

The Medical Practitioner

A Monthly Medical Journal

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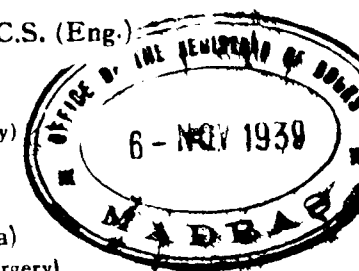
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Then it was found that the fats and proteins in the two are not identical. There is difference also in the vitamin and salt content. Some enthusiasts think that by increasing vitamin contents in cow's milk they can modify it to get better result than breast milk. Laboratory investigators believe cow's milk can be modified to excel human milk once a few vitamins and salts are added. But they overlook the possibility that there are many more chemical and biological differences between the two which have yet to be showed and clinical experience support the view. Breast milk contains protective bodies absent in cow's milk. Moro showed that although no antibacterial substances were to be found in human milk yet the blood serum of breast fed infants exhibited a bactericidal power much greater than in the serum of children artificially fed.

In a recent discussion on Otitis Media in early childhood at Royal Society of Medicine, the incidence of otitis was discussed and in a series of 146 cases only 5 of the children were breast fed and the rest 141 were bottle fed. Therefore it is very necessary to remember that cow's milk cannot replace breast milk with impunity in the earlier periods of infancy. By the time the infant is 6 months old, its tolerance to cow's milk is well established so that after about the 6th month a child may thrive on cow's milk probably just as well as it would have done on breast milk. Cow's milk is particularly unsuitable during the first 4 to 8 weeks of the infant's life and more so if the infant is born prematurely. I know there are infants who have been brought up since birth fairly successfully on cow's milk or its modifications but these are exceptions. The activity, the alert contented expression, the tone of the muscles noticeable in the breast fed infant are not present to the same degree in the artificially fed though for all superficial appearance as in photographs the baby fed on artificial food may look plumpier and better nourished. In short an infant's health during the first few weeks depends to a very great extent whether it has the benefit of mother's milk or not.

Let us next consider some of the com-

moner difficulties met in breast feeding and how to overcome them. A common difficulty met is sufficiency of milk. Both mother and baby are free from disease or defect but the mother's milk is insufficient for the baby. This condition is on the increase in all countries. It is prevalent amongst all classes rich as well as the poor and probably to a greater extent among the rich. Cow's milk or artificial foods are started right from the beginning to make up for the deficiency thus laying the foundation for digestive troubles early in its life. More time is spent in finding out what additional food is likely to suit the infant instead of devising measures to increase the supply of breast milk. These measures are simple and probably on account of their simplicity they are overlooked. These are:

Encourage the mother to breast feed the child explaining to her the advantages thereby. Mother should take sufficient quantity of fluids, the best being barley water. Diet should be usually the same kind as she is accustomed to take. If the mother is of a poor class unaccustomed to take milk advising her to take a pint or two of milk per day, will cause not only indigestion and from the point of economy may not be a successful proposition. Sufficient fresh green vegetables must be taken at lunch time or dinner. The mother should avoid any work and rest for a while in the afternoon for an hour or two. Application to the breasts hot water and cold water alternately stimulate the secretion of milk. This could be done for 10 minutes morning and evening and immediately after the breast are gently massaged. These simple measures increase the flow of milk. In the case of an elderly mother who was delivered by Caesarian in the Madras Government Hospital for Women and Children, the breast milk began to fail by the 21st day. She was anxious to feed the child on breast milk only. The above mentioned advice was given at the time of her discharge from the hospital and she was able to breast feed her child entirely for a period of 3 months and with the aid of one or two artificial feeds for a period of 7 months. It needs

no mention that the child kept very good health.

If local conditions like cracked nipples interfere with breast feeding they should be promptly attended to. Friar's Balsam i.e., Tr. Benzoin Co. is an old reliable remedy. Then there are a group of cases fairly distinct where there is sufficiency of breast milk but the milk disagrees with the infant causing colic, distension and greenish diarrhoea. The temptation in these cases is to stop breast milk and to advise a substitute. In a few cases the mother's diet may be rich in fats and proteins but generally the diet is not faulty though blaming the mother for taking an unsuitable diet may be the easiest way of explaining the difficulties. In such cases examination of the mother or baby shows nothing abnormal. Therefore the mother should be advised to give the breast milk diluted and the condition sets itself right in the course of a week or so. The baby should be given about half an ounce of warm water first before putting it to the breast. I have found administration of citrated water (2 grs. of sodium citrate to 1 oz. of water) particularly useful in this condition.

An important factor working against successful breast feeding is the want of appreciation of the values of human milk both by public as well as the medical profession. Powerful commercial interests slowly but surely influence the minds of even doctors in assigning a higher value for artificial foods than they want. Every day advertisements pour in explaining how such and such a milk food is the ideal one for the infant. Photographs are displayed, testimonials by the scores from doctors are quoted and what is more the food it is mentioned, is used in the nurseries of Royal households. No wonder the mother anxious to do her best for the baby looks down in breast feeding and would prefer to give her baby the so called very best. How can a practitioner specially if he is just beginning practice dare raise his voice against these products in preference to breast milk. The result is that even if the artificial food disagrees it is not blamed but the person who actually ad-

ministered it, the ayah or the nanny. As one who had the opportunity of looking after a very large number of infants in the first few weeks of life, I can safely assert I have yet to see an artificial food which can compare more favourably with breast milk. No wonder that the celebrated author and physician, Oliver Wendel Holmes remarked, "No fluid prepared according to the best formula elaborated in the hemispheres of the human brain can compare with the fluid elaborated in the hemispheres of the human breast".

Now we come to a group of cases fairly large and common where breast feeding cannot be continued and artificial feeding has to be resorted to. These are when the mother is suffering from serious illness like tuberculosis, severe anaemia, cachexia or insanity or when the mother is dead. In these cases there is no other course but to adopt artificial feeding. The next best substitute to human milk is cow's milk. It is generally necessary to modify it before it is administered. How to modify it suitably is the problem. Research has been done at this for decades, countless books and papers have been published in substitute feeding, the very number indicating how complex the problems.

A simple modification is by dilution. For a child of 3 months, cow's milk could be diluted with equal parts of water and for a child of 6 months 2 parts of milk to 1 of water, the increase in the milk proportion to be done gradually, a child of 9 months and over can have milk 3 parts and water 1 part or undiluted milk. Barley water could be used instead of plain water as it facilitates digestion. If there is a tendency towards loose motions lime water, 2 or 3 teaspoonfuls may be added to every feed. By diluting the milk the calorific value per oz of the feed is reduced and to make up the deficiency carbohydrate in the form of sugar and fat in the form of cream or cod-liver oil are added. The concentration of sugar in the milk mixture should be between 7 to 10%. This is important point not sufficiently emphasised in books. Thus to a mixture

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of milk and water equal parts, sugar may be added in the proportion of 1 or 1½ level teaspoonful to a 3 ounce feed. Concentration higher than 10% is likely to cause fermentative type of diarrhoea in the tropics though a higher concentration than 10% is tolerated in cold countries. About the kind of sugar to be added cane sugar is as satisfactory as any other. Clean brown sugar is quite suitable. Milk sugar or lactose at one time was considered better. The best form of sugar is dextrin maltose as it is not easily fermented. Glucose is more widely used to-day.

Now there is very common impression among the laity that a new product glucose has been discovered and that it has special nutritive value in the infant's dietary. I know many a mother giving her infant glucose in large amounts thinking that it is even better than breast milk. Sometimes it is with a feeling of pride that you will be told that she is giving the baby not the ordinary glucose but a special kind, say glucose x or glucose y. So great is the hold of glucose on the imagination of the people that they are apt to look down upon a doctor who fails to prescribe it. I do not know who is responsible for this state of affairs but I know that even the medical profession has come under its spell. Doctors allow glucose administration freely where they would not have allowed the same amount of carbohydrates, say, in the form of cane sugar. The excessive administration of glucose to infants leads to digestive interference resulting in attacks of diarrhoea.

About the addition of fats either cream could be added or fats could be administered separately in the form of cod liver oil. It is not well known that infants here cannot tolerate fats to the same extent as in the subtropical and temperate climates. By extensive trials we have found that the infants here do not tolerate a higher percent of fat than 1.7 to 1.8 per cent in the milk mixture though probably a higher percent 3 to 4 may agree with them in cool heights of Ooty or Kodaikanal. This is particularly so with infants below 16 weeks. Now it becomes clear why

several of the reputed infant feeds, which have given good results in the country of their manufacture failed to give us satisfaction when tried here. Be it remembered that we cannot have infants to suit proprietary foods however excellent these might be and it is the foods that must suit the infants. Then only we shall meet with greater success in the artificial feeding of infants. It is usual to supplement the feeds by the addition of fruit juice. This contains vitamin C, orange juice is particularly advocated. Oranges are not cheap and not available throughout the year. Even in towns at times it may be impossible to get them. Potato cream contains enough vitamin C to serve the purpose. The potato is washed and just boiled with its skin on. The skin is peeled off and the layer just beneath it is scraped with a spoon. A teaspoonful of this in a little milk in the form of potato cream will suffice. Potatoes are always available and within the means of the rich and as well as the poor. Scurvy was once very common in Ireland; after the introduction of potato it almost disappeared in that country.

A word about the newer methods, of vitamin administration. This is the age of vitamins. Hardly a day passes without one's receiving literature about the role they play in health or disease. Essential as they are in the economy of nutrition, small amounts have been found sufficient for health. A well balanced food usually contains all the necessary vitamins. These vitamins are available in the concentrated form and there is an impression that if they are not prescribed as such, the doctor is not up to date. But it is better to administer vitamin containing food products of definite nutritive and calorific value rather than the powerful concentrated vitamin A products. It is not generally known that vitamin in concentrated form gives rise in feeble infants to inflation of the colon. Vitamin A is found in generous amount in cod liver oil. The latter is cheap and easily available. It is easily assimilated and has a far greater nutritive value than the purified vitamin A. Recent work has shown that vitamin D in high doses is

definitely injurious. As regards vitamin A no evil effects have been reported in human beings but experimentally in rats and guinea pigs harmful effects such as lowered metabolism, haemorrhage, conjunctivitis, diarrhoea and cramps have been noted. My object of speaking at length on this is not to minimise the value of vitamins but to emphasise that they should be used with caution and discretion. Lastly if permitted I may touch upon another aspect, generally overlooked. I would say that infants should not be considered merely as living things weighing so many pounds governed solely by the laws of physiology or biochemistry. We have studied or rather attempted to study their somatic condition but the psychic is yet to a great extent

unexplored. They react to the unseen but all the same real influences of love and kindness. It is extraordinary how some children will fume and fret in the arms of one person and refuse to take food while they will be quiet and happy in the arms of another, taking food with delight. A nurse who is a stern disciplinarian and thorough in her methods who may not be an unqualified asset in the operation theatre, may not be able to show good results in the feeding as one who loves babies and whom the babies love in return. In conclusion let it be remembered that babies are not standardised and each case has to be approached and studied individually. Then only several problems in infant feeding will be solved.

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No. 1

Original Articles

* SOME PROBLEMS IN INFANT FEEDING

By

DR. M. B. PRABHU M. D., M.R.C.P. (Ed) M. M. (Lond)

This evening's subject is very common-place one. There are none amongst you who are not quite familiar with infants because, after all children form a fairly large percentage of the patients we meet in the daily practice. Another reason for preferring a common place subject was my experience from associating with medical students; common place subjects do not attract them; they probably know more about disseminated sclerosis than about a common cold. The difficulties we come across in the management of these common complaints are perhaps far trivial to receive anything more than a passing notice in books of medicine. Yet these can become a source of vexation if not anxiety to the attending physician.

is necessary and unless the infant feeding is judicially adjusted its health is bound to suffer. Sometimes the after effects of disease contracted during this period may last for a long time an example being rickets where the bony deformities caused, may have far reaching effect in adult life in the case of females. Moreover infections affect a poorly nourished child more often and more severely than in the case of a properly nourished child. The pleasure of keeping an infant healthy and safe guarding it from disease is greater than the satisfaction one may derive by curing it of its ailments and no single factor is more responsible for maintenance of its good health than adequate and proper feeding.

In the management of the infant, the right method of feeding plays an important part. The food requirements in infancy are comparatively greater than in childhood or adult life. The rate of growth in infants marked during the first 2 years is greater than at any other period. You can well realise this if it is remembered that the infant nearly doubles its birth weight during the first 12 months and weighs nearly 4 times by the end of second year. During this period of activities sufficient nourishment

We all know that the infant's diet should consist solely of milk during the first 6 or 7 months. The milk is either breast milk or cow's milk. We will not be out of place if the merits of two are discussed at this stage. Breast milk is the ideal food for the infant. It is free from micro-organisms. Certain biological and chemical differences make it impossible to prepare from cow's milk a fluid identical with human milk. At one time it was believed that the sole differences between the two were in the percentage of fat and proteins.

A Lecture delivered at the Annual session of the Ramnad District Medical Association on 16—9—'39.

HÆMATEMESIS

BY

DR. K. NARAYANA MURTHI, M.D.,

Hon. Physician, Government General Hospital, Madras.

Vomiting of blood at times baffles the most experienced physician especially if he is consulted by a patient suffering from this symptom for the first time, being a mere symptom of some hidden disease not necessarily of the stomach from where the blood pours out either in small quantities, at protracted intervals or in large quantities frightening all concerned not excluding the attending physician.

Slight and protracted hæmorrhage gives the physician some time and scope to think over to resort to suitable treatment depending upon the cause or causes. Vomiting of blood in these cases is usually due to the venous or capillary congestion of the mucous membrane of the stomach in cases of acute or chronic gastritis produced by irritating articles of food. Congestion of portal system is a frequent cause of hæmatemesis. The most marked and fatal cases of this kind occur when the vena portae or its large branches are plugged with blood clots or cancerous matter. These cases are rare but are usually fatal. The other cases of protracted hæmorrhage take place in cirrhosis of liver or splenic enlargements and it is mentioned by Osler that deaths took place more frequently from hæmatemesis due to cirrhosis of liver and splenic enlargements than in ulcer or cancer of stomach. All the same in majority of cases where vomiting of blood is due to portal congestion relief is obtained by the communication with the varicose oesophageal veins which burst and thus give relief to portal circulation. This may happen though not so frequently in persons suffering from diseased heart especially when mitral orifice is stenosed. In the latter condition there is usually coexistence of chronic gastritis and in all probability bleeding takes place from the hæmorrhagic erosions in the stomach wall. At times there is considerable bleeding in these cases but these can be distinguished from the bleeding due to ulcer by the absence of pain by

the vomiting being only occasional and also by the fact that there is lot of mucus mixed with blood which is always of dark colour. There is no evidence to show that vicarious menstruation can cause hæmatemesis but cases have been noted clinically, hæmorrhage occurring in a pregnant woman where there was history of the occurrence of vicarious menstruation. In such a family, history could be elicited of a hæmorrhagic diathesis particularly among women. I had a patient a pregnant mohamadan lady aged 23 years having hæmatemesis during the first six months of pregnancy which made me think that the hæmorrhage could be from the lungs as there was a recent history in the family that one of her brothers died of T. B. Clinically no evidence of any pulmonary lesion could be noticed and as the hæmorrhage was profuse about 10 to 12 ounces at a time, an examination of the peripheral blood of the patient revealed a reduction in the number of blood-platelets and delayed bleeding time. The vomited blood was bright red in colour sometimes in big clots and it has necessarily to be distinguished from other sources it originated.

Large hæmorrhage from the stomach are generally due to ulcer of the stomach. The bleeding generally takes place soon after a meal. It is not always that the bleeding from an ulcer in the stomach is large. In some cases it may be so small that it may require careful examination to discover it. At times it may so happen that a small ulcer which may be difficult to find out might rupture a big artery and cause profuse bleeding. It must also be remembered that there may be fatal cases of hæmorrhage in the stomach without vomiting. There are cases where a diseased organ such as liver, pancreas or spleen gets itself adhered to the stomach wall and the artery in these organs may break open in the stomach wall. At times for want of history of pain or vomiting such hæ-

morrhages are made out in the post-mortem room only. So the medical practitioner should always be on the alert when signs of hæmorrhage present themselves. In cancer of the stomach bleeding is not so profuse as in simple ulcer. It is just probable that the new growth compresses the blood vessels and in these cases there is constant oozing of blood which being acted upon by gastric juice gives the blood 'coffee ground' appearance. Occasionally profuse hæmorrhage may take place due to rupture of aneurysm into the stomach. It should also be noted that a foreign body such as a fish bone might pierce the aorta through the oesophagus and cause fatal hæmorrhage in the stomach. In all cases of large hæmorrhages in the stomach the patient passes tarry black stools.

Hæmatemesis may also arise due to blood changes predisposing it to ooze, through the veins or capillaries of stomach. This may happen in puerpura hæmophilia, leukemia, yellow fever and other specific fevers such as small-pox etc., and even in typhoid cases. Blood may flow into the stomach from the nose as in epistaxis, from the base of a fractured skull, from diseased fauces or gums and from the ear. So it is essential that the patient's nose, throat and ears should be thoroughly examined in all cases of vomiting of blood when no distinct history can be got from the patient or his relations. Some time ago the term gastro-taxis was applied to a hæmorrhage occurring in the stomach in the absence of any noticeable organic lesion in the stomach. The recent advances made by the use of gastro-scope reveal multiple acute congested areas of ulceration which were found to heal very rapidly. Operations done immediately on the escape of blood and the results of autopsy, confirms that the hæmatemesis was due to acute ulcers which have a peculiar characteristic of healing rapidly. The mucous-membrane appears at operation to "weep" blood at the slightest touch. The condition is due to hæmorrhagic gastritis as a result of some infection or intoxication. Chemical irritants such as arsenic, alcohol and mineral acids are amongst other causes hæmatemesis.

As I was handing over this article to

the Editor he told me of two cases of vomiting both in women. One was at her menopause aged 50 and another a woman nearing 60. In the first case the patient had profuse menorrhagia which suddenly stopped followed by vomiting of large quantities of blood and ending fatally. The other patient had frequent vomiting of blood in small quantities for over a fortnight and eventually recovered due to, he said, chance or luck. Both had all sort of treatments indicated for such cases and in both no disease which causes bleeding in the stomach directly or indirectly could be detected. Evidently these cases might be due to blood changes chemical or physical causing the blood to ooze out through the vessels of the stomach.

SYMPTOMS: Generally a patient in hæmatemesis is suddenly attacked with a fainting fit. He complains of a feeling of weight and uneasiness at the pit of the stomach, looks pale with a feeble pulse at times in collapse. This state is followed by vomiting. When a large vessel is ruptured in the stomach the blood is profuse and is bright red but generally hæmorrhage goes on slowly and the blood is acted upon by the gastric juice and consequently it is of a dark colour. In these cases the patient passes tarry stools.

DIAGNOSIS: In cases where blood in the stomach is oozing in small quantities it may be difficult to say by naked eye whether the fluid is blood or bile. Microscope and the laboratory tests for bile salts may help in arriving at right conclusions in these cases. It is very necessary to differentiate the cause of hæmatemesis. What one has to do, is to examine nose, gums, throat, etc., then stomach and duodenum to find out any tenderness.

2. Examine the liver for cirrhosis.
3. Examination of chest for any lung signs.
4. Find out by X-ray for aneurysm or medistinal growths which might have perforated into the oesophagus.
5. The quantity of blood is noted and the possibility of simulation in neurotic individuals should always be remembered.

It is not always easy to ascertain whether blood came from stomach or lungs, the patient is much alarmed that his version cannot be depended upon. Generally the blood from the lungs is scarlet red, mixed with mucus, alkaline and is frothy. That from stomach is of darker colour, acid, mixed with food. Haemoptysis is generally preceded by symptoms referable to heart or lungs such as cough, expectoration or dyspnoea. Haematemesis is preceded with symptoms indicating gastric or hepatic diseases.

PROGNOSIS: Haematemesis is a serious symptom but its seriousness depends upon the cause. In portal congestion haematemesis acts as a safety valve and relieves abdominal congestion thereby giving considerable relief to the patient. Therefore the bleeding must not be checked. As regards lesions, aneurysm is the most grave, and before any treatment is given the patient may be found dead. In the order of severity, cancer comes 2nd, 3rd morbid blood conditions, 4th cirrhosis and 5th simple ulcer. The amount of haemorrhage is not such a valuable guide in prognosis but one has to remember a large haemorrhage makes the patient very anaemic and debilitated for a considerable amount of time.

The mortality rate in haemorrhage from the ulcer of the stomach is about 1.5%. If gastric duodenal and anastomatic ulcers are taken together the mortality rate works to 27%. But the mortality rate from haemorrhage of all cases of ulcers where there is no history of haemorrhage before is about 1%.

TREATMENT: The treatment of course depends upon the cause. In cases of haematemesis due to local lesions in the stomach, the patient should be kept in the bed for 48 hours without allowing him to go out of it even to pass urine or stool. He should be given sips of ice cold water. During the period of starvation rectal saline may be given. No addition to the diet should be made until at least 48 hours after the disappearance of occult blood from the stool. When the haemorrhage is large an ice bag should be placed over the epigastrium, the thirst may be relieved by sucking a linen rag moistened with

iced water. Morphia is injected hypodermically to relieve anxiety and pain. If bleeding still continues, Alum grs. v with acid sulphuric dil m 20 or Ergot or Adrenalin 1 in 1000 in $\frac{1}{2}$ drachm doses every second or third hour may be given. 2 grs. of lead acetate in pill or combined with acetic acid may also be tried. Calcium chloride 1% solution may be given intravenously. Normal serum or Neo-Haemoplastin may be found useful. Coagulose is useful when the coagulation time is delayed. Sanguostop or kongored 1% may be given intravenously. In profuse haemorrhage, subcutaneous infusion of saline may be useful. Gum acacia 6% in normal saline may be given intravenously. If the haemoglobin is below 30% the patient should be transfused not more than 10 ozs of blood and it should not be repeated unless haemorrhage recurs. Transfusion is necessary to prevent the patient dying from anaemia and it is not required for the restoration of the blood to the normal level. A rapid rise in B.P. may lead to recurrence of haemorrhage and hence transfusion should not be administered too rapidly. Calcium gluconate 5% solution, 10 cc. may be given to support the heart. Intramuscular injection of Vitamin C is of doubtful value.

If the haemorrhage from the stomach continues to a dangerous extent a stomach tube is passed and the stomach contents are emptied by an evacuator "Senoran's" and washed with $\frac{1}{2}$ pint of iced water until the contents of the stomach are no longer tinged with blood. Then 1 drachm adrenalin chloride may be left in the stomach.

When the bleeding is slight and there is reason to believe that it is due to portal congestion the best thing to do is to give a dose of blue pill at bed time followed by sulphate of magnesium and dilute sulphuric acid (2 drs. of former and 10 minims of latter in an ounce of water or infusion of roses) every 2 or 3 hours till bowels move freely.

If the diagnosis of ulcer of stomach or duodenum is made, surgical measures are resorted to to prevent further occurrence of haematemesis.

THE Medical Practitioner

Vol. XI]

OCTOBER, 1939

[No. 1

OURSELVES.

The Medical Practitioner has just entered the eleventh year of its life. All these ten years, it concentrated its activities towards problems relating to the life and prosperity of the members of the medical profession and it may be said with satisfaction that its efforts in this direction have not been in vain. We have to express our gratitude to the popular Government that is now on the saddle in this province especially to the Hon'ble Minister in charge of Public Health but for whose dynamic influence the progress of reforms in the Medical Administration would not have been so speedy as it is conducive to the growth of the medical profession as a homogeneous fraternity. The abolition of medical schools did once for all put an end to the castes in the profession and the increased scope afforded to the members of the independent medical profession to serve in State Hospitals as honoraries will in addition to raising of their prestige and status, give them facilities to bring to the door of the public up-to-date knowledge and experience in the treatment of diseases. For want of an organised profession, the opportunities afforded by the progressive policy of the Government have not been availed of so far by the profession to its advantage and The Medical Practitioner will earnestly endeavour to place before the profession ways and methods by which the reforms introduced by the Government in their medical administration could be worked out

most advantageously to the best interests of the public and the profession. The scientific profession has great many handicaps in this direction, the most significant being that its numbers who are at present a little over 6,000 having to contend against the competition of quacks, a good member of whom have managed to get into the register maintained by the Central Board of Indian medicine and materially flooded its pages and this register has a numerical strength of 20,000. They are let loose on the public to practise medicine not of indigenous systems but the system practised by the members belonging to the scientific system to practise which they had to undergo scientific training from four to five years and which scientific system is being practised by many amongst the 20,000 with impunity. Scientific system of medicine cannot restrict its votaries to any theory of medicine or surgery; all that it requires is that the theories should be scientifically recognised for public safety. The army of 20,000 is making a big noise in season and out of season and in all places making erroneous impressions on credulous masses. The popular Government have to depend upon mass opinion and not so much on scientific opinion; so it is incumbent on the part of the members of the scientific profession to conquer mass opinion in favour of science making them realise that their lives are in danger in the hands of unscientific practitioners. This will strengthen the Government against unscientific mass opinion. The

Public Health Minister who happens to be a scientific medical practitioner is not and cannot be against indigenous systems of medicine as he is depicted to be by interested people. Though he is against unscientific development of these systems, he nor others belonging to the same system as he belongs, cannot but recognise the ancient glory of indigenous systems and all of them are anxious that these systems should be developed in as glorious a manner. This can only be done by practitioners trained in a scientific manner. So it is the duty of the profession to educate the public making it plain that the members of the scientific medical profession far from ignoring the indigenous systems are anxious to add to the lore of medicine anything that will cure diseases and relieve human suffering. The Medical Practitioner has not been lagging behind to apprise the Government of the dangers ahead relating to the development of a hybrid system of medicine. There is yet another way and more sure to win the confidence of the masses and that is mutual service and mutual admiration for one another in the profession. For one thing or other the members of the scientific profession are suffering more for want of these two qualities than from unhealthy competition with the quacks. To exercise these two qualities there is no need for money or labour but there should be only an attempt to develop the inherent noble qualities which need not be borrowed by the members of a profession which is recognised to be the noblest.

The Medical Practitioner has been able to play its part quite successfully in minimising castes in the profession, lessening unhealthy and unwholesome competition between State-paid and private practitioners, increasing the scope of honorary service in State Hospitals

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TUBERCULOSIS ASSOCIATION OF INDIA.

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deaths are due to tuberculosis. On this basis it is assumed that for a population of 100,000 there are 250 deaths in India due to this infection whereas in Great Britain it is 69, 68 in United States and 40 in Denmark. It is also said that in England between the years 1861-65 there were 252 deaths for a population of 100,000, very near the rate in India at present. It looks it will take at least a century for India to come to the standard of England if measures adopted in that country are to be adopted in India for combating tuberculosis. The anti-tuberculosis activities in the west are not confined to institutional treatment centres only such as tuberculosis clinics hospitals, and sanatoria. Colonies for ex-patients, institutions for after-care of tuberculous patients, research, surveys, legislative measures and publicity and propaganda for educating the people are amongst other activities. Taking into consideration the appalling poverty, ignorance, lack of interest taken by the medical profession, the absence of family doctors on a large scale or any schemes of Public Health service and to a great extent public apathy for any scheme in regard to health and welfare, it will not be possible in India in the immediate future to have recourse to the measures adopted in other advanced countries to fight tuberculosis. But for the benevolent activities of Lady Linlithgow, which she alone could command being the life partner of His Majesty's representative in India there would not have been such a response from the public and that within a very brief period. We learn that the total collections made so far by Her Excellency come to Rs. 83,00,000. Out of this amount 95 per cent has been distributed to the provinces and Indian states in the proportion contributed by these territories and 5 per cent

retained by the Central Association. Not a bad beginning indeed; the affiliated provincial branches should follow the example of Lady Linlithgow to arouse in the public including the masses self help impressing on them that contributing towards the funds of the anti-tuberculosis associations should not be considered as charity but a legitimate duty for insuring protection against tuberculosis infection. The association should find out efficient methods to kindle the sense of responsibility in the people for their own good.

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that the infection is so widespread and the people are so callous that it is a hopeless task in India to attempt to do anything. We wish them to know what the state of affairs were in England 75 years ago. As referred to above the death rate in England was much the same as it is now in India, i.e., 252 for 100,000 and it has been possible for the medical profession to bring it down to 69 to 100,000 with efficient organisation with the help of the public. Is it not possible for the members of the medical profession and the public to be as patriotic as those in England?

As in education so also in medical relief, the Christian Missionaries have been the pioneers in India. We learn that till 1900 there was not a single institution in India for the treatment of tuberculosis and the very first institution goes to the credit of missionary work. Till recently about half the number of beds available in the whole of India for the treatment of tuberculosis belonged to the mission institutions. Dr. Kesava Pai tells us in his article that Madras Presidency has no less than 200,000 cases of tuberculosis, and that there are hardly 500 beds including the Arogyavaram Sanatorium which caters for patients all over India. He points out that many advanced countries in Europe have 1 bed for 10 cases and that this presidency should have 20,000 beds. In a survey recently conducted by Drs. Benjamin, Vergese and Jesudian, the medical staff of the Arogyavaram Sanatorium in Saidapet, a suburban town of Madras with a population of 33,000, 58.1 per cent of 3,309 persons examined, showed a positive reaction, the percentage in adults being 69.8 and children 41.2. Saidapet is considered 'to be a typical South Indian Town in its economical,

social, hygienic and religious customs and methods of living'. This survey should therefore give a fairly authoritative idea of the bulk of tuberculous infection prevailing in Southern India. Affairs in Northern India should be much worse taking into consideration the prevailing purda among the female population, both amongst the Hindus and the Mohamadans. The magnitude of work in India seems to be much greater due to another factor. It is said by research workers in close touch with tuberculosis problems that tuberculous infection in India is of a different type from that found in the West and that 'economic, social and hygienic factors play a far less important part'. This is said to be due to 'a want of acquired resistance'. So the tuberculosis associations have a tough fight in India and the fight can only be successful if the army divisions are considerably large in number and efficient in fighting. The army should be also of a high morale and as much disciplined. These qualities could only be secured if the army is fed and kept above want. This has been the secret of the successful work turned out in mission institutions. Her Excellency, Lady Linlithgow who may be rightly called the first War Lord against Tuberculosis has made the best choice of her commander in the person of Dr. C. Frimodt-Moller a typical soldier of tried merit who it is hoped will lead his army placing before it his own exemplary missionary work. He has been in India for three decades working silently and diligently at the Arogyavaram Sanatorium which is considered to be the largest and best organised Sanatorium in India. His first duty and of those in sub-command is to recruit a large army of disciplined workers imbued with love for work more than for money. The spirit of political sacrifices which is not far

too uncommon in India should be diverted in the medical profession at least in the campaign against social diseases like tuberculosis remembering always that India is a very poor country. It is said that so far about 250 medical practitioners have been given a month's special training in tuberculosis and that the Madras Government is instituting a special Diploma in Tuberculosis (T. D. D.). It may be claimed that there is fairly a good number of practitioners who have a special aptitude in the diagnosis and treatment of tuberculosis but who had not the opportunities of working in recognised institutions for the treatment of tuberculosis. Almost all the institutions at least in Southern India were originally staffed by such practitioners in Government or Missionary service and the work in these institutions gave them further opportunities for specialising themselves. This fact should not be forgotten while recruiting the future tuberculosis army especially so as the campaign has to be as wide as possible. Nobody can deny the special role of X-Ray in the diagnosis and treatment of tuberculosis. But the old workers in tuberculosis institutions should not forget that there was a time in the history of their work not older than even a decade when cases of tuberculosis were diagnosed and successfully treated by them without the X-Ray help. We should not be misunderstood that we minimise the importance of X-Ray but we have to warn all concerned that X-Ray plants in some institutions not excluding those owned by Government have done more harm than good especially when the photographs and their readings as interpreted by the radiologists did not confirm the undoubted clinical findings. Such are the state of affairs in India which, we are sure, are bound to improve. Till such time at least it is incumbent on

ted member is Rs. 3 a year. (iii) *Associated members*: This membership is restricted to only registered practitioners. The annual subscription for such membership is Rs. 2 a year. (iv) *Representative members*: Any institution or body which makes an annual grant of not less than Rs. 250 to the Association shall be eligible to nominate one representative as a member of the Association. Such a member has not to pay any subscription. (v) *Life members*: Any person paying Rs. 100 in one lump is to be a life member. (vi) *Honorary members*: These are to be elected by the Central Committee from amongst the public who have rendered services to the Association.

Whatever information we could get about the Central and the Madras Tuberculosis Association we have placed before our readers. The programme of work contemplated by both the associations seems to be uniformly the same. The constitution of both the associations seem to have been drafted most cautiously so that there may not be any hitch in the useful and progressive work that should go ahead. The Central Association seems to be more liberal than its Madras Branch in that the General Body can elect some members to the Executive Committee whereas there is no such provision in the Madras Association. In the present state of the affairs of the Indian public and of the Indian Medical Profession no better constitution could perhaps be thought of. A special provision has been made for the admission of registered practitioners as Associate members on a comparatively the smallest fee. But it is learnt that the Associate members cannot vote at the General Body meetings. We would suggest to the practitioners to join the Madras Association in large numbers as ordinary members paying Rs. 5 a year for obvious reasons. There is no restriction that these members should be residents of Madras. They can vote either in person or by proxy at the General Body meeting, which though does not seem to have any control over the executive authority, can certainly control the general policy of the Association in all its aspects.

T. D. D. Diploma: That necessity is the mother of invention is amply proved by the fact that in Madras a post-graduate diploma in Tuberculosis will soon be instituted by the Government of Madras to enable the Tuberculosis Association of Madras to have specialists in charge of Tuberculosis Clinics to be started in the City and the mofussil headquarters if sufficient encouragement is forthcoming. It is said that at present there is scope to train only six students at a time. The course will be for nine months of which three months are to be spent in Madras and the other six months in the Arogyavaram Sanatorium. Later when the Government Sanatorium at Tambaram has sufficient complement of beds and other equipments the entire course will be in Madras and still later perhaps when the scheme of a sanatorium in Waltair ripens and a well equipped sanatorium is established, the future Andhra Province is sure to introduce this special diploma. There was a talk of a controversy, though not an open one, in the circle which started the idea of the T. D. D. diploma whether the medical licentiates could aspire for it. It is not likely that in this circle there could have been any medical licentiate of Madras but it is possible that at least one such licentiate who might have been in contact with one or two in the circle must have exclaimed that no invidious distinction should be made for admitting practitioners in the Madras Register for the T. D. D. course or any such course to be run by the Government. Provincial Medical Registers seem to us at times anomalous to the spirit of legislation introduced by the Governments to establish Medical Registers. The old bureaucratic and semi-bureaucratic Governments the former of whom took the British Medical Acts, as a model for introducing such Acts in the Provinces of India, copied only the skeleton of the British Acts and they could afford to make a skeleton appear like bodies with souls in them; the present popular Governments and especially the Government of Madras cannot say that a skeleton can have a body or soul. Fortunately for the medical profession or at least for the licentiate section

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OURSELVES.

The Medical Practitioner has just entered the eleventh year of its life. All these ten years, it concentrated its activities towards problems relating to the life and prosperity of the members of the medical profession and it may be said with satisfaction that its efforts in this direction have not been in vain. We have to express our gratitude to the popular Government that is now on the saddle in this province especially to the Hon'ble Minister in charge of Public Health but for whose dynamic influence the progress of reforms in the Medical Administration would not have been so speedy as it is conducive to the growth of the medical profession as a homogeneous fraternity. The abolition of medical schools did once for all put an end to the castes in the profession and the increased scope afforded to the members of the independent medical profession to serve in State Hospitals as honoraries will in addition to raising of their prestige and status, give them facilities to bring to the door of the public up-to-date knowledge and experience in the treatment of diseases. For want of an organised profession, the opportunities afforded by the progressive policy of the Government have not been availed of so far by the profession to its advantage and The Medical Practitioner will earnestly endeavour to place before the profession ways and methods by which the reforms introduced by the Government in their medical administration could be worked out

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the part of educational authorities that the students are well taught in the art of diagnosing tuberculosis by the use of eyes, fingers and ears in which case a few at least amongst the intelligent students will be able to diagnose earliest cases of tuberculosis of the lungs before the X-Ray could indicate the pathological condition; while even an average student may be able to suspect tuberculosis in the lungs. At the same time the members of the profession should realise that in an army there should be Commanders, Major-Generals, Colonels, Lt. Colonels, and so forth in rank and all cannot occupy the highest or higher places unless they are qualified for it. We are glad to learn that Dr. Frimodt-Moller, the Medical Commissioner of the Tuberculosis Association of India and Dr. Kesava Pai, the Honorary Secretary of the Tuberculosis Association of Madras have placed special stress on organised home-treatment without which the campaign against tuberculosis will be next to nothing and Dr. Moller enjoins genuine

co-operation between the tuberculosis specialists at the clinics and the hospitals and the private practitioners. He is of opinion that the tuberculosis clinics and hospitals should serve as advisory centres to the private practitioners in charge of patients and the staff in these institutions should give free service to the poor, the specialist should be allowed only consulting practice and that patients undergoing special medical treatment in the institutions should stay in the hospital for a bare minimum number of days when they require special nursing and later sent home to be under the treatment of practitioners. It is only a medical missionary of the type and experience of Dr. Moller that could conceive missionary service even in non-missionary institutions and we hope that under his guidance, the campaign against tuberculosis will achieve the end which that noble person, Her Excellency, Lady Linlithgow has in view.

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News and Comments

The Central and Local Tuberculosis Associations: We have been often mentioning in these columns about the desirability of the members of the medical profession to take active part in matters relating to campaigns against social diseases. One such opportunity is now before them, thanks to the Tuberculosis Association of India which under the presidency of Her Excellency, the Marchioness of Linlithgow has been appealing for help and co-operation from the public. A brief history of the Association and its contemplated activities will it is hoped give the members of the profession an impetus to play their part not forgetting their professional interests and their responsibilities to the public.

We refer our readers to the article contributed by Dr. M. Kesava Pai which gives briefly an idea of the starting of the "King Emperor's Anti-Tuberculosis Fund" by Her Excellency Lady Linlithgow. The total contribution collected so far is reported to be Rs. 83,00,000. This will be distributed throughout the provinces and Indian states in proportion to the collection made by them, the central office retaining only 5 p. c. A new Association has been formed called the Tuberculosis Association of India which was registered on 23rd February of this year and the first meeting of the Association was held at the Viceroy's residence in New Delhi on March 29. The Patron of the Association is the Viceroy and the President the Vicerine. The general management is vested in a central committee of 28 members, besides officials, the committee has two representatives elected by the Central Assembly and the Council State; the Indian Red Cross has one representative and the General Body is to select some members; there is representation to the affiliated bodies and in addition there are a few co-opted members. The affiliated bodies are the Provincial Associations and the Associations formed in the Indian States. The affiliated associations are independent of the central one regarding their administration, in finance and in all the other ways and the medical commissioner

of the Association who is Dr. C. Frimodt-Moller would give advice to all associations in all matters relating to the development of their schemes so that they may have the benefit of the experience gained by the Commissioner in the other parts of India. The Commissioner would give detailed help concerning the location, construction, equipment, staffing, and functions of tuberculosis clinics and other institutions. The Central Association will promote and assist research work in tuberculosis and in the investigation of problems concerning this disease peculiar to India. The Association is also contemplating to start an information and statistical bureau, a library and a special journal.

About the immediate activities of the Association it is said that the work will be concentrated in a well thought of scheme for prevention and organised home treatment, the patients being segregated whenever and wherever possible at the same time introduce preventive measures in the homes and later establish contact for them with a proper Care and After-Care organisation.

The Madras Branch has His Excellency the Governor of Madras as its President, and the Hon'ble the Public Health Minister as the Chairman of the Executive Committee, the Vice-Chairman being the Surgeon-General with the Government of Madras. The Executive Committee consists of the Prime-Minister, the Public Health Minister, Surgeon-General, Director of Public Health, Private Secretary to His Excellency, the Governor, Secretary, Public Health Department, Director of Public Instruction and Secretary-Treasurer of the Imperial Bank of India. The ex-officio members have power to co-opt, not more than ten members and the Governor may nominate not more than five.

The Members of the Association belong to six categories: (i) *Ordinary members:* These have to pay Rs. 5 a year as subscription. (ii) *Affiliated members:* The number of these members to be fixed by the Central Committee. They are to be chosen from amongst the members of the affiliated bodies i.e., the District Associations. The annual subscription to be paid by a affilia-

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We learn that thirty years ago Dr. A. Lankaster a medical missionary conceived the idea of an All-India organisation for the prevention of tuberculosis and struggled hard for over two years to organise one and failed. This task was possible only for Her Excellency, Lady Linlithgow possessing a soft heart for the people of India. Possession of ideas however noble and useful do not go far unless these ideas are entertained by persons in authority. This is too true in India where due to variety of causes people not excluding the rich show always an inclination to be dependent and not independent except perhaps in political aspirations. "Let us first get political independence and the rest of things will follow" is the usual slogan on the lips of leaders in India. They forget that even for fighting for political emancipation they should possess healthy bodies and health is a very useful and powerful ally of politics, not to mention of all trades and professions. There is prevailing pessimism in the public that tuberculosis is an incurable disease. While a large section of medical profession show their apathy to lead a campaign to root out tuberculosis or at least to lessen its virulence. They are cowed down by the idea

that the infection is so widespread and the people are so callous that it is a hopeless task in India to attempt to do anything. We wish them to know what the state of affairs were in England 75 years ago. As referred to above the death rate in England was much the same as it is now in India, *i.e.* 252 for 100,000 and it has been possible for the medical profession to bring it down to 69 to 100,000 with efficient organisation with the help of the public. Is it not possible for the members of the medical profession and the public to be as patriotic as those in England?

As in education so also in medical relief, the Christian Missionaries have been the pioneers in India. We learn that till 1900 there was not a single institution in India for the treatment of tuberculosis and the very first institution goes to the credit of missionary work. Till recently about half the number of beds available in the whole of India for the treatment of tuberculosis belonged to the mission institutions. Dr. Kesava Pai tells us in his article that Madras Presidency has no less than 200,000 cases of tuberculosis, and that there are hardly 500 beds including the Arogyavaram Sanatorium which caters for patients all over India. He points out that many advanced countries in Europe have 1 bed for 10 cases and that this presidency should have 20,000 beds. In a survey recently conducted by Drs. Benjamin, Vergese and Jesudian, the medical staff of the Arogyavaram Sanatorium in Saidapet, a suburban town of Madras with a population of 33,000, 58.1 per cent of 3,309 persons examined, showed a positive reaction, the percentage in adults being 69.8 and children 41.2. Saidapet is considered 'to be a typical South Indian Town in its economical,

social, hygienic and religious customs and methods of living'. This survey should therefore give a fairly authoritative idea of the bulk of tuberculous infection prevailing in Southern India. Affairs in Northern India should be much worse taking into consideration the prevailing purda among the female population, both amongst the Hindus and the Mohamadans. The magnitude of work in India seems to be much greater due to another factor. It is said by research workers in close touch with tuberculosis problems that tuberculous infection in India is of a different type from that found in the West and that 'economic, social and hygienic factors play a far less important part'. This is said to be due to 'a want of acquired resistance'. So the tuberculosis associations have a tough fight in India and the fight can only be successful if the army divisions are considerably large in number and efficient in fighting. The army should be also of a high morale and as much disciplined. These qualities could only be secured if the army is fed and kept above want. This has been the secret of the successful work turned out in mission institutions. Her Excellency, Lady Linlithgow who may be rightly called the first War Lord against Tuberculosis has made the best choice of her commander in the person of Dr. C. Frimodt-Moller a typical soldier of tried merit who it is hoped will lead his army placing before it his own exemplary missionary work. He has been in India for three decades working silently and diligently at the Arogyavaram Sanatorium which is considered to be the largest and best organised Sanatorium in India. His first duty and of those in sub-command is to recruit a large army of disciplined workers imbued with love for work more than for money. The spirit of political sacrifices which is not far

too uncommon in India should be diverted in the medical profession at least in the campaign against social diseases like tuberculosis remembering always that India is a very poor country. It is said that so far about 250 medical practitioners have been given a month's special training in tuberculosis and that the Madras Government is instituting a special Diploma in Tuberculosis (T. D. D.). It may be claimed that there is fairly a good number of practitioners who have a special aptitude in the diagnosis and treatment of tuberculosis but who had not the opportunities of working in recognised institutions for the treatment of tuberculosis. Almost all the institutions at least in Southern India were originally staffed by such practitioners in Government or Missionary service and the work in these institutions gave them further opportunities for specialising themselves. This fact should not be forgotten while recruiting the future tuberculosis army especially so as the campaign has to be as wide as possible. Nobody can deny the special role of X-Ray in the diagnosis and treatment of tuberculosis. But the old workers in tuberculosis institutions should not forget that there was a time in the history of their work not older than even a decade when cases of tuberculosis were diagnosed and successfully treated by them without the X-Ray help. We should not be misunderstood that we minimise the importance of X-Ray but we have to warn all concerned that X-Ray plants in some institutions not excluding those owned by Government have done more harm than good especially when the photographs and their readings as interpreted by the radiologists did not confirm the undoubted clinical findings. Such are the state of affairs in India which, we are sure, are bound to improve. Till such time at least it is incumbent on

the part of educational authorities that the students are well taught in the art of diagnosing tuberculosis by the use of eyes, fingers and ears in which case a few at least amongst the intelligent students will be able to diagnose earliest cases of tuberculosis of the lungs before the X-Ray could indicate the pathological condition; while even an average student may be able to suspect tuberculosis in the lungs. At the same time the members of the profession should realise that in an army there should be Commanders, Major-Generals, Colonels, Lt. Colonels, and so forth in rank and all cannot occupy the highest or higher places unless they are qualified for it. We are glad to learn that Dr. Frimodt-Moller, the Medical Commissioner of the Tuberculosis Association of India and Dr. Kesava Pai, the Honorary Secretary of the Tuberculosis Association of Madras have placed special stress on organised home-treatment without which the campaign against tuberculosis will be next to nothing and Dr. Moller enjoins genuine

co-operation between the tuberculosis specialists at the clinics and the hospitals and the private practitioners. He is of opinion that the tuberculosis clinics and hospitals should serve as advisory centres to the private practitioners in charge of patients and the staff in these institutions should give free service to the poor, the specialist should be allowed only consulting practice and that patients undergoing special medical treatment in the institutions should stay in the hospital for a bare minimum number of days when they require special nursing and later sent home to be under the treatment of practitioners. It is only a medical missionary of the type and experience of Dr. Moller that could conceive missionary service even in non-missionary institutions and we hope that under his guidance, the campaign against tuberculosis will achieve the end which that noble person, Her Excellency, Lady Linlithgow has in view.

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News and Comments

The Central and Local Tuberculosis Associations: We have been often mentioning in these columns about the desirability of the members of the medical profession to take active part in matters relating to campaigns against social diseases. One such opportunity is now before them, thanks to the Tuberculosis Association of India which under the presidentship of Her Excellency, the Marchioness of Linlithgow has been appealing for help and co-operation from the public. A brief history of the Association and its contemplated activities will it is hoped give the members of the profession an impetus to play their part not forgetting their professional interests and their responsibilities to the public.

We refer our readers to the article contributed by Dr. M. Kesava Pai which gives briefly an idea of the starting of the "King Emperor's Anti-Tuberculosis Fund" by Her Excellency Lady Linlithgow. The total contribution collected so far is reported to be Rs. 83,00,000. This will be distributed throughout the provinces and Indian states in proportion to the collection made by them, the central office retaining only 5 p. c. A new Association has been formed called the Tuberculosis Association of India which was registered on 23rd February of this year and the first meeting of the Association was held at the Viceroy's residence in New Delhi on March 29. The Patron of the Association is the Viceroy and the President the Vicerine. The general management is vested in a central committee of 28 members, besides officials, the committee has two representatives elected by the Central Assembly and the Council State; the Indian Red Cross has one representative and the General Body is to select some members; there is representation to the affiliated bodies and in addition there are a few co-opted members. The affiliated bodies are the Provincial Associations and the Associations formed in the Indian States. The affiliated associations are independent of the central one regarding their administration, in finance and in all the other ways and the medical commissioner

of the Association who is Dr. C. Frimodt-Moller would give advice to all associations in all matters relating to the development of their schemes so that they may have the benefit of the experience gained by the Commissioner in the other parts of India. The Commissioner would give detailed help concerning the location, construction, equipment, staffing, and functions of tuberculosis clinics and other institutions. The Central Association will promote and assist research work in tuberculosis and in the investigation of problems concerning this disease peculiar to India. The Association is also contemplating to start an information and statistical bureau, a library and a special journal.

About the immediate activities of the Association it is said that the work will be concentrated in a well thought of scheme for prevention and organised home treatment, the patients being segregated whenever and wherever possible at the same time introduce preventive measures in the homes and later establish contact for them with a proper Care and After-Care organisation.

The Madras Branch has His Excellency the Governor of Madras as its President, and the Hon'ble the Public Health Minister as the Chairman of the Executive Committee, the Vice-Chairman being the Surgeon-General with the Government of Madras. The Executive Committee consists of the Prime-Minister, the Public Health Minister, Surgeon-General, Director of Public Health, Private Secretary to His Excellency, the Governor, Secretary, Public Health Department, Director of Public Instruction and Secretary-Treasurer of the Imperial Bank of India. The ex-officio members have power to co-opt, not more than ten members and the Governor may nominate not more than five.

The Members of the Association belong to six categories: (i) *Ordinary members:* These have to pay Rs. 5 a year as subscription. (ii) *Affiliated members:* The number of these members to be fixed by the Central Committee. They are to be chosen from amongst the members of the affiliated bodies i.e., the District Associations. The annual subscription to be paid by a affilia-

ted member is Rs. 3 a year. (iii) *Associated members*: This membership is restricted to only registered practitioners. The annual subscription for such membership is Rs. 2 a year. (iv) *Representative members*: Any institution or body which makes an annual grant of not less than Rs. 250 to the Association shall be eligible to nominate one representative as a member of the Association. Such a member has not to pay any subscription. (v) *Life members*: Any person paying Rs. 100 in one lump is to be a life member. (vi) *Honorary members*: These are to be elected by the Central Committee from amongst the public who have rendered services to the Association.

Whatever information we could get about the Central and the Madras Tuberculosis Association we have placed before our readers. The programme of work contemplated by both the associations seems to be uniformly the same. The constitution of both the associations seem to have been drafted most cautiously so that there may not be any hitch in the useful and progressive work that should go ahead. The Central Association seems to be more liberal than its Madras Branch in that the General Body can elect some members to the Executive Committee whereas there is no such provision in the Madras Association. In the present state of the affairs of the Indian public and of the Indian Medical Profession no better constitution could perhaps be thought of. A special provision has been made for the admission of registered practitioners as Associate members on a comparatively the smallest fee. But it is learnt that the Associate members cannot vote at the General Body meetings. We would suggest to the practitioners to join the Madras Association in large numbers as ordinary members paying Rs. 5 a year for obvious reasons. There is no restriction that these members should be residents of Madras. They can vote either in person or by proxy at the General Body meeting, which though does not seem to have any control over the executive authority, can certainly control the general policy of the Association in all its aspects.

T. D. D. Diploma: That necessity is the mother of invention is amply proved by the fact that in Madras a post-graduate diploma in Tuberculosis will soon be instituted by the Government of Madras to enable the Tuberculosis Association of Madras to have specialists in charge of Tuberculosis Clinics to be started in the City and the mofussil headquarters if sufficient encouragement is forthcoming. It is said that at present there is scope to train only six students at a time. The course will be for nine months of which three months are to be spent in Madras and the other six months in the Arogyavaram Sanatorium. Later when the Government Sanatorium at Tambaram has sufficient complement of beds and other equipments the entire course will be in Madras and still later perhaps when the scheme of a sanatorium in Waltair ripens and a well equipped sanatorium is established, the future Andhra Province is sure to introduce this special diploma. There was a talk of a controversy, though not an open one, in the circle which started the idea of the T. D. D. diploma whether the medical licentiates could aspire for it. It is not likely that in this circle there could have been any medical licentiate of Madras but it is possible that at least one such licentiate who might have been in contact with one or two in the circle must have exclaimed that no invidious distinction should be made for admitting practitioners in the Madras Register for the T. D. D. course or any such course to be run by the Government. Provincial Medical Registers seem to us at times anomalous to the spirit of legislation introduced by the Governments to establish Medical Registers. The old bureaucratic and semi-bureaucratic Governments the former of whom took the British Medical Acts, as a model for introducing such Acts in the Provinces of India, copied only the skeleton of the British Acts and they could afford to make a skeleton appear like bodies with souls in them; the present popular Governments and especially the Government of Madras cannot say that a skeleton can have a body or soul. Fortunately for the medical profession or at least for the licentiate section

of it, there is a medical licentiate as one of the units of the Government. This Licentiate was one of the luckiest in the group having had the good fortune of going to Great Britain and qualifying himself as a Member of the Royal College of Surgeons and as a Licentiate of the Royal College of Physicians. He must have seen in that democratic country that all qualified practitioners are grouped in one list in the British Medical Register and that for any appointment in medical institutions any practitioner in the Register is eligible though perhaps higher qualifications naturally counted much in selection. He must have also come to know that in the United Kingdom there were and there are still acknowledged veterans in medicine and surgery or any branch of medical science who though they possessed only the Membership and the Licentiate qualifications could teach and examine students aspiring for higher qualifications and that merit and experience counted much more than the hall mark of qualifications. Having seen things for himself as a practitioner, the Medical Minister of Madras has been attempting to introduce reforms in the medical education, medical administration and medical relief bringing them to a level obtaining in other progressive countries, minding of course the conditions peculiar to India and the heritage of past Governments. It is very likely that his presence as the Chairman of the Committee of Management of the Madras Tuberculosis Association and also as the Head of the Technical Committee of the same body must have induced the Committee that sat to draft the T.D.D. course for the approval of the Government, not to debar the Madras licentiates from possessing this qualification. It is now rumoured that only graduates with T.D.D. qualification will be put in charge of Tuberculosis Clinics to be started next year in the Madras Presidency and that the first six to be chosen for the course will be therefore graduates only. Many a time rumours become facts so we thought we should give publicity to rumours also for what they are worth with the hope they will not be facts. It may be

superfluous on our part to say that given equal opportunities whether in private practice or Government service, the licentiates have been faring well. Even in the aspiration for post-graduate diplomas their record is not bad. The Madras Government have been granting a post-graduate diploma in ophthalmology and the licentiates and the graduates are admitted to this course, thanks to the sagacity of Col. Wright at whose instance the L. O. course was started by the Government. There were passes and failures in the L. O. examinations and these did count on the merit of the candidates and not on the qualifications possessed by them. It is not our purpose to claim superiority for the licentiates as against the graduates. The licentiates should be what they are but their legitimate aspirations to soar high in the profession should not be curbed or opposed when especially at least a few amongst them have proved to the satisfaction of the profession that given equal opportunities of service they are second to none in their zeal or capacity. We trust that those who are responsible in selecting the first batch of candidates to the T. D. D. course will make a gesture of fair play by selecting half the number from amongst the licentiates. It will not be out of place for us to mention that the selected candidates should not be too young or too old but practitioners of ripe experience, who have been commanding fairly respectable general practice.

Need For National Self-Sufficiency: When the industrialists and Governments are planning to take advantage of the world-war to give an impetus to Indian industries, the medical profession should also rise to the occasion and agitate for the introduction of post-graduate training and devise ways to introduce suitable diplomas for proficiency in special branches of medicine and surgery.

As we have pointed out, often, in these columns, the craze for foreign diplomas in medicine, in the past, was not checked in time. And now that the continent of Europe is in the throes of a terrible war, this exodus must practically, for the time

**Statement of Receipts and Charges of the Madras Provincial Subsidized
Rural Medical Practitioners' Association for the Month of September 1939.**

RECEIPTS.	Rs. A. P.	CHARGES.	Rs. A. P.
Cash balance on 31-8-1939 ...	163 14 3	Postage including V. P. charges ...	9 14 0
Subscriptions from members (in- cluding the V. P. P. Postal charges) ...	82 6 6	Pay to Clerks for August 1939 ...	15 0 0
Entrance fees from six new members ...	1 8 0	Amount paid to The Medical Practitioner from the subscrip- tions for 1939 paid by 21 members.	40 6 6.
Interest from Savings Bank with post office ...	0 10 7	Printing and Stationery ...	5 11 6
Part payment made by Dr. M. R. Bhat, General-Secretary towards the expenses incurred by the Association on behalf of the Manachanalloor Conference, Reception Committee ...	5 14 0	Contribution paid to the Kistna District Branch ...	13 0 0
	254 5 4	T. A. paid to Dr. M. R. Bhat, General-Secretary, for attending the Working Committee meeting held on 2-7-39 ...	5 14 0
		Rs. A. P.	89 14 0
		Cash Balance :	
		with Savings Bank 164 3 7	
		with Office 0 3 9	
			164 7 4
			254 5 4

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in Madras. It is a strange coincidence that the anniversary took place on 9-9-'39 a day after Sir Nilratan Sircar delivered his address in Vizagapatam. The judge said amongst other things: "that, in the realm of medicine, the benefits of the scientific advance of the West were certainly to be availed of, and it was by the application of Western methods to our own ancient Ayurvedic learning that the best could be obtained. He hoped that the allopath in this country would not look down upon the indigenous systems, and that whatever there was in these systems, which was good, would be retained and improved."

An Announcement: Consistent with our future aims and plans of service to the medical profession as referred to in the Editorial "Ourselves" appearing elsewhere in these columns, we approached all the Government Medical Officers who took part in delivering lectures in connection with the post graduate course in Tuberculosis to a limited number of 25 practitioners belonging to this and other provinces in India and almost all of them have been kind enough to promise to contribute summaries of their lectures to The Medical Practitioner. One such lecture appears in this number. The Missionary Doctors belonging to the Arogyavaram Sanatorium have also been approached. These lectures will be published in a series in the future numbers of The Medical Practitioner. We express our gratitude both on our behalf and on behalf of the readers of The Medical Practitioner to the lecturers

referred to above and we hope that we will be able by adopting such and similar means to bring about a largest possible team of practitioners whose motto will be mutual help and mutual admiration without which the scientific medical profession in India will not be able to do much to relieve human suffering which is the only concern of the profession.

Poison Gas: A neat little book on the 'Treatment and Prevention of Poison Gas' during air raids has been published by the Indian Medical Association. The General Secretary of the Association acknowledges the indebtedness of the authors of the book to the various publications of the Government of Great Britain. A book written on the information gathered from Great Britain where an exhaustive study of the precautions against air raids have been made, must be really a very useful one. The book costs only annas eight. Members of the medical profession will have much to do during air raids and it cannot be said that important cities in India on the coast such as Karachi, Bombay, Calcutta, Madras and other minor towns similarly situated can escape these raids if the war were to continue long. The cost of the book is so trivial and the chances of danger are so imminent that the members of the profession will do well to have the book. The cheapest way to order for the book is to send 10 annas stamps to 'The General Secretary, Indian Medical Association, 12, Samavaya Mansions, Calcutta.' This includes postage.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

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By

DR. SIR. NILRATAN SIRCAR.

EXTRACTS

"Let us turn our attention for a few minutes to medicine and public health on the teaching of which your University has devoted considerable attention. With the passing of the Indian Medical Council Act in 1933 attempts have been made to raise under graduate medical teaching to a higher and more uniform standard. The medical curricula have undergone many changes since 1892 when direct connection was established between the Indian Medical College and the General Medical Council of the United Kingdom. Although the Indian Medical Council has done good work within the short period of its existence, handicap to coordinated progress in the teaching of medicine and surgery in India has arisen as a result of the control of this body by the General Medical Council of the United Kingdom. The special needs of India and of Indian students must be kept in view in framing a medical curriculum and in introducing appropriate courses of training. Indian students and Indian conditions should receive special emphasis from the teachers. A fair amount of research work has been carried out by Indian workers on diseases prevalent in this country within the last four or five decades; hence an Indian orientation to medical teaching can very well be given now by those who are responsible for the same. Researches into the etiology and pathology of unexplained diseases and on therapy, particularly in the domain of indigenous drugs, should receive special attention. With the excellent natural advantages which India possesses as regards her soil, climate and plant flora, and with proper and adequate training of young students in chemistry and allied subjects for handling these and other relevant matters, it should not be necessary for her to depend wholly on imports. Each time a war blockades the communications between the West and the East we realise our helplessness in the matter of the supply of medicinal preparations and chemicals. I hope the young generation which I see before me here will try to remove these wants in a large measure.

RURAL MEDICAL RELIEF

"A time has come when we should give a public health orientation to medical

teaching, and this should be in consonance with the needs and the environment which a student or a medical practitioner or a public health worker will have to deal with. If we have to supply one qualified doctor and one qualified public health man to a group of three villages, we shall require 200,000 workers of each category to put a well-considered scheme into operation for India's 600,000 villages. As a result of scientific medical teaching for the last 100 years, we can now supply 35,000 qualified doctors and only a few hundred public health workers for the above purpose. If we go on at this rate, it will take for us another 200 years to raise India to an up-to-date world level. The need for rapid progress in these directions is, therefore, obvious.

NEED FOR SINGLE MEDICAL REGISTER

"With the establishment of provincial autonomy in the provinces, efforts are being made to give official recognition to the Ayurvedic, Unani and Homoeopathic systems of medicine. The basic sciences of chemistry, physics, biology, physiology, pharmacology, pathology and bacteriology are the same all over the world. The present tendency to register practitioners of various so-called systems of medicine, lacking systematic scientific training of any sort, is a move in the wrong direction. The question of prevention of epidemic diseases cannot be successfully solved unless scientific methods of proved efficiency are adopted. How can we apply all the different systems of medicine towards this end? The proper move should be to have only one medical science which has been worked out by the scientists all over the world, incorporating into it whatever good there may be in the indigenous medical sciences of the country. If this is done there will be only one medical register in the country which should facilitate the control of medical relief and sanitation for the entire population. It is for this reason that I am compelled to discourage the teaching of the so-called medical systems, without the help of the basic sciences. If India is to achieve her place among the first rank nations of the world, she must advance with the help of modern sciences and she must discourage retrograde measure of the sort, that are being encouraged in some of the provinces without fore-thought and imagination".

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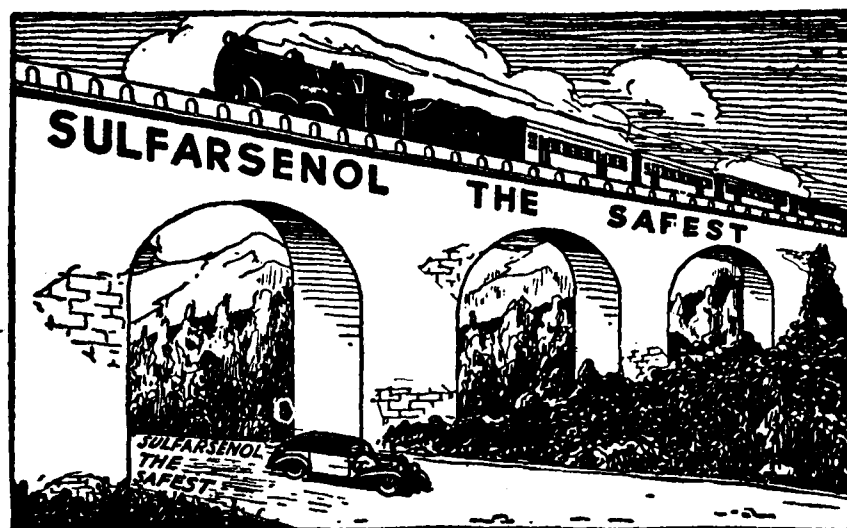
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Original Articles

THE ROLE OF THE GENERAL PRACTITIONER IN THE PREVENTION OF TUBERCULOSIS.*

By

LT. COL. G. R. McROBERT, M.D., F.R.C.P., I.M.S.,

Professor of Medicine, Madras Medical College.

The spread of pulmonary tuberculosis is largely due to ignorance, and in order to reduce its incidence the public needs more teachers of health principles. We should not forget that the word "doctor" means teacher and it is only when the doctor is himself properly trained that he is fit to instruct.

Unless the young doctors of India leave their colleges and schools imbued with the idea that prevention is better than cure we shall get no further with our anti-tuberculosis campaign and until the general public learn that the function of the doctor is to give advice and not to sell medicine, the practitioner will rank with the grocer and toddy seller in popular esteem.

It was to the general practitioner of Britain and America that Willam Osler said, "The leadership of the battle against the scourge is in your hands, much has to be done, much remains to do. By early diagnosis, prompt systematic treatment of individual cases, by striving in every way

to improve the social condition of the poor, by joining actively in the work of local and national anti-tuberculosis societies you can help in the most important and hopeful campaign ever undertaken by the profession".

Covering as they do in one paragraph all that I have to say to-day, they are wise words indeed, when addressed to the practitioners in the west. But to whom in India do they apply? Where is the general practitioner in India and of what sort of public health service does he form an indispensable partner? Coming as you do from all over India, from Assam, the Punjab, Bengal, Bombay and Travancore you must be well aware of the intense apathy which exists amongst the members of our profession with regard to the prevention of disease.

I am at times shocked to find that no notification has been sent to the health authorities in cases of several members of a household stricken by enteric or of cases of typhoid occurring in leading hotels.

* The above article and the two following are the lectures delivered by the authors to the Post-graduate students at the October Session of the Post-graduate course in Tuberculosis held at Madras and organised by the Tuberculosis Association of India.

The attitude taken up by practitioners usually implies a complete lack of confidence in the efficacy of any measures likely to be taken as a result of complying with the law regarding notification of disease.

The prevailing apathy with regard to prophylaxis is partly and, in my opinion, largely due to defective organization of medical education.

In university medical courses much too little attention has been paid to the teaching of pathology, bacteriology and hygiene. Too often the teaching of these important subjects is in the hands of men of low professional status, anxious to move on to clinical or administrative appointments. The position is far worse when we consider the education afforded to the L.M.P. In their schools the study of bacteria, protozoa and helminths has been so grossly neglected that in one school in which I had to examine, not a single candidate in the final examination, knew that the very prevalent disease dengue fever was carried by an insect. All insects to them were "flies." Little wonder then that the badly taught medical man has little inclination or aptitude to play his part as a teacher.

There is urgent need in India for wide-spread dissemination of accurate information with regard to tuberculosis. That information must be spread by the medical profession and can be spread only by the trusted advisers of families.

That being so we cannot hope to get much further with the education of the public by its doctors until the profession itself is both well educated and united, until caste differences are wiped out, until the cut-throat "Advice free, Medicine charged for" medical shop system passes away and until the people of this country learn to adopt a family practitioner who will himself arrange for a competent substitute in his absence, instead of the present system of flitting from one doctor to another in search of cheapness and of larger and larger bottles of medicine.

Like Osler, I would urge the practitioners to join an anti-tuberculosis society

but even more important is their membership of a strong professional society. On numerous occasions I have pointed out to medical societies that if only inter-caste and intra-professional squabbles could be abolished they would have a magnificent opportunity of wielding a "big stick" over Government, municipal and district boards and so compelling them to perform their duty so far as the prevention of disease is concerned.

The record of our own city with regard to two preventable diseases, smallpox and typhoid is disgraceful. The methods adopted to control the spread of diphtheria which is much more prevalent than most people think—seems to depend on some theory prevalent in the pre-pasteur days when bacteria were unknown.

Let the general practitioners combine, let them speak with the united voice of all the medical professional societies in S. India and something would be done.

One of the first points to be concentrated on is the provision of free laboratory examination for the diagnosis of infectious disease. This is provided in Great Britain where it is much less necessary than in this country in which infectious and infective diseases are so common.

As bovine tuberculosis is not very prevalent in India the spread of tuberculosis amongst human beings is due almost solely to sputum infection and the first duty of a general practitioner when he finds a case of sputum positive tuberculosis is to teach the patient how and where to spit and how to avoid infecting others. In cases of suspected tuberculosis every effort should be made to find the tubercle bacillus in the sputum—by the ordinary method, by concentration methods, by examination of the faeces and in children particularly, by stomach lavage after two days administration of potassium iodide.

It has been well said that "no community can solve its tuberculosis problem unless it provides a sufficient number of beds for immediate isolation of every person with known communicable disease." Even hopeless cases should be isolated.

Emphasis must be laid on the influence which the family practitioner must bring to bear in order to have all contacts examined—not infrequently aged relatives with chronic coughs are the originators of the trouble in infants. The practitioner can make efforts to have children removed from an infected household to safer surroundings with relatives. I do not think the role of B. C. G. Vaccine has been sufficiently well determined to make it advisable for the general practitioner to employ it as routine prophylactic.

The early diagnosis of pulmonary tuberculosis is by no means easy and the practitioner should seek the aid of the specialist or clinic for help in suspected early cases. Even the specialist with X-rays at his command may be unable to give a definite opinion at the first examination as there is generally nothing sufficiently characteristic about a single X-ray film to justify a diagnosis of tuberculosis in an early case. By taking a series of plates at intervals shadows may be seen forming some two or three years before symptoms present themselves. The function of the general practitioner is to investigate carefully all cases of cough, expectoration, haemoptysis and chronic fever with loss of weight and to co-operate with experts in the prevention of early cases from turning into cavity cases for it is these which spread the disease. The procedures to be undertaken for the actual shutting up of cavities are beyond the range of service of the general practitioner. Much can be done by the family medical attendant to remove factors which have an inhibitory influence on good health. The removal of protozoal and helminthic infections can be performed by him. Great irritation is caused in the lungs by the passage of the larvae of such helminths as ascaris and ancylostome.

A doctor well versed in the principles of nutrition can advise about the wise spending of the family income and in particular he can divert some of the lakhs of rupees which have flowed into Hitler's treasury during the past few years from the purchase often by very poor persons, of elaborate patent pharmaceuticals when

simple preparations of cod liver oil and malt would serve the same purpose.

Care should be devoted to inspection of the sleeping quarters of the family and if the infective patient cannot be removed he or she must be isolated on a verandah or screened off beside a window. Too much stress cannot be laid upon the necessity for improving the oxygen carrying power of the blood. Anaemia is very prevalent and can be cured by a few pice spent on iron much more readily than by many rupees sent to Hitler for campolon. The general practitioner must of course keep his eyes open for causes of chronic fever and wasting other than tuberculosis and I feel strongly that every patient should see a general practitioner or general physician before consulting a specialist in one particular disease as chronic urinary infection and chronic hepatitis are apt to be missed.

In conclusion I would plead for a helpful attitude towards the tuberculosis patient and for the abolition of the too often prevailing tone of the practitioner in the newspaper advertisements, who with minatory finger and awful mien "Condemns to Death from Tuberculosis" the father who did not drink his particular brand of cough syrup. Tuberculosis of the lung is a common disease. Most of us get it at some time and the majority recover without knowing that they have had it.

Let us then do our best, by applying known principles of hygiene and therapeutics, to increase the disease resisting and body building powers of our patients, and when we do have an infective case let us think not only of our patient but of all those around him to whom he may spread the disease and from whom he may have caught it.

Let us also combine as a profession to demand the provision of adequate facilities for the diagnosis and treatment of this infectious disease not as a memorial to any one or anything but as the right of a decent civilized community to be decently administered.

PATHOLOGY OF TUBERCULOSIS

By

RAO BAHADUR DR. T. S. TIRUMURTI, B.A., M.B.C.M., D.T.M. & H.

Principal, Stanley Medical College.

INTRODUCTION: It has been computed from the statistics obtained from all the countries of the world that Tuberculosis is responsible for nearly one-seventh of the total deaths from all diseases put together. Tuberculosis is, therefore, well-described as "the commonest, the most fatal and perhaps the saddest of those diseases, which oppress mankind."

Tuberculosis has also been described as a classical disease, because its manifestations are many and varied. The student, who has been well-grounded in the problems of Tuberculosis must have a good framework of knowledge, on which to base his study of other diseases.

It is now general knowledge that Tuberculosis may affect any part of the body. Symptoms resulting from injury to the particular organ affected are naturally to be expected, but Tuberculosis is peculiar in that it produces certain general effects, whatever may be the part of the body affected. Such general effects are (1) allergy or sensitivity, (2) immunity, and (3) tolerance. These effects present many problems of great interest and importance to research workers, the general practitioners and the public health authorities.

A brief account of the progress in our knowledge regarding Tuberculosis may not be out of place. In 1840 George Bodington, first advocated treatment of pulmonary Tuberculosis by open air. In 1859 Grehmer, Deit Weller and their followers instituted the sanatorium treatment. In 1865 Villemin proved by animal experiments that the disease could be transmitted to animals. It is interesting to note that even the great pathologist Virchow was for some time strongly of opinion that the different manifestations of Tuberculosis were different diseases, but Lennec with his uncanny insight considered that all of them were due to

the same cause. The truth of the common etiology of the varied manifestations was, however, not established, until Koch discovered the Tuberculosis bacillus. He did not stop with the mere discovery of the bacillus. He invented the culture media and reproduced the disease in animals with the cultures of the organism. Koch's discovery is one of the masterpieces in bacteriology.

It is of interest to note that three fundamental advances in the history of Tuberculosis were made by three men:—Lennec, who proclaimed its unity; Villemin, who demonstrated that it was due to a virus and could be transmitted to animals; and Koch, who discovered and identified its pathogenic agent. In spite of these great advances there are yet many problems, which remain puzzling and unsolved.

It was about 34 years ago that the X-rays were discovered and the importance of the X-ray examination in the early diagnosis and during the treatment of the disease is now well understood. In 1894 Forlanini discovered artificial pneumothorax, otherwise known as collapse therapy. Within the last 25 years phrenicotomy, thorocoplasty, cauterization of adhesions and other surgical methods of treatment have been employed. Gold therapy is also of recent date.

THE BIOLOGY OF THE TUBERCLE BACILLUS: In nature there is a large variety of acid fast organisms, which are saprophytes. There are also a few acid fast organisms, which are pathogenic to animals and man. Tubercle bacillus belongs to this group of pathogenic acid fast organisms. The pleomorphism of the tubercle bacillus and its content of certain substances, pertaining to animal life, in its composition are presumptive

evidence that the tubercle bacillus must have been originally a saprophyte plant of the nature of mycetes or fungi. The organism appears to have acquired pathogenic characters in the course of past ages by adaptation to the new environment of the animal body.

Tubercle bacillus exhibits considerable differences in size and shape, both in nature and artificial culture. It does not give rise to spores, branches or buds, which are frequently seen among the non-pathogenic acid fast organisms. But the organism does, under certain conditions assume granular forms, known as, Much granules. These are considered to be involution forms of the tubercle bacillus. These granules are non-acid fast, but stain well with Gram's Iodine. By inoculation experiments it has been shown that these granular forms can develop into the usual rod shape forms of the bacillus. It is probable that the so-called 'filterable' forms of the tubercle bacillus are such granular involution forms.

Tubercle bacillus is among the most resistant organisms to adverse conditions of growth. It is said to remain viable in old calcified or fibrous tubercular nodules in the internal organs for long periods. In artificial cultures the organism has been found viable for nearly 1½ years after cessation of the growth in the culture medium. Only the organism loses its acid fast quality under such conditions.

Both pathogenic and non-pathogenic acid fast organisms possess the common characteristic of containing a waxy or fatty ingredient in their make-up, which accounts for their peculiar staining property.

CLASSIFICATION: The two important pathogenic acid fast bacilli are the human and the bovine tubercle bacilli.

CHARACTERS OF THE HUMAN TYPE OF TUBERCLE BACILLUS: It is a rod-shaped organism, slightly curved, two to four^u in length and 0.2^u to 0.5^u in thickness. It is slightly longer than the bovine bacillus

and more uniform in size and shape. The two organisms cannot be differentiated upon mere morphological differences. The human bacillus grows well on the serum, egg, and potatoe media, to which a small quantity of glycerol is added. A well-developed growth on solid media shows a wrinkled, crusted, elevated, heaped and furrowed appearance, especially on potatoe media; in old cultures a yellowish red colour develops. The colour is not due to any special pigment formation, but to certain oxidation changes in the fatty acids. It is a difficult organism to grow and requires special media. It takes 10 to 14 days for a visible colony to develop in the culture medium. An examination of old cultures will show longer beaded forms, resembling diphtheria bacilli. The waxy-substance does not form merely an external coat for the bacillus, but it is distributed homogeneously in its substance and not merely on its surface. The tubercle bacillus is non-motile, and has no flagella.

The guinea-pig is a very good laboratory animal for the study of tuberculosis. It is very susceptible to infection both to the bovine and the human tubercle bacillus. The organisms may vary considerably in their virulence for the guinea-pig.

The bovine tubercle bacillus is smaller, shorter and thicker. It is also difficult to isolate. Glycerol is usually omitted in the culture medium. The optimum temperature for growth is slightly higher than that for the human bacillus. In broth cultures the bovine bacillus produces a decrease in acidity as contrasted with the increase in acidity by the human bacillus. The bovine bacillus is rarely present in the human sputum. If found, it may have been derived from the milk or dairy products. It has never been found in the human urine. The bacilli may be seen in the faeces, when the food is contaminated with the organism, for example, milk from tuberculous cows.

DIFFERENCES IN THE PATHOGENISITY OF THE TWO TYPES:—For many years it was believed that the bovine bacillus was not pathogenic to man. It was also shown

that the human bacillus did not produce progressive disease in cattle. The human tubercle bacillus is not virulent to majority of the domestic animals, but the guinea-pig, monkey and anthropoid apes are quite susceptible to it. In anthropoid apes the inoculation of the human bacillus produces localised disease, which does not spread. At the seat of inoculation the tissues behave in the same manner, as they would to a mildly irritant foreign substance or to dead bacilli. The virulence does not appear to be increased by passing the organism from one animal to another, but a loss of virulence after prolonged culture in various media is commonly noticed.

The bovine bacillus, however, is virulent for all barn yard animals, including the ox, horse, sheep, goat, pig and occasionally fowls. The bovine bacillus is capable of producing progressive disease also in almost all wild animals. Bovine bacillus is, therefore, of great virulence than the human one. Bovine infection in man is rare after the age of adolescence. Bovine bacilli have been isolated from tuberculous disease of lymph nodes and bone in children. Pulmonary tuberculosis is practically, never due to the bovine bacillus. The best animal for testing the virulence of bovine bacillus is the rabbit.

ISOLATION OF THE TUBERCLE BACILLUS: The organism can be isolated by (1) injecting the guinea-pig with the suspected material subcutaneously and removing the diseased tissue from the animal after the lapse of 2 to 4 weeks, and transferring such material to culture tubes; (2) by the antiformin method; (3) Griffith's modification of the above method; (4) Sodium-hydroxide method (Petroff's); (5) by the use of plate cultures for the isolation of the organism from suspected material.

CULTIVATION OF THE TUBERCLE BACILLUS:—The method of cultivation of this organism is somewhat different from that for any other organisms. The following media are used (1) Coagulated beef or sheep serum, (2) glycerol agar; (3) Dorset's egg medium (4) egg meat

juice medium; (5) Gentian violet egg medium; (6) glycerol potatoe. The fluid media used are (1) potatoe broth (2) Beszda's bouillon egg medium.

METABOLISM OF THE TUBERCLE BACILLUS: The requisites for growth are simple. The organism can be adapted to grow even in a medium, consisting of only ammonium carbonate, mono-potassium phosphate, magnesium sulphate and glycerol. Phosphorus, nitrogen and carbon in these simple forms are the only necessary requirements. Oxygen and moisture are necessary for growth. It is a strict aerobe. It has visible fermentative action on proteids. It can transform glycerol into solid alcohols or fats. In the culture is produced a volatile fatty acid. The broth culture filtrate gives rise to a very weak tuberculin action. It is only by maceration and autolysis of the organism that the broth acquires the properties of the tuberculin. This shows that the organism does not produce an exotoxin and that the toxin is present in the body of the organism and is liberated only, when the organism disintegrates.

CHEMISTRY OF THE TUBERCLE BACILLUS: The most distinguishing feature of the tubercle bacillus and other acid fast bacilli is the presence of a waxy substance in their composition. This waxy substance is known by the name of 'Lipin'. It is a complex alcohol, combined with various fatty acids. It is in intimate physical combination with the protein. The pure lipin is not toxic and this forms nearly half of the dry tubercle bacillus the other half is protein in nature. The crude tuberculin extract is made up of the nucleo-proteins and nucleic acid. It has been named tuberculinic acid.

The febrile reaction in active tuberculous disease is accounted for by the absorption of the protein-nuclein acid compounds liberated from dead bacilli and to a certain extent to absorption of the proteins resulting from tissue injury.

The exceedingly slow autolysis of the tubercle bacilli has been attributed to their lack of enzymes. The presence of soaps of unsaturated fatty acids in the

bacilli appears to inhibit the action of the proteolytic enzymes of the blood cells. This also explains the slow softening of the caseous tubercle.

SUSCEPTIBILITY OF TUBERCLE BACILLUS TO PHYSICAL AND CHEMICAL INFLUENCES: Boiling for two minutes and pasteurisation at 60° C. (143° F. for 10 minutes) will kill the bacilli. In moist sputum the bacilli remain alive even when exposed to direct sunlight for six to eight hours and for nearly a week in diffused daylight; but 10 minutes are enough for sunlight to kill them in saline suspensions. The organisms are resistant to most acids and alkalies, owing to the literally large watertight waxy substance present also on thin surface. Phenol and Cresol are useful antiseptics for these organisms, because they are better able to penetrate the waxy coat, being themselves soluble in lipoids.

The bacillus has little affinity for dyes, but combines with them by the aid of a mordant, accelerated by the action of heat. This is the principle underlying the Ziehl-Neelsen method of staining. Gastric juice does not kill the tubercle bacillus. Droplets of sputum on clothing and street dust retain the live bacilli for three to fourteen days. The tubercle bacillus exhibits a longer period of vitality than most bacteria. This is due to the protective influence of the mucopurulent sputum, wherein they may retain their virulence for 4 to 8 weeks. As the drying is necessarily slow, the bacilli remain viable for a considerable period. Disinfection, therefore, requires special attention in the case of tuberculosis.

THE EXPERIMENTAL STUDY OF TUBERCULOSIS BY ANIMAL INOCULATION: In experimental study it was observed that the lung of the rabbit was much more frequently and earlier involved in the tuberculous infection than that of the guinea-pig; it has now been shown that the special susceptibility of the rabbit's lung is due to a large quantity of lymphoid tissue present in it, and to the bacilli, showing a preference to localisation in lymphoid tissue. The guinea-pig's lung, on the other hand, is deficient in

lymphoid tissue. The bacilli, which are carried to the lung by the blood, pass through the walls of the air-spaces, where they are taken up by phagocytic cells, which carry them again towards the lymphatic vessels of the lung. They are not arrested in the wide lymphatic vessels, which lead from the periphery of the lung to the hilum. They are, however, arrested in the trachio-bronchial lymph nodes. These nodes form the central dumping ground for foreign material and tubercle bacilli, which gain entrance on any point at the periphery of the body.

The importance of the pulmonary lymphatic system in localising infection is emphasised by the observation that if the lymphatic system is affected by previous long-continued inhalation of certain types of in-organic dust, early involvement to the lung will take place in the guinea-pig as in the rabbit.

Tuberculosis has been studied by employing various methods of infecting laboratory animals—(1) subcutaneous injection; (2) intra-cutaneous inoculation; (3) inhalation infection; (4) infection by the alimentary tract; (5) intra-peritoneal infection, (6) inoculation into the eye; (7) inoculation into the meninges; (8) inoculation into the lymph nodes (9) intra-venous blood inoculation.

Of these, inhalation infection and infection through the alimentary tract are of interest to us.

INHALATION INFECTION: The first tubercles are formed in the pleura and are seen distributed uniformly in all parts of the lung. After three or four weeks, secondary foci appear in the trachio-bronchial lymph nodes and to a lesser extent in the intra-pulmonary lymphoid tissue. If the infecting organisms are of low virulence, the pulmonary tubercles beneath pleura do not spread within the lungs, but remain localised to the original foci of proliferation. The above observation is known as the Parrot's Law, namely, that there is no tubercle in the bronchial lymph nodes without previous involvement of

the parenchyma of the lung. Experiments with coloured dust proves that tubercle bacilli can also reach the terminal air passages directly through the respiratory tract.

INFECTION BY THE ALIMENTARY TRACT : The organisms can pass through the epithelial covering of the intestines without producing any detectable injury. According to Cohnheim's Law of localisation the tubercle formation is to be expected first in the lymphoid tissue near the portal of entry. The lymph stream carries the bacilli to the mesenteric lymph nodes or even to the thoracic duct and thus into venous blood. A few organisms may be retained in the local lymphoid tissue and the intestinal mucous membrane to produce a small tubercle in its substance. It thus becomes apparent that the first focal reaction after the injection of the bacilli may occur locally in the intestine or in a remote point as in the lungs. It is interesting to note that intestinal tuberculosis is, however, not produced in experimental animals without local trauma of the intestinal wall.

It should be remembered that, while the rabbit and the guinea pig are particularly susceptible to artificial infection, spontaneous infection in them is extremely rare even when they are kept in infected cages.

HISTO-GENESIS OF THE PRIMARY TUBERCLE OF THE LUNG.

The entry of a few tubercle bacilli of attenuated virulence gives rise to a small focal accumulation of mono-nuclear and polymorpho-nuclear leucocytes, red blood corpuscles and some serum within the sub-pleural air spaces. After the lapse of 24 hours most of the exudate cells, with the exception of the mono-nuclear phagocytes have disappeared from the air spaces, and even these are few in number. After two or three days if the tissue is examined we find a larger accumulation of large mono-nuclear cells about the distal ends of the ductuli alveolaris. The cytoplasm of these cells becomes more abundant and stains intensively with acid dyes, like eosin. These cells increase in

number to form a solid mass of cells. Later on in the centre of this area one or more multi-nucleated giant cells appear. The cytoplasm and nuclei of these giant cells resemble those of the mono-nuclear cells. Then necrotic changes commence in the centre of the tubercle and slowly progress to the periphery. The nuclei of the cells become fragmented (Karyolysis) and finally they no longer take the nuclear stain but the cytoplasm becomes filled with fat. After a variable period the whole central area assumes a homogeneous appearance and the outlines of the individual cells are lost. There is neither stroma nor new blood vessels in such an early tuberculous nodule.

But almost coincidentally with the aggregation of mono-nuclear cells, fibroblasts and endothelial cells multiply to form a bundle of granulation tissue all round the original collection of mono-nuclear cells; small round cells resembling lymphocytes are seen in large numbers in this granulation tissue. Newly formed blood vessels are confined to the periphery.

Thus the tubercle and its granulation tissue investment, constitute the fundamental reaction to the tubercle bacillus, which is known as the anatomical tubercle.

The defences of the tubercle bacillus are (1) its insolubility, (2) its power to multiply within the tissues and (3) its toxic products, which are only liberated, however, after the death of the organism. As it is not motile, it cannot migrate from one position to another, but must be carried passively either in its free state or within phagocytic cells.

The defences of the body against the tubercle bacillus are (1) the phagocytic cells and (2) changes in the humoral condition.

The tubercle in its simplest form consists in an aggregation of large cells, which wall off and separate the tubercle bacilli from the rest of the body. The formation is in no way characteristic of infection by the living tubercle bacilli. It is merely a reaction to an insoluble

foreign substance. Such tubercles (foreign body tubercles) also develop round about pieces of silk, hair, splinters of wood or glass etc. Even killed tubercle bacilli likewise provoke a similar reaction. The feature essential to this kind of response appears to be merely the presence of a relatively insoluble foreign body, too large or too hard to be effectively dealt with by a single phagocyte.

LOCALISATION OF PRIMARY TUBERCLE IN THE LUNG.

Inhalation infection produces primarily tuberculosis in the sub-pleural region, while by other methods the first lesions are developed throughout all portions of the lung. The first tubercles, whatever the path of infection, develop within the masses of lymphoid tissue.

In all parts of the body, artificial injection of tubercle bacilli in small numbers is not followed by tubercle formation at the site of inoculation. Without exception tubercle is formed in the depth of the tissues by preference in lymphoid masses, but where the latter does not occur, in and about lymphoid vessels. Never does tubercle start upon an epithelial surface. The presence of collections of lymphoid tissue in the periphery of the lung about the distal ends of ductuli alveolaris would appear to invite localisation in such areas.

The clinical manifestations of tuberculous infection of the lung will depend on the fate of the bacilli which have invaded the lymphoid tissue in the substance of the lung. One of the following possibilities may happen :—(1) the tubercle bacilli may be destroyed before they are able to produce any symptoms of ill-health (2) the tubercle bacilli may set up definite tubercular lesions, which may, however, heal completely or only partially. The lesions which do not heal completely may remain localised and quiescent for years, but often they tend to spread, at times either locally or by the lymph or blood stream or by the bronchi. In this way the caseous, fibrocaseous, or fibroid type of the disease is produced.

The tubercle bacilli may spread rapidly throughout the lungs, causing acute

broncho-pneumonia. Which of these results will follow will depend on several factors, the chief of them being :—(1) the dosage of the organisms in proportion to the size of the organ (2) the resistance of the patient and (3) the treatment after infection.

THE SEQUENCE OF PATHOLOGICAL CHANGES IN THE LUNGS : The early lesion in the lung is the formation of the tuberculous nodule. The initial deposit is usually in or around the small bronchi. The inflammatory swellings of the bronchioles obstruct their lumen, leading to collapse of the alveoli beyond, and the formation of broncho-pneumonic areas. At the same time varied broncheolar inflammation develops.

The secondary changes are (1) Caseation (2) Cavitation and (3) Fibrosis.

CASEATION : The tubercle is avascular and owing to this and possibly also to the action of tuberculous toxins, coagulation necrosis and fatty degeneration ensue. This combined process is caseation, and results in the formation of a structureless cheesy mass.

CAVITATION : Cavitation is the result of the liquification of caseous areas and the expectoration of the resulting liquified material. The branch of the bronchus will be seen connected to the cavity by an eroded rough opening. A recent cavity has an irregular outline with rough shaggy walls and a vascular line of demarcation. It is often traversed by trabeculae, formed by bronchi and vessels which may be partly or completely obliterated. The thickening of the blood vessels is due to an obliterating endarteritis which thickens the wall, especially the intimal layer, on the approach of the tuberculous inflammation.

In chronic stages of the disease the cavity may reach an enormous size, even occupying a whole lobe. The lobe is converted into a mere sack whose wall is formed by the thickened pleura. If this in its turn is perforated, the contents of the cavity, including air, escape into the pleural cavity, unless it has been obliterated by adhesions.

The cavity contains a thick, opaque, greenish-yellow, sticky fluid, which is full of bacteria, leucocytes, cellular debris, fragments of elastic tissue etc. The wall is covered by a caseous, necrotic layer beneath which is tuberculous granulation tissue.

All the bronchi or bronchioles and most of the blood vessels which lay in the area of cavity formation are interrupted. But some blood vessels are still found stretching across from wall to wall or standing up as high ridges against one side. The vessels are usually occluded by obliterative endarteritis. Weakening of the vessel wall by advancing caseation leads to bulging of the wall into a little sac or aneurysm. Rupture of such aneurysm causes haemoptysis. In death from haemoptysis the cavity is full of blood clot.

FIBROSIS: Reactive changes in the lung stroma lead to the formation of fibrous tissue. This fibrosis may be localised around a small arrested tissue or may spread throughout a lung in which caseation or excavation has occurred.

In the majority of deaths from all causes old tuberculous lesions are found post mortem near the apex of one lung. These consist of small nodules of arrested disease with thickening and dimpling of the adjacent pleura.

DISSEMINATION IN THE LUNGS: The diseases may spread from the primary peribronchial deposit:—

(a) by direct infiltration,

(b) by the peribronchial lymphatics leading to peribronchial fibrosis,

(c) by the subpleural and interstitial lymphatics with localised miliary dissemination,

(d) by inhalation into a bronchus of tuberculous material which is then carried to other parts of the same or to the opposite lung—this not infrequently happens after haemoptysis and

(e) by the blood vessels generalised miliary tuberculosis may result from erosion of a caseous tubercle into a vein.

CLINICAL FORMS OF TUBERCULOSIS:

1. Acute miliary tuberculosis.
2. Acute caseous tuberculosis.
3. Fibro-caseous tuberculosis.
4. Fibroid tuberculosis.

1. **ACUTE-MILIARY TUBERCULOSIS:** A primary caseous focus may be discovered at the apex of one lung in the bronchial glands or at some distant spot in the body. Local erosion of a vein may be found accounting for the dissemination of the disease.

It is perhaps most usual to find a portal of entry in a branch of the pulmonary vein but if this fails, the systemic veins or the thoracic duct must be surveyed. It is common to find that a caseous lymph-gland attached to the vein wall is the source of the material. When the vein is laid open a granular cheesy mass may be seen projecting into the lumen in such a way that the soft bacillus-laden material is washed by the passing stream into the general current.

The tubercles which are formed by this wholesale distribution may appear practically anywhere. They are sprinkled over the serous surfaces, where they are conspicuous, and are scattered profusely in such organs as the spleen, liver and lungs. They are beautifully seen with the ophthalmoscope in the choroid of the living patient. Pancreas, Thyroid, muscle skin and etc., seem less prone to develop tubercles.

LUNG IN MILIARY TUBERCULOSIS—NAKED EYE: The lungs are studded with minute pale grey translucent nodules all over the surface. The tubercles vary from the size of a pin point to pin's head or small shot. They are raised circumscribed and stoned out prominently on the surface. There may be very little pleurisy. Section red in color and show a large number of tubercles also in the substance of the lung. If caseation has begun the grey tubercles become yellow tubercles. In very acute cases death occurs before any secondary bronchopneumonic changes take place.

Miliary tuberculosis may develop as a terminal event in chronic fibro-caseous or fibroid tuberculosis.

2. **ACUTE CASEOUS TUBERCULOSIS:** Large areas of consolidation form rapidly, quickly followed by caseation of the whole mass. A whole lobe or even a whole lung may be uniformly consolidated and resemble the appearance of an ordinary lobar pneumonia. The character of the exudate with its predominant mononuclear cells and the subsequent caseation en masse serve to differentiate. The consolidated area is opaque and yellowish white and has the consistency of cream cheese. The affected areas are friable, airless and sink in water. Softening is generally present and the discharge of such necrotic material will leave huge cavities in the lung. The rapidity with which the organ is destroyed in this way has given rise to the name phthisis florida or galloping consumption.

The clinical features resemble those of a frank lobar pneumonia until, with the protracted course, there appears signs of breaking down of the lung and the discharge of a green sputum full of shreds of elastic tissue.

Even small lobular areas of consolidation become caseous and spill their contents when they have become fluid enough into the bronchi. This liquefaction seems to be partly the work of the enzymes of the surrounding cells, but partly the consequence of a secondary infection—at least there are always found numbers of other organisms in a cavity of any size.

3. **FIBRO-CASEOUS TUBERCULOSIS:** This is the commonest variety of the disease. The appearances of the lung vary with the relative preponderance of the caseous and fibrotic changes.

In a typical case the naked eye appearances will be as follows:—

The pleura is thickened and covered with a fibrous exudate. Tubercles are to be found in the granulation tissue beneath this exudate. Frequently there are quite dense adhesions, especially over the region where the cavity approaches the

surface. The pleura may show greater thickening when a cavity underlies it.

The lymphatic glands at the hilum contain tubercles and larger caseous areas.

A cavity below the apex is usually present, opening widely into the bronchus and surrounded by consolidated fibrous lung tissue studded with caseous foci.

The next place likely to show a cavity is the apex of the lower lobe. In the rest of the lung will be found numerous patches of bronchi pneumonic consolidation, varying in age from the freshest to the completely caseous area.

4. **FIBROID TUBERCULOSIS:** In this condition one lobe or the whole lung is bound in thick pleural adhesions. The lung is distorted indurated and greatly contracted. On section in the interstices, of the fibrous tissue which is usually pigmented, inspissated caseous material, calcareous patches or cavities are seen. The section reveals cavities at the ends of short wide stumps of bronchi. The shrinkage leads to bronchiectasis especially in the lower lobes. In other places, especially over the edges of the lung, the alveoli which remain are enormously dilated and thin walled, (compensatory emphysema.)

From the above description of the four chronic varieties of tuberculosis it is evident that the rate of progression, which perhaps about the same in the majority of cases, is capable of great variation, so that, on the one hand we find a man dying a few weeks after the first symptoms appear, in the other a man who has had pulmonary tuberculosis for many years finally dies from something else, revealing extensive scarred and almost healed lesions in the lungs.

In addition to the changes in the lungs, the bronchial glands and pleura, in a post-mortem examination on a case of phthisis there will be evidences of tuberculosis in the other organs such as tuberculous meningitis, peritonitis, enteritis and genito-urinary tuberculosis, emaciation and great atrophy of muscles.

There will be changes in the other organs: Emaciation, waxy or fatty infiltration or degeneration of liver, brown atrophy or fatty degeneration of heart.

FUNCTIONAL AND VISCERAL DISTURBANCES PRODUCED BY PHTHISIS: (1) With extensive cavity formation and fibrosis there is naturally a great diminution of the respiratory surface. The bed of the blood stream through the lungs is largely obliterated. The remaining lung substance is emphysematous. All conditions favouring hypertrophy of the right side of heart exist. But curiously enough there is no hypertrophy of the right heart except in those rare cases where the lungs are extensively scarred.

2. Disturbances of temperature regulation, hectic temperature, high rises of temperature are usually due to secondary invaders (pyogenic organisms).

3. Changes in metabolism due to absorption of toxic substances which the bacilli produces are:

(a) Wasting and anaemia.

(b) Fat accumulation in liver due to disturbances of fat metabolism.

(c) Waxy liver.

4. Extension of infection:—

(a) to lymphatic glands at the hilum of lung,

(b) to trachea and larynx from the infected sputum,

(c) to stomach and intestines from the swallowed sputum, and

(d) disseminated miliary tubercles in all organs due to entrance of bacilli into blood stream. The transport of bacilli from the lung may cause localised disease in some distant organ, as in a bone, or in the kidney or epididymis and on the contrary primary disease of the lymph glands or of a bone may in the end give rise to pulmonary tuberculosis.

INTESTINAL TUBERCULOSIS: In the treatment of Pulmonary Tuberculosis intestinal tuberculosis is the most frequent of all tuberculous complications not even excepting laryngeal tuberculosis; until recently it was difficult to state definitely when in the course of pulmonary tuber-

culosis, intestinal tuberculosis began. But thanks to the perfection of the Roentgen ray diagnosis, it is possible to diagnose the complication earlier in the disease. It should be remembered that intestinal infection may take place even when the disease in the lung is minimal. Intestinal ulcerations though they may exist extensively as a terminal complication they are much more common among the moderately advanced case of pulmonary tuberculosis.

The frequency of digestive disturbances in the course of pulmonary tuberculosis is well recognised. In a disease whose average duration is 3 to 5 years digestive disturbances are of course to be expected. When the general nutrition of the patient is looked upon as of paramount importance for recovery it is unfortunate that gastro-intestinal troubles should often develop early in the disease. The patient is told to rest in bed, to be in the open, and to eat as much as possible but unfortunately the digestion is often upset owing to gastro-intestinal troubles. It was thought that mostly these gastro-intestinal troubles due to poisons of the tubercle bacilli in the lungs or to their absorption from the intestines. We now know that more often they are due to organic disease in the intestines possibly tuberculous in origin.

Tubercle bacilli when present in the sputum are naturally almost constantly present in the intestinal contents. The bacilli are more easily absorbed through the bowel wall when the intestines are already ulcerated. Some observers maintain that in such cases infection of blood and thereby reinfection of the lung are not uncommon. In ulcerative colitis, in the presence of pulmonary tuberculosis is practically always of tuberculous nature. Hyper mobility of the colon and filling defects are easily determined now a days, by X-ray examinations. The absence of hyper mobility and of filling defects excludes for practical purposes the presence of tuberculous colitis. Roentgenological diagnosis has now placed in the hands of the clinician a fairly reliable method of diagnosing.

EARLY INTESTINAL TUBERCULOSIS: The cause of intestinal tuberculosis secondary to pulmonary tuberculosis is due to the tubercle bacilli in the sputum, swallowed consciously or unconsciously by the patient.

Children however have secondary intestinal tuberculosis much more rarely than adults. The rarity is due to the less common occurrence of open tuberculous lesions and to the easy passage of the tubercle bacilli through the intestinal wall and the wider lymph spaces in the lymphatic glands in children.

Experimentally in animals it is difficult to produce ulcerative intestinal tuberculosis. Swallowed sputum containing pyococci can apparently set up a catarrhal condition of the mucous membrane of the intestine. This will lead to epithelial desquamation and formation of erosions. This stage may be called a pretuberculous enteritis. It is held that such a condition favours easier penetration of the tubercle bacilli through the intestinal wall.

Tubercle bacilli are also always present in the stools of practically all patients who have them in the sputum. Sometimes they can be discovered apparently only in the faeces and not in the sputum.

Prolonged contact of the bacilli with the mucous membrane whether in large or small numbers, is the most important etiological factor in the production of secondary intestinal tuberculosis. The experimental work of David Smith McCoukey, with diet deficient in vitamin would suggest that such diets are necessary in the majority of cases to bring about intestinal tuberculosis in man. This will explain that the mere presence of tubercle bacilli in the intestinal contents, or even in the intestinal wall is not sufficient to produce ulcerative intestinal tuberculosis.

The explanation may lie in the fact that in pulmonary tuberculosis, the swallowed sputum, over-feeding, lack of vitamins, indiscretion in diet and other causes may set a catarrhal condition of the mucous membrane and so favour entry and implantation of the tubercle bacilli. It may be that allergic states occur from time to time

in patients with chronic pulmonary tuberculosis, whose disease extends over many years and who have tubercle bacilli constantly in the intestinal contents and suffer from time to time from other complications. In any case, it appears that mere contact of the intestinal wall with the tubercle bacilli is not sufficient to produce intestinal tuberculosis either in man or in animals.

It is of interest to note that the stomach is rarely affected with tuberculosis. It is said to be due to the fact that the acid secretion in the stomach have little effect in dissolving the sputum, which, on the other hand, is readily dissolved in the alkaline intestinal contents, more tubercle bacilli are therefore brought in contact with the intestinal rather than with the gastric mucosa. This also explains the immunity of the duodenum. The gastric juice does not kill the tubercle bacillus though it may have attenuating effect on it. A decrease in the staining power and definite Much granules have been noticed to result from the action of pure gastric and intestinal juices on the tubercle bacilli.

SITE OF LESIONS: The most frequent site of intestinal tuberculosis is the ileo-cæcal region we know that tuberculous infection originates most frequently in lymphoid tissue. Absorption of the final products of digestion takes place here, the meal is longer in contact with the ileal walls than with those of the stomach. The lymph masses of the intestinal wall (solitary follicles and Peyer's patches) are aggregated in this region, and therefore it is not surprising that the ileo-cæcal junction is the most favourable site.

Next to the terminal ileum the caecum is most commonly affected. The inspissation of the faeces beyond the caecum lessens the chances of contact of the tubercle bacilli in the walls in the remaining extent of the large intestine. It is of interest to note that tuberculous ulceration decreases in frequency in direct relation to the distance from the ileo-cæcal sphincter.

Tuberculosis of the liver, often found only microscopically, is nearly constant occurrence in intestinal tuberculosis.

This is all due to tubercle bacilli which have gained entrance through the portal vein. The bacilli may also gain a ready entrance into the blood stream through the tuberculous ulcer.

Ransohoff believes that the fixity of the ileo-cæcal junction is the explanation of frequency of the tuberculous lesion here, though stasis and the trouble breeding appendix are additional factors.

To summarise it seems highly probable that the presence of numerous tubercle bacilli in the intestinal contents and a deficiency in the diet of fat soluble vitamins are the controlling factors in the production of secondary intestinal tuberculosis.

TUBERCULOSIS OF THE LYMPH NODES.

Tuberculosis of the cervical lymph nodes is called scrofula. This expression is rarely used nowadays. The tuberculosis of the lymph nodes is gradually disappearing in the progressive western countries as United States of America.

The majority of cases of tuberculous nodes as of other forms of nonpulmonary tuberculosis are caused by the bovine type of the bacillus. It is particularly true in children. As the age of the infected individual increases the percentage of cases of infection with human type increases but whether the infection is caused by the human or the bovine type of bacilli the clinical cause of the disease, its pathology and treatment are the same.

The pathological picture in the tuberculous lymph nodes is essentially the same as that of tuberculosis of other tissues. The unit is the tubercle; more and more of tubercles develop and coalesce until the whole lymph node is filled with a cheesy and caseous material.

In some instances the disease becomes arrested. The infected nodes become walled off grow smaller and smaller and may disappear. They may become calcified and though visible by the X-ray examination they cause no clinical symptoms.

But in a greater proportion of cases the pathological process is progressive,

involves the capsule and the connective tissues around. The caseous pus gradually makes its way to the skin of the neck, at this stage secondary infection is not unusual. Signs of acute inflammation supervene on what was a low grade process "cold abscess." The discharge of the caseous pus brings about only partial evacuation of the tuberculous mass and there results a sinus, leading down to a mass of infected nodes of variable size.

Though the basic pathological picture is the same in the tubercle, lymph nodes in the mediastinum, around the bronchi and in the retro-peritoneal tissues, the tendency to rupture and spread towards some surface is lacking. These nodes usually become encapsuled, confined and a self healing process takes place.

But it does occasionally happen that an infected tracheo-bronchial lymph node does rupture into a bronchus, a node in the retro-peritoneal space rupture into the peritoneal cavity. A node anywhere may ulcerate into a blood vessel with resultant generalised tuberculosis of a greater or lesser degree of intensity.

The infected lymph node, whether in the neck, the mediastinum or the abdomen constitute foci of great potential danger.

The three groups of lymph nodes which are involved more than others are (1) cervical (2) tracheo-bronchial (3) retro-peritoneal. Of these only the cervical nodes become at once apparent to the patient and the patients family. The tracheo-bronchial, though common are discoverable only on careful physical X-ray examination. The retro-peritoneal nodes seldom cause symptoms and are seldom detected except with the X-rays.

RELATION TO TUBERCULOSIS ELSEWHERE : In any tuberculous process there is a low grade bacillaemia, frequently without any symptom or signs. Such a bacillaemia may become apparent by the development of erythema, induration or eye tuberculosis. These secondary manifestations need not mean that an acute process such as miliary tuberculosis is developing.

The fact that early dissemination of bacilli from lymph nodes into veins will probably occur should never be lost sight of.

BACTERIOLOGY OF TUBERCULOSIS

BY

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DISCOVERY: Villemin (1865) showed that material from cases of tuberculosis was infective to guineapigs. Koch, 1882, discovered the tubercle bacillus and conclusively proved it to be the aetiological agent.

CLASSIFICATION: Phylum Schizomycetes—(Order—actinomycetales; Family—mycobacteriaceae; Genus—mycobacterium) Species—Pathogenic.

1. Mycobacterium Lepræ (Hansen, 1874).
 2. Mycobacterium Tuberculosis (Human, Koch 1882).
 3. Mycobacterium Tuberculosis (Bovine, Smith and others, 1898).
 4. Mycobacterium tuberculosis (Avian-Rivolta and others, 1889).
 5. Mycobacterium tuberculosis (Cold blooded—Sibley and others, 1889).
 6. Bacillus of rat leprosy (Stefansky, 1903).
 7. Bacillus of rat leprosy (John's disease—John and Forthingham, 1903). (enteritis of cattle).
- Saprophytic.
8. Mycobacterium smegmatis (Alvarez and Tavel, 1885).
 9. Mycobacterium butyricum (Rabinowitsch, 1897).
 10. Mycobacterium phlei or timothy-grass bacillus (Moeller, 1898).
 11. Mycobacterium Stercusis or "Mist" bacillus (Moeller, 1901).

CAUSE OF HUMAN TUBERCULOSIS: Human and bovine strains. The majority of cases and deaths due to human strain. Pulmonary tuberculosis in adults is invariably due to it. Bovine strain causes in western countries primary glandular and

abdominal tuberculosis in children. In India human strain alone responsible. Cases due to Bovine strain not been recorded.

DESCRIPTION OF HUMAN STRAIN: Morphology—Rod shaped 1 to 4 long and 0.2^u to 0.8^u broad; straight or slightly curved; arranged single or in small clumps; nonbeaded and clubbed forms may be seen.

STAINING: With simple dyes difficult; hot carbol fuchsin best; resists decolorisation with 25 per cent sulphuric acid and alcohol for 10 minutes; gram positive.

CULTURE: Grows with difficulty on ordinary media. Addition of glucose boiled, blood, potato glycerine, serum, egg, dead acid fast bacilli, vitamin B, and traces of iron salts improve growth.

NAMES OF SPECIAL MEDIA used are—Inspissated serum; Glycerine potato, Glycerine agar; Glycerine broth; Dorset's egg; Lubenau's; Petroff's crystal violet; Petragnini's; Wooley and Petrik's; Bile potato; Santon's synthetic; Long's synthetic.

CHARACTER OF GROWTH (a) on solid media—confluent, thick, irregularly raised and heaped up, granular, yellow to golden in colour, friable in consistency, emulsifies with difficulty; (b) on liquid media—forms a film on top. Pellicle has a wrinkled surface, broth shows no turbidity and there is no deposit.

METABOLISM: Optimum Ph 7 to 7.6; optimum temperature 37°C; strict acrobe, best growth in an atmosphere of 50 per cent oxygen; golden pigment produced on glycerinated ox serum medium. No exotoxin but endotoxin present. This does not diffuse readily and depending on concentration causes either necrosis and

death of tissue or stimulation to cell proliferation.

SEROLOGICAL REACTION: Serologically cannot distinguish human from bovine, but can distinguish either from avian cold blooded and saprophytic through agglutination absorption.

PATHOGENICITY: The bacillus produces naturally tuberculosis in man, pig, monkey, dog and parrots. Experimentally pathogenic to guineapigs but not for rabbit, mouse, cat, goat or ox. Minute quantity injected into guineapig subcutaneously causes death in 6 to 12 weeks. P.M. shows local abscess, enlarged caseous glands and enlargement of spleen and liver with yellowish areas of necrosis. Bacilli are numerous in the lesions. In rabbits while 0.1 m.grm. of bovine bacillus causes disease and death 1 to 100 m.grm of human bacillus generally causes only a localised lesion.

RESISTANCE: Cultures of the bacilli live from 4 to 8 weeks, to 1 year. Bacilli killed by moist heat at 60°C in 20 minutes; in tissues and in sputum when dried die in a few days to a week. Very susceptible to ultra-violet light and sun-light. Very resistant to chemical disinfectant.

DIFFERENTIATION:—Distinguish 'bovine' by its dysguenic growth on glycerine media, absence of pigment and pathogenicity to rabbit. Distinguish 'avian' by its moist paint-like growth, buterous consistency, absence of pellicle in broth, pathogenicity to birds, and serological difference. Distinguish cold blooded type by smooth abundant moist cream white growth ability to grow at low temperature (22°C) absence of pellicle in broth, pathogenicity and serological reaction. Distinguish saprophytic type by abundant, rapidity in growth-marked pigmentation, (orange, pink or brick red) capacity to grow both at 22°C and at 37°C, non-pathogenicity and serological reaction.

FILTERABILITY: There is some slight evidence that the tubercle bacillus has filterable stage. Foutes (1910) showed

that the bacilli may have a filterable stage. Calmette and other continental workers have confirmed this and even suggested that the filterable form passes through the maternal placenta. Italian, English and American workers have failed to confirm them.

STABILITY OF TYPE: Experiments have been done to find out if the three types of tubercle bacillus can change one form to the other under the influence of altered environment. Griffith has shown that it does not occur; but variation in virulence takes place as in B. coll.

SOURCE AND MODE OF ENTRY OF THE TUBERCLE BACILLUS.

SOURCES OF INFECTION: These are two (1) human cases of tuberculosis, (2) tubercular cows. In India former is the chief source. All cases of human tuberculosis are not equally infectious. They may be classified into (a) open or infectious and (b) closed or non-infectious. An open case may discharge in 24 hours several billions of bacilli (Nuttall). It may get closed or a closed case may become open any time.

In England 6.5 percent of milk samples found infected. In India milk has not been shown to be a source of infection except when contaminated with infective material from a human case.

MATERIAL IN WHICH ORGANISM LEAVES THE BODY: This depends on the anatomical distribution of lesion. If disease is of lung then sputum, saliva and nasal secretion are infective; if of bone and glands—pus and other discharges; if of genito-urinary tract—urine; if of intestine—faeces. Open cases of pulmonary tuberculosis may pass bacilli in faeces even in the absence of lesions in their intestine.

MODE OF TRANSFERENCE OF INFECTION: May be *direct* from person to person of *indirect* through infected utensils, food, milk, water, flies or dust. Organism can live in all these for long periods under suitable conditions.

PORTALS OF ENTRY: May be, through blood (congenital), through skin (acci-

dental inoculation) or eye, alimentary tract or respiratory tract. There is no general agreement as to which of these is the most frequent and as such the most important. The controversy is between alimentary versus respiratory.

Congenital: Infection of foetus in utero is uncommon. If filterability of the tubercle bacillus is established congenital infection may take place. At present all we can say is that the tubercular mother probably transmits to her offspring only a condition of lowered resistance. This view is corroborated by the recent findings in Lancaster. It was found that death rate among children born of tubercular parents was twenty times higher among children born of healthy parents, in the age period 2 to 5. In children of tubercular parents postnatal infection if small may give rise to immunity.

Direct inoculation: This is rare. Few cases are on record in postmortem attendants, butchers, laundresses and laboratory workers.

Oral ingestion: This is the common method in children in abdominal tuberculosis and for bovine tubercle bacillus. Behring and Calmette consider this the chief route in adult pulmonary tuberculosis as well. Opie's work in U. S. A. does not confirm this. Findel's work also is against it. In India it is probably an important portal of entry of the human tubercle bacillus due to the insanitary and unhygienic conditions.

Inhalation: This is a common method in adults, in pulmonary tuberculosis and for the human tubercle bacillus. Two forms in which organism enters are (a) in dried sputum as dust (Cornet's view) and (b) in droplets or sputum and nasopharyngeal secretion (Flugg's view). In western countries both are important but in India latter more likely theory than former. Postmortem findings support inhalation as the chief method of entry in pulmonary tuberculosis. To a small extent a study of conjugal tuberculosis also favours it.

Eye: may be a portal of entry. Phlyctenular conjunctivitis associated with tubercular lesions.

LABORATORY METHODS THAT AID OF THE DIAGNOSIS AND PROGNOSIS IN TUBERCULOSIS

These may be considered under the following heads:—

(A) Confirmatory:

Demonstration of T. B. in excretions, discharges or tissues, sputum, pus, urine, faeces and body fluids are examined.

(1) Microscopically—

(a) by direct smear,

(b) by concentration methods

{ Petroff's K.O.H.,
Antiformin,
Corper & Uyei H₂SO₄ 6%.
Petrolaether mixture.

(2) Culturally—in special media like,

(a) Wooley & Petrick's,

(b) Petragnini's,

and by (3) Animals inoculation—

(a) Guineapig,

(b) Rabbit for differentiation.

(B) Suggestive: (indirect evidence.)

Demonstration of hyper-sensitiveness or of the presence of antibody in serum.

(1) by allergic test—

(a) Koch's Subcutaneous test—Injecting subcutaneously small doses of Koch's O. T.

(b) Von-Pirquets Cutaneous test—A drop of undiluted O. T. is lightly scarified on the skin of the fore-arm with a control of saline by its side.

(c) Calmette's Ophthalmic test—Instillation of a drop of 0.5% of purified O. T. in the conjunctiva (now abandoned).

(d) Moro's Percutaneous test—A small quantity of 50% ointment of O. T. in Lanolin is rubbed on the chest.

(e) Mantoux's Intra-Cutaneous test—Injecting 0.1 c.c. of a series of dilutions of O. T. intradermally.

(2) by complement fixation test.

(C) Accessory:

Indicating through non-specific phenomena the nature of lesion, activity, etc. These are useful in prognosis.

(1) Cytology of sputum—lymphocytes in early and-healing lesions, polymorphs in caseation and cavitation.

(2) Cytology of blood—

(a) R.B.C. changes.

(b) R.B.C. sedimentation (Wester-green's method).

(c) Leucocytic changes—

(i) Arneth index.

(ii) Schilling's two types—regenerative and degenerative types.

(3) Cytology of pathological fluids—

(a) Cerebrospinal fluid—increase in cells—lymphocytosis.

(b) Pleural fluid—increase in cells—lymphocytosis.

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By

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INTRODUCTION.

The terms "private" and "public" are only relative from the point of public health. Any ignorant or a wilful individual, may claim his right to live his own piggish life, in his own den or mire. Apparently he may claim he does not endanger the health of the people living about him. Men may thus divide among themselves, the earth's surface and may commit outrages to public health in their narrow strips. But there are creatures, in the lower strata of evolution such as the mosquitoes, the fleas, flies and a host of intermediates, who observe no territorial limits set by man, and who cannot be trusted to discriminate between the innocent and the culprit. It is elementary justice to concede that the innocent must be protected, and the wicked must be weaned from their bad deeds. What is the use of keeping my house and ground clean when my neighbour sends his hosts of flies and mosquitoes to invade my territory and bite my flesh? So personal hygiene is as important as public hygiene. The two are complementary. They merge one into the other. If every individual keeps his body, his room, his house, his compound and his street clean he must be considered not only to have maintained a high standard of personal hygiene but also to have laid firmly the foundation for public hygiene. Such a state of society where the individuals while trying their utmost, to fulfil their individual obligations to health, also enforce amongst themselves, the necessary, code of public duty, must be the ideal one. Are Indians any near to it, at present? Certainly not.

INFLUENCE OF ENVIRONMENT.

In human affairs, environment plays an important, and, at times, a decisive role.

Periodical appearance of spots in the sun, may presage, wars, floods and pandemics. Movements of stars and planets and their mutual influences, practically decide the present and future of man collectively and and individually. Meteorology and climatology have decisive influences on the monsoons, winds and seasons, which have intimate relation with the men's food crop and health. A man, after all, is a speck in the mighty earth, which itself, is a miserable dot in the cosmos. No wonder, then that the forces of this universe, have practically bound him hand and foot. If man is thus influenced by the big environment, even from astronomical distances, how much more, he will be influenced by his immediate environments in his house, his street, his village, etc. Hence his great responsibility to maintain the purity of his environment; hence the great need to educate him about his public duty; and hence the dire necessity to consider any wrong-doer in public health, as a greater criminal than a cold-blooded murderer. A deliberate murderer after all murders one individual. But a public health offender may be responsible for mass murders of a most torturing kind. To our shame, it must be confessed, that India is still far, far behind, in not realizing the evil effects of filthy environment.

SACREDNESS OF THE STREETS AND PUBLIC PLACES.

It is deplorable that the attitude of the average man towards the streets, the public places, the public conveyances etc., is one of utter callousness. The streets and the public grounds which give us air, light, are treated as places where one can commit anything from the indiscriminate spitting of betel and chunam stained stuff to shameless deposition of faecal

* Substance of a lecture delivered on 18th October 1939 in connexion with the Coimbatore Health week celebrations.

TETANUS.*

By

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Hippocrates who lived between 460 and 370 B. C. had described the symptoms of tetanus accurately. The nature of the disease was not unknown in Hindu Medicine. It was only in the later half of the 19th century that the bacterial nature of the disease was recognized. The antiserum of tetanus was discovered by Kitasato and Behring. The value of antiserum of tetanus as a prophylactic treatment was put to the test in the late great war with remarkable success; but the problem of treatment of tetanus was not solved then.

Tetanus is local infective disease due to *Bacillus tetani* associated with characteristic toxæmia. The bacilli are found in the form of delicate straight rods. They are strict anaerobes and usually develop characteristic spherical terminal spores taking the form of drum-sticks. These spores are found in the pus of the wound and cultures are extremely resistant to the action of heat. They survive boiling for at least 5 minutes. They are Gram positive. There is no tendency for the bacilli to multiply in the tissues unless the vitality of these is also reduced by the action of toxins or by the action of other bacteria or the presence of foreign body or damage to tissues.

Devoid of the toxins the spores often fail to produce tetanic symptoms, but if a minute trace of toxin be present it so depresses the vitality of surrounding tissues that spores develop into bacilli which multiply and produce more toxins.

The organism causing tetanus is often found in garden soil and street, stable and road refuse. Agricultural labourers and gardeners are liable to the disease especially if the soil is heavily manured. The excreta of horses usually contain tetanus bacilli. But cow dung must be comparatively free from tetanus bacilli, since in

spite of the fact that ignorant people very often use it as a surgical dressing the incidence of tetanus is rare among people who use it. The intestines of herbivora may contain tetanus bacilli and that is the reason that, by using improperly sterilised catgut, which are made out of intestines of animals, tetanus develops. The disease is more common in the tropics than in other climates.

The existence of the wound can invariably be demonstrated and it is usually a dirty lacerated or punctured one and suppuration is generally present. Any part of the body may be affected but more commonly it is the palm of the hand or sole of the foot which are liable to be brought into contact with the soil. The depressed vitality of the tissues owing to the bruising and tearing; the irritation caused by the growth of pyogenic organisms and the absorption by the latter of any oxygen present thereby determine the development of tetanus bacilli.

PATHOLOGY.

Tetanus is the best example of a local infection with general toxæmia. The bacilli remain in or near the wound and do not enter the blood or reach the distant parts of the body. The toxins produced locally act on the central nervous system in a manner very similar to strychnine characterized by increasing reflex excitability of the muscles so that slight stimuli produce excessive muscular contraction of tonic character.

The manner of the passage of the toxin from a local wound to the cells of the spinal cord is peculiar in that the toxin is not absorbed by these cells from the blood or lymph from which fluids it quickly disappears but is picked up locally or from the blood or lymph by the end

plates of the muscles and from there it is carried up along the motor nerves either along the lymphatics or the protoplasm of the neurones. In the case of the involvement of the muscles in an infected wound the transference of the toxins along the motor nerves of that region is facilitated and the cells of the spinal cord controlling this area may be affected earlier than others and so a localized form of tetanus results. It has been found possible to protect certain areas by injecting antitoxin into motor nerves. Thus a full intravenous dose of toxin is given to an animal and shortly afterwards antitoxin is injected into both sciatic nerves. Tetanus develops in the usual manner in the head, trunk, forelimbs but the hind limbs escape. The muscles of the jaw and neck appear to have a specific predilection for the toxin and it is probable that toxin reaches the spinal cord through the nerves leading from these muscles.

Post-mortem changes are not characteristic. Muscles are sometimes pale and show evidences of rupture or extravasation of blood. The nerve centres frequently present areas of softening and perivascular cellular exudation with some hyperæmia especially in the pons and medulla. Degenerative changes may also be evident in the anterior cornual nerve cells of the cord.

CLINICAL FEATURES.

Incubation period varies from a few days to several weeks and is influenced by the prophylactic injection of sera. In temperate climate the incubation period is from one week to two weeks. But in the tropics the disease may appear after a few hours. The length of incubation period is often of great prognostic value as later the affection appears the better the outlook and vice versa.

Symptoms: The early symptoms are psychical. The patient becomes restless and uneasy, he is unable to concentrate or even keep still and he experiences a dread of some impending evil. The temperature and pulse rate are above normal. Within 24 hours muscular spasms supervene usually first affecting the muscles at the back of the neck and

then the jaw muscles. *Risus sardonius* appears later due to contraction of the facial muscles. Spasms follow which appear to extend to all the skeletal muscles and during severe exacerbations the patient rests on his head and heels. The psoas or rectus abdominus muscles are sometimes ruptured. The spasms are clonic as well as tonic in character. Relaxation of the muscles are incomplete during the intervals. This feature helps to distinguish tetanus from strychnine poisoning. In the latter case spasms commence in the extremities. Death occurs from cardiac failure following exhaustion or sometimes from asphyxia during a vice-like spasm of the respiratory muscles.

Chronic tetanus: Incubation period is over 15 days or may be as long as six weeks. Symptoms are less severe. Prognosis is more favourable.

Head tetanus follows a wound in the distribution of the facial nerve. Toxin reaches the central nervous system via lymphatics in the sheath of the nerve and so swelling of the nerve results. In the case of the facial nerve which is enclosed in the rigid stylomastoid foramen the swelling results in compression of the nerve and consequent paresis of the muscles of expression.

Delayed tetanus: Bacilli are capable of remaining latent in a wound for years and cause tetanus when the wound is opened again. A prophylactic dose of serum must always be given if a potentially infected wound requires opening.

Local tetanus occurs in the muscles around the initial wound. It is usually seen when the prophylactic dose of serum has counteracted general infection but was insufficient to prevent local nerve involvement. This type was not uncommon during the great war.

Tetanus neonatorum is due to infection of the new-born child via the wound left after separation of the umbilical cord. This type is said to be fatal.

Differential diagnosis: Tetanus has to be distinguished from simple trismus arising from dental irritation, disease of the pons, acute bulbar paralysis, periosti-

* A paper read at a meeting of the Coimbatore District Medical Association in August 1939.

tis of the jaw, disease of the temporo-maxillary joint and quinsy. Other conditions from which tetanus has to be differentiated are strychnine poisoning, meningitis, tetany and hysterical opisthotonus. From simple causes of trismus tetanus is distinguished by the presence of rigidity of the neck muscles. In strychnine poisoning the relaxation of the muscles between spasms will be complete unlike tetanus.

TREATMENT of tetanus is divided into (1) Prophylactic, (2) Symptomatic, and (3) Curative:—

1. It is of the utmost importance that every patient with a potentially infected wound should receive an intramuscular injection of anti-tetanic serum. The usual dose is 500 U. S. A. units. If the wound is extensive larger dose has to be administered. Some calcium preparation can be given to prevent serum sickness. It is safer to give prophylactic A. T. serum before opening old wounds to remove foreign bodies.

2. Patient is to be isolated in quiet surroundings in a partially darkened room. Bowels and bladder of the patient should be attended to. Nasal feeding has to be resorted to in some cases. Chloral hydrate and potassium bromide in doses of ten and twenty grains respectively are administered three times a day. 10 c. c. of 25% solution of magnesium sulphate are given intravenously daily to reduce the spasms.

3. Curative serum is said to be disappointing when the disease is fully esta-

blished. As soon as possible 20,000 units of A. T. S. are given intravenously and intramuscularly. Concentrated anti-tetanic serum is now available in 4 c. c. ampoules containing 20,000 units. If serum is diluted with equal quantity of warm sterile normal saline and given intravenously serum reaction can be avoided. Since the toxins are absorbed by the end plates in the muscles and carried along the nerves leading from the infected area it may be an advantage if the anti-toxin is injected into the neighbourhood of the trunk of the nerve so that it may destroy the toxins on its way to the central nervous system. At least 20,000 units of A. T. S. must be given intravenously every day for ten days and Magnesium sulphate solution intravenously in the evenings. Intravenous administration of A. T. serum gives even better results than intrathecal. Antitoxic bodies are secreted along with C. S. F. by the choroid plexes in the ventricles of the brain and so the antibodies get even better and quicker chance of acting on the toxins in the central nervous system. Intracisternal administration of A. T. S. may give better results than intravenous. The tendency of the A. T. S. introduced into the theca is to be excreted into the venous plexus around the spinal cord and has less chance for the antibodies to reach the higher centres of the brain. The cost of the serum in the treatment of tetanus is a problem to be solved. Some hospital give the cost of the serum necessary to cure a tetanus case to be Rs. 240 as an average.

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BY

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ANTI-TUBERCULOSIS CAMPAIGN AND THE GENERAL PRACTITIONERS.

Medical men in India engaged specially in the treatment of tuberculosis assert that tuberculous infection may range from 50 to 90 per cent of the population. They also say that in a large number of cases the disease cures itself and in many others, the infection may lie quiescent not doing any apparent harm to the system. The theories of the modes of infection are as alarming as its effects are devastating. Yet thanks to the ever advancing science which proclaims that every system is imbued with natural resisting power against all known pathogenic organisms and when such resistance is found wanting there are ways and means of rehabilitating the system artificially. So any campaign to combat tuberculosis should necessarily be on a very large scale whether it be for preventing, curing or controlling the disease in those in whom signs and symptoms of the disease are detected. The most effective agency that can do the task of prevention, cure or relief are the general practitioners. The surer and most economical method is to prevent infection by raising the natural resisting capacity in human organism. The apathy of the Indian public towards the maintenance of Public Health is scandalously proverbial. Any amount of propaganda for educating the public to create in them a sanitary conscience, be it by leaflets, posters, lectures, broadcasts, health exhibitions cannot and will not have the

same effect as the demonstrative advice given by medical attendants who alone can practically display the virtues of sanitation and hygienic living. Such advice coming from those who actually relieve the sufferings will be most impressive being demonstrated by actual examples. Members of the medical profession as practitioners and investigators have been largely responsible in the great advances in public health and their importance in preventing tuberculosis must be taken into account by the other co-ordinating agencies in this problem such as the physicists, the chemists, the epidemiologists, statisticians, health administrators, engineers, health educators and a number of others. The role of the members of the medical profession as the monopolists in curing or preventing tuberculosis and in alleviating the sufferings of even the incurables can never be questioned. But unfortunately in India the control of the monopoly of the medical profession is at present entirely under State control and the State being governed by the politicians, the medical profession as such is not in a position to wield "a big stick" on the Government and Local Bodies who are in charge of Public Health and Medical Relief as the profession is miserably lacking in organisation. Consequently vested interests have the monopoly of Public Health and Medical Services. It cannot be otherwise in regard to campaign against tuberculosis. If tuberculosis and similar social diseases have been brought under efficient control in Great Britain and other countries it is mainly

due to the existence of organised medical profession in those countries, which guards the interests of the profession and therefore it has been possible in those countries for the general practitioners to evolve into an useful entity, side by side the later growth of the specialists, and a general practitioner is as much respected by the specialist as the specialist by the general practitioner. Affairs in India are quite different. The State and not the profession makes the specialists and the profession is forced to recognise them. The academic qualifications not merit and experience, count more for their recognition. All the institutions for medical relief belong to the State excepting a few owned by missions and naturally whoever is in charge of the special institution has to be recognised as the specialist. So in this country it is difficult to say who is a specialist and who is a general practitioner. The confusion has been also worse confounded on account of unwholesome competition between specialists and general practitioners. Dr. C. Frimodt-Moller, the Medical Commissioner of the Tuberculosis Association of India, makes it plain to his hearers whether they be medical men or lay men that the general practitioners have to play a very important part in the campaign against tuberculosis. Dr. M. Kesava Pai who is the Secretary of the local branch of the All-India Tuberculosis Association of India while lecturing to the practitioners undergoing post-graduate course in Tuberculosis (*vide, page 12, The Medical Practitioner, October*) made an appeal to the general practitioners that they should make free use of the facilities offered by the specialists in tuberculosis special Clinics and "there should not be any false notion of prestige." The real fear of the general practitioners cannot be loss of prestige so much as the loss of the patients.

We agree with Col. McRobert (*vide, his lecture published elsewhere in these columns*) that there are very few general practitioners in India of the type to whom William Osler, addressed in Britain and America in the following words :

"The leadership of the battle against the scourge is in your hands, much has to be done, much remains to do. By early diagnosis, prompt systematic treatment of individual cases, by striving in every way to improve the social condition of the poor, by joining actively in the work of local and national anti-tuberculosis societies you can help in the most important and hopeful campaign ever undertaken by the profession."

Col. McRobert has made valuable suggestions for the evolution of the right sort of general practitioners and for the necessity of an organised medical profession in India. Campaign against tuberculosis cannot wait till such practitioners are found. In the mean while, the responsibility of securing co-operation from the existing practitioners rests entirely on those who control the campaign against tuberculosis. The specialists should realise or made to realise that they are to aid the general practitioners and co-operate with them and not take their place either in the diagnosis or the treatment of patients taken to them. The services rendered by the specialists at the clinics should be free and if services are requisitioned in the patients' houses, they must be always through the general practitioners and the fee charged for these services should go to the funds of the clinics. Dr. Frimodt-Moller had suggested that the specialists in charge of special clinics should be debarred from private practice and should be adequately paid. It is said that a few members of the Technical Committee of the Madras Branch of Tuberculosis Association are of opinion that these specialists may be asked to do honorary work. The views of The Medical Practitioner on voluntary medical service are

too well known to be misunderstood. General practice is quite different from specialist practice relating to a social disease which is eating away the vitals of India and to combat which the workers engaged in the campaign should necessarily possess missionary ideals of service receiving emoluments just to maintain themselves and to be above want. The reputation which the Arogyavaram Sanatorium is enjoying along with such and similar institutions, is to a large extent due to the ideals of service entertained by the missionaries controlling them. As far as we are aware the staff in the missionary medical institutions are not allowed the privilege of private practice and if for any special emergency the services of any of the staff are required, the fee paid by the public for such service goes to the funds of the institutions and not into the pockets of those who render the service. Unless such a spirit of service which will also ensure the hearty co-operation of general practitioners, is inspired in those who are working under the Tuberculosis Association of India or its branches, we are afraid the campaign will not achieve its aims as satisfactorily as is expected. The general practitioners who are qualified not by academic special qualifications only but by the volume of work turned out by them in the treatment of tuberculosis should not only co-operate with all the existing philanthropic institutions devoted for the treatment of Tuberculosis but should co-ordinate wholeheartedly with them by starting special private clinics for the treatment of tuberculosis with a spirit of honest rivalry, the effect of the rivalry being not the counting of coins but the

counting of patients treated and made useful not only to the patients themselves but to the society as a whole. They should avail themselves of the opportunities offered to them to specialise in the diagnosis and treatment of tuberculosis and the existing institutions owned either by the State, missions, and those that are to be started by the Tuberculosis Association or its branches should provide for facilities to the practitioners for specialising. The scourge is so deep rooted and so extensive in its devastation that India wants thousands and thousands of medical men efficient in the art of curing and preventing the disease which has found a nidus in the teeming millions of the population. The practitioners should be made to feel that specialisation in the treatment of tuberculosis is not a monopoly of only a few, then only the public will have confidence in the general practitioners and the complexes either superior or inferior from whatever source will wane away considerably even if they cannot disappear altogether. Before closing we cannot do better than quoting the inspiring appeal of Col. McRobert, to the general practitioners contained in the last two paras of his lecture :

"Let us then do our best, by applying known principles of hygiene and therapeutics, to increase the disease resisting and body building powers of our patients, and when we do have an infective case, let us think not only of our patient but of all those around him to whom he may spread the disease and from whom he may have caught it."

Let us also combine as a profession to demand the provision of adequate facilities for the diagnosis and treatment of this infectious disease not as a memorial to anyone or anything but as the right of a decent civilized community to be decently administered."

NOTICE.

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matter. All sorts of refuse are dumped into the streets. In towns attempts are made to do some sort of cleansing and clearance by the sanitary staff once or twice a day, but the defilement continues unabated right through all the twenty-four hours. Unless our attitude to the streets undergoes a revolution, this disgraceful pollution will go on for ever. It must be a fundamental axiom that the household refuse must be kept in a covered and fly proof receptacle in a separate place, within the precincts of the house, until the sanitary peon demands it morning and evening. It should never be allowed to be thrown pell-mell in or out or about the dust bins. In Madras it is usual for a motor lorry to go on at about ten miles per hour, with two peons attempting to collect street rubbish and trying to overtake the lorry. Such haste in the collection of rubbish, leads to perfunctoriness. Collection of rubbish must be done deliberately and thoroughly.

Villages are only piteous scenes of houses built in a disorderly way, with every sort of rubbish and filth round about. The villager is so saturated with his dung heaps, rubbish heaps, and a ground indiscriminately punctuated with deposits of faeces in varying stages of disintegration, that, he considers it should be the normal picture of his life. He cannot realize the utter insanitariness of his surroundings.

The streets and public places must be held as sacred as temples, mosques or churches. Alas w., the descendants of Manu, the great sanitarian of old, have become so low, so apathetic and so pig-gish, that even these holy places are not spared from such depredations. You can talk tall about the responsibilities of Municipalities, Panchayats, the Government etc., but no municipality on earth can ever do public cleansing satisfactorily, until the municipal citizen realizes his duty and is prepared to do his bit of scavenging. This caste ridden India wants to relegate the scavenging to an unfortunate and down-trodden class. This attitude must go. Each citizen high or low especially a municipal councillor or a member of the local boards, must be pre-

pared to do his bit of scavenging in his house, street and elsewhere. People allow their children to pass stools on a street-side platform and afterwards expect the public scavenger to clean it, perhaps, the next day. If they realize their sin and if they are made, by law or convention, to cleanse it themselves, would they dare repeat the offence? The sweeper class is looked down with contempt and the poor devils are content with their lot. So long as you relegate this fundamental function to a human class exclusively, so long will our streets and villages, in spite of the colossal expense, continue to be insanitary, and so long, will you be haunted with the numerous angels of acute and chronic death.

URBANIZATION THE BANE.

We are in the unfortunate predicament of one who has cast off the old salutary health injunctions, but who has not assimilated the modern developments. Most of our ills in modern times can be attributed to the slipshod urbanization that has been a marked feature during the last three quarters of a century. Urbanization has developed in us, an utter sense of irresponsibility in all matters of health. Without any thought the townsman uses the public street for dumping every imaginable animal and vegetable refuse, and expects, for the tax he pays, the public scavenger to clean it, as often as he fouls. There is at least some pretence of cleaning in the towns. But what about the villages? The poor village cannot afford to maintain sweepers. The consequence is the picture of dung heaps, dust heaps and faecal punctuations.

It is very easy, in a properly planned village, to make each house, with its garden, self sufficient for all sanitary purposes. Each householder shall be responsible for the proper cleaning of the public streets and spaces, in juxtaposition to his house. A bore-hole or a trench latrine of the shiftable type is all that is needed for the human excreta. A deep pit for the dumping of the animal excreta and the house-hold refuse, is all that is needed for other purposes. Half an hour's sweeping and watering, morning and evening, is all that is necessary to mitigate dust. These

fundamental attributes for a healthy village life, can be modified according to circumstances. I can boldly say, that, with very little expenditure and taxation, a village can be kept clean and sweet. When the lethargy of mind and body is given up, health comes to us unasked.

So, I should seriously suggest, in order that the humanity may not dig its own grave, that the towns must be ruralized. In my conception of an ideal state, there will be no towns. There will be endless autonomous villages and a few godowns here and there for the essential commercial needs.

ESSENTIALS OF THE CITIZEN'S RESPONSIBILITY.

(1) Proper house planning : It is better to build a small house in a big space, than to build a big house, in a small space. The municipalities must impose more stringent regulations so that at least 50% of the allotted site should be open.

(2) The house-hold refuse must be kept in a fly-proof receptacle and must be handed over to the municipal sweeper at stated times in the day. I am against dust bins which are more sinned against than sinning.

(3) Spitting in the streets, house-fronts, buses, trains etc must be prohibited. How often have I noticed, people spitting inside the railway compartment, when they could easily spit out. This spitting especially the red juice of betel, chunam and tobacco, is a thing, I hate most. In towns it is better to have provision for spitting at select places on the sides of the street.

(4) Urination and defecation at public places, must be considered a heinous crime. For the floating people, public latrines and urinals must be provided, in the towns.

(5) Notification of infectious diseases must be made the duty of every citizen. The cooperation with the health staff must be free, full and ungrudging.

CONCLUSION.

The future of our country, in matters of health, lies in the realization and fulfilment of the responsibility of each individual citizen of this great country. Till then, any amount of money spent on the public health establishments, will not bear fruit. The foundation for all this is true education of the child, at the most impressionable periods of life, education not only at the school, but at the home.



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News and Comments.

An Awkward Situation : Our readers might remember the comments made in these columns about a new regulation passed by the Syndicate of the Madras University in regard to Clinical Lecturers, which demanded that the Clinical Lecturers should possess a higher degree such as M.D. or M.S. and should have practised the speciality for four years after having obtained the qualifications. It was thought at the time these comments were made that the regulation was applicable only to the honorary medical officers working in the City hospitals attached to the Madras Medical College. We now learn that the European junior specialist belonging to the Indian Medical Service and working in the Government Hospital for women and children, Madras, comes under the purview of the new regulation. We pointed out that the regulation cannot apply to the honorary medical officers as the category, Clinical Lecturers as such did not appear in the Madras Medical College Calendar, the hononaries being grouped under the heading, "Medical Officers giving clinical instructions to the M.B. B.S. students." Under the same heading mention is made of other medical officers none of whom possessing the M. D. or M.S. qualifications. And even in case only the honorary officers appearing in the latter category come under the purview of the regulation, it cannot be made applicable to those appointed before the date of the new regulation. It may be that the regulation is in the interest of the medical education and the Syndicate wishes that the Clinical Lecturers should have sufficient experience to be able to give clinical instructions to the students. The test claimed from the hononaries as teachers of practical medicine is quite different from that laid down by the Syndicate for paid medical officers who are actually in charge of teaching of, theory and practice of medicine. In 1937 the Syndicate passed a regulation in regard to professors and lecturers of the Medical College which demands higher qualifications such as M. D. and M. S. as in the case of Clinical Lecturers mentioned in the new regulation. But the additional test for

the professors and lecturers is four years' teaching experience and not four years' practice. An M. B. B. S. is qualified to practise medicine, surgery and midwifery soon after he leaves the college. Both the honorary physician and surgeon recently appointed in the Government General Hospital are said to have practised Medicine and Surgery respectively for over ten years. The four years' teaching experience demanded from the professors and lecturers of Medicine and Surgery is not after their having possessed the higher degrees M. D. and M. S. So the interpretation that the four years' practice in the case of honorary Clinical Lecturers should be after the date of their passing the higher degree is neither fair nor reasonable. The practice of Medicine and Surgery is just the same in an individual whether he be an M. B. B. S., M. D., or M. S. The latter two are the hall marks of higher academic qualifications. The Syndicate cannot deny that an M.B. B.S. can shine as good and as efficient a physician or surgeon as the M.D. or M.S. Even in the legal profession there are more B.Ls commanding legal knowledge and experience not inferior in quality to that possessed by the M.Ls. After all the University exists for the control of teaching which teaching should be useful to be exercised in various professions. The art of Medicine, Surgery and Midwifery are taught so that those practising the same might relieve human suffering. The public and not the University is the best judge for testing the professional skill and it is the public that created the universities, gave them statutory powers to act for the public to control the teaching. So, what all the University does should be in public interest and not in academic interest nor in the interest of individuals. The Government is the highest authority to judge what is in public interest and what is not. It is true that the University is a statutory independent body and the Government cannot interfere with the decisions arrived at by the University. But undue advantage should not be taken by a statutory body, which savours discourtesy if not disrespect to the Govern-

ment. While framing any regulation, the Syndicate should mind also the policy of the Government in regard to the institutions which belong to them and not to the University as in the case of Madras Medical College and the hospitals attached to it. At the time the Government advertised for the posts of honorary physicians and surgeons to serve in the hospitals attached to the Medical College, the new regulation did not exist nor was it promulgated before the date of the order of the Government appointing the new honoraries. The Government selected suitable candidates whom they considered to be the best amongst the applicants and the Government knew at the time that the honoraries had to give clinical instructions to the medical students working in their wards. The person who sponsored the new regulation which was finally passed by the Syndicate is the Principal of the Medical College, an officer under the Government, who knew the policy of the Government in regard to extension of honorary medical service. He is a Madrasee who should know the existing conditions of the medical profession in Madras. The Syndicate who promulgated the regulation relating to the professors and lecturers demanding the higher qualifications in 1937 have not given retrospective effect to it and there are to-day professors and lecturers in the Medical Colleges in the City of Madras not satisfying the conditions of the regulations of 1937. The new honoraries appointed before the date of the new regulation certainly satisfy the conditions demanded of Clinical Lecturers in the new regulation of the Syndicate relating to the higher qualifications at least and have been practising their speciality for more than 4 years. Apart from all the considerations discussed by us above, an awkward situation has now arisen which is likely to create misgivings in the minds of the public who seek admission into Government General Hospital and the Government Hospital for Women and Children where the Secretary of State for India has appointed an European I. M. S. officer as junior specialist who is an F. R. C. S. of over four years standing. The two honoraries in the General Hospital and

the junior specialist are found wanting by the Syndicate to tell the medical students what they saw in the patients and what they did for the patients entrusted to their care. The fact that there is a physician, a surgeon and an obstetrician in the Government Hospitals in the City who can practise medicine, surgery and midwifery respectively but cannot demonstrate to the medical students what they do in these hospitals, will be misinterpreted by interested people and will also lower the prestige of the healing art and the reputation of the hospitals. This regulation though it might serve the proverbial academic interest, will not serve the interests of the medical profession and those of the public. There is a solution for every problem and if there be a will there will be surely a way. The Surgeon-General with the Government of Madras may point out to the Syndicate of the Madras University the implications of the new regulation on the administration of the hospitals and request the Syndicate not to give retrospective effect to the same.

Advice to New Licentiates: On 16.11.1939 Dewan Bahadur S. E. Runganadban, Vice-Chancellor of the University of Madras presided over the function of the distribution of prizes and Diplomas to the Licentiates who passed out of the Stanley Medical College this year. After congratulating the Principal, Rao Bahadur Dr. T. S. Tirumurti on all-round progress and many sided activities of the College, the Vice-Chancellor congratulated the prize winners and "referred to the view held by some that examinations were after all not real tests of the ability of the students and added that it was pointed out in proof of that fact that a great many who did not get any prize or even failed in examinations, were successful in later life. There was a great deal of truth in that view. But unfortunately they could not do without any system of examinations in the field of education. Examinations did afford a criterion of the skill and knowledge of the men and women who sat for them. In particular, medical examinations, both theoretical and practical, were

thorough and searching tests and those who went through them, gave evidence of diligence, concentration of mind, perseverance and the possession of the requisite knowledge and skill for the proper exercise of their profession. However, he would advise those who were successful in the examinations and would be leaving the College, not to say good-bye to their books. Medical men could not afford to be out of touch with the latest developments in medicine and surgery. They ought to keep up their study of books throughout their life."

The Vice-Chancellor said that with the help of the true scientific temper earned by the medical men in the course of their studies they could discriminate between the trivial and the important dispassionately and come to correct judgments about their relations with others as citizens and contribute to the formation of sound public opinions in regard to social and political progress. He mentioned that the doctors are in a privileged position because every door belonging to any class or any community was open to them. He pointed out that on account of this privilege they could promote healthy inter-communal relationship. In conclusion he advised the out-going Licentiates to do their best to the masses as patriotic Indians while discharging their duties pertaining to Public Health.

We wish the good words of the Vice-Chancellor will bestir the medical profession and make them conscious of their potential strength and capacity to build a harmonious society strong in body and mind. Let them with the help of their scientifically tempered talent first begin to build their own fraternity which is at present not organised on sound and healthy lines.

On 17.11.1939 the Stanley Medical College Association gave a reception to the out-going Licentiates. Dr. D.V. Venkappa who addressed the Licentiates was rather pessimistic. He said that the feature of the Licentiates was gloomy whether it be in the service of the Government, Local Bodies and even in subsidized service and strongly criticised the Madras Corporation for the manner

in which the Licentiates were treated by it. He advised the Licentiates to join the ranks of independent practitioners as he saw the Licentiates thriving well as practitioners. Hon. Dr. U. Rama Rao who presided on the occasion was as optimistic as Dr. Venkappa was pessimistic when he said that there was nothing that a Licentiate could not achieve in the field of medical science. He advised them to take to private practice and settle in places where scientific medical relief was not available. He exhorted them to take interest in public work without risking their professional business.

The two good old practitioners whose field of activities was the Madras City placed before their audience pictures as they saw them. It is true that the Medical Licentiates have been plodding on in the midst of handicaps and hardships but the fact that in spite of them they hold their own and have not been found less wanting than their more fortunate brethren in the profession should encourage the young Licentiates that their lot depends upon themselves and they should face it with courage and fortitude. Their capital should be knowledge, their work should be service and their solace should be contentment. Let them plod on as their elders have been doing for,

"Honour and shame, from no condition rise;
Act well your part, and there all the honour lies."

Counter-signature > and Second Opinion: It is most regrettable that some of the medical officers and heads of the Government Departments keep themselves ignorant of the Government Orders in regard to the procedure of countersigning of the medical certificates and giving second opinion on them. It is at times surprising to hear that even the Presidency Surgeons in the City of Madras, who daily as a routine are dealing with medical certificates show their ignorance at times to a marked degree. One such instance has recently come to our notice from South Madras, the Surgeon countersigning the medical certificate issued by a private practitioner

in spite of his being informed that this procedure was found unethical by the Madras Medical Council and that the Local Government ordered long long ago that the procedure of obtaining second opinion should take the place of counter-signature when the head of a department suspected the veracity of the original certificate. A practitioner from North Madras narrated to us about three months ago about his experience of another Presidency Surgeon who did not mind the instructions contained in a Government Order which calls upon the Government medical officers to summon the medical practitioners who issued the medical certificates to their patients, to be present at the time they were to be examined by the Government medical officers for the purpose of giving second opinion. In the Correspondence Columns we have published a letter from a private practitioner along with the enclosures received by us, one of which is a copy of the letter addressed by the Surgeon-General to the Municipal Commissioner, Hindupur and the other is the G. O. on the subject. The letter and

the G. O. speak for themselves. We wish the practitioners who are humiliated by the unethical conduct of the Government medical officers follow the example of the practitioner of Hindupur persistently so that the Government might be tired of the ignorance displayed by their medical officers. Before closing it may not be out of place for us to mention that the Madras Medical Council did point out to the Government that the procedure of obtaining second opinion on the certificate issued by a private practitioner was as objectionable as the old procedure of countersigning though less unethical. We trust that the new Medical Council which will come into existence next July and which will be perhaps less undemocratic than its predecessor will take up this subject and see that the members of the medical profession will enjoy the rights and privileges of Medical Registration in par with their brethren in other civilised countries. Our services are always at the disposal of the profession as they were in regard to the above complaint.

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To
THE MEMBERS, THE P. S. R. M. Ps'
ASSOCIATION.

Brethren,

I have to inform you through these columns that the Provincial Committee of the Association has almost unanimously decided not to hold the Annual Conference at Chittoor District during the Xmas holidays as decided at the Annual Conference held at Samalkot last April. The only dissenting member was the one representing Kistna District and the member representing Chingleput District has not so far intimated his opinion. The Working Committee first approved the idea which was initiated in the form of recommendatory resolutions to the Provincial Committee given notice of by the General-Secretary. The resolutions appear in the next column.

One of the extraordinary events anticipated in the preamble of the resolutions has unfortunately taken place, i.e., the resignation on the Congress Ministry. It may also be mentioned that the Government did not as yet pass orders on the memorandum submitted by the Association on the resolutions passed by the Provincial Committee at its first meeting dated 31-12-1938. Consequently no memorandum has yet been submitted on the resolutions passed at the Samalkot Conference, the executive of the Association has been awaiting the orders of the Government on the previous memorandum basing upon which the memorandum on the resolutions passed at Samalkot have to be drafted. So just at this stage it is considered and rightly so that no good purpose would be served by holding the Annual Conference this year. In the meanwhile there is lot of constructive work to be formulated which cannot be done at the spectacular gathering of a Conference and which could be coolly and deliberately done by the Provincial Committee sitting day after day till the programme of work is over. In the past no

substantial constructive work could be attempted nor done at the Conferences when everybody who attended the Conference was in a hurry to return to his village.

It is hoped that the meeting of the Provincial Committee will be more conducive to the interests of the Association than the holding of the Conference this year.

I appeal most earnestly to all the members of the Provincial Committee to make it convenient to attend the meeting which will be held at Tirupathi. The dates of the meetings and the programme will be duly communicated to the members. In the meanwhile the members of the Provincial Committee should be active. They should consult their comrades and get ready constructive proposals for the betterment of the Subsidised Rural Medical Relief Scheme and the lot of the practitioners running them. There is very little time before us and if it is not possible for the members of the Association to meet, the individual members may take the initiative and inform the members of the Provincial Committee of their Districts in writing about their ideas relating to constructive work incorporating any of their local grievances and hardships. A copy of such a letter should also be sent to the Central Office before 10th December.

V. RAMA KAMATH,
President.

Resolutions passed by the Provincial Committee of the P. S. R. M. Ps' Association as recommended by the Working Committee.

1. As the situation in the Country may not be so conducive as to hold the annual conference in December this year in the District of Chittoor as decided at Samalkot Conference the same be postponed to December 1940 or earlier if circumstances permit.

2. General election to the Provincial Committee be postponed except where any District finds it expedient to elect its new representative to fill up a vacancy.

3. The Provincial Committee meeting be held at Tirupathi for two days or more beginning from 26th December 1939.

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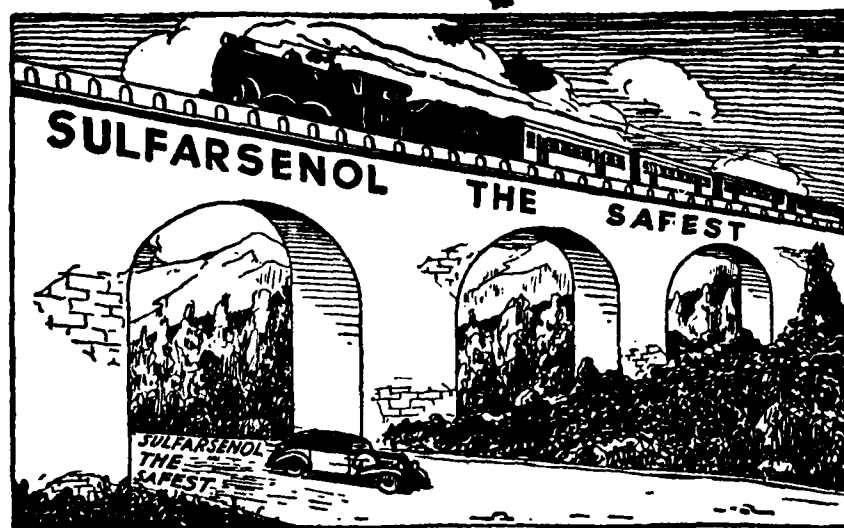
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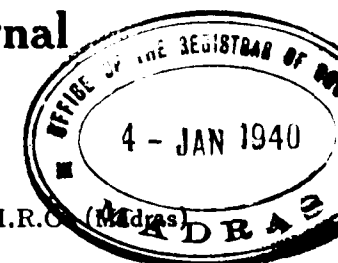
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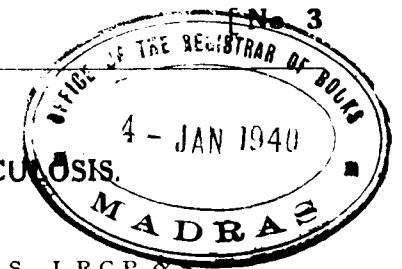
Original Articles *

RADIOLOGY IN LUNG TUBERCULOSIS.

BY

Dr. M. J. SANTANAKRISHNA PILLAI, L.M.S., L.R.C.P. & S.,
L.F.P. & S. D.R., F.B.R.A.,

Medical Superintendent, Barnard Institute of Radiology,
General Hospital, Madras.



The importance and the necessity of the X-ray in the diagnosis and treatment of tuberculosis of the lungs being well established, the practitioners entrusted with the campaign against this disease should have clear ideas of the role of Radiology as an essential aid for diagnosing and treating this malady. It is therefore desirable that the practitioner who wishes to make a special study of the lung tuberculosis should know not only the principles of the technique but also the actual working of the technique relating to Radiology. After knowing this he should be conversant with the radiological pictures of normal lungs and other lung diseases so as to enable him not to mistake other lung conditions with those found in tuberculosis of the lungs.

At the very outset the practitioner should realise that variations in technique cause variations in the resultant picture. The position of the patient during exposure, time of exposure, hardness of tube, tube film distance, temperature and age of developer all these contribute towards the finished radiograph.

The acknowledged standardised technique for chest radiography is carried out at two meter distance with a normal instantaneous exposure. The end result must show the shadow of the subclavian veins, the interior venacava and the inter-lobar pleura between the right upper and middle lobes. The chest is pressed closely against the cassette with the arms rotated inwards and held slightly forwards or with the arms embracing the cassette holder. In this position the shadow of the scapulae is thrown out. The chin rests on the top of the cassette so that the apices are in close contact with the film. 55 to 60 K. V. with 100 to 180 milliamperes being used. The exposure varies a little with the size of a patient from 1/10 to 1/25 of a second. In recently developed apparatus the rotating anode tube is utilised which adds to the details—otherwise obtained. Intensifying screens with fine grains are used and these should be changed after every 10,000 exposures. The temperature of the developer ranges from 65° F to 68° and the developer should be changed after every 60 films. In the pictures

* The above article and the two following are the lectures delivered by the authors to the Post-graduate students at the October Session of the Post-graduate course in Tuberculosis held at Madras and organised by the Tuberculosis Association of India.

taken with proper technique there are five distinct normal opacities in the region of apex though all are not seen in a particular film. They are:

(1) The opacity in the upper half of the apex due to the shadows of sub-clavian vein.

(2) The normal opacity in the inner half of the apex produced by sterno-mastoid muscle.

(3) The normal opacity seen as a dense sharp line accompanying the shadow of the second rib and disappearing below the shadow of the clavicle. This is probably caused by a fold of fascia containing superior intercostal artery and vein and a large branch of first thoracic nerve.

(4) The normal triangular opacity probably caused by the folding of pleura inwards. The point of this opacity projects normally in the centre of apex.

(5) The normal opacity in the form of a few fine hair like lines probably caused by muscular development in the neck.

Again there are extra lobes, a fourth on the right side and a third on the left. The additional lobe called azygos lobe. This lobe defrosted by the azygos vein contains less air than normal and hence appears rather opaque. It may not be mistaken for a pleural thickening or any other condition. This must be distinguished from a true azygos lobe described by Cockayne and Gladstone. This is a small infra cardiac lobe on the right side its fissure appearing along the right cardiac border and extending to the middle diaphragm.

The hilum shadows are formed in the main by the pulmonary vessels and the lung striations by its branches. The tracheo-bronchial glands are invisible unless calcified, and when calcified this opacity can be seen behind the normal hilar shadow. The proof that hilar shadows are cast by pulmonary artery is noted in mitral disease of heart when these shadows are seen pulsating.

Stereoscopic chest radiography is useful in lung tumours, lung abscess and the

localisation of foreign bodies. The stereoscopic examination is not recommended as a routine measure in bringing out the lung fields as it very often causes a false interpretation of cavitation and infiltration.

X-RAY SIGNS IN NON-TUBERCULOUS DISEASES OF LUNGS.

To diagnose tuberculosis of lungs with the help of X-ray, one should know the X-ray appearances in lungs due to non-tuberculous diseases of lungs acute or chronic—exudative or non-exudative.

In mild cases of short duration no X-ray signs are noted. In severe cases lasting for sometime, there is increased lung striations. The increased striations are probably caused by the active hyperaemia and partly by the secretion in the larger bronchi. The bronchi and these bifurcations running longitudinally appear as soft shadows of the same density but wider than the vascular. Unlike vascular shadows they do not decrease at bifurcation nor do they bifurcate so often. These shadows are best seen in lower lung fields. The end of bronchi in acute bronchitis are seen as mottled areas scattered all over the lung fields. They are neither big enough nor dense enough to stimulate tuberculosis, secondary deposits or pneumoconios. These unlike those of broncho-pneumonic patches of tuberculosis are scattered evenly all over the lung. They do not show a tendency to coalesce. In purely bronchitic condition if the patient is asked to cough out many of these spots or shadows disappear. In bronchial condition associated with measles whooping cough and influenza in children there is marked increase in the width and density of the hilar and perihilar shadows. This is partly due to active hyperaemia of the vessels and partly to oedema of the bronchial glands.

In chronic bronchitis, similar appearances with increased striations are noted. There exists also emphysema resulting in increased instead of diminished translucency. The bronchial walls are seen very clearly and definitely along the right border of the heart. These are thin and

running slightly outwards bifurcating at or just below the diaphragm. In children these are well defined after an attack of broncho-pneumonia and in elderly people in whom deposition of calcium salts takes place along the walls of the bronchi. Stasis in pulmonary vessel is frequently confused with bronchitis. Passive hyperaemia of the lung occurs in mitral stenosis of heart failure and presents various appearances those caused by hyperaemia at different stages. Some of these may be caused by unsuspected pulmonary diseases and some are certainly due to congenital abnormalities of the vessels themselves; especially their situation in extra lobes of the lungs. In early stage of hyperaemia there is loss of translucency and marked increase in density of vascular shadows. These are visible right out to the periphery. The other confirmatory signs are the enlarged hilar shadows and the restricted movements or diaphragm. The movements of the hilar shadows can be seen on the screen. The loss of translucency is due to the compression of the alveoli by the capillaries. The enlarged hilar shadows are coarse vascular markings caused by the distention of the pulmonary vessels. If the hyperaemia is chronic the loss of translucency is more marked and so the vascular stria in the lungs are coarser and wider because the peribronchial lymphatics now show up. The oedematous bronchial glands also tend to enlarge the hilar shadows. Thickness of the inter-lobar fissure is seen some times in parietal pleura. The shadow along the course of the 2nd rib also shows thickening. It was thought that it was pleural origin, but Kuntson has shown that it is due to the sheath of connective tissue containing the superior intercostal artery, vein and a large branch of the 1st thoracic nerve. The clarity of the shadow in mitral stenosis is due to the swelling of the vessels in Kuntson's Sheath.

X-RAY SIGNS IN LUNG TUBERCULOSIS.

To understand clearly, the X-ray appearances in lung tuberculosis and to grasp intelligently their causation, indica-

tions and implication, the X-ray appearances have to be described along with a brief account of the anatomy (including surface) physiology, and pathology of the lung.

The lung should be viewed as a muscular organ in term of Macklin's definition. His work has established that the lungs are muscular organs in the every sense of the word since there is hardly a millimeter of lung tissue which does not contain smooth muscle. The musculature of lung are of two types (1) tracheo-bronchial and (2) interstitial which consists of scattered whips of muscle fibres in the interstices of lung and deep layers of pleura. The bronchial musculature may be regarded as a net work of contractile tissue, embracing the mucosa of the entire bronchial tree, from larynx up to the alveolar mouths. One loosely woven layer of elastic fibres being closely incorporated with the muscular coat, the whole being described by Macklin as "Myoelastic tissue". We may recount here that anatomically each bronchus divides into peripheral branches ever increasing in number and ever diminishing in size, until it finally divides into numerous fine terminal bronchioles. Each terminal bronchiole divides into two respiratory bronchioles and at the end of each respiratory bronchiole is formed an alveolar duct leading into an alveolar sac, which is composed of numerous alveoli; and thus each alveolus forms the minute subdivision of an alveolar sac which forms ultimately the respiratory chambers. The tracheo-bronchial musculature is made up of two parts; viz:—(a) conducting tubular part from the trachea up to terminal bronchiole (b) conducting respiratory part from the respiratory bronchiole to the alveoli. It is in the respiratory part where interchange of gases takes place. Some of these muscular fibres are reinforced to act like sphincters at two places; at the terminal bronchiole and at the entrance of the alveoli themselves. This sphincter like action is chiefly brought into play in spasmodic contractions as in asthma, collapse of lung massive or otherwise. Therefore according to Hus-

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tin's definition the lung unit should consist of all the lung tissue including and beyond the respiratory bronchiole and it is to this unit the foci of early tuberculosis actually correspond—confirming all those implied in Hustin's lung unit.

The action of diaphragm extends up to the apex of lung, and the expansion of the apex of lung is under the control of the crura of the diaphragm. The other parts of the lung are controlled by the expansion of thorax. During inspiration the trachea and the bronchi dilate, the muscles almost remaining passive. Therefore during this phase of respiration, the chest wall and diaphragm are active, as the diaphragm descends and chest expands. While in expiration the bronchi get narrower and shortened the diaphragm ascends and the thorax relaxes and musculature of lungs plays in active part. In all probability the movement along the bronchioles is a wave like motion akin to peristalsis travelling from the terminal bronchioles upwards. Gairdner described this in 1850 as the "deostruent" of the bronchial tubes. This is one of the principle factors in the upward movement of the bronchial contents, mucous and secretion upward in bronchial tubes.

The lymphatics of the lungs extend upto the alveolar duct only and not in the alveolar sac or alveoli. These lymphatics mostly drain towards the hilum and those from the septa of lung drain into the pleural pre-aortic lymph glands or the bronchial glands lying along the primary division of the bronchi. The normal pulmonary glands which are peri-bronchial in distribution are very small in size and are not ordinarily visible. These glands when infiltrated by tubercular bacilli enlarge and show up in radiograph as a tiny string of beads on either side of the walls of the bronchi. In an adult a couple of dense shadows are seen in the hilar region with nothing else striking in the rest of the lung field. These are the indurated fibrous glands or anthrotic lymph glands. The appearance of the hilum in the infant is crescent-shaped. In the adult it is dense consisting of bronchi, blood vessels, lymphatic,

nerves, glands and soft tissues surrounding the above. In the hilum small circular shadows with translucent lumen are noted. These are not cavitations but are the branches of bronchi viewed in end on position. The apex of the lung is at the level of the neck of the first rib which corresponds to the 7th cervical vertebra.

LOBES OF THE LUNG: A line drawn from the second dorsal to the 6th rib in the mammary line divides the upper and lower lobes and a line drawn from the middle of this line to the sternum at the level of the 4th costal cartilage on the right side, marks, the position of the inter-lobar fissure between the upper and the middle lobes. It may be stated that anterior part contains the lower lobe. A line seen above the clavicle and running parallel with it in its outer half represents the skin over the clavicle when it is reflected over in the supra clavicular fossa. Occasionally the nipples of female breasts especially if large and pigmented may appear in a good radiograph of lung as a small opacity simulating secondary deposits in the lung fields etc. Its symmetry and its presence in a radiograph of a female, its position will determine the nature of the shadow.

In tuberculosis of the lungs, the pathology is just the same as in bones namely deposits of tubercular bacilli in the tissues and reaction of the tissues causing inflammatory deposits around it consisting of epithelioid cells. By the coalescence of these cells a few giant cells are formed. The spread is mostly through lymphatics and peribronchial infiltration is characteristic of tuberculosis. In acute miliary tuberculosis the infection spreads through the blood stream. From such localised meta-static lesions resolution takes place with fibrous tissue formation but if caseation occurs the epithelioid cells break down eventually resulting in cavity formation. Calcification is noted when apparently the lesion is healed up. Nature appears to calcify all dead tissue in the living organism.

Screening alone is not sufficient to detect very early lesions. A radiograph

taken while screening gives additional details.

(1) In films small details are not early made out while in screening they may be revealed.

(2) Only a single view of the chest is brought out in the film and shows nothing of the changes made by movements or changes produced by respiration.

(3) A higher voltage is used and almost instantaneous exposure is given whereas in screen examination the patient is examined through different angles in different positions. Respiratory changes are noted when low voltage is used and for a long period.

In trying to detect early cases of tuberculosis, it is stated that intensifying screens should not be used but in my experience the use of these screens gives additional information.

In the diagnosis of pulmonary lesions radiograph should be revised if the findings do not confirm the clinical and bacteriological evidence. In such conditions one should remember lesions simulating tuberculosis when they are really due to syphilis. T. B. lesions can be clearly seen through the shadow of the ribs. Again, a regular graduated diminution of the translucency in lungs on one side gradually lessening from above downwards can be produced by many conditions which are not pathological such as:

(1) Well developed pectoral muscles or their involuntary contraction at the moment of exposure.

(2) Thick scapulae.

(3) The breast.

(4) Wrongly centred tube.

(5) A symmetrical position of the patient and such other conditions may also produce the effect noted above.

Different densities of shadow sometimes present between the right and the

left apices without their being any tubercular lesion. This may be due to the presence of cervical rib, enlarged glands, curvature of cervical spine, aneurysm of the innominate artery, injury to the rib or the clavicle, excessive development of the cervical erectospinal muscles as in the case of athletes. All these points should be borne in mind in interpreting a shadow on the screen or on the film.

X-ray examination of the lungs is not only a valuable help in the diagnosis of lung tuberculosis but also serves to differentiate the latter disease from other lung affections. The X-ray is also useful in assessing the lung condition at different stages of treatment especially when the patient is having pneumo-thorax therapy.

The presence of thickened and calcified cervical glands similar calcified glands in the hilum and the presence of the peri-bronchial lymphatic glands, hilar shadows enlargement with marked striations radiating towards the base or the apices denoting the lymphatic extension of the tubercular process, a vertically placed small fibrotic heart are some of the X-ray evidences showing the tubercular diathesis.

Pulmonary tuberculosis has been divided into (a) proliferative, (b) exudative and (c) fibrous etc. Radiologically the pulmonary pathology may be classified as:

(1) Pulmonary T. B. without physical signs i.e., latent form.

(2) Pulmonary tuberculosis with doubtful symptoms.

(3) Early T. B.

(4) Miliary T. B.

(5) Advanced cases with evidence of symptoms namely chronic tuberculosis with cavity formation etc.

In the latent form very small abnormal shadows of apex not very dense without well defined edge may be noted. It is usually unilateral commonly found in

adults and usually found in the outer zone of upper and middle lung fields. Imperfect variations of apex is noted, and also defective diaphragm movement. It may be retarded, sluggish or absent altogether. In this condition the diaphragm remains in the expiratory position. Old lesions though apparently healed up are seen as well developed shadows fibrosed or calcified though retaining their liability to light up again. In the very earliest lesion tubercle are only microscopic in size but when these coalesce and attain the size of 4 millimeter in diameter then only it becomes demonstrable in X-ray.

Comparative opacity in one apex due to poor air entry and not cleared up by vigorous cough or breathing is noted on the screen. Hilar shadows may be enlarged but are not pathognomonic of tuberculosis as in the case of hilum pneumonia, involvement of hilar glands, in diphtheria, pneumonia, influenza and in like diseases.

Miliary forms are of two types (1) Real type and (2) Snow Storm appearance type. In the real type it is blood borne, is usually part of the general miliarised affection. On X-ray examination miliary tubercles being microscopic are not visualised even though the whole lung fields are riddled with them. There may be only a general diminution of translucency but when coalesced, small area of increased density throughout the area may be noted. Children and adults are both equally affected. These lesions are noted more in the interstices of lungs and not in air-alveoli.

Snow Storm type is really a case of tubercular broncho-pneumonia. An air borne condition usually originating in larynx or after ulceration in the bronchi. The tubercular bacilli are incarcerated in the alveoli and get sealed off by the occlusion of the terminal bronchioles and hence appear prominently as numerous dots. These appear usually in the middle portions of the lungs and not in the apex. It progresses rapidly. The appearance is sometimes simulated by

miliary carcinomatosis of diffused type, pneumoconiosis; and in infants in acute bronchitis of severe type.

Chronic tuberculosis radiographs confirm and record the clinical findings and diagnosis.

Mottlings are scattered deposits of increased density separated from one another by clear phases of compensatory emphysema on both sides and spread evenly.

Cavities small and large, formed as a result of lung disorganisation and defined by fibrous walls containing air and fluid, patches of broncho-pneumonia, pleurisy with effusion, hydro-pneumothorax, pyo-pneumothorax are some of the complications of the chronic tuberculosis.

In pseudo tubercular cases such like encysted inter-lobar emphysema, abscess, hydatid, bronchiectasis and syphilis, the cavitations formed are not of the same degree as in tuberculosis and other clinical tests will also help in arriving at a definite conclusion. Inactive focus the wooly appearance caused by inflammatory reaction around tubercles is very striking in radiograph pictures. The inactive focus gives rise to definite shadows of the lung. Tissues around are clear and healthy. In doubtful cases it is advisable to give three or five grains of Pot. Iodide three times a day or two in order to clear up the lung field by increased expectoration.

ASSMANN'S FOCUS OF TUBERCULOSIS.

The X-ray film shows an isolated patch of consolidation mostly situated in the upper and outer zone of the right lung. There is no reacting exudate around the region. It remains latent for sometime and then either undergoes resolution or suddenly breaks up extending towards the hilum. The typical appearance of a number of these circular opacities arranged circularly around a nucleus and their disappearance after

resolution are very often noted in lung lesions.

LUNG TUBERCULOSIS IN CHILDREN.

Tuberculous lesion in the parenchyma of lung tissue except as a miliary tubercle is not very common in children.

What is known as Ghon's tubercle in children is seen as a small healed fibrotic patch in the lung parenchyma. It invariably exists in the peripheral part and near the pleura. It is rarely visible in the apices, hilum, and middle zones, and appears very often between the 2nd and 6th intercostal spaces. This occurs only in a very few cases and it is claimed that this is the origin of tuberculous mesenteric glands in children. But this theory is not universally accepted.

In acute bronchitis of severe type diffused tiny patches like miliary tubercles are noted in the lung fields.

GLANDULAR TUBERCULOSIS: The enlargement of glands can occur in measles, whooping cough, influenza and this enlargement may persist for some months. In these non-tubercular lesions the enlargement of glands subsides after a time but in tuberculosis there will be no reduction in the size of the glands.

Tomography, Pladography, Stratography, are some of the terms used in connection with the process of bringing out the lung tissue in different strata and in different planes. In this process the cassette is made to move rapidly while radiographic exposures are being given. The arrangement is such that the resultant picture shows out the lung at the required depth unlike as in the plain radiograph where superimposition of shadows and their summation cause the disappearance of the depth effects. Cavities and central pneumonic patches situated in the depth of the lung tissue can be brought out in relief by these processes.

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TREATMENT OF TUBERCULOSIS

GENERAL PRINCIPLES.

By

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According to Hutchinson the three fundamental principles of treatment are diagnosis, diagnosis and diagnosis. So far as the tuberculosis problem is concerned we as practitioners of medicine are responsible mainly for the treatment of those suffering from tuberculosis. Our endeavours are judged by the success which we achieve. And the success in the treatment of tuberculosis depends mostly in the early recognition of the disease. The percentage of cure in early cases is decidedly greater than in later cases. This is more true of tuberculosis than any other disease. From the point of view of the general practitioner it is all the more important to recognise the disease at its very outset because once it has passed the stage of incipency, the general practitioner's armamentarium is not sufficient to tackle the case since special methods which only the specialist is competent to apply are to be requisitioned.

The diagnosis of minimal tuberculosis is dependant on repeated examination of the apparently healthy for tuberculous infection and disease. The success of dairy men in many western countries in reducing infection among cattle to less than 5% suggest the value of a similar effort among humans. Much money and energy has been and is being spent for treating 87% of cases in India with moderately and far advanced tuberculous lesions. Relatively little has been done to find and treat the disease while it is still in the minimal stages. This is to be effected by special clinics which ought to be primarily diagnostic centres. The importance of such clinics has not been fully realised by many of us. The method adopted in all western countries is to refer all cases with any suspicion to special clinics where only the proper diagnosis is made, and not merely to send the established cases, for

treatment alone. Naturally many patients who are not really suffering from tuberculosis will also be attending these clinics.

That is the reason why the name tuberculosis clinic is being abandoned and the name chest or lung clinical substituted. What is the role of the general practitioner in the treatment of Phthisis? Are all the cases once recognised to be relegated to the Specialist? Emphatically not. The specialist comes in first of all as a consultant to help the general practitioner in the arriving at a diagnosis in doubtful cases and secondly in adopting special measures as 'artificial pneumothorax' and 'phrenic-evulsion' etc. in selected cases. It will not be out of place if it is pointed that specialists either in the treatment of tuberculosis or any other disease should first pass the stage of an intelligent general practitioner who alone will be in a position to avoid pitfalls in the diagnosis of tuberculosis judging from a careful history and the manifestations of signs and symptoms in a particular case as many a time a single manifestation or a group of them many be identical in both the special or a general disease. Such mistakes are very common these days when a specialist usually does not pass the stage of a general practitioner. It is particularly so in lung tuberculosis. In England specialists in a particular branch of medicine or surgery attached to special hospitals are general physicians or surgeons respectively doing duty as such in general hospitals. It is well such a practice is followed in India also.

A busy general practitioner is apt to overlook or fail to recognise early tuberculosis. This is to be remedied by keeping the possibility of T. B. in mind whenever he is confronted with cases with obscure

fevers, unaccountable cough, perplexing emaciation or persistent anorexia. A general practitioner can certainly treat most of the incipient cases where there are no localising signs. Even when there are localising signs he can certainly treat the case by the ordinary measures of rest, good food and fresh air for a period of three weeks. And if within this period he finds no subsidence of symptoms, he must not fail to refer the case to the specialist, because that is a definite indication to adopt special measures. The general practitioner has to come in again to look after advanced cases where the special forms of treatment will be of no avail and the doctor is necessary only to ease the patient's way till he succumbs so that the patient's relatives may have the consolation that the patient was well looked after till his death.

In the treatment of tuberculosis three questions may usually strike the mind of a practitioner, viz., why treat tuberculosis, when to treat and how to treat. The answer to the first question is obvious. The old time-honoured idea that tuberculosis is incurable should be dispelled. There is not the slightest doubt that many cases of phthisis in the early stages get completely cured if treated properly. And even in advanced cases it is possible by adopting proper measures to arrest the progress of the disease and patients will be able to go on with their routine work for years with no apparent disability. The second question may seem unnecessary but none the less pertinent. For it is the general experience of those who have to deal in the treatment of tuberculosis on a very large scale to find that the urgent necessity for the immediate treatment of the T. B. patient on the development of clinical symptoms, is not appreciated either by the profession or by the laity. The characteristic feature in this disease is the fact that the acute outbreak of the symptoms is very often followed by the subsidence of all signs of activity and a return to a feeling of well-being. This gives a false sense of security and permits a delay which very often means a prolonged period of invalidism or death, instead of restoration to health and usefulness. So the aim should be to treat the

disease soon after it manifests clinical symptoms and treat it till the patient is cured or till it has been definitely proved that the patient cannot recover.

It is most disappointing to hear at least a few medical men saying these days that nothing would do good to a patient suffering from tuberculosis excepting open air treatment when it is known that special methods of treatment have been devised to ensure not only relief but also cure for those suffering from this disease which was once considered incurable.

Segregation of the patient is essential from the point of view of public health. Thanks to the new Health Act, tuberculosis has become a notifiable disease. The main value of sanatoria and hospitals consists in achieving this object of segregation whereby the patient is taken away from the neighbourhood of the other members of the family. Tuberculosis can certainly be treated at home provided the patient is satisfactorily isolated in a room where the other members of the family have no access and provided the patient is intelligent enough to follow the doctor's instructions to the very letter.

There are certain definite measures which have stood the test of time as being of greatest value in the treatment of tuberculosis. They are those which when applied to the patient have as their aim the creation of a strong physical body and the development of a helpful psychology and further more such measures as may bring about in the areas surrounding the foci of disease conditions which will tend to destroy the bacilli or retain them in the tissues already infected and resist their scattering to new ones. I would slightly modify the trilogy of Rolleston in the treatment of hypertension namely, fresh air, meagre fare and freedom from care and insist on fresh air, plenty of fare and freedom from care in the treatment of tuberculosis.

Over and above all other measures the value of rest is undeniable. It is apt to be ignored by the tuberculous patient especially in the incipient stage. If the temperature at rest is above 99.4 through-

out the day the patient should be ordered absolute rest in bed and should be treated as one who is suffering from acute illness. It is because of the difficulty of convincing and controlling the patient who does not feel sufficiently ill to take to bed that we have to prescribe institutional treatment. If it is 99.4 or over only in the evenings and normal during the remaining parts of the day it is enough if he is in bed during those hours when the temperature is raised. There is no restriction of diet. He should be allowed to take his ordinary food over and above which he must be asked to take at least two pints of milk, a couple of eggs and fruits. Medicinal treatment in the incipient stage is mainly symptomatic. The symptom for which the patient will seek most for relief is cough, because it is so harassing and unproductive. If the patient himself complains of any tenacious sputum bringing out of which gives him relief one should not hesitate in administering such drugs as ammon carb, sod bicarb and vinipicac with the idea of loosening the secretion. If on the other hand it is a hacking dry cough starting with a ticklish feeling in the throat, linctus heroine or codeins or any kind of sedative throat lozenges will give relief. I have often prescribed Glikeron a patent codeine preparation specially for those who have an abiding faith in patents. Insomnia should be combated by prescribing some of the barbiturates like medinal or allonal or nembutal. Perhaps 2 drachms of paraldehyde will be equally effective. Large doses of calcium by mouth in the form of glucosides or dicalcium phosphates can be given, with the fond hope of calcifying the tuberculous processes. For psychological reasons if not for anything else, injection of calcium preparations is preferred I would advise intramuscular injection of Sandos preparations, or subcutaneous injection of colossal calcium. I would not advise intravenous injection of calcium preparations in private practice as most of the preparations give alarming reactions. The time-honoured remedy cod liver oil even though it has no specific action can certainly be prescribed for its food value, and vitamin content. In those who can tolerate cod liver oil it should be given in

large doses at least three ounces a day. For combating anorexia the drug which I have found most useful is Easton's syrup, given half an hour before each meal.

If in spite of the above regimen there is no amelioration in the condition of the patient within 3 weeks, it is best to hand over the patient to the specialist for the adoption of special methods as A. P., P. E., etc. I would not advise the general practitioner using that dangerous drug gold. As a rule gold should be given only in institutions where the patient can be kept under constant observation. The chief dangers are affection of the kidneys and possibility of haemoptysis. Of course any private practitioner who takes special interest in the treatment of tuberculosis and who is able to give undivided attention to his patient, can certainly have recourse to gold therapy when indicated.

A. P. and its indications are beyond the scope of this article. But I cannot too strongly emphasise on the necessity of resorting to A. P. more frequently than it is done now. The fault of course lies in ourselves in not recognising the cases early and not giving the special treatment even when it is definitely indicated. Many cases have come to me in advanced stages when nothing could be done. From my own experience I can say with some amount of authority that A. P. is the only effective weapon in the armamentarium of the Phthysiologist. The earlier the medical profession in this country begins to realise the extreme importance of resorting to pneumothorax more extensively the better will be for the unfortunate patients. The more I see some of the dramatic results which we get from A. P. even sometimes in advanced cases the more I become convinced of its efficacy and usefulness. To my mind every patient should be given a dog's chance. Hence once the disease has passed the incipient stage wherein it is possible to localise the lesion clinically or radiographically special methods should be resorted to.

Most of the patients are poor. They cannot afford domiciliary treatment.

Besides I am of opinion that institutional treatment is to be advocated at least for sometime in all cases if possible. They must be taught a regime of life which has to be followed for years if not for life.

Let me conclude by emphasizing the fact that tuberculosis can be treated successfully by any one who will study the disease and the patient and then apply the measures which are generally recognised to be successful. There is one thing more however which will be the determining factor far more than it might be believed and that is, the psychology of the physician. It takes a very different attitude towards the disease and towards the person who has to treat chronic

tuberculosis than it does in the treatment of an acute illness. Unless one is interested in human beings and their problems, unless he is sympathetic with the disappointments, sacrifices and struggles of the patients he cannot aid his patients to the fullest extent, for their greatest problem is often that of developing a proper psychological attitude in the face of uncertainties of treatment and the disappointments attendant upon the necessity for one withdrawing himself for an uncertain time from the active duties of life. Many of the most serious difficulties are those of a domestic economic and social nature and unless these can be solved recovery may be retarded and may even be prevented.

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SYMPTOMATOLOGY OF PULMONARY TUBERCULOSIS

TEMPERATURE AS GUIDE.

BY

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[Series of articles on the 'Symptomatology of Pulmonary Tuberculosis' will be contributed by the same author, of which 'Temperature as Guide' is the first in the series.—Ed.]

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

The temperature in cases of pulmonary tuberculosis is varied in manifestations and unless, great precautions are taken, one is likely to be misled.

In the early stages of pulmonary tuberculosis, the temperature is so slight that it is difficult to notice it by means of touch. Very often, I have seen patients coming to me and saying that they have no temperature and when I put the thermometer in their mouths, it registers a temperature of 100 or 101 degrees. Though it is very frequently said that even very small rises of temperature could be made out by the patients themselves by such signs as burning of the eyes, burning of palms and soles of the feet, etc., yet a large number of these do not experience this. The only other disease in which a patient does not feel the temperature even though it is high, is Kala Azar. Hence the patient's version should never be relied upon and it must be tested by regular recording of the temperature.

The temperature in pulmonary tuberculosis is taken in two places—rectum and mouth. There are two schools of thought each recommending that the temperature should be taken in a particular way. My

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

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

The rectal temperature certainly gives a better idea of exact condition of the patient. Wherever possible, I would recommend its use in preference to the oral temperature. By whichever route the temperature is taken, I would insist on the following conditions being satisfied:—

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

2. The thermometer should be kept in the mouth under the tongue for at

least 3 to 5 minutes even though the thermometer is said to be a half-minute one.

3. When mouth temperature is taken, precaution should be taken that no drink or food is taken by the patient at least half an hour before the temperature is to be recorded.

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

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

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

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

In the early stage of pulmonary tuberculosis, the rise in temperature is very small—going upto 99.6 to 99.8°. As the disease advances, this temperature varies depending upon the condition of the patient.

As mentioned before, the type of temperature that is met with in early stages is intermittent in character; the highest temperature being 99.6 to

100° and the lowest being from 97.4 to 97.8°. The highest peak is reached most frequently between 4 and 6 in the evening according to some people and according to others by about 2 in the afternoon.

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

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

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

When on the other hand a continuous temperature shows a tendency to become

remittent or intermittent—the prognosis in those cases is more hopeful.

When the patient is getting better, the drop in temperature always keeps in proportion to the pulse rate. In the ordinary type, where the patient is improving and where temperature has dropped down, there is always an improvement in general condition of the patient as well as in the pulse rate, whereas in the case of advanced disease it is not infrequent to see the temperature drop down to below normal and the pulse rate keeping up 120 and above. It always means that there is very little resistance in the individual and there is no reaction as shown by the temperature. The chest is no guide to the exact condition of the patient. It is pulse that should always be looked upon as a better guide.

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

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

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

peratures are always characteristic of pulmonary tuberculosis especially in the active stage.

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

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

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

In certain other cases, instead of getting an intermittent, remittent or continuous temperature, we meet with what is called a cyclic type of temperature. What happens in this condition is this: the patient is apyrexial for a period of 10 or 15 days. Then the temperature is usher-

ed in by a rigour and keeps up raised for about 4 or 5 days and then drops down to normal again and then the patient is apyrexial in 2 weeks or so. This goes on periodically. If the patient is seen in one of these apyrexial periods, it is quite possible that the true condition of the patient may be missed and hence when the patient is suspected to be suffering from tuberculosis and if the temperature is round about normal at the time of your examination, it is always safe to insist the patient on keeping a temperature chart for at least a month.

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

In certain other cases, the temperature chart shows double rise, the first being between 10 and 12 in the morning and the second rise between 8 and 10 in the night. Double rise in temperature frequently occurs in malignant malaria and kala-azar. In the latter it is said to be always pathognomonic. When the occurrence of this condition in pulmonary tuberculosis is not thought of, it is quite possible to miss the diagnosis of the disease and take it to be one of kala-azar or malignant malaria. This double rise in temperature could also be caused by the administration of drugs like aspirin, pyramidon, etc. Later when caseation and cavitation are progressing rapidly, the temperature takes on a hectic form. The morning temperature being subnormal say 96° and the evening temperature being 103° or 104°. Very frequently there is a sense of chill or rigor. The causation of this hectic temperature in pulmonary tuberculosis has been accounted for in various ways. It is thought that when caseation and breaking down of the lung tissue is taking place, micro-organisms that are in the naso-pharyngeal regions travel down and as these caseated matters are good media, develop there—in other words—the hectic temperature is an indication of secondary infection of the lung tissue by septic organisms. This theory is not always correct as at times no new organisms are found in the system and it is now believed that tuberculous condition itself may cause the hectic temperature. This hectic temperature is likely to be mistaken for the other conditions which give rise to this type of temperature such as malaria, cystitis, bacillus coli infection and other septic conditions. Hence there is a possibility of the true condition being missed and treatment given for other diseases than for tuberculosis. Occasionally in early stages of pulmonary tuberculosis, temperature sets in with very little or no remissions, particularly akin to typhoid cases. So the tuberculous infection is very frequently mistaken for typhoid with the result that the patient is put on starving diet and the true nature of the disease being missed. In all cases where the typhoid type of temperature is

present with a negative widal or a negative blood culture, careful attempts should be made for eliminating tuberculosis, especially the typhoid type of miliary tuberculosis.

Certain cases of pulmonary tuberculosis are ushered in with a typical picture of acute lobar pneumonia. There is pain in the chest, a slight amount of dyspnoea, high temperature in fact all the symptoms of lobar pneumonia. Examination of the chest may not be much value as in both you get signs of consolidation. I found the following observations to be very useful distinguishing one from the other:

(1) The temperature never reaches normal by crisis in cases of pulmonary tuberculosis and it often takes long time for the temperature to touch normal.

(2) The rusty sputum that is characteristic of lobar pneumonia may also be present in cases of pulmonary tuberculosis, but in the latter condition the quantity of blood is more.

(3) And the sputum in tuberculosis shows a tendency to be positive by the end of the second week and the pulse rate is not in proportion to the temperature, it is very frequently higher.

(4) The other condition to which, I attach great amount of importance is the appetite of the patient. Very frequently a tuberculous pneumonic patient craves for more food whereas a pneumonic patient has often an aversion for food.

It must always be remembered that a tuberculous patient like other human beings is liable to get diseases like malaria, influenza, etc. So the rise of temperature in a case of pulmonary tuberculosis should not be attributed solely to his lung condition. The important diseases which have to be borne in mind are malaria, typhoid, bronchiectasis, dysentery and malignant growth, acute bronchitis, etc. But no case in whom the necessary data for diagnosis of any one of these conditions is not present, ought not to be diagnosed as one of these conditions. It

must always be remembered that any of these conditions may be present as a complication of pulmonary tuberculosis.

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

During treatment of pulmonary tuberculosis by different methods, modifications of temperature occur and I shall explain the causes for the same. During the periods of artificial pneumo-thorax treatment in a good number of cases, there is a high rise in temperature on the day of induction of primary pneumo-thorax which is explained by the fact that when by putting the air into the pleural cavity, the lung becomes collapsed, the secretions contained therein should naturally be poured out into the general circulation, thus giving rise to a high rise in temperature. This temperature usually drops down to normal during 24 to 48 hours.

It is highly desirable that the patient and his relation should be informed about this lest they should be frightened and led to infer that these injections make the patients worse rather than better. Otherwise there is every possibility of the patient not coming for the second injection.

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

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

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

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

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

When the effusion sets in acutely, the patient is as acutely ill, breathless has to be propped up in bed, the breathing is 40 to 50 per minute, the temperature

which was normal shoots up to 103 or 104° and keeps up at that level with very little remissions for 7 or 8 days. Physical examination reveals a hyper-resonance on percussion over the apices. Breath sounds are weak and a metallic tinkle is heard when the patient is asked to cough. So-called bell sound is also heard at this juncture. No succussion splash will be heard. After about a week's time if the condition of succussion splash appears there will be a certain amount of dullness in the dependant area. Then the temperature drops down and thereafter the patient improves rapidly than before.

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

In the third type, when effusion sets in, as an innocent one, there is practically no indication of it in the temperature chart. The temperature as usual is roundabout normal. The patient does not complain of any fresh symptoms nor does he complain of any difficulty in breathing. The presence of this effusion is detected only at the usual periodical examinations.

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

There is only one other condition *i.e.*, haemoptysis. In many cases of pulmonary tuberculosis, when haemoptysis sets in, it always produces a condition of broncho-pneumonic spread, due to the filling of the infected lung. Due to this broncho-

pneumonic condition, the temperature very frequently rises and shows an undulating type. It takes nearly 2 to 3 weeks after the haemoptysis has stopped for the temperature to settle down to its original level.

All cases of haemoptysis are not accompanied by this rise in temperature. Prognosis is certainly better in cases where there is no rise in temperature than in other cases. General physiological conditions which are frequently present in an individual become exaggerated during the active stage of pulmonary tuberculosis. One such condition which I wish to place before you is the menstruation in women. In healthy women, there is always a tendency for a rise in temperature during the periods of menstruation. If the patient is tuberculous, this manifests itself to a greater degree. The rise in temperature that accompanies the period may be either premenstrual, occurring just before the flow sets in; or menstrual occurring during the period of the flow or postmenstrual, occurring after the menstrual flow. This occurrence of high temperature during any one of these periods must raise the suspicion of the practitioner and he must subject lungs to a thorough examination. The temperature may rise as high as 102° or 103° in exceptional cases but in the majority of cases, the temperature rises by at least one degree above its original level. Various workers attach importance to the rise in temperature during these periods. I personally believe that menstrual and postmenstrual rises forbode worse prognosis than premenstrual rises. No patient should be discharged as cured unless the alteration of temperature is in normal limits say 99.4° to 99.6° by mouth and 100° by rectum.

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

(To be continued.)

NOTICE.

Subscribers of The Medical Practitioner are requested to note their registered numbers appearing on the postal wrapper of the Journal while corresponding with the Managing Editor.

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NEW YEAR GREETINGS.

The history of the past few months on the continent has proved without a shadow of doubt that the world is for the mighty aggressor and the man-made civilization is not a reality and very few amongst the so called civilised nations believe in the existence of God. The 'might is right' theory that is now promulgated cannot be strange to the inhabitants of the sub-continent of India who have been subject to it from ancient days. India is incapable to use machine guns, tanks of various descriptions on the land; bombers, poison gas in the air and submarines, mines in the sea and secret weapons still to be used by Hitler or by his ally, Stalin, but it did stand the test of brutalities in the past and will continue to face them not by the use of brutal force which is now in evidence throughout the world but by the use of spiritual force which, though it looks to be waning due to contact and association, is the only strong hold for India. It will not be possible for the most intensive mechanised warfare to kill this spirituality. It looks as if the gospel of Lord Christ is completely forgotten in the warring countries in the West. The large majority of the inhabitants in India still remember what Sri Krishna told his disciple Arjuna on the battle field of Kurukshetra that when unrighteousness prevailed in the world beyond tolerance, God will appear in human flesh and set right the world. All the great world teachers had their birth in the East. People of all reli-

gions believe in the coming of world teacher and some even say that he is already born. May it be so and let us have deliverance of righteousness in the place of unrighteousness of whatever form, Nazism, Fascism, Bolshevism and even Imperialism. In the meanwhile the medical profession has to play a prominent part in preparing the world for the coming teacher. Whether on the battlefield where its members do not make a difference between a friend and a foe and where they would treat even the most hated Hitler with tender care and affection if it were to be Hitler's lot to be wounded and to be a prisoner of war, or in the areas which are not active fields of war and where the civil population suffers most, not so much on account of actual war amidst them but on account of the effects of war elsewhere, the members of the profession have to be kind and considerate to those with whom they come in contact. There is now a civil war in India against the economic and social structure and India has to suffer innocently and helplessly for the sins of others. The aggressors in India are the unscrupulous wealthy merchants who have been taking advantage of the war conditions. They have been able to corner the markets by not only stocking foreign goods but also indigenous goods including the commodities of food which are found in India. There may be an excuse for the rise in prices of goods not available in India but there cannot be any reason for the rise in prices of food stuffs

procurable in India. In this respect we should say the people living in the war zone suffer less than those outside the war zone. For, there is efficient control by the Government in those countries over the prices of all commodities. Such a control is wanting in India with the result that for good stuffs available in India in plenty the prices have been rising fabulously. Drugs and chemicals have risen in prices quite naturally. But it appears to us that the increase in prices in the latter case is not so much due to dearth of drugs and chemicals as the greed of wealthy merchants who buy them in large quantities but do not sell them thus creating a scare and a consequent rise in prices.

The rise in the prices of the necessities of life and the fabulous increase of prices of medicines will naturally tend to increase the incidence of diseases and the members of the independent medical profession will have to bear the brunt of a state of affairs when they will have to treat the patients who cannot maintain themselves much less pay the doctor and his medicine bills. The war has also upset the usual unstable political tranquility to a dangerous extent. Unscrupulous politicians have been busy to trade upon the religious and social sentiments of the people in India and have been preventing the harmonious growth of India as one nation with the result that the much coveted hope of India having an independent existence is not to be realised in the near future and it seems to be doubtful whether India can ever be free.

During this turmoil when the civilised nations are at war and India has no peace, the medical profession can come to the rescue of sufferers whether it be on the battle field or

other fields where the sufferings of the people have to be attended to. The mechanised warfare of the 20th century which has been utilising science for the work of destruction is not in need of man power so much as in the past and consequently there may not be a need for military medical officers to the extent the last world-war demanded. Yet as the enemy has no compassion to the non-combatant civil population and is letting down bombs, poison gas mercilessly wherever he can, the medical men especially in India may have to do actual military duties as honoraries unlike their brethren in the West and elsewhere who are paid liberally for such work. Can they afford it? The answer cannot but be that the majority of them cannot. Yet the medical profession in India must be prepared for such an unnatural exigency.

Even before the war time the large majority of the members of the profession who depended entirely on private practice have been struggling for their existence not so much because there is no field for private work but on account of unwholesome, unequal competition between the private practitioners and the State paid practitioners and the ruthless competition between them and the unscientific medical practitioners, a large section of whom having been given recognition by the popular Governments who minded political popularity for their ends not minding the welfare of the public for which alone any popular Government exists. All the same we will be failing in our duty if we did not express our gratitude to the last Government who have done substantial good to the independent section of the medical profession by inaugurating far reaching reforms in the medical administration in this province, which afford facilities to the private practitioners for gaining

knowledge and experience in State-hospitals which facilities were the monopoly of the state-paid doctors till recently. Ever since The Medical Practitioner came into existence in 1929, we have been repeatedly pointing out in these columns and elsewhere the necessity of abolishing or at least restricting the privilege of private practice enjoyed by the Government medical officers which we did in the interests of the medical profession as a whole and it was possible only in 1939 for the Government of Madras out of eleven Provincial Governments to realise the necessity of introducing such restriction which the Government, did by issuing an order on the 27th April 1939 and the reasonable views of the Government on this subject have been clearly enunciated in the preamble of this order which runs thus:

"The question of abolishing or restricting the concession of private practice allowed to whole-time medical officers belonging to the Madras Medical Service and the Madras Medical Subordinate Service has been under the consideration of the Government for some time past. Government Medical Officers were allowed to engage in private practice in the past owing to the absence of a sufficient number of qualified private medical practitioners. With the growth of an independent medical profession in recent years, the condition has ceased to exist. Further, under the scheme for the reorganization of the medical services, honorary medical officers will replace full-time paid medical officers as and when vacancies arise in the Provincial and Subordinate cadres of medical officers and in order to encourage private medical practitioners to take up honorary appointments and to provide sufficient scope for private medical practice to develop unhampered, it is necessary to prohibit paid whole-time Government medical officers from engaging in private practice."

Soon after the G. O. was published we consoled those who are likely to be affected that they should mind the larger interest of the profession rather than the personal interest of a small section in the profession and that the reform would benefit them also soon after retirement.

We have not been wanting to take up the cause of members of the profes-

sion in service whether it be under the Government or the local bodies. One of the items of our agitation regarding the service grievance was relating to transfers which exceeded the speed of the tossing of a foot-ball in regard to many and has been a life-long permanency in regard to a few. His Excellency, the Governor of Madras was pleased to recognise the justification of our comments and on 24-7-39 the Government issued orders "regulating the tenure of posts by periodical transfers" of not only medical officers but also other staff in the medical department. It was mentioned in the G. O. that transfers of officers holding non-specialist appointment should be effected every three years and of those holding teaching appointments every five years. These transfers are conducive to the interests of all concerned not excluding the public and the profession. The resignation of the Ministry has given rise to misgivings in the minds of some whether the above mentioned orders will be given effect to by the Government. They seem to forget that the Government is to be run by His Excellency, the Governor of Madras under the advice of his ministers who are the people's representatives and it is run now by His Excellency himself under the advice of three senior officers of the Government and so the Government is the same though the advisers are changed temporarily. The circumstances that persuaded the retired Ministry to advise His Excellency to be pleased to pass the order not having changed within a month and a few days there can be no justification to the misgivings entertained by some. No Government can afford to be blind to the fact that without the co-operation of private practitioners the Government could do little or nothing to afford medical relief to the public and it is therefore the duty of

any Government that the independent medical profession is above want to be able to co-operate with the Government. The exigency of war which is likely to continue for years should induce the present Government to be more liberal or at least not less liberal than they were before towards their policy to encourage the independent medical profession by removing all obstacles in its way so as to enable it to grow to the strength of the medical profession in the country from where the rulers of India hail.

Indianisation of the medical services is a legitimate ambition of the Indian practitioners and the medical services are really more Indianised than the independent medical profession is liberalised after the advent of political reforms stage by stage and it is a strange irony that the Indian Medical officers who have been fortunate to get into the shoes of the members of the Indian Medical Service show a tendency to be less liberal in their outlook towards the members of the independent medical profession. It is also complained by the members of the independent medical profession that the atmosphere of vested interests in the Government medical institutions shows also a tendency to get thicker instead of thinner after the entry of the natives into them.

There is bound to be clashing of interests in the transitional period of reforms and such clashing will be felt more in India than in other countries as India does not rule, but is ruled. The members of the scientific medical profession in India have to be patient and tactful as they are at present completely under the grip of the Government and the public, both of whom have been able to command free service from the members of the independent medical profession. They cannot afford to assert,

much less revolt so long as they are not able to shape the policy of the Government in regard to medical relief. Popular Government of the loftiest democratic principles cannot make the medical profession prosper or bring it happiness. The profession must depend upon itself. They must organise, whether it be in villages or in urban areas. The conditions in India are so varying in villages, towns and cities that there is a need for several organisations to suit variety of interests in different localities but all such organisations should co-operate and co-ordinate so homogeneously that the members of the profession wherever it is their lot to work, could stand together and show themselves to the lay public that they are all one in their aims and methods for rendering service to the public. As in political field there is a great demand for selfless leaders in the medical profession to serve it in different fields of activities. The profession is also wanting in publicity. This is felt even in advanced countries as in Great Britain and America, where the profession is well organised. Without publicity the public cannot know the duties and responsibilities of the members of the medical profession in alleviating human suffering by curative and preventive measures. The public also must be educated in regard to their responsibilities towards the members of the profession. The immediate need is the organisation of the profession and the starting of non-Government medical institutions by the members of the medical profession with the help of the public for the treatment of the middle and upper class patients. Retired medical officers who were in charge of State hospitals should come forward and guide the team of practitioners who are keen in starting centres for institutional treatment. All this is possible if the Government close the gates of

the hospitals to all except the necessitous poor. If the Government adopts this policy without delay the ban on private practice by the Government medical officers will not be felt by them as they could serve as consultants to private practitioners on a larger scale than they have been doing at present and during the period when the Government medical officers will be substituted by the members of the independent medical profession till the former are all absorbed, there will be harmony and contentment between the two competing parties and the whole profession will merge into one peacefully. Such a medical profession in addition to their legitimate work of healing will eventually bring about communal and social harmony. For, the healing art cannot recognise castes and creeds or different levels in social strata nor do people have any communal bias towards the members of the medical profession. They mind only their virtues as healers. It is our sincere hope that if the medical profession organises itself on sound lines and establishes contact with the society to the extent it should, health and happiness will be secured in India and its inhabitants will grow into a sturdy vital nation enjoying social and communal harmony. To attain the above object we send our good wishes to the members of the medical profession and we place our services at their disposal to do propaganda for realising our hopes in the noble profession and to give publicity to the good and patriotic work turned out by them. In all spheres of life including the building of nations past history has proved that adversity and not prosperity that has been the stimulus for united and organised action. Let the medical profession take courage and may God give them wisdom and guide them to unite and organise will be our sincere prayer now and always in the coming year.

News and Comments.

First Indian President, Medical Council of India: At the last meeting of the Medical Council of India Dr. B. C. Roy was elected as the President of the Council which place was occupied for the first four years of the life of the Council by a nominated official in the person of the Director-General, Indian Medical Service. The unanimous vote of a Council consisting of a large majority of official members indicates that Dr. Roy has been commanding the respect and confidence of both the official and non-official elements in the Council. The independent medical profession to which Dr. Roy belongs is really proud that the first President of the Medical Council of India which was presided over by the highest member belonging to the Indian Medical Service during the transitional period of four years of the life of the Council, is presided over by a member of Indian independent medical profession in spite of the predominance of the officials in that body. Signs are not wanting that the new President who is a prominent member of an advanced political party and who is as eminent a medical practitioner in India, is likely to transform the Medical Council of India as an independent body which will cater to the Indian needs and Indian aspirations without being allowed to be dictated by any outside agency. Dr. Roy's feelings and sentiments as expressed by him at the two functions held in his honour at Calcutta, indicate his policy towards the functions of the Medical Council of India of which he is now the Head. On 10-12-1939 he was entertained by the Calcutta Public. Dr. Roy while thanking his hosts said amongst other things:

"The Indian Medical Council, was concerned with the establishment of a uniform standard for medical graduates in India. The question was not only of importance to medical practitioners, but to lay men as well inasmuch as all people desired that all medical men under whose care they were placed, should possess the requisite standard, and that all their children and wards should get the proper type of medical education which could stand them in good stead in the practical field. The task of controlling the method of educating medical students should not be left in the hands of foreigners, but in the

hands of those who had the interest of the country at heart. It required organised effort of every member of the profession."

At the second function which was arranged by the Managing Director and the staff of the United Press of India, Dr. Roy said:

"The medical profession in India had exerted a profound influence on her political destiny right from the advent of the East India Company. Dr. Roy reminded the audience that the first licence for trade and commerce in India was secured by a British medical man 300 years ago. The western system of medicine had made great strides in this country to-day but it would be interesting to recall, he said, how the system had taken root in the soil of this country. The steamers that used to arrive in this country in the early days of the advent of foreigners had in them European doctors, known as Assistant-Surgeons whose duty was to look after the health of the high European officials. These people had to employ Indian assistants to help them in their work as medical officers. But subsequently it was found that medical institutions had to be started for teaching allopathic system of medicine and the first institution was started in Calcutta nearly 105 years ago. Similar institutions were started later on in other provinces. But throughout this period the European as in other spheres of life, did not want that Indian assistants should receive advanced medical education and that situation continued for the last few scores of years.

The Indian Medical Service was an institution, opined Dr. Roy, where the Europeans had a most extreme and most perfected form of trade unionism. Human nature being what it is, people, when they fell ill, were more subservient to their doctors than in normal condition of health. The medical men took advantage of this phenomenon of human nature and exerted a large measure of influence on the powers that be, the Viceroy or the Governor, getting them to do many things in the interest of Indian Medical Service. This explained how in the Constitutional Act of 1935 the position of the members of the Indian Medical Service had been safeguarded to the extent that no laws passed by the Indian Legislature might jeopardise their position."

We are delighted that the first Indian President of the Medical Council of India has proved from past history the power of influence of the members of the medical profession over the lay public. In the Editorial New Year Greetings to the members of the medical profession, appearing elsewhere we expressed our views on the potential influence of the medical profession to do good all round to the public not only in regard to medical relief but also to

rid the country of the present political turmoil which has resulted in serious communal and social disharmony. We are concerned more about the future of the medical profession as a whole and are disappointed that leaders in the medical profession have not been so far able to infuse hopes in the younger generations that the life of a medical practitioner is worth living. Indianisation of medical services is certainly a legitimate ambition to be strived after but the organisation of the Indian medical profession should be the first concern. What can a few members of the Indian Medical Service do to the teeming millions of India? The influence of this service is waning and is bound to wane still further automatically. The vested interests have taken another shape and in the case of licentiates, the old history narrated by Dr. Roy relating to Indian Assistants during the regime of the East India Company and after continues though to a great extent the Indian Medical Officers are now occupying the position of European Medical Officers. We are rather disappointed that while talking about the medical profession and its care by the public for the public good, Dr. Roy referred exclusively to University medical education. We know Dr. Roy has a soft corner in his heart for the medical licentiates and he sympathised with them and did condemn the Indian Medical Council Act for not bringing them within its purview. It is essential in the interests of the public and not so much in the interests of the licentiates that the Medical Council of India which 'may rightly be compared with the General Medical Council of England,'—to quote our Calcutta contemporary, the official organ of the Indian Medical Association—will bring the licentiates under its control so that the comparison may be real and not imaginary. All are now forgetting whether it be in India or in Great Britain that the Medical Acts were brought into existence primarily for the benefit of the lay public to help them to know by means of a legal document, the Medical Register,—who is qualified and who is not, to treat the patients. The Medical Council of India has no such register. Can it serve the primary purpose of the Medical Acts? We trust Dr. Roy who

has the support of not only the entire medical profession in India but also of an all powerful political party, would be able to bring the Medical Council of India to the level of the General Medical Council of Great Britain by bringing all the qualified practitioners under its control as is the case in that free country, Great Britain. The Medical Councils exist for the safety of public and not to exhibit trade union spirit at the cost of any particular section of the Indian medical profession.

We send our felicitations to Dr. Roy and assure him of our support in his endeavours to organise the medical profession in India of which he is now the Head.

What is the Medical Council for? This question is on the lips of many registered practitioners and some even go to the extent of asking why did not Congress Ministry repeal the Madras Medical Registration Act instead of amending the same? Elections to the imperfectly democratised Madras Medical Council are to take place early in the coming year and the prospective candidates will have to answer the question. The readers of The Medical Practitioner are aware that from the very day of its birth in 1929 it has been publishing the activities of the local Medical Council and the possibilities of making the Council a strong and powerful body not only to bestow certain rights and privileges on the registered medical practitioners but also to see that such rights and privileges are enjoyed equally by all who come under the purview of the act after registration. One of the most important privileges of registration is the right of a registered practitioner to issue certificates expressing his opinion on matters in which he is concerned as a member of the medical profession. It may be a certificate of fitness or disability and may be a certificate of expressing opinion on any other matter concerning the public health or sanitation and in fact on all matters concerning physiological functions and pathological conditions in human body. Usually it is the certificates of physical fitness and disability that are demanded

from the practitioners on a large scale. The fact that the Government have given discretion to the heads of their departments to question the veracity of certificates issued by private practitioners have given rise to a good deal of dissatisfaction, as the practitioners are subjected to great humiliation, as very often their opinions about the condition of their patients under their care and observation, are doubted and second opinions are obtained from Government medical officers. This procedure is in force from about the year 1932; earlier the certificates granted by private practitioners used to be countersigned by the Government medical officers who did it at times without even seeing the patients. It was the Madras Medical Council that was the first to condemn the procedure of countersigning of the certificates as it was against medical ethics and against the spirit of Registration Act. The Madras Medical Council did not also approve the procedure of obtaining second opinion. Then the Madras Government passed an order requiring the Government medical officers to give intimation to the practitioners who gave the original certificates, to be present while their patients are to be examined before giving second opinion. Yet there are found Government medical officers in the persons of the Presidency Surgeons whose daily routine work is relating to certificates, still countersigning the medical certificates and giving second opinion not in conformity with the orders of the Government. We pointed out two such instances in these columns last month. We wonder if the aggrieved practitioners have complained against these two officers to the Government as well as the Madras Medical Council. Unless exemplary disciplinary action is taken against violation of medical ethics, the humiliation of the independent medical profession will continue.

This month we have to bring to the notice of the readers and the concerned authorities of another instance of the mysterious invidious distinctions shown by the Government between registered medical practitioners inside the Government Hospitals and those outside though

their qualifications are identical. It is reported to us from Coimbatore District that the President, District Board has notified that Subsidized Practitioners should not issue physical fitness certificates to the motor drivers as required by the Motor Vehicles Act. It is said that under this Act, the local Government have passed rules and the rule relating to physical fitness certificates to motor drivers requires that such certificates should be obtained from registered practitioners in Government service or who are honorary medical officers having a qualification not lower than the L.M.P. diploma. The rule is as ridiculous as the notification of the President, District Board, Coimbatore though it may be consistent with the policy of the Government who have been assessing the morals of their officers at a higher value than those of the independent medical practitioners irrespective of the fact that the moral monopoly enjoyed by Government medical officers in issuing certificates, has in some instances at least, demoralised the medical profession to a scandalous degree. In spite of the strange policy of the Government we should say that the President, District Board was wrong in humiliating the subsidized practitioners by denying them the right of issuing the physical fitness certificates to the motor drivers though they come within the conditions of the Motor Vehicles Act rules. Subsidized Rural Medical Service comes under Government Service though it is not a regular paid service. And also it will not be wrong even if the subsidized service is considered as honorary service for the purpose of the rules as there is not much difference between a subsidy and an honorarium though the latter term looks more dignified. The rule pertaining to the Motor Vehicles Act is one of the many instances where the Government did humiliate the non official registered practitioners. It is a pity that the members of the independent medical profession who form the bulk in the 24 District Medical Associations in this presidency have not been persistently protesting against such humiliation through the District Medical Associations. They seem to have not realised the powerful influence

of the opinions of the District Associations of which the District Medical Officers are the ex-officio Presidents in all the districts excepting perhaps in two or three districts and even there the District Medical officers are the members of the associations. District associations are the proper places to discuss questions of ethics and the opinions of the District Medical Officers who are local advisers to the Surgeon-General will carry weight with the latter officer who is the final adviser to the Government. The independent medical profession must also remember that the Surgeon-General is the ex-officio President of the Medical Council. So the District Associations have two effective channels to let in their protests and suggestions one official, the other the non-official. As both these channels merge in one who is the chief adviser to the Government, the channels must be kept active till what is attempted is achieved. We on our part will render all assistance to the associations as well as to their individual members so that the channels are not blocked in their course to reach the proper destination. Lot of good work without much inconvenience and with very little expense can be done if the members of the profession co-operate with each other and give publicity to their activities in the interests of the profession through popular medical journals. The columns of *The Medical Practitioner* are always open to them for this purpose.

Supersession Again: A few days before the Madras Ministry resigned, seven appointments to the list of permanent Civil-Surgeons were gazetted. We now learn that the last four in the list who were made permanent have superseded their seniors who have been acting as Civil-Surgeons. Supersessions has been the rule rather than an exception in the Madras Medical Department and each time such supersessions were noticed by us we did point out to the Government through these columns, the injustice done to the seniors, for no fault of theirs. The Government must have noticed the injustice done and all the juniors who superseded the seniors were not made permanent and the Government expressed their policy in unmistakable terms in

their order No. 2232 Public (Service) dated 22-11-1937 and the pertinent clause in the G.O. runs thus:

"No person shall be eligible for appointment as a full member of the service in any post borne on the cadre of Civil-Surgeons (categories 3, 6, 7, 8 and 11 of class I), unless

(i) he has satisfactorily completed the prescribed period of probation; and

(ii) his turn for such appointment arises in accordance with his rank in the cadre of Assistant-Surgeons."

The superseded Civil-Surgeons belong to the Categories 8 and 11. One of the last four mentioned in the permanent list did not, it is said, complete the prescribed period of probation. The recent supersessions seem to have violated the terms of the G. O. referred to above. It is not

likely that the aggrieved seniors might have brought this injustice to the notice of the Government as they must have felt that the Government are not likely to change the orders once passed. We are therefore compelled to point out this injustice to the Government through these columns with the hope that it might serve as a preventive measure at least, as the medical profession has as much if not more faith in prevention. It is a pity that those who were responsible for these supersessions did not realise that a contented service is a great asset to the Government and that supersessions though they might favour a few lucky in the Government service, are sure to create discontentment and disharmony in the Department. How did these supersessions escape the notice of the ever vigilant Medical Minister, is the surprise expressed not only by the aggrieved but also by the disinterested on-lookers!

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Government of Madras

EDUCATION AND PUBLIC HEALTH DEPARTMENT

(PUBLIC HEALTH)

G.O. No. 3374, 22nd September 1939.

Medical Institutions—Rural—Subsidized—Remuneration to medical practitioners for inoculation work—Reduction in the rate per case and removal of maximum limit—Proposal of the Director of Public Health—Approved—Clause (9) of the agreement—Amended.

READ—the following papers :—

From the Director of Public Health, dated 12th May 1939, R. No. 17425-1/R.M.P. Endorsement of the Surgeon-General, dated 13th July 1939, No. 10484-H.

Order—No. 3374, P.H., dated 22nd Sept. 1939.

The Government accept the recommendation of the Director of Public Health that the rate of remuneration to rural medical practitioners for inoculation work fixed in clause (9) of the forms of agreement prescribed in G.O. No. 3510, P.H., dated 4th October 1938, may be reduced from 9 pies to 6 pies per case and that the maximum limit of Rs. 5 per day be removed. The reduction will take effect from 1st November 1939.

2. The following amendments shall be made to the forms of agreement prescribed for rural medical practitioners in G.O. No. 3510, P.H., dated 4th October 1938, as subsequently amended.

AMENDMENTS.

1. In the form of agreements in Appendix I to the said Government Order, for clause (9), the following clause shall be substituted, namely :—

"(9) The practitioner shall, if required either by the President or the officers of the Health Department, attend to inoculation work. He shall be paid by the Board for the services so rendered a remuneration at the rate of 6 pies per case of inoculation subject to a minimum of Re. 1 per day and shall also be paid travelling allowance for journeys if any beyond five miles undertaken by him in connexion with such work. He shall also attend to fairs and festivals duty if required by the President or the officers of the Health Department. He will be paid by the Board a daily allowance of Rs. 5 and travelling allowance for journey if any beyond five miles. He shall be treated as an officer falling under grade IX for the grant of travelling allowance in connexion with epidemic or festival duties".

II. In the form of agreement in Appendix II to the said Government Order, for clause (9),

the following clause shall be substituted, namely :—

"(9) The practitioner shall, if required either by the President or the officers of the Health Department, attend to inoculation work. He shall be paid by the Board for the services so rendered a remuneration at the rate of 6 pies per case of inoculation subject to a minimum of Re. 1 per day and shall also be paid travelling allowance for journeys if any beyond five miles undertaken by him in connexion with such work. He shall also attend to fairs and festivals duty if required by the President or the officers of the Health Department. He shall be paid by the Board a daily allowance of Rs. 5 and travelling allowance for journeys if any beyond five miles. He shall be treated as an officer falling under grade IX for the grant of travelling allowance in connexion with epidemic or festival duties."

(By order of His Excellency the Governor)

G. H. COOKE,
Secretary to Government.

Government of Madras.

EDUCATION AND PUBLIC HEALTH DEPARTMENT.

G.O., No. Press 4474 P.H., dated
5th December 1939.

Medical Institutions—Rural—Subsidized—Memorandum of the Provincial Subsidized Rural Medical Practitioners' Association—Orders passed.

Read the following :—

From the President of the Madras Provincial Subsidized Rural Medical Practitioners' Association, Madras, R.M.P.G. 29/413, dated 20-2-1939.

ORDER.

The Government are pleased to pass the following orders on the points raised in the memorandum submitted by the Madras Provincial Subsidized Rural Medical Practitioners' Association.

1. Appointment of honorary officers to be in charge of rural dispensaries :—The question of extending the honorary system to rural dispensaries has been dropped for the present.

2. Rural medical practitioners deputed for public health training :—The Government regret that they must decline to accede to the request that medical practitioners deputed for

public health training should be granted the Government subsidy payable for the dispensary, in addition to the honorarium of Rs. 25 a month for which they are eligible during the period of training; nor do they see sufficient grounds for raising the remuneration of Rs. 15 admissible to them according to existing orders for doing public health work.

3. *Selection of rural medical practitioners for appointment to Local Fund Dispensaries*:—It is not considered necessary to issue any general instructions in the matter. Cases of irregular appointment will be duly considered when they are brought to the notice of Government.

4. *Employment of dispensary servants*:—The Government see no reason to modify the order passed in paragraph 3 (a) (i) of G.O. 3510 Public Health dated 4-10-1938, permitting the employment of dispensary servants in rural dispensaries with a daily average attendance of 50 and over.

5. *Adequacy of the existing arrangements for supplying medical stores to rural dispensaries*:—The question of improving the arrangements now in force is under the consideration and orders will issue separately.

6. *Appointment of substitutes during the absence of rural medical practitioners on short leave or on deputation for public health*

training:—In the opinion of the Government much of the difficulty raised in this respect is exaggerated: the Government are not prepared to allow rural medical practitioners to leave their dispensaries in the charge of men selected by them.

7. *Rural Medical Practitioners to be treated as officers falling under class IX, if summoned to give evidence in law courts*:—Orders have already been issued in G.O. No. 1805 Home, dated 30-3-1939, on this point.

8. *Rural Medical Practitioners subsidized by local bodies to be entrusted with public health work*:—Rural Medical Practitioners subsidized by local boards will be admitted to the course of training in public health work on payment of the fee prescribed in G.O. No. 4455 Public Health, dated 12-12-1938. After training they may also be entrusted with public health work subject to the conditions laid down in G.O. No. 2639 Public Health, dated 21-7-1938.

9. *Conversion of dispensaries subsidized by local boards into dispensaries subsidized by Government*:—The Government decline to accept the suggestion.

(By order of His Excellency the Governor)

G. H. COOKE,
Secretary to Government.

Statement of Receipts and Charges of the Madras Provincial Subsidized Rural Medical Practitioners' Association for the Month of November 1939.

RECEIPTS.	Rs. A. P.	CHARGES.	Rs. A. P.
Cash balance on 31-10-1939. ...	173 4 1	Postage including V. P. charges etc., ...	12 8 6
Subscriptions from members (including V. P. charges etc.) ...	74 10 0	Pay to Clerks for October 1939 ...	15 0 0
Entrance fees from 15 new members ...	3 12 0	Amount credited to The Medical Practitioner from the subscriptions paid by 14 members ...	28 0 0
		Printing and Stationery ...	5 5 2
			60 13 8
		Cash Balance : Rs. A. P. with Savings Bank 189 3 7 with Office 1 8 10	190 12 5
	251 10 1		251 10 1

V. RAMA KAMATH,
President.

K. GOVINDAN,
Treasurer.

Review

OF THE

ADMINISTRATION REPORT OF THE KING EDWARD VII MEMORIAL HOSPITAL AND THE SATH GORDHANDAS SUNDERDAS MEDICAL COLLEGE, BOMBAY.

For the Year 1938-39.

The report is exhaustive as it is educative and is worth to be a model to similar medical teaching institutions.

The report under review is so arranged that the highest administrative authority down to the humblest rate payer can have an idea of the work turned out by the Dean of these two combined institutions. He first gives the names of his colleagues a large majority of whom being honoraries. Then he gives an idea of the accommodation capacity of the hospital. This is immediately followed by the enumeration of the inpatients actually treated to serve perhaps as a clever device to appeal to all concerned that the institution is in urgent need of extensions. That the order in the report which was followed year after year had the desired psychological effect, could be evidenced by the fact that in the present report mention has been made of all round extensions to the K. E. M. Hospital and its annexes. The number of patients treated (both in the In and the Outpatient departments) is the next item in the report followed immediately by tables showing costs for the Inpatient and Out-patient departments under several heads for each patient such as diet, drugs, linen, stores, heat and lighting miscellaneous expenses, establishment, repairs to buildings etc. The total cost per inpatient per day for the year 1938-39 was Rs. 2/15/- and for an out-patient was Rs. 1-2-8 per day on an average. A poor box is maintained in the Out and In patient departments of the hospital which brings in nearly Rs. 3 000 a year which amount is spent for giving extra relief to the patients in buying artificial limbs, spectacles and pauper patients get their travelling expenditure for their journeys to their homes.

Under casualties special mention is made about motor and mill accidents (the hospital is situated in a mill area) which again has its own psychological effect in getting contributions to the hospital in addition to the dropping of the coins in the charity box.

The hospital has a school clinic and the children belonging to all the Corporation schools are referred to this clinic for observation and treatment for general and special diseases. We wish the Madras Corporation establishes such clinics in the Madras City Hospitals instead of sending school children to Corporation dispensaries where even a minute cannot be spent for examining a child, judging from the attendance hours and daily admissions of out-patients in these dispensaries.

A Research Department is being maintained where research was conducted for 15 items in diet and diseases in the year under report. The medical staff of the hospital are encouraged to contribute to the medical journals and a register is maintained where the names of the contributors, subjects contributed and the journals in which the contributions appeared, are shown.

Welfare of the nurses and the labour staff of the hospital has not escaped the attention of the Dean and very good work is done in this direction in arranging recreation to the hard working nurses and in case of labour staff co-operative Banks and welfare centres are established under the direct supervision of the Dean.

We have only mentioned special features in the report not usually seen in such documents either in Madras or elsewhere, to give an idea of the scope of work and the nature of work that could be done by a whole time administrator of combined medical teaching institutions which is itself an education to the students passing out of the same. We have not referred to other stereo-typed routine tables of nomenclature of diseases and other details which very few read though they have their own special value for statistical purpose without which no report can be complete.

We have been inviting the attention of the Madras Government to the advantages of having one officer to be in administrative charge of the Medical College and the hospitals attached to it designating this officer as the Dean. It is only then the education of the students will be under satisfactory control and the public and the medical profession will have the benefit of knowing in detail what is going on in the teaching institutions. It is disappointing that even the Congress Government which had the benefit of having a medical man in charge of medical portfolio, could not realise that the combination of the post of the Principal, Medical College with that of the Superintendent, General Hospital would apart from ensuring efficiency of administration in the teaching institutions, would also be an economy measure. The fact that the two Governments of the major provinces of Bombay and Calcutta did follow the example of the Bombay Corporation in entrusting S. G. S. Medical College and K. E. M. Hospital under its management to the administrative control of one Dean should serve as a guarantee for the Madras Government to try this experiment in the three medical colleges owned by them.

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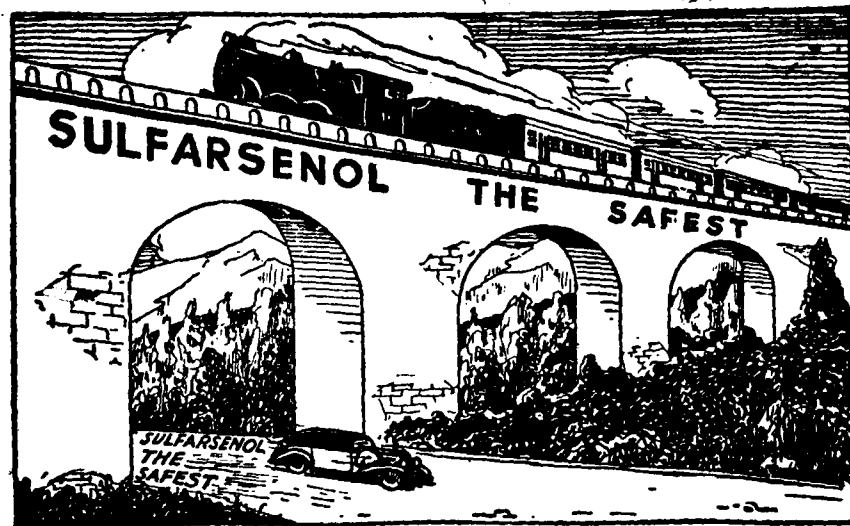
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