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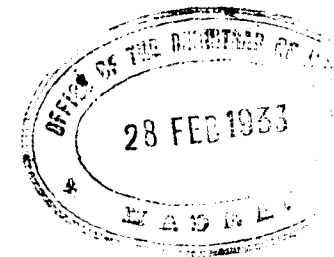
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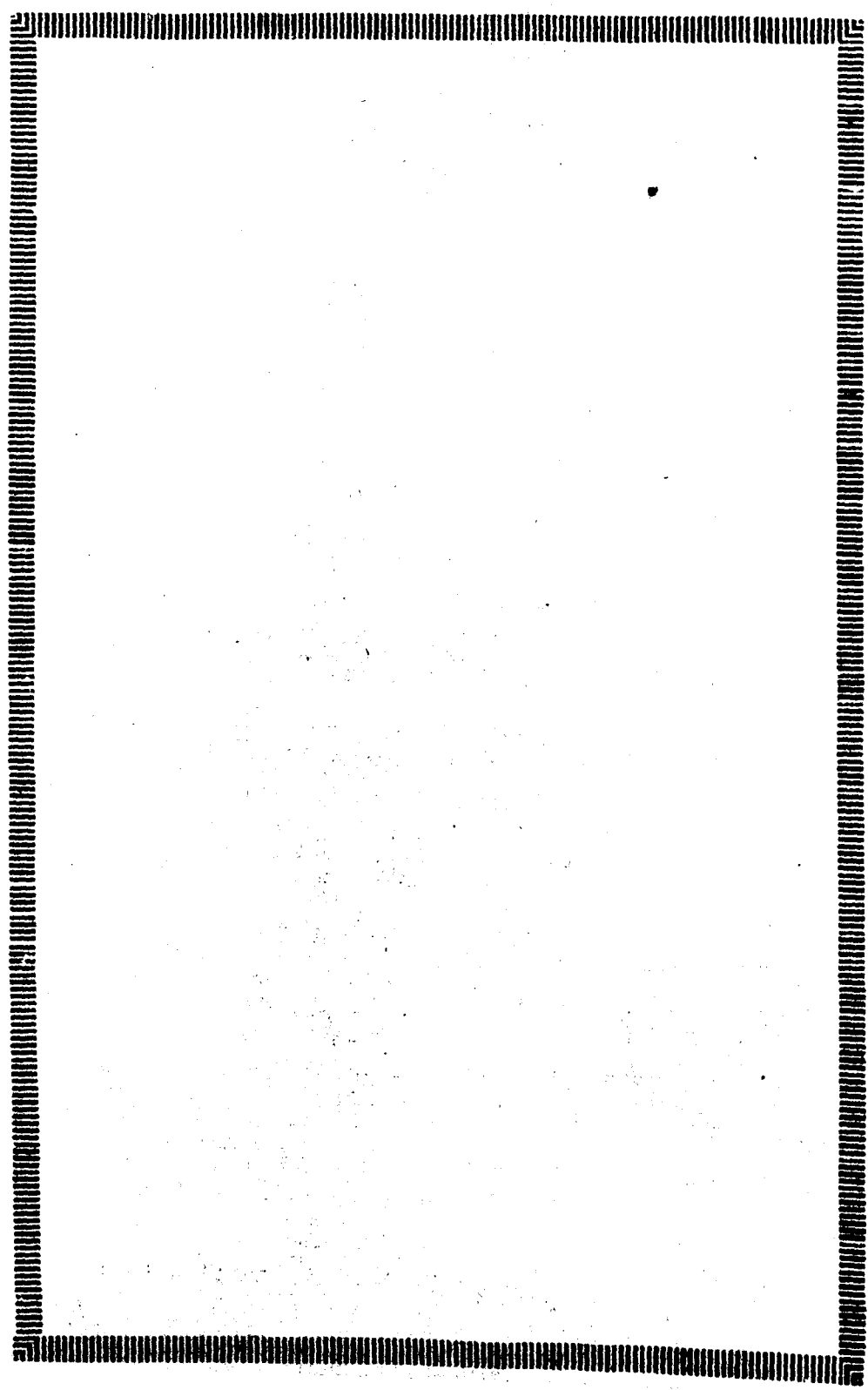
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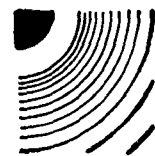
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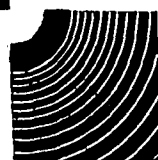
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FEBRUARY, 1933.

The Madras Medical College Magazine

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THE OATH OF HIPPOCRATES.

I SWEAR by Appolo the Physician, by Asklepios, by his daughters Hygeia and Panacea and by all the gods and goddesses, that to the best of my ability and judgment I will faithfully keep this oath and obligation.

The master that has instructed me I will esteem as my parents, and shall supply to him, as occasion may require, the comforts and necessities of life. His children I will regard as my own brothers, and if they desire to learn I will instruct them in the same art without any reward. My patients shall be treated by me to the best of my power and judgment in the best manner, without injury or violence.

Neither will I be prevailed upon by anyone to administer noxious medicines nor will I be the author of such advice myself. I shall never recommend means to procure abortion, but will live and practice chastely and religiously. I will not meddle with lithotomy, leaving that to operators of that art. Whatever house I am called upon to attend, I will aim at making the patient's good my chief aim, avoiding all injury, corruption and unchastity; and whatever I hear in the course of my practice relating to the affairs of life of my patients that ought to remain secret, nobody shall ever know of me.

May I be prosperous, honoured and esteemed by all men as I observe this solemn oath, and may the reverse be my lot if I violate it and forswear myself.

THE MADRAS

Medical College Magazine

VOL. XII

FEBRUARY 1933

No. 3

Pathology and Treatment of Anæmias of Pregnancy.*

BY K. NARASIMHA RAO, M.B.B.S., D.G.O.,

Research Fellow in Medicine, University of Madras.

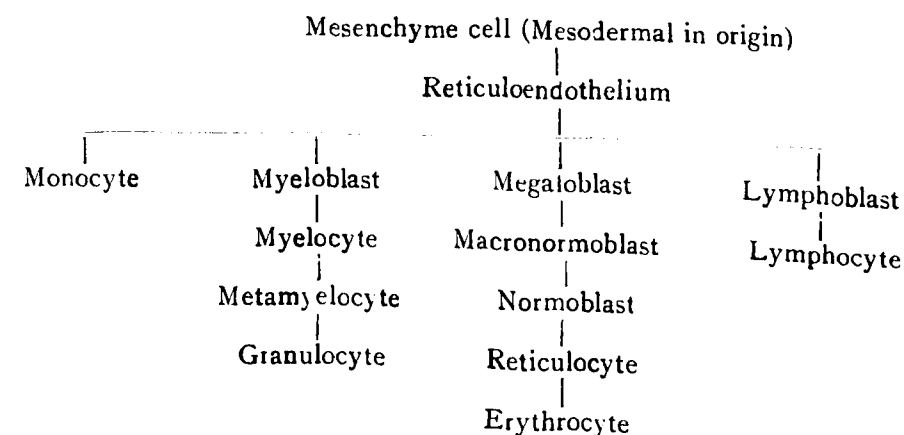
In no field of Medicine to-day is a more intensive investigation made or is a more rapid progress resulting than in the acquisition of new knowledge concerning normal and pathological conditions of blood. The medical journals to-day teem with many articles on every phase of the subject and many papers are contributed to the programmes of various societies. It is only in the fitness of things that our Obstetric society has come in tune with the modern interest in this particular branch of medicine applied to obstetrics.

I

The Pathology and Etiology of Anaemia are intimately associated with some of the fundamental problems of Haematology, the most important of them being the physiology of blood formation. Much of the accuracy in interpretation of the blood picture in disease is dependent upon the proper understanding of the mechanism of Haemopoiesis. As such, a brief review of the origin, development and the fate of the Erythrocytes seems necessary. Embryologists divide the intrauterine life into two periods, the first the embryonic life,

* Paper read before the Medical Officers' Association, Govt. Hospital for Women and Children at the Giffard School. Lt. Col. W. C. Paton presiding.

which begins at the time of fertilisation of the ovum and ends about two months later; and the second the foetal life which begins at the third month and ends seven months later at parturition. In the early embryo, blood formation takes place in the wall of the Yolk sac and the cells that are produced are all Megaloblasts and are all haemoglobinoferous. Whether these cells are of mesodermic origin or entodermal origin is not settled. In the first half of embryonic life Haemopoiesis takes place in the liver and in the second half both in the liver and the spleen. From the beginning of foetal life, red marrow in the bones begins to function and the progressive development of the red marrow is accompanied by a concomitant decrease in the Haemopoietic activity of liver and spleen. As a result of the work of Doan, Cunningham, and Sabin, it may be stated with certainty that in mammals both in the embryo and the extrauterine life the white corpuscles develop extravascularly and the red corpuscles intravascularly from the Reticulo-endothelial cells lining the minute blood vessels. The most accepted view of the origin of blood cells may be represented thus:



It is necessary to refer here to Piney's conception of Haemopoiesis. He believes that the megaloblast is a separate special cell only found in the foetal liver, spleen, the yolk sac and in adult liver of constitutionally predisposed individuals who develop Pernicious Anaemia. As has been referred to above,

blood formation in embryonic life is claimed by him to be of entodermal origin and the cellular elements arising from the marrow as of mesodermal origin. In normal persons atrophy and disappearance of this entodermal liver tissue coincides with the hyperplasia of mesoblastic bone marrow. The cells which are called megaloblasts are termed by Piney as macro-normoblasts. In the true megaloblast the nucleus is reticulated and the shape of the cell is oval. The macro-normoblast is round and has a nucleus in which the chromatin is arranged in a radial manner (cartwheel appearance). Davidson and Gulland think that the megaloblast is the precursor of the macro-normoblast. Similar difference in shape are noted between megalocytes, (which are oval) and macrocytes, (which are round) though both are much bigger than the normal erythrocyte.

The erythrocyte, before it is delivered into the general circulation undergoes maturation from the stage of the megaloblast to the normoblast, to the reticulocyte and finally the erythrocyte. During maturation process the nucleated erythroblasts elaborate haemoglobin and they lose their nuclei before becoming adult cells. Except for one per cent. of the reticulocytes, in normal conditions, the erythrocytes are all mature in the peripheral circulation. When the rate of delivery of the blood cells is increased as happens in haemorrhage, haemolytic processes or in the regenerative phase of anaemia, the percentage of reticulocytes may go up to 50 per cent. Enumeration of reticulocytes is a method for determining the rate of blood formation. When the blood formation is excessively active the more immature cells, normoblasts and megaloblasts enter the circulation. In normal individuals the reaction of the bone marrow is arrested at the normoblastic phase, however severe the blood loss may be. In persons predisposed to the development of pernicious anaemia and in very severe anaemias the reaction of the bone marrow goes further up to the stage of megaloblastic hyperplasia. The nucleated cells in the blood are only a sign of hyperplasia of the bone marrow and not an evidence of in-

creased blood formation unless they are accompanied by an increase in the number of reticulocytes. The co-existence of reticulocytoses and nucleated R. B. C. in the peripheral circulation is the surest sign of accelerated blood formation.

Fate of the erythrocytes.—It has been found that the average life of an erythrocyte is about 30 days and from this it is inferred that 1/30 of the total red blood cells is destroyed daily by the reticulo-endothelial system. The reticulo-endothelial cell engulfs the R. B. C. and releases the haemoglobin which is broken into haematin and globin. The next step is the splitting up of the haematin into the iron-free bilirubin and iron compound. The iron is consumed and re-utilised in the formation of new haemoglobin. The bilirubin travels in the plasma to the liver where it is extracted by the liver cells and excreted in the bile.

II

Effect of Pregnancy on the Haemopoietic system.

The reproductive function in women makes rather a heavy demand on the blood forming organs. At each menstrual period an amount of blood varying from 15-150 c.c., is lost. A normal confinement, generally, entails a loss of about 250 c.c. of blood and this may be increased ten to fifteen times in P. P. H. Thus menstruation and pregnancy are potential causes of anaemia. As it is essential to supply the growing foetus with large quantities of material iron, one would expect some degree of anaemia to be a common feature of pregnancy, but it is rarely of a severe type. It is also known that the foetus gets $\frac{2}{3}$ of the total quantity of iron it contains during the third trimester of pregnancy. Hence anaemias, whatever their etiology may be, become apparent and severe during this period. Haemoglobin percentage and R. B. C. counts were made in 75 clinically normal pregnant women at full term. The average obtained was Hb 66 per cent: R. B. C. 3.75 millions and C. I. 0.88. There is thus an anaemia which is physiological in normal

pregnant women. Alder, Fullaway and others consider this as the physiological anaemia of pregnancy.

Classification of anaemias of pregnancy.—Alder divided anaemias of pregnancy into two groups: (i) Anaemia resulting from pregnancy which comprises (a) the physiological anaemia which is referred to above and (b) the so-called pernicious anaemia of pregnancy, which has been referred to as a severe form of anaemia of pregnancy by Osler and as the haemolytic anaemia of pregnancy by Witts (1932). (ii) Anaemia associated with pregnancy. Pregnancy has been recorded in association with every known grave form of anaemia. In this group would come all the anaemias for which a cause is known such as Malaria, Kala-Azar, Ankylostomiasis, Tuberculosis, Syphilis, Toxaemias, chronic blood loss, etc. In this is also included all other anaemias such as the Addisonian anaemia, and Simple Achlorhydric anaemia, which are not primarily due to pregnancy.

A word about the laboratory classification of anaemias. Hampson and Shackle (1924) suggested the classification of anaemias on the basis of cell size into megalocytic and nonmegalocytic. Wintrobe (1932) suggested four groups (1) Macrocytic, (2) Normocytic, (3) Simple Microcytic, (4) Hypochrome Anaemia. Haden (1932) suggested that the most logical classification of anaemia must be based in three variables of the erythrocyte, viz., number, size, and haemoglobin content. Thus anaemias may be classified into macrocytic, normocytic and microcytic according to the cell size and each may be sub-classified into hyperchromic, normochromic, and hypochromic according as the haemoglobin contained in the cell is above the normal, normal or below the normal quantity.

III

"Pernicious Anaemia" of Pregnancy (Macrocytic Anaemia).

The incidence of this anaemia in India has been studied and described by Mudaliar (1915), Balfour (1927), McSwiney (1927), Mitra (1931), Wills (1930), Gupta (1932), and Mudaliar

and Narasimha Rao (1932). In Madras one case is seen in every 94 confinements, whereas in U. S. A. the incidence varies from 1 in 10,000 to 1 in 6,000 confinements. It was supposed to be rare in England but the recent articles of Whitby (1932) and Wilkinson (1932) point out its incidence there. This anaemia occurs in all communities in India; amongst Hindus 1 in 49·5, Mahomedans 1 in 12·1, Christians 1 in 277·6 and in Adidraidas 1 in 129. It is not rare in Anglo-Indians and European residents in India. No particular seasonal variation has been noted.

Clinical Feature.—Pernicious anaemia of Pregnancy occurs usually between the ages of 15 and 35. It is more common in Multiparae. Repeated pregnancy at short intervals seems to predispose to the development of this anaemia. It usually makes itself evident and becomes noticeable in the third trimester. There is often a history of anaemia during or following one or more previous pregnancies. The onset is insidious, and the patient can rarely assign the exact date of the first beginnings. The initial symptoms are unusual weakness, debility, palpitation, and breathlessness on exertion. Vomiting and diarrhoea are not observed in our cases but it is reported by Balfour.

Physical Signs.—Definite anaemia and pallor is noticed only during the later months of pregnancy. The patient is noticeably weak, dyspnoeic and presents a fairly lemon yellow colour suggesting Addisonian Anaemia. It is neither the muddy complexion of Ankylostomiasis nor the sallow complexion of Malaria but has a distinct feature of itself—a modified lemon-yellow colour. The face is puffy and there is oedema of the feet and generalised anasarca. Varying amounts of albumin is noted in the urine.

Alimentary system.—The tongue is sore in some cases and there is glossitis in some form or other. The appetite is poor, vomiting and diarrhoea are not always complained of. The liver and spleen are not noticeably enlarged.

Circulatory System.—The heart rate is not rapid, except in the later stages and if rapid it is within the limits of the degree of anaemia. There is no Tic-Tac Rhythm, which is so characteristic of Beri-beri and no signs of Myocarditis to explain the oedema of the feet. The blood pressure is normal or sub-normal unless complicated with Albuminuria and Toxaemias.

Respiratory System.—Rales may be heard in the lungs and there may be effusion into the Pleural cavities, when there is a severe grade of anaemia with general anasarca.

Haemorrhages into the retina are seen in some cases and the disc is found to be pale.

The condition of the uterus is that found in normal pregnancy.

There was no nervous manifestation of the disease in our cases except in one, in which symptoms and signs of sub-acute combined degeneration were evident with the Macrocytic anaemia. Possibly this was a case of true Addisonian anaemia.

Course.—This disease takes a progressive course until death supervenes or spontaneous improvement occurs in the puerperium. Labour generally sets in prematurely and is more often precipitate. The premature onset of Labour is possibly due to the fact that the foetus can no longer get nutriment from the mother or possibly there is some endocrine disturbance causing the premature onset. The patient gets into a much worse condition immediately after labour. This period seems to be much more critical as with the birth of the child the breathing becomes more laboured, hyperpnoea, and dyspnoea set in, and the patient gets into a comatose condition; and although the heart may beat the respiration becomes more shallow, and occurs at longer intervals, till the patient expires. If the patient survives the shock of labour, the prognosis is slightly better, but the first few days of the puerperium are still critical days, and the slightest indiscretion on the part of the

patient leads to a repetition of the above symptoms. It is needless to point out the amount of the work done by the uterine musculature during labour and the amount of strain it would cause on the weak, ill-nourished, and dilated heart. During labour there is often a blood crisis characterized by the great number of megaloblasts, normoblasts, myelocytes and reticulocytes in the blood and this is associated with cyanosis, dyspnoea and rapidity of pulse rate. This is explained by the anoxaemia and the increased acidosis during labour.

Haematological findings.—The blood picture is that of a megalocytic anaemia with a high colour index in the majority of cases. But it is common to find cases with low colour index. The volume index appears to be a more correct method in assaying the macrocytic character rather than the colour index in this form of anaemia.

The Hb. varies from 10 to 40 per cent. The R. B. C. are reduced markedly in number sometimes as low as $\frac{1}{2}$ million and nearly all cases are below 2 millions. The average in our cases was 1·3 million, R. B. C., 25·2, Hb. and colour index 1·01. The colour index as stated above is not necessarily a criterion of diagnosis though in most cases it is above one. The blood picture shows megaloblasts, normoblasts, megalocytes, poikilocytes, marked anisocytosis and less often polychromatophilia and punctate basophilia. Normoblasts and megaloblasts are in excess particularly during blood crisis. The reticulocytes are found to be about $\frac{1}{2}$ to 1 per cent on the average and in some about 5 per cent even without treatment. The average size of the cells as measured by the Halometer is found to be macrocytic 7·5 to 8·6 micro. The W. B. C. are found to be normal in number but the polymorphonuclear cells show characteristic features. Marked hypersegmentation of the nuclei is noted in several cases (5 to 7 lobes). Blood platelets are reduced in number slightly.

Gastric Analysis studies.—The results of the fractional testmeal analysis show varying figures. Some cases show Achlorhydria (complete) and some cases, hypochlorhydria.

Bilirubin content of the serum.—Indirect van den Bergh reaction is positive and the number of units of bilirubin in the serum is found to be from ·5 to 1·5 units.

Addisonian Anaemia.—This anaemia, when it complicates pregnancy either by being present before pregnancy or being precipitated by pregnancy, is difficult to differentiate from the Pernicious Anaemia of Pregnancy.

1. The age incidence of Addisonian anaemia, is from 35 and above. The Pernicious Anaemia of Pregnancy is between 15 and 35.—the child-bearing period.

2. Achylia Gastrica or complete Achlorhydria is the rule in Addisonian Anaemia whereas in the Pernicious Anaemia of Pregnancy and Haemolytic Anaemia of Pregnancy it is not the rule. Achlorhydria and Hypochlorhydria of varying degrees occur. There are some cases with Achlorhydria with the typical pernicious blood picture which possibly at a later date *i. e.*, at the age of 35·40 develop typical Addisonian Anaemia with its triad *i. e.*, anaemia, achylia and nervous symptoms.

3. The nervous manifestations of sub-acute combined degeneration in some form or other are present in Addisonian Anaemia whereas in Pernicious Anaemia of Pregnancy and Haemolytic Anaemia of Pregnancy they are absent except in rare cases.

4. High degree of Bilirubinaemia is characteristic of Addisonian Anaemia. The number of units of Bilirubin in the blood is from 1·5 to 4·5 units in Addisonian Anaemia. In Pernicious Anaemia of Pregnancy the number of units are from ·5 to 1·5 units. In Haemolytic Anaemia of Pregnancy the number of units may be greater. Here again it is difficult to differentiate the Addisonian Anaemia from Haemolytic Anaemia by this point alone.

5. Hypersegmentations of the Polynuclears, the extreme Leucopenia and the presence of the megaloblasts are supposed

to be additional points in favour of the Addisonian Anaemia. But hypersegmentation of the polynuclears has been recorded in our cases and this point cannot be a reliable factor in the diagnosis of pernicious anaemia of pregnancy from the Addisonian Anaemia.

Haemolytic Anaemia of Pregnancy.—This disease begins generally in the third trimester of pregnancy but may develop in the earlier months also. The patient is profoundly anaemic. Extreme dyspnoea, oedema, causeless haemorrhage and digestive symptoms (stomatitis, uncontrollable vomiting and diarrhoea) are some of the commonest symptoms. The temperature is raised throughout pregnancy. The spleen is palpable in 1/3rd of the cases. Death like pallor is noticed. Examination of the blood shows severe megalocytic anaemia with plenty of microcytes in addition. The anaemia is of the plastic type with signs of rapid regeneration of the red cells, polychromasia, punctate basophilia and nucleated red cells, reticulocytes are found in large numbers without any treatment with liver. This shows the true haemolytic nature of the disease. The regenerative phenomena reach a climax soon after labour. The fragility of the cells seems to be increased as long as the patient is pregnant. After pregnancy the fragility returns to normal. Platelets are diminished. Purpura and external haemorrhages occur in about 1/3rd of the cases and the bleeding is generally from the nose gums and the gastrointestinal tract. There may be antepartum haemorrhage, but curiously enough the blood loss is less than normal. Urobilin is present in the urine and the indirect van den Bergh is positive. The bilirubin content in units is higher than in the pernicious anaemia of pregnancy and it may even go up to 10 to 15 units. (The rarity of the disease is seen by the occurrence of only 2 cases in the last 3 years in the Government Hospital for Women and Children). Gastric analysis shows the presence of free HCl. The course of the disease is like the pernicious anaemia of pregnancy but it is much more severe and the risk of relapse in successive preg-

nancies is considerable. The post-mortem appearances show oedema, anaemia, and fatty degeneration of the viscera. The spleen is enlarged, liver shows Haemosiderosis in the periphery of the lobules. Bone marrow shows hyperplasia and megaloblastic degeneration.

Puerperal Anaemia.—This type of anaemia is associated with diarrhoea resembling sprue in all respects. This is commonly known as *Sutika* in Bengal. Acton and Knowles think it to be an example of "Pernicious Anaemia" associated with or without asthenic diarrhoea produced during debilitating conditions and predisposed to by chronic bacillary dysentery. The anaemia is of a severe grade with a high colour index and macrocytic blood picture.

In all the above anaemias two or more haematologic types are described: (1) The plastic variety where there is great degree of regenerative capacity which is evidenced by the reticulocytoses and nucleated cells. (2) The Hypoplastic and Aplastic types in which the regenerative capacity is poor as the bone marrow is exhausted. These cases do not respond to any form of treatment except transfusion.

IV

Secondary Anaemias complicating pregnancy.

Secondary anaemias are very frequent in this country, and among the various causes may be stated malaria, ankylostomiasis and syphilis. The anaemia is of a much more severe degree than in the physiological anaemia of pregnancy, depending upon the degree of infection. The blood picture is non-megalocytic in character. Poikilocytes and anisocytes are found and eosinophilia in Helminthic infections. There is neither macrocytosis nor microcytosis. The haemoglobin percentage in this anaemia range from 31.8 to 51.3 per cent and R. B. C. count from 2.61 to 2.91 millions. The C. I. is low, but very low

haemoglobin values and low counts are noticed in some cases. In such cases normoblasts and sometimes megaloblasts are also seen in the blood picture. The treatment of this anaemia is both specific and iron medication.

Idiopathic group of secondary anaemia.—(Simple microcytic anaemia, or hypochrome anaemia, or simple Achlorhydric anaemia.)

A large percentage of cases with non-megalocytic blood picture is found to have no apparent cause. The routine examination of the blood, motion and urine has not revealed in this group any cause for this anaemia. Possibly this group includes cases of chronic microcytic anaemia (Witts) and hypochrome anaemias. In some cases predominant microcytosis was noticed. The age incidence is between 20—45 years, and it is prevalent in all communities, but more so in the poorer classes. The symptoms are divided into two groups: (1) Those that are due to anaemia (2) Those that are due to digestive disturbances. The symptoms of the former are in no way different from other anaemic states with one exception, *i.e.*, as the haemoglobin is diminished to a much greater extent than the red cells, dyspnoea is a prominent symptom, and particularly so at the time of labour. Alimentary symptoms of varying degree are present without exception. Discomfort and fulness after food, anorexia and constipation are present. The patients have a peculiar sallow look of malnutrition, with wrinkles and an inelastic skin, in contrast to the rotund appearance of pernicious anaemia. The patient often exhibits painful cracks at the angles of the mouth, and tongue shows glossitis. Nails are unusually brittle, flattened, and tend to split longitudinally in these cases. The blood picture is that of secondary anaemia with a predominance of microcytes. The van den Bergh reaction is negative (both direct and indirect). Gastric analysis in a few cases showed varying degrees of hypo- and a- chloridia. In the typical Achlorhydric Anaemia of Witts and Davis the gastric analysis studies showed (1) Absence of

Free HCl. (2) Increased mucous content (3) Rapid emptying rate of the stomach. But the Achlorhydria is apparent and relative, as the pepsin and the intrinsic factors are still secreted in this form of anaemia in contrast to pernicious anaemia where pepsin, HCl. and intrinsic factor are absent.

—	Simple (Achlorhydria) Anaemia	Addisonian Anaemia.	Pernicious Anaemia of Pregnancy.
1. Duration of Anaemia.	Indefinite 5-10 years.	2 years maximum.	Third trimester of pregnancy.
2. Gastro intestinal symptoms.	Usually marked and long standing. Anorexia etc.	Not prominent.	Prominent.
3. Diet.	Abnormal for years.	Normal.	Abnormal defect of A, C, D.
4. Tongue Mucosa ...	Atrophic changes constant.	Atrophic changes less frequent.	Fairly common.
5. Nails ...	Changes common.	None.	Met with now and then.
6. Neural signs ...	Uncommon.	Common.	Rare.
7. Bilirubinamia ...	Decreased (Nil).	Increased (1.5 to 4.5 units).	Moderate (.5 to 1 units).
8. Gastric Secretion ...	Achlorhydria. Intrinsic factor present.	Achylia. Intrinsic factor absent.	Achlorhydria or Hypochlorhydria. Intrinsic Factor deficient for the needs of the organism.
9. Red cells ...	Not greatly reduced. Microcytosis.	Marked reduction. Macrocytosis.	Markedly reduced. Macrocytosis.
10. Haemoglobin ...	Relatively low.	Relatively high.	Relatively Moderate or even low.
11. Effect of Preg. ...	Increased in severity. Mortality low.	Mortality High.	

V.

Etiology.

The important etiological factors in the Hypochromic Anaemia are (1) deficient diet, poor in iron and (2) achlorhydria. This disease is primarily an iron deficiency disease.

Etiology of the Macrocytic Anaemias of Pregnancy.—The causation of this anaemia is unknown but theories concerning its origin are many.

Infective Theory.—There is so far no definite seasonal incidence and distribution. The Bacteriological examination of the motion, urine, and blood showed no Pathogenic organism.

Vitamin Deficiency Theory.—Pernicious Anaemia of Pregnancy as it occurs in Tropics is considered by some, notably Wills (1931), as a Vitamin deficiency disease. At first, it was considered that Vitamins A. and C. were the etiological factors and the failure of response to such therapy disproved such origin. Later Wills (1931) found Marmite to be effective in this form of anaemia and postulated that it was due to Vitamin B deficiency. Recently she considered that Vitamin B₂ or its complex was the factor that is deficient in all these anaemias. Marmite was tried in several cases in this hospital on that score. It has not however been found to be of use either in the pernicious anaemia of pregnancy or secondary anaemias of pregnancy that commonly occur here. The inefficiency of Vitamin B treatment in Addisonian anaemia had been pointed out by Davidson (1931). Recently we found a case of Macrocytic anaemia complicating pregnancy with free HCl in the gastric juice responding to large doses of marmite. Cases with Achlorhydria, do not seem to respond.

Toxaemia Theory.—Pernicious anaemia of pregnancy is supposed to be definitely a haemolytic anaemia, probably produced by a toxin from the placenta. Schneider (1927) considered that this is similar to the toxin which causes nephritis and eclampsia. When produced early in pregnancy, this toxin is neutralized by the anti-haemolysin so that little anaemia results. Lack of the anti-haemolysin allows the haemolytic toxin to cause undue destruction of R. B. C. The blood pressure is not high, and there is no retention of non-protein nitrogen unless complicated with renal disease. Possibly the

haemolytic anaemia of pregnancy described above may be due to increased destruction of the R. B. C. in the placenta. Young of Edinburgh holds the same view. Gupta (1932) has shown that the post-mortem appearances of pregnancy anaemia is in no way different from Addisonian anaemia.

Deficiency of Anti-anaemic factor and iron.—Alder (1924) considered this anaemia as a reaction of a previously damaged bone marrow to the unusual demands of pregnancy. In the pernicious anaemia of pregnancy we see both (1) Increased destruction and (2) Deficient blood production.

Gastric derangement and megalocytic anaemia.—Ivy and his co-workers (1931) have shown that in gastrectomised dogs anaemia developed only when pregnancy intervened. Straus (1932) in a study of 38 pregnant women with a haemoglobin below 45 per cent. and no other complication found 19 with an acidity after histamine, and 12 with little or no free HCl. He also had shown that pregnancy definitely affected the gastric function.

Castle (1930) has shown that normal gastric juice contains substances which elaborate from beef muscle another substance that promotes the normal blood regeneration, and that this power is absent in the gastric secretion of patients suffering from pernicious anaemia. The substance secreted by the stomach is called by him the *intrinsic factor* and the moiety in the beef muscle as the *extrinsic factor*. Recently Castle and Straus (1932) suggested that the extrinsic factor may be the vitamin B₂ or its complex. Hence they postulated the pathogenesis of the megalocytic anaemias as follows :

(1) Absence or deficiency of the intrinsic factor as in Addisonian anaemia.

(2) Lack of extrinsic factor as in sprue, coeliac disease and Wills anaemia.

(3) Failure of absorption of the effective principle as in some cases of sprue, and certain cases resistant to oral administration.

The absence, or the deficiency, of the pernicious anaemia factor underlies the megaloblastic hyperplasia of the bone marrow in pernicious anaemia. This factor is stored in the liver and kidney, and it is necessary for the maturation of the R.B.C. from the megaloblast to the megalocyte and finally to the erythrocyte.

"We think that there are two factors in addition to pregnancy in the causation of this anaemia: (1) Constitutional factor (2) Deficiency of the anti-anaemic factor, mostly the *intrinsic factor*. That the mother supplies the foetus all the nutrition in the form of end products and that there is no digestion in the foetus are well known. The anti-anaemic factor that is required for the maturation of the foetal R.B.C. is supplied by the mother. It is our experience to see infants born to these anaemic patients, having a normal Hb. per cent value and normal R.B.C. counts and normal blood picture though they may be premature. Thus it is evident that the mother has a double demand and that—She supplies the infant, at her cost, all the materials including the anti-anaemic factor. The maternal haemopoietic system suffers resulting in an anaemia with abnormal formation of R.B.C. which are more easily destroyed by the reticulo—endothelial system which is found to be hyperplastic during pregnancy. In constitutionally predisposed individuals the amount of anti-anaemic factor is deficient, and hence the megalocytic blood picture and megaloblastic changes in the bone marrow. This explains why the post-mortem appearances resemble those of true pernicious anaemia". (Mudaliar and Rao.)

Predisposing factors for the perverted haemopoietic system by such agents as

1. Defective Nutrition.
2. Bad Hygiene.

3. Infections such as Pyorrhoea alveolaris and other septic foci.

4. Some of the tropical diseases causing anaemia, *e. g.*, Malaria, Kala-Azar, Ankylostomiasis and Sprue may be noted.

In a way they contribute in some cases but not in all. Of all the factors the nutritional defects, particularly the iron deficiency in the foods of the patients, seem to be prominent in all anaemia cases. As for the development of the particular type of reaction of the blood, it seems to be the inherent constitutional factor of the individuals.

.VI

Prognosis.

Maternal morbidity and mortality is very great in the macrocytic anaemia group. Balfour (1927) reports 42 per cent of deaths in a series of 150 cases. After the advent of liver therapy the mortality both foetal and maternal has been much diminished. The maternal mortality in our hospital cases is 22 per cent., the cause of death being (1) Heart failure 15 per cent, (2) Sepsis 3.5 per cent, (3) Shock 3.5 per cent. The infantile mortality is 59.4 per cent (still-born 50 per cent, died soon after delivery 9.4 per cent.) Infants born alive and lived till after discharge from the hospital are 40.6 per cent. Premature delivery is common in anaemia. The mortality in other anaemias is much less though the complications in the puerperium are greater than normal. The cause of death immediately after labour seems to be due to the sudden influx of blood from the uterine vessels into the general circulation from the contraction of the uterus, producing a plethoric condition and consequent failing of the heart. Anoxaemia also seems to be another cause.

VII

Therapeutics of Anaemias of Pregnancy.

The rational therapeutics of any anaemia must be based on the correct understanding of the pathology and aetiology of the

anaemia. That the red blood corpuscles consist of (1) the stroma, (2) the pigment and the different substances required for the production of each are well known. It is summed up most clearly by Witts (1932) thus :

Aplastic Anaemia.	Megalocytic Anaemia.	Microcytic Anaemia.	Normocytic Anaemia.
?	Liver Ventriculin Vitamin B ₁₂ ?	Fe, Cu, Vitamin C, Thyroxin.	...
Reticulo-endothelial cell.	Megaloblastic degeneration of Bone Marrow.	Normoblastic degeneration.	Erythrocyte.

Thus we see anaemia may be due to deficient blood formation in some cases, deficient pigment production in some cases and in some cases both. According to the stage at which the haemopoiesis is arrested, the marrow may be normoblastic, megaloblastic or aplastic.

The essential treatment in all these anaemias may be summed up as follows :

1. The institution of proper diet and rest in all cases.
2. The treatment of the megalocytic anaemias with liver, ventriculin and in urgent cases with intravenous or intramuscular liver extract of known potency.
3. The re-inforcement of demonstrable deficiencies by such means as HCl. Iron, Vitamins A. and C. Under this group are included all the secondary anaemias as well as the idiopathic anaemia due to iron deficiency.
4. Transfusion of blood in urgent cases.

The treatment must be adopted to the individual requirements of the case and where concomitant diseases such as

Malaria, Ankylostomiasis and Syphilis exist, specific therapy must be instituted.

Liver Therapy in Pernicious Anaemia of Pregnancy.—The epoch making discovery of Minot and Murphy (1926) of liver as a cure for pernicious anaemia has revolutionised the treatment of pernicious anaemia of pregnancy. Liver is found to be efficacious in all megalocytic anaemias (Vaughan 1930). Wills (1930) and Balfour (1927) have shown that response to liver therapy is just the same as in pernicious anaemia though a little slow. In our experience the administration of liver and iron was found to be of great value in this anaemia. Inadequate dosage, administration for too short a period, infection and administration in secondary anaemia cases are the causes of the so-called failure of liver therapy. Half a pound of liver dressed in a palatable form seems to be the correct dose. The reticulocyte response is similar to that observed in pernicious anaemia. The reticulocytes reach a maximum between the 5th and the 14th days, and then there is a gradual fall. The reticulocyte percentage rise is inversely proportional to the degree of anaemia. Thus the pernicious anaemia of pregnancy is found to be essentially a deficiency disease—a deficiency not of vitamins, but of the intrinsic factor necessary for the elaboration of the anti-anaemic factor. Early treatment must be instituted and it should be our aim to raise the blood count at least to 3 million and the Hb. to 50 per cent before term.

Ventriculin or the desiccated and defatted stomach substance was introduced by Sturgis and it has been found to be more useful than liver. Ventriculin was tried in some of our cases and it was found to be equally good showing that the essential cause of the disease is the lack of the intrinsic factor. Dose 10 gm. for every million deficiency of R.B.C.

Intravenous and Intramuscular liver extracts.—In a very bad case Hepatix P.A.F. (Evans) was administered intramuscularly and it was found to be very encouraging. It is worth

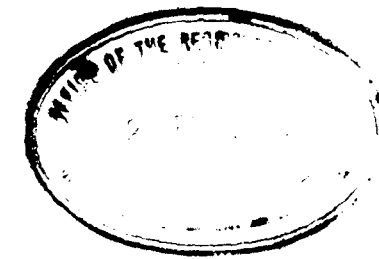
while noticing here that the Hepatix P.A.F. contains very little vitamin. In cases with severe Albuminuria liver is not given in such large doses as it necessarily increases the protein intake. In such cases Hepatix P.A.F. seems to be the only rational method of administering the specific principle. Hepatine, a French product of liver extract, can be administered subcutaneously. It was tried in 10 cases in this hospital and was found to be good, 5 c.c. given every alternate day. Twelve such injections seem to bring the blood count to 3.5 millions. (See Chart.)

Vitamin Treatment.—The great amount of vitamin content of liver created a great enthusiasm that the vitamins were the primary factors in the regeneration of the R.B.C. The interest in this form of treatment was roused by the contribution of Wills on the effect of Marmite in the treatment of pernicious anaemia of pregnancy in the tropics. The clinical improvement according to Wills (1931) (less oedema, easier breathing, return of appetite) was found by the third day and the improvement in the blood condition by the fourth day. Marmite was tried in about 26 cases in all by us. 12 cases were typical pernicious anaemia of pregnancy and others were either secondary anaemias or puerperal macrocytic anaemias. The reticulocytic response was not found in any of our cases except in the case mentioned above.

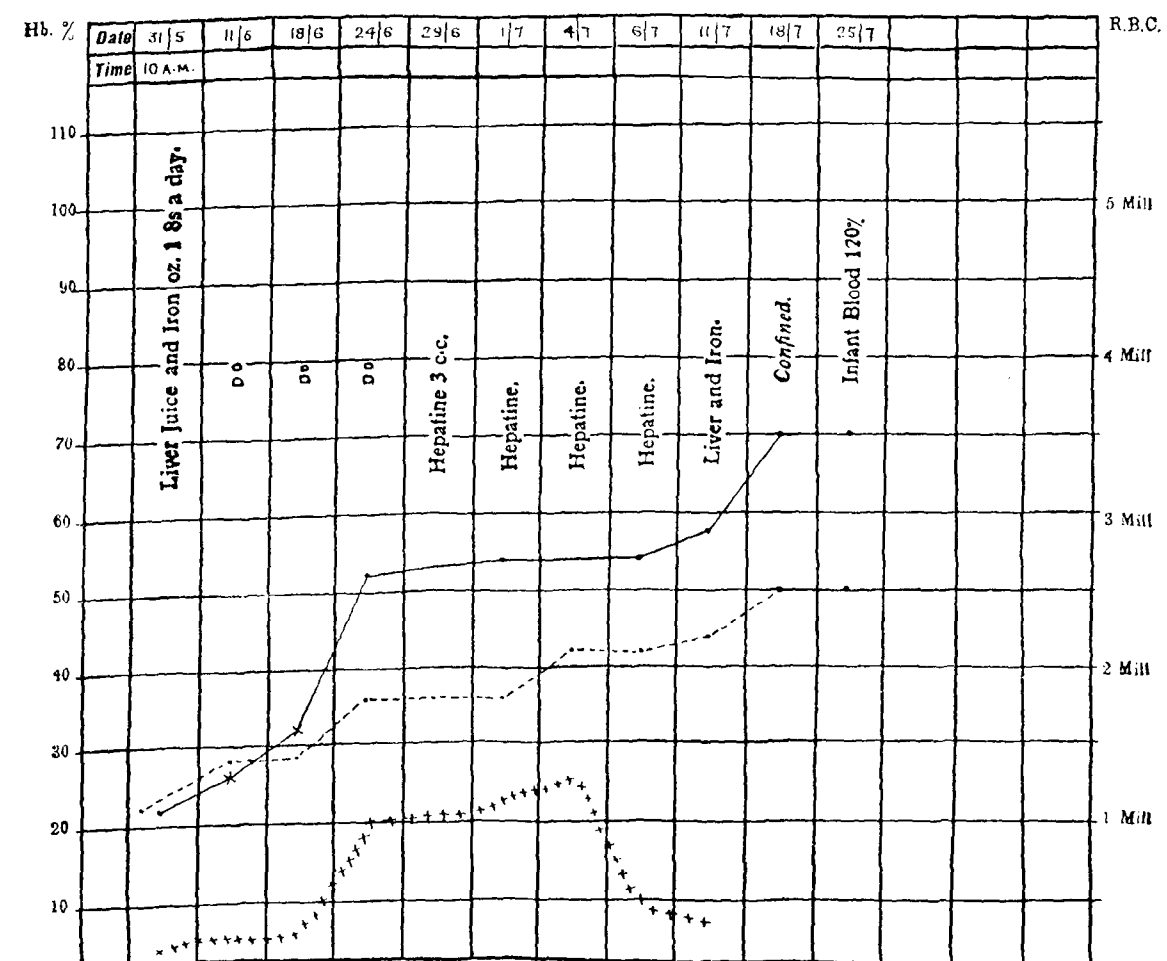
Reinforcement of demonstrable deficiency by such means as HCl, Iron, Vitamins A and C.—If there is achlorhydria or hypochlorhydria it is undoubtedly a reasonable procedure to give:—

Acid Hydrochlora Dil		1 Drachm
Glycerine Pepsin		1 "
Syrup Aurantii		1 "
Aquam ad		1 oz. T. D. S.

Iron as stated already is found to be a useful adjuvant to liver and in cases with low Hb. values it is always better to



HÆMOGLOBIN CHART.



Name: Govindamma Primi. Age: 16. Disease: Megalocytic Anæmia. Notes: Urine clear. Motion R. W. ova. Culture motion and urine. No Pathogenic organism grown. S.R.—Neg. Vanden Berg: Both Direct-Indirect, Negative. G. Analysis: Complete Achlorpydria.

continue iron and liver therapy. In simple achlorhydric anaemia iron has to be given in large doses 60 to 80 grains of Ferri et Ammonium Citras for over 6 to 12 weeks or more till the Hb. improves. The clinical improvement is as striking as with liver in pernicious anaemia. No untoward symptoms would result from the ingestion of such large doses of iron. Of course it is always better to start with small doses. It is not known why such large doses are necessary and little is known of the fate of the iron that is absorbed, other than its storage in the liver. In this anaemia also HCl. and Pepsin should be given. Bipalatinoid: Ferrous Carb gr. 3, three times a day will maintain the blood picture in pernicious anaemia after liver treatment.

The Obstetric treatment in these Anaemias.—No antenatal clinic is complete and up-to-date without a Haematological department attached to it. Examination and treatment for anaemia should be included in the routine care of the pregnant women as early as possible.

Induction of premature labour or abortion.—As severe anaemias occur at any time during pregnancy, the treatment must be based on rational methods. Artificial termination of pregnancy was the sheet anchor of Obstetricians before the modern therapy of pernicious anaemia of pregnancy was introduced. Green-Armytage (1927) advocated X-Ray exposures to the abdomen to cause the death of the foetus in utero, in severe cases of anaemia. In modern times there does not seem to be any justification for interruption of pregnancy before adequate treatment is tried. Artificial termination of pregnancy must not be sought for even then, as the fatal end may be precipitated by such interference.

Labour.—To avoid the strain of labour on the circulatory system, Caesarian section has been advocated in some cases. During normal labour it is always better to help the mother with the aid of forceps during the second stage. In premature

terminations of pregnancy labour is found in the majority of the cases to be precipitate. P.P.H. is not found to be a cause of death. Transfusion of blood during or before labour would save many a life. Puerperal sepsis is not uncommon in anaemia cases and every precaution should be taken to prevent sepsis as well as raise the resistance of the individual to a high degree. Oxygen inhalation in severe cases of anaemia seems to be rational.

VIII

Summary.

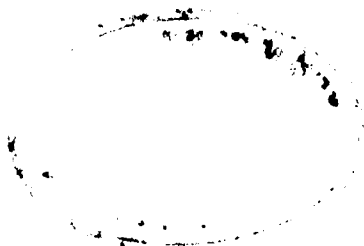
- (1) Physiology of blood formation is discussed.
- (2) Classification of anaemias of pregnancy.
 - (3) (a) "Pernicious Anaemia" of pregnancy (macrocytic anaemia). Its incidence, clinical features, course, haematological findings are discussed.
 - (b) Addisonian Anaemia and (c) haemolytic anaemia in pregnancy are described and their differentiating features from pernicious anaemia of pregnancy are discussed.
 - (d) Puerperal Anaemia.
- (4) Secondary Anaemias complicating pregnancy including the Ideopathic variety are discussed.
- (5) Etiology of the Achlorhydric anaemias and the Macrocytic anaemias is discussed.
- (6) Prognosis.
- (7) Therapeutics.
 - (1) Macrocytic anaemias. The place of liver, ventriculin vitamin B, and iron is discussed.
 - (2) In the secondary anaemias, both hypochromic, and normochromic, Iron is advocated in large doses with HCl and

pepsin, as adjuvants in addition to the therapy to concomitant diseases.

I am much indebted to Dr. A. L. Mudaliar, B.A., M.D., F.C.O.G., for the help and encouragement he has given me in the preparation of this paper, and to Dr. E. A. Menon, F.R.C.S., for facilities afforded.

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The Nobel Prize in Medicine for 1932.

(*Journal of American Med. Assn.*, Vol. 99, No. 20, 1932.)

The Nobel Prize in Medicine for 1932 has been awarded to two British investigators, *Sir Charles Scott Sherrington*, Professor of Physiology at Oxford University, and *Dr. Edgar Douglas Adrian*, Professor of Physiology at Cambridge University. The honour bestowed on Professor Sherrington is a belated recognition by the Nobel Prize Committee of his many monumental contributions to knowledge of the physiology of the nervous system made during the past forty years. Early in his career he mapped out the motor area of the cerebral cortex of the chimpanzee, thus establishing the character of cerebral localization of function. Another important discovery made by him was that of decerebrate rigidity—an extensor hypertonus of the legs of a mammal following the section of the brain stem just above the pons. This discovery led to the epoch-making work of Magnus and his associates in body righting and postural reflexes. Professor Sherrington is perhaps best known for his thorough-going study of the reflex equipment of the “Spinal” mammal, in which he discovered the phenomenon of “reciprocal innervation,” a reflex relaxation of one muscle or set of muscles simultaneously with the contraction of another group of muscles, the two groups constituting anatomic antagonists. Thus, flexors and extensors, instead of working against each other, actually are made to work together in the execution of both flexion and extension, which results in the movements being carried out with a greater degree of exactitude than would be possible by the action of one group alone. His work on the spinal mammal was reported in a series of lectures given at Yale University and published in 1906 under the title “Integrative Action of the Nervous System,” which



The Nobel Prize in Medicine for 1932.

has become one of the classics of physiologic research. That other scientific bodies were not so tardy in recognizing Professor Sherrington's accomplishments is shown by his election to the presidency of the Royal Society, his membership in many foreign scientific societies, including the National Academy of Science at Washington, and the bestowal on him of honorary degrees by seventeen universities.

Adrian's researches began on the isolated peripheral nerve. At first, with Lucas, he clarified much of the behaviour of nerves in transmitting crucial messages. The index of a propagated nerve impulse was here the contraction of an attached muscle and failed to discriminate the action of an individual axon from the total. With the advent of a practical amplifying technic, however, the nerve action current could be studied with a precision not before possible, and Adrian utilized these in his further analysis. Single nerve fibres were activated by normal stimulation of single end organs, or after destruction of the connection of all but one. Detailed information on mechanisms of sensory stimulation rapidly resulted, and the general relationship, that stimulus intensity is reflected in afferent impulse frequency, clearly emerged.

One of the first fruits of Sherrington's later approach was the delineation (in cats) of the myotatic, or stretch, reflex, not unrelated to his earlier discovery of decerebrate rigidity. Pull on the tendon of a muscle led to reflex shortening in response to continued tension, as in posture and tone of antigravity muscles. Adrian obtained his first success with single end organs by pulling a frog's muscle and recording the volley set up in a single afferent fibre. These studies resulted in a clearer picture of reflex tone that helped to settle the cloudiness of conceptions of this problem. Many clinical neurologists as well as physiologists have been interested in this work, for spasticities

contribute greatly to human invalidism. Neurologists have followed his work with their own researches on the disturbances in tone mechanism appearing in disease.

The discharge of motor neurons also was investigated by the electrical and mechanical technics, and complementary information was obtained. The occurrence of distinct, spontaneous and rhythmic changes in electrical state and irritability of ganglion cells was an important observation. It cannot fail to be of profound significance that receptor organs and nerve cells and, barring striking quantitative differences, the nerve fibre itself have been shown to function on the same simple plan. Professor Sherrington and Adrian have made significant additions to knowledge of the dynamics of the normal nervous system, a knowledge that is basic for diagnosis and thereby in nervous disorders.

Dame Mary Scharlieb.

The following editorial notes from the 'Stri-Dharma' of December 1932 will be read with interest, especially by our fair sisters in the college:—

"We are indeed glad that Madras has honoured the first woman medical student in Madras and the first Superintendent of the Caste and Gosha Hospital by unveiling her portrait, presented to the Lady Willingdon Medical School by the Association of Medical Women in India so as to inspire the present and the future students of the school with the high ideals of service that had actuated this pioneer medical woman. The year, 1875, when Dame Mary Scharlieb applied for admission into the Medical College and into Maternity Hospital for training was very different from the year 1932 when Madras as well as a few other metropolitan cities in India command separate medical schools for Women, a number of hospitals for women and children entirely staffed by women medicals, and possess facilities, though not adequate enough, to meet the demands of the country for training of the midwives, nurses and health visitors. The life of Dame Scharlieb is of immense interest and value to us, not only because she was the first medical student and the first woman medical practitioner in Madras but because, she, a happy wife and a proud mother of three children, was so much touched by the unrelieved sufferings of the Indian women in childbirth that she could not rest content with her own happy lot, and that she made up her mind to exchange a comfortable home life for a life of hard study and labour so as to be in a position to afford relief to her poor, unfortunate Indian sisters. We see from her records that herself and three other women students were not even welcomed into

the Government Maternity Hospital by the Superintendent, Col. Branfoot, who showed his dislike to these ladies by declining to teach them. All the same, these brave women successfully got through the course. Madame Scharlieb not content with the Indian training, went to England and passed the London M.B.B.S. with honours and distinctions. On her return to India, she set up practice in Madras, and very soon enlisted the sympathy and support for her noble cause, of the then Governor of Madras and his wife and a few other Indian friends. With their help she established the present Government Victoria Hospital for Women and Children, Triplicane. The Lady Willingdon Medical School is of later origin and, has about 100 women students studying for the L.M.P. while in the Medical College there are about 70 women undergoing training for the M.B.B.S. course.

We take this opportunity to remind our Indian sisters of the noble example of Dame Scharlieb, especially those who are very fond of pleading that their domestic duties prevent them from taking any active part in the social and the public life of this country. The conditions of childbirth in the districts are just the same now as it was in Madras during the time of Dr. Scharlieb. Even in the cities, a visit to the cheries, to the slums and to the poor quarters will show how much need there is for the teaching of hygiene and sanitation to the poor illiterate population living in these areas. Therefore, while we appeal to our educated and well-to-do sisters to find a little time for social service, in the midst of their domestic duties, we would strongly urge the qualified medical women not to crowd into the cities alone but spread themselves out over the rural areas and districts for the service of the suffering women and children so as to bring a little light and joy into those poor, illiterate homes where reigns now a state of supreme ignorance, superstition and utter despair during times of even preventible illness."



A Clinical Survey of Bacillary Dysentery.

BY DR. FLORA R. INNES, M.B. CH. B.

(Physician, Vellore Medical School.)

I have chosen this subject with the idea of presenting a theory of bacillary dysentery and its end stage sprue, that has slowly crystallized during the past few years. There are two types in which B. dysenteric infection presents itself (A) * *The Excretory type* and (B) *The non Excretory type*.

A. Excretory type.—In this the toxin expends its power on the colon and produces great pathological changes in it such as colliquative necrosis bringing about sloughing of the mucosa. During the onset of symptoms of dysentery, rigor, convulsions and tetany are found in a few patients before the actual occurrence of blood and mucus in the stool. In the course of the attack besides blood and mucus in the stool, signs and symptoms of hepatitis, pancreatitis, meningitis, wasting of fat and muscle, bronchitis, adrenal depression, acute nephritis and uraemia appear in the patients.

The tetany is an extremely interesting symptom and is especially apt to occur where there is delay in the excretion of blood and mucus. In one of the cases a child who had already seven days of fever and little diarrhoea, acute convulsions developed. It was treated with salines and alkalies when the dysenteric stools appeared. In another case a nurse of our hospital suffered from an extremely acute toxic condition, suggesting the onset of haemorrhagic small-pox. The attack which was sudden

* These types seem to correspond with Murthi and Pillai's Ascending and Descending Varieties of Sprue as revealed by the Bismuth meal photographs.

was followed by rigor, high fever and repeated attacks of acute tetany. The blood and mucus did not appear until the evening of the 5th day of the onset of fever and with the appearance of the symptoms there was rapid improvement in the toxic condition.

This tetany seems to be associated with a low alkalinity of the blood and so it yields to sodii bicarb drachm or even two drachm doses given every three hours. It is difficult to say the cause of this tetany. It might be perhaps due to the action of the toxin on the parathyroids or it might be due to excess of phosphates in the blood. Where there has been delay of 24-48 hours or even more numbers of hours in giving serum and eliminative treatment the above toxic symptoms are found most commonly in all those cases. In neglected acute cases uraemic convulsions and asthenia finally ending in death had been observed. In other words the dysenteric toxin is all pervasive and once it gets a hold, it cannot be dislodged from its union with the tissues.

There are two factors in the causation of nephritis. One is due to the direct damage done by the toxin to the parenchyma of the kidney and the other due to the rapid and sustained lowering of the alkaline reserve. The latter continues to fall during the attack in spite of large and frequent doses of alkalies. The headache and vomiting seem to be due to this and so they yield to adequate doses of the alkali. This lowered alkalinity continues for years after recovery. Such cases among our nursing staff have been followed up.

Age distribution.—The excretory type is found among all classes of Indians. It is common in children and young adults. Adult Europeans during their early years of stay in India seem to be susceptible to this infection. Adult Indians do not seem to suffer much from it.

B. Non-excretory type.—In this the cellular tissue-poisoning is less severe but more sustained. It is this type which is apt to result in sprue and macrocytic anaemia. In this type there is an actual infection with the bacilli. These bacilli continue to live and multiply within the wall of the bowel. The toxin acting steadily through long years, poisons the cellular tissues, but it never reaches the climax of excretion as blood and mucus. The toxin is fixed up to the tissues. In this type there seem to be two varieties. In the first variety which we meet with, in childhood there is a condition of mal-nutrition called by the Tamil people as Kāmala. The children are generally 4-6 years of age. They look puffy, anaemic, having palpable liver, a large gassy abdomen, habitual constipation, keratomalacia, dry scaly skin, loss of appetite and inertia. There is frequently evidence of renal rickets and slow growth. In these cases the anaemia is of hypochromic type with a haemoglobin of 50-60 per cent. Urine is found to be of a low specific gravity, with a trace of albumen. The history in these cases is that they suffered when they were one to two years old from diarrhoea, sometimes with mucus in stool for several months. Occasionally in this non-excretory type the motion is sometimes colourless and at other times greenish or brown. The children who were attacked might suffer from fever. The disease continues in the later years of the life of these children for about 15-25 years. In all these cases they are admitted into the adult wards still with a puffy look and they show a raised blood urea, low specific gravity of urine which is diminished in quantity, hypochromic type of anaemia, a haemoglobin ranging from 10-30 per cent and a positive indirect van-den Bergh test.

The tone of the muscles is surprisingly good due to probably adrenal compensation. Seldom do these cases give a history of attacks of fever or of diarrhoea though

they may have had recurrent attacks of diarrhoea and nephritis. They show marked intolerance to carbohydrates and fats in the diet.

The other variety is the adolescent type. The bound-up toxic infection in this type may show various forms. Here the disease is due to the original infection which might have continued from childhood up to adolescence or it might be due to a flare up of the chronic latent condition of infection. The disease simulates typhoid. The agglutination is often positive 1 in 200 for flexner, but frequently the agglutination for flexner is very weak at first and rises to full strength during the fever. The distinguishing signs of this entero-dysentery are (1) Profuse salivation. (2) Moist clean tongue. (3) High respiratory rate, which may be due to an acute lung condition or to acidosis. Acetone bodies are found frequently in the urine in such cases. (4) Early onset of oedema, due to scanty flow of urine. (5) High tension pulse. (6) Drowsiness but marked clear mindedness. (The whole clinical appearance is not that of typhoid state). (7) W. B. C. count usually lies between 10—14,000 per c. m. m. and (8) Stool varies and there may be curious constipation with no response to enema. The entero-dysentery cases respond to alkalies, protein diet and eliminative treatment. None of the nurses or students who have come under our observation have shown any after results, as early treatment was given to them. But villagers who suffered from this disease and had late treatment, were found to develop during their convalescence a glazed tongue. They give a positive indirect van-den-Bergh test, a high colour index, a low halometer reading and show a typical blood picture of pernicious anaemia.

Another type simulates malaria. The rigors are usually one to three a day. There will be obstinate constipation, profuse salivation and a clean tongue. These

patients surprisingly look well. The presence of malarial parasites in the blood obscures the picture and these patients are wrongly given quinine. In these cases quinine does not control the fever. And these patients are considered to be "resistant to quinine". But the fever yields to alkalies, salines, a high protein diet and serum treatment.

Choleric-dysentery is another type. It is likely to give rise to sub-acute nephritis, with a high urea and salt and water retention. The nephritis is very resistant to treatment and is usually associated with low fever. This is an evidence of continued action of the dysenteric toxin.

The last type which is of extreme interest is that of vascular spasms, with or without symptoms suggestive of sympathetic disbalance. The clinical signs are often so clear cut, that it is possible to define the artery affected in the patient. Thus the ileocolic will show in them signs in the last part of the ileum, caecum and ascending colon. In some patients the signs of the spasm will pass from one artery to another, *e.g.* middle colic. A tender hyper-sensitive aorta is always associated with those spasms. Some of these attacks are only to be described as abdominal angina. The pain is agonising and is accompanied by coldness and claminess in the limbs. This condition is dulled by morphia. The pain will be quiescent for some days but sometimes exacerbation of it are found. Some patients complain of attacks of trembling along with a feeling of agitation and fear. These cases do have rapid pulse, but seem decidedly to be not neurotic. It seems very probable that aortic hyper-aesthesia, attacks of rapid pulse, trembling, anginal pain are all due to some irritation of the sympathetics by the toxin.

I have dwelt on these non-excretory manifestations, because, it seems to be this type which leads to sprue and hypoadernia simulating Addison's disease.

The key condition resulting from flexner infection is lowered alkaline reserve. This has three main consequences:

- (1) The development of achlorhydria,
- (2) Chronic tissue uriasis, and
- (3) a deficiency of agglutinins and bacterio-lysins.

Achlorhydria.—The fact that the achlorhydria of chronic uraemia responds to alkalies lends support to the theory that there is a direct connection between lowered alkaline reserve and the achlorhydria. Further one of the theories of the formation of hydrochloric acid in the stomach is that acid sodi-phosphate reacts with NaCl to produce, $\text{HCl} + \text{Na}_2\text{HPO}_4$. If alkali, *e.g.*, sodii bicarb is deficient, there is phosphate retention. Two cases of hypochromic anaemia—Kamala anaemia—which had achlorhydria showed on treatment with alkalies for 10 weeks, the return of the hydrochloric acid. One of them had a rapid recovery of the blood condition.

Chronic tissue uriasis.—This term is used to cover both the actual nephritis and its results on the tissues. The first examination of blood and salivary urea may give figures within the normal limits, but after elimination has begun, these figures rise and often remain high for many weeks. Thus tissue uriasis is a constant feature of all varieties of flexner infections, and especially in those cases that drift on to sprue anaemias. Very often the nephritis is steadily active. The nephritis of dysentery has been (according to a German author) is a hydrolysis of the tubular cells and an oedema of the interstitial tissue. The lowered alkali reserve might have been a contributing cause of nephritis or the nephritis might have led to the lowered alkaline reserve. Thus there is a vicious circle.

A deficiency of agglutinins and bacterio-lysins.—It has been shown that the reduction of the alkali reserve results in lessened anti-body formation in response to infection. Reduction of bactericidal power has been obtained

by the administration of hydrochloric acid and by section of the spinal cord.

The finding of the alkali reserve is of extreme importance:—

(1) *In diagnosis.*—The case which is most likely to develop anaemia and sprue is the one which has a continued low agglutinating power. The rise in the titre of agglutination in it will be of great prognostic value. The diagnosis has to be made by clinical observation and by laboratory tests for finding out the existence of achlorhydria, a positive indirect van-den-Bergh and a typical blood picture of pernicious anaemia with high colour index and a low halometer reading (Malcomson and Murthi). Seldom any culture of stool will give any help.

(2) *In treatment.*—The scope for treatment is great. It means that all cases, and types from acute dysentery to sprue, should be treated with adequate alkalies not only to raise the blood alkali reserve to normal but also to sustain it and produce a raise in the agglutinins. The use of alkali relieves the tissue uriasis.

(3) In the process to increase the agglutinins we must prepare for reactions in some cases such as fever, increased uraemia and increased anaemia. So severe are some of the symptoms that they prove sometimes fatal. In other cases after a slight reaction there will be an increased sense of well being. In a few others a mesothelial reaction may develop in the tissues like the peritoneum causing proliferative peritonitis (Megaw), pericarditis pleurisy and synovitis. These reactions I am inclined to believe are very beneficial as they raise the immunizing capacity in the individual.

My thanks among others are due to Dr. K. N. Murthi who was kind enough to give me the benefit of discussion with him and from whose published papers, I have derived assistance.

Case Reports.

A Case of Landry's Paralysis.

P. K. VELAYUDHAN, M.B., B.S.

A female patient A—, aged 35 years, was admitted on 27th December 1932 in F. S. Ward, Royapettah Hospital, under the 2nd Honorary Physican. Her complaint was inability to use both upper and lower extremities and to turn the neck to either side, the duration being one day.

Family history.—None other in the family had any nervous disease.

Previous history.—She used to have pricking sensations in her legs at intervals previous to the attack. No history of Venereal disease.

History of present illness.—On the day previous to her admission she had some exertion, being a cooly, after which she took her meals and slept at 8 p.m. The present complaint was noticed by the patient at 12 mid-night when she found after a sleep that she was unable to use her limbs and to turn the neck to either side. She was also not able to sit up. No history of fever, unconsciousness or convulsions at onset. She complains of pain in legs.

Condition on admission.—The patient is not anaemic. Pyorrhoea alveolaris present. Tongue glossy and not coated. No enlarged glands felt.

Nervous system.—Intelligence and memory good. Cranial nerves all normal, Marked paresis of the neck muscles. The patient is not able to turn the neck to either side. Paralysis of the shoulder, hip, and thigh muscles on both sides and marked paresis of flexor and extensor muscles of forearms and legs. Respiratory muscles active during respiration although trunk movements were not possible. The patient is able to elicit small movements at wrists and ankles. Sensation normal all over the body to fine and coarse touch, temperature and to pain. All jerks absent below the neck. Abdominal reflexes absent on both sides. A feeble extensor plantar reflex present. Visceral reflexes normal. No sphincter paralysis.

Circulatory system.—Apex beat palpable in the sixth space in anterior axillary line. On percussion: Heart boundaries: Upper border 2nd rib. Right border one inch lateral to lateral sternal line. Left border anterior axillary line. Auscultation: A Systolic murmur best heard in mitral area and conducted to axilla. Extrasystole after every beat, the pulse corresponding to the extrasystole not being felt at the wrist. Pulse: slow, volume and tension fair. Pulse rate 50.

Respiratory system.—Nil abnormal on palpation and percussion. Five rales all over on Auscultation. Respiration rate 28.

Alimentary system.—Nil abnormal

Urine.—Acid, no sugar, no albumin.

Blood.—No Leucocytosis.

Blood pressure.—Systolic 115 m.m. of mercury.

Diastolic 90 m.m. of mercury.

Blood was sent for Wasserman reaction, but unfortunately the blood was reported to have lysed and a second examination was not possible since the patient was discharged by the time.

Treatment given.—Patient was put on mist. pot. iodide, with Tr. Digitalis and hexamine.

Progress.—28th December 1932. The patient is able to turn the neck slowly towards the right side. Slight voluntary flexion of fore-arm possible. Shoulder movements still not possible. Abdominal reflexes still absent. Pain in legs disappeared to a marked degree. Pulse 60; Resp. 28. Extrasystole still present.

29th December 1932. Neck movements possible, patient is able to sit up slowly. Shoulder movements on left side possible though to a slight extent. Movements at knee also improved. Flexion at hip also possible to a slight extent. Babinski positive. Abdominal reflexes present on both sides though diminished. Extra systole still present. Pulse 56, Resp. 26.

30th December 1932. The patient is able to stand up and take a few steps. Complains of diarrhoea. Digitalis stopped. Pulse 64. Resp. 22. Pulse irregular. Extra systoles present.

31st December 1932. Patient is able to walk to-day.

2nd January 1933. Patient complains of some pricking sensation in both feet. Sensations to all stimuli normal. All jerks normal. Babinski positive. No extra systoles. Pulse 60. Resp. 24.

4th January 1933. Patient has almost regained her original strength, but Babinski remains positive. No extra systoles. Pulse regular. Pulse rate 60. Resp. 24. Patient discharged.

The possibilities we have to think of in the above case are :—

Bilateral Embolism of cerebral arteries, Hysteria, Acute Poliomyelitis, Acute Spreading Myelitis, Thecal Haemorrhage, Cervical lesions as Cervical Pachymeningitis and Meningomyelitis, Acute polyneuritis, and Landry's paralysis.

1. *Bilateral Embolism* is thought of as a possibility in this case only because she had a heart lesion concomitant with paralysis. But generally Embolism is one sided unless as a matter of coincidence affecting both sides which is very rare. Moreover with such an extensive paralysis the patient would in all probability be unconscious and there would be evidence of other gross lesions as loss of sensation, and convulsions at the onset. The absence of all these together with perfect recovery without the residual symptoms are against it being a case of Embolism.

2. *Hysteria*.—The sudden onset, bilateral paralysis without loss of sensations and sudden recovery may suggest hysteria. But the points against it are (a) Loss of abdominal reflexes (b) Babinski's sign positive. (c) Loss of all jerks (in hysteria jerks are usually exaggerated).

3. *Acute Poliomyelitis* (of the spreading type) occurs more often in children generally with a history of fever and there will be leucocytosis. Moreover the absence of residual paralysis goes against it being poliomyelitis.

4. *Acute Spreading Myelitis*.—Here there is gross disturbance of sensations and sphincter paralysis.

5. *Thecal Haemorrhage*.—Thecal haemorrhage is hardly ever spontaneous. It may be caused by injury such as a stab in the back or a bullet wound in which case the history as also a lumbar puncture will

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indicate the diagnosis. In thecal haemorrhage there are also sensory and sphincter disturbances.

6. *Cervical lesions*.—As cervical meningomyelitis. Here also there are sensory disturbances. Cervical meningomyelitis usually comes on slowly with root pains. Bladder control is lost and objective loss of sensation can be detected. Rapid recovery is also against it.

7. *Acute Polyneuritis*.—No differential diagnosis between this and Landry's paralysis is possible as both are said to be the same disease.

8. *Landry's paralysis*.—Points for Landry's paralysis are :—
(a) Bilateral paralysis with sudden onset, (b) paralysis of flaccid type (c) loss of abdominal reflexes, (d) absence of any sensory disturbances (e) Absence of sphincter trouble, (f) absence of unconsciousness or convulsions at onset, (g) affection of the proximal more than the distal parts of the limb, (h) Rapid recovery, (i) absence of residual paralysis.

Some aspects of Landry's paralysis.—Landry's paralysis is a rare disease. *Aetiology* of Landry's paralysis is disputed. The most accepted view is that it is an acute toxic polyneuritis.

Pathology.—There is general hyperaemia of grey matter of spinal cord on naked eye examination. Microscopically various degrees of chromatolysis of anterior horn cells and cells of Clarke's column are found: cerebrospinal fluid is slightly under increased pressure.

Symptoms.—Onset is abrupt with a spreading paralysis beginning in any group of muscles. Generally there are premonitory symptoms as anorexia, lassitude, vomiting, etc., with pain in neck and limbs. Paraesthesia may occur. The paralysis spreads rapidly, but it may stop short at any stage. The paralysis is bilateral and generally symmetrical and may commence in any group of muscles but spreads through contiguous group of muscles as represented in spinal cord. The proximal parts of the extremities are more affected than the distal. Paralysis is of flaccid type without any sensory or sphincter troubles associated with complete abolition of superficial and deep reflexes. Death occurs when paralysis involves the respiratory muscles. The respiratory muscles are peculiarly resistant to the supposed toxin and are generally affected last.

The course of the disease varies. It may stop short at any stage and later exacerbate or improvement may begin without exacerbation.

An exacerbation may cause death with involvement of respiratory muscles. In case of recovery the muscles recently affected recover first and later the other muscles. Recovery generally takes in a few days or weeks and when it occurs is complete without any residual paralysis. Generally 50 per cent of cases recover, the other 50 per cent die of paralysis of respiratory muscles.

Treatment.—Lumbar puncture is recommended; when respiration fails artificial respiration is resorted to since recovery of respiratory muscles may occur at any time. Hexamine by mouth is said to do good.

My thanks are due to Dr. H. Chatterjee, L.M. & S., for his valuable help and to Dr. M. L. Kamath, B.A., M.D., for giving me permission to publish this case.

II. A Case of Malignant Growth of the Right Pleura.

BY N. SRINIVASAN, M.B., B.S.

I report this case of malignant growth of the Right Pleura, not only for its rare occurrence, but also for the typical clinical picture it presented.

Mr. B..... 42 years of age and a fitter by occupation, sought admission to General Hospital on 17th September 1932 for Breathlessness and pain in the right side of the chest, of 6 days' duration. The history of the present illness was that about the 2nd of previous month, i. e., August 1932, the patient lifted a very heavy weight and carried it for some distance, when he experienced dyspnoea for nearly 12 minutes. About a week after this incident, he felt severe pain in the right side of the chest and found it swollen. He began to feel difficulty in breathing, and ever since all the complaints had been continuous.

Physical Examination.—Examination of the Respiratory system revealed diminished movement of the right side of the chest, with diminished Vocal Fremitus and Vocal Resonance, and dull percussion note right from the base up to the Clavicle. The breath sounds were not heard in these areas. There was some slight oedema of the skin on the chest wall.

The left boundary of the heart was found to be $\frac{1}{2}$ " outside the left nipple line. The heart sounds were fairly normal with a regular pulse of good volume and tension.

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The liver was palpable an inch below the costal margin, spleen was not palpable.

Investigation and Examination.—A markedly enlarged, hard, lymphatic gland was found in the Right Supraclavicular Region. Examination of the abdominal organs and Rectum revealed nothing abnormal.

An X-Ray of the chest showed a dense shadow in the Right Lung field with very little displacement of the mediastinum; an appearance suggestive of a tumour with some amount of Pleural Effusion and a tendency to organisation.

Aspiration of the Right Pleural Cavity was done on the 17th September 1932 to relieve the patient of his dyspnoea when only 10 ounces of clear fluid were obtained. But the dyspnoea did not cease, and aspiration was again done on 20th September 1932, when 40 ounces of clear fluid were drawn. The patient still complained of pain and breathlessness. Aspiration for a third time gave 93 ounces of a clear fluid. Evidence of further accumulation of fluid necessitated a fourth aspiration when 76 ounces of *Blood-tinged* fluid were evacuated. As Haemorrhagic fluid was obtained on the last occasion no further aspirations were made. Ever since admission the patient had severe pain which caused him sleeplessness and his general health was rapidly declining. The patient expired on 21st October 1932.

Diagnosis and Comment.—An unilateral effusion in young people is usually of tuberculous origin; whereas Neoplasm should be thought of in the old. Pleurisy in the effusion stage does not usually give rise to pain. In this case the patient had severe pain throughout. Again the Haemorrhagic nature of the fluid was in favour of Neoplasm. The tell tale enlargement of Supraclavicular gland suggested a Malignant growth. A chronic pleural effusion in an old man, not associated with fever and not due to tuberculosis should arouse the suspicion of Malignant disease of the lung or pleura. A Haemorrhagic effusion with a rapid reaccumulation after tapping was suggestive. The absence of cough, and expectoration of a typical "Current jelly", or "Prune juice", sputum negated new growths of the lung. The absence of "Mediastinal Syndrome" i.e., pressure on the neighbouring structures and displacement of viscera, so characteristic of mediastinal growth, ruled out

involvement of Mediastinum. Hence the conclusion arrived at was that it was a new growth of the Pleura.

Endothelioma, sarcoma, and carcinoma are the common Malignant tumour of the Pleura ; of which the first is more common as a Primary disease. An Endothelioma of the pleura may be diffuse or localised ; the diffuse variety being commoner. In the diffuse type, dyspnoea due to large effusion is often the first evidence of the disease. The effusion is serous in the early stages but almost invariably Haemorrhagic in the later stages.

A cytological examination of the Pleural effusion showed endothelial cells, red and white cells. A necropsy could not be obtained, which would have given valuable information as to the exact nature of the growth. Most probably this was a case of a *Primary Endothelioma of the Right Pleura*.

My great and sincere thanks are due to Rao Bahadur Captain P. Krishnaswami, M.B. & C.M., M.R.C.P., for kindly allowing me to report the case from his words, and for the valuable help he gave me.

Conscience.

(BY THE CONTRIBUTOR OF "McGRATH CAFE")

Many a time have I given serious thought as to what is conscience and where it is situated, its anatomical relations, its physiological significance, its biochemical reactions, its pathological manifestations, its medicinal importance, and its surgical aspect ; and on all those occasions I have tried to understand it in its various aspects. The idea I have in my mind about conscience, and its description which I am going to give below, are all purely what I have experienced, and what I have gathered from different sources ; and I hope that all my readers will agree with my view at least to a great extent. I request that if further information is available to any one, it may be submitted to the editor of our magazine for publication in the next issue.

Conscience is the knowledge of our acts and feelings as right or wrong, and Shakespeare has defined it as understanding, and 'to speak one's conscience' is to speak frankly or to give one's opinion. The discriminatory sense of judging between right and wrong is a Divine quality, and as such, cannot we describe conscience as the 'seat of God in man'. It is only to human beings that scientists have acknowledged this supreme quality. In all our actions conscience dictates to us to proceed in a certain direction and these dictates of conscience can be appreciated by those who know what conscience is, and so long as one adheres to one's conscience one is always led to the realization of one's hopes or desires. At some time or other in one's life conscience will show itself, and usually one repents afterwards for going against its dictates. When one attempts to say or do anything against somebody, the conscience in him at once reminds him that it is wrong, and only if one is in a position to appreciate these silent dictates of one's conscience that one can prevent oneself from causing a great harm by one's actions either by word or by deed. Proceeding against our conscience in all our actions leads us to downfall and often we realize that if we say or do anything to wound the feelings of others, the conscience in us reminds us that our actions are wrong, and no human creed or law will ever forgive us and neither God nor Gods above in whom we may believe will ever pardon us.

As to where conscience is situated no one has yet exactly localised it. Some say it is in some part of the central nervous system probably in the cortex of the brain, while Poets describe it as situated in the heart—the seat of all affections and emotions. But all people agree that there is a something called conscience and I ask you, gentle reader, whether its exact situation is known to you and whether there is a conscience existing in you.

Its anatomy is still imperfectly known. It has not been dissected out so far, and no museum boasts of having a specimen of conscience. All attempts both microscopical and macroscopical have turned out to be futile to determine its situation, its anterior, posterior, medial, and lateral relations, its nerve supply, and much less its action. Its anatomy has remained a mystery till now, and it is left to us the younger generation to devote ourselves to the study of such hypothetical parts of human anatomy, so that one day in the near future even conscience can be made to appear before us on a screen. Much work has to be done before one can establish its exact relationship.

If at all anything is known about conscience it is only its physiology. Any one who possesses a conscience knows its function and how it forms part and parcel of the human system. As I have already stated, its physiological function is nothing but the sense of discrimination between right and wrong actions. It is also well established that if the dictates of conscience be repeatedly disobeyed, a time will come when it will fail to do its duty, and I wonder whether it is a sort of conditioned reflex action. Eminent physiologists have failed to find out conscience in the lower animals and none of their researches has been crowned with success so far.

Its biochemical reactions are least known. Whether its reaction is acid, alkaline or neutral, no indicator has shown.

The pathology of conscience is known to a certain extent. People with pathological conscience are seen to end their days in jails and I think that a great percentage of the occupants of jails (excluding the political prisoners) are those who have revolted against their conscience. Hence if the silent dictates of our conscience are obeyed scrupulously, the number of inmates in jails will fall by a considerable number and thus the state finance can be replenished a great deal. On the other hand too delicate a conscience can also land one in prison.

The medicinal value of conscience is also brought to one's mind if one pays a visit to our mental hospitals wherein we find human beings who have lost their equilibrium, and who probably for no fault of theirs are forced to take refuge in such asylums. Sometimes even a high sense of conscience makes one to come to this level of lost equilibrium, and I think that conscience has to play a great role in their present condition of existence. No drug has been found out to radically cure those with lost conscience or for those who have begun to lose faith in their inner soul.

The rapid advance which surgery has made during the last few years, has in no way improved the surgical aspect of conscience. Heart and brain surgery are being practised the world over but none has ever reported as having done any operation on conscience. If any one claims to do something radical on conscience with the aid of the knife, then I am sure it will be a great boon to those who by their own actions have lost their conscience.

Now lastly coming to its gynæcological bearings I am of opinion that it finds a prominent place in the study of the ailments peculiar to the 'fair sex' and I suppose it may not be out of place to make an appeal to them in particular, to endeavour to put it before the lay public that conscience is being equally possessed by them as well, although physiologists have established that they are the weaker of the two sexes.

My thanks are due to my friends who have gladly reciprocated to my requests to give me their conception of conscience and also to give their experiences.

Beauty.

The rose is gay in beauty's wealth !
The plant is bright and green, with grace
Of virgin, young, love, struck in face !
Plays out her store of buds in health !

The day is bright, the sky is clear,
The birds are chirping sweet, the trees
Are wafting soft, and all the bees
Are humming out to flowers near !

The world is running smooth, and God
Is watching from His chariot
On red horizon getting hot !
Earth's life thus goes by word of God !

Time rolls on fast, and the plant bright
Hast lost its flowers in the dust !
The day of flourish slowly must
Die losing all its kingly might !

All beauty chaste dies not any time !
No Mausolean tombs are seen
Where beauty ripe bath one time been !
And yet Her power lives all time !

A. V. S. SARMA,
Final Year Class.

The Doctor.

Who comes when we are in distress ?
The doctor.

Who hears our call and answers : " Yes " ?
The doctor.

Who four and twenty hours a day
Is never sure of rest or play
And cannot put his work away ?
The doctor.

Who asks no shelter from the rain ?
The doctor.

Who braves all storms to comfort pain ?
The doctor.

Who in the banquet hall will rise
And all its pleasures sacrifice,
Because somewhere a baby cries ?
The doctor.

Who knows no bed time fixed and sure ?
The doctor.

Who all our worries must endure ?
The doctor.

Who must his every nerve command
In times of greatest peril, and
Work with a calm and steady hand ?
The doctor.

Who to the poor the friend will play ?
The doctor.

Who sometimes never gets his pay ?
The doctor.

Who, having skill and getting wise,
Must to great profits shut his eyes
And neither boast nor advertise ?
The doctor.

Who most deserves man's gratitude?

The doctor.

Who is it prayers should oft include?

The doctor.

Who all through life is standing by,

From birth and that first happy cry

Unto the last, when death is nigh?

The doctor.

EDGAR. G. GUEST,

(From *Advt. in J. Am. Med. Assn.*)

Whence Mankind?

(BY A. BABU RAU, III Year.)

".....the reflection that from some simian grimace there has been evolved with the progress of time the smile of Mona Lisa is an exhortation to fortify man in his effort to gratify his yearning for higher things and for a yet more highly perfected future."

—SIR SHERRINGTON.

One is prone to muse over these lines and laugh at the unimaginative, sophisticated minds that cannot attribute the development of the tiny smithereens of life of the dim past into the perfect human mould of the present, to the passage of time; when they, perhaps, with no hesitation, would concur if it is said, that the hand of time is responsible to the transformation of the crooning of a Paleolithic man into the heart-melting symphonies and sonatas of Von Beethoven, and that the rugged, unprepossessing features of the nomad of yore have been evolved by the progress of time into the polished, perfect man of the twentieth century.

* * *

" 'Man looks before and after,' and, peering into the darkness of the past, has often sought answer to the question, How he came to be." He has thirsted for knowledge and most justly, too. There will not be any one of us, I am sure, who at one time or another would not have wondered, How we have come into existence. Who had created us. How He had created us, and so forth. And to these curious questions various answers have indeed been suggested time and again, and only recently has there flowed knowledge to us as to fulfil the demands of critical reason and scientific fact. Absurd histories of creation have been put forward, supported by religion and superstition. The Mosaic narrative states that "God made man to His own image and likeness," though in reality "Man made God according to his own image and likeness." The only answer that has stood sound reasoning, and, in solitude, has defied oppositions, goes by the name *Evolution*, which is but a repeated appearance of "new qualities, new characters, new powers, new beauties for which there is no antecedent in experience or no evident promise in the germ itself;" it is, thus, a gradual transformation.

Conklin has said that, "evolution means only the transformation of an earlier into a later stage according to natural laws." He has also, *said elsewhere*, that it has proceeded in all directions—forward, backward, and sidewise. Thus, he refers to the degenerate changes that have taken place in certain cases and the progressive ones that have taken place in certain others.

No one, I hope, will deny when it is said that science has always eradicated baseless beliefs and silly superstitions. Thus, we no more hold, as was once held, that the stars are pinholes in the celestial floor through which rain drops upon us, that the sunset is lighted by the red lights of Hell into which the sun daily sinks, that the planets are carried back and forth by Angels, that the earth is the immovable centre of the universe, etc., nor does any "educated person now respect the dictum ascribed by the Archbishop of Ussher, who said, 200 years ago, that Heaven and Earth, centre and circumference, were created all together at the same instant, with the clouds full of water on October 24th, 4004 B.C. at 9 o'clock in the morning."

As Thomson says, the Doctrine of evolution gives the world of animate nature a happy unity, thereby showing that all living creatures belong to a great system, which moves on from less to more, which establishes a blood-relationship betwixt all living things, and which binds us all in an eternal bond of kinship. What interests us most is the pedigree of Man—the stages through which he has passed before he came to occupy his present eminent pedestal. Further, the doctrine of evolution does not deny creation; it merely explains the method of creation. "Man was not an abruptly created novelty, but is a flower on a shoot that has very deep roots." But, before approaching the subject, one has to lay aside all customary hackneyed beliefs regarding the creation of Man, and divest himself of all deep rooted prejudices concerning it.

Great trials and siftings there seem to have been before there appeared the "man-child-glorious." The origin of life on this world is a much disputed question; but, based on sound arguments it is said to have originated by spontaneous generation. The whole universe has come into existence by a process of evolution, an inorganic one, and the sequel to it is organic evolution. On the cooling of the Earth's crust and the appearance of water on it by the condensation of vapour

around, there arose peculiar particles of a substance by the simple combination of the elements, C, O, H, and N. This substance has been called *plasson*, a mass of protoplasmic substance with no definite nucleus, evincing the power of "self-adaptation, self-reformation, self-regeneration, self-perfection, self-resourcefulness," etc.—just the properties of living matter.

Regarding criticisms on the theory of spontaneous generation, Naegeli remarks, "The origin of organic from inorganic matter is, first of all, not a question of experience or of experiment, but a fact that follows from the law of preservation of force and matter. If, in the material world, everything stands in causal connection, if all phenomena take place in a natural manner, then organisms likewise—which are constructed of the same substances and finally dissolve into the same substances of which inorganic nature consists—must, in their first beginnings, have originated out of inorganic combinations. To deny spontaneous generation is to proclaim miracles." It is thought that such acts of spontaneous generation are often repeated; especially at such times when conditions required for it existed in inorganic nature. They may, even be taking place daily still; only, we are not able to observe them owing to lack of the proper requisites. The necessary conditions for such acts of spontaneous generation are, as yet, not known to us.

These masses of undifferentiated protoplasm constitute the most elementary form of animals, known as *Monera*. Such *Monera* still exist and they are either directly descended from those of many millions of years past, or are the products of repeated acts of spontaneous generation still taking place. It is these simple, homogeneous, structureless and formless little lumps of mucous, or albuminous matter that form the most primitive ancestor of Man; and also, of all the metazoal animal kingdom of to-day. Life being capable of self-reformation, and self-regeneration, the *Monera*, later, modified themselves into single celled animals by the differentiation of the central portion of the protoplasm into a nucleus, which took up the vital activities.

The associate nature manifested by living things to-day, seems to have originated long, long ago, at the time when these animals arose; for, they formed into groups of single-celled animals (like the *Morula*) and carried on an associate life. It is not difficult next, to conceive of each of these colonies becoming hollow (like the *Blastula* of the human

embryo,) and their eventual transformation into *Gastrea*, i.e., animals with a primary stomach, by the outer layer of cells constituting the ecto-derm and the inner layer, the ento-derm. The primary stomach once having come into existence, a third layer of cells, the meso-derm or muscular layer, formed next, being necessary for feeding. These animals were flat ones without a true body cavity, anus, or blood. These, also, developed a nervous system, and the organs of sense, secretion, and generation. The next step was the appearance of simple wormlike animals, *Helminthes*, which, by the formation of a Branchial gut, i.e., the front part of the intestine being changed into a characteristic "Gill-basket with ciliated tract," evolved into Tongue-worms, *Enteropneuta*. The nervous system of these animals, later on developed a primary spinal cord, and simultaneously there appeared the notochord, as well. This resulted in the origination of animals, called *Prochordates*, which, by virtue of the formation of the notochord, bridge across the gap between the Invertebrates and the Vertebrates.

Naturally enough, these animals with a primary notochord led to the development of the primary vertebrates, which had no skull formed, as yet. Hence these latter were called *Acrania*. Necessarily the *Acrania* gave rise to animals with a primary skull and brain, and these in turn transformed into the primaeval fishes with genuine internal gill-arches, a jaw skeleton, two pairs of legs (i.e., breast fins and ventral fins.), etc. The primaeval fishes, by slight modifications, became ganoid fishes, and these again, led to the mud-fishes by the transformation of the swimming bladder into an air breathing lung and of the nasal cavity into the air-passages, with the consequent adaptation to life on land. Primary air-breathing animals as they were, they next evolved into the *Amphibians*, which started the penta-dactyle (five-toed) character of animals. Variations occurred among these Amphibia, with the resulting appearance of tailed ones which had gills during the early part of their life and lost them during the later part. The next step was the entire loss of the gills and the formation of the amnion, cochlea, the tympanic membranes and the organs of tears. These were called the *Protamnia*. They passed through a series of Reptilian stages, and finally came to be the primary mammals, the transformation mainly affecting the skeleton, the brain and the heart. The transformation also resulted in well formed internal organizations, hair, and mammary glands. From these a class

of pouched animals, resembling the present day kangaroos, arose. These animals had their rectum and urogenital sinus well apart, thus resulting in the disappearance of the cloaca, and also, formed nipples on the mammary glands.

The semi-apes, *Prosimiae*, came as the next stage of animals and these had developed placenta, and commissures of the brain. They were transformed into narrow-nosed genuine apes, *Catarhinae*, or the Tailed-apes, and, there evolved out of them Man-like apes, by the loss of the tail, by the partial loss of the hairy covering and by the excessive development of the frontal lobes of the brain. These Man-like apes were named *Anthropoids*, their nearest kins being the present-day Orang and Gibbon of Asia, and Gorilla and Chimpanzee of Africa.

The next stage of animals, which was the transitional one between the Anthropoids and man, was, for long, missing. But the historical discovery of Dr. Dubois, of the jaw bone, the skull-cap, the femur and some molar teeth, gave enough clue to reconstruct the missing animal. The discovery was made while digging the earth in Java. The animal thus reconstructed was only a collateral off-shoot of the main stem of evolution; i.e., the animal had been one of nearest kin to the transitional animal, which linked the Anthropoid to man. This transitional animal, on the main line, was named by Haeckel, *Pithecanthropus*, and Dr. Dubois called his reconstructed animal, *Pithecanthropus erectus*. Thus, from the Anthropoids had arisen a group of animals, the Ape-like men, called the Pithecanthropi.

By the further development of the brain and the higher faculties, and the greater differentiation of the larynx, there appeared on this earth the peculiar two legged mammals that reign the land, and water and air—the genuine men or Homines.

So, we could see, how the lowest forms of life have rolled on with the ages past and moulded themselves into the perfect Man of to-day; how they began by living to eat and reproduce, and advanced toward eating to live and propagate their own; how there first appeared muscles, then nerves to control them, then an exo-skeleton, later an endo-skeleton; next a thickening of the head-end of the nervous system to form a brain; again, the appearance of a normal warm temperature of the blood, independent of the environment, by an improvement of the heart; and

lastly, the higher advancement of the intellect and brain capacity with the consequent scene of Man's glorious appearance. Thus, evolution has led to the development of Man, by a physical, mental and social improvement and we know not whither it will lead further. It is a tree with the trunk representing the main course of life through ages, and the branches representing the great group of animals and plants that have appeared during its growth.

These theories are based on Palæontological, Embryological and Anatomical evidences and have been weighed by a great many scientists of the world. As is the growth of a tree not directly seen, so is the growth of evolution. It can *only* be observed at long intervals of time; and these are but too long for any one human race to live to see it. I cannot conclude better than repeat what has been said by the great Haeckel that the Doctrine of Evolution has been a great advance in our knowledge and should be "regarded as the beginning of a new period of the development of mankind. It can only be compared to the discovery made by Copernicus, who was the first who ventured distinctly to express the opinion, that it was not the Sun that moved round the Earth, but the Earth round the Sun."

"That ends this strange, eventful history."

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To

THE EDITOR,

Madras Medical College Magazine.

DEAR SIR,

May I request the hospitality of the pages of your magazine to make the following appeal to the College Association.

It is really a sad thing to note that there is no immediate prospect of the opening of the college tennis courts. That such a premier institution as ours should not be able to open new tennis courts after the lapse of nearly two years is really very humiliating. I wonder how the authorities concerned who are so lukewarm in this matter can wax eloquent on the necessity for compulsory Physical Training and games. It will be a happy day when the new tennis courts are laid out.

May I hope the appeal will not fall on deaf ears.

MADRAS,

1st January 1933.

I remain,
Yours sincerely,
S. RAMALINGAM,
1st year M.B. B.S.

Editorial.

We wish all our readers a happy New Year. Let us hope this year will see the end of the retrenchment and brighten the prospects of all those that pass out of our gates as graduates in Medicine.

We are glad to notice that once again our ladies have topped the list in the Final Examinations. Our heartiest congratulations to Misses Ponnammal and Dakshyayini who secure the first and second places in Part II of the Final M.B. & B.S. examination. Our boys should take this in the right spirit, and may we hope that in the ensuing examination one of them will be bracketted together with a fair one for the first rank.

It is sometime since the Fort St. George Gazette announced a first class in our medical examinations and it is a matter of great satisfaction to see one among the candidates that passed the First M. B. B. S. examination last December, Mr. K. E. Eapen who topped this examination with a first class and distinction in Anatomy deserves our warmest congratulations. We wish him further and greater honours in his future career.

Elsewhere will be found a letter from one of our readers regarding the delay in laying the tennis courts. We understand that the Sports Committee is not allowing grass to grow under their feet but are continually agitating for an early settlement of this question. But the sight of rows of gravel heaps along where we had hope to see our tennis courts is not one calculated to cheer the biggest optimist. We believe that these preparations are for the purpose of

laying a road from near the old level crossing to the general hospital along the railway line.

Our thanks are due to the University authorities for having organised the extension lectures. These have been very popular; witness the crowd of students that listened eagerly week after week, most of them taking copious notes all the time. We hope these lectures will be a regular feature hereafter. We feel that the College authorities should also inaugurate a course of tutorial lectures for the benefit of those post-graduates who wish to take the M. D. and M. S. degrees, who are now like sheep without shepherds.

The Christmas vacation saw the usual number of conferences and among them were three of immediate interest to the medicoes. One, that was held in Madras was that of the All-India Medical Licentiates which was opened by the chief minister. The Surgeon-General announced important changes in the curriculum of the L. M. P. course, the chief among them being the extension of the course to five years and the raising of the percentage of passing marks. These, along with the facilities now offered to the L. M. Ps. for obtaining the M. B. degree of this university should go a long way to remove some of their outstanding grievances. We are glad to notice that of nine candidates of this class who joined our college last year five passed the First M. B. examination.

Just as we go to the press we have received the sad news of the death of Dewan Bahadur R. N. Arokyaswamy Mudaliar, B.A., B.L., M.L.C., who was one of our ex-ministers. He was an able man with a loveable character. It was during his regime as our minister that the whole time appointments of Professors of Pharmacology and Bacteriology were created and the Physiology department was formed into a separate cadre. He was an ardent nationa-

list and even in his last moments during attacks of delirium he was heard to be speaking about those topics, so dear to his heart—*Irrigation, Prohibition and Communal unity*. In him Madras has lost a leader who cannot be easily replaced. We extend our heartfelt condolences to the bereaved family.

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We extend our heartiest congratulations to Drs. Narayana Phesaroti and R. Viswanathan on their well-merited success in the last membership Examination of the Royal College of Physicians, London. The former was long connected with the Prince of Wales Medical School, Tanjore, as Lecturer in Medicine and the latter was well-known to every one of our readers as "Arvy" and contributed many personal sketches to our Magazine. He was Tutor in Medicine before he left us on study Leave. We hope that they will bring along with them fresh and varying experiences from different Occidental centres of learning and research.

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One more change has occurred in the staff of the College. Dr. M. Krishna Menon has succeeded Lt. G. F. Duckworth, I. M. D., as Resident Medical Officer, Government Ophthalmic Hospital, Madras.

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An interesting and instructive lecture was delivered at the Madras Medical College under the auspices of the Association by Dr. Philipp Rezek from Vienna on "The Differential diagnosis and prognosis of Angina Pectoris." Dr. T. Krishna Menon, M.B.C.M., M.R.C.S., L.R.C.P., who has just returned from a refresher course in Cardiology from Vienna and London, presided on the occasion.

Pockets.

It is a bit of a job I feel to choose a subject to write for the magazine, specially when we think it as part of our duty to contribute our little mite to it—but—when everything fails—out comes such a prosaic subject as 'pockets.'

We all had pockets of one form or other when we were young. Their possession, I should say, is the beginning of one's responsibilities. The little girl with a small pocket tacked on to her frock feels she is no more in her nurse's custody—She is the guardian of her own little treasures! Turn out the boy's pocket and you will find marbles birds' eggs, screws, balloons, all nestling beside a piece of 'grub'—a combination of a zoo and a mecano shop!!

Now peeping into the pocket of the Big.—The contents are in no way less in number. A Medico's seems to me to contain the most number of things. The chief—the diagnostic point—is that tortuous instrument, the stethoscope. By its side, the inch tape, the skin pencil, the hammer, the probe, the scissors and the forceps, modestly take their respective places. In addition, there is the wee note book into which the medico gathers all the 'gems' from the boss, during his rounds in the wards. Lurking behind all these one might see a few annas or more often a few coppers—not being satisfied with this fine collection our fashionable friend burdens his pocket with—shall I say—three kerchiefs, for 'show,' for 'blow' and for 'shoe'! In the midst of the chaos that is reigning, there is the cigarette case which no one can lose sight of, without which our friend thinks he is unfit for good society. One may not miss peeping from behind all these things, a blue letter or a little snap. Fine collision between business and variety!

Having accommodated all these things we can imagine how full the poor pockets would look. Some of them with many other 'odds and ends' stand out so prominently that certain people are even identified by their perpetually full pockets. One might wonder how all these things—at least some of them—which seem to be necessary for a medico's daily work, are carried about by the 'Ladies', who cannot boast of any

pockets. Arn't the 'Ladies' envious? Well! they don't look it. They are quite satisfied with their fancy little soap boxes into which they stuff in all these necessities. I suppose our pockets must contain all these things as long as we are students.

Turning to the merchant's pockets we find them the seat of all knowledge of commerce. Those of a miser? A mere shake would produce the most musical tingling which would tickle anybody's ears.

Going to the past for a while, let us peep into the pockets of those great men—Shelley—Byron—Tennyson—surely they must have held the greatest literary treasures. Their 'Odes' and 'Oaks' which are held in such high esteem to-day, must have been lying on scraps of paper, rustling in their pockets. If those pockets were in existence to-day, they would have attained as much greatness as their owners. Who would not fondly hope that the apples which led Newton to propound the laws of gravitation gravitated into his pockets! I suppose you will agree with me when I say that the pockets had been their never failing companions and help to greatness.

'Puck'.

Sisters of Man.

(A Tribute of gratitude to the great unthanked)

BY DOROTHY.

Almost without warning, plague broke out in a far away corner of the province; and a special medical mission with a nurse included, set out to combat it.

With her experience, she was under no illusion as to the risks of visiting an infected area. None the less she volunteered for the work, caught the disease and was dead in forty-eight hours.

Instantly another nurse, knowing all the circumstances replaced her. "She never thought twice about going" was the matron's comment.

Who says that this is a drab and prosaic world when such flashes of matter-of-course, unconscious heroism are illuminating it every hour of every day.

Thus thought I as I lay uneasily in my bed of pain.

When gratitude is common, this earth would be a heaven. The ability to be grateful is scarce. It is exhibited more rarely.

I wish some Croesus would endow a chair of gratitude in some university. None have been founded to this day. It would not be easy to discover professors of gratitude, for it is an unknown art. But a course of lectures about the people who are never thanked might do to begin with.

I set the medical profession at the head of the great unthanked professions. They keep us alive long after we deserve to die. But they hardly expect gratitude.

If you desire to exhibit gratitude to the doctor who has hauled you out of the grave, try something better than a trowel.

But I think that the medical profession get more gratitude than the nursing profession. The nurse is badly named.

I wish somebody would invent a new name for the angel who helps the physician or the surgeon to keep you out of the Valley of the Shadow of Death.

You phone for an angel, and she comes prepared to be your slave—till you no longer need her. She fights for your life. It is her business to fight for any old life.

She tackles death for a few rupees a week and laundry.

How she keeps so spotlessly white for so little passeth my understanding.

I doubt whether anybody except an angel could or would take on the duties of a night nurse. It is a twelve hour night! No Trade union laws or Factory acts here.

The day nurse does a ten hour day, and has two hours to rest in. But the invalid, who watches a day nurse and notes everything she does, seldom grasps the fact that she is tired.

I have tried to calculate how many miles a day a nurse walks round the beds. I am sure she walks further than a policeman or a post-man.

But I cannot calculate the miles a night nurse walks during twelve hours of sleepless duty. I wish an experiment could be carried out with a pedometer. I am sure that while I was battling recently against asthma, bronchitis and abdominal type of influenza my night nurse walked at least fifty miles a night.

The walking is only part of the long night's toil. It would be startling if all the other activities and labours of the night nurse could be recorded. One white night I kept my eyes on the clock and I discovered that my night nurse had not sat down for two hours even.

If I had written down all she had done during those two hours, it would have run to at least a few thousand words. But her night report is dumb about her work.

It is bare brief realism.

I do not know how she kept awake, but she did it, for if I moved in the bed she was out of her chair in a second.

One muffled cough was enough.

I say nobody but an angel could or would keep such a vigil.

It is almost an insult to call her an artist—no artist has ever achieved her perfection.

As an architect of pillows I back her against Sir Christopher Wren.

It is not possible to sit bolt upright in bed for weeks without desiring to lie down and die. Many men and one woman have tried to make me sit up, but only my night nurse has succeeded.

She constructed an armchair out of seven pillows and on this throne of rest I found repose for every limb and every bone.

The arm pillows were masterpieces, for I could lay my arms along them and forget them.

When my pillow throne had a land slide or an earthquake the super-angel, a dim snow-white ghost in the screened glow-light, rose up from her simulated somnolence and made new cool pillows out of the old hot ones.

Then she built me a new pillow throne. Don't ask me how she created her magical chair.

A few touches and it soared like the Jungfrau, (and she is either Jungen Frauleinn—a young woman) a hollow of unwrinkled snowdon.

As I lay back like a God I marvelled how her seven pillows fitted every weary bone in my spine, how they took the dead weight of my head, relaxed the tired muscles of my neck, upheld my drooping shoulders, supported my aching elbows and wrists, cooled the palms of my numb hands, allowed my fatigued legs to float like thistle down on the unrippled sheet and permitted me to turn up my toes without a ton of blanket on top of them.

More magical than the snowchair is my superangel's blanket bath. She does it in eight movements—a symphony of ablution. Her blankets are hot. She washes my face as if it were her own with no eye or ear jabs.

I now come to the unbelievable bit of my paeon. My divinity can make coffee-tea-cocoa.

It is worth lying awake all night to taste this cup of ecstasy. I am often afraid to beg for a second cup. But she is a thought-reader.

In a silvery voice she says, "Another cup?"

"A thousand" I reply.

And the second cup is even more ambrosial. One wild night I cajoled her into giving me three cups.

"Ha?" You giggle.

What age is this paragon? I don't know. She won't tell me. But she has silvery hair under her snowy wimple.

She is young enough to be my sister. I am in love with her, and I do not want to be well enough to lose her, for I know that I shall never find tea or pillows like hers.

I shudder at the reception awaiting me from the other figure at home and I pray.

"Nurse—Nurse—Don't let me get well again."

Alas! I am only one of her long procession of worshippers. She is a realist artist, and already she is spreading her wings for flight.

I envy the next lucky wretch who is nursed by her.

Kannan, M. B.

By H. SUMITRA RAO, IV YEAR.

(With due apologies to 'Kannan, B.A.'
for a few extracts here and there.)

'A Universal remedy for all melancholia, impotency, head-aches and heart-aches'—boomed an advertisement, as Mr. Kannan, M.B. flung himself gloomily in his chair, with a Telephone in front of him. Oh! Ghosh! who wouldn't want it—I would want it—you would want it, and in short everybody would want it. I suspect, perhaps, the advertiser himself should have suffered keenly sometime before in his life-time and has now announced it to the world, for the amelioration and alleviation of human suffering, thus doing a piece of service to humanity in general.

In fact, Kannan wanted it desperately. The pinch of poverty is keen on him. He is now at the end of his resources. Everyday dawning is a problem to him.

Kannan was an M.B. He got his degree, at last, after a series of attacks on the University, not unlike the memorable invasions of Mahomed Ghazni on the famous temple of Somanath. He commenced his career somewhere towards the beginning of the twentieth century and conveniently finished it to his satisfaction and to the satisfaction of his relatives. Any how he got his degree—that is a consolation indeed! Like all youths, he started his Medical career with very high ambitions, but in the usual inevitable course of things, had come to belong to that large and numerous crowd of expensively educated gentlemen, floating loose in the country (so many by the acre, like ground-nuts and paddy) with head full of *Rales and Rhonchi*, the Heart throbbing with murmurs and Lungs squeaking out harsh breath-sounds—a highly intellectual class, who after having struggled effectively against the varying vicissitudes of the Medical career and having spent nearly a decade in the college and Ten Thousand Rupees in the aggregate over the acquisition of what was considered 'Marketable Knowledge' within the postals of the University, have been left high and dry on the threshold of life, sickeningly waiting for phone calls, with a woe-begone face, a hollow

eye, a lean cheek and a thin frame—and not knowing how to live and where to live, but constantly being told a Doctor's profession is a noble profession in the noble art of healing suffering humanity and that an M.B. is an M.B. after all, for its extent and depth of knowledge gained.

Kannan married young—a measure particularly calculated to serve as a distinct opposition to Sarda Bill. In the eyes of Kannan, it appeared, Rai Sahib Haribilas Sarda had no business to bring such a Bill in defiance to time-honoured social customs. As years rolled on, during his career in the Medical College, his mother-in-law also grew old. But a sharp temper never grows old with age; and a sharp tongue is the only edged tool that grows keener with constant use. His mother-in-law kept on heckling him, "He is a good-for-nothing fellow, a rotter, and a 'gas-pot'". But Kannan, however, was one of those happy mortals of well-oiled dispositions, who take the world easy, eat white bread or brown whichever could be got with least thought or trouble and would rather starve on a penny than work for a pound. In spite of his mother in law, he would have somehow whistled his life away in perfect contentment; but his wife who had by now joined him, kept continually dinning into his ears about his idleness, his carelessness and the ruin he was bringing in the family; morning, noon and night her tongue was incessantly going and everything he said or did was sure to produce a torrent of household eloquence. He could have borne his mother in-law's hecklings but his *gentle* wife's curtain lectures and bossing over him was too much on his nerves. He vowed eternal isolation from them, and attached himself mostly to his room and to the telephone which never rang a call.

Even in the gloomiest of his dreams, Kannan never fancied that he would at anytime be reduced to this situation. The vision of his future lay in the direction of a motor car or two, a nice bungalow, evenings at the Cosmopolitan club, and a life of Wealth, Fame and Influence. But alas! this was not to be!

As we said before, he married young. He was married in the first year of his Medical career for now-a-days sons in-law are 'booked' early to avoid disappointments, every father hunting for his daughter's partner in the Medical College, believing every Medical Student in the first year to be a potential Rangachari or a Guruswamy, a Ronald Ross

or a Donovan! For who knows what potentialities one may develop especially in a Medical College:—Did not the Bard of old sing:—

" Full many a gem of purest ray serene
The dark unfathomed cares of ocean bear:
Full many a flower is born to blush unseen
And waste its sweetness in the desert air."

Proposals of marriage poured on Kannan in plenty from persons of all grades of social position—from forlorn schoolmasters suffering from daughters and scanty pay, 'passing rich' with 40 chips a year, to overbearing distinct officials who can never say anything without mixing the 'cursed' and 'Rascal' with their words: from enterprising M.L.Cs. who hovered on the verge of bankruptcy in exchange for the joy of adding three letters to their names for three years—to the luminaries in the public eye, whose coming in and going out of a place is always announced in Newspapers for public benefit.

But, *hanging and wiring*, they say go only by destiny. Kannan finally married the daughter of a High Court Vakil, with a motor car, 2 cooks and a bungalow, with an income of Rs. 2,000 a month (and an expenditure of Rs. 3,000 ditto) whose financial position imminently threatened to burst the bounds of secrecy.

Kannan's relation with his father-in-law mainly consisted in receiving fat monthly remittances from the latter: on all important occasions, he visited his father-in-law's house, received costly presents, and sat stark and stiff in the outer hall, according to the rule that a son-in-law ought always to sit stark and stiff, in perfect agreement to all rules of decency and courtesy as regards the conduct of a son-in-law towards his father-in-law. The father-in-law treated Kannan generously and supplied him with funds, not only sufficient for Kannan's legitimate educational requirements, but also for the other inevitable expenditure which the high life of a student in the city demanded. Kannan, on the whole, lived a grand and magnificent life in the city, the life of the amazing rich, something like a minor prince in the expectation of a 'Gadi'. He always ate in Silver dishes, sipped always from silver tumblers, rode always in motor cars, and slept always on silk cushions. And simultaneously with his father-in-law becoming a bankrupt, Kannan emerged out of the college an M. B. With a cropped head, a

clean shaven face, a pair of gold spectacles, four blazer coats, two dozen starched shirts, three pull-overs, four costly Tennis rackets, a stethoscope, dangling a yard out of his pocket, a 'Gold Flake' Cigarette putting out volumes of smoke, half-a-dozen stiff collars, a pair of tic-toc shoes a dozen silken ties, a dozen silken hand-kerchiefs to match, an unbounded conceit and an immense capacity for a highly refined enjoyment of life.

In the usual run of events, he appeared for the competitive Examination for recruitment of Assistant Surgeons and anxiously awaited the result. But the committee of selection has a mysterious way of doing things. They did not select him—or in other words he did not come within the pale of allotted places. So he had to tell everyone of his friends—individually—that it was rather very hard that he should get one place beyond the number of selections for the year. "Wasn't it unfortunate—just a few marks more and I should have been a blooming Assistant Surgeon"—he told one after another. All the same for some further time, he was mysteriously giving out (he is not prepared to say how) that he might yet be called up, perhaps hoping that one or two of the selected might yet die or turn insane,—but none of them appeared to have obliged him that way either!

Kannan then extended his vigilance to far-off places. One day, he saw an advertisement calling for Medical Experts in a Farm Establishment in the South. The appointment was in the plantations in the South: terms easy and remuneration heavy! He stared at the offer, bestirred himself, ripped open his ward-robe, selected the best blazer coat, started off for that night's train and presented himself before the committee of selection, very much in the role of that Imperial Caesar who marched out to carve out a Kingdom for himself. But the Committee had a mysterious way of doing their business and Kannan returned home saying, that everything went there by recommendation. "I ought to have taken a note from my cousin Dr—(his mother's brother's mother-in-law's cousin—a relation as near as our primitive forefathers Adam and Eve) not knowing several other M.Ds. and F.R.C.Ss., who took notes from Rao Bahadurs and Dewan Bahadurs fared no better.

Next, he found himself apprentice to a 'star' of the medical profession by way of gaining experience under him. But the constant knocks

Kannan, M. B.

of his 'Boss,' the professional rivalry of his colleagues, soon threw him out of employment.

Next, he turned his attention to securing one of the posts in the rural dispensaries scattered far and wide throughout mofussil stations. A post within the gift of the District Board President falling vacant, Mr. Kannan, M. B., applied for the same. But 'Presidents' in general whether it be a Taluk Board or a District Board are not always easy of access, unless you pass the way and besiege their hearts with prints, flowers and presents and dance attendance at their doors at all odd hours of the day. 'Sweet are the uses of adversity' says Bacon. Our hero was prudent this time. He undertook to please His Lordship, the 'President' under a double and dubious footing of half-a-servant and half-a-doctor. He would playfully poke the belly of the 'President's' child with the end of his stick; he would nudge his boy on the cheek and call him a young rascal; he would do for him small errands—bring him everyday fruit and flowers and praise his administration to the skies. In short, he got into the appointment and was 'passing rich' with 40 Rs. a month, when an accidental circumstance and a *slight* mistake kicked him out of employment. A patient was taken to the dispensary in a delirious condition—a condition in which he was hovering between this and the other world. He supported the physiologist's teaching—'sleep tones up the system.' He prescribed to the patient eternal rest by despatching him to the other world with an overdraft of a sleeping mixture.

Kannan, M.B., is now without an employment and sat in his room, forlorn and dejected in front of a swing mirror, which showed signs of having suffered from small-pox, at sometime in its career indicating the faded gardens of Kannan. He had come to the end of his resources: lenders became nil and clamorous duns many. He sighed as he pondered over the mystery of life, the tragedy of education, the futility of passing examinations, the inscrutable pathos of existence, the strange perversities and tricks of fate and asked himself what good he did to himself or to anybody by supporting this miserable existence.

It was then that the advertisement appeared announcing a 'Panacea' for all 'aches' and 'melancholias.' He stirred, borrowed a rupee from his neighbour and wrote for the advertisement and awaited results. By return of post, he received a bulky packet of testimonials,

announcing to the world and extolling the value of their 'Medicines'—the panacea for all ailments. Kannan carefully went through a few of the testimonials selected out of several thousand!—

A Khan Bahadur wrote "I was suffering from severe heart-ache and my heart was on the verge of breaking into two; after taking your pills, the crack is firmly cemented with a partner. Awful thanks to you."—

And this from a high-placed lady:—"I longed for children and since taking your medicine, I got triplets—each time through three successive child-births. Please send me another medicine that would stop triplets."

"I was a chronic sufferer from melancholia"—wrote Dr. Bhattacharya—"after taking your medicine I am dancing about in the air. Profound thanks for the Kruschen feeling imparted."

Kannan closed the booklet and pondered:—

A few months later, he wrote to the firm:—

"Your pills are charming. I am indeed grateful to you for I have myself found out the secret of success. I am now fairly on the high road to success."

To make a long story short, Mr. Kannan, M.B., opened a big consultation room in Mint Street No.—with a big board and appendages 'Surgeon, Physician, Gynaecologist and Oto-Rhino-Laryngologist—Treatment of venereal diseases—a speciality.'

Mr. Kannan has now advertised for an Assistant on Rs. 200, a month and has notified, "No one need apply who is not an M.D., failing which at least a first class M.B.!"

The Madras Medical College Athletic Club.

Hockey.—To-day our first Eleven stands unbeaten in the inter-collegiate tournament, but due to two tournament matches taking place on the same day, our second team representing the first in the inter-collegiate tournament went down to a third rate team. Hence we are a point below the Loyola College whom we beat by no small margin (3-0). As there is yet another round in the tournament we hope to carry all before us.

In the Muslim United Club tournament we are the Semi-Finalists. Since last September, our opponents the Muslim having gone on a tour. (I think this team out to be scratched from the tournament for not turning up to play when the game was arranged by the Secretary.)

The team has been strengthened by the arrival of the freshers Gomez and McNamara. The former on the outside left has no equal in Madras. The latter coming from Bangalore was staky when he started but is now playing dashing hockey at centre forward. Pereria our former centre forward has adopted himself to playing at inside left, in combination with Gomez he is a real source of danger to the opposing defence. Beetles at inside right is the goal-getter of the team and in combination with D'Costa on the right wing is too fast to an ordinary defence. McMurray the left half back of the team is a hard worker and feeds his forwards well. With Muller at the first pivot forwards have no need of falling back to defend. He is ably supported by MacInnis on the right. Our backs Cullen and Denton with Letong in goal have formed an impregnable trio. The goal scored against us have been mainly due to the eagerness of our back to come forward and to Letang playing third Back.

S. F. D'COSTA,
Captain Hockey Team.

CRICKET.

The cricket for the season 1932-33 started with the usual enthusiasm which has always been lacking towards the close of the season; and as a matter of fact dies away after about a month. Very few in the college are interested in what the college does on the field of sport. With regard to cricket, better things could be done if only the sum allotted for the game were increased.

The team is composed of almost all of last year's players. A new-comer to the college and to the team is K. R. Rama Rao, a good batsman and bowler. S. Tiruvankata Chari has come back as wicket-keeper. We miss Dr. K. S. Bhandari; his presence on the field, when the college has been in a tight corner, has often helped us materially as well as morally. G. Martinus and E. Gonsalves of the Final years still play for us; the latter has helped greatly on the two occasions that he has played in Inter-Collegiate cricket; and the former, when raised, can be relied upon to make as scores and bag a good few wickets. Another who has helped us a great deal and who is still helping us, though to a lesser extent now, is Mr. Good Luck.

C. J. Pereira and Garson still continue to open the innings of the team; they are an extremely good pair. They are followed by Venkata Chari and Rama Rao, two steady bats who have a great liking for the L.B. W. D'Costa and Wilkinson come next to play real holiday cricket, as each tries to obtain a "six" before the other. Chan Sahib and Cullen try their best to break them "ducks", and the latter seems to delight in being "Not out." F. W. Pereira, when in for what we call a score, excels at driving as he would in a game of Tennis. G. F. Martinus tries to emulate C. P. Johnstone, but we all have to stretch our imagination a wee bit. Gonsalves is the man to watch; his powerful drives leave a track of scorched grass; he is somewhat partial toward "sixes."

Our bowling is opened by Martinus and Chan Sahib and is backed at by such changes as are found in Gonsalves, Rama Rao, Garson and Wilkinson. Chan Sahib would be a better bowler if he would only listen to good advice. Martinus opens with a couple of well placed wides, and next clean bowls a batsman with a surprisingly straight ball. It is a

good thing that he has given up his various changes of pace, Venkata Chari behind the wicket is good; but now and again he happens to catch the way ball and stump at the wrog moment.

We have met several good teams and given a good account of ourselves. In the Inter-Collegiate Tourney we are drawn 2 points, having lost a match to Law College. We are leading with Presidency College who lost to us in a very exciting match by the narrow margin of 3 runs. We have met Christian and Pachaiyappa's Colleges and beaten both by a large margin. At the beginning of the season we beat a strong team of the Eccentrics, and lately did well in a match against a strong team of the A. I. S. C.; we may have pulled off this match if it had not been abandoned owing to rain.

Presidency College and Law College are extremely fortunate in having the services of Mr. Bill Hitch as coach; their cricket has certainly improved but I dare say that, if we too had gone to the trouble and expense of securing a good coaching, it is a certainty that we would have out-shone our contemporaries when it is taken into consideration that we have still been able to hold our own. It is lamentable that members of the team have allowed themselves to be demoralised by the fact that we, unlike other Colleges, are without an experienced coach. The captain finds it hard now to arouse in the team the same enthusiasm that it showed at the beginning of the season.

MATCHES PLAYED.

Vs. Minerva C. C.—Won—135 for 6. (D'Costa 58, Garson 45.)
Minerva C. C.—132 (Garson 5 for 56, Chan Sahib 2 for 15.)

Vs. Christian College.—Won—182 for 8. (Garson 94, D'Costa 22, Hedge 21.) Christian College. (Garson 4 for 14, Rama Rao 2 for 15, Wilkinson 2 for 18.)

Vs. Eccentrics.—Won—206 for 9. (D'Costa 85, Garson 39, Chan Sahib 25.) Eccentrics—202 (Martinus 4 for 14, Wilkinson 2 for 38.)

Vs. Christian College.—Won—173 for 7. (C. Pereira 60, Rama Rao 23, Garson 21.) Christian—103 (Garson 5 for 22.)

Vs. Eversleigh Boy's Club.—Won—116. (Venkata Chari 28.)
Eversleigh Boy's Club—110 (Chan Sahib 4 for 36, Garson 4 for 41,
Wilkinson 2 for 14.)

Vs. Law College.—Lost—116. (D'Costa 32, Garson 25.) Lawyers—
135 for 5 (Martinus 3 for 41.)

Vs. Presidency College.—Won—109. (Gonsalvez 49, D'Costa 20.)
Presidency College—106 (Chan Sahib 4 for 41, Martinus 2 for 22.)

Vs. A. I. S. C.—Drawn—222 for 7. (Garson 17, C. Pereira 34,
D'Costa 27.) A. I. S. C.—54 for 6 (Martinus 3 for 30, Rama Rao 2
for 9.)

Vs. Pachaiyappa's College.—Won—181 for 6. (Gonsalvez 56,
Venkata Chari 53, C. Pereira 34.) Pachaiyappa's College—72 (Gonsal-
vez 5 for 20, Garson 4 for 15)

University of Madras

MEDICAL EXAMINATIONS, DECEMBER 1932.

The following is the list of successful candidates at the Medical
Examinations held in December 1932 :—

Note :—Names in italics denote female candidates.

Medical College, Madras.

PRE-REGISTRATION EXAMINATION.

SECOND CLASS.

Rank.	Regr. No.	Name of candidate.	Rank.	Regr. No.	Name of candidate.
1	80	Mohan Rao, U.	33	21	Chacko, C. W.
2	2	Anandakumara Menon, P.	35	106	<i>Rajamanikkam, H. Mabel</i>
3	142	Srinivasa Rao, U.	36	68	Kumaran, V. C.
4	13	Balakrishna Rao, P.	37	130	Satya Joseph, H. A.
5	116	Ramanarayana Reddi, N.	38	133	Sridharan, N. V.
6	70	<i>Lakshmi, S.</i>	39	105	Rajagopalan, V.
7	129	Sarangapani, N. E.	40	118	Rama Rao, K. R.
8	55	Karney, P. L.		123	Rithuparnan, T. K.
9	107	<i>Rajamma, B. N.</i>		6	Antony, P. K.
10	151	Subrahmanyam, G. K.		9	Azariah E. P.
11	122	Rebello, E. R. F.		18	Booth, A. H.
12	113	Ramakrishna Rao, K.		20	<i>Buultjens, Gusta.</i>
13	152	Subrahmanyam, R.		22	Chandrasekhara Panikkar, T. G.
14	31	<i>Fapen Mary.</i>		30	Dorairaj, T.
15	135	Sivarama Kini, U.		41	Gopala Pillai, S.
16	104	Rajagopalan, S. G.		48	Jagannatham, K.
17	58	Koshi, K. G.		50	<i>Krishna Bai, L.</i>
18	111	Ramakrishnan, S. P.		75	Manikkamuttu, C.
19	28	David, C. J.		76	Maruthi Rao, U.
20	140	Srinivasan, A.		83	Muhammad Shamsuddin
21	5	Annamalai, A. S.		97	Paul Devadoss, A.
22	173	Visvanatha Rao, S.		99	Pushong, E. C.
23	33	Francis, O.		101	Raghavendra Rao, M.
24	37	Ganesh Mudaliyar, E.		103	Rajagopalan, R.
25	38	Gomez, S. F.		117	Ramanathan, A. N.
26	112	Ramakrishnan Tampi, K.		121	<i>Rapson, Sylvia M.</i>
27	137	Snow, Dudley J. R.		144	Subbaramayya, J.
28	23	Chandroya Chetti, K.		153	Subrahmanyam, R.
29	132	Shillong, D. W.		154	Sundaram, G. A.
30	63	Krishnan, A.		160	Tyagarajan, M. K.
	78	McNamara, C. W.		166	Venkatachalam, T. N.
	139	Sridharan Nambiyar, A. C.			

FIRST M.B. & B.S. EXAMINATION.

PART I.

Register number and name of candidate.

176	Abraham, M.	218	Mallesu, G. M.
177	Aga Muhammad Javad Shirazi,	222	McNamara, L.
178	Anantan Nambiyar, M.	223	Miran Rowther, K. M.
179	Azariab, E. P.	224	Muhammad, K. C.
180	Baby, K. P.	225	Mubammad Ikram.
181	Balakrishnan, S.	229	Narayanan Nayar, M. K.
183	Booth, A. H.	230	Ommen, P. O.
184	Chacko, A. G.	231	<i>Padmavati, I. K.</i>
185	Chandrasekharan Nedungadi, P.	232	Panchapakesan, K.
186	Chan Sahib, G.	233	<i>Pancharatnam, Mary E. P.</i>
187	Chatelier, C. O.	234	Paulose, K. I.
188	Damodar Sheno, G.	236	Raghava Rao, T. V.
189	D'Costa, D. J. W.	237	Rajagopalan, G. N.
190	Dharmaraj, J. J.	238	Ramachandran, G. S.
191	Dominic Sebastian, K.	240	Ramachandran, V. S.
192	Doraiswamy, P. K.	241	<i>Ramakrishnamma, Z.</i>
193	Duraiswami, N. S.	242	Raman, P.
194	Duraiswam Ayyar, H.	243	Ramanathan, N.
196	<i>Elizabeth, P. K.</i>	244	Rangavadivelu, N.
197	Eroman Unni, T.	246	Sankarankutti Menon, M.
198	Fonseca, P. J.	247	Sankaran Pillai, K. N.
199	Gangadharan Tampi, P.	248	Sankaranunoi, T.
202	Gibson, Heywood B.	251	Sivabushanam.
203	Gopalakrishna Ayyar, T. P.	252	Sivanandam, T. V.
204	Gundu Rao, M.	253	Sivarama Nayar, M.
205	Hart, C. J.	255	Srinivasa Rao, R.
206	Jaganathan M. R.	256	<i>Subbalaakshmi, K. S.</i>
207	Janardhanan, P. S.	257	Subbarayulu, P.
208	Kailasam, P.	258	Subrahmanyam, N. R.
209	Kamath, M. V.	259	Subrahmanyam, V. S.
210	Kerala Varma Tirupad, K.	261	Syed Muhammad Ghouse
211	Kochukuttan Thampuran, K.	262	Tiruvenkatachari, S. V.
212	Krishna Bhat, K.	264	Venkatachalam, P. V.
213	Krishna Bhatta, B.	266	<i>Venkataswami, Pushpan.</i>
215	Lakshminarasimhan, K. V.	273	Vittaloss, S.
217	Madhavan Nayar, R.	276	Sundararajan, G. A.

PART II.

FIRST CLASS.

1 295 * Eapen, K. E.

* Obtains distinction in Anatomy.

SECOND CLASS.

Rank.	Regr. No.	Name of candidate.	Rank.	Regr. No.	Name of candidate.
1	293	Damodara Taravanar, T.	13	343	<i>Pankajam, L. M.</i>
2	311	Joseph, A. D.	14	317	Krishnan Nayar, K.
3	338	<i>Noronha, Teresa.</i>	15	288	Chandrasekhara Menon.
4	286	Bhaskaran, K.			C.
5	283	Balachandran Tampi, R.		369	Subba Rao, K.
6	302	Gopalaratnam, P.	17	282	Rabu Rao, A.
7	303	Govindan Navar, K.	18	367	Sivasankara Kurup, P.
8	{ 277	Abdul Sathar Ismail	19	352	Ramachandran, V. K.
	344	Paramasivan, S.	20	332	Munuswami, L.
10	373	Sundaresvaran, D.	21	308	Jacob, T. M.
11	296	<i>Edwin, E. C. Sarah.</i>	22	289	<i>Colledge, Mervyn.</i>
12	306	Isvaran, N.			

PART II—(Contd.)

SECOND CLASS.

Rank.	Regr. No.	Name of candidate.	Rank.	Regr. No.	Name of candidate.
23	297	Gangadharan, V.		327	Mahadeo Dinker Barve.
24	318	Kumara Menon, K.		336	Narayanaswami, K. S.
25	{ 291	Damodara Das, D.		342	Pandidurai, C. S.
	322	Luke, V.		345	Paul, M. A.
27	386	Ward, W.		349	Pereira, J.
28	335	Narasimhachari, R.		350	Porinchu, A. A.
	285	Basanta Kumar Chandra.		359	<i>Rudrani Amma, G.</i>
	287	Buchinarasimham, M.		366	Sivarama Mannadiyar,
	292	Damodara Mallayya, B.			E.
	301	Goda Varma Raja, P. K.		368	Srinivasan, O. V.
	309	Jagadisan, A. N.		372	Subrahmanyam, H. S.
	313	Kasim Pillai, A.		380	Varghese, P. K.
	321	<i>Lalita, N.</i>			

SECOND M.B. & B.S. EXAMINATION.

PART I.

Register number and name of candidate.

388	Abdul Karim.	406	<i>Madhavi Amma, P. T.</i>
389	Appa Nayar, C.	407	Madhusudan Tampi, M.
390	Balakrishnan, M.	408	Nagaswami, S.
391	Basi Reddi, K.	410	Narasimhan, M. G.
392	Beetles, B. N.	411	Narayanan, G.
394	<i>Cheriyam, Mary P.</i>	412	Narayana Prabhu, A.
395	Dasaradharama Reddi.	414	Raman Nayar, M. K.
397	Devadas, B.	415	Rangachari, P.
398	George, K. J.	416	Sitarama Rao.
399	Gopala Pillai, P. P.	417	Srinivasan, S.
401	<i>Roman, Premela.</i>	419	Valisvaran, S.
402	<i>Roman, Pushpavalli.</i>	420	Varkkey, C. E.
404	Krishnan Nayar, P.	422	Vaughan, E. E.
405	<i>Lakshmikantham, M.</i>	423	Visvanathan, G.

PART II.

SECOND CLASS.

Rank.	Regr. No.	Name of candidate.	Rank.	Regr. No.	Name of candidate.
1	441	Joseph, P. T.	11	462	Rama Rao, K.
2	472	Titus, K. K.	12	475	Vasudeva Sheno, V.
3	444	Kesavan Nayar, R.	13	468	Srinivasan, T. V.
4	471	Subrahmanya Sarma,	14	458	Ramachandran, M. S.
		A. V.	15	469	<i>Subhadra Devi, I. J.</i>
5	429	<i>Chacko, Lizamma.</i>	16	454	<i>Pancharatnam,</i>
		Dandayudhapani, D. A.			<i>Kanagambal P.</i>
6	{ 430	Kuruvilla, V.	17	424	Abraham, P. Z.
	448	Ramakrishna		426	Alphonso D. Fernandez.
8	460	Upadhyaya, K.		451	Muhammad Mumtaz Ali.
9	435	Gopala Pillai, M.		463	Sanjiva Rao, P.
10	474	Vaidyanatha Ayyar, A		467	Sivasankaran, V.

FINAL M.B. & B.S. DEGREE EXAMINATION.

PART I.

Register number and name of candidate.

479 Balamani, M.	496 Dakshayani, M.
480 Govindankutti Menon, P.	497 Damodaran, T.
481 Govindarajan, S.	498 Jesudian, K. T.
482 Jubai, M.	499 Kolandavelu, Anne.
483 Krishna Ayyaagar, V.	501 Kumara Menon, M.
484 Kuravilla, P. J.	506 Padmanabha Pillai, S.
487 Narayana Ayyar, K. V.	507 Pereira, Daisy.
488 Pirukutti Amma, K.	508 Philip, M. J.
490 Atchamambu, K.	511 Razak, M. A.
491 Balakrishnan, K.	512 Rukmini, C. N.
493 Chacko, K. C.	514 Vasudeva Rao, G.
494 Cbathurbujdas, M.	

PART II.

The following candidates qualified for the M.B. & B.S. Degree :—

SECOND CLASS.

Rank.	Regr. No.	Name of candidate.	Rank.	Regr. No.	Name of candidate.
1	579	Pannamma, K.	567		Mascarenhas, P. P.
2	496	Dakshayani, M.	570		Muttakaruppa Pillai, S.
3	569	Mathew, M. M.	583		Ramachandran, A.
	517	Ambu, M.	585		Ramalingam, E.
	537	George, A. T.	590		Srinivasan, N.
	548	Kalyani Ammal, E. V.	600		Srinivasan, R.
	551	Kesavaran, R. S.	602		Sriramulu, G.
	563	Manikham, Alice V.	603		Subbalakshmi, S.
	564	Mariamamma, C. V.	606		Subrahmanyam, T. S.

The following candidates appeared for the Final M.B. & B.S. Degree Examination, but qualified for the L.M. & S. Degree :—

Register number and name of candidate.

610	* Sunderam, V. K.
	* By combination of results.

FINAL L.M. & S. DEGREE EXAMINATION.

PART I.

Register number and name of candidate.

1502	Madhavan, K. B.
	† Obtains M.B. marks in Ophthalmology.

PART II.

The following candidates qualified for the L.M. & S. Degree :—

Register number and name of candidate.

* 523	Balasubrahmanyam, V.	615	Thomas, T. C.
† 528	Chacko, T. N.	618	Vadivelu, P.
584	Ramachandran, A. K.	619	Vaidyacathu, J.
586	Rama Rao, S.	§ 626	Zachariah, V. C.
† 614	Thomas, E.		

* Obtains M.B. marks in Midwifery.

Do.

Medicine.

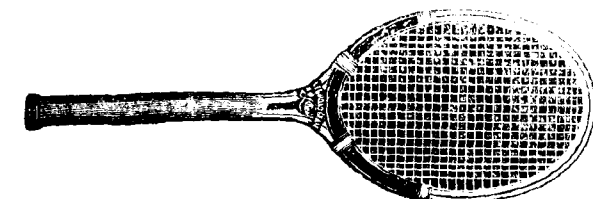
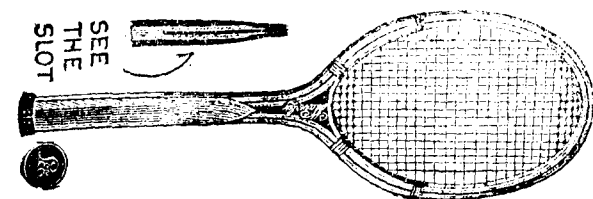
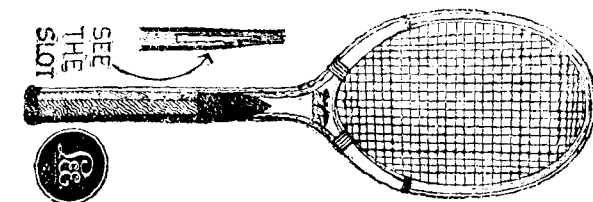
Do.

Medicine and Surgery.

§ By combination of results.

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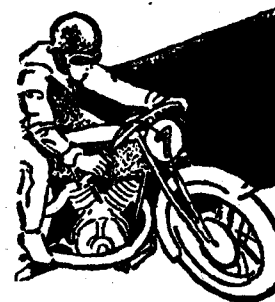
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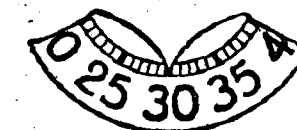
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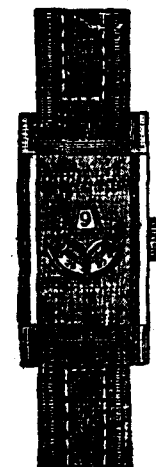


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