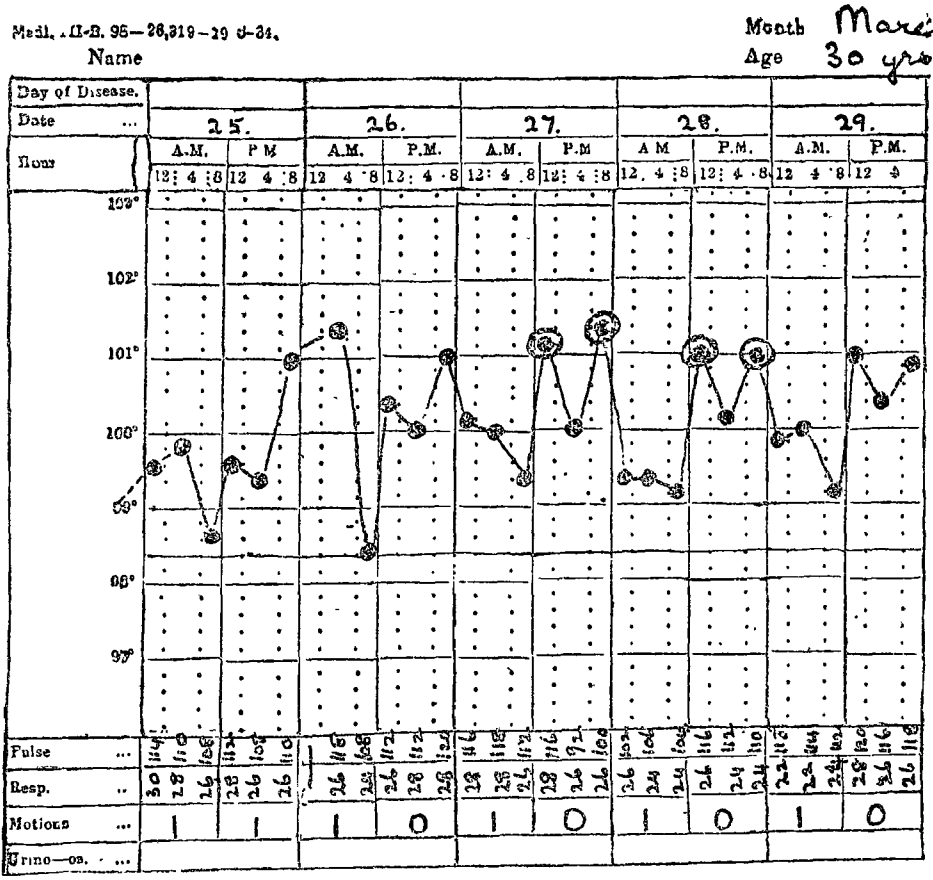

CHART 3. Showing double rises in temperature during the 24 hours.

(*b*) WASTING.—Most patients show some degree of wasting even in the early days of the illness. As the disease progresses the wasting becomes increased. In some cases, however, the general nutrition is well preserved till late, when with the supervention of cachexia, wasting becomes a prominent feature. Generally the appetite remains throughout good.

(*c*) ENLARGEMENT OF THE SPLEEN.—In the majority of the cases, the spleen shows demonstrable enlargement only by the end of the second month of the illness. In a few instances, the organ becomes palpable during the second or third week. The enlargement continues with the progress of the disease, and in many cases by the end of the fourth or fifth month the organ attains such a size that its lower pole is almost in the pelvis. The rate of growth varies from case to case; in some it may be rapid, and in others slow. We have had cases in which at the end of the fourth month the spleen was almost at the brim of the pelvis, and we have seen also cases in which at the end of the ninth month the organ had reached only the level of the umbilicus. The splenic mass is hard to the

feel, and usually it is not tender. Sometimes, however, tenderness is elicited on palpating the organ. This is especially the case in patients in whom the temperature shows high rises.

(*d*) ENLARGEMENT OF THE LIVER.—Enlargement of the liver is often noted towards the end of the second month of the malady. It may sometimes be delayed till three months have elapsed, and at times it may occur at a much earlier period. By the end of the sixth month, the liver is usually enlarged to such an extent that its anterior edge is palpable three or four inches below the costal margin. In a few cases in our series, clinically demonstrable hepatic enlargement was wanting.

(*e*) PIGMENTATION.—Pigmentation is observable when the illness has lasted about four months. It can be made out clearly on the palms, the soles, and the palate. In individuals of light complexion, it can be noted on the general cutaneous surface. It is of a slaty blue colour, and occurs in patches of varying size.

(4) THE BLOOD CHANGES in early kala-azar are a low grade *leucopenia* and slight *mononucleosis*. The leucopenia becomes noticeable by the end of the second or third week of the illness. A total leucocyte count done at the beginning of the third week might show that the blood contains only 4,500 or 5,000 leucocytes per c. mm., and a differential leucocyte count might disclose that the large mononuclears are increased to 9 or 10 per cent. By the end of the second month, the number of leucocytes would have fallen to 4,000 or 3,500 per c. mm., and the mononuclears would have shown a relative increase to 14 per cent or more. As the disease progresses, the leucopenia and the mononucleosis become more and more marked. We have had cases in which the leucocyte count had fallen as low as 1,400 per c. mm., and the mononuclears had shown a relative increase to 26 per cent.

Other changes that have been noted are: a mild anaemia of the secondary type, a relative increase in the globulin fraction, and a fall in the calcium content. In the later stages of the disease, the red cells may have fallen to 3,500,000, or even less, per c. mm., and the haemoglobin to 50 or 60 per cent of the normal.

The clinical features of ADVANCED CASES of kala-azar are sufficiently well-known that it is scarcely necessary to describe them separately. Moreover, to most of them we have drawn attention in the preceding paragraphs. We might mention, however, that in a large number of cases

ascites and even generalised oedema may develop. Further, pulmonary symptoms are by no means uncommon. Bronchitis, congestion of the pulmonary bases, and even hydrothorax may be met with. Bowel disturbances are quite common in the late stages, more especially diarrhoea. In some advanced cases, bleeding from the mucous surfaces has been noted.

III

The DIAGNOSIS of kala-azar can be seldom made with certainty on clinical grounds. Laboratory investigations are necessary in most instances to enable the diagnosis to be arrived at. In very early cases, positive evidence cannot be obtained even from the laboratory. In the more advanced cases, the laboratory findings are often suggestive of the disease, and occasionally of such a nature as to leave no room for doubt. It may be remarked that in most cases careful observation at the bed-side with detailed study of the blood will clear up the diagnosis.

1. In the EARLY stages, the absence of distinctive features in the clinical picture makes the diagnosis extremely difficult and uncertain, and often impossible. When the disease has lasted a few weeks, and the pyrexia has become irregularly remittent in type, in cases coming from endemic areas and under close observation, the true nature of the malady may be suspected, especially if double rises in temperature occur during the twenty-four hours on several consecutive days. The blood picture may be suggestive of the disease if the total white cell count and the differential leucocyte count are repeatedly done at intervals of three or four days. A gradual diminution in the total number of leucocytes and a progressive, but relative, increase of the monocytes may be noted even in early kala-azar. It should, however, be remembered that these changes in the blood picture occur only in cases that have been two weeks or more in duration. The correctness of the diagnosis is to be surmised by noting the response to treatment with preparations of antimony, which if satisfactory will argue in favour of the disease being really kala-azar.

We pointed out, in discussing the clinical picture, that early kala-azar is mistaken for *enteric fever, malaria, acute miliary tuberculosis, early pulmonary tuberculosis,* and *Malta fever.* The differentiation of the disease from these conditions is usually effected by a process of exclusion.

CASES SIMULATING ENTERIC FEVER.—The diagnosis of these cases is extremely difficult. In the absence of repeated and thorough laboratory

investigations, they can seldom be recognized as instances of kala-azar. A continuous fever, lasting more than a week or ten days, and attended by no definite symptoms and signs, is usually regarded by most clinicians as suggestive of infection with the enteric group of organisms. Indeed, enteric fever is the commonest continued fever met with in tropical and sub-tropical climates. During the *first week* of the illness, in spite of the inability to grow typhoid or paratyphoid bacilli from the blood, the pulse rate being proportionate to the rise in temperature, and the abdominal symptoms being equivocal, a diagnosis of enteric fever is made. During the *second week*, notwithstanding a negative response to Widal's agglutination test for the enteric group of organisms, the absence of toxic symptoms usually observable in cases of enteric fever, and the spleen showing no enlargement, there is the greatest reluctance to discard the diagnosis originally made, even though the fever may no longer be of the continuous type. The slight leucopenia and the mononucleosis noted at this period make the difficulty in diagnosis greater; for, the same changes in the leucocytic picture are found in enteric fever during the second week of the disease. During the *third week*, the persistent absence of toxic symptoms, the negative response on repeating the Widal reaction, the absence of splenic enlargement, the irregularly remittent pyrexia, the absence of bowel disturbances, and the surprisingly good appetite and clean tongue may raise the suspicion that the disease is not enteric fever but probably early kala-azar. The suspicion will be strengthened if double rises in temperature during the twenty-four hours occur on several successive days. It is, however, during the *fourth week* or later, when the expected convalescence does not set in, kala-azar is usually thought of and confirmatory evidence sought for.

In the differentiation of early kala-azar from enteric fever, it is necessary, therefore, to keep the patient under close clinical observation, to record the temperature fourth-hourly (if not oftener), to have the Widal test repeated every week, and to make leucocyte counts repeatedly every three or four days. *An irregularly remittent pyrexia, absence of splenic enlargement, good appetite, absence of toxic symptoms, persistently negative Widal reaction, and increasing leucopenia and mononucleosis* are against a diagnosis of enteric fever and in favour of one of kala-azar (especially if the patient has come from an area where kala-azar is endemic). In cases coming from endemic areas, the physician should beware to accept as positive a Widal reaction unless it is obtained in serum dilutions of 1 in 100 or higher. If the Widal reaction is positive in serum dilutions of 1 in 25 or

1 in 50, the test should be repeated a week later, and if a positive reaction is not obtained then in a higher dilution, the diagnosis of enteric fever should be discarded. A positive Widal reaction obtained in serum dilutions of 1 in 100 and 1 in 200 is definitely in favour of a diagnosis of enteric fever; so also is a reaction which is positive in successively higher dilutions on successive repetitions of the test.

CASES SIMULATING MALARIA.—The diagnosis of these cases is seldom possible on clinical grounds. A sudden onset with rigor and rapid elevation of temperature, equally rapid defervescence with profuse perspiration, and repetition of the rigor with each fresh accession of fever, which may occur daily or every alternate day, suggest a diagnosis of malaria. Even if the pyrexia is irregularly remittent in type and rigors are of infrequent occurrence, malaria cannot be ruled out, for, in many cases of malignant tertian (and some cases of benign tertian) malaria the pyrexia is of the remittent type and rigors are infrequent. There is one point which may help in excluding malaria, namely, the absence of splenic enlargement. It is only rarely the spleen will show enlargement in kala-azar before the end of the second month of the illness; in malaria, enlargement of the organ will usually be evident in a couple of weeks.

Examination of the blood film for malarial parasites is of the utmost importance in establishing or ruling out a diagnosis of malaria, and in every case of fever suspected to be malarial in origin the blood should be examined repeatedly for malarial parasites before antimalarial treatment is given. If the patient has been receiving antimalarial treatment, and the fever has shown no sign of abatement, the treatment should be stopped and blood examination carried out on several successive days. In cases of kala-azar such examinations will yield negative results; in malaria, careful and prolonged search will, as a rule, reveal the causative organism.

The blood picture may often help in the diagnosis of these cases. In malaria, the red cell count will show marked decrease by the end of ten days or a fortnight. In kala-azar, the number of red cells is scarcely affected in the early stages. In malaria, the red cells usually show abnormal staining reactions, such as polychromasia, which are never seen in early kala-azar. The total white cell count does not show any deficit in early malaria, whereas in kala-azar a decrease is noted by the end of the second week. But in both diseases a relative increase of mononuclears is found.

Inability to detect the malarial parasite in the blood does not

necessarily mean that the disease is not malaria. But it is unusual not to find the parasite in a case of malaria if careful and prolonged search of the blood films is made on several days. When, however, blood examination has been negative, but clinical evidence points to a diagnosis of malaria, antimalarial therapy should be advised and the result watched. In malaria, the response to treatment will be satisfactory; but, in kala-azar, the fever will be uninfluenced by the treatment adopted.

The absence of satisfactory response to proper antimalarial treatment, taken in conjunction with the irregularly remittent pyrexia, the inability to find malarial parasites in the blood, and the changes in the blood picture, should pave the way for the correct diagnosis to be made. But it often happens that in many of these early cases kala-azar is not even suspected. They are looked upon as instances of malaria, resistant to treatment. We cannot, however, too strongly urge the need for revision of a diagnosis of malaria in cases in which antimalarial treatment continued for a week has evoked no satisfactory response, if the original diagnosis was made without finding the malarial parasite in the blood.

MALTA FEVER is fortunately unknown in Madras, and it need seldom be considered in the diagnosis of the cases of early kala-azar in this area. The points in favour of this disease are: fever of insidious onset and undulant type; pains in the joints; glandular swellings; profuse sweatings; and a positive agglutination reaction on testing the blood serum with dead cultures of *Micrococcus melitensis.*

The *typhoidal form* of ACUTE MILIARY TUBERCULOSIS is not usually thought of in the diagnosis of early kala-azar. If the suspicion arises in any case that this disease is the cause of the illness, considerable difficulty will be encountered in excluding it. A positive diazo reaction is obtainable in the urine of cases of this disease; in kala-azar this reaction is not obtained. Further, the progressive leucopenia and the relative mononucleosis noted in kala-azar even in the early stages are wanting in acute miliary tuberculosis. In fact, in this disease neutrophilia with lymphocytic decrease is the usual rule.

EARLY PULMONARY TUBERCULOSIS can be excluded by careful and thorough physical examination of the lungs, by repeated examination of the sputum for tubercle bacilli, and by radiological examination of the chest. Radiological signs are especially important in the diagnosis of pulmonary tuberculosis and should be sought for when the disease is suspected and tubercle bacilli are wanting in the sputum.

2. Many cases of kala-azar come under observation in such an advanced state that the diagnosis can be easily surmised from the clinical picture. *A history of low fever continuing irregularly for several months, dusky appearance of the face, weakness and emaciation, marked enlargement of the spleen and liver, and patchy or universal pigmentation* are so suggestive of the disease that in an endemic area the most reasonable diagnosis which can be made on this clinical picture is one of kala-azar. Examination of the blood will make the evidence more complete by revealing a marked leucopenia and relative mononucleosis. In these cases, further investigations are scarcely necessary to indicate the true nature of the malady. But, in order to avoid mistakes in diagnosis, it is advisable to obtain absolute evidence of kala-azar, which is possible only by demonstration of the causative organism.

More cases are seen at a stage when the clinical picture is not so clearly defined. The spleen and liver are but moderately enlarged; the pigmentation is not marked; the history may be of occasional bouts of irregular fever for three or four months. Kala-azar may be suspected; but other conditions giving rise to splenic and hepatic enlargement, such as chronic malaria, splenic anaemia, and myeloid leukaemia, may also be thought of. It is really hazardous, in these cases, to make a diagnosis of kala-azar without careful clinical and laboratory investigation. For, occasionally other diseases may be mistaken for kala-azar. THAMBIAH mentions a *case* of myeloid leukaemia, coming from the George Town area of Madras City where kala-azar is endemic, in which even after examination of the blood film a diagnosis of kala-azar was made. In this case, besides the enlargement of the spleen and liver, double rises in temperature occurred on some days, and the blood film was negative for myeloid cells at the time the diagnosis was made. We had a *case* of the same disease in which the clinical picture was suggestive of kala-azar, the aldehyde test was strongly positive, and irregular pyrexia was observed at the time the patient came under observation. Examination of the stained blood film, however, showed the typical picture of myeloid leukaemia. One of us (K. C. P.) recently saw a *patient* with enlarged spleen and liver, slight oedema all over the body, anaemia, and patchy pigmentation, and giving a history of irregularly intermittent fever of eight months' duration. Kala-azar was suspected on superficial examination; but examination of the cardio-vascular system revealed dilatation of the heart, and systolic and pre-systolic murmurs at the mitral area. It was really a case of chronic

myocardial failure secondary to mitral disease complicated by chronic malaria. We would mention another *case* we had under our care in which a diagnosis of kala-azar was made clinically and confirmed by blood counts and aldehyde and stiburea tests. A spleen puncture was done to make sure of the diagnosis. On examination of the material obtained by the puncture, no Leishman-Donovan bodies were detected, but numerous crescent-shaped gametocytes of *Plasmodium falciparum* found. Both spleen and liver were enlarged, pigmentation was a noticeable feature, and the patient had come from a part of the city where kala-azar is known to be endemic. These mistakes in diagnosis occurred in hospital practice which affords adequate facilities for thorough investigation of the cases.

In the clinical differentiation of ADVANCED kala-azar, chronic malaria offers the greatest difficulty. CHRONIC MALARIA is a much more common cause of splenic enlargement than any other disease met with in this country. Malaria occurs endemically in the areas where kala-azar also is endemic. Enlargement of the liver, though not as often noted as in kala-azar, occurs in chronic malaria often enough. Pigmentation is by no means uncommon. The clinical history as told by the patient is not distinctive. And, lastly, the blood picture shows leucopenia and mononucleosis. The points of distinction are: (1) Freedom from fever: most patients with chronic malaria do not have fever when they come under observation. In kala-azar, fever is a conspicuous feature at all stages of the disease. (2) Anaemia: this is well marked in chronic malaria; in kala-azar, it does occur, but is never of a severe type. (3) Impaired appetite: impairment of appetite is often noted in cases of chronic malaria; in kala-azar, the appetite is good. (4) Spleen: the enlarged spleen is very hard to the feel in chronic malaria; in kala-azar, the same hardness of feel is not obtained. (5) Relation between splenic and hepatic enlargements: in chronic malaria, the hepatic enlargement is little marked in relation to the splenic enlargement, whereas in kala-azar the enlargement of the liver keeps pace with the enlargement of the spleen. (6) Pigmentation is rarely a marked feature of chronic malaria in contrast with the well-marked slaty blue or dark pigmentation noticeable in cases of kala-azar. (7) The blood changes in chronic malaria are characteristically those noted in cases of secondary anaemia. There is marked reduction in the number of the red cells; polychromasia is a noteworthy feature; the colour index is below unity; leucopenia occurs, but not to any marked degree as

in kala-azar; macrophage cells containing malarial pigment may be seen on careful examination; often, on prolonged search, the malarial parasite can be demonstrated in the blood film. While these points of difference are helpful, nothing short of the actual demonstration of the causative parasite can be regarded as proof of a case being one of malaria or of kala-azar.

The diagnosis of kala-azar from the condition spoken of as SPLENIC ANAEMIA or BANTI'S DISEASE is often fraught with considerable difficulty. For, in splenic anaemia, fever of a low irregular type may occasionally be present, and in addition to the characteristic splenic enlargement, anaemia and neutrophilic leucopenia, the liver may also show enlargement. A tendency to gastric and oesophageal haemorrhage is a feature of the disease. The diagnosis can be made positively only by demonstrating the Leishman-Donovan body in the peripheral blood, the spleen, the liver, or the bone-marrow. However, as splenic anaemia is a much rarer condition than kala-azar, the difficulty is usually the differentiation of this disease from kala-azar. This may occasionally be impossible till the typical cirrhosis of the liver develops in the third stage of the disease. The points which help in its differentiation are: absence of pigmentation; gross enlargement of the spleen with slight enlargement of the liver; relative lymphocytosis; and hyper-bilirubinaemia. The inability to detect the Leishman-Donovan body in the splenic pulp or the liver substance on two or three successive occasions should be looked upon as proof that a diagnosis of kala-azar is untenable.

3. The METHODS OF INVESTIGATION employed in obtaining evidence which would enable the diagnosis of kala-azar to be made positively are:

1. Examination of stained smears of the peripheral blood (with a view to finding the Leishman-Donovan body);

2. Total and differential white cell counts (to detect leucopenia and mononuclear increase);

3. Blood culture (to grow the Leishman-Donovan body from the peripheral blood);

4. Examination of the material obtained by puncture of the spleen or the liver, or of the bone-marrow (for the Leishman-Donovan body);

5. The formol-gel (or aldehyde) test;

6. The water precipitation (or globulin) test; and

7. The urea-stibamine (or stiburea) test.

We shall not in this paper discuss these methods of investigation, but will consider them in detail in a second paper which will be published shortly. We would, however, point out that these methods should be employed in every case of suspected kala-azar so as to enable the diagnosis to be made with certainty. But it may often happen, especially in places where laboratory facilities are not available, the diagnosis should be made on the clinical picture only. Mistakes will, no doubt, arise, but they can be minimised by taking special care to detect all the clinical features, especially those which are obscure, such as the double rises in temperature occurring in the twenty-four hours.

REFERENCE

THAMBIAH, S.—The Leukaemias, JOURNAL OF SOUTH INDIAN MEDICINE, VOL. I. NO. 4. APRIL, 1935, *p.* 145.

THE LEUKAEMIAS

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From Hippocrates to Hunter, the treatment of disease was one long traffic in hypothesis—OSLER.

LEUKAEMIA is not a common disease; yet it comes often into consideration in the differential diagnosis of spleno-hepatic enlargements and general enlargement of lymph-nodes. None of the signs and symptoms of this disease can be regarded as pathognomonic. A well-prepared and stained film will often give us decisive information. Ordinary Leishman's stain is as good as any other if care is taken not to wash the slide too long in water. Jenner-Giemsa stain yields better results than Leishman's as with this stain basophilic differentiation is well brought out along with the nuclear structure and the basophilic granules of the mast cells.

Jenner-Giemsa staining is carried out as follows: A small drop of blood is spread out thinly and evenly, and allowed to dry in the air and not by heating over a flame. Enough Jenner stain to cover the film is allowed to act for three minutes, and then an equal quantity of water added to the film with gentle rocking, and the dilute stain kept on for one minute. Throw off the stain, rapidly wash the slide and drop it into a staining boat containing dilute Giemsa stain (15 minims of Giemsa stain in 10 c. c. of distilled water) for 15 minutes. The film is then washed in distilled water (three or four changes of water) and air-dried.

On examination of a stained film, the field looks spectacular in MYELOID LEUKAEMIA, owing to the presence of different kinds of myeloid cells with their diversity in colour. This is much in contrast to the "endless monotony" of one kind of cells of lymphatic leukaemia. It need hardly be pointed out that it is the type of cells present, i.e., immature cells not commonly found in general circulation, that constitutes a leukaemia. Further, critical scrutiny will show two more features insisted on by Ehrlich and commonly present in myeloid leukaemia films—basophils and normoblasts. These are never seen in lymphatic leukaemia, which is intrinsically a disturbance affecting the lymphoid system, unless it is in the irritative stage of *myelophthisis* induced by leukaemic infiltration.

The recognition of myeloblasts is essential from the point of view of establishing the acuteness of the disease and also as a guide in treatment. Otherwise, a differential count will not be of much value. The presence of large numbers of myeloblasts in a chronic myeloid leukaemia is an invaluable index that the disease is taking an acute turn, and all forms of special treatment will have to be held in abeyance. The presence of nucleoli, basophilic cytoplasm, and the larger size of the cell as compared with the myelocytes in the field will distinguish the myeloblasts. Confusion with lymphoblasts will not come in for the reason assigned above. All types of cells are increased in a total count in myeloid leukaemia; lymphocytes do not preponderate in a percentage determination, though they may be increased in a total count.

The following case may be of interest in that it brings out some of the points considered above. The case was under observation for nearly five years and terminated fatally by a severe haemorrhage from the bowels.

Mr. C. R. P.—Hindu male of 41, admitted into hospital during 1927, with a history of pain in the sternum and right thigh for two weeks, and a high continued temperature for one week. Previous history of an attack of malaria some years back.

Examination showed slight tumescence of abdomen and a spleen two fingers' breadth below the costal margin. Liver was just palpable on deep inspiration. Blood film showed no malaria parasite. A few basophils and nucleated red cells (normoblasts) were noted, but no importance was attached to this finding. Widal's serum reaction was repeatedly negative. The patient was given four injections of urea-stibamine on the strength of a few double rises in the four-hourly temperature chart; the patient was living in a kala-azar endemic area and the blood film showed leucopenia and 8 per cent mono-nucleosis. He was discharged after 7 weeks' stay in hospital. He was not entirely relieved of the pain in the sternum and the right thigh.

At about the end of the year, the patient again complained of fever and the same pain in the bones which was so severe as to keep him sleepless. A blood film was examined and the blood picture was one of chronic myeloid leukaemia. The total count was about 80,000 leucocytes per c. mm. The count made on different days varied from 60 to 80 thousands. R. B. C. 3,500,000. Hb. 70 per cent. Colour Index 0·86.

The patient was not willing to undergo treatment by X-rays. His spleen was at the level of the umbilicus and the liver three fingers below the costal margin. He complained of a dragging pain on the left side; no friction sounds were audible over the splenic area. He was put on 10 minims of benzol and 15 minims of olive oil, which he continued to take regularly, twice a day. The regime was interrupted now and again by a course of iron and arsenic. The patient continued at his work without interruption, though he complained of getting fatigued early, and of want of concentration. He was averse to repeated blood examinations and so the treatment was not controlled by regular blood count determinations.

He again came into hospital during December 1931, with bleeding and tender gums, anaemia and breathlessness. Blood film showed numerous myeloblasts and pre-myelocytes, and many degenerate myeloid cells difficult to classify. The patient was running a moderate temperature.

After a stay of a few days, the patient wished to be discharged, though he complained of a severe griping abdominal pain. On the same evening his abdominal discomfort grew worse, and the patient passed large quanties of pure blood per anum and expired.

DISCUSSION.—The patient took benzol without blood count control, still aplasia of the bone-marrow or pronounced fall in the R. B. C. count did not take place. Could he have lived the same period (5 years) without benzol? The death was due to severe haemorrhage; if no haemorrhage occurred he might have lived longer. The pain in the sternum and the right femur was due to leukaemic changes rapidly invading the inactive reserve fatty marrow and converting it into active red marrow (active myelosis). The basophils and normoblasts seen in the early blood films perhaps indicate the myeloid changes (early precursors?) before the appearance of the characteristic blood picture of myeloid leukaemia in the peripheral blood. In other words, do the basophils and normoblasts seen here give an early index of the changes in the bone marrow?

LYMPHATIC LEUKAEMIA does not show the picturesqueness of myeloid leukaemia in a fixed film. Immaturity is not easy of determination as the maturation process from the lymphoblast to mature lymphocytes is not so

well defined as in the cells of myeloid origin. Lymphoblasts are much larger cells than the mature lymphocytes, nucleoli (2 to 4) can be made out and the cytoplasm stains a deep blue. Immature lymphocytes are bigger than the small lymphocytes (which are usually mature and normal types found ordinarily in circulation) and the nuclear chromatin is not so dense though still gathered in nodules. In leukaemic films, a good percentage of cells are devoid of even the small halo of cytoplasm. Most of the cells are represented by the 'naked' nuclei. Lymphoblasts and large lymphocytes, when preponderant, will be an index of the acuteness of the disease. Total red cell count and total platelet count are also of value in determining the progress of the disease. The former and the percentage of haemoglobin form probably the most reliable index with regard to the activity of the leukaemic process. Persistent thrombocytopenia commonly indicates a bad prognosis. It is also worthy of note that in spite of much reduction in platelets, purpura is not much in evidence. Platelet count in chronic lymphatic leukaemia gives a better guide for irradiation therapy, as a rapid fall will indicate aplasia of the bone marrow.

Enlargement of the lymphatic glands occurs in all cases of lymphatic leukaemia in addition to the spleno-hepatomegaly. Sometimes this may not be very apparent, as the glands first affected may be the mediastinal or the retro-peritoneal. The affected glands always remain discrete, free from cutaneous adhesions, and have a distinct, elastic, rubbery feel to the palpating finger. Cutaneous infiltration—lymphomatosis cutis—takes place in lymphatic leukaemia and such a feature is absent in myelosis.

Among the numerous signs and symptoms described, some require more than a passing notice. Basal metabolic rate is raised in both forms, particularly so in the myeloid variety. Fever is not a constant feature, and when present is not noticed by the patient himself. Persistent high temperature is a bad sign. History of profuse sweating may be obtained in a good many cases. Splenic pain is very commonly complained of and may be due to infarcts, sudden haemorrhage or perisplenitis; part of the pain is due to the weight of the enlarged spleen. Priapism is common in myeloid leukaemia and rare in lymphatic leukaemia; it may be the first abnormality noticed by the patient. This is caused by myelocytic infiltration and thrombosis in the corpora cavernosa. Urine analysis gives a higher nitrogen content; uric acid and phosphates are increased owing to the constant break-down of the numerous labile cells.

Leukaemoid reaction.—Blood film alone will not establish the diagnosis as a leukaemoid reaction associated with infection may give rise to a blood picture closely simulating some stage of the leukaemias. Associated clinical history and the course of the disease should be considered in conjunction with the blood findings. Extreme leucocytosis with a high percentage of immature myeloid cells do occur in pneumonia, erysipelas, meningitis and many other septic conditions. An Arneth haemogram may show a strong 'shift to the left' in traumatic and metastatic irritation of the bone marrow, and in some cases of pernicious anaemia. In whooping cough, 95 per cent of the cells are lymphocytes and the blood picture may closely simulate lymphatic leukaemia. I had a child of 8, suffering from whooping cough during an epidemic, whose total count varied from 96 to 99 per cent of lymphocytes for one month during the height of the paroxysm. It waned off with a fall in the intensity of the paroxysm. Many mild infectious conditions give rise to a post-infective lymphocytosis which will furnish high figures in a differential count. In infective mononucleosis (glandular fever), *pari pasu* with a glandular enlargement, there appears a pronounced lymphocytosis with numerous large atypical dropsical-looking lymphocytes.

AETIOLOGY: It is nearly a hundred years since Virchow and Hughes Bennett independently described (1845) leukaemia as a separate disease entity, yet the etiology of the disease is not worked out. Of the many theories that have been advanced, only three deserve notice. (1) *An infective theory*: As already shown, taking the leukæmoid reaction as a basis, it is argued that leukaemia results from an infection. So far no infective agent has been described. The slight shift to the left of an Arneth hæmogram in infective conditions becomes more accentuated in marked toxic states with a disorderliness of myeloid response as shown by the presence of immature meta-myelocytes, myelocytes and amoeboid leucocytes wanting the full specific granule-complement. It is carried to an extreme degree in myeloid leukaemia, "where a law which seems to govern formation, maturation and delivery of the cells under normal and pathological conditions no longer holds." Are these young abnormal cells of any use in defending the body against infection? If leukaemia is an infection, how could the leukaemic infiltration of different organs be explained? Most of the organs are infiltrated and their normal physiological functions are much interfered with. The usual portals for

the entry of infection are the lungs and the alimentary canal; but these remain normal in leukaemia. (2) *The malignant growth*: Histologically chloroma is indistinguishable from leukaemia. Distinct green-coloured tumours invading bones are seen in chloroma. It has also been noted that small tumour-like nodules are seen in the gums, the skin and the intestinal wall. The cell proliferation in leukaemia serves no useful purpose and in fact hinders proper functioning by intensive infiltration. Acute leukaemias are almost always fatal and this is not so in infections. The atypical or immature cells in leukaemia stain readily in fluid mounts containing methyl-green (nuclear stain) in contrast to the polymorph whose nuclei scarcely take-up the stain in such a short time. This shows that the cells are effete and serve no useful purpose—neoplastic. There is one feature in the leukaemic process which cannot be satisfactorily explained, i. e., the whole haemopoietic system is involved in the neoplastic process at one and the same time. We are accustomed to note a malignant growth starting from a primary focus and then metastasizing to other parts. Again, bones and capsules of organs are not disorganised by leukaemias (only infiltrations) as is the case in malignant neoplasm. (3) *Nægali's view*: In leukaemias, there is a permanent disharmony in the functioning of the endocrine system as a whole. Perhaps a maturation factor is wanting, and so the immature and atypical cells are allowed to pass into the peripheral circulation without restraint. We are allowed to conjecture what this factor is.

Leukaemia is a disease of middle age, except for a few cases of lymphatic leukaemia appearing in the young. It is said that both sexes are equally affected, whereas in the General Hospital, males are five times more affected than the females. In 1933, 23 cases were admitted into the Hospital, and 21 of these were myeloid leukaemias. In 1933, 17 myeloid and 1 lymphatic leukaemia were treated. So myeloid leukaemias are in preponderance. No useful conclusion can be drawn from statistics as regards incidence, as patients crowd up in hospitals where special treatment is adopted, and again many acute cases are not recognised as the severe septic process may be a misleading factor.

TREATMENT: Till the correct aetiology is known, the treatment will remain only palliative and symptomatic. One should also not forget that the disease may undergo a natural remission for long periods.

With regard to drugs, arsenic, benzol and naphthalene tetrachloride may be mentioned. Arsenic in the form of Fowler's solution may be given in gradually increasing doses till the limit of tolerance is reached and then kept up for some time at a slightly reduced dosage. Under this treatment, general health improves, spleen and liver shrink considerably, and the blood count falls appreciably. Benzol is a special leucotoxic drug and exerts a considerable influence on the blood picture. It is given in the form of capsules combined with olive oil to allay gastric irritation, 7-10 m. each of benzol and olive oil twice a day. Its effect should be watched by regular blood counts. When the total count reaches the neighbourhood of 20,000 the course should be interrupted, and if required a small dose of arsenic substituted. Napthalene tetrachloride is given 2 or 3 times a day in doses of 3 or 4 grains. It may be carefully increased to ten grains twice or thrice a day. All these drugs require careful control by blood counts.

Sen of America was the first to use X-rays in leukaemia in an empirical way in 1903, and Heneicke, a few years later, established its selective influence on certain types of labile cells. Blood counts should be regularly done as in benzol treatment, for a further reduction takes place even after breaking off the irradiation. A raised leucocyte count alone is not an indication for therapy, nor will a low red cell count be a contraindication for X-rays. A heightened basal metabolic rate and distressing symptoms will correctly indicate radio-therapy. Pape prefers irradiation of the spleen (and possibly liver) in myelogenous, and lymph glands in lymphatic leukaemia. Persistence of splenomegaly is in itself no indication for continuing irradiation therapy. Caution is necessary in treating leukaemias with haemorrhagic diathesis and cases of acute leukaemia. The action of Radium is similar to that of X-rays. The easy portability is an advantage in the former. Intravenous injection of radio-active substances as Thorium-X has been found to be valueless. Radium pads may be applied to the spleen and kept on without a break till 6 to 8 thousand milli-radium-hours are obtained. The modern tendency is to give an intensive treatment in 3 or 4 days than small irradiation spread over a long period. The latter is only applicable to the long bones and sternum, to avoid inducing aplasia of the bone-marrow.

Splenectomy is not a logical procedure. Transfusion is useless in acute cases, but may stave off the fatal end for a while. Iron has a distinct place in the treatment of secondary anaemia in cases of lymphatic leukaemia. A cure in leukaemia is unknown.

THE PROBLEM OF BIRTH CONTROL.*

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It were very amusing, had not the situation been so tragic, to see the theologian, the arm-chair philosopher, and the easy going layman, all males, indulging in hair-splitting arguments about the pros and cons of Birth Control. They all seem to have clean forgotten that the problem of birth control is mainly a problem of the woman and that the two great factors that chiefly concern her are her own health and the health of her children. The fact that the subject of birth control has come to be discussed publicly (and that the Government itself has come to regard the teaching of birth control to the Public urgent) shows that everybody feels there is something wrong somewhere with our social arrangements.

All of us feel that the health of the younger generation has become poor, that their staying power is low, that they suffer from more diseases than we ever did in our days of childhood, that our daughters and danghters-in-law are puny, ill-developed and ill-nourished, that they conceive almost every year, abort or bring forth short-lived weaklings, running up a fat bill for the doctor every time they do either, that when they are not conceiving they are always ailing, and that many young mothers die early as victims of "child-birth," tuberculosis, anaemia, or any other after-math of frequent child-birth. And we feel that something must be done to arrest further deterioration.

The doctors, especially those that practice in large towns where the situation is very acute, not only feel but are face to face with it. They see the physical condition of the mother deteriorate with every quick-succeeding pregnancy, the baby at the breast and the baby in the womb sucking away her vitality, there being hardly any interval to recoup the lost health. When she is the mother of many children the situation becomes worse. Most nights she is sleepless, tending the sick child and nursing

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the worrying baby at the breast, and the days are spent in attending to the family and the other children, the poor mother having no time at all for rest, day or night.

No member of the medical profession can be ignorant of the results of unlimited procreation. "We have all seen these poor wrecks of humanity coming up to us for advice, their lives one long agony of child-bearing, and each month a night-mare lest their periods should not appear. Ill and broken in spirit they come, these drudges of the world, ignored by the governments and religions, reduced to a hopeless despair by the much-vaunted glories of motherhood."

It is no wonder that the women of the West have revolted against such abject slavery, and with the advance of Western Civilization among us in India, it is no wonder that our women should be demanding to be something more than mere child-bearing machines; it is but just that they should be given as their right a fuller and healthier life with opportunities for self-development and independence, with full facilities to regulate their fecundity, according to their individual health and economic status.

The maternity mortality rate in India is high, ranging up to 53 per thousand live births. It is not contended that all these deaths are due to the above cause, but it is a very important factor in our country where marriages are universal and the maternity service is notoriously inadequate and crude.

The important factor to bear in mind about child-bearing is that it does not matter so much how many children a woman begets on the whole, but it matters very much that there should be adequate spacing between the child-births in her own interest and in the interests of her children. The following Tables prepared by the Children's Bureau of the United States Department of Labour are interesting in this connection:—

Table A.

Interval between Births	Infant mortality rate
1 year	147
2 years	98
3 „	86
4 „	85

Table B.

Number of children in the family :	Infant mortality
4 and less	118
6 and more	267
7 and more	280
8 and more	291
9 and more	303

Table C.

Order of birth	Infant mortality
1st and 2nd born	138.3
3rd and 4th born	143.2
5th and 6th born	177.0
7th and 8th born	181.5
9th and later born	201.1

Table D. (Indian figures)

	Infant mortality	Percentage of still-births to live births	Children alive per 1000 pregnancies
5 pregnancies and under	226.3	... 12.5 ...	633.7
6 pregnancies and over	272.2	... 20.9 ...	594.4

Table E.

Age of mother	Infant mortality rate.
Under 18	160.3
18-19	128.9
20-24	109.5
25-29	101.4
30-34	104.7
35-39	126.5
40-44	131.3
45 and over	250.0

The income of the family, it will be admitted, has a great bearing on the infant mortality rate and the health of the surviving children. The following figures by the Director of Public Health, Madras, after official

investigation, in 1929, in the four cities of Madras, Madura, Coimbatore, and Trichinopoly, are useful:—

Table F.

Income of the family		Death rate per mille
Rs. 25 and under	...	120
Rs. 50 and under	...	102
Over Rs. 50	...	84

Table G.

American figures, prepared again by the Children's Bureau.

Earnings of father in dollars.				Infant mortality rate.
Under 400	...	...	...	170
450-549	...	...	...	130
550-649	...	...	...	120
650-849	...	...	...	110
850-1, 049	...	...	...	90
1,050-1,249	...	...	...	70
1250 and over	...	...	...	60

Thus, it will be seen that the rate of infant mortality and the health and longevity of the surviving children, are chiefly dependent on the interval between the children, the number of children in the family, mother's age and her health, the child's possible heredity, and the financial status of the parents.

It will be admitted by every person that there are certain situations in which it is desirable that the mother should not conceive: mental and physical maladies in which, if she does, she either dies or her condition is aggravated and the child born is weak and diseased. In these cases it is obvious that conception should be controlled or prevented altogether. Even in cases where the father is able to maintain any number of children, when it is found that child-bearing in quick succession is telling on the health of the mother, it is essential that births should be controlled to get adequate spacing. Similarly, in cases where the health of the mother might permit limitless fecundity, the earning capacity of the father being far too inadequate to maintain this rapid expansion, it becomes imperative that the growth of the family should be checked, if the "happy" father is to provide the wherewithal at least to the mother and the existing children not to speak of the other dependents usual among us Indians.

There are at present three methods only for the controlling of births and regulating child-spacing, one unapproved and the other two approved. These are Abortion, Self-control, and Birth Control.

Abortion is rightly condemned as criminal, and yet the number of abortions procured or attempted even among the married for various reasons will run into lakhs. In 1920, France alarmed at the decrease of her population, accentuated by the ravages of war, passed an Act making the practice of contraception a criminal offence. The objects of this Act were not achieved in that the number of live births did not increase, but the abortion rate became appallingly high. Dr. Lacassagne of Lyons, an eminent sociologist, estimated that the number of abortions in France rose to not fewer than 500,000 a year, an appalling figure in comparison with the average annual total of 750,000 actual births. In the land of Miss Mayo, according to the *American Journal of Obstetrics and Gynaecology*, in the year 1922, "It has been estimated that in New York City alone there are 80,000 criminal abortions annually." Margaret Sanger, in the course of her nursing career, which took her into the poorest quarters of New York, states she has seen on Saturday nights groups of anything from 50 to 100 women going into questionable offices well known to the community for cheap abortion.

So that, in the West, it has become not merely a question of birth control *versus* unlimited procreation, but birth control *versus* abortion. Do our anti-birth-control protogonists want this latter problem to arise in our country as well? The day is not far off, seeing the rate of Westernisation in our country, when this nasty question will begin to loom large, if we neglect to take proper and efficient precautions now.

Though this evil is not prevalent to any great extent at present in our country, yet any doctor, nurse, or compounder or chemist will tell us about the number of applications they receive for medicines to "regulate the periods." The tale of self-induced abortions, with its trail of misery and ill-health, and its probable effect on maternal mortality and morbidity in later pregnancies, is a horrible reality.

As for Self-control, it is the best method: ancient, good for the soul, and good for the body; but it should not be forgotten that in this question there are two who are concerned. There is nothing new in the statement that sexual appetite, next to hunger, is the most dominating and insistent instinct of life, though Society, ignorant of the overwhelming importance

of the subject may clamour for its suppression. Self-control implies the repression of a natural and necessary instinct, and it is a psychological truism that repression of such an instinct is more harmful than its expression. Young and normal couples cannot for long carry out this repression without mental, physical and moral deterioration. To those who can practice self-control the teaching of contraceptive methods is certainly unnecessary. Even in the case of our great Rishis, like Visvamitra, who lived isolated in the forests self-control was found to be difficult of attainment It is certainly not any easier in these days, living in towns amidst cinemas, theatres and gramaphone music, with their glaring sex appeals at every turn.

Birth Control should be regarded as a form of treatment to be used or prescribed by doctors and competent persons in suitable cases. At present the knowledge of birth control methods is chiefly derived from chemists' advertisements and books and through hearsay information from friends, mostly laymen. This being unscientific and of doubtful value proves ineffective and often harmful. It is regrettable that the knowledge of most medical men and women on this subject is very hazy. Due to want of authoritative and scientific treatises on the subject and the absence of birth-control clinics run either by the State or by experienced specialists, people are groping in the dark, and a good lot of undeserved scepticism and sentimental opposition have arisen about it. A Government birth-control clinic has been established in Mysore, and it is time that steps are taken to establish such clinics here also, at least in important centres where instruction could be given to all medical people and accurate advice to all deserving cases.

It is feared by some that indiscriminate diffusion of birth-control knowledge from these clinics will be misused and will lead to increased immorality. But, then, is it better that the country should go on being scourged with venereal diseases, with abortions, and with the sacrifice of the health and lives of countless mothers and children than that it should be freed from these horrors at the risk perhaps of a slight increase in illicit sexual relations? Even this misuse could be checked very easily by a law similar to the one in England where the Ministry of Health has issued permissive memorandum allowing married women to be given information on birth-control at the clinics in cases where further pregnancy would be detrimental to health.

There is a good deal of opposition to birth-control on other grounds also. Some say it is indecent. Birth control is purely private to each man or woman and there can be no indecency in the adoption of its methods. The stigma of indecency is not attached to anything in itself but only exists in the mind of the person who considers it as indecent.

Why should religion be allowed to interfere in the treating and advising of the sick? With regard to the Church's opposition two facts are worth noting. The Church seems to oppose any new advance in science applicable to mankind. When Sir James Simpson wanted to introduce the use of chloroform in labour cases, the clergy were loud in denouncing "this unmitigated piece of iniquity," and he had a regular fight before he could achieve his object to the great relief of the suffering womankind. Concerning its attitude towards birth-control it is interesting to note that the clergy of the Church of England have a low birth rate and the clergy of the Church of Rome are celibate.

Of late, in our part of India, which is mainly agricultural, a rapid process of urbanisation, industrialisation and Westernisation is taking place. The standard of living has risen, struggle for existence is getting keener, unemployment among the educated classes is appalling, and the urban areas are getting overcrowded. It is in the urban area that the birth rate is high. To the agriculturist every addition to his family is an asset as the earning capacity of the family is increased in proportion. But to the urban family every rapid addition to it tells very adversely on its already ill-balanced and sensitive domestic finance. Hence the whole family becomes ill-nourished, and consequently the mortality rate is increased.

Overcrowding, under-nourishment, constant anxiety and worry in the struggle for existence are among the potent causes for the rapid increase of tuberculosis evident among the urban population. Procreation, unlimited and at short intervals, leads to calcium deficiency in the mother and the children, which gives added momentum to the spread of the disease. For these reasons at least the regulation of birth rate among them is very urgent.

Marcus Rubin, in 1900, in his work "Population and Birth Rate illustrated from Historical Statistics" showed that where the birth rate was very high, early mortality also was high, and, therefore, the survival rate, which is the nationally important figure, was low. Therefore, birth-control is the most important alternative to a high death rate, and it is an essential

condition for the improvement of the racial type. A decline in the rate of birth among onr urban population would strengthen the community by raising its health rate, substituting *quality* for *quantity.*

That our Ancients cared more for quality than for quantity is shown by the fact that even in those days when our land was in urgent need of increased population, the Shastras laid down strict rules, permissive and restrictive, regarding sex union. Till recently, in the joint family life, these rules were rigidly enforced by the elders, and thus a sort of birth control was exercised, though indirectly and unconsciously. Hence in those days, the quality of the issues was high—in health, strength and longevity. With the disruption of the joint family system and the removal of these restraints, the quantity is increasing and the quality is deteriorating in proportion. Hence, direct birth-control on a voluntary basis is necessary and will be beneficial.

Apart from the purely medical aspects of this question, there are many other advantages to be derived through birth-control. It will lessen prostitution by promoting a happy married life in that it allows the husband to have all the sexual life at home without the fear of injuring the health of the wife. It will thus indirectly reduce the incidence of venereal diseases. Overcrowding, over-population and the consequent evils: under-bidding, child labour, and lowering of the standard of living, will be checked. The community will be free to raise its standard of health and living.

There is no practical use in arguing that contraception is useless in solving our problems as it is empirical and uncertain, and that improvement of the economic condition of the people only is going to do it. We have been saying this too long. What have we done all these years towards that end? On the other hand, the economic condition of the people is growing from bad to worse year by year.

Birth-control is one of the most important factors in improving the economic condition of our middle class urban population. It is a social issue of tremendous importance and would prove one of the corner stones in any scheme for the social and economic amelioration of the community, and for the reduction of crime, pauperism, drunkenness, disease and overcrowding. It has the national advantage of preventing waste of maternal vitality and the financial outlay incidental to the production of weakly diseased infants which only too frequently become a burden to the State in later years, if, indeed, they survive at all. It would release vast amounts of time and money, private and public, now spent in alleviating distress, ill-health and unemployment.

GLEANINGS FROM MEDICAL LITERATURE.

11 FIBROCYSTIC DISEASE OF BONE.

Proceedings of the Royal Society of Medicine, 1934, 973.

In opening a discussion on this subject, R. E. ELMSLIE said that the term *osteitis fibrosa* had been applied to a miscellaneous group of bone diseases in which the skeleton showed some or all of a series of pathological changes. It is possible to distinguish among these diseases a number of clinico-pathologic pictures to which definite names may be given.

1. *The bone cyst*, especially frequent in the upper ends of the humerus and the femur, typically contains a brown fluid, is often surrounded by bone showing lacunar absorption, and has no lining membrane; it may sometimes have a membranous lining, and occasionally cartilage is formed in the bone around the cyst.

2. *The osteoclastoma* (giant-cell tumour) is the classical myeloid sarcoma; it may be cured by curetting, but the cavity may fail to clear up, and a bone cyst may thus be left.

3. *The osteoclastomatous cyst* has soft solid marginal tissue, containing numerous giant cells. The diagnosis between cysts and osteo-clastomas is hardly possible except by exploratory incision and histological examination.

4. *In local diffuse fibrosis*, the marrow is replaced by fibrous tissue containing small bone fragments.

5. *Generalised diffuse fibrosis.*—The changes are exactly the same as in the above group, but occur in many bones. X-rays show the same expansion of bone, disappearance of medulla, and a sharp margin. In the skull, there are local patches, but the general thickening and alteration of texture seen in cases of hyper-parathyroidism do not occur. The expanded bone region may appear as clear as in a cyst, but exploration usually shows that the bone contains no fibrous tissue. When cysts do occur, they are apparently degeneration cysts in the fibrous tissue and not bone cysts. These cases can be distinguished from hyper-parathyroidism by the clinical aud X-ray findings, and by the absence of general porosis of the bone, of the characteristic skull changes, and of the bio-chemical changes found in hyper-parathyroidism.

6. *Hyper-parathyroidism* is characterized by generalized porosis of bone and formation of cysts and osteo-clastomas, often great muscular weakness and hypotonicity, and abnormal calcium metabolism.

Most of the cases of fibrocystic bone disease can be included in one of these six groups, and it is no longer necessary to use the term osteitis fibrosa.

R. DAVIES-COLLEY suggested that the term fibrocystic disease be restricted to the generalized metabolic disease (hyper-parathyroidism.)

H. TAYLOR pointed out that in the fibrocystic diseases of bone, as in other osseous dystrophies, there is a deficiency of calcium in the skeleton, due chiefly to faulty metabolism of this element. He further pointed out that not all patients with parathyroid tumour have von Recklinghausen's disease.

K. R. C. H.

12 PATHOLOGY AND TREATMENT OF LYMPHADENOMA

Proceedings of the Royal Society of Medicine, 1934, xxvii, 1035.

In opening a discussion on lymphadenoma, M. H. GORDON stated that since this condition forms a link between the granulomata of known etiology and malignant disease, knowledge of its etiology might pave the way for a successful attempt to discover the cause of sarcoma. When the three characteristic changes of fibrosis, giant cell formation and esoinophile infiltration are present, the histological evidence for lymphadenoma is complete. But, in practice, a considerable number of cases occur in which one or more of these features is lacking, and in such cases the histological diagnosis is on far less secure ground. Among these atypical cases there seems to be a series of gradations between typical lymphadenoma and typical lympho-sarcoma or reticulo-sarcoma, for which the term "*Hodgkin group*" has come into use.

While the etiology of lympadenoma is still undetermined, it seems likely that the pathogenic agent may prove to be more closely related to the sarcoma-producing than to the granuloma-producing agents. Pullinger believes that the condition is most closely allied to leukaemia, and it is possible that this latter condition bears a close relationship to sarcoma.

W. M. LEVITT said that while the X-ray treatment of lymphadenoma gives almost magical results in the earlier stages, it is often useless, and, indeed, if injudiciously used, worse than useless, in the terminal stages. He suggested the possibility that in most cases the initial lesion may occur in some of the deeper lymph-nodes, the first discoverable lesion being a secondary deposit, and that lymphadenoma, like lympho-sarcoma and other diseases of lymphoid tissue, may have its favourite sites of origin. One might in this way explain the rare instances in which a cure has been claimed by X-ray therapy as those in which the earliest observed lesion was the actual focus of the disease. The primary focus may, however, owing to its position, escape X-ray treatment until it is too late, acting as a reservoir of disease in the body, and this may explain why the end-results of X-ray therapy of lymphadenoma are worse than in certain varieties of malignant disease. Methods of irradiation involving the exposure of the entire thorax, abdomen, and trunk to repeated small radiation doses have met with a certain amount of encouragement. The results with abdominal irradiation have so far proved merely temporary, lasting only a period of weeks or perhaps a few months. It seems possible that with increase of knowledge of the origin and methods of spread of lymphadenoma some form of general irradiation may become the routine method of treatment.

K. R. C. H.

13 THE MANAGEMENT OF UROLOGIC COMPLICATIONS IN INJURIES TO THE SPINE

T. F. CONNORS AND I. E. NASH.

The American Journal of Surgery, October 1934, p. 159.

It is generally agreed that the most important complication in injuries to the spine is involvement of the urinary tract, and that it is this complication that is mainly responsible for deaths occurring in such conditions. Catheterization of the bladder is generally accepted as

the cause of infection. As such, the following management of such cases is described which stresses the absolute necessity for the avoidance of catheterization.

1. Voluntary emptying might occur in cases in which slight concussion of the cord or some other minor injury has taken place.

2. Or, the bladder might get distended. Moderate distension without pain is not attended to. But if pain is present, "credeing" of the bladder is tried. "Credeing" of the bladder is manual expression of the urine by application of suprapubic pressure, which when carefully employed is a satisfactory procedure. By this method one almost always succeeds in expressing some urine from the bladder, and it is carried out every four to six hours. This method is, however, not used if distension is too marked, as in such cases manipulation of the bladder is painful and not permitted by the patient.

3. In the absence of discomfort until overflow occurs: The usual time of waiting for this overflow to take place is from twenty-four to thirty-six hours, and there is absolutely no risk of rupture from over-distension. Once the bladder has succeeded in voiding some urine by overflow, it will continue to do so for several weeks to several months until automatic control is established. In this type of case, however, special care must be taken to prevent bed-sores.

4. Finally, there is the type of case where either because "credeing" was not instituted early enough, or because "credeing" is very painful, or because of the pressure the distended bladder produces upon the abdominal viscera, there is marked pain and distress with tympanites and vomiting, something has to be done to empty the bladder. In such cases, suprapubic cystotomy is performed. In a series of 54 cases reported by the authors, this procedure was necessary in only two cases, and the patients went home cured.

P. G. R.

14 EPIDURAL AND PERINEURAL INJECTIONS IN THE TREATMENT OF PERIPHERAL PAIN

E. A. JOSEPH.

The American Journal of Surgery, August 1934, 304.

The effects of epidural injections in cases of sacro-coxalgia, sciatica, and chronic arteritis not due to diabetes, syphilis, caudal tumour, or other diseases, are described. It was found that complete relief of the pain of sacro-coxalgia in 91 per cent of cases, and of sciatica in 67 per cent of cases, and partial relief of pain of chronic arthritis in knee or ankle in 71 per cent of cases, was possible with this method of treatment. It was made certain that these patients received no other treatment at the time. The technique employed is as follows: With the patient lying on his abdomen, the opening of the sacral canal just below the sacral spine is located. The skin over this area is cleansed and infiltrated with a small amount 0.5 per cent solution of Novocaine. A needle, 8 cm. long and No. 19 gauge, is inserted first at an angle of 20 to 30 degrees through the sacro-coccygeal ligament, and then pushed upwards parallel to the long axis of the bone for about 4 to 6 cm. After making sure that neither vein nor dura has been punctured, either normal saline solution or 0.5 per cent Novocaine solution in sterile water is injected at body temperature in quantities of from 20 to 100 c.c., the average amount being about 50 c.c.

When more than one injection is necessary, it is repeated at intervals of a week to one month; but it is considered futile to give more than five injections.

The *modus operandi* although speculative is thought to be a physical interference in the pain-conducting mechanism by pressure similar to that obtained by stretching the nerve. Untoward accidents are rare, no after treatment is necessary, and the patient immediately arises and leaves.

Similar perineural injections, of the brachial plexus (10 to 20 c.c. of Novocaine solution being used) in neuritis of the upper extremities, through the paravertebral spaces for intercostal neuralgias, and through the supra-orbital notch for supra-orbital neuralgia, also give gratifying results.

P. G. R.

15 ORAL UROGRAPHY

In an editorial note on the above subject in the *Radiological Review* (Nov. 1933) HAROLD SWANBERG says that just as intravenous cholecystography was followed by oral cholecystography, it now appears that intravenous urography is to be followed by oral urography. SWICK of the Mount Sinai Hospital of New York has been working on a new compound—sodium ortho-iodohippurate—that can be successfully used for both intravenous and oral urography as well as retrograde pyelography.

The development of this new substance, which is to be called *hipiodan* or *hippuran*, is based upon the physiologic principle of detoxification. The fundamental concept is the utilization of a normal product of metabolism as an organic nucleus for combination with the radiopaque element necessary for the X-ray visualization of the urinary tract. In other words, it is the halogen derivative of a substance normally found in the human urine.

The tolerance for the new compound is said to be good. No unfavourable reaction has been encountered and iodism has never been observed. Manifestations of injury to the kidney, as demonstrated by urine analysis in man as well as tissue examination in the rabbit, have not been noted. The substance is excreted unchanged into the urinary tract.

For *oral urography* 10 to 15 grams of the substance, dissolved in approximately 75 cc. of a simple syrup, has yielded satisfactory roentgenograms in about 60 per cent of the cases. The only subjective sensation recorded is the salty aromatic taste of the solution. The most satisfactory films were those obtained approximately 90 to 135 minutes after ingestion.

Successful oral urography will indeed be a distinct step forward in simplifying the X-ray study of the urinary tract. Unfortunately, the results by the oral route have not been found as consistently good as by the intravenous method. Further investigations, however, are in progress in the hope of improving the efficacy of the method.

K. R. C. H.

16 RECURRENT DISLOCATION OF THE SHOULDER

TOUFIC NICOLA.

Surgery, Gynaecology, and Obstetrics, February, 1935, 545.

The operation consists in dividing the tendon of the long head of the biceps and fixing it in a bony canal formed by tunnelling the head of the humerus. It is justified on grounds of

comparative anatomy in that in the dog the head of the biceps normally runs through the head of the humerus.

The incision commences just outside the coracoid process and extends 3 inches downwards along the deltoid fibres. The latter are separated by blunt dissection, care being exercised not to injure the circumflex nerve and vessels. The transverse humeral ligament is divided, the biceps tendon exposed up into the shoulder joint, and divided half an inch above the upper border of the pectoralis major, after stay sutures of black silk have been placed in the upper and lower parts. The elbow is kept flexed at 45 degrees and the *synovial membrane covering the sheath is removed.* The head of the humerus is then tunnelled with a shank gouge which enters the bone in the bicipital groove one inch distal to the lesser tuberosity and, proceeding in the direction of the tendon, emerges on the articular surface *one half to three quarters of an inch from the edge of the articular cartilage.* The gouge is withdrawn, the loose bone marrow removed and the proximal end of the tendon drawn through the tunnel with the aid of a probe, to which the ends of the silk stay have been attached. The cut ends are then united by tying the stay silks. With the arm abducted at 90 degrees the *transverse humeral ligament is then sutured to the tendon in the bicipital groove.* The transverse humeral ligament and capsule are sewed with continuous, and the deltoid with interrupted, cat-gut stitches, and the skin incision with a subcuticular stitch. The dressing consists of a velpeau bandage, reinforced with plaster, with the arm close to the chest and the elbow at 45 degrees for a period of 2 weeks. *After-care* consists in massage, application of radiant heat, and active movement, with the arm carried in a sling between treatments.

It is important—

1. To remove the synovial membrane over the tendon and fix the transverse ligament to it;
2. Not to make the hole in the bone too large;
3. Not to place the point of emergence nearer than half an inch from the articular cartilage, since in every one of these cases the tendon moves freely up and down in the tunnel instead of being fixed, which latter is of the very essence of the operation.

M. K.

REVIEWS

PROCEEDINGS OF THE ALL-INDIA OPHTHALMOLOGICAL SOCIETY, Volume III, 1933, *pp* 208 *plus* xvi.

We have received a copy of the PROCEEDINGS OF THE ALL-INDIA OPHTHALMOLOGICAL SOCIETY, VOLUME III. It is a volume of 208 pages, containing the communications made before The THIRD CONFERENCE of the Society held at Calcutta in December 1933, besides the Report of the Society, and the Report of the Third Conference. It is admirably got up, the illustrations in particular being reproduced with remarkable clearness and accuracy.

As regards the COMMUNICATIONS, we would draw special attention to the paper on *The Surgery of Iridocyclitis* by Prof. A. Fuchs of Vienna, on *Von Hippel-Lindau's Disease* by the Staff of the Government Ophthalmic Hospital, Madras, and to the one entitled *Further Observations on Glaucoma as a result of Epidemic Dropsy* by S. K. Mukerjee of Calcutta. The paper on *Epidemic Superficial Punctate Keratitis* in Bengal by Lt. Col. E.W.O'G. Kirwan, I.M.S., is of particular interest to us in Madras. But the contribution adds little to what the Madras School of Ophthalmology has already described. There are many more communications which should interest ophthalmologists, such as *Kruckenberg's Spindle* by H. K. Indra of Calcutta, *Intracapsular Cataract Operation suitable to the conditions in India* by C. N. Shroff of Bombay, and *Iridencleisis in Glaucoma* by G. Joseph Gnanadickam of Tirupattur. We consider this volume a testimonial to the progress Ophthalmology has made in India, a progress of which we have every reason to be proud.

INDIAN JOURNAL OF VENEREAL DISEASES edited by U. B. Narayana Rao, and published quarterly at 94, 97, Girgaum Road, Bombay. Subscription: Rs. 5 per annum.

We have received the first number, published in March, of the above Journal. A list of its contents is given in the section on MEDICAL PERIODICALS.

The need for a Medical Journal devoted to the study of venereal diseases in India can scarcely be denied. In this vast sub-continent of ours, with its teeming millions, venereal disease presents as urgent problems as

anywhere else. In some respects, the problems are more pressing here than in some other civilised countries. All types of venereal disease, with their varied and complex medical and sociological problems, exist in this country amidst a truly astounding ignorance or lack of perception of the methods of controlling their incidence or checking their ravages. This state of affairs is no doubt due to two main causes, namely (1) want of education of the PUBLIC in such matters, and (2) the absence of proper medical efforts at collecting and presenting the data pertaining to these diseases. The information which could be made available to the world at large by consecutive and correlated studies on the medical aspects of these diseases in this country would be enormous, were the attempt only made. There are important venereal clinics run on more or less up-to-date lines in almost every big town in India, and the material available at these centres of clinical investigation and treatment can easily be brought together and placed at the disposal of the medical profession to the immense benefit of the profession and the suffering humanity here and abroad. It is our belief that such efforts at consecutive and correlated studies will be stimulated by such a Journal as the INDIAN JOURNAL OF VENEREAL DISEASES, which would make it possible for every observation of importance having a bearing on venereal diseases to be published in its proper perspective. Further, such a Journal will help in disseminating necessary scientific information among the medical men who are really the agents that work towards the abolition and prevention of these truly preventable diseases. We welcome, therefore, the new Journal, the first number of which contains many useful articles amongst which we may mention *Incidence of Syphilis* by K. D. Manohar of Bombay and *Post-Arsenobenzol Reactions* by V. Govindan Nair of Vizagapatam. The JOURNAL is admirably got up on art paper and contains numerous clearly reproduced illustrations. We wish it every success, and commend it to every member of the Medical Profession in India.

JOURNAL OF SOUTH INDIAN MEDICINE

APRIL, 1935

BUDGET SPEECHES

The interpellations and answers and the speeches delivered in connection with the Medical Budget in the last session of the local Legislative Council are rather interesting. Most of those who took part in the discussion were insistent on the evils that accrue to the Public from the practice of allowing members of the Government Medical Services to undertake *private practice.* The readers of the JOURNAL are familiar with our views* on this subject. We are happy to know that the Profession feels unitedly on this question. Some members of the Services would like to give it out that only the Independent Medical Practitioners are against this privilege. This is not true. Members of the Services feel even more keenly about it, for they are very adversely affected by the abuse of this privilege. When the officer in authority in an institution allows most of his time to be taken up by outside work, the underdog has to carry on the whole of the work unaided and has to put in very long hours to finish the work, besides the time wasted in waiting for the arrival of the chief and his departure from the institution. Similarly, when one of the subordinates in the hospital spends much of his time looking after the interests of his private patients, his work inside becomes more and more inefficient, and no chief would like such a state of affairs. Further, the younger men in the Services, reading and hearing so much and so often of the amount of research work done in other countries, are often very anxious to do something in that line themselves. They find that the desire for more and more practice in some members of the unit prevents them from enthusiastic work in the institution itself.

The reader might here ask why members of the Medical Services should resent any suggestion of restriction of practice if they are not themselves so keen about private practice. It is because many fear that some people with influence might still be allowed to engage in such practice on one pretext or another while the humbler men are debarred

* Expressed repeatedly in the columns of the BULLETIN.

absolutely. We, therefore, welcome the authoritative assurance of the Hon'ble Minister in charge of the Medical Portfolio that he considers this practice undesirable and that steps are in contemplation to put down at least some of the more glaring abuses of this privilege.

Another encouraging fact that emerges out of the last Budget session is the growing realization by the Public of the usefulness of the *Honorary Medical Scheme.* Not many years ago we used to hear uninformed and uncharitable remarks on the scheme. Some of the members of the Legislative Council were led to believe that the Independent Practitioners were men without much work and that they sought entry into the Government Hospitals for purposes of self-aggrandisement. It was feared by others that the private practitioner would lower the efficiency of the various institutions. We are, therefore, extremely proud to know that in the short space of a few years, the honorary staff in the various hospitals in the city and the districts has demonstrated to the Public, that in efficiency and sincerity, it has nothing to fear by comparsion.

The Lady Willingdon Medical School occupied the attention of the Council for some time. There was active canvassing for and against co-education in Medicine. We have always been against the maintenance of separate schools for the different sexes. But we realize that it is chiefly for the parents and the Public, and not for medical educationists, to decide this question. But the need for separate schools rests on social conditions and not on the percentage of passes or failures in examinations. Some unfortunate statements have been made on the floor of the Council about the examination results of certain institutions. We very much deprecate public discussion of such minor questions in serious Legislatures. We hope that the authorities concerned would so order their affairs that grievances about failures in examinations would not figure so prominently in the Legislative Council in future.

MEDICAL PERIODICALS

INDIAN JOURNAL OF VENEREAL DISEASES

VOL. 1. NO. 1. MARCH, 1935.

Lives of Great Men—Paul Ehrlich. *p.* 1.

Problem of Venereal Diseases in India, U. B. Narayana Rao. *p.* 3.

Incidence of Syphillis, Evidences from Autopsies, E. D. Manohar. *p.* 9.

The author has carefully analysed the post-mortem notes of 882 autopsies done at the Grand Medical College, Bombay, and of 1829 autopsies done by the Police Surgeon, Bombay, with a view to determining the incidence of syphilitic lesions, and he has discussed the findings in the light of the medical literature on the subject. He has summarised his findings as below :

In detailed examination of 882 autopsies, evidence of syphilis was obtained in 190 cases (21.5 per cent). Venereal diseases were the direct or indirect cause of death in 8 per cent of total autopsies. Organs affected were aorta 48 per cent, heart 49 per cent, liver 29 per cent, and central nervous system 19 per cent. In 1829 autopsies syphilis was the cause of death in 241 cases, an incidence of 13·7 per cent. The maximum death incidence occurs between 30 to 50 years of age (in 64 per cent). Aortic aneurysm and cerebral vascular lesions are commoner between 30 and 40, and myocardial degeneration also plays an important role in the senile period.

Bismuth Therapy in the Treatment of Syphilis, Rajendra Kumar Sen. *p.* 17.

Diagnostic Hints in Syphilis, Edward Podolsky. *p.* 24.

Post-arsenobenzol Cutaneous Reactions, V. Govindan Nair. *p.* 28.

"1. A series of eighteen cases of post-arsenobenzol exfoliative dermatitis is reported with three deaths. 2. Exfoliative dermatitis occurred twice in epidemic form while using the same brand of arsenobenzol compound. 3. The dermatitis was found to be more common (28 per cent) after the fifth injection. 4. Toxicity of the drug may have a share in the production of these reactions and it is suggested that a safety time limit be fixed for the sale of the arsenobenzol compounds in this country where the climatic conditions may have something to do with the molecular change, as the general physical characteristics of the powder appear to be without any change. 5. Many of the theories propounded to explain the aetiology of the dermatitis are discussed. 6. The possibility of malaria sensitizing the skin of the patient and damaging the reticulo-endothelial system in the spleen and liver thus diminishing their detoxicating action is suggested. 7. Septic foci, allergy or hypersensitiveness to the drug in an already sensitized skin by bacterial proteins and toxin, impairment of liver function, individual susceptibility or idiosyncracy and toxicity of the drug, all contribute individually or collectively to produce the

explosion. 8. The development, course, complications and sequelae of the dermatitis are elaborately dealt with. 9. Treatment is considered in detail in all its aspects; intravenous injections of calcium gluconate, intramuscular injections of liver extract in addition to liver by mouth; oral administration of sodium thiosulphate and calcium gluconate along with alkalies; external application of a powder or a simple lotion of calamine and ichthyol; starch and alkali bath and sympathetic nursing form the routine treatment. Liver therapy at all stages of the disease is found to be of great value."

The Primary Syphilitic Affections, Otto Kren. *p.* 63.

Difficulties in Diagnosis of Gonococcal infections, Anil Chauduri. *p.* 69.

The Place of Social Hygiene in Education, Socrates Noronha, *p.* 71.

THE INDIAN MEDICAL GAZETTE

VOL. LXX. NO. 1. JANUARY, 1935

Some Observations on the Toxicity of Synthetic Antimalarial Remedies, R. N. Chopra and R. N. Chaudhuri. *p.* 1.

"A number of instances of the toxic effects produced by the synthetic anti-malarial remedies have been given so as to impress on the profession that care should be exercised in the use of these drugs. The main action of plasmochin is on the sexual forms and therefore it has neither very marked curative action in this disease nor does it prevent relapses. The sexual parasites are destroyed by small doses after a few days' administration and therefore the main function of the drug is to prevent dissemination of the disease by mosquitoes. Plasmochin is a toxic drug and does not bear repetition too often without producing serious toxic effects. It has been shown that 0.02 gramme of plasmochin daily for a two or at most three-days' course causes disappearance of the crescents in the peripheral blood in cases of Indian strains of malaria and prolonged use is unnecessary and dangerous. Neither plasmochin nor atebrin should be used for prolonged periods for prophylactic purposes. Patients should not be allowed to use these drugs except under direct medical supervision. There is some evidence to show that combining atebrin with plasmochin increases the toxicity of the latter."

Atebrin in the Treatment of Malaria in Railway Employees, C. D. Newman and B. S. Chalam. *p.* 5.

"1. Atebrin and plasmochin are effective in the treatment of malaria due to all strains of plasmodium in Bengal. 2. It is uncommon to find a temperature above 99° F. after 48 hours' treatment. 3. With the exception of subtertian gametocytes it is rare to find malarial parasites in the blood after the third day of treatment. 4. In subtertian malaria plasmochin also should be given owing to its specific action on the subtertian gametocytes. 5. In the absence of absolute certainty regarding the species of parasite, it is beneficial to use atebrin with plasmochin in all forms of malaria. 6. Atebrin produces a rapid reduction in the size of the

spleen. 7. People exhibiting idiosyncrasy to quinine tolerate atebrin with plasmochin well. 8. Atebrin given alone occasionally produces certain untoward symptoms which are seldom serious. 9. Atebrin and plasmochin given together cause untoward symptoms in a larger percentage of cases and the symptoms are more severe. 10. It is safer to give atebrin for the first five days followed by plasmochin for the next five days. 11. The cost of treatment is on the whole less than treatment with quinine. The treatment of malaria with atebrin and plasmochin is a distinct advance. The treatment is simple, short and economical. The consistent use of this drug should effect a considerable reduction in the number of malaria cases and the consequent loss of working days due to this disease on Indian railways."

Notes on an Experiment on the Prophylactic and Curative Value of Atebrin and Plasmochin Therapy in a Tea Garden in Assam, D. P. Williams and Rasamay Bhattacharyya.

A population of two hundred and thirty four people—159 adults and 75 children—were subjected to prophylactic and curative treatment with the synthetic antimalarial remedies, atebrin and plasmochin. There were 50 relapses (21.36 per cent)—the vast majority of which were confined to the children population, especially among those below two years of age, thus showing the absence of immunity in them. Of this age group 11 cases had one relapse, 8 cases two, 3 cases three and 1 case as many as four relapses. The total infection and total incidence of malaria diminished to some extent; this diminution was due chiefly to the reduction of malignant tertian cases, but there was no reduction in benign tertian cases. The real value of an antimalarial drug especially as a prophylactic agent can be gauged properly only when its efficacy is proved in terms of children, and from this stand-point atebrin and plasmochin have failed, in this experiment, to fulfil the somewhat exaggerated claims made on their behalf. The efficacy of atebrin relative to that of quinine was not determined, but the authors are under the impression that as a therapeutic agent atebrin is at least as efficacious as quinine. On the point of toxicity atebrin is decidedly superior to quinine. It does not give rise to neurotrophic symptoms, is well tolerated by children and also those who have an idiosyncrasy to quinine as well as by pregnant women. Ill effects are attributed to the combination of atebrin and plasmochin. The cost of a course of atebrin treatment is much higher than that of quinine, and, in spite of its being less toxic than quinine, it cannot replace quinine for general use in a country like India. As a gametocyticide plasmochin should be used in mass treatment only under proper medical supervision and under suitable conditions.

The Inspectional value of Phrynoderma and 'Sore Mouth', Lucius Nicholas. *p.* 14.

Thrombo-Angiitis Obliterans, D. C. Chakravarti, *p.* 16.

Observations on Spinal Novocaine Anaesthesia, R. Viswanathan, *p.* 19.

The Influence of Fresh Bile on Guinea-Worm Larvae Encysted in Cyclops (A Preliminary Report), V. N. Moorthy, *p.* 21.

VOL. LXX. No. 2. FEBRUARY, 1935.

"Keratoplasty or corneal transplantation is a very important part of plastic surgery, especially in India, where blindness is so common from scars the result of interstitial keratitis and ulcers of the cornea.

"The operation is not difficult and the results are full of promise, provided that the minutest details in the technique are adhered to, and bearing in mind that success depends entirely on preserving the transparency of the delicate graft."

"There is no direct relationship between the concentration of quinine in the blood and the parasite count at any particular time. The highest concentration of the alkaloid attainable without producing too severe toxic effects produces no apparent reduction in the number of parasites, nor degenerative changes in them. On the other hand in the majority of cases there was a definite apparent increase in the number of parasites per c. mm. of blood after administration of quinine. The action of quinine on the parasites does not appear to be direct, but is probably synergistic to other mechanisms set up in the body. It has been observed that once the number of parasites approximates to one million per c. mm. no amount of quinine however administered is of any avail."

"Three illustrative cases are recorded, showing the three stages of the disease; a primary lesion, a second stage with the commencement of the granulating lesion with secondary nodules, and a third stage with an established chronic lesion—granuloma genito-inguinale. In our experience, a careful analysis of the history of cases of granuloma inguinale would reveal a venereal history in a large proportion. In others, there are extra-genital inoculations, as in syphilis."

THE CALCUTA MEDICAL JOURNAL

VOL. XXIX No. 7. JANUARY 1935.

Tuberculosis, Pathology and Laboratory Diagnosis, M. N. De and K. D. Chatterjee, *p.* 335.

A detailed presentation of the accepted views and methods. The illustrations which form a feature of the paper are very clearly reproduced and extremely valuable.

Ganglion, its Injection Treatment with Acid Quinine Hydrochloride and Urethane, Rabindranath Chatterjee. *p.* 359.

"Excision of ganglion is the method of choice, but in a certain number of cases the operation is refused by the patient. In such cases. injection of solution of acid quinine hydrochlor and urethane may be rccommended as a dependable method of treatment."

VOL. XXIX No. 8. FEBRUARY 1935.

Study of Faecal Cocci, B. P. Tribedi, *p* 396.

"1. 105 samples of faeces—normal and abnormal—were examined for the type of cocci present in them. 2. They were found to belong to the group of enterococci of Thiercelin. 3. The rarity of streptocci of the haemolytic and viridans groups has been noted. 4. Increased percentage of enterococci in stools is not necessarily associated with any pathological condition of the bowel and *vice versa*. 5. Attempts to classify enterococci into different strains according to their colonial characters proved useless."

Diabetic Coma and its Treatmant, S. C. Sen Gupta. *p.* 405.

Diphtheria, Pathology and Laboratory Diagnosis, M. N. De and K. D. Chatterjee, *p.* 419.

THE INDIAN MEDICAL JOURNAL

VOL. XXIX, No. 1, JANUARY. 1935.

Tuberculosis Number

The Tuberculosis Problem in India, A. C. Ukil. *p.* 1.

Pulmonary Tuberculosis and its Early Diagnosis, Akhil Ranjan Majumder. *p.* 8.

Roentgen Rays in Diagnosis of Early Pulmonary Tuberculosis, Nilmoni Chakravarty, *p.* 12.

"The following important Roentgen findings must be carefully considered while diagnosing a case of pulmonary tuberculosis (adult type):

1. The situation below the clavicle and in the peripheral part of the parenchyma of an upper lobe;

2. The roughly conical or spherical form of the lesions;
3. The hazy faintness and marginal dimness of the shadows, which merge indefinably with the transradiant normal tissue;
4. The enlargement of the tributary broncho-vascular stem."

The Principles of Treatment of Pulmonary Tuberculosis, P. V. Benjamin, *p.* 17.

Artificial Pneumothorax in Pulmonary Tuberculosis, Santi Lal Roy, *p.* 20.

Calcium Therapy in Tuberculosis, Rames Chandra Roy, *p.* 28.

Ultra-Violet Ray in the Treatment of Tuberculosis, Ahibhusan Mukherjee, *p.* 30.

Treatment of Pulmonary Tuberculosis, S. Sitharamaiya, *p.* 33.

Study of the Phenomenon of Tuberculosis, as seen in individual cases for periods varying from 2 to 25 years, with special reference to causation of relapses, G. C. Chatterjee. *p.* 38.

Tubercular Affections of the Eye, T. C. Basu Chowdhury, *p.* 64.

Observations on Tuberculosis in Villages, Ajodhya Nath Bhattacharjee. *p.* 76.

A Study into the Etiological Factors and Measures of Control of Tuberculosis in India, S. P. Sen Gupta, *p.* 79.

Tuberculosis Sanatoria in India. *p.* 81.

THE PATNA JOURNAL OF MEDICINE

VOL. X No. 1. JANUARY, 1935.

Effects of Vitamin D on Thyroid and Suprarenals, R. K. Pal, *p.* 1.

"Vitamin D behaves towards the thyroid exactly as vitamins A, B and C. It promotes a resting condition of the gland, and in this respect, substances like cod liver oil and irradiated milk which contain the antirachitic factor, or ultra-violet rays which produce it, contribute towards the resting phase, proportional to the amount of the antirachitic substance they contain or are capable of producing. Deficiency of vitamln D leads to an actively secreting condition of the gland. Vitamin D, although it is a fat soluble factor and is almost closely associated with vitamin A, is not antitoxic to acetonitril. Deficiency of vitamin D leads to a slight diminution in the adrenaline content of the suprarenal glands. Ultra violet radiation leads to a scanty amount of adrenaline in the medulla of the suprarenals. This effect is probably due to the direct effect of the rays rather than to the chemical substance vitamin D, which is produced under their influence. Vitamin D deficiency alone does not lead to any appreciable difference in the lipoid content of the cortex of the suprarenal glands."

Hygiene of the Menopause, Edward Podolsky, *p.* 12.

The Infinitely Small, W. Burridge, *p.* 18.

Electrocardiogram as an assistance to the Clinician, S. Prasad. *p.* 27.

A Micromethod of determining Normal Urinary Sugar, M. N. Rudra, *p.* 29.

A modified method for determining quickly and accurately normal urinary sugar is given. The advantages are simplicity in treatment and quickness in estimation while accuracy is maintained.

Studies on Electrocution, H. N. Banerji, *p.* 33.

Review of Enlarged prostrate Cases treated at D. M. S. Hospital, Laheriasarai, in 1932-33, H. P. Lal. *p.* 37.

THE ANTISEPTIC

VOL. XXXII NO. I, JANUARY, 1935

Cholecyst-enterostomy in Biliary Disease, M. S. Khera, *p.* 1.

In this paper the author discusses in detail the biliary diseases in which cholecyst-enterostomy is indicated. In acute cholecystitis it is performed in order to avoid recurrence of the attacks, to obviate the development of the chronic stage, and to prevent the formation of gall-stones. In chronic cholecystitis it is to be undertaken in preference to simple cholecystotomy; the results of the operation in such cases are highly satisfactory. But it is to be decided on only after giving a thorough trial to medical measurs to clear up the condition.

Ante-Natal Care of Pregnant Women, S. B. Trivedi, *p.* 13.

Vesical Calculus, Syed Ali Hassan, *p.* 16.

The Nasal Treatment of Asthma, Ch. S. John, *p.* 26.

Antimony Preparations in Therapeutics, B. C. Mallaya, *p.* 30.

The author discusses briefly the diseases in which antimony treatment has been found useful. These diseases are kala-azar, Oriental sore, infective granulema, pityriasis nigra, filariasis, bilharziasis, Egyptian splenomegaly, trypanosomiasis, and progressive muscular atrophy.

VOL. XXXII NO. 2. FEBRUARY, 1935

The Madras University Extension Lectures (1935) Part I

Inguinal Hernia and Hernioplasty, N. Mangesha Rao, *p.* 73.

Modern Views on Chronic Lobar and Interstitial Mastitis or Cystic Mastitis, N. Mangesha Rao, *p.* 83.

Acute Appendicitis, N. Mangesha Rao, *p.* 92.

Some Common Surgical Affections of Children, E. S. Gopalan, Part I. *p.* 103; Part II. *p.* 112.

VOL. XXXIII NO. 3. MARCH, 1935

The Madras University Extension Lectures (1935) Part II

We have received also the PERIODICALS mentioned below:—

THE MEDICAL DIGEST, Bombay.

THE MEDICAL PRACTITIONER, Madras.

THE BURMA MEDICAL TIMES, Rangoon.

THE INDIAN MEDICAL RECORD, Calcutta.

THE JOURNAL OF THE MADURA MEDICAL ASSOCIATION, Madura.

THE SIND MEDICAL JOURNAL, Karachi.