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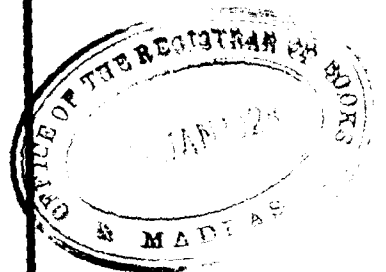
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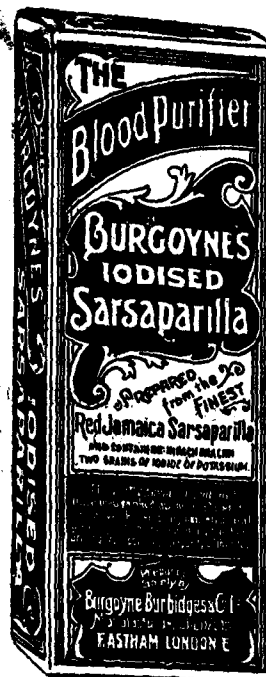
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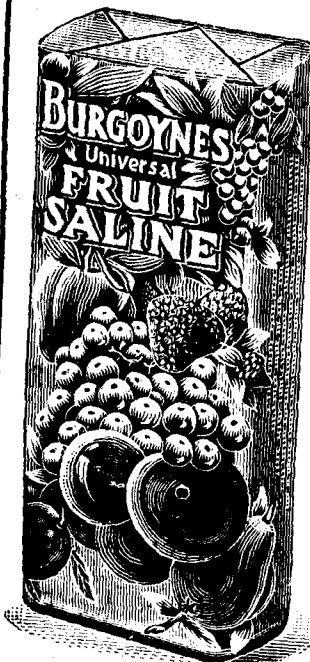
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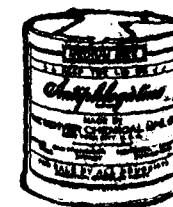
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THE MADRAS MEDICAL COLLEGE MAGAZINE.

Vol. VII

October, 1927

No. 2

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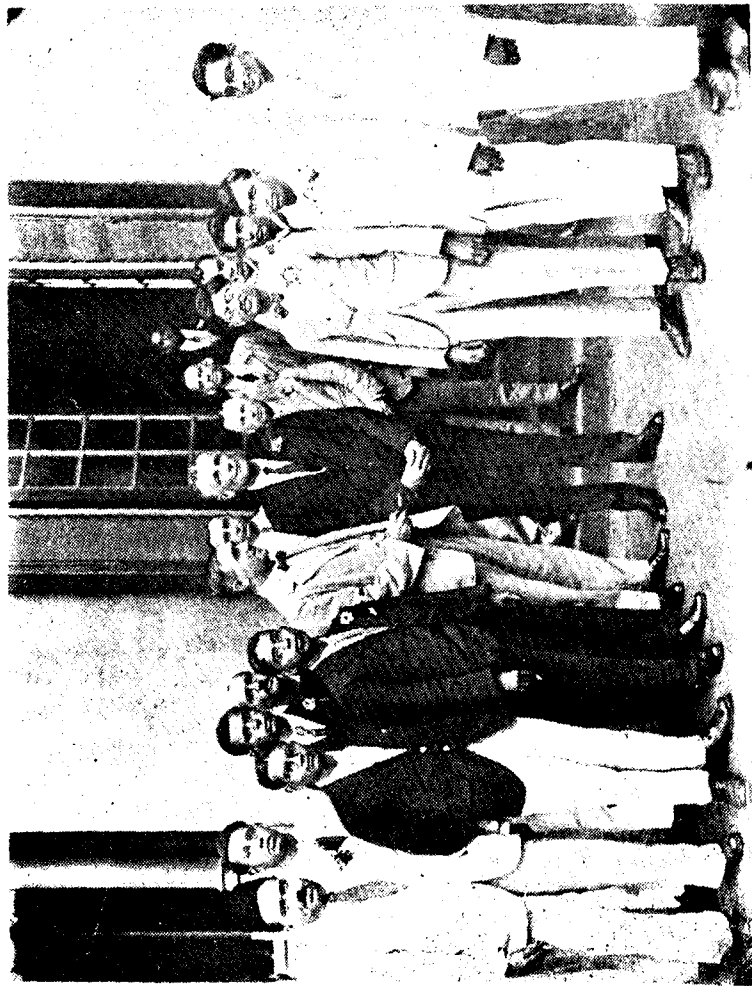
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that the great responsibility of affording suitable advice to the sick public principally falls. I am, therefore, in my remarks, stressing more particularly the diagnosis and the treatment of the disease and will not touch more than very briefly on its well-known symptoms and signs. The odds against which surgeons in Southern India have to battle are not probably known to the profession at large. This is so particularly on account of the wide prevalence of Tuberculosis, which of all complicating general diseases, is the most frequent enemy of the Surgeon. It is granted that Malaria, Kala-azar, Dysentery and other parasitic diseases undermine the general health of the population to an enormous extent. It is also now realised that Venereal diseases are causing widespread deterioration of public health to an extent hitherto not realised; but Tuberculosis is the worst enemy of all, for, in its latent or early stages it presents no clear-cut picture and being with difficulty recognised is therefore often neglected.

Even when a disease is detected, it is not often that the practitioner is successful in inducing the patient to undergo sustained and adequate treatment, particularly if the ailment is one that demands surgical help. The outlook of the public on surgery is not conducive either to their own welfare or to the progress of our Art. Surgery is still looked upon as a compartment of knowledge, a self contained speciality or an isolated branch of medicine, and to be thought of only as a last resort and when other measures have failed. The dread of operations is a universal feature, but all over the world surgery is now being recognised to be a humane art and not the dreadful slaughtering science, it is depicted to be by the caricaturist. As a department of Therapeutics, its aim is as much to relieve pain and to save life as that of general

medicine and drugs so much in favour with the sick public, are auxiliaries extensively employed by surgeons also to promote their ends. It is a friend and is the right arm of general medicine rather than the servant or the camp follower as it is often thought to be. A good Surgeon has, of necessity to be a good Physician, particularly when dealing with the very poor surgical risks we have to deal with in hospital practice in Madras. One often feels jealous of the spectacular advances in surgery in other countries, but in Madras we have to be extremely cautious and to remember the very low power of endurance of our patients, lower than we may imagine, chiefly due to the insidious inroads of our hidden enemy, Tuberculosis. According to many people in India, Madras occupies a foremost position in matters surgical. This is probably true, but I cannot help feeling some surprise when we remember the population we have to deal with here and contrast them with the comparatively more physically efficient people of the northern parts of India. There are many surprises in our work and I will mention an illustration of a remarkable and untoward incident which occurred in my surgical wards. A little more than 12 months ago we were experimenting on the production of gall-bladder pictures with the then new drug, Sodium Tetra Bromophenolphthalein. As you know, this drug was being administered in the early days intravenously; we selected a healthy-looking male adult who was in the ward for a Sinus in the mastoid region. The patient was carefully examined for signs of organic disease and nothing could be discovered. A dose of 0.6 grms. of the drug suitably divided and diluted, was administered intravenously about 8 hours before the appointed time for the Radiogram.

Imagine my surprise when 12 hours after the Radio-



The New Graduates of the Year 1927 with the Surgeon-General

THE MADRAS Medical College Magazine

Vol. VII

OCTOBER

No. 2

Tuberculosis in relation to Abdominal Surgery in Madras.*

MAJOR K. G. PANDALAI M. B. C. M. F. R. C. S. (ENG) I.M.S.

(Professor of operative surgery Medical College, Madras.)

In addressing you on a subject of first-rate importance to the health of our people, I do not pretend to place before you the results of any laboratory research or announce the discovery of any original methods of diagnosis or treatment but I am merely presenting to you the fruits of clinical study of Tuberculosis as viewed from the standpoint of a Surgeon who has been in contact with surgical patients in Madras for nearly 5 years. The facts which are being presented are already well known in other countries and to a small number in our own country, but do not appear to be realised by the majority of the people here. I wish to address my remarks particularly to the general practitioners and the recent post-graduates, as it is on them

*A 'Varsity Readership Lecture delivered at the Madras Medical College.

grams were taken the patient had a severe attack of Hæmoptysis for the first time in his life. His condition was alarming, but under restorative treatment he improved and at the time of discharge was in fair health although still showing lung signs at one apex. This was obviously a case of latent Tuberculosis of the lungs in which there had been no symptoms or physical signs and in which neither ordinary physical examination, nor a Radiogram could detect any lesion in the chest. This is not the only case of such a catastrophe occurring on the Surgical side without notice and in spite of all possible care to avoid accidents. I will mention as I go on a few similar cases which will bring home to you, the pressing need for extreme caution which we have to observe in order to avoid serious mistakes in our daily work. It may be a matter of surprise to my medical colleagues, if I venture to assert that our available methods of physical examination, particularly of the Thorax are still far from reliable. There was a case under my care quite recently of a middle aged man admitted for a Gastric Ulcer. In my wards a careful physical examination as well as a Skiagram of the chest have been the routine in every case of a Laparotomy. We have seen and studied large numbers of such pictures and are driven to the conclusion that our interpretation of Radiograms of the Thorax is often incorrect. This patient had part of his stomach removed for an extensive adherent ulcer of the lesser curvature by partial Gastrectomy; but died in 24 hours. A post mortem examination was held and disclosed the fact that death was attributable to extensive Tubercular deposits in both lungs with adhesions of the Pleurae. There was a cavity at one apex and it seemed strange that this patient should have had no rise of temperature, no cough, no dyspnoea or any other

symptoms or signs suggesting a chest lesion. He appeared to be as sound a surgical subject as any we had before. The Radiographer who had X-rayed his chest before the operation was surprised. When such is the lurking danger behind any surgical measure, I ask, how, in a city like this, where the majority of the working classes seem to exist on the narrow boundary between health and disease, our surgical art, which hopes to obtain smart and radical cures, can advance at all.

I do not think many of our younger men sufficiently realise the great prevalence of abdominal symptoms as well as discomfort in the right iliac fossa in incipient Tuberculosis. Errors in diagnosis and treatment may occur and every Surgeon with some experience can look back on a few such unfortunate cases early in his career. Young persons, in apparently good health, complain of dyspepsia and pain particularly in the right iliac fossa coming on a few hours after meals; this seems to occur regularly with each meal and has lasted for many months. There is no cough, loss of flesh or rise of temperature. Everything seems sound except the dyspepsia and the apparent trouble in the right iliac fossa. Who would not under these circumstances diagnose a chronic appendicitis? (In the diagnosis of Appendicitis X-rays have not been of much help. A normal appendix may appear contorted or segmented in the Radiogram and an appendix full of faces may not admit any Bismuth into its lumen and thus cast no shadow on the film. We have therefore ceased to rely on X-Ray appearances for a diagnosis of this condition). The organ is removed and great relief follows. The patient improves in health, the pain is gone, and everything seems so satisfactory. In 6 month's time, perhaps, a sudden attack of Hæmoptysis or persistent cough after an apparently trivial cold

the right Iliac Fossa have more than once been mistaken for abscesses of appendicular origin. I well remember a case, fortunately not my own, in which an abscess of this kind was opened in a soldier with disastrous results. Tuberculosis of the Hips and Sacro-Iliac Joints is a well known imitator of appendicular or caecal disease in the right Iliac Fossa. The induration and pus formation are so close to this area that often careless mistakes have occurred and hopeless damage done.

Coming next to the abdominal cavity itself varied are the conditions which may be simulated by Tuberculosis. Our knowledge of the Pathology of Abdominal Tuberculosis is now fairly extensive on account of the frequency of Laparotomy rendered so safe by Aseptic methods of operating. And of all the chronic conditions for which the abdomen is opened far and away the most common in this city is ulceration of the Gastro-duodenal region. This particular branch of Surgery is so very common in Madras that, more than at any other time, the existence of Tuberculosis has of necessity to be remembered. Surgeons in Madras have seen a number of cases in which the typical symptoms of the above ulceration have existed with no other obvious pathological basis than ring like multiple tuberculous ulceration with stricture of the small intestines. In this connection, I may say that these ulcers and strictures are more often seen in the upper Jejunum than in the lower Ilium.

Being generally multiple and situated within a few feet of each other, they have been found to occur about a couple of feet distal to the Duodeno-Jejunal flexure and present on their peritoneal surfaces minute greyish tubercular nodules to prove their identity. For this condition, Surgery can offer no lasting relief and if met with

by accident nothing more than closing the abdomen is deemed advisable. Occasionally resection of the involved segment or a short-circuiting operation may be possible. I can recall similarly, cases of supposed gastro intestinal's ulceration in which laparotomy demonstrated nothing more than the presence of numerous tubercles on the peritoneum sometimes visceral, sometimes parietal, and in many cases both. The cases of the latter condition presenting ascites do not cause difficulties in diagnosis; but they produce symptoms referable to the stomach and well mimic those due to ulceration. It is the earlier cases of tubercular peritonitis in which the quantity of effusion is minimal that difficulty in diagnosis constantly arises and most surgeons could recall cases of this type. Often tuberculous deposits in the peritoneum are encountered without warning when the abdomen is opened for a totally different condition. I could well recall the case of a young lady whose abdomen was opened for an ovarian tumour. It turned out to be on microscopic examination an ovarian carcinoma; but before closing the abdomen it was noted that the parietal peritoneum behind the cæcum showed a few (3 or 4) greyish flat deposits. These were suspected to be tubercular, but the patient had no symptoms or signs before operation, pointing to a tubercular infection in the abdomen. Later on it was proved that our suspicion was correct, as although the laparotomy wound healed normally, her abdomen became gradually distended and nodular lumps could be palpated here and there. About 3 weeks later, symptoms of chronic obstruction which culminated in acute obstruction supervened and on a second laparotomy for its relief, the visceral and parietal peritoneum were found studded with innumerable tubercles. This was a case in which a

brings the patient back and the truth is now borne in on the medical man. This is a serious pitfall which it seems difficult to escape; for, the diagnosis of chronic appendicitis and the call for operation now-a-days, are so frequent in surgical practice that a Surgeon may often be tempted to operate. Too much caution cannot be exercised in Madras in dealing with cases presenting vague abdominal symptoms of pain in the right Iliac Fossa without a history of an acute attack; for if appendicitis, acute and chronic, is a common disease in these parts, (much more common indeed than was imagined a decade ago), Tuberculosis, in all its varieties is far more common.

The extent of Tuberculosis of the lungs, Mediastinal glands and pleuræ is difficult to gauge. Among the less well-to-do classes on this side of India, among the cultivators and Mill-labourers, it is quite common. Nor are the more well-to-do classes free from the disease.

With an insidious disease like Tuberculosis it is not easy to estimate the extent of its prevalence with any approach to accuracy. But if one were to judge by the Hospital figures as well as from experience of private patients its prevalence among the general population of Madras taken as a whole should be placed at somewhere near 30%. A few figures may be of interest. In 1925, 172 cases were admitted into my ward for Laparotomy. Of this number 10 were considered unfit for operation on account of Tuberculosis of the lungs in an active form. There were 30 others in whom enlarged Mesenteric or other glands, presumably Tuberculous complicated the condition. In 1926, 186 cases were admitted for Laparotomy. 15 of these were unfit for operation on account of obvious Tuberculosis. 42 others had enlarged glands in the Mesentery. In 1927, 72 cases admitted for Laparotomy had their chest radiographed. 8 of these showed

obvious signs of TB. thus supporting the clinical opinion and were rejected. Of the remainder 30 showed signs of latent T.B. but were operated upon: 3 died and 27 survived. A remarkable fact in connection with some of the deaths in a number of cases showing no preoperative signs of TB. and when theoretically death was attributable to shock, is that a Post Mortem showed clear signs of TB. in the lungs.

The percentage of the population who would show a positive reaction to careful Serological tests is probably much higher than 30 % but I include in my estimate only such as show in one form or another clinical signs of the ravages of the disease, near or remote. Its prevalence is perhaps wider than these figures indicate and in our daily work it is becoming increasingly obligatory on us to think of every surgical patient in Hospital as a possible tuberculous subject until he is proved to be the contrary. It is becoming necessary to constantly bear this principle in mind, and to take more than ordinary care with the physical examination of patients before subjecting them to operations. The forms in which this ever-present danger may manifest itself are as varied as they are sudden.

Tuberculosis of the Spine is an extremely common disease in these parts. One comes across such from the merest infant in arms to the fully grown and well developed adult. It is not usual for Tuberculosis of the spine to cause complications in abdominal surgery; but cases are on record where vomiting in relation to meals and tenderness in the upper abdomen have been entirely attributable to an early tuberculous caries of the lower dorsalspine. Fortunately these cases are easily diagnosed particularly with the aid of a Radiogram of the Spine. Tubercular Psoas abscesses gravitating towards

mild and latent tubercular focus in the peritoneum had as a result of the shock of a laparotomy flared up into a generalised infection although one would have thought according to current belief that a laparotomy allowing as it does ventilation of an infected peritoneum has a curative effect. The impression left on the minds of the operating staff in such a case can never be effaced.

Tuberculosis of the abdominal lymph glands and omenta is another type, which is constantly complicating diagnosis and treatment, particularly in the younger patients. We have all operated on a number of cases giving typical gastric histories of dyspepsia in which on laparotomy nothing is visible but some enlarged glands in the mesentery and along the greater curvature of the stomach. In these cases a gland removed at operation invariably demonstrates a chronic inflammatory condition which may, or may not be tubercular. I am inclined to believe that such cases are tubercular. I can recall two very instructive cases, one was that of a lad of about 18 who complained of an intense pain in the upper abdomen after meals with vomiting, all suggesting a possible ulcer in the stomach or duodenum. Laparotomy disclosed no lesion of the stomach or duodenum but a mass of enlarged lymph glands about the size of a walnut with large, tortuous milky white lymphatics coursing over it was found situated in the uppermost part of the mesentery, to the left of the midline; one of these glands was removed the pathological report was an endothelioma. Frankly I was sceptical. The wound healed in due course and we were all gratified when the patient reported improvement. He was discharged. I came across this patient again 2 years later when he reported for identical symptoms. He had lost a great deal of flesh but showed a second laparotomy scar close to my old incision. It was explain-

ed to me that about a year after the 1st operation and during my absence from Madras his abdomen had been opened by another surgeon who found exactly the same condition as at the first operation. Nothing was done. On his third admission, the patient's condition was so bad that nothing could be done except to keep him alive with liquid nourishment. Even this, he brought up and gradually sank. The so-called endothelioma had not grown in the slightest and no lumps could be detected in the abdomen through a very emaciated and retracted abdominal wall. A post-mortem could not be had. The second case is more instructive still. A young student of 18 with an irregular lump in the right iliac fossa and pain after meals with occasional vomiting was sent in as a typical case of Appendicitis for operation. I explored and felt surprised to find the appendix was perfectly normal, but the ileo-caecal lymph glands were enlarged and matted. One of them was removed for microscopic examination. The report again was endothelioma. The wound healed perprimum and the patient was discharged with a gloomy prognosis, the parents being duly warned that the boy had a very serious disease which could not be cured in the hospital. The boy was lost sight of, but after about 2 years his parents brought him one morning to see me in hospital. He had grown into a fine, sturdy boy and on examination the old lump in the right iliac fossa had gone. It is now more than 2 years since I last saw the boy and as he lives somewhere in Madras, I have no doubt he would have reported if there was anything untoward. The inference one is driven to is, that one was dealing with a case of tuberculous Adenopathy and not malignant disease at all. It may be a source of comfort to surgeons that there are others who make diagnostic errors besides themselves,

1. Letter to the Editor

not the least being pathologists. Speaking of tubercular lumps in the peritoneal cavity, not very long ago an elderly ayah of the General Hospital was admitted under my care for a supposed carcinoma of the stomach. She had been steadily losing flesh, had dyspepsia, vomiting and gradual enlargement of the abdomen. An irregular lump was palpable in the epigastrium, fixed behind and boundaries undefinable. This to all appearance was a case of carcinoma of the stomach which had caused glandular metastasis and peritoneal effusion. The X-rays did not show disfigurement of the stomach. A speculative laparotomy was performed and a remarkably extensive tubercular peritonitis with matting of the omentum and glands into an irregular lump in the epigastrium accounted for the tumour above referred to.

As already said there is a great deal of surgery being performed in the upper abdomen in this city and we have seen that there is a great deal of tuberculous disease also prevalent in these parts. One may therefore be pardoned if a causal connection is imagined between the two conditions. Only circumstantial evidence is available. Tuberculosis of the stomach and duodenum is one of the rarities of pathology, perhaps because tubercle bacilli on account of their fatty coat would appear to be well provided by nature to stand hydrochloric acid. There are many who believe that a dietetic deficiency is a constant accompaniment of tuberculous infection and in fact is the cause of tuberculosis. Whatever it may be, there is no doubt about the fact that general hygienic treatment is one of the essential conditions of success in the treatment of tuberculosis with light and fresh air, both of which activate the vitamins of our food. It would therefore not be a surprise considering the commonness of the association of tuberculosis with gastro-duodenal ulcera-

tion, if deficiencies in the diet are found to be associated with gastro-duodenal ulceration in a portion of cases.

Quite a number of cases of tuberculous infection of the cæcum present themselves for treatment. It is frequent enough to remind us in every case of a tumour in the right iliac fossa, that tuberculosis might be the possible cause. Once this fact is borne in mind, mistakes are easily avoided; but to the unwary there are many pitfalls. Not very long ago, a case running a hectic temperature in a middle aged man with a history of six months' duration, with a lump in the right iliac fossa, the size of a human fist, reported for treatment. A diagnosis was confidently made of the presence of an appendicular abscess. The surgeon boldly opened into what proved to be the interior of a tuberculous cæcum. The patient died in a few days of a violent cellulitis. I well remember the case of a middle-aged Anglo-Indian, aged about 50, who reported with a swelling in the right iliac fossa, anæmia, hectic temperature and emaciation. A practitioner had diagnosed this to be an abscess of appendicular origin and had recommended operation. The patient had refused and consulted me 6 months later. The swelling was there, obviously a tubercular cæcum. Clinically he was not a case for operative treatment, the local condition being too far advanced and the general condition too bad. Under dietetic treatment and rest assisted by exposures to X-rays, the swelling rapidly shrank and had almost disappeared in about a month's time. The patient was discharged having put on 7 lbs. in weight and eating an ordinary diet. Cases of tubercular cæcum therefore even in advanced stages being inoperable need not be despaired of. They may be benefited by rest and electrical treatment as tuberculosis elsewhere. This patient was alive and doing well for

nearly 12 months after discharge but then had a recurrence of symptoms. He consulted another surgeon who operated performing an Ileo-Sigmoidostomy. He died 8 days later. This is not a unique case and others can be cited in illustration. On the other hand, an obsession that lumps in the right iliac fossa may be tubercular may sometimes prevent the surgeon diagnosing other conditions than tuberculosis. A middle aged woman was admitted with a soft tender lump in the right iliac fossa and another in the right breast. The latter was obviously an abscess and was incised and drained. The patient's condition and temperature did not reach normal and for some days much doubt prevailed regarding the prognosis of the case. After a great deal of hesitation, it was decided to explore the swelling in the right iliac fossa which when opened turned out to be a large collection of pus behind the peritoneum. Such abscesses in the right iliac fossa unconnected, with tuberculous disease of the ileum, spine, or joints are fairly common incidents but every effort should be made in each case to exclude a possible tuberculous origin, for no one wishes to drain either a psoas abscess or a tuberculous cæcum. Cases in which a laparotomy for a suspected appendicitis, discloses a normal appendix but slightly enlarged ileo cæcal glands, a little thickening of the cæcum and a few tubercular deposits on the visceral peritoneum are not common, but they do occur and their treatment bristles with difficulties. I have known cases in which after appendectomy these cases have developed chronic sinuses, later developing into fæcal fistulæ which gradually enlarge and finally kill the patient. The surgery of tuberculous infection of the right lower quadrant of the abdomen bristles with difficulties. The very earliest cases as well as the most advanced ones are best treated on conservative lines, although it is possible on laparotomy

to excise a tubercular cæcum which has not become too extensive or contracted too many adhesions. It is these early cases that respond very satisfactorily to general treatment, rest, careful diet and irradiation. This attitude is rational for the reason that, tuberculosis being a general disease it is not possible to guarantee that the disease will not recur locally or elsewhere. This is also in keeping with the modern general tendency to treat all types of so-called surgical tuberculosis, i.e. bones, joints, glands etc., on conservative medical lines. A reaction against drastic surgery in T. B. has set in excepting in those chronic obstructive types of tuberculosis in this region, in which with a bismuth meal, marked delay in its progress is visible in the cæcal region, operation would not be justifiable. If obstruction exists some short circuiting operation may be required, and the immediate results are fairly satisfactory.

The kidneys, appear to be comparatively the seat of very few diseases in the tropics as its functions are carried out mostly by the skin. It may be for this reason that we get so few cases of renal surgical lesions of which tuberculosis forms only a small proportion; or perhaps considering the prevalence of tuberculosis in other parts of the body, the kidneys are also affected in a number of cases, but that these cases are treated on the medical side as those of sub-acute or chronic nephritis of undefined nature. As regards tuberculosis in the pelvic organs, I do not pretend to speak with authority, but presume that the same conditions prevail as those in other parts of the peritoneal cavity. The tubes which are so frequently the site of inflammation—Gonococcal and other, would naturally be predisposed to a superimposed infection with tuberculosis. Such infections, either primary or secondary are, I understand not infrequently encountered by those who operate for inflammatory conditions in the pelvis.

To sum up, I have attempted to show that in the hospital patients, tuberculous infection somewhere in the body is a very frequent accompaniment in the surgical wards. This proportion I venture to place somewhere near 1 in 3. This high percentage places a serious handicap on the operating surgeon and it is contended that the handicap produced by other specially tropical diseases, hitherto intensively studied as Malaria, Kala-Azar and Dysentery is not so serious as that produced by such a chronic insidious and progressive disease as tuberculosis. I venture to assert that chiefly on this account our hospital statistics, i.e. mortality rates and average number of days in hospital cannot for many years compare with those of healthier and more prosperous communities in other parts of the world. Improvement in our results can only come when there is a general awakening of the conscience of all classes of the people, the state, the medical profession and the lay public and when combined and organised efforts are made to educate the people and the profession to take early note of disordered health and the state realises its duty to provide facilities for the relief of such conditions. Frequent medical inspection of the entire population even of apparently healthy people, large recuperation colonies rather than expensive hospitals, and a persistent educative effort in the interests of national health beginning in the lowest educational institutions and on the country side and above all a special Health Board laying emphasis more on the preventive than on the curative aspect of diseases, assuring one and all, clean food, pure milk and clean homes to live in, would be some of the directions in which national effort may profitably be directed. It is a large economic problem and requires the active co-operation of all patriotic citizens for its early and effective solution.

Tonsillectomy

BY DR. P. V. CHERIAN M. B., F. R. C. S. E.

(Lecturer on E. N. T. Diseases, Medical College, Madras.)

History

Extirpation of the tonsils was practised from very early times. Hippocrates as early as 460 B. C. advised avulsion of the tonsils. The next record we have is in A. D. 10 when Celsus described it as a very common operation in the following terms:—

“Tonsils which remain indurated after inflammation, if covered by a thin membrane should be loosened by working the finger round them and then torn out. But when this is not practicable they should be seized by a hook and excised with a scalpel”. In A. D. 490 Aetius said “The portion which projects, that is about one half of the enlarged gland—may be removed. Those who extirpate the entire tonsil remove at the same time structures which are perfectly healthy and in this way give rise to serious haemorrhage”.

Paulus Aegineta in A. D. 750 gave indications and method of removal of the tonsils. He was against removal of the tonsils when they are inflamed and advocated their removal when they are white, contracted and have a narrow base.

Next one to popularise the operation was Albucasis in 1120 A. D. with a caution against hæmorrhage.

After Albucasis, the operation seems to have fallen into disrepute and several writers including Ambroise Pare (1509) do not make any mention of the operation. Pare as a matter of fact advised Tracheotomy where the tonsils

were very much enlarged. In 1637 Severini during an epidemic practiced the partial removal of tonsils with caustics, hooks or semi-circular knives. For one full century after this, operations on the tonsils were discountenanced. During the 1st half of the 18th century Heister wrote that "the operation is not only too severe and cruel but also too difficult in the performance, to come into the practice of the moderns because of the obscure situation of the tonsils."

After 1740 however the operation was again revived by Wiseman. He ligatured the tonsil and cut off the projecting portions. In 1757 Caque of Rheims started excision of the tonsils. This now became one of the recognised operations in surgery. It was also proved that the dread of hæmorrhage, was groundless. From this period several new instruments came into use and modifications of several old instruments were made. It was only about 1880 that the snare and guillotine were coming into use. A general anaesthetic was but rarely given and some surgeons gave the patients large doses of potassium bromide for several days before the operation. The usual practice was for the assistant to press the patient's tongue down while the surgeon seized the tonsil with a vulsellum and pulling on it cut off as much of it as was possible.

Vulpean reported cases where the internal carotid artery was laid open during operations of this kind. About the year 1875, the common carotid artery was successfully ligatured at the London Hospital for continual hæmorrhage after excision of a tonsil. What prevented the early operators from making the operation popular was the dread of hæmorrhage, but this is a very rare complication due to the better methods now in use and the clearer knowledge of the anatomy of the parts.

Indications.

The tonsils should invariably be removed in the following circumstances:—

- (1) For recurrent attacks of Quinsy. Some surgeons remove the tonsil even after the first attack of Quinsy.
- (2) For new growths in the tonsils when their removal is possible and does not endanger life.
- (3) When the crypts of the tonsil are diseased and lead to septic absorption.
- (4) When rheumatic attacks do not respond to general treatment, with co-existing disease of the tonsils.
- (5) For tuberculous cervical glands.
- (6) For middle ear disease with enlarged tonsils
- (7) When the tonsils are sufficiently large to interfere with speech and respiration.
- (8) For recurring attacks of sore throat and persistent cough.
- (9) In diphtheria carriers.

Contra-indications.

It is not desirable to remove the tonsils in children under five, unless symptoms are present which are undoubtedly tonsillar in origin. Enlargement of the tonsil is present at the periods of molar teeth eruption i. e. at the ages of 2, 6, 12 and 17. This is physiological and the tonsils return to their normal size after complete eruption of these teeth. It is therefore not necessary to remove the tonsils for this enlargement.

Hæmophilia in the child is a very strong contra-indication.

There is no necessity to remove the tonsils when adenoids alone are present.

It is advisable not to remove the tonsils during men-

struation, as they are likely to lead to profuse hæmorrhage.

Tonsils should not be removed when they are acutely inflamed.

METHODS OF REMOVAL.

(1) *Dissection.*

The operation of tonsillectomy means the entire removal of tonsil with its capsule. This involves the separation of the capsule of the tonsil from its attachments to the anterior and posterior pillars of the fauces and superiorly where the two pillars meet. After this separation has been done the tonsil can be detached from its fibrous attachment inferiorly to the inner border of the superior constrictor muscle. Some of the fibres of the superior constrictor occasionally run into the capsule and are detached along with the tonsil. In most cases, the tonsil can be removed without detaching a single muscle fibre.

To accomplish the separation of the tonsil from the pillars several instruments have been devised consisting of knives, scissors and blunt dissectors of various shapes. The tonsil is first held with a vulsellum and pulled medially. This brings into prominence the extent of the tonsil and now the dissection begins. The tonsil is first separated superiorly, anteriorly and posteriorly. When this is finished the tonsil is nearly free and lies on the base of the tongue attached only at its lowest part. This part is detached with scissors, tonsillotome or snare. Preference must be given to the snare because it removes the tonsil cleaner than other instruments by working naturally towards the inferior attachment. Haemorrhage is also less than when the other instruments are used.

Guillotine. This method as it is now used was first started by Whillis & Pybus of New Castle in 1910. Here

Tonsillectomy

the guillotine is introduced like a tongue depressor and its ring is so applied that its upper surface lies towards the tonsil. Beginning with the lower pole the tonsil is pushed into the ring of the guillotine and the blade pushed home. A firm and steady pull or a twisting movement withdraws the guillotine with the tonsil lying on its under surface. The blade of the instrument must be well blunted before using it so as to diminish the amount of hæmorrhage. A clean cut vessel bleeds much more than one torn irregularly.

Haemorrhage after Tonsillectomy. This is a very rare complication but when present is most alarming. H. W. Loeb from a confidential questionnaire sent round to the profession in the United States recorded 62 deaths from hæmorrhage. Haemorrhage may be very brisk during the first few seconds but it usually ceases spontaneously in 3 to 5 minutes. The usual sites of the bleeding points in order of frequency are the posterior aspect of the anterior pillar, bed of the tonsil about its middle, the lower end of the wound or near the tongue and most inaccessible of all the upper pole of the wound under cover of the soft palate.

Methods of checking hæmorrhage. Free use of ice or iced water is most effective in the majority of cases.

Failing this, a sponge, either dry or moistened with *Hydrogen peroxide* or *Turpentine* should be applied to the tonsillar fossa and gentle pressure applied to it by the finger or a pair of forceps.

Another method is to use the Watson-Williams clamp—one blade of the clamp properly padded is applied to the tonsillar fossa and the other blade provides counter-pressure outside behind the angle of the jaw.

If hæmorrhage is not checked by these methods a search should be made for the bleeding points under good

illumination and when discovered they should be clamped with long artery forceps and ligatured as in any ordinary surgical procedure.

When the bleeding vessel cannot be discovered the anterior and posterior pillars may be sutured together over a pad of gauze.

In hæmorrhage occurring several hours after tonsillectomy the tonsillar fossa will be found filled with clot with constant oozing of fresh blood from under it. The first step in the treatment here is to remove the clot and then deal with the hæmorrhage exactly as a primary one.

The suggestion that the carotid artery lies near the base of the tonsil is a myth except in abnormal cases. In normal cases, the pharyngeal aponeurosis the superior constrictor and stylopharyngeus muscles and a certain amount of areolar tissue occupy the interval between the internal carotid artery and the tonsil. The extent of this space is from $\frac{3}{4}$ to 1 inch.

Ligature of the external or common carotid artery is very rarely called for, to arrest hæmorrhage after tonsillectomy.

Clinical Biochemistry

BY DR. A. S. MANNADI NAIR, M.B.B.S. PH.D. (EDIN.)

(Professor of Biochemistry, Medical College, Madras).

Medicine during the past few years has entered upon a new phase which may rather be called a Biochemical phase. Hitherto our conception of diseases has been rather static based upon morbid findings of the post-mortem room and histological laboratory. In this we are liable to forget that most of our ailments begin as derangements of function and the pathologist's findings are only the final photographs of the tragedy, brought about by continuous derangements of functions. We have now turned with a new zest to the study of functions, both normal and abnormal, in the living human subject. Since each and every function ultimately involves or depends upon chemical changes, the study of them both in normal and abnormal conditions, (the peculiar province of clinical biochemistry,) is opening up a new avenue of great promise.

Perhaps there still exists in some quarters a little lingering confusion about the subject of biochemistry. Chemists assert with all earnestness that it is nothing but organic chemistry, physiologists state it is only chemical physiology, and pathologists declare that it is their province of chemical pathology. There is an exaggeration of some truth in all these assertions. The fact is that the biochemist applies the established principles and facts of organic & physical chemistry to the study and interpretation of life and in this he studies the normal conditions and variations in the abnormal. Therefore to discharge

the functions of the clinical biochemist he should acquire a proper knowledge of organic and physical chemistry, physiology, pathology and clinical medicine.

A Research worker cannot allow himself to be transferred by limitations in his field. He should be prepared to use whatever tools he requires to solve his problems whether it be physics, physical chemistry, physiology or pathology. Perhaps it is a derogatory step that is being pursued at present to confine the physiologist, biochemist, and pathologist to the laboratory. I venture to think it is essential that they should interpret their findings of the laboratory in conjunction with clinical facts. With this subject may it not be better to assign to them a few beds in a hospital where they can study clinical facts and correlate them with their laboratory findings? Else a danger arises in overrating the importance of laboratory findings, placing undue reliance on the laboratory in the final solution of problems. Laboratory should never be considered as "the mathematical workshop of medicine". It should be only a valuable adjunct and never a substitute to the clinical study.

Though clinical biochemistry is an infant subject, an attempt shall be made now and again in the pages of this magazine to indicate the proper significance in clinical medicine of analyses of blood, urine, faeces, gastric contents and cerebro spinal fluid, basal metabolism tests and other biochemical tests.

(To be continued)

The Indian Medical Education Bill

BY THE HON'BLE DR. U. RAMA RAU

(Member, Council of State.)

A Bill to regulate Medical Education in India was introduced by me in the Council of State on 22nd February 1926 and is now at the Select Committee stage. My object in moving this Bill is, to establish a Council on the lines of the General Medical Council of the United Kingdom, for organizing and controlling medical education under the direction of the profession in India. That a vast country like India with a horde of medical practitioners of different schools, professing and practising on different lines should have no duly organized body to look after medical education and to prescribe and regulate the courses of study, is a serious omission and a long-felt want, which this Bill seeks to fill. There are four different systems of medicine at present being practised in this country viz. (1) the Allopathic or the Western System of medicine (2) the Ayurvedic system of medicine (3) the Unani or Tibbi system and (4) Homeopathy. With the exception of the Allopathic system, which is under the restraint of law, all other systems of medicine have their own courses of study and pursue their own methods of practice, with the result that quackery has increased to an alarming extent, of late, inflicting incalculable injuries and bringing untold miseries on the ailing millions of India with impunity. The Allopathic system also has its own sad tale to tell. Medical education in accordance with this system of medicine is under the control of two different agencies viz., the Universities and the Government. The standard of education maintained by the Universities is somewhat uniform and nearly

reaching the level of other civilized countries in the world and this is because they seek recognition by the General Medical Council of Great Britain. But, the standard of medical education obtaining in the Government medical Schools, which are exclusively under the control of the Provincial Governments, is deplorably low and defective. I particularly refrain from enlarging on the numerous deficiencies in the system of medical education as at present imparted in this country, for it is a matter of common knowledge. Suffice it to say that a sort of caste system has been established in medical education, which is detrimental to the interests of both the profession and the public. Further, medical education is in the hands of the Executive Government and even in the Universities, their voice is supreme. In these days of Democracy, it is essential that medical education, in order that it may improve on progressive scientific lines, must be divested of Government control and placed in the hands of a popular body like the proposed General Medical Council. The existing Provincial Medical Registration Acts are also defective in many respects. The primary function of a Provincial Medical Council is merely to supervise the maintenance of the Register of medical practitioners in the respective provinces. These enactments deal more with ethics and discipline than the organization, direction and control of medical education. They lack in uniformity and full reciprocity. Owing to the dissipated condition of medical education and the defective nature of the Provincial Medical Registration Acts, as outlined above, the imperative need for a General Medical Council for the whole of India, not only to control and regulate medical education but also to maintain a register of qualified medical practitioners and deal with their discipline and ethics, is established beyond

dispute, and my Bill is merely intended to supply this need. The idea to establish a General Medical Council for All-India is no new one. In fact, the Government of India, so far back as 1921, had itself taken up this question of the establishment of a General Medical Council for All-India and even circularized the Provincial Governments and the various Provincial Medical Councils for their opinion but for reasons unknown, this proposal had not seen the light of day afterwards. My Bill merely rose from that dead proposal.

Now, coming to the provisions of the Bill, clause 1 is preamble. Clause 2 deals with the constitution of the Council. It is similar in character to the one constituted under the British Medical Act of 1886. The Council will consist of:—7 members including the President to be nominated by the Governor-General in Council for the time being, one member to be elected by the Senate of every University in India, one representative of medical graduates from each province, one representative of medical licentiates from each province and 4 members to be elected by practitioners registered under the Medical Acts of the provinces in India who have been on the teaching staff of institutions giving instructions in independent schools of medicine. The Council thus provides for about 35 members as against 42 in the General Medical Council of Great Britain and the charge that it will prove to be an unwieldy body, that is generally levelled against it, cannot therefore hold water. Moreover, the Council bids fair to be a fully representative body composed largely of non-officials.

Clause 3 deals with the period of office of membership of the Council which is restricted to 5 years and the method of filling in interim vacancies etc.

Clause 4 of the Bill, details the purposes of the Coun-

cil, the chief being the establishment of a qualification in medicine equivalent to that which is registrable in the United Kingdom and the establishment of a qualification in independent schools or methods of medicine as shall empower the holders thereof to practise in all provinces in India and the establishment and maintenance of Inspectors of medical education to secure a suitable standard of proficiency in medical education. The principle embodied in the Bill is therefore to place the independent methods of treatment also under the same control as the European system and allow them to grow on scientific lines and thus provide for a differentiation of the properly trained from the untrained.

Clause 5 empowers the Council to frame rules and regulations for the purpose of carrying out the provisions of the Act. The existing Provincial Medical Acts only provide for the Registration of qualified Allopathic practitioners and to avoid conflict with the existing enactments and powers of bodies created by them, all matters of internal management and devolution of the powers of control are left to regulations under this Bill. These regulations will come into force only after they have been previously approved by the Governor-General in Council and notified and objections thereto called for in the Government of India and Provincial Gazettes at least two months before they are submitted for the sanction of the Governor-General in Council.

The Sixth and last clause vests, in the Governor-General in Council, full power to revoke, suspend or cancel all or any of the powers conferred on the Council under the Act in case of default, excess or abuse of power and to have such powers and duties exercised and performed by such agency and for such period as he may think fit.

This is the sum and substance of the Bill. The Bill though short, is full of potentialities. It may be said, in all humility, that it forms the framework of the future edifice of Indian Medicine. That the Bill has had the general support of the independent medical profession in India is a matter for gratification. The only objection to the smooth-sailing of the Bill through the Legislature is the provision pertaining to the admission of practitioners practising the indigenous systems of medicine into the Council. The Bill provides in their case, only for a future contingency. If the Council is thoroughly satisfied and all the instructions issued by it are carried to the very letter, then only it can register those practising the indigenous systems of medicine. For the first election, it takes only those that are registered under the medical Acts of the different provinces and as such a non-registered man cannot enter the Council not to speak of those practising the indigenous system. This provision is nothing but an incentive pure and simple to encourage the study of the indigenous system of medicine and thus extend scientific methods of treatment to 9/10ths of the population of India, to whom Allopathic medicine has not yet reached. However, I must swim with the current and am prepared to drop this provision, if the majority of my professional brethren are overwhelmingly against it. Then the chances of the Bill being passed into Law will be more favourable and I am sanguine that the Government will also heartily lend their support in piloting this measure through, to a successful end.

Editorial Comments

Since the publication of the last issue of this Journal the chief event of general interest has been the October University Examinations. Up to the time of going to press the results have not been published, but from the optimistic atmosphere generally prevalent it is expected that the results would be to the satisfaction of all concerned.

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When a few months ago a Commission appointed by the General Medical Council of Great Britain came round inspecting the medical institutions of India, little enthusiasm did it arouse and little did we imagine the possibilities for good of such an inspection. There is no doubt about the value of such periodic inspections, when held by experienced individuals unconnected with our institutions. This is a principle which our University has recognised and is carrying out with regard to the various Arts or Science Colleges affiliated to it. Apart from the prevalent desire that such inspections should properly be conducted by an authority constituted within the limits of our own country such as an All-India Medical Council, under existing circumstances and until legislation is introduced for the creation of such an authority there is no alternative to present arrangements, however objectionable they may appear to be, from certain points of view.

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There is a stir throughout the civilised world in educational matters—medical education included. Men are exploring methods of making our instruction more effective than at present. In this direction some of the remarks of the Inspection Commission would be found serviceable to those Indians and Britishers who are

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genuinely interested in the cause of medical education in this Province. The report referred to above has completely dis-illusioned us. It has disclosed the fact that for more than a decade we have been living in a fool's paradise. We had been persuaded that so far as Madras was concerned our methods of teaching excelled those obtaining in the rest of India and could not be improved upon. This illusion in our minds has been strengthened until 5 years ago by the General Medical Council's unconditional recognition of our M. B. Degree. The Indian section of the medical profession in Madras until recently took very little interest in educational matters, but with the close of the war and the general intellectual awakening all round, even we, in Madras, shook off our torpor, got into a questioning mood and wondered whether all was well with us. Discontent with existing methods of education became manifest and proposals for reform were seriously made by various members of the profession both government and independent; but we are such peculiar people and are so peculiarly circumstanced that a step forward in these matters could not be taken unless directed by an authority from a distant land such as the General Medical Council of Great Britain. We are genuinely grateful to the latter body for having come to our aid and specifically pointed out the very deficiencies in our system which many in Madras had noticed for several years past.

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We sympathise heartily with our sister college of Vizagapatam in the treatment accorded to them by the medical commissioners. Their Final M. B. B. S. degree is not to be recognised by the English General Medical Council, but it may comfort them to know that they are not alone in distress and that we in Madras are only a

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in each subject belong to the Andhra or Mysore Universities. We must, however, point out that in conducting a conjoint final qualifying examination in association with the Andhra University, which latter appears to have incurred the displeasure of the General Medical Council, we are laying ourselves open to the charge of associating with unrecognised teachers and examiners.

Every measure that would ensure a more rapid disappearance of the L. M. & S. degree from our University would receive our hearty support. We are glad that the abolition of the L. M. & S. so ably carried through the Senate by a few progressive medical members of our University in the teeth of a powerful opposition from the adherents of the old order, has received the unqualified approval of such a distinguished and disinterested body as the General Medical Council. In fact they go so far as to say that the instruction of L. M. & S. students alongside M. B. students in our Colleges is an undesirable measure; we are inclined to agree in principle but in Madras at present a step such as this is not immediately practicable and it is a point for consideration whether the transfer of our L. M. & S. students to another institution in Madras or elsewhere in the near future would be satisfactory from all points of view.

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We would also strongly support the proposal that the percentage of pass marks in every subject in each year of the medical course for the M. B. B. S. Degree should be 50% of the total uniformly.

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We are glad to note that in one portion of their report the Medical Inspectors approved of the appointment of honorary clinical teachers and demonstrators to supplement the existing staff of our hospitals. This

recommendation, we are sure, would gladden the hearts of all who are interested in the progress of the unpaid medical profession in Madras and pave the way for an early and rapid increase in the number of those employed in the instruction of students.

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We are sure that the Commissioners must have noticed that in Madras as elsewhere in India the present problem is not one of want of funds, equipment or buildings; these are comparatively easy to procure, and can be found or purchased with some perseverance; but the great problem of the moment is a want of spirit and enthusiasm, a desire to get on and not to be left behind in the race for life, so essential in the advancement of a scientific profession like ours. Our greatest enemy of the moment is a habit of self-adulation, which makes us believe that our ways are the best in the world and which does not permit of any progress unless forced on us by the acid criticisms of an alien body.

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We commend to our readers a lucid article appearing in this issue of the Magazine by Dr. U. Rama Rao on the scope and provisions of his Medical Education Bill which is now in the Select Committee stage before the Council of State. In introducing a bill of this nature Dr. Rama Rao is doing an act of great public utility and deserves the gratitude of the medical profession of India. There may be differences of opinion as regards the constitution of the Council as well as the inclusion of the indigenous profession within the scope of its provisions. We have always pleaded for rapid unification of the ranks of our profession by abolishing the existing multifarious degrees and diplomas, all entitling the holders to practise yet promoting separate class interests and thus keeping our

trifle better off than themselves as our own M. B. Degree is to be recognised only till July next. It would appear that in both places an important fact noticed by the Commission is that a number of the professors are men of very little teaching experience and that some of them have not the necessary training for holding teaching appointments. As regards this we wish to point out that experience is not gained in a day and qualifications which would command the respect of an English visiting commission could only be obtained outside India. Our sister Provinces of Bombay and Calcutta have had a considerable start over us in this respect and had no difficulty in staffing their institution with men of high Academic qualifications when the medical portfolio was transferred and Indianisation became an accepted principle. We in Madras have lagged behind and when our opportunity came we had not the men to staff the rapidly expanding medical institutions of the province. But we have no cause to be disheartened as a steadily increasing number of our youths is proceeding abroad for study, higher qualifications and specialisation, and it will not be long before we also have an abundant supply of well-trained men to carry through the efficient teaching of our youths in the Science and Art of Medicine. Meanwhile we have to bear with patience temporary disappointments and refusal of a respectable status by the outside world and must look upon these as unavoidable trials which have to be undergone in our difficult march towards the goal of our efforts.

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We entirely agree, however, that the present length of the medical curriculum i. e. 5 years is inadequate for complete instruction in the evergrowing subjects of medical science and that a lengthening of the course to 6

years is an urgently required measure. We would prefer also to go back to the old system by which the first year's subjects viz. Chemistry, Physics and Biology covered one year of the curriculum rather than the present method of allotting to these subjects only 6 months. We are, however, unable to see how the standard of general education before admission to the Medical Colleges could be improved until the standard of the Intermediate examination in Arts is also improved or until a rule is made that no one but graduates of the University preferably in the Natural Sciences would be admitted to the Medical College. This, although a desirable step in the long run is probably not a practicable measure under present circumstances, as such a restriction of admission would leave a large portion of our available accommodation unutilised.

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We are strongly of opinion that several special departments of Medicine and Surgery still remain to be organised and developed in Madras. The departments of Skin Diseases, Neurology and Cardiology, to mention only a few, are some of those that require urgently to be created. The diseases of children, we are glad to notice are receiving adequate attention at the hands of the authorities. We strongly support the further recommendations of the Medical Commissioners regarding the reorganisation of the Out-patient Department, the provision of better nursing, encouragement of research and the appointment of more teachers of a junior grade in the subjects of Medicine, Surgery and Midwifery. We consider that the system of external examiners is a wholesome and progressive measure and in this respect would strongly support the continuation of the existing arrangements under which some at least of the examiners

ranks divided and in a state of dis-union. We have pleaded for the abolition of more qualifying degrees than the one granted by a University. We are firmly convinced that there is no longer any need for the production of a cheap type of doctors possessing a lesser qualification than the holder of a University degree. This opinion is rapidly gaining in strength and volume and it will not be long before the numerous medical schools, qualifying our youths for the L. M. P. diploma, are considered superfluous and out of date. Until such a time arrives, perhaps there may be need for the separate representation of the medical licentiates' group which forms in every province the great majority of medical practioners.

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We are, however, of the opinion that the inclusion of Ayurvedic medicine within the scope of the proposed Bill is likely to prove detrimental to the smooth passage of the Bill as a whole through the Council of State. Although Ayurvedic medicine is a thing of many centuries of growth, yet its development on modern lines must be admitted to be of very recent occurrence. The growth and prosperity of any science is not accomplished in a day and no one can predict what direction the modern revival of Ayurvedic medicine will take within the coming decade. Already tendencies are evident in the direction of making it almost similar to Western medicine in thought and in practice. Bacteriology, X-rays and general pathological methods, the Stethoscope, Thermometer and other refinements of Western Medical Science are being openly adopted by practitioners of Ayurvedic medicine. It is not therefore, permissible to imagine that a day might soon arrive when the two methods of practice would become identical in all essential particulars. Indigenous medicine thus is passing through a stage of transition and

until its new features have become crystallised, it is not considered desirable to legislate for its benefit. We hope Dr. Rama Rao could be persuaded by the voice of an overwhelming majority of his brother practitioners throughout India, who, although zealous patriots themselves and anxious to see the name and honour of our motherland shine in the eyes of the world at large, are yet unconvinced of the wisdom of his present proposals for the betterment of the indigenous medical profession and are genuinely apprehensive of the safety of the more beneficent provisions of the Bill in the company of those covering subjects of a highly controversial nature.

* * * *

We have received a communication from the lady students of the college about certain alleged grievances of theirs. We have also received a letter from the Lady Tutor of the College on the same point. Apparently things are not running as smoothly as one might desire in this institution, and we would draw the immediate attention of the authorities concerned to this question.

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We bid farwell to Lt. Col. A. Leslie I. M. S. and we are glad to note that he has gone to his old favourite place Coonoor.

* * * *

We extend over hearty welcome to Lt. Col. G. E. Malcomson M. D., M. R. C. P. (Lon.) I. M. S. on his return from his leave and hope that he will be in the midst of happy company for at least a few more years to come.

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We regret to announce the death of Mr. Balakrishna Naidu, a student of Fourth Year class of Typhoid fever. We offer our heart-felt condolences to the berieved family.

X-rays as applied to Medicine*

BY DR. C. V. RAMAN, M.A., D.SC., F.R.S.,

(From a lecture delivered by Dr. C. V. Raman, Palit Professor of Physics,
Calcutta University under the auspices of the Madras Medical College Association)

The lecturer began by saying that Physics and Medicine have many things in common, but perhaps there is no particular branch of knowledge which brings them closer together than the one which has happened to be the most magnificent discovery of Rontgen about 30 years ago. The whole world was startled as it were at this accidental and dramatic discovery of a new kind of ray. Rontgen, perhaps, from the very first, realised the extreme importance of his discovery which he was not slow in intimating to his friends in the medical profession who therein found an immense possibility of its playing a very important part in future medicine and the consequent relief of human suffering.

The lecturer then said that rather than enumerating to us the various uses to which the X-rays are put, he would like to touch upon some of the recent workings on this branch of knowledge and how they have gone a good deal ahead in explaining to us the fundamental constitution of matter, radiation and so forth.

X-rays like sunlight are a kind of radiation in the ether but whereas the wavelength of the latter is only about 50,000th of an inch, that of the former is 1000—2000 times smaller than this, i.e. about a hundred millionth part of an inch.

Rontgen discovered these rays when he was conducting an experiment with a certain type of vacuum tube through which a current of electricity was passing. His type of X-ray tube has undergone immense improvement, and we now obtain rays which are far more powerful and effective than those obtained some years ago.

The Coolidge Bulb, the one designed by Prof. Coolidge of the American Research Institute, is the best that can be had in the market

* Report by T. P. Sundaram IIIrd year.

X-rays as applied to Medicine

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today and the one generally used in hospitals. The striking improvements to bring about such efficiency in this bulb are :

1. the bulb is made almost a perfect vacuum,
2. the anode consists of Tungsten wire which is made to glow by means of an auxiliary current of electricity.
3. a bright and efficient anticathode.
4. a radiator attached at the end to carry away the surplus heat and prevent the tube from collapsing.

A specially made Coolidge Bulb costs about 3 to 4,000 Rupees and an ordinary one from 5 to 600 Rupees. The lecturer remarked that owing to this exorbitant cost and the continuous strain to which these bulbs have to be subjected in the field of research, he had to abandon the idea of working with Coolidge Bulbs, and take to crude but efficient forms of tubes in his own laboratory at Calcutta.

There are two kinds of X-rays the hard and the soft, according as the number of Arhmstrong Units used is above or below 10. The soft ray is the one generally employed for biological and physiological purposes whereas the hard one is used where a penetration through 5-6" of metal is required.

Then the lecturer dwelt upon some of the researches done by a German Professor named Lawle in 1912, on crystals like magnesium oxide, rock salt, alum &c, and showed by beautiful illustrations on the screen what a marvellous thing the architecture of a crystal is, an architecture compared to which the Tajmahal at Agra is nothing. He explained how the spots around a central bright area in an X-ray photograph of a crystal are produced by the atoms inside the crystal and how they assume various configurations when taken in various postures.

He elucidated further by photographic slides what is meant by a radiation spectrum and a composite photograph of powdered rock salt. An X-ray photograph of colloidal gold was projected on the screen showing thereby how apparently lucid the minutest microscopically undetectable atoms become. Speaking about the so-called amorphous precipitates obtained in the laboratory and described of in text-books of chemistry, he said that they should not be believed in, for when they are examined under the X-rays they are all crystalline in structure, except a very few like pure glass and amorphous silica.

The crystalline structure of the ultimate vegetable and animal fibre

was the next topic, and the learned lecturer greatly emphasised the importance of X-rays in the research about the fundamental nature of things. The X-ray study of liquids he cited to be a very complicated one when compared to those of the crystals and gases and illustrated by a slide of Prof. Sabhani how very complicated and remarkable is the internal arrangement of the molecules. Photographs of two sets of hexane rings were then shown—one clear and the other a shade cloudy—which varied in the configuration of their atoms.

Regarding the practical application of X-rays medically the lecturer referred to the difficulty and danger arising out of scattering of the rays and how a good deal of work is being done in the perfection of filters and screens which will ward off their evil effects.

Concluding, the lecturer said that Medical science wanted a better conception of the ultimate nature of the body tissues, e.g., the muscles, their structure, mode of action and the structural changes they undergo during contraction and all that, in order that the art of medicine may grow more perfect and the methods of prevention and cure a matter of comparative ease. Incidentally he spoke about a remarkable bit of discovery made by Prof. Katz, viz: that when an extended rubber band is seen under the X-rays it is crystalline in structure but in the normal condition colloidal. It is for finding out such fundamental phenomena that the Physicist works, and it is also the duty of the medical man to find out the prime structure of the body tissues without a knowledge of which the medical science cannot advance far.

Lastly he remarked how we as medical men cannot afford to ignore such an important subject as the X-rays, having in view the invaluable aid it is likely to render in the curing of certain diseases. With a vote of thanks the meeting came to a close.

Mr. Ram—The Lover

(A SEQUEL TO "THE WATER-STUNT")

I promised my readers in the last issue that I would tell them about the love experiences of our hero. He has had so many inoculations with pure strains of the Cupid's Arrow-bacillus that he may be said to have attained a certain amount of immunity against this particular bacillus. But still, one never knows. The acquired immunity may be but fleeting, and more virulent strains of the organism may successfully infect our friend. It looked as if it would. That is what one was inclined to think on seeing Dr. Ram at every civic function of the place, gloriously dressed in the latest West End cuts and profuse in his attentions to the Fair Sex—the culture-medium par excellence of the Cupid's Arrow-bacillus. Nor did he miss his regular "Constitutional" walks in the evenings.

Well, it happened this way: Ram came of a respectable Hindu family of moderate means; was the only son and the pet-child ("spoilt" others would call him) of his mother. (God rest her soul—she is no more!). His Dad was a school master of the old school type and was an extreme prude. Ram was from his youngest years very inquisitive by nature, and always bothered his progenitor with whys and hows and whens and what-nots till the old man got nearly raving and Ram never forgets those days, or rather his back doesn't forget them.

Ram was an unsuccessful lover from the beginning—not that his advances were rejected by his lady-love, but the society in which he was placed with his father as the presiding deity forbade any of his various proposals on grounds of finance, age, social taboo, ostracism and many other things which only their wonderful brains could invent. The net result of all this is that Ram is still unmarried and one would think he would continue to be so for some time to come. Let me disillusion that man.

This is his latest: Now that he had a decent practice, and a decent income, thanks to the "water-stunt" the invention of his pedagogue-friend's evil genius, he was beginning to feel the need of a woman's presence in his home. Of course, our friends would remember he had his land-lady who still stuck to him like a leech. Sort of leech unto Leach—isn't it? But the

dear-old-thing was getting on to dotage, and she was rather trying to Ram and his patience—I am sorry, I meant patients.

* * * *

He was seriously engaged in a "brown study" one hot afternoon in his drawing room, lazily lounging in an arm-chair with his old favourite "Three Castles" perfuming the air, when, who should pop in but his old chum and class-mate Kittu.

Kittu was more lucky than his friend: had finished his course successfully, though not so brilliantly as Ram, but, who with the aid of some God-fathers had sponged upon the Government and was now a Civil Assistant Surgeon in a District Head-quarters with a very decent private practice. Nor was this all. He was luckier in the matrimonial field too. In fact, the letters M. B. B. S., M. A. L. L. D., would fit in aptly with his name.

A love affair—(A "silly" affair of the heart, the old folks would call it), developed between Kittu and his land-lady's daughter in his student days and when he got his degree from the University, his friends gave him the other degree also. He's not an M.A., nor is he a Doctor of Laws; he merely Married A Land Lady's Daughter. I beg your pardon, dear readers, I have digressed.

To come back to Ram. Kittu popped in that afternoon when Ram was busy building Three castles in air with the aid of Smoke rings. "Hullo, Kit! this is a pleasant surprise. Why the deuce didn't you write to me—I would have sent my two-seater to the station. It is very good of you however to have thought of me....."

After the exchange of preliminary enquiries and compliments they set to talking about affairs pertaining to the heart, not your endocarditis or anything of the sort, but a condition more dignified by being made famous by poets and literary men than by sweating pathologists who day after day open heart after heart most heartlessly. Yes, there Kittu had caught Ram at the vital point. Poor Ram! He said that he couldn't care for anybody now as the youthful fire had been brutally quenched and that he doesn't care now to get married, but would all the same like a lady to keep the house for him, but society intervened there again and would *talk*, and he would like to know a way out of the mire he had got into.

Kit wasn't the sort of man to let a pal of his drown. It seemed as if the object with which he had come was already achieved. The plum seem-

ed to fall plop into his mouth. He had a sister—recently the victim of an unfortunate accident, was widowed—"the darlingest thing, Kit described her, "and the most accomplished and sweet creature you could meet". Kit was a brave man, and wanted to defy the silly conventions of his society, and make his sister happy and Ram too in the bargain.

* * * *

Well, all is well that ends well, isn't it? This ended well as all stories end, and Ram has dispensed with the services of his chauffeur—there is no more room for him in the car—even the Dicky seat behind is occupied by the Doctor's kid. The seat on his left is occupied as all can guess by "the Missus", and one evening on the Promenade while he was having a "Constitutional" Drive (the walk having now given place to the Drive), the cop who held him up at the crossing to let another car pass, mildly put in: "Hey Doc., why don't you use both hands? as he saw the Doctor holding the Steering Wheel of his Car with but one hand, the other arm round his neighbour, our Doc. replied: "If I use both hands, Man, who the Dickens will hold the Wheel?"

And it wasn't till his wife told him that night that he understood why the cop laughed at his reply.

L. S.

“The Doctor in Embryo”

From the point of view of the Nursing Staff, Medical Students are of three Kinds; The highly competent, the frankly nervous and the obviously imbecile.

Generally speaking, the highly competent group is the least-popular. Such a student enters the ward briskly on the stroke of the appointed hour, perfectly tailored with a hearty “Good morning sister,—Nurse,” he strides confidently up to his new case (poor individual!!) from whom he capably proceeds to extract intimate details, (at times making the patient blush and feeling like hiding her face beneath the sheet or pillow), of her life from the cradle upwards.

He spends the rest of the morning beside that bed, with his dirty shoes on the recently painted cot, thoughtfully shaking a fountain pen at intervals over the clean sheet and polished floor. Nothing seems to move him, in spite of the diets being served, temp: etc. taken. He is still there. So thoroughly does he compile his notes that the smallest detail is carefully inserted. One of the cases for instance, solemnly read out during a ward round with his surgeon. “Hair coarse, especially after washing, good appetite when seeing food being served, otherwise nothing abnormal discovered. From such spring our research workers.

The frankly nervous student may be recognised at once from the manner in which he insinuates himself round the door, enquiring of the nearest probation nurse or ward attendant “Where is sister?” Too timid to move anything out of the way he knocks over a glass of water and the nearest flowers or tilts the ink bottle over a cleaned table. In the theatre he tears his rubber gloves, shuffles about in an odd mackintosh apron sometimes twice his size, and willingly offers the surgeon a pair of scissors as a likely tool for enlarging an incision. He usually stands just where he is most in the way and when a nurse falls over his dainty feet with a basin of lotion, picks her up in an apologetic and gentlemanly manner; he retires into a corner where several glass jars he had not noticed immediately fall over. Sister looks over her mask and all eyes are on the unfortunate young doctor, who finally dashes out of the room. Marked improvement is

The Doctor in Embryo

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usually seen in these students. In a few months they become reasonable and useful members of hospital society and in a few years no doubt they are ornaments to their honoured profession.

Life would be dull without the “Dressers”. Their Bandaging is marvellous. An out-patient was once seen leaving hospital struggling with an awkward looking sling—a nurse offered to readjust it and the patient gratefully said, ‘Thanks, Nurse, one of the young doctors put it on, but it don’t just seem to go some’ow’. These trifling incidents at least serve to break any possible monotony

By an old scholar of the
GENERAL Hospital Nursing Staff.

Current Medical Literature

Gentian Violet in Rheumatic Carditis

Seven of the ten cases of rheumatic carditis treated by intravenous injections of gentian violet are reported by Gunn. He injects from 25 to 50 c.c. of a 25% solution; 5 mgm. per kilo gram of body weight. Of the ten cases, eight were definitely improved, one was apparently un-influenced while one case did not receive a fair trial. From an examination of the results, it may be concluded that gentian violet opens a more hopeful future in the treatment of blood infections, and is worthy of a more extended trial.—*Lancet*. 15th Jan. 1927.

A simple method of treating fractured clavicle

This method for which the writer claims no originality, is, he thinks, of French origin. The patient must be put to bed. No strapping and no appliances are required. Bring the side affected right to the edge of the bed and allow the arm to hang straight down to the floor, as if endeavouring to pick something. This position is maintained for 4 hrs. Patients find no difficulty in doing this. Then bring alongside the bed a chair with a pillow on it. The patient for the remainder of the treatment rests his elbow on this pillow in an easy position, but still with some slight drag on the shoulder. Correction of deformity is certain and accurate, no matter how bad, and union appears to be extra-ordinarily rapid. The most striking feature of the treatment is the comfort of the patient.—*Med. Journ. of Australia*, P. 485.

Vicarious Menstruation

Elkin reports the case of a woman who had suffered for 20 years with bleeding from various organs, including the eye. This bleeding was always coincident with menstruation. The cure of the condition by oophorectomy (performed for tubo-ovarian abscess) apparently proves that the extra-uterine bleeding was a menstrual phenomenon and the result of ovarian over-activity or dysfunction.—*Amer. Jour. of Obst. and Gn.*, Jan. 1927.

Treatment of Vomiting of Pregnancy

Of the 18 cases reported by Waters 13 were treated with high carbohydrate diet, saline hypodermoclyses, sufficient fluid intake, corpus luteum intravenously, and symptomatic treatment of various kinds before intravenous injections of glucose and insulin were used with curative effect. There was one recurrence which promptly responded to treatment. One injection caused cessation of vomiting in 14 patients within 24 hrs. and the average hospital duration of these was 13 days—*Amer. Jour. of Obst. and Gn.*, Jan. 1927.

Atropine plus Morphine in Treatment of Spasmodic Rigidity

Tonelf reports, among others, 10 cases of spasmodic contraction of the uterine cervix, in which atropine or belladonna combined with morphine were employed. The dose of atropine was 0.0005 gm.; that of belladonna was from 0.6 to 0.09 gm.; that of morphine, 0.02 or 0.03 gm. These doses were given within 4 to 6 hours. Toxic phenomena on the part of the woman or of the foetus were never observed. Suppression of spasms, and consequently of rigidity in the uterine cervix, favoured dilatation of the orifice, thus hastening the delivery. The usual obstetric interventions are indicated only after this treatment fails. Chloroform used in such cases did not exert an appreciable antispasmodic action.—*Gyn. et. Obst. Paris*.

The Relation of Pregnancy to General Diseases*

I. CARDIAC DISEASE.

BY J. M. MUNRO KERR, M.D.,

(Regius Professor of Midwifery, Glasgow University.)

The choice of the Committee in selecting cardiac disease in relation to pregnancy as one of the subjects for discussion in the Section of Obstetrics and Gynaecology is peculiarly appropriate, for, in Scotland at least, it will always be associated with the name of Angus Macdonald, whose early death was such a loss to the Edinburgh school of obstetrics.

Much has happened since Angus Macdonald's monograph appeared in

* Report from B. M. J. August 13-1927.

1878. Cardiology to-day is an infinitely more complex subject; the mechanical methods of diagnosis have been enormously developed. But with all the modern and more exact methods of diagnosis, the real test, the "acid test" of the journalists, still remains—the response the heart makes to the call of increased work, and if organically diseased and disturbed in function the response it makes to such simple methods of treatment as rest, suitable diet, and improved elimination.

In approaching the subject of cardiac disease in pregnancy, the first question which naturally arises is the effect pregnancy has upon the anatomy and physiology of the healthy heart. Considering the large number of investigators who have interested themselves in cardiology, one would have thought that by this time definite decisions would have been reached. But this is not so. Take the simple question of hypertrophy of the left ventricle during pregnancy: does it, or does it not, occur? Is there a work hypertrophy, or is the extra effort brought about by its latent reserve? Sir Thomas Oliver, writing the other day, states, "On the whole the consensus of medical opinion is that in pregnancy there is a slight increase in the size and weight of the heart, and my own experience confirms this." Sir James Mackenzie held the other view. Here are his words: "The assumption that the heart hypertrophies during pregnancy is not justified. All this additional work is met by a call upon the reserve force." The latest contribution to the subject which has come to my notice is by Jensen and Norgaard; it is entitled "Studies of the functional cardiac diseases and the essential cardiac hypertrophy in normal pregnancy," and is based upon observations in 239 cases of pregnancy. These authors state "The roentgenograms showed an increase in 60 per cent, of the pregnant while the electrocardiograms showed hypertrophy in all the cases examined. This means that a cardiac hypertrophy is of normal occurrence during pregnancy, and that it is associated with dilatation of the heart in about 60 per cent, of the cases."

Percussion gives little information except in gross cardiac enlargement, for during the later weeks of pregnancy the heart in health is displaced upwards and backwards, the apex beat being often felt in the fourth interspace, with the left margin of dullness displaced outwards.

As regards the physiology, again we find differences of opinion even on such a simple question as blood pressure. This undoubtedly is due in some instances to the fact that in pregnancy variations in blood pressure

readily occur from disturbances in metabolism, the toxæmias of pregnancy, etc. In normal pregnancy there is no increase in blood pressure. Next to the systematic examination of the urine, estimation of the blood pressure is probably the most important detail in the medical examination of the pregnant woman. We are all familiar with the danger signal of a distinct rise in blood pressure associated with the toxæmias; a distinct fall in blood pressure is also a danger signal.

The pulse rate is very easily disturbed in the later weeks of pregnancy. Slight exertion often produces a marked increase in the rate, which falls relatively slowly on resting. I have observed marked tachycardia in quite a number of cases, and in two with very pronounced enlargement of the thyroid gland. Paroxysmal tachycardia is occasionally encountered, and *per se* is not necessarily serious.

Lastly, there is the increase in the body weight, blood volume, and cardiac output—all playing a part in effecting variations in normal activity.

The functional disturbances which may occur are palpitation, tachycardia, slight cardiac irregularities, dyspnoea on exertion, soft blowing murmurs over the pulmonic area, and accentuation of the second sound. Some are undoubtedly mechanical, from pressure of the enlarging uterus; others, of a much more subtle origin, are caused by disturbed innervation, alterations in metabolism, and over-activity in the endocrine glands, more especially the thyroid.

Putting aside the cases in which there is no great difficulty in deciding that the disturbances are purely functional and not organic, we come to those of a definitely organic nature—the lesions associated with murmurs and irregularities of cardiac force and rhythm. Here we find a unanimity of opinion that it is the condition of the heart muscle which determines the seriousness of the lesion. This the cardiologists have taught us; but in dealing with pregnant women the problem is complicated by reason of the fact that pregnancy is associated in many instances with insidious metabolic disturbances and over-activities in the ductless glands, disturbances which in themselves may play an important part in aggravating a tendency to decompensation.

Within the last year several important contributions to our subject have been made by physicians and obstetricians. There are the remarks made by Price at the Annual Meeting last year; the interesting lecture by

Sir Thomas Oliver; the discussion on heart disease and pregnancy at the February meeting of the Midland Obstetrical and Gynaecological Society; and lastly, an important contribution by Lennie, made to the Sixth British Congress of Obstetrics and Gynaecology in Manchester in April of this year. Reading the remarks of the different contributors who introduced or took part in the discussions one finds a general consensus of opinion on such questions as (1) the gravity of the condition, (2) the distress signals manifested, and (3) the treatment to be employed. This highly satisfactory result has been reached by co-operation between physicians and obstetricians, and is a testimony to the value of co-operation in the consideration of problems that affect the domain of both these branches of medicine. Every maternity hospital should have its visiting physician. There is in the ante-natal wards of all maternity hospitals invaluable material for medical research.

Let me discuss the question under the headings just mentioned.

1. THE GRAVITY OF THE CONDITION

Our experience in the Royal Maternity Hospital in Glasgow is that cardiac disease takes heavy toll of its victims. In Lennie's series of 84 cases there were 19 deaths—that is, a mortality of 22 per cent. Other writers on the subject have recorded a lower, and many a higher, mortality rate. The figure is probably somewhere between 15 and 25 per cent. I give here a summary of the cardiac cases, 58 in all, admitted to the Glasgow Maternity Hospital during 1926. The records have been kept with particular care and supervised by Dr. Cruickshank.

Cardiac Cases, 1926.—During the year 1926 the cardiac cases admitted to the hospital numbered 58 (approximately 1.6 per cent. of all admissions). Of these patients 7 died in the wards and 51 were dismissed alive: 47 were delivered and 11 were undelivered; 39 of the patients were under ante-natal supervision; 16 were sent in as emergency cases, and 3 applied for admission at the onset of labour; 5 of the fatal cases had been under ante-natal treatment and the remaining 2 were emergencies.

Mode of Delivery.—As stated previously, 47 of the 58 cardiac cases were delivered, and the mode of delivery was as follows:

Spontaneous delivery (including spontaneous abortion)	30
Forceps delivery	6
Induction (including two abortions)	4
Caesarean section	6
Hysterectomy	1
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Spontaneous Delivery.—In 30 cases there was spontaneous delivery, with 3 maternal deaths, 1 abortion, 1 stillbirth, and 28 live-born children (29 including twins): 1 premature child died.

Forceps Delivery.—In the 6 cases of forceps delivery there were no maternal deaths and no stillbirths, but 1 premature child died some days after delivery.

Induction.—All 4 cases of induction were under ante-natal treatment. One was an induced abortion, and 3 were induced near term; 3 living, though premature, infants were obtained.

Caesarean Section.—All 6 mothers delivered by Caesarean section recovered. One had been sent in as an emergency, and the others were treated in the ante-natal wards: 4 living, and 2 stillborn, children were delivered.

Hysterectomy.—The 1 case of hysterectomy (at the third month) resulted in the recovery of the mother.

Fatal Cases.—Seven of the 58 cardiac cases resulted in the death of the mother. The youngest of these 7 patients was 27, the eldest was 44, and the mean age was 32.3 years. The parity of the fatal cases ranged from 3 to 9, with a mean of 4.6 pregnancies. All the fatal cases were examples of mitral disease, and 2 had definite auricular fibrillation. There were two examples of ulcerative endocarditis. The mode of delivery in the fatal cases was as follows:

Mode of Delivery in 7 Fatal Cases.

Spontaneous	...	...	...	...	2
Forceps	...	...	...	...	Nil
Induction	...	...	...	...	2
Caesarean section	...	...	...	...	Nil
Hysterectomy	...	...	...	...	Nil
Not delivered	...	...	...	...	3

2. EVIDENCES OF APPROACHING DANGER

In many cases, although there is an improvement in this direction in recent years, decompensation had reached an advanced stage at the time of admission. It is very desirable that cardiac cases should be sent into hospital early, so that ordinary medical remedies may have a fair trial.

In patients with failing compensation who improved in the early months and were allowed to leave hospital prior to delivery, recurrence of decompensation was much more difficult to correct, and in some cases was impossible on the subsequent admission.

Undoubtedly all evidence indicates a general tendency to earlier and more pronounced decompensation with each succeeding pregnancy. Specially anxious must one be if, prior to the pregnancy, there is a history of unsatisfactory compensation, or a compensation readily unbalanced by slight exertion or any mild intercurrent ailment.

As already mentioned the condition of the myocardium calls for first consideration. In judging of this the opinion of a physician is of inestimable value to the obstetrician. Mackenzie states that "evidences of heart failure are to be found not in the examination of the organ but in the manner in which the circulation is maintained in the different organs of the body." Thus dusky skin of the face, slight increase in the respirations, occasional crepitation at the bases of the lungs, and breathlessness on slight exertion, are often more important indications than occasional cardiac irregularity that a heart is beginning to find the strain too great. Generally speaking, at this stage, with careful nursing, dieting, etc., the pregnancy, labour, and puerperium can be safely negotiated. Less certain is the outlook and prognosis when cyanosis, œdema, and albuminuria are present, and when crepitation is continuous. We get a considerable number of cases sent into the wards at this stage, and it has always been my practice in such cases, no matter what the nature of the cardiac lesion, to try for a week or ten days the effect of the recognized treatment for cardiac decompensation. If no improvement results the pregnancy is terminated. Patients the subjects of cardiac disease improve very soon, if they are going to improve, so that a week or ten days is almost always sufficient.

Where the decompensation is more pronounced, the heart is enlarged, and other organs are markedly disturbed as a result of a weakening myocardium, the sooner the pregnancy is terminated the better.

Only a word or two is necessary regarding the various valvular lesions from one whose knowledge of cardiology is limited.

Aortic Regurgitation.—I have seen comparatively few examples of this lesion. Relatively speaking, they are not very common in pregnant women. Lennie's figures for the Glasgow Maternity Hospital show its occurrence in 4.7 per cent. All writers are agreed that decompensation in this condition is very serious. Especially grave is a much enlarged heart with a "Corrigan" pulse. With good compensation I have seen several women pass through pregnancy and labour with comparatively little disturbance. But even in the absence of marked decompensation I should be inclined to terminate pregnancy if moderate effort produced distress. For with aortic regurgitation, once distinct decompensation develops it is generally impossible to arrest the progress downhill. The immediate prognosis and the treatment are comparatively simple, therefore, with this particular lesion, and operative treatment should not be too long delayed.

Mitral Regurgitation.—I have had many cases of mitral regurgitation under my care. My personal experience is that if the condition of the cardiac muscle is satisfactory the prognosis is good both as regards the pregnancy and the labour. This is borne out by Lennie's figures—one death in 17 cases (7.1 per cent.) of simple mitral regurgitation contrasting with a fatality of 24.5 per cent. for mitral stenosis. It is seldom difficult, therefore, to decide when a patient with simple mitral regurgitation may be safely left to continue in her pregnancy.

Mitral Stenosis.—This lesion has always seemed to me the most difficult to gauge; as a clinical study it is much the most interesting of all the cardiac murmurs. Of the grave examples of cardiac disease complicating pregnancy it is the one which most frequently gives us concern during pregnancy and labour. My own personal experience of this lesion has led me to view with grave concern any example of the condition where there was marked cardiac irregularity, crepitation at the bases of the lungs, breathlessness on the least exertion, and especially if these symptoms were not relieved by simple treatment. The danger signals have been wonderfully described by a great master. Chapter IX of *Heart Disease in Pregnancy* is most fascinating reading. The story of how, as the disease progresses, the murmurs change in character, auricular fibrillations and other features appear, seems to me a

perfect example of exact clinical observation. Very interesting, too, are the remarks of Price at last year's meeting of this Section.

3. TREATMENT

I now turn to the treatment of this condition, and more particularly to the obstetric treatment, for this is a subject regarding which there are differences of opinion amongst obstetricians and rather vague views are held by many physicians. While in a considerable number of instances a damaged heart stands to the strain of pregnancy to a surprising degree and no obstetric intervention except shortening the second stage by forceps delivery is necessary, there are undoubtedly many exceptions. The mistake, therefore, may be made of delaying obstetric treatment too long, just as there may be the mistake in initiating it too soon. Here I would again emphasize the importance of co-operation between physician and obstetrician. It is quite unnecessary to describe in detail the management of a cardiac case in pregnancy where the cardiac condition justifies one in adopting an attitude of watchfulness and employing ordinary medical remedies. I feel my contribution to the discussion will be most useful if I refer to my own clinical experiences in the grave examples of cardiac disease. I will presume that the physician and obstetrician have consulted, ordinary medical treatment has been employed and proved inadequate, and it is decided that the symptoms indicate that the pregnancy should be terminated. How is it to be done?

At the outset permit me to state that operative intervention—that is to say, the artificial termination of pregnancy—is not infrequently the immediate cause of the patient's death: (1) because it is too long delayed; (2) because the most suitable method is not employed. The first of these causes I have already mentioned, and the fatalities due to it, although not so numerous to-day as formerly, are not inconsiderable. We obstetricians still encounter in our private and hospital work too many examples of cardiac disease in pregnant women where the question of terminating the pregnancy should have been considered much earlier. As regards the second cause—the method of terminating the pregnancy—I find that many consulting physicians and general practitioners are not fully alive to the importance of selecting the method which will cause the patient the least amount of shock. Many consulting physicians and general practitioners

think that emptying the uterus is a simple procedure, but this is not the case. In the early months induction of abortion necessitates dilating the cervix prior to removal of the ovum. All are familiar with the fact that stretching or dilating a sphincter has a very pronounced depressive effect on the heart, especially if it is done rapidly. If to avoid this one employs the more gradual method by tents—a common procedure ten or fifteen years ago—time is lost. Further, although one can introduce laminaria tents without an anaesthetic in a multipara, it is difficult to do this in a primipara and at the same time take every precaution against septic infection. I have long been convinced, therefore, that where the uterus has to be emptied in the early months vaginal hysterotomy (vaginal Caesarean section) should be employed. It is a comparatively simple operation, can be performed in ten or fifteen minutes, at one "sitting," and is attended with little shock.

In terminating a pregnancy in the later weeks the ordinary procedure is to induce labour by bougies. This in a multipara is not difficult, and can often be done without anaesthetizing the patient; but in a primipara it is much harder, because the cervix is closed and must be dilated to a slight extent, unless one is going to employ the simplest of all methods—rupture of the membranes. Besides, prior to carrying out these manipulations, it is very important that the canal should be disinfected, and this is not easy in a primipara unless she is anaesthetized. But there is another and even greater objection to induction of labour—namely, that there is no guarantee that one or two days may not elapse before labour starts. Thus the patient, already in a critical condition, is, if the ordinary method is employed, faced with the disturbance from the anaesthesia, the nervous tension of waiting for the labour to start, and, finally, the strain of the labour. It is not surprising, therefore, that the results from this method of treatment are, generally speaking, unsatisfactory. In Lennie's group of cases this method shows a mortality of 44 per cent., whilst in Cruickshank's table for last year the mortality was 50 per cent. Similar unsatisfactory results have led many of us to advocate Caesarean section, and it gives me special pleasure to tell you that Lennie's figures for Caesarean section in 17 cases show a mortality of 11 per cent, while last year in the 6 cases in which this operation was performed, there were no deaths. As further evidence of the wisdom of selecting this operation I would remark that some of the worst cases admit-

ted to the hospital were treated by this purely surgical procedure. I feel convinced we shall see in the future Caesarean section the accepted treatment for grave cardiac conditions where pregnancy has to be terminated in the later months. There is one peculiar advantage of abdominal Caesarean section for this condition—it permits the operator to sterilize the patient by excising a portion of the Fallopian tubes. He may even perform hysterectomy and conserve the ovaries if he deems this advisable. Undoubtedly there is something to be said for bringing about a cessation of the menstrual discharge while conserving ovarian function.

As regards cases in which labour comes on spontaneously, in many of them the termination is satisfactory if they are left alone, or if the second stage is shortened by forceps. In the cases for last year spontaneous delivery took place in 30 cases with 2 deaths (6 per cent.), and forceps delivery was employed in 6 cases with no deaths. But I feel convinced that in a number of the graver examples of cardiac disease it is a wiser procedure to employ Caesarean section. Particularly does this apply to primiparae, for delivery of a primipara with forceps in order to shorten the second stage produces distinct shock: the child has to be dragged through the vagina not previously dilated.

As you will see from the above record of cases, forcible dilatation of the cervix, manually or by instruments, was not employed. I know few conditions for which accouchement force is suitable, and certainly cardiac disease is not one of them. The unsatisfactory results from accouchement force are illustrated in Lennie's series, where this method of treatment shows a mortality of 50 per cent.

It is generally believed in this country that the parturient runs little if any danger from chloroform, and this has been my experience. But it would be folly to maintain, as some have done, that chloroform is the ideal anaesthetic for patients suffering from cardiac disease. I would like to have the views of expert anaesthetists on this subject. The more I operate the more importance do I attach to the administration of the anaesthetic. I am convinced that the anaesthesia induced by the "finished artist" not only materially lessens the ordinary discomforts following operation, but very decidedly affects the mortality and morbidity.

I cannot conclude this paper without referring to the fatalities in the puerperium. Anyone who has had to deal with a large number of cases of

cardiac disease complicating pregnancy must have experienced the disappointment of fatalities occurring three or four days after labour. The pregnancy and labour are satisfactorily tided over, all seems well after the delivery and on the day following, and even on the second and third days, and then failing compensation sets in and nothing can be done to save the patient. Angus Macdonald refers to this, and every observant clinician is aware of it. What is the explanation? I have often spoken to my students about it, and I have now and again been able to let them see the disaster occurring. Two special factors probably play a part in this particular type of decompensation: (a) a degeneration of the hypertrophied muscle fibres; and (b) absorption from the decidual debris in the uterus. Further, at the *post-mortem* examination in a number of cases there are distinct evidences of an acute endocarditis superimposed on the chronic valve lesion. Cruickshank refers to two examples of this in the summary of the cases already given.

The patient suffering from cardiac disease must receive, therefore in puerperium every particular care and attention.

II.—Tuberculosis

BY E. RIST, M. D. PARIS.

It is a curious fact that the very unfavourable influence exerted upon lung tuberculosis by pregnancy should have been completely overlooked in the past, and that, at the present day, there should still be a small proportion of physicians who doubt it, or even deny it. Hippocrates believed that pregnancy was the best cure for consumption, and his, to us very surprising, opinion was followed blindly along the twenty centuries during which medicine was hardly anything else than a dogmatic systematization of the Hippocratic creed. We, of course, know better now, and the serious aspect of the coincidence of pregnancy with tuberculosis has become a matter for study and research. There is no sane physician, I am sure, who would not strongly object now a days to a tuberculous girl being married. But there are perhaps still some who would object more on account of the menace to the progeny than of the danger to the expectant mother. And we still hear occasionally of medical men who, while admitting that there is such a

danger, nevertheless believe that it has been, to a certain extent, exaggerated, and that a note-worthy proportion of consumptive women are able to bear children without having to pay a heavy tax for it.

I have been interested in that problem for many years, and after having carefully read whatever arguments have been put forward in order to minimize the awkward effects of pregnancy upon tuberculosis I came to the conclusion that the principal causes for such divergence of opinions lay in the somewhat loose conditions of our diagnostic criteria. It has been one of the lessons of the great war that we have realized how necessary it is that we should revise those criteria, and that we should adjust our clinical methods of diagnosis to the far-reaching discoveries which, at the beginning of the present century, have so completely transformed our ideas concerning the pathology of tuberculosis. Since we have learned to discriminate between tuberculous infection of the adult, which in civilized countries is nearly universal, and tuberculous disease, which develops only in a small proportion of the infected adults, we are no longer justified in endeavouring, as we formerly did, to make the diagnosis and the early treatment of tuberculosis coincide as nearly as possible with the initial stage of infection. We must rely, therefore, less on general and functional symptoms, to which such a decisive importance was attached in the near past, than on positive signs—the demonstration of a definite lesion on an x-ray plate and tubercle bacilli in the sputum being, as a general rule, the most fundamental of those signs. Previous to the war we all complained that a large proportion of tuberculous disease of the lung was overlooked and mistaken for some other morbid condition. That this is still going on we sadly know; but to many of us it came as a surprise that, by using more correct diagnostic criteria, we should find that the reverse error was by no means less common—namely that a considerable proportion of morbid conditions, some very harmless, some serious were in ordinary practice mistaken for tuberculosis and unduly treated as such.

Now if we read some of the papers where the association of tuberculosis with pregnancy is regarded as being only exceptionally harmful, we may observe that the diagnostic criteria used by their authors are generally very disputable; they are of a vague and purely symptomatic character, and we get the impression that, among the favourable cases, a few only were really and positively tuberculous. When, however, statistics are based upon reliable diagnostic criteria they

invariably show that pregnancy in a tuberculous woman leads to an aggravation of symptoms, to the extension of existing lesions, to the production of fresh ones, and to the flaring up of those which were quiescent. Death may occur during the course of pregnancy or after a premature or mature birth. The mother may survive confinement for some time, but her condition has become definitely and permanently worse. The few exceptions to this rule concern women who had a markedly fibrotic and obviously mild form of tuberculosis.

Summing up last year with my assistant, Dr. Andler, the cases which had been followed in my hospital department since 1919, concerning women, who being already affected with some form of lung tuberculosis, had become pregnant, I found a total number of 52. Among them 12 had only one lung affected, 40 had a bilateral tuberculosis. The fate of these 52 women can be summarized as follows:

Condition unchanged, but incurable	... 8=15.3%
Condition worse	... 44=84.6%
Death after one year	... 19=36.5%
Death after two years	... 26=50.0%

In 2 cases the women died during the last three months of pregnancy; one woman died during the first week after confinement, 6 died during the first three months after confinement. I presume that almost all of the "worse" cases have since passed into the "deceased" group. The symptoms and signs of an aggravation of the tuberculous process may appear at any time during the course of pregnancy. A considerable number of cases turn suddenly worse immediately after confinement.

But this does not give us an insight into the more important side of the problem; the largest proportion of facts where tuberculosis is associated with pregnancy is not made up of cases where an already tuberculous woman becomes pregnant. For obvious reasons such cases are rather seldom observed. A woman who knows that she is affected with tuberculosis, or who simply, feels in a condition of bad health, generally avoids pregnancy.

We meet much more frequently with women who, previous to becoming pregnant, were in good health, and in whom the symptoms and signs of tuberculosis of the lungs appear either during the course of pregnancy or immediately after confinement or during the first three

or four months following confinement. In the statistical survey previously mentioned I find 117 such cases.

In a first group of 11 women the generally acute and sudden onset of tuberculosis was coincident with the beginning of pregnancy :

Condition unchanged	...	2
Condition worse	...	9
Death at end of first year	...	6
Death at end of second year	...	7

In a second group we find 22 women who became consumptive during the first three months of pregnancy :

Condition unchanged	...	2
Condition worse	...	20
Death at end of first year	...	9
Death at end of second year	...	13

In a third group of 22 women the onset of tuberculosis occurred in the last six months of pregnancy :

Condition unchanged	...	2
Condition worse	...	20
Death at end of first year	...	7
Death at end of second year	...	12
Death after the second year	...	16

If we sum up these three groups, including all the cases where the onset of tuberculosis occurred during the course of pregnancy, we get the following figures :

Condition unchanged	...	6 = 10.9%
Condition worse	...	49 = 89.09%
Death rate after one year	...	41.8%
Death rate after two years	...	58.1%

Our fourth and last group concerns 62 cases, where the onset of tuberculosis followed confinement either immediately or during the first six months. There is no doubt that the previous pregnancy was a determining factor in the incidence of tuberculosis in such cases ; 55 out of them had both lungs affected, 7 only one ; 12 had died at the end of the first year, 5 more at the end of the second year, 7 more still later ; 8 only are more or less quiescent. Therefore, among the 117 cases where tuberculosis began either during pregnancy or shortly after pregnancy, 60 (51.2 per cent.) died after two years ; 43 (36.7 per cent.) were still alive in a severe condition, leaving little hope of recovery ; a large number of these have probably died since this survey

was made. But we must not forget that even in the 14 temporarily arrested or quiescent cases, representing 11.9 per cent. of the total, pregnancy was the determining cause in the onset of tuberculosis.

It is a matter of common observation among physicians who specialize in the treatment of consumption that there is no circumstance more likely to disturb the healing process determined by a sufficient air and rest cure, or by a successful artificial pneumothorax, than the occurrence of pregnancy. The flaring up of the disease may be only temporary ; it may be limited to the reappearance of some bacilli in the sputum, which had remained sterile for a long period before, to a transient loss of weight with abnormal temperatures. But it may also be, and it too often is, quite serious, characterized by the rapid extension of the existing lesions or by the appearance of severe lesions in the hitherto sound contralateral lung. Many a woman who had the most favourable prospects for making a complete recovery has lost all her chances and has died because of an intervening pregnancy. Conversely, I know of no better criterion of complete and permanent healing of a once confirmed tuberculous lesion in a woman than the fact that she has been able to bear a child without having to suffer from any recurrence of symptoms or signs of her lung disease.

(To be continued)

Case Reports*

TUBERCULOUS STRICTURE OF THE OESOPHAGUS

The oesophagus normally presents a strong resistance to invasion by the bacillus of tuberculosis. The relative rarity of tuberculous infection of the oesophagus is remarkable when considered in relation to the proximity of this organ to the easily invaded lungs, and the fact that its mucosa is so commonly bathed by infectious sputum.

A man, aged 46, merchant by occupation, whose family and marital history had no apparent relationship to his trouble, presented himself for examination on November 30, 1926, complaining of dysphagia of five months' duration. In 1922 he had suffered from influenza, which was followed three weeks later by pneumonia. He had been confined to bed for two weeks, and during convalescence the sputum became blood-stained and contained tubercle bacilli. Three weeks after the onset of the pneumonia an ischio-rectal abscess and fistula-in-ano developed, which, after draining for eight weeks, was promptly cured by operation. Thereafter the man felt very well, maintained his weight and did not cough. In September, 1925, he had an attack of herpes zoster, which induced weakness and moderate expectoration of sputum containing tubercle bacilli. There was no appreciable loss of weight, but weakness and fever persisted and the patient went to Florida for the winter. In December he had a cold for ten days, followed by severe sore throat and pain on swallowing solids or liquids. During January, 1926, a severe cough developed, which sometimes induced emesis and was productive of much sputum. The sore throat persisted, and the patient lost weight until May, 1926, when he entered a sanatorium. An ulcer was then discovered in the region of the vocal cords. During the first few months in the sanatorium he gained 14 pounds, and soreness disappeared from the throat. Six weeks later he began to have difficulty in swallowing, with some regurgitation of food into the nasal passages. Fluids caused less difficulty than solids. The dysphagia and loss of weight and strength gradually progressed. In October, 1926, an oesophageal stricture was found and dilated, and radium treatment was

* From the Mayo Clinic, Rochester, Minnesota. The Amer. Review of Tuberc.

instituted. The patient was then able to swallow well for ten days. Three weeks later a second treatment by radium afforded slight relief from the dysphagia for two days. Twelve days later the cough increased and a pulmonary haemorrhage, with loss of about 120 cc. of blood, occurred. The temperature rose about 1.5° for five days, and the fatigue and weakness continued.

The patient was 6 feet, 1.25 inches tall, and weighed 137 pounds, 10 lb. less than his former usual weight. The systolic blood pressure was 124, the diastolic 75, the pulse rate 80, and the morning temperature 97.8°. Examination of the chest revealed infiltration without moisture in the upper lobe of the right lung. Urinalysis gave essentially negative information. Haemoglobin estimation by the Dare method gave a normal value of 75 per cent. Erythrocytes numbered 4,600,000 and leucocytes 12,400. The Wasserman reaction was negative. Tubercle bacilli were found in the sputum. Roentgenological examination of the chest revealed extensive tuberculous involvement of both lungs, with cavities in the left upper lobe. A roentgenogram of the oesophagus demonstrated a stricture at the level of the fourth cervical vertebra. No evidence of a lesion was observed in the larynx or hypopharynx.

On oesophagoscopic examination, a pale, firm, almost cartilaginous lesion was found obstructing the lumen of the upper oesophagus. There was moderate necrosis, but little tendency to bleed, even when a specimen was removed for microscopic examination. It was thought that the lesion was probably tuberculous, but a malignant lesion that had been altered by irradiation was also considered in making the differential diagnosis. Microscopic examination of a specimen of removed tissue showed it to be tuberculous.

On December 4, 1926, dilatation of the stricture with a 38 French sound was accomplished without difficulty. This afforded complete relief from dysphagia, and the patient gained rapidly in weight and strength. On January 11 and February 1 the stretching was repeated. The patient was then referred to a sanatorium for treatment, and was advised to have a sound passed through the stricture whenever closure was sufficient to interfere with deglutition. As sounds could be passed without much trauma, this method of management was considered less hazardous and more comfortable to the patient than gastrostomy.

Cerebral Tuberculosis in Adults*

B. M. RANDOLPH AND THOMAS CAJIGAS.

The general impression received by the medical profession of a generation ago was that tuberculosis of the brain and its membranes, except as a terminal feature of generalized tuberculosis, was rather peculiar to infancy and childhood. While those who do a large number of routine autopsies are aware that its occurrence in adult life is by no means exceptional, it may be that the frequency of adult cerebral tuberculosis is not adequately realized.

The hypothesis of Roemer and his school, that tuberculosis in the human being is a childhood infection, that later infections are auto-reinfections, and that, after primary childhood infection, there exists an immunity against infection from without, is not accepted to-day as confidently as was the case ten years ago; still, in the majority of cases, it seems to accord with the clinical facts. The struggle of the infant to deal with initial infection without the presence of acquired immunity seems to furnish a natural explanation of why acute and disseminated forms of the disease are to be met with more frequently in the young than in older persons, who have acquired a relative immunity through their experience in dealing with earlier infection.

Such earlier infection does not, however, ensure adults against the development of metastatic lesions of tuberculosis later in life, and, in view of the number of cases involving the brain and its membranes which have occurred in our clinic in recent years, we have thought it worth while to report the cases that have come under our observation. Further-more, there are certain features which have appeared, which are not consonant with the generally accepted behaviour of tuberculous infection, and to which we feel that attention should be drawn.

The cases reported herewith have all occurred in the past two years.

7. (H. N. 42,893.) Female, aged 56, accountant, admitted May 21, 1926. No previous serious illness, except that in childhood

* Case reports read before the Medical Society of the District of Columbia, Washington, March 17, 1927. Amer. Rev. of Tub. July, 1927.

Cerebral Tuberculosis in Adults

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she fell and hurt right hip. This was followed by shortening of the limb. She wore a plaster cast at that time for three months. In October, 1925, she fell and injured her right breast, which became inflamed and painful. Was operated on in January, 1926, the inflamed mass being removed and the wound drained. Pathological report was to the effect that the lesion was a galatocoele, and that there was no malignancy. The pain in the breast has persisted, and the hand and arm have been swollen. The morning of the day of admission she received a hypodermic injection for headache. She complains of severe occipital headache, and recurrent vomiting. The pupils are contracted. Breathing is hurried, and she is somewhat dyspnoeic. Temperature 100.6°, pulse 70, respiration 22. Patellar reflexes not obtained. May 22: The eyeballs seem prominent and tense, and slight pressure causes pain, more so on the left. Pupils react to light and accommodation. No functional disturbance of the cranial nerves. Co-ordination good. Romberg sign positive. Mental state normal. No peripheral sensory disturbances elicited; no ankle clonus, Kernig or Babinski obtained. The right side could not be tested for Kernig's sign because of old hip disease (evidently tuberculous). The temperature, which was subnormal on admission, had now risen to 99.4°. Leucocytes 12,000; polymorphonuclears, 96 per cent. *Eye-Grounds* (Dr. Tibbets): *Right*: Pupil reacts slightly to light and accommodation: Movements and tension normal. No cupped disc. Haziness of optic nerve due to swelling of fibres, more marked on nasal half. Vessels normal, No exudate or haemorrhage. *Left*: Haziness of the disc more marked than in right eye. Otherwise the same. Tentative *diagnosis* at this date, intracranial lesion, probably of left side. To be considered are abscess, neoplasm and meningitis. *Spinal Fluid* (May 26): Pressure 14 mm. Hg. Wasserman negative. Cells, 279; polymorphonuclears, 51 per cent; lymphocytes, 49 per cent. Globulin, 4 plus. Cultures and smears negative. May 28: Oedema of the disc without elevation in right eye. Left eye shows more oedema than right, and the veins are more tortuous than normal. The diagnosis now appeared to be tuberculous meningitis, but it was felt that abscess had not been excluded. As the patient was rapidly getting worse, it was decided to open the skull and explore. If the case was one of tuberculosis, it would be inevitably fatal, and, if a surgical condition, early operation was indicated to get the best chance of saving life and vision. We thought it possible that even in the presence of tuberculosis, relief of the intracranial pressure

might prove of benefit. May 28: Dr. Charles S. White, under ethylene anaesthesia, removed a large bone-flap from the left temporal region. Clear subdural fluid present. Brain oedematous, and bulged forcibly into the wound. No tubercles seen; exploration with needle revealed no abscess or growth. Wound closed without drainage. For the first few days after the operation, cerebral symptoms seemed to improve. The temperature, which had been ranging between 101° and 102°, declined the next day to subnormal, and for three days the maximum was not over 100°. The patient now developed an acute cystitis, which for a while was her chief source of discomfort. June 3: Eye examination gave the impression that there was less oedema in both eyes than before operation, though there was still more in left than in the right. In the last five days the cerebral symptoms became more marked, and the pulse, respiratory rate and temperature increased. In the final twenty-four hours the temperature climbed to 106°, the pulse to 145, and the respiration to 52.

She died June 7, 1926.

Autopsy: Showed tubercle bacilli in brain substance.

8: (H. N. 42,903; seen with Dr. Lockett.) Admitted May 22, 1926; female, aged 30, school teacher. Has had mild pulmonary tuberculosis for several years. Developed heavy cold three weeks ago. Following the cold, developed dizziness, nausea, vomiting and intense headache. Also rigidity of the neck, somnolence and obtunded intellect. Temperature 100.6°, pulse 70, respiration 20. Examination, May 23: Patient lying on left side; eyes and lips closed. Moans when disturbed. Resists attempts to examine eyes. Pupils are equal and react to light. Patellar reflexes absent. No Babinski or ankle clonus. Kernig positive on right; negative on left. Brudzinski's sign positive. Stiffness and some retraction of neck with pain on attempt to flex the head. *Eye Examination:* Pupils react to light and accommodation, left pupil slightly less than right. No nystagmus. Marked limitation of movement in all directions. Both eye-grounds normal. No oedema of the nerve head. Area around the right disc slightly paler than in left eye; not pathological. (Examination followed spinal puncture with removal of 60 c.c. of fluid. Dr. DeSaussure.) *Blood:* May 22: leucocytes 12,200; polymorphonuclears, 94 per cent. May 24: leucocytes, 17,600. Chemical Examination showed no abnormality. *Spinal Fluid:* May 26: Pressure, 29 mm. Hg. Reduced to 12 mm. Hg. on removal of 50 c.c. of fluid. Cells, 200; polymorphonuclears, 50 per cent; lymphocytes, 44

per cent. Globulin, 3 plus. Kahn test negative. Smears negative for tubercle bacilli. June 3: Cell count, 266; polymorphonuclears, 37 per cent; lymphocytes, 63 per cent. *Bacillus tuberculosis* positive in direct smears. There was an irregular continued fever, temperature falling to normal or below on two occasions. The third day before death there began a progressive rise, which reached 106.2° the day of death. At this time the pulse was so rapid and weak it could not be counted. Terminal respiratory rate 40.

The patient died June 3. No autopsy.

Certain interesting points are brought out by this study:

(1) In all our cases of acute cerebral tuberculosis there has been a blood leucocytosis with a high polymorphonuclear percentage. The lowest count seen is 8,400, and the highest 24,000; the average, 15,444; polymorphonuclears, lowest 81 per cent, highest 90 per cent, and average 88 per cent. In view of the general impression that tuberculous infection is characterized by a larger proportion of lymphoid elements than the normal, the observation is an important one. We have noted the same blood picture in acute miliary tuberculosis, and have learned to discount the blood count in separating other infections from acute tuberculosis. Lymphocytosis in tuberculosis occurs in the chronic types, just as it often does in chronic streptococcus infections.

(2) With a proper technique we expect to find tubercle bacilli in direct smears from the spinal fluid. In only two cases did we fail to find the micro-organism, and in these only a single spinal puncture was made. In the others it was found in the first or second tapping. To a certain extent the chances of finding the bacillus increase with the degree of pleocytosis. As the outcome is invariably fatal, the only practical value of a diagnosis before death is to establish the prognosis, and to save the patient futile and trying therapeutic procedures. In cases in which the diagnosis is not made from examination of the spinal fluid, guinea-pig inoculation ultimately settles the question, but, as a rule, this result is not obtained till after death.

The cell count was increased in all cases, pleocytosis usually being more marked as the disease progressed. The relative percentage of polymorphonuclears varies. The lymphocytes are usually in excess, sometimes two to one, but in some cases this figure is reversed, the polymorphonuclears predominating. The globulin content was consistently high, more or less rising with the cell count.

(3) The clinical picture of tuberculous meningitis is extremely

variable. Almost any neurological abnormality may be present or absent. Generally speaking, the predominating features are severe and unremitting headache, with fever; though in one case fever did not appear till the day of death, and in another not until two days after the diagnosis from the spinal fluid had been made. Almost always there is stiffness of the neck, diffuse hyperaesthesia and increased reflex irritability, but as the disease progresses these symptoms may rapidly disappear.

The fever is sometimes regularly remittent, but more often it is completely irregular, both as to degree and rhythm. The pulse is usually normal or slowed at the beginning, but becomes rapid as the vitality fails. The respiration is not accelerated in the early stages, but is so later.

The eye-grounds may be negative at first, but the early examination usually shows evidence of increased intracranial pressure in one or both eyes. It is our belief that, except in those cases in which the meningitis is a terminal phenomenon in generalized tuberculosis, it arises from a cerebral focus already present. Autopsy in these cases does not usually reveal any evidence of unhealed or recent tuberculosis elsewhere in the body, and the clinical history supports the hypothesis that the meningitis arises from a cerebral focus. In case 7 tubercle bacilli were found in the brain substance. In a case reported by Randolph before the Washington Society for Nervous and Mental Diseases in 1921,* there was gross cerebral involvement and secondary meningitis. In case 9 of this series the history of months of uncontrollable headache before the development of symptoms of active meningitis indicates that this case almost certainly had cerebral as well as meningeal involvement.

(4) Autopsy on these subjects often reveals one large tubercle in the brain substance, from the size and structure of which it is apparent that it has existed for possibly several months. This may explain the long period of headaches prior to the typical onset of symptoms of meningitis. The meningeal involvement is always by young tubercles of the miliary type, widely diffused throughout the leptomeninges and with accumulation of fibrin at the base of brain and distinctly a process of rather short duration.

* A case of tuberculoma of left frontal lobe of brain, AMERICAN REVIEW OF TUBERCULOSIS, 1921, v. 665.

Items of Interest

The blanket was first made and used by Thomas Blanket, a Flemish merchant, in 1340.

Lighthouses on the Atlantic coast have been painted with large arrows pointing north, to help and guide aviators.

The loss to the world each year by the rusting of iron and steel is said to amount to £ 500,000,000.

An inch of rainfall is equivalent to 101 tons per acre, or approximately 14½ millions of gallons per square mile.

The highest railway in the world was inaugurated recently when M. Tardieu, Minister of Public Works, performed the opening ceremony of the railway up Mont Blanc.

At a recent exhibition of the Company of Gold and Silver Wire Drawers, a sample of gold wire drawn so fine that 3,500 yards weigh only 1 oz was exhibited.

Tiny electric light bulbs are mounted on the shafts of the newest surgeon's instruments. While the surgeon is performing an operation, the lamp directs a tiny circle of light into the wound.

There is a strange clock in the Polytechnic Institute at Zurich, Switzerland. It never needs to be wound, but is run by a mechanism set in motion every time the temperature changes two degrees.

Far out in the Atlantic, west of the Canary Islands, ships sometimes encounter sandstorms so thick that a layer of dust is deposited on the docks. Weather experts believe this dust comes from the Sahara Desert.

Bananas are said to exceed nearly any other fruit or vegetable in food values. They contain 460 calories per pound, as compared with potatoes, 385; milk, 325; macaroni, cooked, 415.

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The usual height at which swallows, wild ducks, geese, and other birds fly when travelling long distances is from 1,000 ft. to 2,500 ft. Cranes have been known to fly five miles above the earth.

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A savings bank in the form of a closed urn of baked clay with a slit in the top has been found in the ruins of Utica, an ancient Phoenician city on the African coast. It is believed to be 2,500 years old.

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Originally, handkerchiefs were made in all shapes and sizes. About, 140 years ago, however, a Royal decree was issued in France that all handkerchiefs should be square—because the Queen, Marie Antoinette, thought they looked neater in that shape!

* * * *

After a flight of 3,000 miles a homing pigeon was picked up wet and exhausted in a New York street. On one of its legs was a message telling that Dr. Edmund Heller, a famous naturalist, was lost in the Hoodoo Mountains of Yellowstone National Park, Wyoming.

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On the South Sea Islands there lives the largest shell-fish in the world. Its shell is frequently a foot or more in diameter. If a wader accidentally puts his foot on the creature when the shell is open, the shell will snap shut, and it is said that men have been held in this way until the tide rose and drowned them.

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Gleanings

Tansfusion of blood

Formerly one of the best football players of the Cerele Francaise, a young Parisian sportsman, Raymond Briez, aged 29, is believed to hold world's record for transfusion of blood. During the past two years he has given his blood to 181 patients, most of them in desperate conditions. The quantity of blood taken from his body for transfusion amounts to 80 pints. Since July 3 he has submitted to 21 operations giving 10 pints of blood. "My body is a remarkable blood producer" said M. Briez, in an interview, "I seem to be able to 'make' blood as others make verses. I am able to renew all my blood within a month. My record was three transfusions in one day." He said he was not giving his blood with the hope of financial profit, and he is very happy to know that he has saved many lives.

New York reducing diphtheria menace

WASHINGTON.—The American Association for Medical Progress reported recently that the diphtheria hazard for children has been minimized with the development of an effective means of protecting them on a large scale.

Approximately 500,000 children were reported to have been immunized in New York, where the toxin-antitoxin campaign was begun about five years ago. The resultant decrease in diphtheria cases was estimated at 34 per cent over the previous five years, while diphtheria deaths were reported to have declined 41 per cent in the same period.

The pamphlet said this represented a saving of more than 450 lives for each year.

Ancients Died of Same Afflictions

LONDON.—People 3,000 years ago suffered from the same diseases which afflict moderns, according to information presented to the British Medical Association. Mummies have been found in Egypt showing signs of rheumatism, gout, pneumonia, tuberculosis, and pyorrhea. It is said that a bust of Alexander the Great indicates that he had spinal meningitis when the bust was made.

Tricks of The Brain

Playing The Piano While Asleep.—A servant girl, who could scarcely write, was heard to talk in her sleep nightly. She was placed under observation, and a professor discovered that she talked in Greek and Latin. It was found that her first situation was with an eccentric scholar who was in the habit of pacing about his study declaiming aloud extracts from the classics. The girl had subconsciously memorized passages of this literature, which she seemed only capable of reproducing in her sleep.

There was a nurse-maid who had no talent for singing in her waking moments, but sang operatic airs in her sleep. The sounds seemed to proceed from her throat only and were very thin, as though coming from a distance, while there was little or no movement of the lips. No explanation was forthcoming as to where the girl had learned these melodies.

Still another girl, who had never had a musical education, could play the piano beautifully in her sleep, although she did not know one note from another when she was awake. Was she drawing upon some strange dream memory, or from some former incarnation?

Frau Assmann was a peasant woman who produced remarkable pastel drawings when blindfolded and in a state of trance. They were accurate and beautiful in colour, but had an Eastern rather than a Western quality. She did not know what a pastel drawing was when awake, and had never had any teaching in art.

The papers recorded a case only a few years ago of a charwoman who composed poetry in her sleep, and was actually able to remember it when she awoke.

Buildings of London Decay

London—British scientists are confronted with what they consider a very serious problem in the crumbling away of hundreds of London buildings.

Nearly all London's most famous buildings are suffering from the

Gleanings

decay. Westminster Abbey is never free of scaffolding and pieces of scaffolding and pieces of stone fall every day from the House of Parliament.

The department of scientific and industrial research has appointed a committee to investigate the cause of the trouble, but it has been unable to find a solution.

The contributing causes of the crumbling, experts say, are the sulphuric acid in London atmosphere through the use of coal, the city's rain water and presence of bacteria and plants in the stone.

The material mainly used in London—especially of the older type of buildings—is limestone, which easily decays from the effect of acid. The sulphuric compounds in the air mix with the lime and this combination causes the decay.

The Human Heart.

The sound of the human heart beat was amplified ten million times before the American Medical Association meeting in convention at Washington recently. This was the greatest sound amplification ever achieved in history.

In the Washington auditorium building, hundreds listened spellbound while sounds like a giant treading an empty hall filled the entire structure. Out in the street pedestrians paused and listened to what sounded like distant cannon fire.

The main purpose of the development of the instrument,—an electric stethoscope,—was the treatment of heart disease.

Machine to feel the Pulse.

How you react to surprise, fear, love, liquor, coffee or cigarettes is said to be revealed with scientific accuracy by a new "Vitality Metre" invented by a professor University of Berlin, to record graphically the rate and the nature of heart pulses. Attached to the wrist of the person being examined, a sensitive doctor transmits to a recording paper drum every heart action and vibration of the nervous system. Far more delicately can a physician feel your pulse with this machine, it is said than with his own fingers. Dr. Rudolf Goldschmidt one time scientific adviser to the Kaiser, is the inventor of the instrument. (*Popular Science*).

Tunes played by light rays on Novel Instrument.

Light was converted into sound and made to play tunes in a demons-

tration before members of the New York electrical society. Rays from small lamps were passed through tiny holes in a rotating metal disc and were transformed into electrical impulses amplified by loud-speaking units. A button control to turn the different lights on and off was provided (*Popular Mechanics*.)

Collected by K. N. Murthi.

Medical College and Association Notes

The graduates' reception this year is quite unique in that the Surgeon General with the Government of Madras has delivered the address to the graduates, a report of which is reproduced below from the *Madras Mail* of 29th Aug. 1927. "The Madras Medical College was on fete on Saturday afternoon when the College Association was At Home to the new graduates of the year who have passed out of the college. The premises of the college were tastefully decorated for the occasion but owing to inclement weather tea and refreshments were served indoors, after which an adjournment was made to the Biology lecture hall, where the reception was held.

Almost all the Professors and Lecturers of the college were present, besides several old boys. Prominent among those present were, Major-General F. H. G. Hutchinson C.I.E. I.M.S., the Surgeon-General and Mrs. Hutchinson. Lieut-Colonels Hingston, Bradfield and Leslie, Major and Mrs. Newcomb, Major Pandalai and Captains Basu, Verdon and DeSouza.

After a welcome song, the Surgeon-General, addressing the graduates, made a lengthy speech. After congratulating the new graduates on their success and the College Association on the splendid reception. General Hutchinson traced the origin and growth of medical science and expatiated upon the duties of medical men. He said that medicine had its birth in the East but those great men of by-gone days could not improve upon their knowledge for want of sufficient materials for research work.

Referring to the vexed question of the day, regarding the recognition of their University degree by the General Medical Council of Great Britain, the Surgeon-General said that the question was not a racial one, for it was only in the best interests of the advancement of the science of medicine that the General Medical Council had made certain stipulations and they were asked to come up to that standard. Regarding the intellectual side, he said that the Madras students were in no way inferior to the students of medicine in any part of the world. The same was the case with regard to the Professors and teachers in their colleges, but the difficulty mainly lay with regard to the want of facilities for research in practical medicine and once these

facilities were afforded he was sure there would be no question of the General Medical Council refusing recognition. He hoped however, that ere long their colleges would be fully equipped with excellent laboratories where all branches of medicine could be thoroughly and exhaustively dealt with.

Continuing, the Surgeon-General asked the graduates to always remember their college where they spent the best days of their life in study and to increase their sphere of usefulness with zealous study in the cause of the advancement of medical science by becoming members of medical societies having such aims.

Dr. S. T. Achar, on behalf of the outgoing graduates, thanked the College Association for the entertainment and said, the memory of their doings in the college and hospital would ever be green in their minds wherever they be. He was glad that they had in General Hutchinson a good, great and generous Surgeon-General who was always willing to render them every help.

The speeches over, an interesting variety entertainment was given and much appreciated. Mention should, however, be made of the veena solo by the sisters Misses Kanthamani and Santhasundari. Comic dialogue by Messrs. Condillac and Shunker and the part played by Mr. N. Srinivasan as "Lord Subramanya" and "Hunter" in the enactment of scenes from "Valli." Sergeant Major Hanumantha Rao the Secretary of the College Association, was mainly responsible for the success of the function.

With a vote of thanks to the Surgeon-General proposed by Lieut. Col. C. A. F. Hingston, C.I.E., I.M.S., the Principal of the College, the pleasant function terminated with the singing of the Indian National Song and the National Anthem."

Hardly we have closed the first issue of our Magazine with an in memorium of our late Mr. Lakshmanan, we were shocked to hear another calamity, in the death of Mr. M. Balakrishna Naidu, a student of fourth year class, whose photo we could not reproduce here, as a recent photo of his could not be secured. However, we express our deep regret and sympathy with the bereaved family.

Our Principal has been kind enough to permit us to invite Mahatma Gandhi to our college but owing to his delicate health and

want of time he could not comply with our request. It may be that we will be able to bring him to our college when he visits Madras next.

The Executive Committee of the Association has met and decided (1) to request the Government through our Principal for a Common Room for Students; (2) to raise funds for furnishing it and making other necessary improvements. The first attempt in this direction will be a benefit performance to be kindly given by the Madras Andhra Nataka Sabha, in aid of our Association. So far we could see, the authorities concerned, our Principal and the kind Surgeon-General are in full sympathy with our needs and we fervently hope a Common Room for us will be soon materialised. We are anxiously awaiting reply from our Principal to the letter addressed to him by our Vice-President Dr. K. G. Pandalai on the question of the Common Room.

With regret we note that our U. T. C. contingent has not maintained its usual level at the annual camp at Bangalore. This is partly due to the inevitable absence of our officer, Lt. M. G. Kinni M.C., and a number of our best men who were prevented from attending the camp on account of the University examinations. We are glad to note that Mr. Narayanaswamy of our college has won the sports champion cup at the camp and we congratulate him on this.

In Lighter Vein

Pool Ripples

Jones :—"Sorry, old man, that my hen got loose and scratched up your garden."

Smith :—"That's all right ; my dog ate your hen."

Jones :—"Fine ! I just ran over your dog and killed him."

Mrs. Grubb (after a tiff) : "When I married you I didn't know you were such a coward. I thought you were a brave man."

Grubb :—"So did everybody else."

George :—"Does your wife pick all of your suits for you ?"

John :—"No". Just the pockets.

Husband :—"You accuse me of reckless extravagance. When did I ever make a useless purchase ?"

Wife :—"Why, there's that fire extinguisher you bought a year ago. We have never used it once."

A schoolmaster, attempting to teach a class of boys the composition of sentences, said to them, "If I ask you, 'What have I in my hand?' you must not answer, 'Chalk,' but compose a complete sentence, such as 'You have a piece of chalk in your hand.' Now we will continue. What have I on my feet ?"

"Boots," was the immediate answer.

"Wrong. You haven't listened to my directions."

"Shoes !" came the next suggestion.

"You're quite wrong," said the teacher ; "guess again !"

"Stockings !" was proposed.

"No, no" Try again !"

Then a small boy got up and blurted, recklessly. "Corns !"

In Lighter Vein

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"Marie and I agreed that after we were married I should decide all major questions, and she would decide the minor ones."

"How has it worked out ?"

"We have been married three years, and I am grateful to say there have been no major questions."

Pity the Secretary

If the secretary writes a letter, it is too long.

If he sends a postcard, it's too short.

If he sends out a notice, he's a spendthrift.

If he doesn't send a notice, he is lazy.

If he attends a committee meeting, he is butting in.

If he stays away, he is a shirker.

If he duns the members for dues he is insulting.

If he fails to collect the dues, he is slipping.

If he asks for advice, he is incompetent ; and if he does not, he is bull-headed.

If he writes his reports complete, they are too long ; and if he condenses them, they are incomplete.

If he talks on a subject, he is trying to run things ; and if he remains quiet, he has lost interest in the institution.

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