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The Antiseptic

A MONTHLY MEDICAL JOURNAL

Edited by

DR. U. RAMA RAU & U. KRISHNA RAU, M.B., B.S.



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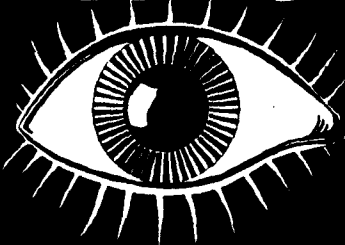
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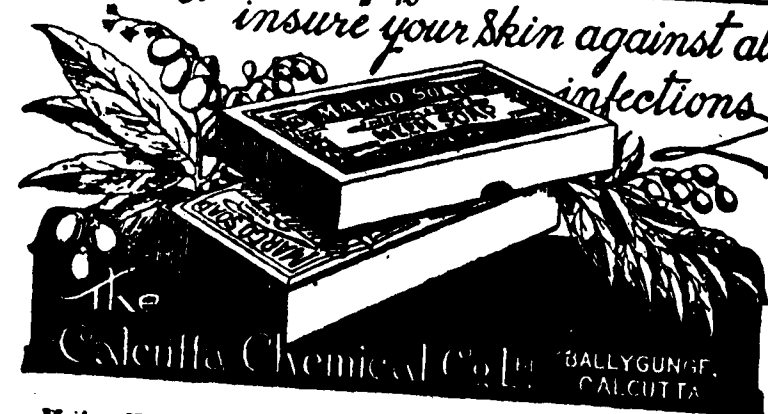
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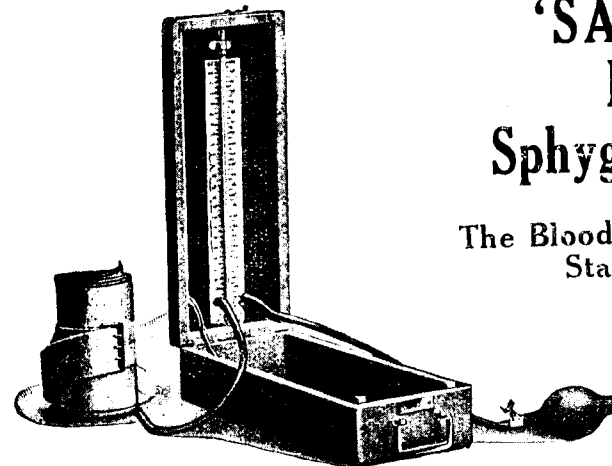
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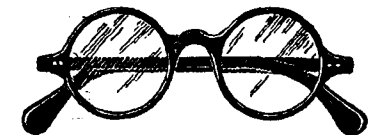
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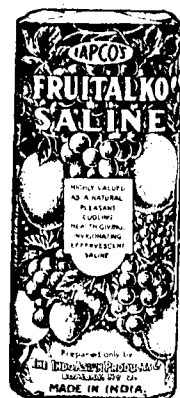
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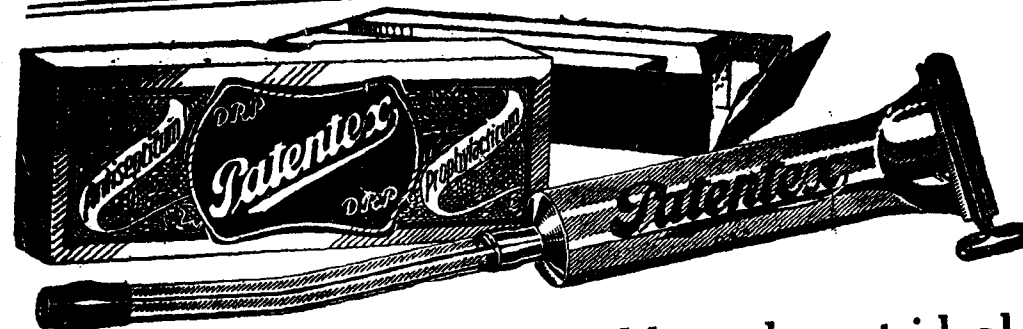
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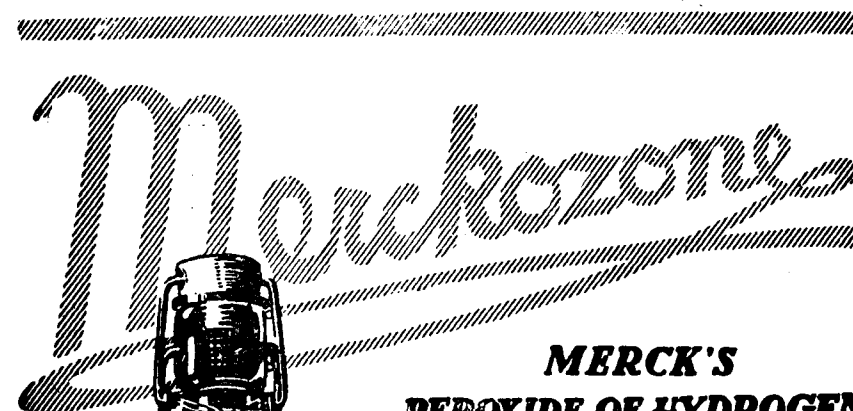
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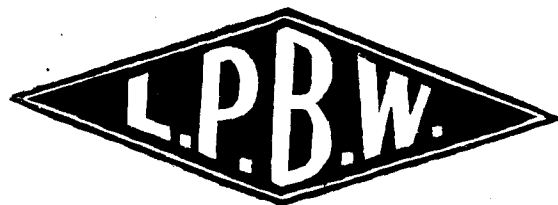
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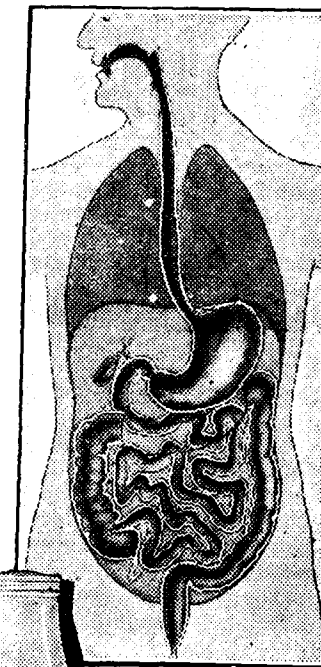
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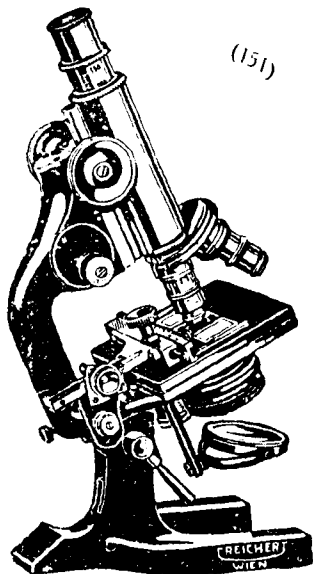
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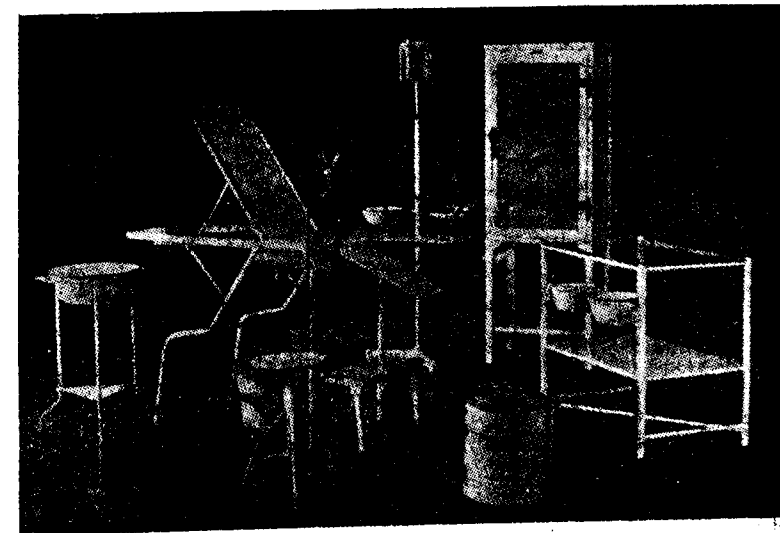
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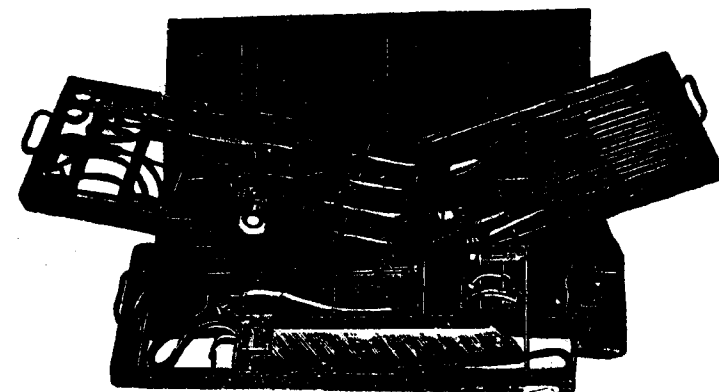
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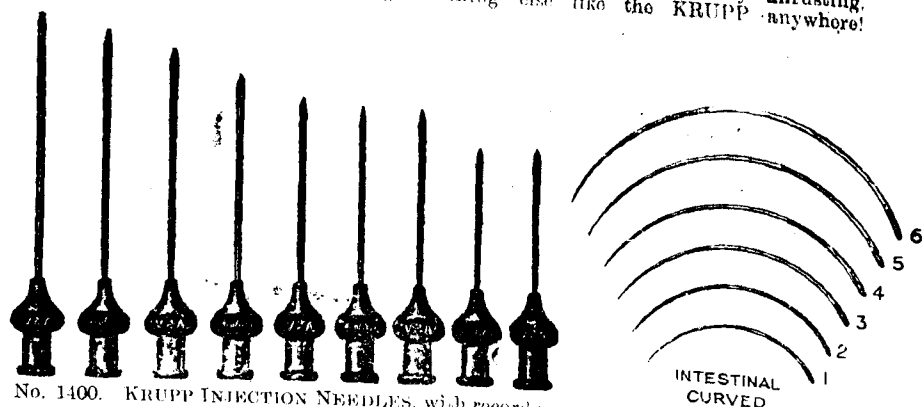
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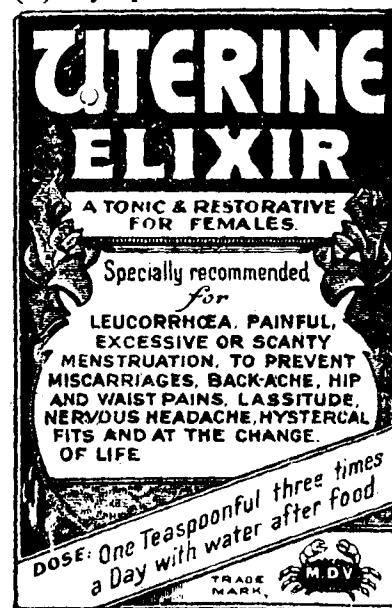


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ORIGINAL ARTICLES.

DIFFICULT SURGICAL PROBLEMS IN CHILDREN*

BY

DR. J. DURLABH DHURUV, M.S., F.R.C.S.E., D.L.O.

Surgeon to Sir J. J. Hospital Bombay.

(Continued from p. 723 'The Antiseptic' October '32.)

Part IV.

Empyema in Children

THIS is a disease which would be frequently encountered by a general practitioner amongst children. Very often, the child is brought for mere cough, wasting, obscure fever, diarrhoea or some complaint which the parents think would yield under medical treatment. Empyema is a disease of weak children. It rarely occurs in the robust and healthy. The child has suffered from some respiratory disease, e.g., Broncho Pneumonia, Capillary Bronchitis or some acute fevers and later on, the child develops an empyema. Rarely empyema is a manifestation of generalised Pyæmia. In this group of cases, recovery never occurs; the child has a severe septic focus somewhere in the body, either in a bone, tonsil or the abdominal cavity and empyema usually double is a part of the whole show.

It would be a good axiom to think of empyema when a child is brought for pyrexia of unknown origin, wasting diarrhoea, cough or peculiar breathing. Most of these cases are being daily

* Specially contributed to the 'Antiseptic'.

certified as broncho pneumonia. It is very difficult to inspect children's chest as they are seldom quiet when examined, and hence a bulging of the chest wall, hurried breathing, unequal mobility of either side of the chest may not be easily detectable. With better housing of the poor and increased care of our children, is it possible to reduce the incidence of this disease if not to eradicate it? We should hope that like osteomyelitis, empyema may be a disappearing disease.—*Wakely*.

Diagnosis would not be late or difficult if empyema is kept in mind when handling children. A thorough inspection of the chest gives the most valuable indications. *Empyema necessitans* is an evidence of a mixed disease. Very often, we encountered cases of localised bulging, abscesses in the chest wall, sinuses in the chest etc., when an empyema was found as the underlying cause.

In some cases, primary disease is in the lungs and then a bronchiectasis, foreign body, pulmonary abscess, pulmonary gangrene etc., may be the exciting factor. Empyema in such cases is a terminal phenomenon in a long drawn out pathological process.

Pointing of an empyema in the chest wall is an interesting anatomical study. Encysted and inter-lobar empyema are most difficult to detect and they defy both clinical diagnosis and perhaps treatment. We have found that similarly apical and anterior pus collections are more serious than posterior and basal ones. This should be so in view of the fact that the former are more difficult to drain, on account of their positions.

Most of the empyemata point in front and in the mammary line. A rupture in the fifth intercostal space is not uncommon. We have seen one case where a sinus next to the sternum led to an empyema cavity on the left side. Here the anterior intercostal membrane had given way. Rupture along superficial blood vessels and nerves is another possible occurrence. Adhesions in the pleural cavity suggest chronicity of the disease; they may also indicate specific causative organisms. Thus it was found that pneumococcal empyemata were full of adhesions while those of streptococcal origin were without them.

It would be found that a majority of these empyemata would burst below the pectoralis major. This is a fleshy sheet which offers a great barrier to their pointing above that level. Pulsating empyema may exist; it is certainly not very common. It is important to bear in mind that fever may be absent in empyema and it may be present in pure serous effusions. The incidence of fever depends upon the activity of the disease and upon the toxic

THE ANTISEPTIC—MARCH 1933



DIFFICULT SURGICAL PROBLEMS IN CHILDREN—J. DHURV.
1. Rodent ulcer. 2. Inherited Syphilis. 3. Ectopic Vesicle. 4. Fungating carcinoma.

absorption. In chronic empyema with thickened pleura, temperature would be absent. Dilatation of pupil on the affected side may occur due to irritation of the sympathetic. Very few clinicians have time enough to keep this in mind while studying a case of empyema by the bed side. Clinically a huge pericardial effusion may simulate a left sided pleural effusion. X-ray examination would clear up such a case. Vomiting, diarrhoea, abdominal pain may suggest acute abdomen. It is wise never to open a child's abdomen before percussion and an auscultation of the chest. Cerebral abscess, hemiplegia and amyloid disease are examples of neglected surgery and the teaching of these complications to our university students merely serve to indicate the very poor way in which such cases have been treated in the past. Prognosis of the disease is bad in children under two years, as these have very poor resistance. Children in whom pulmonary gangrene is co-existent or pyæmia is present with bilateral disease invariably succumb.

In these days, before an exploratory puncture, X-ray examination should be imperative, whenever possible. Such an examination would accurately suggest bone disease, condition of the heart, size of the cavity, adhesions, level of the fluid and the state of the lungs. This is certainly a great help and guide to an operator.

We have seen one case where both pleurae and the pericardium were affected one after the other with pus formation. This child had a protracted illness and it developed several abscesses in various parts of the body, which had to be incised from time to time. It was a case of pyæmia.

After diagnosis with clinical aid and X-ray, it may be difficult to demonstrate pus with an exploratory puncture. The needle is too narrow or the pus is too thick and even after several punctures, pus could not be demonstrated. Surgeons would remember cases where pus in deep-seated abscesses, liver, etc., may be difficult of demonstration by puncture but could only be indicated after a free incision. Empyema is no exception to this. We had shown pus in one child's chest where a colleague had declared 'no pus' after repeated exploratory punctures at various spots.

The proper treatment of empyema is aspiration from time to time till no more pus could be evacuated. If wasting, pyæmia, fever etc., continue in spite of repeated aspirations and the little patient is found going downhill, no time should be lost in free incision resection of a portion of a rib and draining the bottom part of the cavity by another lower, more dependent incision. (Fraser). This

is the ideal method. The cavity should be explored with the operator's finger, partitions broken down and the condition of the lung felt accurately. Very often, flatness of the chest wall points the way to fluid and this sign is an important guide to operators. It should be realised that most cases would yield to repeated aspirations and empyema should not be looked upon as an operation of emergency. This would be correct to say only for slowly-forming and medium-sized pus cavities. Here the respiratory embarrassment does not occur, as the pulmonary collapse is not sudden and complete.

One essential point in the technique of operation should be mentioned here and that is this: after incising the chest wall, the pleura should be completely mobilised before it is divided. This ensures rapid healing. In an average case, three weeks should suffice.

Early expansion of the lung is the key-note to success in this operation. Adhesions offer a great obstacle to such expansion. The patient must be induced to cough and have breathing exercises; crying helps lung-expansion and 'balloons' etc., to blow up should be given to the child for pulmonary exercises. Sitting posture is the best for such children after operation. In the night they should be made to lie on the affected side to help drainage. Empyema that ruptures into the bronchus may be coughed up and this could be helped by Trendelenburg's position. Such empyemata drain beautifully well.

Some empyemata would give trouble. Persistence of a sinus would suggest formation of a 'wheelrib'. In such cases, remove the 'wheel' and establish free drainage. Bacteriological aid in the treatment of empyema has but little place. Vaccines and sera cannot replace surgery. After everything is alright, the general condition of the patient could be improved by corresponding vaccines. Typing of organism in pneumococcal cases may help in a few selected patients. All these methods of treatment must be guided by personal experience, individual reasoning and common sense to achieve the best results.

MENIERE'S SYNDROME *

BY

DR. C. A. AMESUR, M. S. (Lond.): D. L. O. (Eng.) etc.

Honorary Surgeon, Civil Hospital, Karachi.

In 1861, Meniere published a report of his original case, in *Gazette Medicale de Paris*. This was a young girl who during menstruation after a cold drive, was suddenly attacked with extreme giddiness, absolute deafness, nausea and vomiting. Death occurred on the fifth day of her illness. The post-mortem revealed hæmorrhage in the semi-circular canals, a trace in the vestibule but none in cochlea. It is therefore that Meniere failed to explain the cause of absolute deafness without any abnormality in the cochlea.

Ruttin explains this by saying that as the lymphatic spaces of the inner ear are continuous, it is not possible if the disease has originated in labyrinth, to affect only one of its constituent parts *viz.* cochlea or vestibule.

For seventy years, the term Meniere has been loosely employed to devote a syndrome of unilateral deafness of sudden origin, vertigo and vomiting. By the term "Meniere's Syndrome" we mean the sudden onset of these symptoms, without assigning a cause to them, but at the same time keeping in mind that there may or may not be hæmorrhage in the labyrinth, more often there being none.

Etiology:—Both sexes are equally frequently attacked, and no age is immune. Earlier aural disease and inherited tendency to aural diseases play a certain part. Causes of this syndrome have been many and varied *e. g.* pernicious anaemia, nephritis and toxic absorptions from pyorrhoea, septic tonsils or gastro-intestinal stasis.

Kobrak regarded angio-neurotic disturbances in the labyrinth ("labyrinth stroke") as the cause, similar to the vascular disturbances in migraine and epilepsy. Krassnig is not satisfied with the angio-neurotic explanation because the impairment of hearing often lasts days or weeks longer than the vestibular symptoms, because this theory does not explain the predominance of the vestibular symptoms over those originating from the cochlea, which is more sensitive, because in migraine the attacks return at regular intervals, so that the comparison with migraine does not seem to

* Specially contributed to the Antiseptic.

hold good, and because the disturbances of the eye in migraine may last for weeks. All the same, the participation of vaso-motor factors in Meniere's disease is not denied. His point of view, however, is more nearly approached by a paper by Dida Dederding, in which it is pointed out that changes in the eustachian tube play a decisive part in Meniere's disease. In his cases Krassnig also found changes in the eustachian tube, and generally in the middle ear as well. The impaired hearing is explained by the affection of the eustachian tube, and as a rule the vestibular and cochlear symptoms could be influenced by the usual, and consequently causal treatment. The tubal changes as such are not alone responsible; concurrent inflammation in the tensor tympanic muscle also has some etiological importance. Its situation in the musculotubular canal makes this evident. It acts as a damper of sound, and perhaps also damps the waves of stimulation which reach the vestibular nerve. It is known that rapid changes of pressure in the middle ear can produce attacks of vertigo, and when the play of the muscles of middle ear is disturbed, the normal changes of pressure in the labyrinth are less well damped than usual.

Alexander thought it to be due to leukaemic haemorrhage, while Escat believed it to be due to, arterio-sclerosis of auditory artery. Thornval considered it to be due to disturbance in the centre situated in the medulla oblongata. Charcot (1874) and Dandy (1928) considered it to be due to changes in the auditory nerve and not of the semicircular canals. Aboulker thinks it to be due to hyper-tension of cerebro-spinal fluid in the lateral cisterns. Quix thinks that this hyper-tension acts on the otoliths via the ductus endo-lymphaticus. Portman believes that it is due to an increase in intra-labyrinthine pressure.

A questionnaire sent round to 83 patients who were being treated by Vogel for Meniere's disease produced the following information; 5 (=6%) suffered from hay-fever; 9 (=11%) from urticaria after eating strawberries, cherries, fish, crab, eggs, pyramidon or other drugs. No connection could be established between the time when the allergic symptoms appeared and the time when attacks of Meniere's disease occurred. 15 patients (=18%) suffered from non-allergic vasomotor rhinitis; 5 (=6%) from bronchial asthma; 14 (=17%) from cholangitis and cholecystitis; 4 (=5%) from gastric or duodenal ulcer; 3 (=4%) from epilepsy. Altogether 38 of the 83 showed one or more of the vegetative symptoms mentioned above. According to the patients' statements, Meniere's

disease existed among relatives in 7 cases (=8%). This shows that Meniere's disease is not an allergic symptom; but it often occurs in conjunction with conditions of irritation of the vegetative nervous system. Familial occurrence is rather rare.

Dida Dederding and Myging (1931) considered it to be due to faulty metabolism, resulting in overloading of body tissues and labyrinth, with fluid; the latter displaces the mobile stapes causing an apoplectiform attack of Meniere's vertigo. If 1000 c. c. of fluid be taken by such a patient, he will only secrete 600 c. c. in four hours, whereas a normal person will pass over 1000 c. c.

The syndrome consists of feeling of sea-sickness followed by an acute attack of sudden unilateral deafness with intense vertigo, tinnitus, nausea and vomiting. Slightest movement aggravates the symptoms. The attack is followed by prostration. During the attack, nystagmus is rare but may be on one or the other side or change from one side to the other as in McKenzie's case.

The symptoms vary from hour to hour and day to day, depending on the water content of the labyrinth. Rinne is negative, lower tone limit is raised, but high tone limit is normal. Turning and caloric tests show a poorly reacting labyrinth, whereas galvanic tests show a normal reacting nerve. As there is usually no nystagmus, one must assume especially from past pointing tests, that otolith organ is affected.

Treatment:—From the almost varied causes, it would appear that the treatment may be medicinal or surgical. Rest, bromides, chloral hydrate, etc., are recommended by Despons for treatment during attacks. In the intervals regulation of the general condition and medicinal treatment of cardio-vascular changes and of disturbances in the nervous regulation of the blood vessels are important.

Curschmann has treated a large number of cases with quinine sulphate for over 25 years. Among the 38 cases so treated by him only two were resistant to quinine. He emphasises that quinine must not be given only during and after an attack, but recommends continuous treatment in the periods when attacks may occur. Cases of hyper-sensitivity to quinine are best dealt with by slowly increasing dosage. He has never observed any gross ill-effects, and particularly he has never met an increase of deafness. It is therefore that he considers the effect of quinine in vestibular vertigo to be a vaso-motor effect and not a toxic effect on the cells.

Lampe gives 0.04 gm. papaverin. purum and 0.1 gm. Quin. mur. (sold as Monotrean, Luitpold Merck) His 37 patients be-

came free from attacks, and the remaining four were improved so that their condition became bearable. In some cases the drug must be taken for years (one case, for example, remained free from his very severe attacks for 6 years while taking one tablet a day. When he stopped the treatment for 4 weeks the symptoms returned, to disappear again when treatment was re-started).

Dederding and Mygind's researches show Meniere's syndrome is due to faulty water metabolism. This is not only fascinating, but I have had some startling results, in cases which I have treated on this basis. The chief underlying idea is to diminish the in-take of fluid and get rid of it, as much as possible, so much so that the patient is thirsty and loses his weight. This is brought about by avoiding vegetables and fruit which contain lots of water, no salt diet, limiting the intake of water to about a pint per day and very hot baths. Further diuresis should be brought about by an injection of 1 c. c. of salyrgan, which will lead to diuresis extending over two days, whereas in a normal individual it lasts for a day, followed by compensatory decrease on the 2nd day. Bulbocapnin O. 1 gram in 2 c. c. of sterile water injected sub-cutaneously a day may be sufficient not only to prevent vertigo, but improve the general and mental condition of the patient. This is a strong injection and usually produces depression lasting for half an hour during which patient should lie down. He can however go to work after that. After five to six injections give O. 1. gram per day by mouth for a fortnight, then for a week every other day, followed by twice a week for a fortnight. If these drugs are not available calomel at night and salts in the morning will do.

This water-logging condition may affect the cushion of the eustachian tube and it is therefore that these auditory tubes should be opened. The simplest from the patient's point of view is the Valsalva's test, failing which we should politzerize him twice a week. In a few cases this fails: then catheterisation of the auditory tubes will do the trick, and in a very few cases, dilatation of the same by eustachian bougies will be resorted to. Milligan found that this also failed in a few cases to open up the tubes; so he made an opening in the drum and began to dilate the tube from the middle ear to naso-pharynx. Finally as patients love a bottle of physic, it is as well to prescribe hydrobromic acid with quinine or glycerophosphates with iodides and bromides.

If this medicinal treatment fails, we must reduce labyrinthine fluid by operation. The simplest operation was introduced by Babinski and this is to reduce cerebro-spinal fluid by lumbar pun-

cture, thus reducing intra-cranial pressure on the saccus endolymphaticus, and so bringing about an equilibrium between the two inner ears. This invariably gives temporary relief. According to Quix it is better to do decompression over posterior cranial fossa behind mastoid than lumbar puncture. Others still hold that labyrinth could be drained by opening the external semicircular canal. This is too risky and the results are not promising.

Prof. Biehl in 1926 showed us that the oval window moves under control of tympanic muscles and the round window is only influenced by changes of pressure. Now according to this author, pressure only affects labyrinth. Thus affection to ossicles and fenestra ovalis cause greater impact. So pressure on the fenestra rotunda, which if less flexible sends the pressure back to fenestra ovalis, thus causing Meniere's syndrome. Therefore the indication for perforating the fenestra rotunda are cases of giddiness, headache with nystagmus and epiphora. The operation is not performed for deafness, chief points of the operation being the exposure of the promontary by paracentesis and then opening the window by chisel probe. Confine the patient to bed for four to six days and use sterilized dressings. The operation is followed by deafness which passes off gradually. The giddiness, equipoise etc., are also cured.

About this time, Prof. Portmann of Bordeaux suggested that in cases of serous labyrinthitis, which do not yield to medical treatment but there is still hyper-tension of the endolymph, one should do decompression of the labyrinth at the most accessible point viz. saccus endolymphaticus. This he likened to a puncture of cornea in glaucoma. The chief points of the operation are:—Trepine mastoid lower than schwartze's operation. Both incision and puncture of saccus endolymphaticus should be near adhesions. Atrophic saccus of old age may be reduced in size and be only near posterior semicircular canal; therefore if incision away from adhesions, saccus is missed and leptomeninges reached. Operate at contact of bony wall; then even atrophic saccus is found, and posterior semicircular canal is saved. If the opening is sealed, say after a year by adhesions, one should repeat the operation if vertigo is severe.

Mollison, in 1920, began to destroy the labyrinth in non-suppurative aural vertigo by either injecting pure carbolic acid or absolute alcohol in the external semicircular canal. He has since given up the former, but still gets good results with alcohol, the salient points of the technique of which are as

follows:—After cleaning the radical mastoid cavity with ether, the bony external canal is opened with a very fine gauge. Then he injects with a blunt lacrymal syringe, 1 c. c. of absolute alcohol. The injection should be made forwards so that alcohol reaches the vestibule. The puncture is closed by turning down a temporal muscle graft. The wound is closed, but drained for twenty-four hours.

Destruction of the labyrinth has been carried out successfully by Lake and Milligan, but cases in which cochlea is ablated, there is risk of septic meningitis.

There are two classical methods of labyrinth operation, one devised by Hinsberg and second by Neumann. In both, the radical mastoid is the first step. In Hinsberg's method, the external semicircular canal is opened up behind the facial nerve, while the vestibule is opened by the removal of the promontory in front of the nerve.

In Neumann's method after the radical mastoid, the Trautman's triangle is worked out. After this the bone is removed medial to the sigmoid sinus till posterior semicircular canal is found and opened after which the external canal is opened. Between the two openings of the former and one of the latter lies at some depth the vestibule which is opened up. Now with the back of the gauge towards the facial canal, thus avoiding its injury, open with one cut the promontory thus completing the operation.

Wallace and Marriage thinking that the labyrinth operation was severer than the section of the auditory nerve, performed the operation of the section of the auditory nerve, in a case of non-suppurative aural vertigo, thus cutting off the path of impulses from labyrinth to the brain; but unfortunately the patient did not live long enough to teach us the utility of this method.

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PSYCHOLOGICAL MEDICINE *

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(Continued from p. 102 The Antiseptic Vol. 30 No. 2, Feb. '33.)

Part VII

(1) Secondary insanities.

(a) *Insanities connected with Pellagra.* Mental symptoms in this disease are of a confusional character. Insomnia followed by loss of memory, dis-orientation, eventually stupor and dementia close the scene. Treatment consists of rest, sleep, nourishment and proper treatment of the primary disease.

(b) *Mental symptoms connected with intra-cranial tumours.*—These more often manifest themselves when the neoplasm is situated near the frontal lobes, and consist of confusion, somnolence, stupor, occasionally hallucinations of different senses and delusions of vague character. *Treatment.* Provided the granulomata is non-syphilitic, operative treatment either decompression or radical should be undertaken.

(c) *Insanities associated with syphilis.*—In the secondary stages of syphilis, mental symptoms are those of confusional insanity. General paralysis of insane now universally admitted to be of syphilitic origin, idiocy and juvenile general paralysis result of congenital syphilis. Mental symptoms associated with tabes dorsalis are other varieties of insanities directly due to syphilitic virus. Apart from the above, some 'phobias' not directly due to syphilitic virus but based upon ideas about syphilis, appear in some persons. These fears either consist of catching the disease, or in those who have had the disease of suffering from dire consequences of the disease.

(d) *Mental sequelae of Encephalitis lethargica.*—These are of protean character, and vary from slight feeble-mindedness to complete imbecility. The symptoms may commence during the active stage and be continued, or may for the first time appear months after the apparent recovery. Restriction of the field of activity, apathy with alteration of disposition sometimes approaching dementia præcox, complete reversion of the normal function of sleep in the form of boisterous wakefulness at night and irresistible

* Specially contributed to the Antiseptic.

sleep during day, development of various phobias, degrading perversions of character, maniacal and melancholic symptoms, conditions allied to exhaustion, neurosis, confusion, hallucinations and delusions have all been noticed.

(c) *Mental disorders associated with epilepsy.* These consist of :—

- (i) Psychic epileptic precursors.
- (ii) Psychic equivalents.
- (iii) Mental sequelæ of deterioration.

(i) Psychic epileptic precursors manifest themselves in a child going into fits of laughter or crying without cause, or a child suddenly running to her mother from some sense of fear. Early recognition of these is important from early treatment point of view.

(ii) Psychic equivalents. These comprise of episodic attacks analogous to somatic fits and may be associated (a) with somatic fits (b) occur independently.

(a) With somatic fits. These may precede, concur, or follow the fits. Thus aura of a fit may be mental. Hallucinations of special senses, or alteration in the patient's character are all known to be among precursors of fits. Mental symptoms occurring during attack are varied because the patient lies unconscious. Still, feeling of horror is affirmed by some patients, while following the attack, confusion, dis-orientation, and automatism are too well-known, and account for the alteration of character and conduct wholly unconnected with the normal course of the patient's life.

(b) Occurring independently of somatic seizures. These come on suddenly and rapidly, the patient becoming confused, dis-orientated in time and space. The void thus created is filled with hallucinations and delusions. Acts of violence are committed, of which the patient is completely incognisant afterwards. This alienation of such patients from their habitual self makes them most dangerous of insane persons. *Treatment.* This is the same as for somatic forms.

(2) Insanities associated with disorders of internal secretions

(a) *Disorders of the thyroid gland.*

(i) Myxœdema. Mental hebetude and loss of memory are the chief symptoms. Mental processes become slow and it may become impossible for the patient to arrive at a definite decision. Symptoms of confusional insanity with agitation, hallucinations and fleeting

delusions have been recorded. *Treatment.* Preparations of the thyroid gland should be administered.

(ii) Exophthalmic goitre. Mental agitation and emotional instability with disturbed sleep are the chief mental symptoms. The patient has a look of terror and anxiety and is very irritable. *Treatment.* This should be of the primary disease.

(b) *Disorders of the pituitary gland.*

Mental symptoms of confusion, melancholia with or without delusions have been observed associated with acromegaly.

(c) *Disorders of supra-renal and genital glands.*

Symptoms of torpor, lack of will, inertia, depression accompanying Addison's disease have often been observed; but the effects of genital glands on the mental states become apparent from the evidence of their success following administration of testicular and ovarian extracts in various functional disorders.

(3) Epochal insanities.

These are termed epochal because the incidence of these disorders is specially noticeable at certain periods of life.

(a) *Disorders associated with sexual life.*

The symptoms of these disorders are fundamentally those of syndromes described before e.g., confusional insanity, delusional insanity, mania etc.

(i) With puberty (average 12-20 years).

Ill-health, anxiety, overwork, masturbation, deficiency of internal secretions, inborn weakly disposition, faulty home education have all been suggested as factors in the aetiology. The symptoms consist of mere exaggeration of mental alteration accompanying physical growth and physical changes peculiar to the period of puberty—a process of evolution; or more positive mental symptoms may manifest themselves. Thus in the former group may be noticed fears about the burdens of the future, unusual moroseness, shyness and distaste of society. Expressions such as "life is a burden", "there is no joy in life", "I wish I could run away", "people do not understand me", are common. Slight perversions of character may become apparent, while the symptoms of the latter group are more allied to morbid mental syndromes of hebephrenic or catatonic forms of dementia præcox, confusional insanity, delusional insanity, melancholia etc. Between these two limits are cases which are termed "borderland". These present neurastheniform symptoms usually associated with masturbation, hypochondriacal fears usually connected with the genital organs, functional dis-

orders of hysterical forms, obsessions of scrupulosity in sexual and religious spheres, delinquencies of conduct like cruelty to animals and birds, theft, sexual crimes etc. *Treatment.* It is in conditions such as these that knowledge of psychological medicine is most important, and it is in states of this sort that preventive medicine is of utmost importance, and unfortunately is frequently ignored, delayed or misapplied. It is the parents who must understand the syndrome in the right spirit and not resent the remarks regarding neuropathic taint in the family. First item in the treatment is "right education". If this is to be successful, it should be carried out by those fully qualified to do so, and who know about the difficulty of such cases. I shall illustrate this point by an example. A young girl of a respectable family, aged 13 years was noticed by her elder sister to present "an exaggeration of affective tone of sadness". The elder sister had not the courage to communicate this perversion to her mother, which increased till assuming a morbid length, the patient one early morning quietly left the house, changed her clothes with a beggar woman, and went to the jungle. When she was found missing, a search was made by her father who was a government official, and she was found sitting under a tree in the jungle. After this incident the elder sister related the whole genesis of this morbidity to her parents. The father like a wise man immediately took steps in the right direction, and on analysis he found that the cause of his daughter's morbidity implanted in her a firm conviction that salvation lay in the jungle away from men's society. He therefore employed the services of a pandit, who was instructed to deliver sermons from the scriptures on "salvation lying in living within the world and discharging one's duties towards the world, without getting attached thereto". I know that this girl is now married, and is so devoutly attached to her husband that she herself considers this occurrence as a fit of insanity. The second point in treatment is "general hygiene". This term is so vaguely used that I shall explain what I understand by it. By general hygiene I mean proportionate and proper allowance of different elements and factors which conduce to the establishment of a healthy body and mind. Thus, rest and exercise, sleep and mental work, amount of work and physical exertion, character of foods and action of bowels, change of scene and companionship, should all be carefully and correctly balanced. The patient should be encouraged to obtain solution of his difficulties from his elders. In short, mental make-up and physical condition should both receive equal attention.

(4) Menstruation.

The mental aberration manifesting itself at this period is now supposed to be due to an auto-intoxication acting on a patient of a nervous diathesis. That there is retention of a poison, which is eliminated by the flux is amply proved by the increased toxicity of the blood serum of a patient just before the commencement of catamenial period. The symptoms vary between wide limits of slight degree of increased irritability or slight alteration of the affective tone in the form of excitation or depression on the one hand and typical symptoms of delusional insanity, confusional insanity with confusion, impulsiveness, obsessions, strong inclinations towards sexual satisfaction, theft, suicide etc., on the other hand. The disturbance is most pronounced during the catamenia and few days preceding and following the same. *Treatment.* Attention to general hygiene is important. Tone up the general system, combat chronic constipation which is very common, feed up the patient when it is found to be meagre, and give perfect rest during the catamenial period. I have found ammonium bromide and valerianates very useful.

(5) Menopause.

Just as the process of evolution during puberty is responsible for certain mental alterations, so is the process of involution terminating the biological functions of ovulation and child bearing a strain and cause of mental symptoms at this period of life. Loss of blood, auto-intoxication, want of balance on the part of hormones have also been suggested as contributing factors. Symptoms comprise of physical exhaustion with aches in the body and mental alteration ranging between alteration of the affective tone on one side and delusional insanity, confusional insanity, melancholia, definite syndromes on the other. *Treatment.* Attention to general hygiene and change of residence are recommended.

Disorders associated with child bearing.

(1) During pregnancy. There are two groups of persons afflicted with this disorder during the period of pregnancy and it is important that the physician should keep in mind this fact. In one group there is no predisposition, no family history of this disorder, and pregnancy itself is the sole cause. In group two, there is a marked predisposition already existing, while pregnancy only acts as a secondary factor. It is commonly known that the period of pregnancy is one of nervous instability, when tastes and desires wholly foreign and distasteful to the person in normal condition

are present. When the symptoms are more marked, they are those of confusional insanity in group one and of mania, melancholia, or both in group two. In the former case, the patient usually recovers, before or at the termination of pregnancy, while in the latter, no such recovery occurs. *Treatment.* Search should be made for any condition responsible for exhaustion, for focus of infection or intoxication and the same eliminated, eradicated or neutralized. Treatment should be given on lines of general hygiene. The question of termination of pregnancy depends upon (1) physical condition of the patient (2) on the assurance that pregnancy is the essential cause of mental disorder.

(2) During parturition and puerperum.

Symptoms occurring during parturition usually pass away when the baby is born; but those appearing during puerperum usually commence a fortnight after parturition, with insomnia, restlessness, agitation, confusion, even acute delirium and hallucinations. These symptoms are supposed to be due to exhaustion from loss of blood or from the strain of labour and allied to exhaustion psychosis. There may be local infection, in which case head-ache, fever, rapid pulse, hot and dry skin, parched lips, bright eyes, constipated bowels and perhaps foul lochia are also present. *Treatment.* If there is initial excitement, labour should be expedited and sedatives administered. In case of toxæmia, suitable treatment to combat and eliminate the same should be started. In cases of exhaustion, suitable measures as suggested under exhaustion psychosis should be adopted.

(6) Insanities of Involution.

These are associated with senility—premature as well as the result of old age, arterio-sclerosis and cerebral vascular lesions.

Insanity due to senility.

Psychical centres depend for their normal working on the healthy condition of the tissues. When these are worn away either by the brunt of old age which includes various auto-intoxications generated within the body or indiscretions of immoderate life like syphilis, alcohol and tobacco, accelerating the process of dissolution, it is natural that the concomitant working which includes various mental processes should be proportionately damaged. This mental derangement might so affect the highest centres as to result in loss of power without perversions; or perversions may set in as well due to unrestrained action of the lower centres, all depending upon the previous disposition of the affected temperament. It is every day knowledge of most of us to have come

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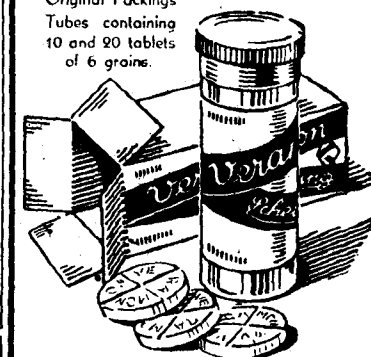
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across attenuation of the mental faculties in the old *e.g.*, diminution in the power of perception, attenuation in the powers of attention, enfeeblement in sentiments of hatred and affection, hesitancy in judgment and decision showing respectively failure of observation, memory, emotion, and will. If on this foundation of decay delusions develop, we may expect to find the whole range of psychical perversions right from mania and melancholia to complete dementia. *Treatment* consists in adjusting the patient's menu of life. Food should be proportionate to the powers of weakened digestion and work should be limited to the powers of bodily strength; recreation should be suitably adopted and so should all the activities of life be well proportioned. Most important point for the medical man to remember in this connection is that such patients on account of easy suggestibility are liable to bestow bounties on indulgent friends, relatives or attendants, exercise of which undue influence requires to be guarded against.

b. *Insanity due to arterio-sclerosis.*

'Man is as old as his arteries' is an adage which may aptly be applied here to represent senility not in terms of time but in terms of the condition of the blood vessels. Head-ache, giddiness and fatigue are three early symptoms. Alteration in the temper and disturbed sleep are 2 other signals of alarm, and when with these are coupled absurdities of character like inexplicable indifference or agitation, hallucinations and delusions, there should be no more doubt regarding the existence of mental aberration. Physical signs of arterio-sclerosis of the superficial arteries may or may not be present, because cerebral arterial disease can exist without there being any apparent sclerosis. The best criterion of the existence of cerebral arterial disease is the condition of the retinal vessels and it will not be out of place if I quote my late Prof. B. Bramwell of Edinburgh University who used to say "ophthalmoscope is to the brain what stethoscope is to the chest". It is not difficult to use an ophthalmoscope and it is necessary that every aspiring neurologist should be well versed in the use of this instrument. Myocardial degeneration, renal sclerosis, effects of vascular degeneration as paresis, bouts of aphasia, transient intermittent hemiplegia should also be borne in mind, while arriving at diagnosis of this condition.

c. *Insanity connected with cerebral vascular lesions.*

These include haemorrhage and thrombosis. The result of these accidents is similar to that of arterio-sclerosis in so far as they deprive the psychical centres of that which brings them

nourishment. Absurdities in character connected with arteriosclerosis have already been mentioned and it is sometimes observed that accentuation of these occurs for a few days preceding the stroke. Thus there may occur extreme inattention or much ado about trifles, forebodings and delinquencies of conduct, impulsive, absurd and improper behaviour. After the stroke, confusion, agnosia and aphasia may appear. The condition of the mental aberration usually persists although improvement may set in. *Treatment.* This consists of close watching and measures to combat the concomitant condition causing this kind of insanity.

Psychasthenia.

Psychasthenia may be defined as a state of perverse ideas, feelings and actions. It differs from the syndrome going by the name of neurasthenia in this respect that in psychasthenia (1) there is usually a hereditary history of some mental disorder (2) physical condition and physical health appears to be quite good, (3) there is no exciting cause like toxæmia, exhaustion etc., (4) tonic treatment of nerve exhaustion does not bring about cure and differs from abnormal mental states in which similar symptoms occur in this respect that there is full consciousness of dual personality in psychasthenia. Inborn deficiency coupled with home-unhappiness during early periods of life are two predominant factors in the aetiology. It has already been explained that our mental make-up is composed of acquisitions which are inborn as well as acquired. Acquired acquisitions consist of (a) those represented in the consciousness (b) those repressed and rendered latent in the subconsciousness. The latter are developed either due to their being immiscible with personality e.g., a Hindu widow with a strong desire for sexual satisfaction subjecting the same by arguments of immorality and therefore incompatible with her personal consciousness; or owing to incompatibility with notions acquired later e.g., child of a thief brought up in an atmosphere where theft is not considered an evil, later tries to forget and subject this early notion to the later-developed conception that theft is an evil. In a normal individual, these repressed ideas are forgotten; they no more obtrude and therefore affect the individual's thought or action. In the abnormal person, however, they affect the conscious thought and therefore produce symptoms, which in extreme cases cause exhaustion, confusional insanity or melancholia of the case of an English lady to be hereafter described under psycho-analysis. There may occur an exciting cause of a

trifling nature to flare up the latent factors. The most important symptoms are imperative ideas, obsessions and impulses. I shall illustrate these terms by examples. *Imperative idea* is an idea which persistently and unconnectively presses itself into the consciousness in spite of the individual trying to reject it. The idea in question has no connection with the ideas then prevailing, and he knows fully well that converting it into an act will serve no useful purpose. Still he cannot stop its ingress into the field of his consciousness. Thus I know of a boy to whom an idea constantly used to torment that he should conceal the shoes of the members of his house. So long as this idea is only an idea, it would be termed an "imperative idea". But if he actually had recourse to concealing the shoes i.e., compelled to convert the imperative idea into action it would be termed "*obsession*". Obsession may be of the above form as well as of negative nature i.e., revealing hesitancy of character, wavering will, scruples and fears, termed by the laity as "eccentricity". In this condition even matters of trivial nature initiate an argumentative process in the brain so that by the time any decision is arrived at, the opportunity for the performance of that particular act disappears. Fears may be of various kinds and have received different names e.g. claustrophobia i.e., fear of being shut in. A case of this sort was reported at Professor Bramwell's out-patient department in Edinburgh. He had a morbid fear of entering a railway carriage, and although he could not afford, he would travel by a taxi and pay much higher fare than travel by the cheaper train. Professor Bramwell subjected this case to psycho-analysis and found out that the genesis of the phobia was in his having vomited in the railway carriage many years before, and he had stopped travelling by the train since. Professor Bramwell explained to the man that his phobia was the result of sub-conscious fear creeping up when he thought of travelling by train, and that it had no solid ground. After this assurance, the patient had no further trouble and was ever grateful to the doctor. Agoraphobia, nosophobia, erythrophobia etc. and anxiety neurosis i.e., morbid anxieties regarding future evil happenings are fairly common in psychasthenics. *Impulse* is an action which has no preconceived idea at its back. Thus in the case of the boy above mentioned, if he straight away without previously thinking, concealed the shoes, it would be termed an impulse.

Let it be once again stressed what has been mentioned in the beginning of this subject that in psychasthenia there is a consciousness of dual personality i.e., there is no disorder of perception, or

loss of gear in time, space, and personal identity as it exists in other states of insanity. The patient is fully conscious of his foolish aberrations and recognises their morbid character although he cannot help it. *Treatment.* Psychotherapy is usually successful.

CASES AND COMMENTS

A FEW CASES OF SYNOVITIS WITH EFFUSION.

BY

SUDHIR CHANDRA ROY, L.M.F.,

Registered Medical Practitioner, (Bengal), Konda, Dacca.

Case No. 1: Mrs. Ghosh, a Hindu lady aged about 25 years under unbearable agony called me at night to examine her right knee-joint which was synovitis with effusion. Typical symptoms such as pain, tenderness, swelling and inflammatory fever were all present. Though young, she had previous rheumatic history. In order to combat with pain, I injected one ampoule of morphia—gr. $\frac{1}{4}$ et-atropina gr. $\frac{1}{100}$ with sodisalicyles mixture. As I found the day to be the 8th day of the disease, I asked the guardian to apply one antilamin on the affected joint and bandage. But on the following morning, I found the swelling etc., gone; she was quite well and had no complaint of the said joint up till now.

Case No. 2:—Mr. R. B. Das, a Hindu gentleman consulted me at the very onset of synovitis with effusion of his left knee-joint. I applied ice moderately for 48 hours on the affected part. He gave history of gonorrhoea. Urine on examination was found to be full of pus and gonococci. Vaccine treatment was adopted. Caffiaspirin and morphia et atropina ampoules were used to suppress pain. Bowels were kept open by purgatives; diuretic atophan, salicylas etc., were used, but swelling did not decrease; and as regards pain, it was only controlled by salicylates, caffiaspirin, and morphia et atropine for certain hours only. Being disgusted I consulted Dr. N. K. Guha on the 6th day who examining the patient advised antilamin application and bandage with addition and alteration of a few medicines. We treated him for another 7 days but to no effect, when Mr. Das continued his treatment under a Kaviraj and was with some difficulty cured in 2 months.

Case No. 3:—Mr. S. Rakshit, a Hindu gentleman of 70

came under my treatment for synovitis with effusion of the right knee-joint. He was treated at first under another physician. On the 4th day of his illness, I was called to alleviate his affliction. I applied a paste—Mag. sulph. $\frac{3}{4}$ xi, carbolic acid $\frac{3}{4}$ i and glycerine-1 lb. on the affected knee externally. I internally administered S. S. Mag sulph. B. D., with diuretic with much relief on the part of the patient. Bi-weekly milk injection (non-specific protein therapy) was also given to him. Next thing I observed that the synovitis had its origin from an injury in a toe; so I watched for septic symptom and I injected iodine, sodiacodylate and by mouth adrenalin chloride, syrup ferri-iodide and S. S. mag. sulph. After the pain had subsided, I aspirated the joint with strict aseptic measure. Swelling and all that disappeared rapidly. Complete recovery took one month's time.

Case No. 4:—Mrs. Das, a Hindu lady of 60 had one of her knee-joints affected with synovitis with effusion. All that I did was to administer salicylates, S.S. mag. sulph. and aspiration of the fluid under surgical guidance to affect her cure.

Case No. 5:—Mr. M. Dutt, a Hindu gentleman of 20, got one of his knee-joints affected with synovitis with effusion owing to trauma. On examining, I suspected it to be suppurated; so in order to investigate, I aspirated by a sterile needle and sucked out the fluid. It was pus. The joint was incised and the cavity was daily washed with sterile normal saline with an aseptic bandage. He became alright in three weeks with no deformity whatsoever.

Case No. 6:—Mr. N. Ali, a Muslim gentleman of 32 years with the affection of both knees and ankles. I simply administered S.S. mag. sulph. with diuretic and aspiration resulting in a fortnight's recovery.

Case No. 7:—Mr. H. Dutt, a Hindu boy of 16, one of his shoulder joints affected. When I was consulted, I pointed out to the treating physician to aspirate and purgation with S.S. mag. sulph. He took my hint and with progressive recovery of his patient.

Conclusive criticism:—As regards treatment of synovitis with effusion, elimination should be adopted; diuretic, purgative, judicious application of antilamin or mag. sulph. paste and lastly strict aseptic aspiration followed by encouraging results. The unexpected early cure of case No. 1 is rare; our failure in case No. 2 is probably due to non-aspiration and want of brisk purgation. Internally and externally mag. sulph. has got some anodyne effect; so I prefer mag sulph; non-specific protein therapy has got some value.

A CASE OF SARCOMA OF THE LOWER JAW AND ANOTHER OF THE UPPER JAW.

BY
SURESH CHANDRA DAS GUPTA, L. M. S. (CALD), M. A. C. P. (U. S. A.),
Senior Surgeon, Bir Hospital, Katmandu, Nepal.

Lower Jaw.

A Nepalese woman aged about 50 years was admitted to the female department of the Bir Hospital in 1931, for the treatment of a tumour of the lower jaw. She noticed the growth about 18 months ago, which developed very quickly, and in the course of an year nearly filled up the cavity of the mouth; and most of her teeth of the affected side were loose, and some had already fallen. She could not chew her food, or swallow even properly. After proper antisepsis of the mouth and cleansing of the teeth for a week or so, she was operated under general anaesthesia. A preliminary tracheotomy was performed to prevent blood entering air passages, and then the back of throat was tightly plugged with gauze also to prevent blood entering the air-passages. All the loose teeth and also the incisor teeth of the affected part were pulled out. Then an incision was made a little external to the median line over the lip which was divided up to the chin, and the incision was prolonged outwards along the lower margin of the jaw up to the lobule of the left ear. Next, the facial artery was secured between two ligatures and then the incision was up to the bone. The cheek together with all structures attached to the bone was reflected upwards. The lower jaw was next divided a little external to symphysis to preserve the shape of the chin as far as possible and save the genial tubercles and the margin origin of the genio-hyo-glossus muscle. The bone near the angle of the jaw was quite spongy, and the growth was shell-like in appearance outside and the masseter muscle covering the tumour was thinned out like a fascia, and much of which had to be sacrificed. The left of the lower jaw was separated carefully for the whole length from the surrounding structures (both internal and external) by blunt dissection and finally the mucous membrane was incised. Lastly the ligaments of the temporo-maxillary joint were severed and the jaw was removed. Then the bleeding points were secured and the indurated edges of the buccal mucous membrane were excised off and then stitched together with cat-gut. Mouth was cleaned out and the plugs removed from inside the throat. Next, the severed masseter and

internal pterygoid muscles were stitched together and anchored below with the platysma of the corresponding side by cat-gut. Finally, the external wound was closed by silkworm-stitches leaving a small drainage near the angle of jaw.

Drainage was removed after 48 hours. The cavity of the mouth was constantly syringed out with alkaline and antiseptic gargle every 4 hours, and occasionally swabbed with glycerin boric. The tracheotomy tube was removed after 3 days, and the wound healed up almost automatically. The patient made an uneventful recovery and was discharged after 4 weeks.

Upper Jaw.

The next case of sarcoma of the upper jaw came just after a couple of months: of course, a strange coincidence. You can see from the photo No. 3, the tumour affecting the whole of the upper jaw extending from the lower eye-lid to the margins of the teeth. The nasal bone and the palate of the same side were also affected. In photo No. 4 you can see the forceps holding the inferior surface of the palate (roof of the mouth) by the teeth.

Operation was performed under chloroform. Tracheotomy was performed as before, and the back of the throat was plugged. Anaesthesia was administered by means of rubber catheter through the tracheotomy tube. I divided the lip a little to the right of the middle line and secured the divided edges with polypus forceps. The orbital plate was not affected, so I made my incision over the inferior margin of the lower lid and prolonged it along the outer border of the nose up to the alae and then below the right nostril to meet the incision of the lip at right angles.

Then having dissected the cheek flap and duly reflected outwards, I proceeded to sever the bony connection. After separating the nasal bone which was affected, I divided the nasal process with a saw and next the orbital plate by means of chisel a little below the infra-orbital foramen and ending in the spheno-maxillary fissure. Then after dividing the mucous membrane on the under surface of the hard palate, I passed a keyhole saw into the right nares and cut down the palate and alveola as quickly as possible, care being taken not to injure the floor of the mouth. Last of all, I broke away the connection of the maxilla with the pterygoid process with a pair of angular bone forceps, and dislodged the bone with a lion forceps after severing the connection between hard and soft palate. Having secured all bleeding vessels in the soft parts, I quickly cauterized the bleeding points at bony parts. Finally I closed the

skin wound with sutures. Then the wound was dressed and bandaged. The external wound healed by first intention; but it took 3 weeks for the cavity to fill and heal. She was discharged after 5 weeks.

A CASE OF ACUTE INTESTINAL OBSTRUCTION.

BY

DURGA KUMAR SEN, L.M.P.,

Medical Officer, Kanaighat Dispensary, Sylhet.

A Hindu male aged 30 years was admitted into the Karinganj Hospital, Sylhet, for the treatment of acute intestinal obstruction on the 5th day of the disease and was brought home on the 6th day on 2-1-33 as it was declared that the prognosis might be fatal even after operation.

I was called to see the patient whose house is situated near my dispensary and found his condition as follows:—

There were signs of shock—*e.g.* weak pulse, pale face, cold and clammy sweat, subnormal temperature. The abdomen was highly distended, the distension being most marked in the flanks and the patient complained of intense pain in the region of the sigmoid flexure. There was stercoraceous vomiting. The urine was scanty and highly coloured.

I was told that enema was given everyday during those 5 days of the disease when the patient was under the treatment of other medical men at Karinganj. But this failed to give him relief. Neither flatus nor faeces had passed. The abdominal distension gradually increased and his condition became worse.

I paused for a while and learning the success of treatment of strangulated hernia by injection of atropine, I took the opportunity of trying injection of atropine in a case of internal strangulation as there was no time to spare and send the patient to a suitable hospital for operation.

Then, I injected $\frac{1}{100}$ gr of atropine sulphate sub-cutaneously. To my utter surprise the patient passed flatus after about half an hour when an enema was given in the genu-pectoral position. The fluid came out with a considerable amount of hard and semi-solid stools.

The abdomen was then massaged with oil Terebinth to relieve the paralysis of the gut, and stupes were also given. The patient began to pass wind and had more motions. The abdominal distension began to diminish and his condition improved.



THE ANTISEPTIC—MARCH 1933.

A CASE OF SARCOMA—S. C. DAS GUPTA.
1. Sarcoma of the Lower Jaw. 2. The Same after Operation. 3. Sarcoma of the Upper Jaw. 4. The Same after Operation.



Case 1.



Case 2.



Case 3.

THREE INTERESTING CASES OF SARCOMA—S. C. DAS GUPTA.

1. Sarcoma Growth from Parotid. 2. Sarcoma Growth from the Sacral Vertebra. 3. Sarcoma Growth from the Cervical Vertebra.

MAR. '33]

CASES OF SARCOMA—S. C. DAS GUPTA

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Calomel was then given internally in fractional doses, the following mixture administered and other palliative measures continued for a few days more.

R

Pot. Citras	3½
Soda-Bicarb	3½
Soda Sulph	3 i
Tr. Nux Vomica	m vii
Tr. Digitalis	m x
Spt Ammon Arom	3½
Aqua Menthpip. ad.	3 i

Mft for a dose.

The patient made an uneventful recovery.

THREE INTERESTING CASES OF SARCOMA.

BY

SURESH CHANDRA DAS GUPTA, L.M.S. (CGL), M.A.C.P. (U.S.A.)

Senior Surgeon, Katmandu, Nepal.

I have the pleasure to present 3 photos of very interesting cases of sarcoma. No. I case is the growth from parotid gland—to start with. In case II the growth originated from the sacral vertebra. Case III had its origin from the cervical vertebra most probably and then it undermined the clavicle and scapula too. These are all inoperable cases. But my aim in publishing these photos is to impress on the minds of my young colleagues to know what to operate and what not to—it is equally needful for the surgeons and patients also. Surgical interference is dangerous in my humble opinion. I do not know if any better qualified man could undertake the operation. If so, it will be a lesson to aspiring operators.

included here, was done six months ago. There has been no recurrence so far.

OPERATION ON INDIRECT INGUINAL HERNIA

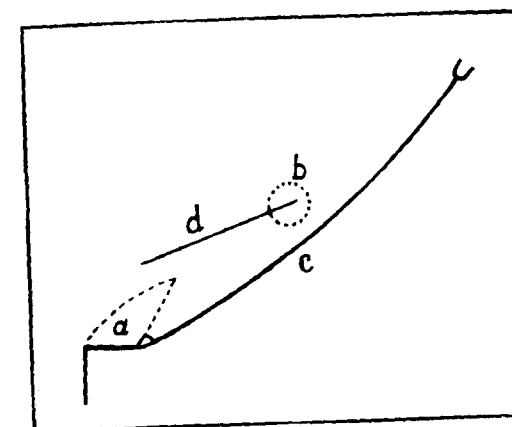
N. S. SAHASRABUDHE M. S., Nagpur, C. P.

It was two and a half years ago that a child, six months old, was brought to me with indirect inguinal hernia. The hernia was of four months standing. The child had malformed penis with the result that during micturition the scrotum on the affected side used to become wet. Fearing the soaking of the bandages and the subsequent trouble, I could not adopt the usual procedure (I used to do Bassini); a purely abdominal, higher incision was a necessity and hence I planned the following procedure:—

An incision was taken from half an inch above the femoral point to about half an inch above the subcutaneous inguinal ring. The Ext. Obl. Apon. was cut in the line of the incision; the intact subcutaneous inguinal ring was naturally seen in the distal part of the Ext. Obl. Apon. The index finger was passed along the internal surface of the distal part of the apon, the inguinal ligament towards the lacunar ligament and then upwards, getting over it the cord and the sac. These structures are traced upwards upto the internal abdominal ring. In this situation the cord structures are always together and below the sac and are easily separable from it. On separating them, the sac was opened half an inch, medial to the internal abdominal ring, the contents put back in the abdominal cavity and the sac was ligatured and cut off as high as possible. The proximal end was transfixed higher up through all the three abdominal muscles. The distal end of the sac was pulled up and the sac was incised along the first incision longitudinally. It was then rubbed with a gauze piece dipped in weak iodine solution and left. The upper part of the Ext. Obl. Apon. was pulled down and sutured to the inguinal ligament latero-medially with four or five interrupted sutures. The distal part of the apon. naturally came on the upper part like the upper flap of a double-breast coat and was sutured with similar stitches. After a continuous subcuticular suture, the skin was stitched with silk-worm gut.

The stitches were out on the tenth day and the patient did not show any untoward symptom during these days or after. There was no recurrence.

Subsequently I have done six operations on indirect inguinal hernia and three on bubonocoeles in this way. The last operation



(a) Subcut Ing. Ring.
(b) Int. Abd. Ring.
(c) Inguinal lig.
(d) Incision through Skin and the Ext. Obl. Apon.

The advantages of this procedure that strike me are:—

1. The incision is purely abdominal and higher enough where the skin can be safely depended upon.
2. The cord-structures, though many times are seen spread around the sac, are always seen together and below the sac near the internal abdominal ring, and are easily separable from it.
3. The identification of the sac in the case of a bubonocoele, even for a beginner, becomes extremely easy.
4. The sac is left in the inguinal canal and naturally adds to the strength of that part of the abdominal wall.
5. The Ext. Obl. Apon. is sutured to the inguinal ligament which is after all a fold of the same aponeurosis and hence can unite better with it.
6. The external oblique aponeurosis is so sutured as to form a double-breast coat over the inguinal canal and adds more to the strength of that part of the wall.

RECURRING FILARIASIS OF THE SCROTUM.

BY

DR. T. S. S. RAJAN, M.B., B.S., F.R.C.P., D.M.S.

Rajan Clinic, Trichinopoly.

Six years ago I operated on a young man aged twenty-five years for filariasis of the scrotum and penis. The whole skin of the scrotum and penis was peeled off and all the thickened and infiltrated tissue removed. The two testicles which were quite healthy were buried on either side of the groin in specially prepared subcutaneous pockets. The wound margin was closed in the middle line encircling the penis and Thiersch's skin grafts were removed from the lateral and anterior aspects of the right thigh and the raw surface of the penis was completely covered over with the grafts. The wounds healed by first intention and the convalescence was quite uneventful. The patient was discharged from my Clinic after a stay of three weeks.



Recurring Filariasis of the Scrotum.

1. Note the base of the tumour extending from the right anterior superior iliac spine to the mid-point of the perineum.
2. The chronic hypertrophy of the skin of the tumour.
3. Note the healthy new-formed scrotum on the left side.
4. The skin graft over the penis which is now six years old which appears as if thrown into small folds.

I have seen the patient subsequently on two occasions—once two years after the operation and again a second time four years after the operation. The patient has had no attacks of filariasis subsequent to the operation, though he continued to live in the same area where from he developed the original infection. The testicles imbedded on either side of the median raphe in the perineum had formed into small scrotal sacs which were soft and supple and the penis skin graft was thrown into small folds when the penis was shrunk and became smooth and stretched when the organ became erect. The photograph shows the left newly-formed scrotum quite healthy and the penial skin thrown into small folds.

Two years ago, the right newly-formed scrotum began to thicken slowly and in the course of the two years had become a fairly huge mass. The peculiarity in this case is that the base or root of the swelling extended from the anterior superior spine of the right iliac bone right up to the centre point of the perineum. There were no signs of filarial disease either in the leg or feet of that side or for that matter no where else in the body. His general health has been good right through and the course of the disease was completely afebrile.

I operated on him on 30-12-32. The whole tumour was excised through a big incision extending from the right anterior spine to the middle of the perineum. The testicle on that side was also removed. The superficial groin lymphatic glands which were enlarged were dissected out and the wound closed by a series of silkworm-gut sutures. The healing has been quite uneventful. The case was produced before the District Medical Association meeting in Jan. 1933.

During the course of the discussion, doubts were raised. Firstly, regarding the utility of such surgical measures in a disease like filariasis and if in adopting such measures, imbedding the testicles in the side of the thigh or perineum is the procedure of choice.

Secondly, the utility of removing the enlarged glands on that side.

Thirdly the procedure of dealing with the cord in huge-sized swellings in case they happen to be long.

Regarding the first doubt, the answer is that so long as our knowledge regarding the cure of filariasis continues to be in the present imperfect and unsatisfactory stage, the only procedure which gives a reasonable chance of cure is surgical interference, particularly when the disease affects the scrotum. There is no doubt that in a few cases, the disease gets down to the legs after the filarial

scrotum is removed; but that does not mean that the scrotum should be allowed to develop into monstrous proportions. The percentage of cases of recurrence in the legs are only very few and they can be tackled in the same way as when the disease affects the legs primarily. If there is any part of the body wherein surgery could be used with advantage to get rid of filariasis, it is the scrotum. The position in which it is placed and the safety with which the testicles could be lodged elsewhere without interfering with its functional activity renders surgical procedure the only method of choice in dealing with such cases. The results are admirable, the cosmetic effect resulting from the removal of an ugly, inconvenient and troublesome tumour in a male adult, apart from its therapeutic effect to the body in the shape of removal of a seat of recurring toxic infection, has a psychological effect on the patient which is indeed remarkable and is well worth the trouble.

The second point raised relates to the removal of the enlarged lymphatic glands. When once the whole of the filarial tissue is removed, there is no use in leaving behind a clump of enlarged lymphatic glands. In fact, in the present case, I believe the swelling in that particular locality and the shape the tumour has assumed are due to the obstruction caused by a group of enlarged lymphatic glands which produce a lymph stasis over the area drained by them leading to the hypertrophy of the skin which resulted in the recurrence of the tumour. In the first operation in this case, no lymphatic glands were removed since none were palpable. Now that they were big enough to be palpable, it stands to reason that they should be removed since they were presumably responsible for the present condition. It is evident that no streptococcal infection has occurred in the present case as the whole course of the progress of the disease has been completely afebrile.

Thirdly, a long cord is only of very rare occurrence. It is only the skin and the subcutaneous tissue that get hypertrophied, and the testicle and the cord remain more or less in the same position. A lengthening of the cord is only possible where the testicle gets adherent to the lowermost part of the scrotum pulling on the cord in its downward march. I have removed some very big monstrous tumours—sizes whose middle point were rubbing on the inside of the knee-joints and even in these, I did not find a long cord. Even if it were long, they can be easily put into the new sac and they may regain their normal length in course of time. At any rate, they will not in any case be a contra indication for surgical interference. In my long series of over

hundreds of cases extending over two decades, I have not come across a single instance where I had any difficulty in dealing with the spermatic cord in cases of filariasis of the scrotum.

The result of surgery in filariasis of the scrotum has been most encouraging, unlike that in any other part of the body such as the arms and the legs. In fact, operations for the condition devised by Kondolean and lymphangioplasty elaborated by Sampson Handley have given very poor results. But the excision of the scrotum stands on a different footing. It is a radical cure as far as the site of the disease is concerned. Shock and haemorrhage are perhaps the only complications in big-sized tumours. Under spinal anaesthesia, the former may be safely eliminated and the latter by careful haemostatic devices well known to surgery.

A CASE OF STRANGULATED HERNIA.

BY

MD. ABDULLA, L.M.S. (Hyd. Dn.) L.C.P. & S. (Bombay)

*Medical officer in-charge, Municipal Hospital, Vaniyambadi,
North Arcot.*

My object in recording the following interesting case of strangulated hernia, is just to show that even the worst and hopeless cases sometimes survive an operation. Of course, it is only a chance but it is worth while undertaking.

A patient, specially with chronic hernia often does not bother himself with an operation, as the disease generally gives him no trouble, and when strangulation of intestines occurs, he gets them reduced by taxis. When taxis fails and the pain becomes more severe and unbearable, he submits himself for an operation. Here is a case of this nature.

A Hindu male aged about 30 years was suffering from hernia for about 5 years. On 20th September '32 he felt acute pain and abdominal distension, for which he consulted a local doctor, who diagnosing the case as strangulated hernia gave him an injection of atropine, and tried in vain, to reduce it by taxis. Pointing out the necessity of an immediate operation, he directed the patient to the hospital. Paying no heed to the doctor's words, the patient went home and was under the treatment of a village Hakim, who kept him well under opium for the two subsequent days. On the 4th day, he was brought to me on a cot for treatment.

The conditions when I first saw him were as follows. The hernia was of a small size, occupying the right inguinal region. The scrotal swelling was tense. The pulse of the patient was nearly imperceptible, quick and thready, tongue dry and thickly coated, body cold and clammy, abdomen "silent", acutely distended and tender, vomitings frequent and distinctly faeculent and eyes sunken and dull. Considering that an operation at this stage would be of no avail, I refused to take the case. But at the requests and entreaties of his attendants, I undertook the operative risk though half-heartedly.

Operation.—I gave him 3 pints of normal saline intravenously. After about 20 minutes I opened the hernial sac under general narcosis. About 2 ounces of foul-smelling and blood-tinged fluid escaped. A loop of small intestines with a portion of omentum were strangulated. They were of a dark purple colour. Under hot saline fomentations, the colour of the intestines improved; but the omentum remained as it was. At this stage of the operation, the patient showed signs of failing and an injection of Caffein .25 gm. Spartein sulph .05 gm., sodium Benzoate .30 gm., Strychnine Sulph .001 gm., and distilled water q. s. to 2 c. c. was given. The omentum was ligated and resected. A few lesions of the serous coat of the intestines were repaired and the intestines reduced. Since the general condition of the patient was not good, the operation had to be hastened up by suturing the muscles and the skin in layers, without bringing the conjoined tendon and the Poupart's ligament together. The patient was put in Fowler's position as usual and rectal saline with a little glucose given. Four hours after the operation, the patient passed a broad and foul-smelling motion with plenty of flatus. Since after that he improved rapidly and steadily. On the 14th day of his admission, he was discharged from the hospital cured of his disease. One important point of interest in this case was that his temperature was quite normal on all the days he was in the in-patient wards.

INANITION HYPOGLYCAEMIA IN A DIABETIC

BY

DR. B. D. SINDHIWANI, M.B.C.S. (ENG.)

Peshawar.

A Sikh gentleman aged 54 years came to consult me for pain and stiffness of his right knee. The pain was pretty sharp on walking. The joint was swollen, and creaking was heard on manual examination. It suggested chronic osteoarthritis with effusion though there was no history of injury. He has had diabetes since 18 years. The pain had come on only recently and swelling was of four or five days duration. The left knee was normal to all looks and purposes, though creaking was heard therein too. X-Ray was done and chronic osteoarthritis with effusion and loose bodies in the joint was the report. The patient was put on limited diet after an initial fast of 42 hours. He took a daily chart for his diet after the examination of his urine. No insulin was used at all. He weighed 172 lbs at the start and gradually lost in weight on the limited diet to 154 lbs. There was more than 8% sugar in urine at start, but on the 5th day it fell to less than $\frac{1}{2}$ a per cent. on limited diet. His right knee was exposed 3 times to ultra violet rays. The swelling disappeared and pain and stiffness went away.

The patient was lost sight of for a fortnight. One day I was called to his house where I found him with fever 103° which he said he had since 6 days. This came down next morning on Acid Sulphurous mixture. The fever lasted for 7 days. All through his 7 days illness, he had been actually starved on the top of his limited dietary before the fever. Two days after the fever came down, I was called again in the evening when I was told of the alarming plight the patient had suddenly got into.

The patient lay quiet and cuddled up in bed, very slow to answer and power of recognition much diminished. When asked to put out his hands, he took no notice. Big beads of cold sweat marked his forehead. His lower jaw was shaky, and articulation difficult. On being raised in bed, he exhibited tremulousness of the arms and fingers and wandering eyes. When offered drink, at the sight of the tumbler he went into convulsions, putting out his shaking arms in a most apprehensive manner. No sooner feeding cup was taken near his lips than he pushed away the hands. Degluti-

tion was difficult. He could attend to the call of nature by himself, and occasionally showed a little intelligence.

This typical picture with no history of insulin injection, prolonged fasting, and absence of sugar in the urine made diagnosis certain of hypoglycaemia due to inanition.

He was given an injection of adrenaline hydrochlor. 1 c.c. and within a few minutes, he began to toss with symptoms more exaggerated. An intravenous injection of glucose and sodii bicarb was given, and glucose-D in half ounce doses with half a drachm of sodii bicarb and the white of an egg was given every hour for the first four or five hours. The patient gradually improved on this diet and was on his feet on the third day though very weak.

Comments:—Hypoglycaemia and hyperglycaemia are often confused owing to the immense similarity of the symptoms; but a little misjudgment in diagnosis may cost the patient his life, if insulin is administered. Presence of sugar in urine does not in any way negate the diagnosis of hypoglycaemia; but absence of sugar in urine where insulin has not been administered will warrant the use of glucose parenterally or by mouth at once.

Summary:—The interesting points of the case are:—

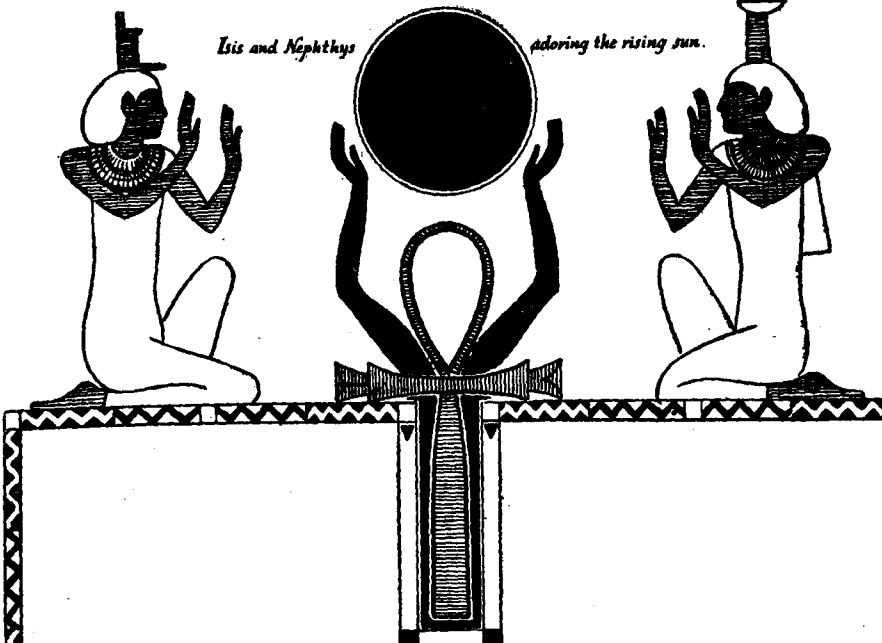
1. Chronic osteoarthritis with loose bodies and effusion of the joint, (right knee) because of diabetes.
2. Hypoglycaemia in a diabetic where no insulin has been used, caused by starvation.
3. Increased symptoms on an adrenaline injection.
4. Coming round of the patient miraculously on glucose D, egg and soda bicarb solution.

HINTS.

(Extracted from 'American Medicine'.)

Acute Intestinal Obstruction.—"There is not any acute abdominal condition in which recovery is more dependent on early diagnosis and early surgical interference than is intestinal obstruction." Dr. Claude F. Dixon, *New Orleans Medical & Surgical Journal*, August, 1932.

Behavior Disturbances in Children.—"It is possible that many conduct disorders are directly influenced, if not caused, by disturbed physiological states, due to insufficient sleep, rest, exercise and hunger. It is for this reason that the first step in the treatment of any behavior disturbance whatever its cause must be the correction of any factors which interfere with the establishment and maintenance of an optimal physiological state." Dr. Grete E. Scham, *Archives of Pediatrics*, June, 1932.



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[Estd. 1904]

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LEPROSY RELIEF IN INDIA.

The leprosy problem in India is a very grave and serious one. The 1921 census gave 102,513 as the number of lepers in India. This, in our opinion, is very much short of the real number. The chief reason for this is that only conspicuous sufferers from this disease are likely to be enumerated by the untrained people who gathered the statistics. Allowing for this and other fallacies, it will be safe to calculate that there are from one half to one million lepers in India. And yet, we wonder why no attempt is being made by the public at large to eradicate this disease. Perhaps the answer is not very difficult to give. Leprosy is not a fatal disease. Compared with malaria, cholera and tuberculosis, there are only a few deaths. But it should not be forgotten that the death roll is not the only criterion of the suffering caused by any disease. Leprosy accounts for more mental and physical suffering than any other disease in the country. This, if nothing else, should make us do something for our suffering brethren and sisters. Dr. E. Muir and Dr. J. Lowe, the well-known workers in the Calcutta School of Tropical Medicine, in the February issue of our contemporary, The Indian Medical Gazette, have given an admirable review of the present situation with regard to leprosy and have suggested a policy for provincial and local authorities to adopt for the eradication of this dreadful disease.

Ever since Hansen discovered the leprosy bacillus, the accepted method of dealing with the disease has been through segregation in leper asylums. This was found to be a failure for two reasons. Firstly, the money available for founding and running these institutions was found sufficient to accommodate only a couple of thousands

of lepers; secondly that the lepers who reached these asylums were in the last stages of the disease and had already spread the infection to their neighbours and relatives.

Accordingly the Indian Branch of the British Empire Leprosy Relief Association tried new lines of campaign and aimed at the diagnosis and treatment of all but the very early cases. In order to secure this, they followed the following programme. The most important work was to train a body of workers to diagnose early cases and treat them. Short refresher courses were given in Calcutta to all medical men who came from the various provinces and states. Many of these when they went back to their own provinces trained others and it was hoped that in a few years, all doctors will be as conversant with leprosy as they are with malaria. They next wanted an accurate survey of the incidence of leprosy in India, showing the parts in India where the disease is most common and the communities amongst whom it is most rife. Propaganda was the next important method. Research was their last activity.

In our own province, the Madras Government, in consultation with Dr. Muir, have drawn up a scheme for anti-leprosy work. The presidency has been divided into six areas for each of which has been appointed a special leprosy officer to carry on propaganda and survey work, create treatment centres attached to suitable medical institutions, train doctors and organise and co-ordinate leprosy work.

This sort of work has been going on for the last six or seven years and is still going on. A word of praise must here be given to the various missionary leper hospitals in Madras and other parts of India, who have been doing splendid work in this connection. This survey work has given us interesting facts, among the chief of which are these:—

- (a) Leprosy is most prevalent among semi-aboriginal tribes who have left their original seclusion but have not yet adopted the modern sanitary measures common among more civilised people.
- (b) Leprosy frequently enters better class families through these semi-aboriginals when they are employed by such families as servants.
- (c) A single highly infectious case may often infect not only a village, but indirectly a group of villages.
- (d) The commonest form of leprosy found is the 'Neural form' showing anæsthetic macules or acroteric lesions.

These cases are presumably non-infectious since no bacilli can usually be found in them. Some of these cases undoubtedly progress later to the cutaneous form which is infectious; but some of them do not. Some cases, exactly what proportion it is difficult to say, undergo spontaneous arrest. At any one time, two or three 'neural' cases are found to each 'cutaneous' case.

- (e) The finding of large numbers of slight cases in a village indicates one or two things. Either the disease has been newly introduced and is spreading rapidly; or the village has long been infected; but since the people have a high degree of resistance, the disease takes a mild form.
- (f) There is generally a fairly obvious pre-disposing cause. Often there is some other disease, such as syphilis, malaria, filariasis, or hook-worm disease. Sometimes it is the diet of the people. At other times, it is the climate or geological conditions resulting in occasional famine or chronic under-feeding.

Another result of this survey and campaign is the general recognition that the leprosy problem, though a difficult one, is not incapable of solution. At the end of last year, there were in India 59 residential institutions with a total of 9,634 inmates; also there were 213 out-patient clinics in which leprosy was treated. But still, the great majority of patients lack perseverance, or are unwilling to take the time and trouble required for complete recovery. Ignorance, superstition, unhealthy surroundings and adverse economic conditions are other factors delaying progress. It has also been realised more and more that treatment alone is never likely to stamp out leprosy in India. Prevention in this case, at least, is better and easier than cure.

Prevention can only be carried out by following up the patient from the dispensary and visiting him in his house. Leprosy is spread by contact of infective with healthy cases. The more intimate the contact and the greater the period of contact, the greater is the danger. Children and young adults are much more susceptible to leprosy than adults. Prevention must therefore be aimed at preventing this contact. Isolation of all infective lepers in institutions is unpracticable in India; but much might be done to carry out isolation in villages and in homes. In villages the leprosy worker must gain the confidence of the villagers and enquire into the history of the origin and spread of the disease. He must

then explain to them how leprosy can be prevented. If possible, separate huts may be put up outside the villages where infective lepers could live and sleep. They can go about and work if possible during the day, but they must sleep in separate quarters at night. In homes of lepers, the same isolation must be practised. A separate room and separate clothes for the infective case to live in and wear are essential. The pernicious habit of living together with healthy cases and of being attended to by healthy little children, so often seen in Hindu joint families must be prohibited.

Bad housing, bad diet and debilitating diseases render people susceptible to leprosy and provide the conditions under which leprosy spreads. Therefore all measures which tend to improve social and hygienic conditions and to help people to lead a healthy life will also tend to bring about a diminution in leprosy. Leprosy propaganda should therefore merge into the wider sphere of general public health work.

This naturally leads us on to the question—What provincial and local authorities can do to prevent the spread of leprosy? We cannot do better than quote the words of Drs. Muir and Lowe who say "The following is an outlined policy for anti-leprosy work.

1. Organise a leprosy board consisting of official and private individuals in order to stimulate interest and public support for leprosy work.

2. Make anti-leprosy work—one of the duties of the public health service and medical service.

3. Appoint a special leprosy officer who has had special training and experience in leprosy work, or else choose a good man to be trained. He should work under the public health authority and his duties will be:—

(a) To train doctors and public health workers in anti-leprosy work.

(b) Where there is a medical school, to instruct the students in anti-leprosy work.

(c) To organise propaganda, survey and treatment work in endemic areas.

(d) In highly endemic areas, in addition, to establish special treatment centres.

(e) To supervise and co-ordinate all anti-leprosy work being done in the province or area.

4. Where the appointment of a special leprosy officer is

impossible, to make anti-leprosy work part of the duty of a responsible public health officer.

5. Make use of the available literature, vernacular pamphlets, lantern slides, posters etc., in anti-leprosy propaganda.

6. Arrange for a doctor with special training to carry out medical examinations for signs of leprosy among Government employees, employees of industrial concerns, and above all of school children.

7. Arrange for leprosy treatment to be given in all public hospitals and dispensaries."

The suggestions are not difficult to carry out and if carried out efficiently, would in time, do much to help to bring leprosy under control. The expense is not very great and is certainly well worth spending in view of the beneficial results to the public.

STUDENTS' SECTION.

DIFFERENTIAL DIAGNOSIS OF SCROTAL SWELLINGS.

BY

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Demonstrator in Anatomy, Medical School, Amritsar.

The swellings may be:—

(1) Sudden swelling.

(2) Rapid swelling.

(3) Slow swelling.

Sudden swellings are:—

(1) Hæmatocele (2) Hernia (3) Insect bite.

Rapid swellings are:—

(1) Extravasation of urine (2) acute hydrocele of the cord and testicle.

Slow swellings are:—

(1) Inflammatory (2) Non-inflammatory.

Inflammatory swelling may be (a) Acute which may be traumatic, metastitic, gonorrhoeal, (b) Sub-Acute i.e., tubercular (c) Chronic i.e., syphilitic.

Non-inflammatory.

(1) Reducible.

(2) Irreducible.

Reducible swelling may be.

(1) Those containing gases *i.e.*, hernia.

(2) " " fluid *i.e.*, bilocular, congenital and infantile hydrocele, varicocele.

Irreducible.

(1) Those containing gases *i.e.*, obstructed inflamed and irreducible hernia.

(2) Those containing liquids *i.e.*, acquired hydrocele, spermatocele and hamatocele of the cord.

(3) Solid swelling (a) hamatocele later stages (b) neoplasm.

(i) Congenital (ii) Acquired (Malignant and Benign).

Sudden Swelling

(1) *Hamatocele*: Its main distinguishing points are:

(a) Sudden onset (b) history of injury or history of tapping of hydrocele (c) local signs of inflammation (d) discoloration of skin of the scrotum positively after three days (e) swelling appears immediately after injury (f) it is fluctuating (g) no signs of inflammation, no impulse on coughing (h) after a few days, it becomes hard at few places and remains soft at others due to coagulation of blood (i) when suppuration takes place, there are signs of inflammation.

(2) *Hernia*:—The chief points are:—

(a) History of some sort of strain.

(b) Patient is taken unaware and is horrified.

(c) No signs of local inflammation or injury.

(d) When the patient lies down the swelling disappears.

(e) Patient feels gurgling sensation when the swelling disappears in the abdomen.

(f) Subsequently the patient can reduce it himself.

(g) There is impulse on coughing.

(h) External abdominal ring looks bigger in size.

(i) Cord cannot be properly felt as some tissues lie in front of it.

(j) Percussion note is dull in case it is omentocele and tympanitic when enterocele.

(3) *Insect Bite*:—

The chief signs are:—

(a) Patient is usually a child.

(b) Whole of the scrotum is involved.

(c) Skin looks red and shiny.

(d) On feeling, one finds that it is only the skin that is involved; no signs of inflammation.

Rapid Swellings.

(1) *Extravasation of Urine*:—

(a) History of serious injury to the perineal region or peri-urethral abscess.

(b) Patient has got a constant desire to pass urine, but no urine beyond a few drops of blood comes out. There may be free hæmorrhage.

(c) Swelling increases with each act of micturition.

(d) General health much affected on account of shock and toxæmia.

(2) *Acute Hydrocele of the Cord*:—

(a) Generally occurs in infants.

(b) Swelling is about the size of an almond.

(c) There is severe pain and general malaise.

(d) It is especially to be distinguished from:—

(i) Strangulated hernia by absence of persistent vomiting, softness of abdomen and passage of stools.

(ii) Torsion of retained testicle by its absence from the scrotum and symptoms are very severe.

Slow Swellings.

(1) *Inflammatory*:—

(a) Acute.

(i) Traumatic. History of injury, signs of local inflammation, the whole testicle looks enlarged, very tender to touch, sickening sensation present, slight rise of temperature.

(ii) Metastatic. Signs of local inflammation as in number one, history of mumps or any such infectious disease.

(iii) Gonorrhœal. Usually occurs during an acute attack. It is the result of direct extension of the disease from the posterior urethra along the vas to epididymis. Pain in the inguinal region, extends along the cord. Epididymis is first to be involved. There is a boat-shaped swelling on the back of the body of the testicle.

When it becomes chronic, it is to be diagnosed from tubercular and syphilitic orchitis.

SYMPTOMS	GONORRHOEAL	TUBERCULAR	SYPHILITIC
Part involved	Epididymis	Epididymis	Body
Pain	Painful	Painful; may be painless	Painless
Urethral Discharge	Present	No	No
History	Half Gon.	Of T. B. of some other organ in the body	Syphilis
Sickening Sensation	Present	Present	Absent
Cord	Infiltrated and tender	Nodular	Slightly thickened
Hydrocele	May be	No	Yes
Sinus	Usually does not suppurate	May suppurate. Sinus is formed behind	When suppurates, sinus is formed in front.
Glands Inguinal	Early involved	Slightlydenitis.	Enlarged, shotty and separate

(2) *Non-inflammatory.*

(A) Reducible.

If note is dull it may be :—

(i) Congenital hydrocele. In this the funicular process remains patent. It has got the following characteristic points :—

(a) No sooner the scrotum is raised, than the swelling disappears without any manipulation.

(b) If the patient stands, it refills and starts refilling from below upwards.

(c) It is translucent to light test.

(d) No impulse on coughing.

(e) History very important. Patient says that the swelling

has gradually increased in size ; but in hernia although it is reducible, it is generally sudden and that its size remains the same.

(f) Generally associated with phimosis.

(ii) Infantile hydrocele. There is a swelling in one half of the scrotum extending into the inguinal region—cannot be properly reduced. Characteristic point is that it has got a definite upper margin. In it the funicular process is closed only above.

(iii) Varicose Veins. There may be other varicose veins. There is neuralgia of the testicle. It is generally present on the left side as :

(a) Left testicle hangs at a lower level.

(b) Left spermatic vein opens into the left renal vein at right angles.

(c) Sigmoid colon generally presses upon the left spermatic vein.

(d) It is not guarded by any valve.

When one feels the scrotum, there is a characteristic feeling of worms in a bag. Reduce the swelling by asking the patient to lie down and raising the scrotum. Place your finger tip in the ext. inguinal ring. If it is hernia, it will not descend ; but a varicose vein will descend.

B. *Irreducible.*

(a) Those containing gases.

OBSTRUCTED HERNIA.	STRANGULATED.	INFLAMED.
Not serious.	Very serious.	Serious.
No signs of infl.	May be.	Signs of infl.
No tenderness over the hernial ring.	Marked tenderness.	No such tenderness.
Sac is irregular, firm and dull.	Tense tympanitic.	Firm, no tension; may be tympanitic or dull.
No fever.	No fever.	Fever.
Vomiting; rarely faecal.	Vomiting : first gastric, then bilious and finally faecal.	Gastric and bilious ; generally not faecal.
Pain intermittent and colicky.	Pain constant.	More of tenderness.

(b) Those containing liquids.

(i) Hydrocele: A pear-shaped swelling; starts filling from below; spermatic cord is normal; enters a normal sub-cutaneous inguinal ring; no impulse on coughing; light testis; translucent (but if the case has been a long-standing one and the patient applying some local irritants, the walls get thickened and this test no more remains positive.) When the size of hydrocele is very large, the penis is seen buried in the scrotum. A normal testicle can be felt posteriorly.

(ii) Spermatocoele: It is a cyst-containing fluid in which spermatozoa are found situated frequently in the neighbourhood of epididymis. It is formed between it and the body of the testicle. Size usually from a plum to an egg. It generally arises from the appendix of the testicle or epididymis. Development is slow and painless. Epididymis, testicle and cyst can all be felt separately.

(iii) Haematocoele of the Cord: It is of uniform consistency, no impulse on coughing, history of injury and sudden onset.

(c) Solid swellings.

They may be benign, malignant; rarely congenital.

(i) Benign.

Commonest form is fibro-adenoma—also called cystic disease. There is a hard or firm swelling. It is weighty. This is the most important sign to be noted and an experienced hand can at once decide whether the swelling is solid or otherwise. Testicle and epididymis cannot be made out properly. There are no acute symptoms. The disease progresses slowly. Dermoid cyst and other teratoma of the testicle are very rare. It is to be specially diagnosed from congenital hydrocele. An irreducible congenital swelling of the testicle is usually dermoid.

(ii) Malignant Growth.

Outline of the swelling is very irregular; it may become nodulated on account of the presence of cysts. Secondary growth in the glands situated at the bifurcation of abdominal aorta. Sensation of weight and dragging. Testicular sensation is soon lost. When the cord gets involved there is pain and cachexia. Course is rapid. There is no accompanying hydrocele.

Exploratory incision will settle the diagnosis. Sarcoma and cancer generally can't be diagnosed clinically. Very rapid growth and involvement of glands point to cancer; moreover it is generally after 40; but sarcoma—before 40.

GLEANINGS FROM MEDICAL PRESS.

SURGERY.

Chancere of Male Breast Simulating Paget's Disease:—J. G. Menville (*Journal Amer. Med. Assoc.* July 30, 1932 p. 381), who records a personal case, illustrates the rarity of primary syphilis of the breast by the fact that only 12.5 per cent. of extra-genital lesions occur in this situation according to Buckley (1894) and 5.1 per cent. according to Fournier (1897) who found that only 5 per cent. of these lesions were seen in the male breast. Menville's case was that of an alcoholic man aged 72 who developed a sore on the left nipple six weeks after being bitten by a prostitute. There was redness about the nipple, which was almost hidden by an excoriated exuding mass. The axillary glands were slightly enlarged. The Wassermann reaction was negative. Paget's disease was diagnosed and radical amputation of the breast was performed. Examination of the breast tissue for spirochaetes was negative, but actively motile spirochaetes which had all the morphological appearances of *Spirochæta pallida* were found in the axillary glands; five days later, a maculo-popular rash developed on the trunk and disappeared after anti-syphilitic treatment.—*B.M.J.* 10th Dec. '32.

The Surgery of the Undescended Testis:—O. H. Wangenstein (*Surg., Gyn. and Obst.*, 54:219, Feb. 1932). Author's summary: "The imperfectly descended testis is aspermatic because of its position. Prior to puberty, the undescended testis is in every respect much like its normal fellow in the scrotum. The scrotum serves as a thermo-regulating mechanism, and in the adult only a scrotal testis is normal. The undescended testis is more likely to become malignant than is the normally—descended one, and scrotal fixation does not diminish this increased predisposition to malignancy. The undescended testis, however, is not a precancerous lesion, and it is true that testicular malignancies are infrequent.

The procedure of election in the treatment of failure of descent is placement of the testes into the scrotum without injury to the testicular blood vessels. Adequate mobilization of the vessels of the testes (spermatolysis) is a significant and essential factor for the success of the procedure. In the operation of orchiopexy, temporary scrotal anchorage is an important detail of the technic. Without adequate scrotal fixation, retraction occurs, and growth of the testes commensurate with the normal does not obtain. A method

to secure this end is described. The opportune time for the performance of the operation is between eight and eleven years; to insure a good functional result, it is important that the operation be done before puberty."—*Minnesota Medicine*.

Thrombo-Angiitis Obliterans: Results of Sympathectomy: Alfred W. Adson and George E. Brown, Rochester, Minn. (*Journal, Amer. Med. Assoc.*, Aug. 13, 1932) report that their experiences with sympathetic ganglionectomy and trunk resection in the treatment of Raynaud's disease due to vasomotor spasm of peripheral arteries led them to employ the same surgical procedure in thrombo-angiitis obliterans, when vasomotor spasm was a contributing factor in the production of symptoms. They consider that the real problem in thrombo-angiitis obliterans is to select suitable cases for operation and to decide when operation is indicated. It is obvious that vaso-dilatation cannot be produced in an arterio-sclerotic or occluded artery, and that surgical intervention is useless unless there is positive evidence of vasospasm in the remaining non-occluded arteries. The operation is not indicated in the milder cases or in those in which response is quick and favourable to medical treatment. In advanced cases of massive gangrene, the condition is likewise non-surgical unless it is hoped to effect a lower amputation than otherwise would be required. Following amputation, sympathectomy may be indicated to preserve the opposite extremity. The operation has proved to be of greatest value in slowly progressive cases and in those in which patients cannot afford or are unable to sacrifice the time required to rest in bed and receive local heat, contrasts bath and vaccine therapy. The authors present a review of 100 consecutive cases of thrombo-angiitis obliterans in which they performed ganglionectomy. There were eighty-nine bilateral lumbar sympathetic ganglionectomies and trunk resections and fifteen bilateral cervico-thoracic ganglionectomies with resection of the upper portion of the thoracic trunk. Operation was performed in four cases of thrombo-angiitis obliterans involving both the upper and lower extremities, which accounts for 104 bilateral operations. Ninety-six patients were males and four were females. The condition of eighty-seven of the patients was improved by the operation. The average degree of improvement was 80 per cent.—*Thro' Medical Arts*, Dec. 1932.

Laboratory Methods for the Diagnosis of Gonorrhoea:—In recent gonorrhoeal infections Herrold (*J. Urol.*, 1931, 26, 379) recommends that single-stain smears are sufficient in the presence of acute clinical symptoms. When in the presence of suggestive clinical symptoms, the smears are negative; further examinations should be made before gonorrhoea is ruled out.

The finding of large numbers of bacteria with or without typical intra-cellular or extra-cellular diplococci by the use of the single stain should be corroborated during the same examination by the use of the gram-stain. If all findings then suggest specific infection, a culture should be made. If the culture proves negative, provocative measures may be used more safely. After such measures, more smears and cultures should be made. The most common cases of this type are: (1) those of non-specific infections associated with stricture or chronic prostatitis, (2) those of patients who have had some previous medication, and (3) those in which there is a definite history of infection during the previous year.

When the smears are doubtful in cases of suspected exacerbation of a chronic infection, the patient should not be subjected to instrumentation, massage, or provocative measures until after further clinical observation.

Positive smears may occur with negative cultures and positive cultures with negative smears.

Gonococci sometimes exist in a saprophytic state. It is under these circumstances that cultures are of the greatest aid.

The value of cultures is directly proportional to the care used in the collection of the specimens, the appropriateness of the medium, and favourable physical conditions, for growth. The author describes a simple and satisfactory blood agar medium for the growth of the gonococcus.

As a rule, nothing can be learned from serological methods that cannot be determined better from smears and cultures; but serological tests may be useful in the differentiation of systemic complications associated with the so-called post-gonorrhoeal infections in the genito-urinary tract.

Skin reactions are also inferior to smears and cultures as diagnostic aids.

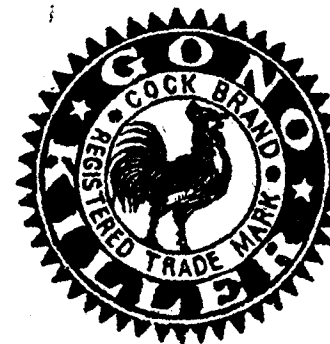
In the male, other bacteria that must often be differentiated from gonococci in smears and cultures are variants of staphylococci and gram-positive diplococci with similar morphological characteristics.—*The Chinese Medical Jour.*, Octo. 1932.

Chronic Suppurative Disease of the Middle Ear:—According to McLaggan (London) treatment of this condition should not be stereotyped, but should be adapted to the individual case. The sites of infection may be nasopharyngeal, mastoid, attic, middle ear, or a combination of these. In nasopharyngeal cases, infection starts in the eustachian tube, with ear-ache, rise of temperature and tenacious discharge from the ear. The perforation is anterior, and in the lower part of the drum. For this type, drops of glycerine of phenol B. P. 1932, are recommended. In the mastoid type with posterior perforation, operative treatment is suggested. In the attic type, there is pin-head perforation in Sharpnel's membrane, with cholesteatomatous debris and a sentinel polypus. The epitympano-mastoid operation should be performed. In the middle ear type, the perforation is central. Ionization with zinc sulphate is recommended for this type. In the combined type of massive infection, extensions to the inner ear and intra-cranial structures are frequent, and there may be gross destruction of the drum with only the remains of the hammer handle adherent to the inner wall of the middle ear and surrounded by polyp. The radical mastoid operation is called for in these cases. —*The Prescriber*, pp. 35-4 December, 1932.

Wounds of the Fingers:—Commenting more particularly on crushing and bruising the wounds of the hands and fingers, M. Iselin and E. B. Uribe (*Presse Med.*, Feb. 19, 1932, p. 220) emphasize the dangers of merely suturing these without a thorough examination of the parts involved. Such wounds are frequently accompanied by osseous lesions, and the debris from these, together with the contused tissues, form a suitable nidus for microbial development; ill results range from simple retardation of healing to death of the patient. Of 110 instances, fractures were found in 103, often with insignificant external lesions; 13 of these are here recorded. The authors therefore insist that all wounds of the hands and fingers should be systematically explored under anaesthesia, even when antitetanic serum has been administered; only when satisfactory conditions are found should immediate suturing be practised. Local anaesthesia suffices for small injuries; for extensive ones, general anaesthesia should be employed. Contused tissue should be excised, particular attention being paid to the skin in order to prevent subsequent suppuration. Recent wounds (not exceeding a maximum of six hours), which have been well prepared, may be sutured when the skin edges can be opposed

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without traction or separation from the subcutaneous tissue. Short notes are given on the treatment of the different varieties of crushing wounds, namely, bursting of the skin, subinguinal haematoma, and various osseous lesions.—*B. M. J.* April, 23, 1932.

Intravesical Treatment of Urinary Bladder Tumours: With a new Method of Diagnosis and a new Instrument for Coagulation and Dessication of Tumours at the Bladder Neck:—Francis H. Redewill, B. S. M. A. M. D., (*American Medicine*, Oct. 1932) is of opinion that Broder's method of classifying bladder tumours according to the degree of malignancy existing, as used by Mayo brothers, is most practical; however, it requires biopsy.

2. With trypan blue; the cystoscopist may classify these tumours according to Broder's method, without removing any part of the tumour, but instead by actual visual observation.

3. A great deal of more shock is manifested, and there is also an increased danger of metastasis, when employing cystotomies to eradicate bladder tumours, rather than treatment through the cystoscope; the latter route is becoming more and more the method of choice.

4. All the electrical potentialities, surgical diathermy, electrical coagulation and dessication can be used successfully through the cystoscope to remove tumours of any size.

5. The question of treating all malignant bladder tumours entirely through the cystoscope is still debatable. However, at the present time, four-fifths of such growths can be so treated.

6. Heretofore inaccessible sites in the bladder are now easily accessible by the use of the author's new electrical director.

7. The potential tendency of the bladder wall to grow papillomata may be lowered by reducing irritation to a minimum (pushing the vitamins by mouth and giving parathyroid hypodermically.)

8. Bismuth intra-muscularly, and Burnham's soluble iodine intravenously, are dependable agents to clear up syphilitic tumours of the bladder rapidly in arsenic fast cases.

Short Anaesthesia for Dental and Minor Surgery:—W. Stanly Sikes, M. B. in an admirable article in the *Medical World*, Dec. 9, 1932 gives the following cardinal rules for safe anaesthesia in minor surgery which are well worth knowing.

1. Be absolutely sure that the right drug is being given. See that your cylinders contain gas and not carbon dioxide. A

fatality has actually happened as a result of a mistake of this sort. Always smell ether before using it to make sure that it is not chloroform. I have had chloroform given to me as ether on one occasion, and the routine smell test certainly prevented a tragedy.

2. Never use unnecessarily deep anaesthesia.

3. Keep an incessant watch on the patient's condition, as indicated by his colour, pulse and respiration.

4. Keep the air way clear. In minor surgery the depth of anaesthesia is insufficient to cause muscular relaxation; consequently the tongue and jaw do not fall back and obstruct the breathing. The chief trouble is likely to be excessive secretion of mucus when ether is employed without the preliminary dose of atropine which is usual in major surgery.

5. Chloroform should never be used in these cases. It is not necessary and never justifiable unless all other drugs are absolutely unobtainable.

6. Ether must never be given near a naked light or fire. The open method is specially dangerous in this respect.

7. Nitrous oxide must never be given in the presence of respiratory obstruction. Cynosis in moderation does not matter, but it should be remembered that artificial light is most misleading in this respect. A person who looks blue under electric light is really much bluer than he looked. Beware of the patient whose colour changes to livid grey, which is much more serious. This means heart-failure, and needs prompt treatment.

Phlebitis Complicating Typhoid Fever:—H. R. Oliver (*Bull. et. Mem. Soc. Med. des Hop. de Paris*, June 27th, 1932 p. 1015) records the case of a woman aged 36, admitted to the hospital with phlebitis of the right lower limb, the leg, foot, and lower half of the thigh being affected with a tense white oedema. There was considerable constitutional disturbance. The temperature was 102·4, but there was no enlargement of the spleen, eruption, or any abdominal symptoms. A blood culture however, reveal the presence of *B. typhosus*, and on the eighteenth day of the disease rose spots appeared, the spleen became enlarged, and the typical picture of typhoid fever developed. The attack was severe, and was complicated by intestinal hæmorrhage; phlebitis of the left internal saphenous vein developed subsequently, and recovery was preceded by prolonged convalescence. Oliver believes that no previous example of typhoid fever commencing with phlebitis has been recorded.

Treatment of Acute Appendicitis.—J. A. Ryle, M.D.F.R.C.P., (*The Clinical Journal* February, 1933. p. 45.) in an interesting article on this subject explains the difficulties that faces a surgeon or physician in deciding when to operate and when not to operate, and in that event, of what alternative treatment to advise in acute appendicitis.

The exact condition of the pathology of the appendix must be well understood by interpreting the clinical states expressed by the patient to correctly determine whether immediate or later action must be taken. To cultivate more nearly this ideal state of judgment which should combine the visual perception of the pathologist, the reasoned caution and prognostic ability of the balanced physician and the readiness for appropriate action of the experienced surgeon, such a state can only be achieved by closer and closer clinical studies of histories, of symptoms and of end results, both good and bad.

The majority of deaths from this disease is still due to the delay in diagnosis, while a undetermined minority of deaths and troublesome sequelæ are due to inexperience, impatience and perhaps particularly to a lack of pathological and prognostic insight on the part of the surgeon. Of the general practitioner, the chief thing to be desired is that he should acquire a better knowledge of the different types of appendicular pathology and of their corresponding symptomologies, and, above all, that he should learn to recognise by history and symptoms Wilke's obstructive types in its early stages.

The writer gives the following sound rules to determine when to interfere which may be found useful in most of the cases.

1. For the subsiding inflammatory cases and sub-acute appendicitis the interval operation, or when operation is to be avoided for special reasons of age or ill health and the patient is within easy reach of competent surgical aid, a 'watching brief'. It should not be forgotten that many patients have recovered from a genuine acute appendicitis never to be troubled again.

2. For the circumscribed abscess—simple drainage by the most favourable path; a most favourable moment and with a minimum of exploration.

3. For Wilke's obstructive type, with its threat of dangerous gangrene, and for the acute inflammatory type seen in its earliest phase, the earliest possible operation.

4. For the late case of uncertain type with much distension or symptoms pointing to intestinal obstruction, a consultation

when possible between surgeon and physician and general practitioner to decide whether immediate action or further delay offers the lesser risk. A few hours of hesitation is little likely to magnify the danger, and the situation is in no way comparable with early appendicular gangrene.

In summary, the first duty in every case of acute appendicitis is not to operate quickly and at all costs, but rather to assess and to plan the optimum moment for operation. When operation is judiciously postponed or disallowed, the completest possible general and alimentary rest must be ensured, the nurse being instructed in the minutest details, and all needless examination and interference eliminated. In every case, treatment, whether medical or surgical, must have its basis in just appreciation of the pathology. Without this appreciation the best technique may fail.

Novocaine injection in Traumatic Arthritis:—*De la valeur thérapeutique des infiltrations peri-articulaires a la novocaïne dans les entorses et les arthrites traumatiques. René Leriche et René Fontaine. Presse Med. xi., 280, 1932.*

The authors inject a one per cent. solution of novocaine into the peri-articular tissues of the affected shoulder, sometimes daily, sometimes less frequently. The ability to abduct the arm voluntarily returns as soon as anaesthesia is established, but again disappears. After the injections have been repeated daily or at less frequent intervals, painless abduction finally supervenes.

Only three cases are reported, all with the diagnosis of traumatic arthritis including two of recent origin.

The method would seem equally promising in the condition, we, Americans, call periarthritis of the shoulder. The authors suggest the use of this method in after-treatment of fractures involving the shoulder joint.

The ability and prominence of the authors combined with the simplicity of the procedure would seem to recommend a trial.—*The Journal of Joint and Bone Surgery*, January, 1933.

Ultra-violet Radiation of the Interior of the Bladder:—H. Meschede (*Wein. Klin. Woch.*, October 28th, 1932, p. 1350) describes some cases of bladder disease which he has alleviated by exposing the interior of the bladder to ultra-violet rays. It was first tried in tuberculosis of the bladder. A quartz tube, 26 cm. in length and 7 cm. in diameter, is introduced into the bladder like a cystoscope, and the free end is attached to a quartz lamp. In a later modifi-

cation of the instrument, the author has made the free end ten times as large as that which is in the bladder; this enables him to view the interior of the bladder and focus the rays on the affected part. Meschede states that the interior of the bladder is ten times as resistant to ultra-violet rays as the skin, an erythema of the skin is produced at a distant of 3 cm. in three minutes, whereas in the bladder it requires half an hour. After ultra-violet radiation of the bladder irritation irritability is increased and the patient micturates less frequently. The patient thus gains confidence in this form of treatment, which at first is somewhat painful. There is a rapid increase of the bladder capacity. The erythema produced is a sign of the reaction on the part of the bladder tissue needed in the healing of chronic inflammatory processes. The whole of the interior of the bladder is irradiated, with special attention to the affected areas. Even in acute cystitis, ultra-violet radiation may be used owing to the high bactericidal action of the rays. The one disadvantage of this form of treatment is that it takes up much time. The bladder is irradiated two or three times a week. The author has used ultra-violet rays for six months, and believes that they promise hope in a large number of cases. In several incurable cases the author was able to make life bearable for the patients.—*B. M. J.* Jan. 14, 1933.

MEDICINE

Intermittent Headache:—An uncommon type of headache associated with well-marked abnormalities in the radiographic appearance of the sella turcica, is described by Thomson (Birmingham). The headache occurs with particular intensity at or about the time of menstruation. In most cases the headache was regarded as migrainous until it was found that the basophilic cells of the anterior lobe of the pituitary were in some way subjected to pressure at the time of menstrual activity. The headache is very severe and the sufferer is gravely ill; the pain is quite different from the mild neuralgia so common during menstruation, and while not definitely localized in the frontal or occipital areas it is never unilateral or expanding as in migraine. Photophobia and dimness of vision are present, with pale discs, but there are no stars, fortification figures, or sensory auræ, while ophthalmoplegia, aphasia, and transient paresis are absent. Nausea and retching are common, but vomiting is rare. The serum-calcium and plasmaphosphorus are reduced, yet calcium lactate and parathyroid hormone

gave no relief. Radiological examination showed in most cases a normal sella turcica but this prevents the normal swelling of the anterior pituitary just before or at the time of menstruation. The administration of ovarian follicular hormone gives relief in the majority of cases. *The Prescriber*, Nov. '32.

B. *Suipestifer* as a cause of disease in man.—*Bacillus suipestifer*, a member of the salmonella group, was first brought into prominence under the name of the Hog cholera bacillus, salmonella cholerae-suis, as it is often called in America, as the cause of Hog Cholera or swine fever. However, while this bacillus is frequently isolated from cases of swine fever, it is now regarded as being not the causal organism but a secondary invader. Much confusion has been caused by a plurality of names, and especially by the use of the term *B. suipestifer* without exact serological definition; but actually this organism is only rarely found to be a cause of human disease. Some continental investigators go so far as to question its pathogenicity to man, while W. E. Savage and P. B. White in 1925 regarded it as an organism of low virulence to man, which can set up an out-break of food poisoning 'only under exceptionally favourable conditions.' Further experience, however, showed that it was less rare than had been supposed, and W. M. Scott, in 1926 described four separate outbreaks of food poisoning in this country, in which over 100 cases in all of gastro-enteritis occurred, one being fatal, and in which the bacillus incriminated was *B. suipestifer*-sub-type 2. Savage and White had previously included one outbreak in their series, while at least three outbreaks have been described in U.S.A. These facts seem to establish this organism as a cause, though not a frequent cause, of food poisoning outbreaks. As usual with the salmonella group, the problem is complicated by further differentiation into sub-types, and there are now three types which have to be considered. One sub-type, generally known as *B. para typhosus* C, is associated with human disease of the para typhoid fever type, but, with rare exceptions, is found only in the East, in places such as India, Mesopotamia, and the Balkans. It is separable from, but closely allied to, the two other types. The true *suipestifers* fall into two sub-types. The sub-type 1, the American type, is almost exclusively confined to that continent and is the type isolated from American swine. It has serological differences and cultural distinctions, such as its failure to blacken lead acetate and its inability to ferment dulcitate and

arabinose. Sub-type 2 is the Western European type. This is the type which is isolated from swine fever infected swine in this country, and is the one associated with *suipestifer* food poisoning outbreaks. This type regularly and rapidly blackens lead acetate and ferments both dulcitate and arabinose. That bacillus *suipestifer* may cause sporadic disease other than food poisoning in this country has recently been shown by Nabarro and his collaborators, who cultivated this organism from the joints of two children suffering from arthritis. Several isolated cases of para-typhoid fever-like nature due to this bacillus have also been reported in U.S.A.

The story is carried a stage further in a valuable paper by A. G. Kuttner and H. D. Zepp which has been just published. During the winter of 1931-32, within a period of four months, seven children with ages ranging from 7 months to 6 years were admitted to the Harriet-Lane Home, Johns Hopkins Hospital, Baltimore. All the cases were entirely unrelated. They were admitted for acute febrile disease of para typhoid fever type, but showing considerable differences, none was of food poisoning type. In every child there was definite blood infections, *B. suipestifer* being isolated from the blood. It is of interest that in only one case, in spite of repeated examination, was the organism isolated from the faeces or from the urine. The course of the disease was mild, there were no recurrences or complications, and all the patients recovered after a period of 14 to 29 days in hospital. The bacteriological investigations were carried out with great care. The fact that six of the strains isolated were found to belong to sub-type 2 and 1 to sub-type 1 is of great interest in view of the known geographical distribution of these three sub-types.

From the different cases recorded we now know that *B. suipestifer* sub-type 2 can cause disease in man, either in the form of an outbreak of food poisoning or as illness of the type of para typhoid fever. It must still be regarded as a rare cause of human illness, but further experience may show a greater prevalence than the reported cases suggest. The sub-type of salmonella found is of importance from the point of view of causation. In the cases of Kuttner and Zepp no source of infection could be found, but they suggest as most probable infection from specifically infected pork. Since *B. suipestifer* is an organism often associated with swine fever, and undetected cases of this disease may be sold as food, it cannot be excluded as a potential source of infection. The likelihood that it was actually the causal organism in the cases described by Kuttner and Zepp is discounted by the fact that in all but one child

the strains were of sub-type 2, whereas the ordinary type in swine in America is sub-type 1. In England this discrepancy does not exist, since all the positive type isolated by White were of sub-type 2, and therefore of the same sub-type as those found in food poisoning outbreaks. Obviously still more detailed study is necessary before causal factors can be fully established. All that can be said at present is that suipestifer strains from pigs, and probably other animals, seem to be of rather low virulence to man, though potential causes of human infection.—*The Lancet*, 21, Jan. 33.

Encephalitis Following Vaccination.—G. Bergman Hygeia, September, 15th 1932, P. 673 discusses the problem of encephalitis provoked by vaccination and illustrates his observations with notes of five cases which occurred in Sweden early in 1932. Though complications of vaccination referable to the central nervous system were observed even in Jenner's time, and have cropped up sporadically at later dates, it seems certain that during the last eight or nine years vaccination encephalitis has occurred with unprecedented frequency. The out break described by the author was a sequel to the occurrence of nine cases of small-pox in January, 1932, in Malmö. Late in January and early in February, 87 per cent. of the town's population were vaccinated, and a total of 112,724 vaccinations. Between February 13th and 21st five patients, whose ages ranged from 46 to 68 years, were admitted to the hospital suffering from acute diseases of the central nervous system. The first three recovered completely. The fourth patient began to show signs of parkinsonism. The fifth case was too recent for an opinion to be formed as to the ultimate issue. In marked contrast with the observations made in England and Austria, all the present author's cases were revaccination cases, and the notes in Kaiser's series of eighty Austrian cases, there were only seven revaccination cases. The incubation period in the author's material ranged from ten to fifteen days, whereas in the Dutch statistics this period in the overwhelming majority of cases within the narrow limit of eleven and twelve days. The source of the vaccine used was the same only in two of the five cases. It is possible that the season of the year played a part in the origin of these cases, for Bastiaanse has shown that in Holland. They are most frequent, relative to the number of vaccinations, in February.—*B. M. J.* Feb. 4, 1933.

Types of Angina Pectoris.—M. D. Silberberg (*Medical Journal of Australia*, July 9th 1932 p. 35) gives a brief survey

of the history of the recognition of angina pectoris, and classifies paroxysmal anterior thoracic pain related to cardiovascular disorder in the following groups: (1) cardio-aortic angina pectoris; (2) neurogenic angina pectoris; and (3) mixed types. In the first group, the pain experienced may arise from the coronary artery itself, or from the related heart muscle as a consequence of ischaemia, oedema, or accumulation of metabolic products. It is suggested that localized painful cramp may be the cause of pain which is referred to the corresponding skin and muscle segments. While most patients have cardio-vascular disease, in a few, no abnormality can be found apart from the pain. The importance of the psychological factor of interest is illustrated by the patient who can play bowls with ease, but cannot walk more than a few hundred yards without experiencing pain. The sufferer from angina pectoris usually gives a graphic account of these symptoms, whereas the subject of neurogenic angina relates a more vivid story, the description of a knife-like stab being especially characteristic of this syndrome. The patient afflicted with neurogenic angina pectoris is commonly the victim of chronic fatigue or toxæmia, the latter being often related to the excessive use of tea, coffee, tobacco, and alcohol. She is also frequently of the hypotonic, visceroptotic, and hyper-sensitive type, and unlike the sufferer from cardio-aortic angina pectoris, does not generally feel well between the attacks. The bouts of pain are not related to effort, nor are they sternal in position, but rather in the left mammary and axillary regions. The author concludes with a summary of the well-known features of coronary thrombosis, and a brief sketch of the treatment required for this condition.

THERAPEUTICS.

Glycerine and Sodium Hydnocarpate Treatment of Leprosy.—J. T. Jackson (*'Leprosy Review'*, July 1932 p. 121) comments on the value of glycerine as regards the alleviation of the pain reaction in the sub-cutaneous administration of sodium hydnocarpate. The strength of the solution generally employed is 2.5 c. cm. of pure double distilled glycerine to 100 c. c. of 3 per cent. sodium hydnocarpate solution containing 0.5 per cent. of carbolic acid. The pain is not abolished, but it is often markedly reduced; this is attributed to the good penetrating power of glycerine and the soothing effect it exercises on irritated tissues. The author describes an

investigation designed to estimate the degree of pain reduction on similar lines to those of his previously reported study of the effects caused by different fractions of sodium hydnocarpate in solutions of varying hydrogen-ion concentration. He found that the average decrease in the "pain factor" was 55.4 per cent. the minimum decrease being 4.7 and the maximum 71.6. He believes that the maximum could be raised by increasing the strength of the glycerine solution, since it has been shown that the pain following the injection of solutions of sodium hydnocarpate has no direct relation to the PH. of the solutions employed, nor to the use of different batches and products of this salt. (*B. M. J.* December 10 '32.)

Vitamin B in Oedema: Dr. Caumalt Jones (*B. M. J.* vol. 1932 p. 374) refers to the action of vitamin B in relieving oedema due to various causes. In three very bad heart cases vitamin B could not postpone death, though it acted as a very good diuretic. These patients had gone too far. In the anaemias of the pernicious type striking results were obtained. The results in oedemas of other origin were also very satisfactory. The preparations of vitamin B used were "marmite" and "tiki-tiki." Of these two, the latter, which is made from rice in the Philippine Islands was the more powerful, a drachm twice a day being quite sufficient.

Ammonium Nitrate in Oedema: Vallery Radot and Gilbsin describe their experiences with ammonium nitrate in various forms of oedema. They have used it when all other therapeutic measures have failed, and they record a high percentage of success in cardiac oedema, but little results in other types. They have been accustomed to start with 2.0 gm. daily or 10 grains three times a day, raising the dose gradually to a maximum of 12.0 gm. daily, or 60 grains three times a day. No ill effects were experienced, except diarrhoea in one case. In one case good results were obtained with ammonium nitrate combined with injection of Salyrgan.—*Bull. et mem. Soc. Med. des.hop. Paris*, 1932, May, 30 thro' The Prescriber.

Bacteriophage as therapeutic agent in Staphylococcus Bacteremia:—W. J. MacNeal and Frances C. Frisbee, New York (*Journal. A. M. A.*, Oct. 1, '32) have produced a staphylococcus bacteriophage which is highly potent against a large majority of bacteria of this species found in infections of the blood stream and have prepared this agent in a nearly protein-free medium. Use

of this bacteriophage by external application, by subcutaneous injection and above all, by intravenous injection in a series of fifteen patients with staphylococcus bacteremia was followed by death in eight and recovery in seven patients. The treatment is not a simple procedure, and the course of the disease leading to recovery is quite prolonged. The authors give brief clinical records pertaining to the fatal cases. In conclusion, they state that bacteriophage is a remedial agent which, when carefully and intelligently employed, may be expected to assist somewhat in the treatment of staphylococcus bacteremia, a disease that must still be regarded as extremely grave.

Gold Sodium Thiosulphate:—This substance, which has the formula $\text{Na}_3\text{Au}(\text{S}_2\text{O}_3)_2 \cdot 2\text{H}_2\text{O}$ was introduced for the treatment of tuberculosis by Professor Mollgaard of Copenhagen, in 1924. It occurs as white crystals, containing 37 per cent. Au, which are soluble in water, giving a neutral solution. A 4.5 per cent. solution is isotonic with the blood. Dilute aqueous solutions (1 per cent.) remain stable for some time and can be sterilised by heating to a temperature of 100 degs. C. without injury. Solutions more concentrated than 5 per cent. decompose slowly. Extensive clinical trials have served to indicate its limitations, but nevertheless, have established its claim to be regarded as a useful means of treating pulmonary tuberculosis in certain types of cases. Mollgaard regarded it as a true chemotherapeutic agent, and, consequently, administered it in maximal doses. It was shown by Wright and others not to be a direct bactericide, either *in vivo* or *in vitro*, but following its administration the sputum rapidly becomes free from tubercle bacilli and the patient shows an increase in weight and improvement in general condition.

It has been used with some success in lupus erythematosus, and in large doses (about 1 gm.) in the treatment of syphilis. Large doses are liable to be attended with reactions, such as rise in temperature and skin rashes. A solution of sodium thiosulphate is injected intravenously to counteract these effects. Even moderate doses may produce albuminuria, and when this occurs it is a warning to discontinue treatment until the urine is free from albumin. On this account treatment is usually carried out in an institution rather than in private practice. Gold sodium thiosulphate is injected intravenously in solutions not exceeding 5 per cent. in strength. Occasionally intramuscular injections are made, and the solution then should not exceed 3 per cent. in strength; it should never be

given subcutaneously. It is usual to commence with a dose of 0.1 gm., and gradually to increase at intervals of about seven days up to a maximum of about 1.0 gm. for males or 0.75 gm. for females, or to the limit of tolerance if that is less than these amounts. Treatment is continued until a total of 5 or 6 gm. has been given, and, if necessary, repeated after an interval of three or four months. For children the maximum dose is 0.5 gm. — *The Indian & Eastern Druggist*.

PROCEEDINGS OF SOCIETIES, ASSOCIATIONS ETC.

MEMORANDUM OF THE INDIAN MEDICAL ASSOCIATION ON THE PROPOSED INDIAN MEDICAL COUNCIL BILL.

(Submitted to the Hon'ble Sir Fazli Hossain, on 30.1.33 at New Delhi.)

This Bill to establish a Medical Council in India is the outcome of a great deal of discussion and agitation in the past. It was brought to a head by the decision of the British General Medical Council to withdraw their recognition of Indian medical degrees, in consequence of which a conference of provincial representatives was held in Bombay in 1930, which, after condemning the action of the General Medical Council, decided that we should set about putting our own house in order. It was felt that, with a view to establishing a uniform minimum standard of medical education in India, it was necessary to form an Indian Medical Council. It is necessary to recall these facts because to no small extent has the attitude of the General Medical Council governed the provisions of this Bill. A reference to the covering letter of Mr. Reid makes it clear that one of the reasons for the introduction of this Bill is to safeguard the "international status of Indian medical degrees which has been endangered by the action of the General Medical Council."

Before proceeding to a consideration of the merits of the Bill, it is necessary at the outset to view the measure in the light of present and impending circumstances. The provinces of India have reached different stages of development from the point of view of provision of medical education, relief and prevention of diseases. It is difficult to foresee what attitude the provinces will take and what would be the position of an All-India Medical Council under the new constitution. Under the Federal Governments of both Australia and Canada, each constituent province regulates its own medical policy and it is not unlikely that the same attitude would

be adopted by the provinces in India under the Federal Government. The position of the Indian states must also be taken into consideration. In these circumstances, therefore, the Bill is to a large extent premature. It would be futile to make an enactment which would, at no distant date, have to be entirely overhauled. This fact needs to be kept prominently in mind and if, in spite of this fact, Government persist in introducing the Bill, then it ought to be framed, as far as possible, in the light of what the control and powers under the impending constitutional reforms would be given the provinces. It is only on this understanding that the Indian Medical Association desires to discuss the details of the Bill.

At this juncture however, we should remark that in a measure so far-reaching in its effects and which has a technical and special aspect, namely the interest of the medical profession in India, the Assembly should have the advantage of expert opinion on the subject—opinion that has the confidence of the great body of the medical profession whose interests are concerned. We, therefore submit that to the Select Committee should be nominated a competent member of the independent Indian medical profession and one who has the confidence of the profession to represent their views.

If we are to have an All-India Medical Council, it is advisable that this council should be comprehensive and not restrictive in its scope. The preamble however limits the Bill to a very narrow channel, namely the maintenance of registration of the "higher" grade of the qualified practitioners in order to establish an uniform minimum standard of the "higher" qualifications in medicine for all provinces. The qualification "higher" is not only vague, but such a qualification was not contemplated either in the previous draft Bill or at the Inter-Universities Conference. Thereby the largest section of Indian medical practitioners (about 30,000 in number) is excluded. Furthermore, the Bill offers little or no incentive for doctors to place their names on the proposed All-India Medical Register. Unlike other countries in which privileges and immunities are allowed to medical men, this Bill entirely omits reference to them and gives nothing in return except perhaps a vague and problematical prestige, for a not inconsiderable registration fee. It gives nothing more than what registration under the existing provincial councils of Medical Registration now provides. There being a reciprocal relationship between the various provinces a practitioner now registered in any one province is free to practise in any other province.

Apart from the scope of the Bill, we would ask what is the real purpose of the measure. If it is to place our own house in order, to improve the standards of medical education in India and to conduct our medical policy in a satisfactory manner, the intention is laudatory and not one at which we would cavil; but if the intention is to effect any of these things merely in order to placate the British General Medical Council, then we would point out that there is much ground for objection, quite apart from any question of sentiment. Unfortunately, the Government's action and statements lead us to infer that the real intention is to placate the General Medical Council and we should be at some pains to point out how unnecessary this is. In the first place, we can put our own house in order quite independently of the General Medical Council. In the second place, we have to study the interests of the overwhelming number of practitioners in India before the interests of the few scores of men who proceed abroad for medical training, particularly to the United Kingdom. In the third place, those who proceeded to the United Kingdom in order to graduate find no difficulty within a short time of arrival in qualifying under the conjoint Boards in England and thereby obtaining recognition by the General Medical Council. Lastly, it might be remarked that an increasing number of Indian students are proceeding to continental countries, where they are given every encouragement and facility and are even provided with scholarships. The language difficulty is overcome by the fact that lectures, as in Vienna, are delivered in several languages, and in fact some of them have adopted English as the medium of instruction. Also, if it is thought that to bring the licentiates within the scope of the Bill would jeopardise the chances of recognition of Indian medical degrees by the General Medical Council, we submit that the interests of these 30,000 medical practitioners are more important than the regaining of recognition by this British Institution.

All these facts have to do with the question of reciprocity and we would consider it an insult to the dignity of this country, if, in the consideration of reciprocity, the Indian Medical Council occupied an inferior or subordinate status to that of any foreign medical body. For this reason we assert that, as a matter of principle, it is for the council upon formation to negotiate reciprocal relationships and it is a negation of this principle to give British medical degrees automatic recognition such as is attempted in the second schedule of this Bill. This principle would be present even if the British General Medical Council had not withdrawn its recognition

of Indian medical degrees; but the fact that it has done so only serves to emphasise the principle.

Apart from these wider issues, the *composition of the proposed Council* is an important matter. We have remarked above that the spirit of the new reforms should be maintained and that the council should be a popular body, composed, for the most part, of elected members. For this reason, we deprecate the suggested composition which gives an almost preponderating element of official representation. Not only is the president to be nominated, not only are the local governments to nominate a member each, but also three members are to be nominated by the Governor-General in council, while even in regard to the members elected by the Medical Faculties it should be remembered that these Faculties have in them a large official element which would ensure the return of an official or one who is officially *persona grata*. As against all these, the provincial Committees are allowed to elect only one representative each and it has to be remembered that in the provinces of Assam and Central Provinces, there would be no provincial committee in view of the non-existence of provincial medical council. The principle of this composition is entirely wrong. The larger interests of the bulk of the medical profession are overlooked, while all Government interests are strongly fortified. We do not suggest that both the Central and Provincial Governments are not interested parties, particularly from the financial stand-point; but this in itself is not sufficient reason to give them such overwhelming power as against the weightier interests of the medical profession as a whole. For example, in the British General Medical Council, some forty five of the members are elected to represent the profession and only five are nominated by the Privy Council as representing Government's interests. The same principle is applicable here. If the Provincial Governments are entitled to representation because of their financial interests, the Corporation of cities like Calcutta and Bombay might with equal right ask to be represented, for they make large donations to medical education and institutions.

Lastly there is the question of the licentiates, who have been trained under the western system of medicine and are recognised as qualified practitioners in India and to whom we have already referred above. We do not see that the inclusion of the licentiates would in any way defeat the objects or purpose of the Bill; in fact their exclusion would place out of the fold the bulk of the medical profession in India which would be a fact to be highly deprecated.

We have already dealt with their claim from the point of view of the General Medical Council, though we would add that if a four-year course of medical training in Japan suffices to gain the General Medical Council's recognition, there is no reason why Indian licentiates should not be similarly recognised. As a matter of fact, Madras has already decided to introduce a five-year course while the U. P. and Bengal have recommended its adoption. We believe that the inclusion of licentiates in the Central Register would lead to a bettering of their training and status and we do not believe that the medical interests of the people would be adversely affected by such improvement in their status. The question of fees depends largely on the capacity of the people to pay and the relation between supply and demand of practitioners with the result that no practitioner could put his fees beyond the economic capacity of the people. There would be no greater tendency towards overcrowding in towns than is present to-day. One of the main reasons why we object to the exclusion of the licentiates is that it makes an invidious distinction in the ranks of the medical profession in India and also because their exclusion contradicts, to no small extent, the intention of the Bill to establish a uniform minimum standard of qualifications in medicine for all provinces. As we have suggested before, the restriction of uniformity to "higher" qualifications alone is not warranted.

We sincerely hope that the Government will give due and close consideration to the various points we raise. It would be impolitic to force through a measure that has no popular support; in which case it would be sure to be altered out of all recognition with the establishment of the more liberal constitution resulting from the Round Table Conference. A statesman-like view is called for and we hope the Government will rise to the occasion.

THE GODAVARI DISTRICT MEDICAL ASSOCIATION, COCANADA.

First Anniversary Celebration.

The First Anniversary of the above Association was celebrated with great eclat yesterday the 18th February '33 in the premises of the M. S. N. Charities buildings, Cocanada, under the Presidentship of Rao Bahadur Dr. T. S. Tirumurti of Vizagapatam. 85 members including a number of lady doctors and 23 non-member doctors attended the function from all over the district, including 3 from West Godavari. Besides, among the distinguished guests that were invited and that attended the function were

J. B. Brown Esq., C.I.E., I.C.S., Collector of East Godavari, Sree Rajah K. R. Gopala Narasaraaja Bahadur, President, District Board, East Godavari, and Rajah of Ramachandrapuram, Mr. L. Subba Rao, Chairman, Municipal Council, Cocanada, Mr. B. Venkata ratnam, President, Taluk Board, Ramachandrapuram, Sree Rajah S. R. V. V. Krishnamaraju Bahadur, President, Taluk Board, Tuni, Mr. A. V. Suryanarayana Raju, President, Taluk Board, Razole, and Miss S. Hatch, K.I.H. of Ramachandrapuram. The guests met at dinner at 11 A. M. held in the spacious halls of the Charities Buildings, and afterwards adjourned to spend their time in the shade of the vast casuarina plantations in the premises. The business meeting commenced at 2 P. M. wherein Major T. S. Shastri I.M.S., was elected as President and Drs. Audinarayanaswami and Kamaraju as Joint Secretaries, and Dr. Miss. T. K. Narayanaswami and Dr. S. Swami Naidu of Rajahmundry, and Dr. B. S. S. Prasada Rao of Samalkot as members of the Managing Committee for the new year. Then commenced the Anniversary meeting at 3 P. M. with Rao Bahadur Dr. T. S. Tirumurti in the chair. Dr. Tirumurti after expressing his great pleasure and surprise at such a large number of doctors, a group of over 100 being present unlike at other places where he used to meet much fewer numbers, including Madras, delivered a very interesting and instructive lecture on "Some recent advances in our conceptions and diagnosis of diseases". He dealt specially with the subjects of inflammation and repair and oedema, (inflammatory—cardiac, renal, and other varieties of it) and how the treatment of these naturally got modified of late in accordance with the changed conceptions. Major Shastri then talked about the necessity of conducting a Leprosy Campaign in this district and exhorted all the members of the Association to co-operate in their respective areas when the campaign is organised. Mr. J. B. Brown joined in this exhortation for working the Leprosy Campaign in this district. With a vote of thanks to the President and the guests of the evening, the meeting terminated. After a group photograph and a tea-party, the guests dispersed at 5-30 P. M.

TANUKU MEDICAL ASSOCIATION.

The last meeting of the Tanuku Medical Association for the year 1932 was held on Sunday the 4th December with Dr. G. Sivaram M.B.B.S., in the chair.

The Association placed on record its deep regret for the

premature demise of Rao Sahib Dr. M. Seshadri Reddi, L.M. & S., who was one of its members and resolved to communicate the same to the members of the bereaved family.

Dr. C. H. Sathivasu, M.B.C.M., M.R.C. & S. and Dr. S. Suryanarayana Rao, L.M.P. were unanimously elected president and secretary respectively of the association for the year 1933.

Dr. G. Sivaram, M.B. & B.S. gave an interesting discourse on the principles of Ayurvedic system of medicine which was followed by some discussion.

After light refreshments the meeting terminated with a vote of thanks to the President and the host.

THE TRICHINOPOLY DISTRICT MEDICAL ASSOCIATION.

A monthly meeting of the above association was held on 30--11--32 in the headquarters hospital at 4 P.M. About forty members were present. Drs. Gnanaraj and Sahadevan were "at home".

Major-General C. A. Sprawson, Surgeon-General to the Government of Madras was present on the occasion. The secretary welcomed him with the following words.

"Permit me on your behalf to welcome to our association a distinguished member of our profession and the provincial head of the department, Major-General C. A. Sprawson C.I.E.V.H.S., I.M.S., F.R.C.P. etc. He is not only a great administrator but a great physician of world repute. His appreciation of medical associations and their work and worth is evident from the fact of his having very readily and kindly consented to preside at our annual gathering which ought to have been held yesterday but for unforeseen circumstances necessitating its postponement. His sympathies with the independent members of the profession are well known. In addition to giving full scope to the honorary system introduced by his predecessors, he has undertaken its extension, as is seen by the appointment of a committee recently to examine and report as to how best the honorary system could be extended.

In an ideal state, except the administrative side and a few necessary and whole-timed staff, the whole of the professional staff should be managed by honoraries. That will save to the department a good deal which can go a great extent in extending medical relief.

I am glad to say that in this town not only the honorary and the paid staff work in harmony but also a number of private

practitioners are associating themselves with the hospital by bringing their cases which require hospital attention and keeping them here till such time as is necessary and then taking them for after-treatment.

Such work is facilitated by the able and general department of the present District Medical Officer. It is hoped that with the extension of the honorary system and the construction of a new hospital for this town which is essential, we will be having an ideal institution. In closing I must thank Major-General C. A. Sprawson for very readily consenting to preside at to-day's function at such short notice, necessitating his stepping from the train into our association direct at great personal inconvenience".

Major-General C. A. Sprawson thanked the association for the honour of inviting him for the day's function. He offered his excuses for not being able to keep up his engagement to preside at the annual gathering which should have come off yesterday, due to ill-health. He regretted he could not stay in this place more than a few hours as he had to get off to Vellore to open the Ladies' Medical School.

He was glad to find such large number of medical men, mustering strong at such meetings. Associations as these were essential and in the interests of the medical men to improve their knowledge, to know each other intimately and to clear misunderstandings often created by many wandering patients. He also stressed that associations were a means to level up differences of class and caste in the profession which had crept up banefully in this country.

He was glad to hear that the honorary system was working smoothly in this place and hoped it will be extended still further in the interests of both doctors and patients.

Dr. Sarma, the D. M. O. demonstrated two cases of appendicitis which were operated upon by him. In one instance, the operation was performed immediately there was an attack, as the patient came in within a few hours. In the other case, the operation was performed only after a month as the patient came for treatment after four days after the attack and he had to wait.

Dr. K. R. N. Chary, the Honorary Assistant Surgeon demonstrated a case of pernicious anaemia which showed marked improvement by injections of Hepatex and also a case of appendicitis which recovered without operation.

After being garlanded, the Surgeon-General left the meeting amidst cheers.

Dr. R. Sambasivan then occupied the chair. The minutes of the last monthly meeting were read by the Secretary and adopted. The Secretary then announced that members of the profession were welcome to attend the leprosy clinic held by Dr. Chokkalingam at the Government head quarters hospital every Tuesday and Friday at 4 P.M.

Dr. Raghavan then proposed a hearty vote of thanks to Drs. Sahadevan and Gnanaraj, the hosts of the evening and Dr. R. Sambasivan the President of the evening. Then the meeting terminated.

II

A monthly meeting of the Trichinopoly District Medical Association was held on Saturday the 18th February at 5 P.M. in the E. R. High School. About 55 doctors were present. Dr. T. K. Manickavasagam Pillai was "At Home" to the members.

After reading of the minutes of the last meeting, Dr. T. S. S. Rajan demonstrated two interesting X-ray photos, one of Exostosis of the vertebrae and another transposition and adhesions of the intestines. Dr. S. Padmanabha Sarma who presided at the earlier part of the meeting introduced the lecturer, Dr. Chokkalingam Pillai, the Group Leprosy Officer, and called upon him to deliver his lecture.

The lecturer started by saying that leprosy was much more prevalent than the census showed and in his experience he found atleast two dozen cases in every village of a 1000 population. Leprosy was not a hereditary disease. It was communicable in different ways, (i.e.) direct contact, using clothes, etc. It is a self curable disease, getting spontaneous cure from 6 months to 15 or 20 years. It is predisposed by insanitary living, under-nutrition and excesses such as alcohol and venereal diseases. He explained the different stages and classification of the disease as A 1-Depigmented anaesthetic patches, A 2-Thickened Nerves, A 3-Trophic changes (Blisters, Ulcers, Contracted fingers and wasting Thenar-Eminence); B 1-Erethematous patches, B 2-Small nodes with slightly thickened fingers and toes, and B 3-with nodules thickened ear lobes (leonine appearance). He also stressed that bacilli will not be found in A1 and A2 cases, but would be found sometimes in nerve roots of A2 cases. Bacilli would be found in the skin in B1 cases and sometimes in nasal smear of B2 cases and in abundance in B3 cases. The new classification according to the latest medical

authorities was as nerve and cutaneous lesions (i.e.) N1, N2, N3, and C1, C2, C3. Regarding the treatment, the lecturer said that experience showed Chauloomgra oil was the basic principle in the treatment which could be used externally, internally, and by injections and the most popular and useful form of injection was Hydnocreol. He also advocated the use of Trichlor-Acetic Acid for external use on depigmented anaesthetic patches. He also said that regular treatment for 6 months in A cases and for two years in B cases was quite adequate for curing cases of leprosy.

After the conclusion of the lecture, there were a number of questions to which the lecturer replied clearing the doubts. In his concluding remarks, Dr. T. S. S. Rajan who presided at the later part of the meeting stressed on the necessity for the early diagnosis of leprosy and said that the old remedy Chaulmoogra still held the field as the specific for the disease. He also warned the practitioners about giving intradermal injections and pushing potassium iodide.

With a vote of thanks to the host, lecturer and the president, the meeting terminated.

BOOK REVIEWS.

Colonic Irrigation:—By W. Kerr Russel, M.D., B.S., 1932. pp. 191 Illustrated. E. & S. Livingstone, Edinburgh, Indian Agents, Messers Butterworth & Co., India Ltd., Price Rs. 7-14-0.

This is an interesting book on colonic irrigation. The writer tells us how at one time this therapy was popular and explains how it has gone down in importance nowadays. This he rightly attributes to the springing up of the numerous purgative pills and potions in the market. He deprecates very much that both the laity and the profession have not as yet realized the significance and usefulness of colonic therapy.

The author is of opinion that the physican would be able to actually cure constipation by means of colon gymnastics which stimulate the bowel to perform its function which is the only rational method.

The opening chapter gives a descriptive history of the origin of the clysters which is very interesting. The subject matter is built up in the following pages in quite a rational manner in the light of our present day knowledge of anatomy and physio-

logy of the intestines. The various apparatuses used for colonic irrigation are taken in order and their utility and importance are clearly discussed.

Medicaments for these irrigations and lavages are given and their therapeutic value stressed.

Contra-indications and suggested dangers form the subject for the next chapter—VIII, while the conditions benefitted are dealt in the IX chapter. This is an admirable production that should be read by all the practitioners in India where one too often meets with a fairly large number of cases suffering from some ailment or other attributable entirely to the faults in the alimentary canal.

There is a copious bibliography at the end of the book which would be found helpful by the more interested readers in this speciality. We most confidently recommend this volume to all our readers.

Specific Changes in the Blood Serum: A contribution to the serological diagnosis of cancer and tuberculosis.—By S. C. T. Bendien, Zeist Holland. Translated By A. Pincey, M.D. The cancer Hospital, London. 1931, pp. 95 with 64 illustrations and 5 spectra in the text and on 8 plates London. William Heinemann Medical Books Ltd., Price 10/6. net.

The aim of the author in writing this book would seem to be to contribute something new to the cancer problem towards its diagnosis by serological test. He does not assert much on his observations but gives the reader in a very explanatory manner the results of his careful observations at the bedside and in the laboratory conducted over thousands of cases and shows the beginning of a new way.

In the first section of the book physical and chemical properties of the normal serum of the horse are given. This is followed by a general consideration of the normal human serum—the effect of various characters of the blood on the flocculation reaction, as viscosity, and suspension stability of the blood. The effects of physical and chemical agents on the flocculation reactions are well illustrated.

The next section deals with the pathological serum and its properties on the same lines as mentioned above.

Thus in these series of experiments carried over five years, the writer finds the following interesting new facts whose practical utility entirely depends on further work on the same lines by others in the field.

A disposition to tuberculosis is associated with flocculation under No. 6 and is on the acid side. In carcinoma the tendency is manifested by flocculation on the alkaline side, and that is, above No. 6.

“Furthermore, I have found that serum in which the globulin has a strongly negative charge—cataphoresis—indicates a predisposition to carcinoma. On the other hand, globulins which carry a strongly positive charge are indicative of a predisposition to tuberculosis.”

As has been said by the translator in his preface, “Time alone can show the practical value of Dr. Bendien's observations, but there can be no doubt that this book presents a number of new facts.”

Materia Medica of Pharmaceutical Combinations and Specialities—By U. B. Narayana Rau, Registered Medical Practitioner, Bombay. 1932 pp. 249, Published by Rayan Pharmacy, Girgaum, Bombay.

This has been specially written for the use of the busy Medical practitioner and gives full information and complete details of every preparation and proprietary drugs sold in the market. The author must be congratulated for the trouble he has taken in collecting and presenting in a book form most of the important specialities prepared by well-known manufacturers of the world. An alphabetical list of manufacturers' names at the commencement of the book and the addresses of surgical instrument dealers in Bombay at the end are useful additions to this book. We heartily commend it to the profession.

PREPARATIONS AND INVENTIONS.

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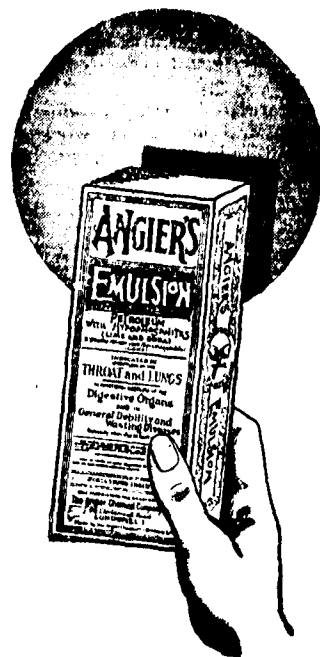
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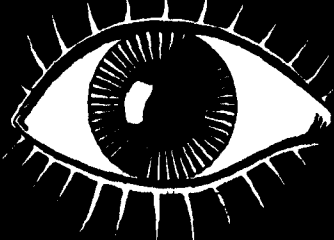
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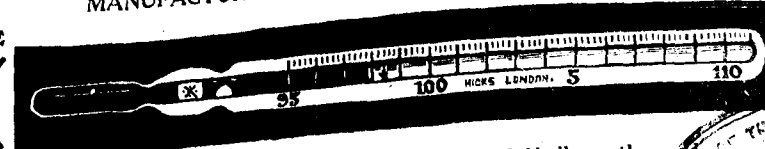
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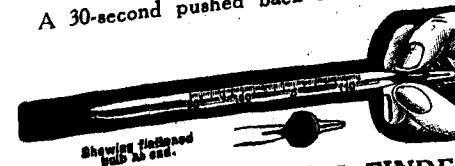
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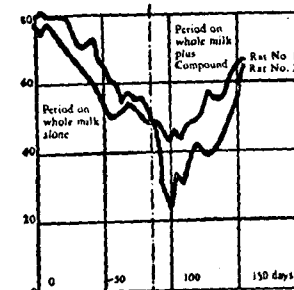
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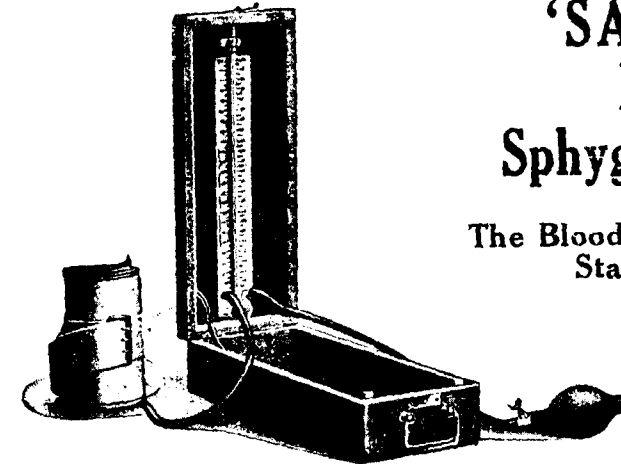
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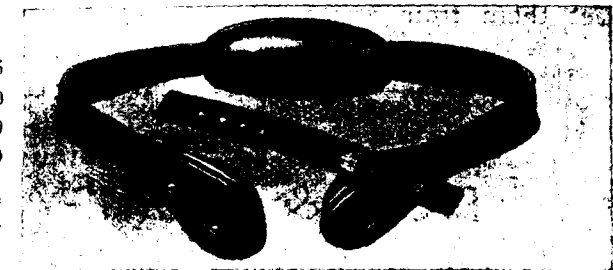
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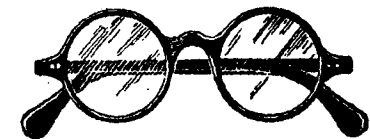
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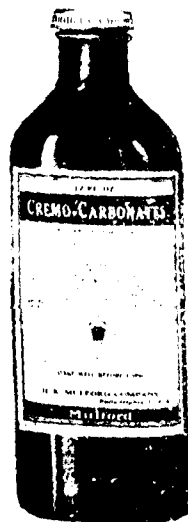
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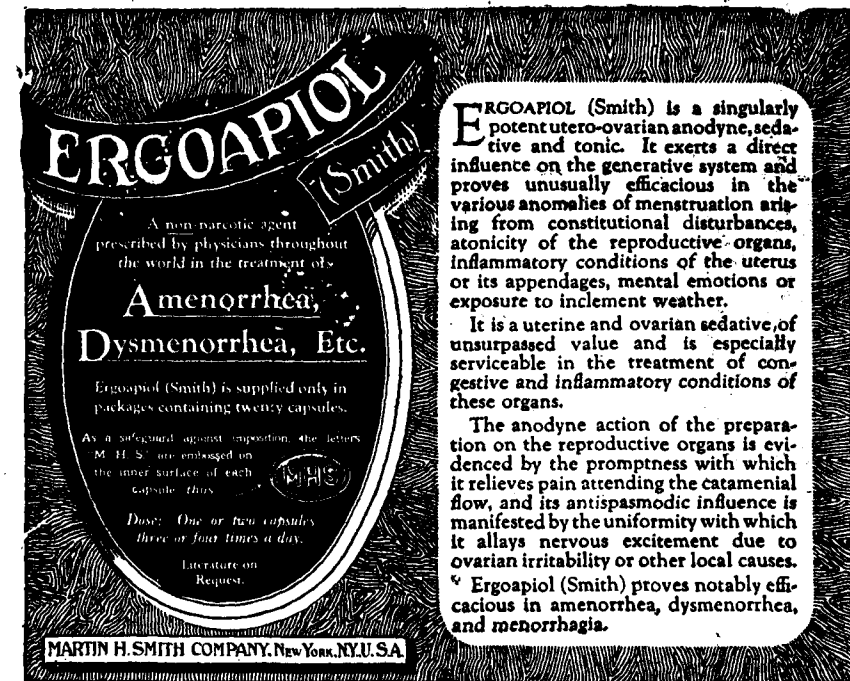
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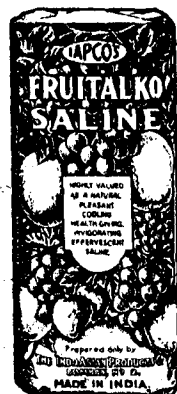
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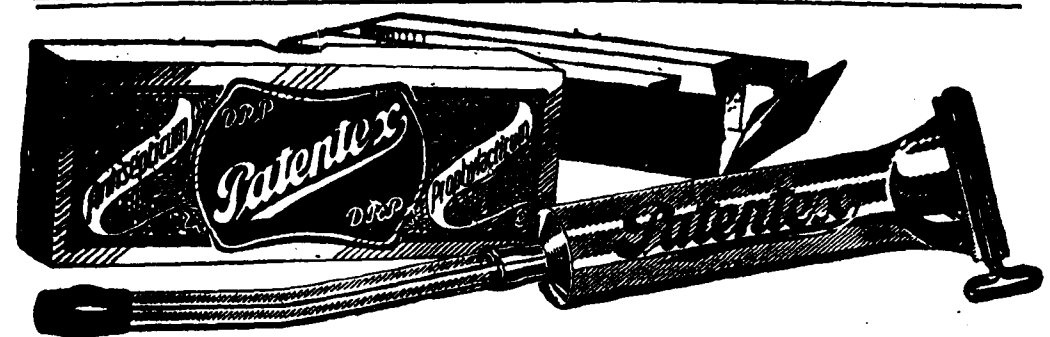
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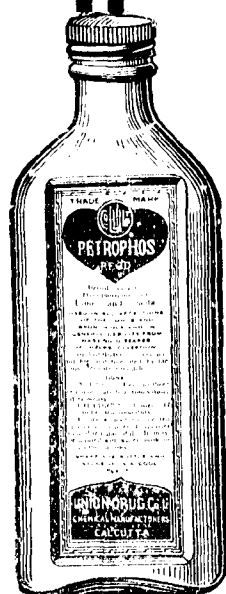
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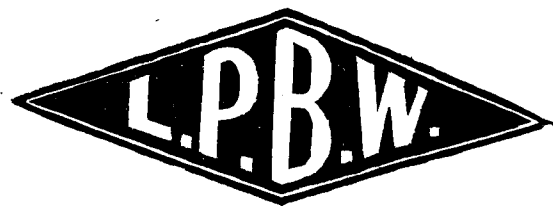
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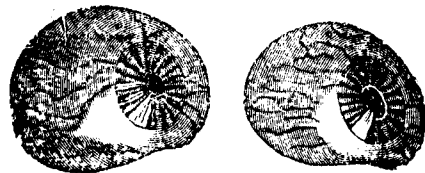
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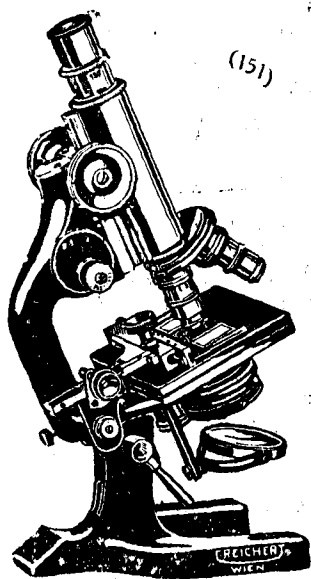
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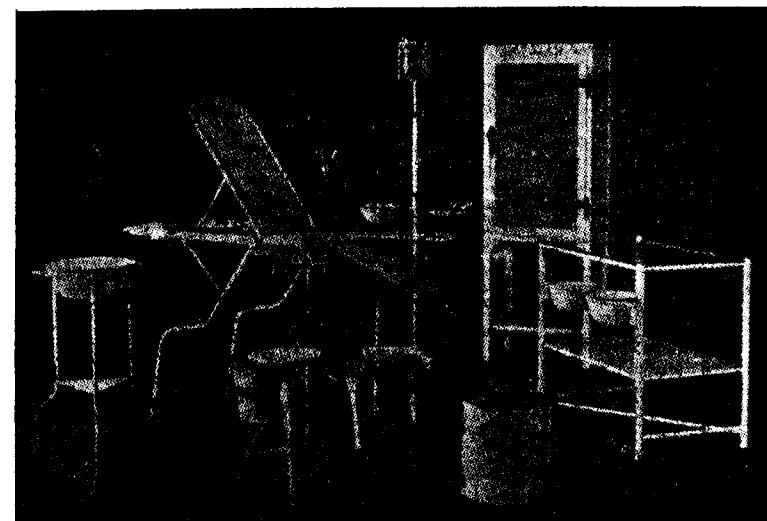
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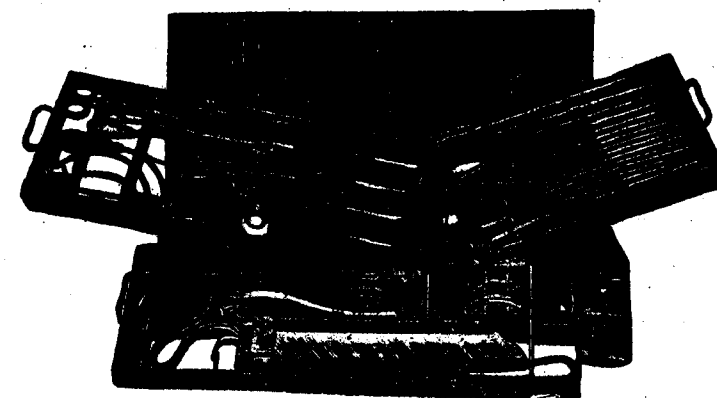
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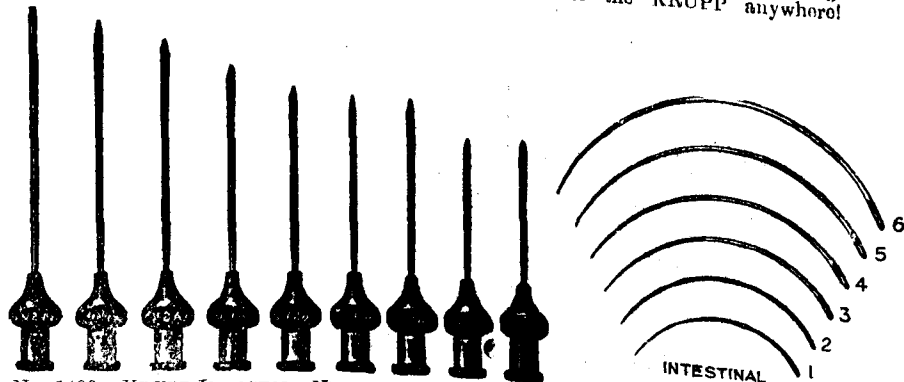
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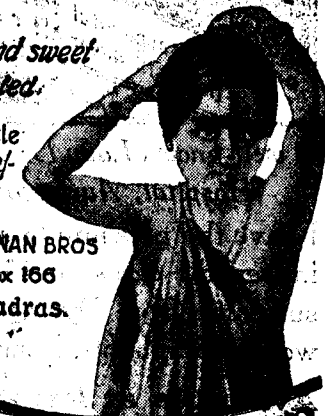
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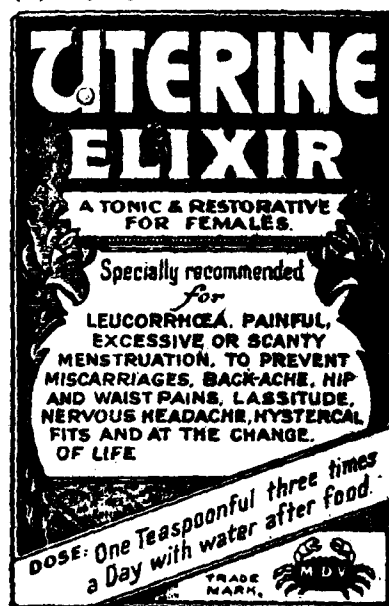


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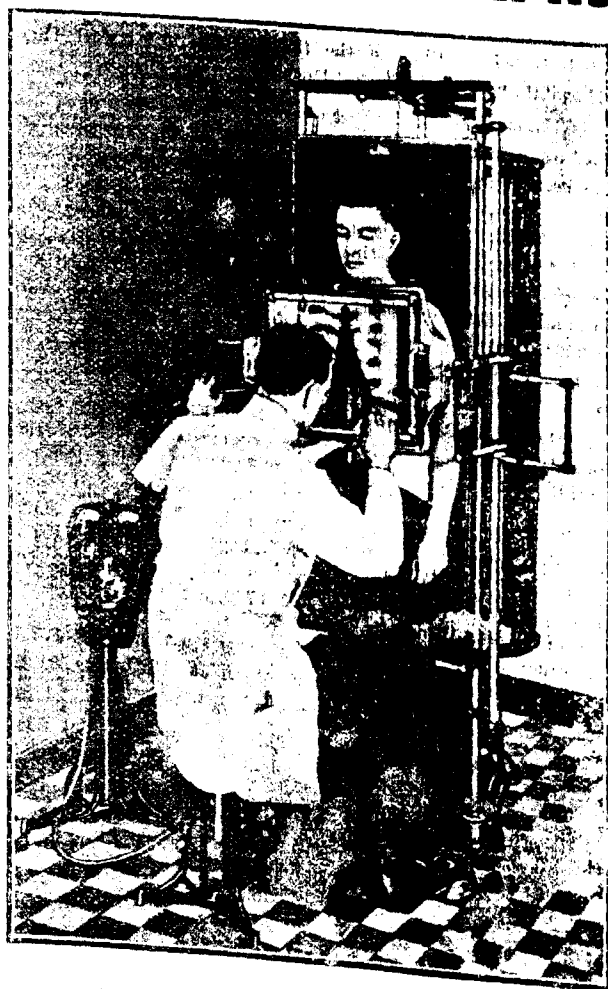
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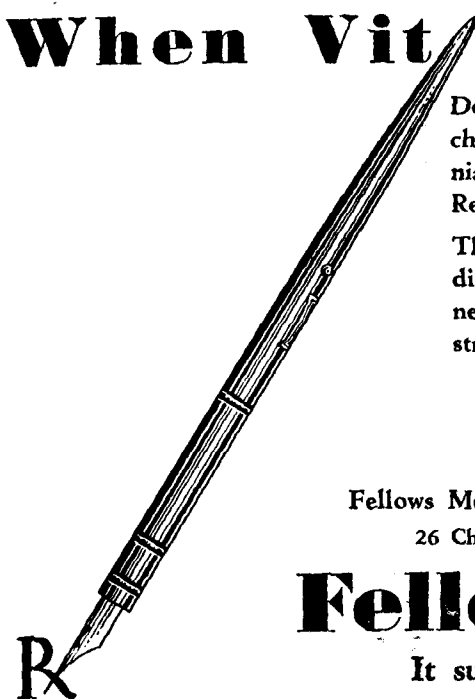
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Foreword.

THE Editors of the Antiseptic have kindly asked me as Convenor of the University Extension Board to write a foreword to this—the special issue of the "Antiseptic", and I do so with pleasure.

In July 1932, the Syndicate of the University of Madras, on the recommendation of the Academic Council and the Senate, constituted a University Extension Board for the City of Madras, whose function it was to arrange for extension lectures in various subjects. As Convenor of the Board, it was my privilege to submit a programme and I must confess that I felt that it was a most suitable opportunity to take up the question of post-graduate lectures in Medicine. Those who have had the advantage of travelling abroad and seeing other medical institutions and universities, would have been struck with the fact that today the most important task that universities and the various organizations have taken up is post-graduate instruction in medicine. The rapid advances in the different spheres of medicine, the need for an up-to-date knowledge of the several subjects for anybody who is practising either general medicine, or surgery or one of the specialities, the difficulties of obtaining this information in a handy manner—all these have necessitated the organization of post-graduate teaching in very many centres in European countries. The system of post-graduate instruction is much in advance in continental cities like Vienna, Berlin and Paris; and it was not till after the war that Britain woke up to the necessity of arranging for a systematic post-graduate instruction. The Fellowship of Medicine in London started these post-graduate lectures a few years ago, and the universities were not slow to follow suit; so that in Edinburgh, Glasgow, Birmingham, Aberdeen and various other university centres, we have now a well-organized scheme of post-graduate lectures. I felt that Madras was sadly in need of such post-graduate instruction both for the general practitioner as well as for the specialist; and it was with that view I approached some of the teachers of the University to co-operate with the University

Extension Board in drawing up a scheme of post-graduate lectures. Eventually, three series of lectures were arranged for, one in Medicine, one in Surgery and one in the Specialities. To one and all of the lecturers who so readily and willingly came forward and accepted the offer of the University Extension Board, our thanks are due in a large measure. This being the first year of the post-graduate lecture series, it is possible that there may be many suggestions to offer with a view to improving the scheme of post-graduate instruction. But I believe that no centre of medical instruction would be fulfilling its full functions, without the auxilliary of a post-graduate instruction. I hope that in years to come, the whole scheme of post-graduate instruction will be organized in such a manner that larger and larger numbers will avail themselves, not only in the city of Madras, but from the mofussil stations as well; that these lectures will be so timed that it will be to the convenience of the greatest number possible; that their practical utility will be such that they will draw together many keen practitioners anxious to be in touch with recent advances in Medicine.

To the Editors of the "Antiseptic," the medical profession owes a debt of gratitude. The idea of publishing these lectures in a special issue of the "Antiseptic" is one to be commended wholeheartedly and the "Antiseptic" being about the most enterprising medical journal in India, it is good that it has come forward once again to show how much it is catering to the essential needs of the profession. I trust that the publication of these lectures will not only create a stimulus for post-graduate reading, but will serve to broadcast the knowledge that post-graduate instruction in Medicine is an essential equipment of the practitioner, if he is to be in the van guard of progress in his profession. I have no doubt whatsoever that the lectures will be widely read and will create the necessary stimulus for an energetic attempt on the part of the profession to improve itself in all fields of medical activity. It is only by such methods that the profession can hope to reach the highest standards of efficiency. Both the general practitioner and the specialist stand in need of post-graduate education. The efficiency of the general practitioner will depend on the efficiency of the specialist; and the wider knowledge of the specialist is just the corrective needed to ensure that specialisation does not deteriorate into an idiosyncrasy. The University will, no doubt, be greatly interested in the progress of the scheme of post-graduate instruction in medicine and any suggestions calculated to improve the scheme will be welcomed. I would only invite all readers of the "Antiseptic" to send any suggestions either to the Editors, or to the Convenor, University Extension Board, Senate House, Madras. I wish the special issue of the "Antiseptic" every success in its endeavours.

A. L. MUDALIAR,

Convenor, University Extension Board, Madras.

SURGERY OF THE BREAST.

BY

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THE subject of to-day's lecture is "Surgery of the Breast." But the time at our disposal is too short to discuss all the diseases of the breast and we shall consider only a few of them that are of common occurrence. Although surgery of the breast is practised extensively in the West, it is not so in this country for the reason that the custom of comparative seclusion of women among the masses prevents their seeking help from male doctors except when they are driven to do so by the rapid spread of the disease. I do not mean to touch upon the cosmetic part of breast surgery, but only as it pertains to the alleviation of pain and cure, temporary or otherwise, of definite pathological conditions.

The term "Breast" naturally reminds us of the female sex, but men also suffer from diseases of their breasts. Occasionally in men whose breast is only a vestigial structure, it undergoes hypertrophy and the condition has been termed gynacomastia. It is often distressing to the patient and therefore requires correction. The common practice is to remove it. To dissect off the glandular tissue of the breast from the nipple and the areola without button-holing the latter, is a delicate task, hardly worth the trouble; hence it is better to remove it altogether.

Injuries of the breast are not rare, due to its exposed position. Often the patients attribute their diseases to injuries which they sustained years back; but in most cases, the injury and the disease cannot be correlated.

Diseases of the nipple are few. They commonly occur during lactation. Abrasions and fissures result from the trauma caused by the sucking infant. They become infected and often the infection penetrates into the deeper structures of the breast.

Primary chancre of the nipple has been noted. It has the same characteristics as chancre elsewhere. Papilloma of the nipple is not infrequent and bleeds if irritated. It is a pedunculated, spread-out growth with a mammillated surface and may become malignant.

Eczema or Paget's disease of the nipple is not an independent condition. It is explained by Sampsen Handley on the basis of his permeation theory as a superficial manifestation of deep-seated carcinoma of the breast.

Mastitis or inflammation of the breast may follow trauma, but is generally infective in origin and usually this infection resolves. Pyogenic organisms may gain entrance and produce abscesses which are named supra-mammary, intra-mammary, or sub-mammary according to the situation of the pus. These acute abscesses are not of much interest to us.

If the infection be mild and the resistance high, chronic mastitis results. Certain organisms of low virulence are responsible for such a condition and the reason for it is unknown. Some of the longstanding lumps in the breast are of this type. Recently, I cut into a lump in the breast and removed a tablespoonful of pus. The abscess wall was $\frac{1}{4}$ inch thick. The lump was not painful, nor fluctuating. It is exceedingly easy to mistake such lumps for malignant swellings and to do radical operations on the breast. In doubtful cases I put in a needle and make sure if there is pus. It is not unusual to meet with chronic abscesses of tubercular origin in the breast tissue. It is fairly easily diagnosed if the existence of such a condition is borne in mind. Usually in general practice we find that such abscesses are treated as any other chronic abscess, by incision and drainage. The patient comes back after a time with a discharging sinus that does not heal, somewhere about the previous incision. Now the surgeon apprehends that the opening has been allowed to heal too soon; so he enlarges the opening, scrapes and cauterises the track thoroughly this time. The sinus may heal but the patient comes back after a few months. The breast is by now, full of sinuses and scars and the surgeon realises that he had been all the time dealing with a tuberculous abscess. In cases of the pathologist for opinion. So in a young girl, coming with chronic sinuses in the breast, especially if previous operations have been performed, always suspect a tuberculous condition.

Chronic Mastitis is a hackneyed subject and much has been written on it. It is a comparatively innocent disease although it has been accused of being a dangerous condition, predisposing to malignancy. In this condition, the glandular tissue of the breast undergoes degenerative and atrophic changes with proportionate increase in the interstitial tissue, giving the breast a tough and fibrous feeling as opposed to its usual soft and fatty nature. This

condition, though common at the menopause, occurs in earlier life and even in nulliparæ.

This gradually growing interstitial tissue invades the glandular structure and cuts off segments of it in islands, which undergo cystic degeneration, with the formation of multiple cysts in the breast and this condition has been termed "Polycystic Disease" of the breast.

The signs and symptoms of chronic interstitial mastitis are vague. The breast is usually small, but not always so. The fat disappears and the tissue feels firm or hard. If a palpable swelling is present, it is fixed to the breast and may fluctuate in case of cyst-formation. Pain is present in the majority of cases and is bilateral as the lumps are. There is usually no discharge from the nipple. Hard squeezing may bring up a few drops of serous discharge, rarely blood stained. The picture of this condition gradually merges into one of malignancy in varying degrees.

Tumours of the breast may be simple or malignant. The latter variety is the commoner. The common simple tumours are adenoma, fibroma and fibro-adenoma according as glandular or fibrous tissue predominates.

Pure adenomata are rare. They occur in young unmarried girls. The breast looks very large for her age. Numerous lumps of varying sizes can be found in its substance. Section shows proliferation of glandular tissue. The tumour is soft when gland tissue predominates as in adenomata and is hard when fibrous tissue predominates as in fibromata.

Carcinoma of the Breast constitutes the major portion of breast surgery. It may be of the columnar or the spheroidal-celled type. Sarcomata are comparatively rare.

Breast cancer as elsewhere is commoner in old age; but may be found in young women. It is usually found in women but occurs also in men, an example of which I shall demonstrate to you presently. Whether the woman has been married and borne children or not, does not seem to bear any influence in the production of cancer of the breast.

Nothing is more important than the early diagnosis of the condition for saving the patient's life. But invariably the patient comes to you rather late. In the early stages, there is nothing more than a small lump which is either ignored or forgotten until pregnancy when it begins to grow. The patient comes to the surgeon only when she begins to feel pain or when she notices a change in size and contour of the breast. Hence, she is not

conscious of the condition in its very early stages and therefore, the history of its duration given by the patient is generally inaccurate.

A thorough clinical examination of the breast is the most important step in its diagnosis and this includes the following :

Inspection :

1. Size of the breast, whether smaller or larger than the opposite one.
2. Contour—uniform, nodular or otherwise.
3. Position—elevated or not.
4. Position of nipple—raised or lowered, tilted to the medial or the lateral aspect; pulled in or pushed out.
5. Condition of nipple—swollen or shrunk; ulcerated or not; discharge or no, moat around the nipple or no.
6. Areola—smooth or puckered or dimpled or ulcerated.
7. Skin—smooth and shiny or thickened and oedematous; or pitted like pig's skin "*Peau de Orange*"; ulcerated; or cutaneous nodules present etc.

Palpation :

8. The tumour is palpated with the flat of the hand and the extent, shape, its consistency and position made out.
9. The axillary glands of the same side are felt for and their size, consistency, number and the particular groups affected are made out. Similarly the supra-clavicular and the infra-clavicular glands of the opposite side including the breast are palpated.
10. Mobility of the tumour in relation to the skin, adjacent tissues, the deep fascia and the chest wall.
11. Whether the liver is enlarged or not.

Finally a *radiogram* of the chest for secondary deposits should be made in all cases.

In Madras there have not been many occasions when I had doubts regarding the nature of the tumour, for most cases have come so late in their career that there could be no doubt about their nature at all. The class of case that one sees generally shows a massive ulcerated or bleeding growth, offensive discharge and secondaries in the glands of the axilla. A slightly less advanced type shows a lump in the breast adherent to the skin with retracted nipple. It is very seldom a case comes so early in its career that doubt arises about its nature. In such cases I should, if the

syringe proves it to be a solid lump, excise it using exclusively the diathermic knife and await a pathological report.

Even putting a needle into the cancerous tissue has been objected to on the ground that cancer cells may infect the needle track. But it is worth taking the risk, for if it is innocent, no harm is done; if it is malignant, it can be removed.

The treatment of cancer especially of the breast and uterus has undergone a revolution since the introduction of Radium. Whether knife or radium is better in an early case is still a matter of controversy. An ideal irradiation is more satisfactory than the knife; but the knife cannot yet be entirely replaced by radium. A perfect barricade by radium of the spreading cancer cells at the periphery of the growth is practically, though not theoretically, impossible. Hence the breast may have to be removed and radium implanted in the surrounding areas.

In advanced cases, unfit for operation, radium may help for a time. But the difficulty of choice comes in the intermediate cases. I would personally treat these cases by radium to begin with, until the mass shrinks; then by removal of the breast with implantation of radium at the periphery under the flaps to catch any stray malignant cells that might have escaped removal.

PSYCHONEUROSIS OF EVERY DAY LIFE.

BY

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I AM extremely grateful to the organisers of these lectures for giving me an opportunity to speak before you; but I feel I must tender my apology for this audacity of mine. Before I begin the subject proper, please permit me to explain why I am here this evening,—not at any rate that I am a scholar, capable of addressing a learned audience as this on an intricate subject like the psychoneurosis. I am glad to be here, to plead for better understanding of the symptomatology, pathology and lines of treatment of the unfortunate class of patients called the Neurotic. The training in our Schools and Colleges, is not giving us adequate knowledge for the handling of such patients. Partly due to this and partly due to other kinds of beliefs regarding the origin of symptoms, these patients are tossed about from doctor to doctor, from one charlatan to another astrologer, from one reputed shrine

to another faith of healing centre, from one type of talisman to another specific line of treatment and so on. Thus, not only the life of the patient is made unhappy, but it becomes veritable misery for the relatives. It was the same kind of story even in western countries till recently. At last doctors have felt that these patients have not to be abandoned to the care of everybody else but themselves and have begun to shoulder the responsibility and attempted to make special study and handle these cases themselves. In a country like ours, where mysticism so much prevails, it would be very difficult to convince people, that it is the psychic causes and not possession by a devil nor the result of witchcraft, that is at work for the production of symptoms. However if the view point has to be changed, the initiative must come through our profession.

As you know, diseases can be divided into two types, those that have primarily an organic basis and those that come under the category of disorders of function. In connection with the latter type, it is not usually recognised that our mental life including the emotional aspects, with changes in the autonomic and endocrinal systems, is largely responsible for the production of this disfunction.

There is no teaching to give us some knowledge about our emotional life. No one gives us an idea of the understanding of human nature and human behaviour. Surely we are all aware, that, when we are dealing with our patients, we are dealing with human beings, who have not only some disorders of some organ or other, but who have also a mental and emotional life, with capacity for thinking, reasoning, imagining, feeling, fearing, hoping, and so on. Our courses of study are expanding in various directions. Laboratories for practical experimentation are multiplying but we forget one fundamental fact and that is that final aim of all doctors, is, to treat efficiently human beings and the real laboratory for the patients is the world with which they have to come into contact. Adjustment in life is the experiment of nature. We must be prepared to be capable of making an intelligent study of human nature and behaviour under various stresses of life. Even in organic diseases, it is not so much the disease, as the emotional reaction of the patient towards that condition, that increases the suffering. Still, very little attention is being paid for such teaching. How can we understand human nature and motivation of behaviour without a study of medical psychology? How can we get an intelligent grasp of what are known as neurotic symptoms

without understanding the mechanism of the mind and the psychopathology lying underneath? How can we really get an idea of the whole individual without making a personality study? How can we attempt to treat cases of this type without such basic knowledge.

The present course in psychiatry consists of some lectures and demonstrations on advanced cases, housed in the Mental Hospital. But the majority of us, when practising our profession, are not often called upon to deal with frank cases of insanity. On the other hand, the symptoms of psychoneurosis are every day problems of a practitioner. How can we deal with them without special training for tackling such problems? Moreover the results of treatment of advanced mental disease are very unsatisfactory. If we want to achieve any real success, it is necessary, as in the case of tuberculosis of lungs, to recognise the symptoms of mental ill-health at its early stage and to nip them in the bud, for which, knowledge of early symptoms is necessary. The reform in the teaching of this branch of medicine needs urgent attention, if our course is to be satisfactory.

Coming to the subject proper, let me first explain what I mean by psychoneurosis. The terminology is indeed confusing. Each writer uses his terms with a special meaning—Hysteria, Neurasthenia, Psychasthenia, Neurosis, Psychoneurosis, Functional nervous disorder, Nervous breakdown, Nervous debility, Anxiety neurosis and so on. I am not going to make confusion worse confounded by trying to discuss about the meaning given to a term by a particular school of thought.

Psychoneurosis is here taken to mean a minor psychosis or mental disorder in which psychical factors play a dominant part, and disorder, not only of nervous function, but also of behaviour, emotion and will, occur, producing a varied type of symptoms. However, they are not so marked as to require certification and detention in a mental hospital but can be dealt with either in the patient's home or in the General Hospitals. These symptoms may consist of

- (1) Gross apparent physical disturbances as paralysis, anaesthesia, disturbed gait etc.
- (2) Functional disturbance of organs as dyspepsia, palpitation etc.
- (3) Number of phenomena of apparent physical kind as tremors, sweats etc.
- (4) Emotional manifestation as depression, anxiety state with fear and tension.

- (5) Fatiguability—Exhaustion on quite moderate amount of physical and mental exertion with difficulty of thought and concentration.
- (6) Symptoms associated with morbid fears, some times even of trivial things as a cockroach.
- (7) Obsession *i. e.*, compulsive thought and action and morbid doubts.

By the above hotch potch character, each group cannot be considered as a separate disease entity but merely as a reaction pattern.

I do not propose to discuss about the psycho-pathological view point of various schools such as of Freud, Jung, Adler, Watson and so on. But for purposes of simplicity, the symptoms may be taken as an exhibition of unconscious bodily or mental protest against an unbearable and unpleasant situation, which, the patient, being unable to fight against, develops a shirking and retreating reaction and flight from reality. However, they are not to be mistaken for malingering; the patient himself is unaware why the symptoms have occurred.

I wish to lay before you some of my thoughts provoked by my investigation of these cases, regarding the production of symptoms.

Some of the characters of a psychoneurotic temperament may be described by the following epithets:—Timidity, diffidence, dependence, doubting nature, indecision, over-cautiousness, scrupulousness, over-conscientiousness; inferiority that he is different from others, complaining, requiring special consideration and sympathy, shirking and evading responsibility and so on.

Let us try to understand what foundations have been laid in early years to build up a personality of the above type.

Have we not amidst us despotic and tyrant-like fathers, before whom children shudder or at the other extreme, have we not got very timid and nervous parents whom the children imitate? Is it any wonder that children become timid and nervous from early life? Are there not parents who will never allow independence of thought and action even though their children might have grown old enough to look after themselves? How can they become confident, self-reliant and independent and capable of managing themselves and their affairs? Is not petting of children a weakness of many a parent, especially, if the child is the first or the last or has been born after death of many other children? Do not some mothers bring up their young in a tender way, in a lap of luxury, without making them do hard work and face squarely the difficulties of life?

Are there not homes where the atmosphere is surcharged with religious ceremonials and sentiments? Is not God depicted as guiding every act and watching us? Are not dire consequences foretold for little faults of children, producing in them, over-consciousness, and over-scrupulous tendencies, with difficulties of adjustment in life? When thus improperly trained, what else do we expect in later life but a shirking and retreating or a doubting and diffident attitude, when problems in scholastic, domestic, social and economic spheres become too hard to grapple them?

What about our school life? There is one type of curriculum for all children, whatever may be their intellectual and individual abilities and disabilities. Keen competition is encouraged by ambitious parents and zealous teachers, sometimes even at the expense of physical and mental health. Games, sports, recreational activities and periodic rests are considered by some parents as waste of time. Examinations are frequent and trying and some teachers are stern and unsympathetic. It is not a surprise that some school children become anxious, depressed and exhausted.

What is the fate of the adolescent boy and girl? There is no proper sex-education imparted by parents or teachers. Phantasmic ideas about sex functions and aberrations, occupy their mind and unwholesome practices creep in. Conflicts and fears of various nature torment their minds and psycho-neurotic symptoms make their appearance.

Taking the case of girls, education in schools is not universal yet. Purdah system amongst some classes still continues. For many, marriage is forced whether they like it or not and occurs at an early age and the husband is himself young, inexperienced, unbalanced and dependent, or is too old and has nothing in common with the girl. Young widows are debarred from marrying even if they like to and some of them lose all interest in life. The proverbial mother-in-law is stern, unsympathetic, despotic and exacting. The situation becomes trying and flight from reality would be welcome for escape. The joint family system is another bug bear to the young couple and adds difficulties in their proper development towards independence, self-reliance and adjustment.

Life of the adult does not seem to be a bed of roses. People are abandoning their rural homes and migrating to the cities. Calm, placid, contented and simple life has changed into one of hurry and bustle, and stress and strain has multiplied. We are not walking through life, but are competing at a running race. Stand-

ards of living are ever increasing; what were once considered as luxuries, have now become necessities; ambitions in various fields such as academic, social, financial and so on, are soaring high; competition is becoming keener. Speculative spirit is growing strong. Bodily needs are even neglected in the pursuit of wealth and fame. Materialistic attitude of life is replacing the philosophical one. A life of that type is full of pit-falls. The higher we go, the greater will be the fall. Disappointments, discontent and sense of insecurity are sure to creep in. "Are we going to keep up this position? What will happen if our income becomes less? Are we getting some disease? Are we losing our money? Are we going to succeed in this attempt or that?" These and a hundred other queries rack our mind. It is true that many can withstand all this, and are capable of making a mark in life. But, for others, fears and anxieties of various types with their bodily changes and mental unrest make their appearance producing what is known as anxiety state, with palpitation, uneasiness in the abdomen, staring eyes, dry mouth, frequent urination, tremors and feeling of tension.

In this connection it may be worthwhile investigating what permanent bad effects might be produced by a state of anxiety, especially in an individual of a conscientious, diffident, and sensitive temperament. By experiment it has been found that in animals, during fear, anger, pain and hunger, there is an excess of adrenaline in the blood and an increase in blood sugar. Similarly if a person is constantly feeling these emotions as in the profession of an ambitious lawyer, particularly with a susceptible temperament, is it possible that this emotional basis might also be an important factor in the production of Diabetes Mellitus as is seen in our speculative businessmen and eminent lawyers?

There are problems and conflicts of various types sapping our mental energy. We are at the stage of changing our view points regarding many matters such as, the domestic, social, religious and so on. Though many can solve this satisfactorily, there are others for whom the strain is too much and symptoms of exhaustion develop.

Whether we admit openly or not, there are many kinds of feeling of inferiority in us, either in physique, stature, colour, beauty, potency, education, intelligence, wealth, caste, social status and so on. This feeling if properly compensated, becomes a boon to us and is the cause of the brilliant success of prominent men in different spheres of activity. But due to personal or environmental

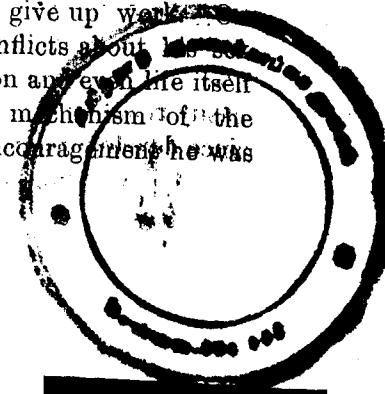
factors, a man is not able to cope up with the struggle; a reaction of an evading and retreating type becomes a habit. Any kind of difficult and unbearable situation in life will evoke this reaction as a protest. Aberrations occur with exhibitions of abnormal conduct or psychoneurotic symptoms.

Thus we see there is no dearth of factors to bring about symptoms of this character in our every-day life. It is a question of resistance. When, due to constitution, proper training and suitable environment, we have developed a strong resistance and are capable of fighting against any kind of stress and strain, every thing goes well. On the other hand, if due to improper training, ill-health, toxic factors, emotional stress or uncongenial and irksome environment, the capacity to endure has become lessened, the symptoms of this type make their appearance. It is possible that some of these symptoms might be noticed to some extent even in what are usually called normal individuals at some period of excessive physical and mental stress and strain. But when they become constant and go beyond a certain limit, to interfere with the usual activities and enjoyment of daily life, it is time that something is done to eradicate them. It is a pity that there is still a belief amongst the lay public and some doctors, that the symptoms are imaginary and can be got over easily. Patients are advised to take a tonic and some injections. But the patients finding no relief and being disappointed, rush from pillar to post and become unhappy chronic invalids.

It is interesting to note that in some conditions as functional paralysis, the symptom is part of the self-defence mechanism, though of an unconscious character. It saves the self respect of the patient, who will become unconcerned and apathetic about it.

Let me now give a very brief account of some types of cases dealt with by me.

1. (a) A middle aged lawyer from the mofussil, academically well qualified, ambitious and hardworking but nervous, diffident and shy, within a short period of twelve years, though of mediocre ability, rose to the position of leader, neglecting his meals, rest and recreation. At the end developed a state of anxiety, digestive troubles and marked exhaustion and had to give up work. mental exploration, amongst other worries, conflicts about his life, fear about losing his professional position and even his life itself were made out. With explanation of the mechanism of the symptoms and errors in his life, and with encouragement he was stabilised.



(b) A young man of 24, a B.Sc., intelligent, but shy, seclusive and timid type, was accustomed to react with fear reaction for slight stimuli. Had explosion during chemistry experiment and received some injuries on the face—some particle of grit entered into his eyes—was much upset and in spite of suitable treatment, was anxious what would happen to his sight. He had also an attack of enteric fever—Concentration became poor—got a bare pass in his B.Sc., instead of a first class as in Intermediate. Developed low temperature with rapid pulse and an anxious temperament for months, complaining of uneasy sensation in his abdomen. No cause was discovered in the way of tuberculosis, septic focus etc. He continued in a state of invalidism over a year, did nothing in the way of higher studies or work. On patient explanation of how even rise of temperature, rapid pulse, palpitation and abdominal discomfort could be produced by fear reaction, and encouraging him to take to tennis, of which he was fond and to club life and putting him for research work to enable him to appear for M.Sc., he was stabilised.

2. A young man of twenty-three, a brilliant honours student belonging to an orthodox and wealthy family, scrupulous and doubtful type, read books written by eminent theosophists, religious and political leaders about guidance of youth in their moral, spiritual and sexual life. Got doubts and perplexities. Had conflict about masturbation. Developed gastric symptoms, loss of concentration and exhaustion. Gave up study. Was handled by every type of healer. On patient explanation about his doubts and conflicts and directing his energies to useful purposes, he was changed enough to be able to take to business.

3. A Brahmin woman of about thirty years. Married at an early age to an old man in the mofussil, who was once rich, but had squandered his money on women. Her life with him was miserable. She gave history of having had previous attacks of fits of hysterical type and aphonia, which disappeared after some months. This time she developed paralysis and analgesia of the right leg. On exploration, this symptom was discovered to be the outcome of an unconscious desire to remain in Madras with her sister and brother-in-law, rather than go to a disagreeable situation in her husband's house. The plea of necessity for stay in the city for treatment would then look reasonable. The symptom was easily removed by suggestion with the aid of electricity but she has since developed a dyspeptic complaint.

4. A young man of 22 from West-Coast. Poorly educated

up-to fourth form, was brought up by the grand-mother as a pet. One day when he was eating a plantain, it went the wrong way and produced choking sensation. Since then for about a year he complained he could not swallow easily. Could not take solids. Sipped even liquids in a peculiar way and took long to drink anything. He was found to be nervous and timid. His symptom was ignored. He was put through a programme to develop courage and independence. In the course of a few weeks, became so much changed that he could independently move in Madras, catching moving trams and buses and take his tiffin in restaurants without discomfort.

5. A young man of twenty-five from West-Coast, rather poor, was helped by his uncle for education. Had brilliant success in College and secured first class in B.A., had hopes of getting some decent job. There was none. Joined a bank but had to leave due to scruples. Started business; though getting on fairly well, had too high an ambition to get rich in a short time—was disappointed. Symptoms of neuralgia like pain in head and chest made their appearance and he got depressed. On explanation of the mechanism and on suitable advice about his errors he got better and left to take up work again.

6. A Brahmin of twenty, a poor student in honours class in Madras, thin, timid, shy and sensitive, did not do well in class examinations. Teacher spoke harshly in open class about his poor performance. Felt the insult very much, and was depressed. In the evening he remembered having gone to Moore Market. After hours, he found himself near Red Hills tank. How he went there and what all occurred, he was quite unaware. Slept in a choultry till early morning and walked back home as he had no money. He gave history of a similar experience sometime back. There was no history of epilepsy. He was diagnosed as hysterical fugie, which developed on account of unpleasant situation. He was advised to give up one subject for the next examination. His malnutrition was treated. On explanation how this form of conduct occurred, no recurrence so far for some weeks has taken place.

Investigation of cases and Diagnosis.

By a perusal of the case sheet guide, you will see what elaborate information from birth onwards is required to get an idea of the patient regarding his temperament and personality, his adjustment at home and school in early years, his sex life, his attitude to himself, his work and his environment, his relationship

with friends and relatives, his eccentricities and so on. Detailed account of the present and past nervous and mental trouble as well as other illness is gathered. A thorough physical examination is made, to detect any abnormality in any of the systems, including careful search for septic foci or specific poisons. A complete neurological examination is particularly necessary to exclude organic basis in the central nervous system. Psychological and bio-chemical tests are instituted where necessary. Mental investigation must exclude possibility of a major mental disease as Dementia præcox, G. P. I. etc. Patient exploration of the mind is undertaken, to get into touch with the particular difficulties, complexes *i.e.* group of ideas with marked emotional attachment and conflicts of individual patients. By such a thorough and prolonged investigation only, can a diagnosis be arrived at with some understanding of the causative factors.

Treatment.

All physical illnesses in the various systems discovered during investigation must be suitably treated, septic foci removed and thus all physical disabilities not secondary to emotional basis must receive proper attention, to take away all handicaps to the individual.

Mental and emotional factors discovered must be gone into. Regarding the removal of symptoms, there are four usual methods viz. 1. Suggestion *i.e.*, forcibly implanting an idea into the patient which he accepts without arguing. 2. Persuasion. *i.e.* adducing reasons and arguments why the symptoms are irrational and thus convincing the patient. 3. Analysis—Exploration of the mind to find out how previous experiences in the patient's life have been responsible for the production of a particular type of symptom by showing the cause and effect. 4. Re-education—*i.e.* correcting all the tendencies for unsuitable types of re-action, showing in what all ways patient has evaded responsibilities of life, how by the symptom the patient has attained a position of advantage and the symptom has occurred to save his self-respect.

For a satisfactory treatment, it is necessary that all the methods have to be taken advantage of. Mere removal of a symptom by suggestion or hypnotism has been found to be futile. The deep inner causative factor has to be gone into.

It must however be understood that the material by exploration is different in each individual and the remedying psychotherapy would thus become individualistic. It is a patient and prolonged process and not one with magical or dramatic result, though

removal of a paralysis or anaesthesia at one sitting might strike one to be so. In a physical or visceral disability of this origin, the symptoms must in obstinate cases be ignored and no fuss made about it. It must be remembered that it is a self-defence mechanism, and the patient will cling to it and offer resistance. But attention is paid to the development of the personality and the regulation of his emotional life. His interests are widened, hobbies are encouraged, tendency for introspection is discouraged, a definite programme is set out, so that he gets accustomed to do more and more independently and efficiently. The hours are filled up either with work, rest, recreation or hobbies.

His environmental factors must also be modified where possible, so that the patient finds it easier to get on and meets co-operation, sympathetic but firm attitude and encouragement. The patient must be helped to achieve success in whatever reasonable interests and ambitions he might have.

Without a knowledge of psychology and psychopathology, efficient treatment by psychotherapy becomes impossible. Psychoanalysis, as advocated by Freud, by free association method, can only be undertaken by a physician who has been specially trained in the technique and been himself psycho-analysed. As it is also very prolonged and costly, it is rarely resorted to.

In connection with the treatment of psycho-neurotic patients some points are to be remembered:—

1. When organic disease is excluded, we must give a definite idea how the symptom has been produced and give the patient confidence about the recovery from the disease.

2. We should not use vague terms as heart trouble or heart disease before such a patient. There is only one idea about it for him and that is, that it is an extreme form of that disease with fatal consequences. He will be always in a sense of dread and anxiety about the impending death. We must patiently explain to him about his particular disability and give encouragement.

3. For a so-called neurasthenic without any organic case, no amount of medicament will cure unless his mental difficulties are found and explanation given about the origin of the symptoms and the patient himself gets conviction and understanding of the mechanism by which the symptoms are produced.

4. We should not give advice to drown his repressed complexes of unpleasant idea by trying to forget and giving diversions or extra work, because such complexes show off some how or other and must be resolved, if permanent good is to result.

Prophylaxis.

A word or two may be said on preventive measures. Our habits and reaction patterns are formed in the very early years of life. Children must be encouraged to do as much as they can for themselves so that they become confident, self-reliant and independent. All shirking and dodging tendencies must be nipped in the bud. Grumbling, complaining, finding fault with others and expecting others to do everything for them must be discouraged. No fuss should be made over minor injuries and ailments. They must be accustomed to do more and more work and take up more and more responsibility and face the rigors of life squarely. They must be taught to face disappointment without undue depression. They must take part in the social activities from early years and play games and take part in the sports. They must get enough knocks in the world to harden them, so that they will be well fitted to cope up with all sorts of difficulties in later life and become useful and happy members in the family, cheerful and efficient workers at their job and capable and co-operative citizens in the community.

The life of an adult must be well planned, so that there is a suitable proportion between work, rest, recreation and sleep. There must be an aim in life but the goal at each stage must be within reach. Though ambition is necessary and creditable, the final result of all our efforts, which should not be stunted, must be left to some superior power, though it is not good to resign ourselves to fate and be inert. It is this philosophical attitude and the control of our emotions, that will maintain our mental health and give us peace of mind, to enjoy the benefits of life and do some useful work in this world.

THE PSYCHIC PROBLEMS OF CHILDHOOD.

BY

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I MUST again express my gratitude to the organisers for their kindness in including this subject regarding the mind, which is indeed very important, for, whatever mental attitude is taken in the very early years of life, will give a clue to us whether the mind of the child is working straightly or there is a tendency for some twist in the mental functions and reactions, making its

appearance. If so, it is just at that period that suitable measures should be instituted to straighten it to ensure the future happiness and utility of the child.

The child is endowed with a physical as well as a mental equipment. Just as he has got needs in the physical sphere, there are needs in the mental sphere; as there is a physical life, there is a mental life and as disabilities might appear in the physical health, there might develop disabilities in the mental health and unless we are aware of the origin of the latter, we are likely to miss the mechanism in which the disabilities have been produced.

In order to understand a child, he must be considered as a whole individual, with a mental life, as well as a physical one, with instincts and emotions. He has inherent hunger for self-expression that is constantly infringing upon a code or laws and customs of which he has no understanding. He has his plans, hopes and ambitions; he has doubts, fears and misgivings; he has joys and sorrows. His emotional life is thwarted and gratified as in an adult. With all these instinctive and emotional drives, there is necessarily lacking that stabilizing factor called experience.

The emotions play an important part. Feelings of fear, anger, sadness, worry, discontent, pleasure, love, jealousy, hate and so on are important factors in governing our mental life and behaviour. The knowledge about this mechanism is necessary if we should get a proper understanding of the psychic problems of childhood. Intelligence, aptitudes, desires, personality traits and reaction patterns may vary from child to child. Elaborate study by experiment and observation is being undertaken in order to understand the child as a whole, its nature, its needs and its behaviour and this study of child psychology is attracting more attention at the hands of ardent research workers and useful knowledge is being added. Children being dynamic, their energies have to be properly directed, instead of being curbed with "don't's" on all sides. Improper conduct instead of being considered as inherent wickedness, is now taken to be the result of bad training, misdirected energy or repressed emotions and conflicts.

The child at birth is a helpless and dependent being with a few reflex reaction patterns. From a position of ease and comfort in the womb of the mother, it is thrown out into a world full of stimuli of an unpleasant character in addition to being compelled to lead a separate existence with regard to the nutritional, respiratory and eliminatory functions. Its pleasures and discomforts are in connection with the bodily needs. It derives satisfaction and

pleasure during sucking, eliminating processes and in being kept warm and free from too many extraneous stimuli.

From a life of helplessness, dependence, comfort-seeking and attention-drawing character, selfish, inconsiderate and dominating tendency, ignorant and instinct-governed mechanism, the child has to evolve into gradual independence in its physical and mental functions, considerate, unselfish and satisfactory conduct and behaviour conforming to the conventions of the elders. In this process of evolution, the instincts and emotions of the child, proper understanding of the nature and needs of the child and the methods of training by the adults and other environmental factors play an important part. It is possible that any incongruous and incoordinate working of this elaborate machinery might bring about disharmony in the smooth working of the child's life and unwholesome conduct and behaviour and aberration of function would creep in, satisfactory adjustment of the child to its surroundings becomes impaired, bringing out what might be called the psychic problems of childhood. We shall now deal briefly with some of these common problems.

(1) Comfort-seeking character :

An infant is happy when it is lying in a cosy and comfortable position in the lap of the mother. When it is laid aside in a cradle it begins to cry in order to draw attention and when it is kept again on the lap, it keeps quiet. But yielding to such conduct would be inimical to proper development of gradual independence and capacity to face uncomfortable positions. An infant is fed at regular intervals, is made comfortable with suitable clothing and bedding, its elimination processes are supervised and if there is any physical illness or discomfort, it is attended to and the infant is kept away in the cradle. If, in spite of all this, it cries just to attract the attention of elders and to lie on the lap of the mother, leave it alone. It soon learns to be quiet. Let it learn to lie by itself without its mother's comfort. Don't make the habit of rocking the child to make it sleep.

(2) Thumb sucking :

There are some situations known as pleasure-giving areas in the body, and lips form one such area. The infant enjoys not only the feed from the mother's breast but also the sucking action itself. In the interval, it may develop a habit of sucking the thumb and may enjoy it but continuous pleasure-seeking of that

type as some other habits to be described later are not to be encouraged. Frequent removal of finger and interest created in handling toys will gradually remove the habit.

(3) Weaning Period :

This is one of the trying periods in an infant's life, as every mother is familiar with. As the comfortable and happy method of feeding is prevented, it puts up a protest. Many types of anger reactions and temper outbursts are exhibited which must be coolly and calmly faced. Gradually the infant takes to the new method.

(4) Feeding :

Only a mother knows how trying this problem is. The food may be refused, spat out, or even vomited or the child may be fidgety and playful during feeding. The parent becomes anxious and solicitous and the child becomes angry and excited ; coaxing and threatening are resorted to. The emotional upset brings about poor appetite and disordered digestion. The satisfactory tackling of this problem lies in the calm handling of the situation. The process of feeding must be done in a business-like manner but with cheerful emotion. Patience, firmness, tact and mental poise in the parents are essential for dealing with the psychic problems of childhood. No fuss should be made even if there is a default.

(5) Enuresis or bed wetting :

By the time the child is 2 or 3 years of age, incontinence of urine at night should ordinarily disappear. Apart from local and general causes of an organic nature, which, if present, should receive suitable treatment, there is a proportion of cases in which poor habit-formation with too sympathetic an attitude and psychic factors of an unpleasant character may be responsible. Shaming and punishment will make the habit worse and create in the mind a feeling of inferiority. In addition to attending to details as restriction of liquid, bland diet, frequent waking up of child to empty the bladder, avoidance of nagging and shaming the child and encouraging him for any success are useful.

(6) Nervousness :

Through contact with adults and their attitudes, every child gets a sense of fear of anything new, such as strangers, animals, as dogs and cats, strange objects and so on. It is a protective mechanism. This fear can be got rid of by gradually getting him accustomed to the object. But there are certain factors that

would make a child become nervous and making him a "nervous child". These are, nervousness in parents themselves, threat of deserting the child, or handing him over to the Bogey man, over-anxiety and worry over the health of the child, constantly reminding him that he is nervous and talking about it to others, not giving him opportunities to develop independence of thought and action and also expecting too much from him, as well as driving him all the while. Apart from timidity, there may be also other unwholesome traits as shyness, seclusiveness and social tendency developing in the child. Wise parents should avoid these factors if they want their child to grow up bold, courageous and independent.

(7) Anger and temper outburst:

Whenever a desire is thwarted, this emotion is brought on. In a child that is brought up in a pet way and demands all its cravings to be satisfied, whether reasonable or otherwise, this type of reaction with either crying, moaning, grumbling or falling to the ground, rolling and kicking may be brought on frequently. Anger is thus a common and dangerous emotion which should be brought under control from the very beginning. Don't be frightened by temper outburst, screaming and rolling on the floor. Take no notice, it will soon cease. He would learn a permanent lesson in the control of his temper. Don't bribe a child to prevent him from getting into a temper and let him not learn that he can get anything by crying loud and long enough.

Apart from this disciplining procedure, in all cases of anger, it is necessary to find out the cause of anger, lying deep down. Is it thwarted desire, jealousy, resentment at being punished, fear, worry by problems of sex, physical illness, mental fatigue or sleeplessness and so on? But the parents too should not lose temper frequently and show an example to the child.

(8) Jealousy:

Jealousy is a powerful emotion in a child and is aroused when more attention is given to a brother or sister such as a new-born baby, when there is difference of treatment and affection between himself and other brothers and sisters or by constant praising of a brother or sister and decrying him and so on. This emotion, if not detected and properly curbed, would lead to serious consequences. The child becomes unhappy, bitter and revengeful, and develops destructiveness and cruelty and may even commit murder.

He must be taught to become considerate and unselfish and to have wider interests and to appreciate merit.

(9) Sleeplessness, Peevishness, Exhaustion:

It is not commonly understood that children cannot stand the excitement and amusement that may be enjoyable to adult. Frequent trips in cars at breakneck speed, dragging children about during shopping, taking them to exciting performances, making them play or work too much without periodic rest are some of the factors for bringing on exhaustion in them. Apart from physical causes, too much exertion and exhaustion, and fright, might be responsible for sleeplessness. The remedy lies in protecting children from such powerful stimuli.

(10) Handling Genitalia:

Though children may not derive the same sort of gratification by handling their genitals as adult sex perverts, still a pleasurable feeling is experienced and a bad habit is brought on. It is necessary that it should be nipped in the bud without emotional outburst. Making children to play with toys with their hands and do something else in which they are interested will wean this undesirable trait.

(11) Too much of exhibition of love:

A parentless child will cling to any one that shows sympathetic and kindly attitude to it and will begin to demonstrate its love by hugging and kissing. This is awkward and must be discouraged.

(12) Too much of phantasy and day dreaming:

It is common for children to play with imaginary play-mates or imagine that their dolls have actual living existence particularly if they are lonely. But when a certain limit is passed and they live all their life in a world of phantasy, then the border line is crossed. It is time that they should be made to feel the reality of life by actual contact with real playmates.

(13) Feeling of inferiority:

This is indeed a depressing emotion and is the root cause of many varieties of abnormal psychic development and anti-social behaviour. In whatever spheres the feeling is present, search must be made patiently; and with encouragement and rectification of the defects, the attitude may be changed.

(14) Immaturity and regression:

Some children would like to remain as babies especially those that have been brought up in a pet way. They continue to talk with a lisp; to be helpless and dependent, and expect everything to be done for them. When older children find they are neglected and have been removed from the centre of the stage they may regress and do acts as if they were younger in order to attract the attention of the adults.

(15) Mental deficiency:

By a knowledge of the development of the various functions of the mind, it is possible to detect mental defect even in early years. Handling cases from that early age might be helpful in developing habits of cleanliness, tidiness, self help and so on even in low grade type.

(16) Investigation of cases and treatment:

As in other psychiatric cases, it is not only necessary to examine the child but also its surroundings. In addition to a thorough physical examination, intelligence, abilities and disabilities, emotional display, temperament and other personality traits must receive careful study. Inter-relationship between members of the family, his relation to them and to schoolmates, his life at home, school and outside must be gone into. His likes and dislikes, his difficulties, hatred, handicaps, feelings of inferiority or difference are to be explored. For a thorough investigation and handling of problems of children, special types of institutions called Child Guidance Clinics have come into existence. Individual study of each child is made and suitable removal of the causative factors and other lines of treatment are instituted to make children happy, healthy and useful.

ECZEMA.

BY

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Introductory.

Diseases of skin as a special branch of general medicine have suffered much by the cumbersome nomenclature and the same disease has been described under various names by different authors. The former was to a certain extent inevitable, and to those of us with "little Latin and less Greek" many of the names fail to convey the exact meaning implied in the descriptive term, a classification, based on morphology was really the main cause of these lengthy Latin and Greek terms, and this is being obviated by the introduction of a classification based on etiology—a real and tenable method. Facilities of travel and inter-change of ideas between different dermatological clinics have brought out an agreed nomenclature doing away with numerous descriptive terms—a large number of these, now remains as only a relic from the earlier works.

Skin diseases divorced from general medicine have no existence; diseases really pertaining to the skin are only a few as benign and malignant tumours and some of the dermatoses of unknown etiology as eczema, psoriasis, pityriasis, rubra pilaris, erythrodermias, etc. etc. Even these, when their etiology becomes established, will be grouped differently thus reducing the actual number of skin diseases. The skin, in fact, reflects disease processes of the body, and should be assessed always as such in relation to general medicine.

Eczema.

Definition:—Eczema literally means an eruption. Root meaning "to boil over" or "burst out". Eczema has been defined as "a cutaneous response, often defensive, to unknown toxins, intrinsic in origin, circulating in, or being eliminated by, local areas of the skin". This will exclude dermatitis due to plant origin (dermatitis venenata), drug eruptions (dermatitis medicamentosa), dermatitis due to physical agencies as erythema solare, erythema abigne, etc., radiation dermatitis from radium, X-ray, U.V.L.,

etc., and the large and ever increasing group of trade dermatitis in connection with arts and industries. This demarcation is quite essential as dermatitis is a known cause, and the removal of it or the patient from such influences will bring about a speedy cure of the skin condition.

Historical:—Formerly eczema included a good many heterogeneous lesions of the skin. In 1808 Willan and Bateman, in their conception of eczema as a type of cutaneous lesion, stressed the action of external irritants and divided the disease into (1) *Eczema solare*, due to direct sun or heated air; (2) *Eczema impetiginoides*, seen in grocers, bricklayers, bakers, etc.; (3) *Eczema rubrum*, caused by mercury, exposure to cold wind, etc. Of the French school, Rayer separated artificial eruptions from cases of genuine eczema. The Viennese school under Hebra and his pupil Kaposi, was more inclined to return to the conception of Willan and Bateman, yet recognised nervous influences and constitutional states in the production of eczematoid eruptions.

Tillbury Fox in England contributed largely to the clarification of the subject. He gave the first accurate description of impetigo contagiosa, which was separated from the list of eczematous eruptions. Under the name of Cheiro-pompholyx or dysidrosis, Fox separated a type of vesico-bulbous lesion of the hands and feet; the wisdom of this separation is not universally accepted.

The monumental work of Unna of Hamburg established seborrhoeic dermatitis, which was formerly included under eczema, as a separate entity. Unna went a step further and claimed that all eczemas are seborrhoeic in origin, and psoriasis is its severe and driest form. This has not found many adherents. In 1900, Sabouraud re-investigated the microbic question of eczema and was in complete agreement with Willan's original idea, that the primary vesicle of eczema was not microbic.

Aetiology—The aetiology is unknown: it is probably a reaction of skin to some unknown toxic process.

Predisposing cause:—This may be conveniently considered under the following headings:—

- (1) Local structural peculiarities of the skin.
- (2) General predisposing conditions.

(1) Local structural peculiarities of the skin.

(a) *Icthyosis*, and a milder condition known as *Xeroderma* are potent causes in the production of eczema. As the skin in these conditions is lacking in one of the most essential constitu-

ents, namely the grease from the sebaceous glands, it becomes harsh and easily fissured. Skin is rendered sensitive to cold and damp, and cold winds.

(b) **Excessive sweating** is another cause. Hands, feet and flexures suffer most. The acrid products arising from the decomposition of sweat, mechanical maceration of the epidermis, and infection by cocci from the surface of the skin may easily predispose these localised areas to eczematous process. It is worthy of note that in dry skin, the extensor surfaces are chiefly affected and the flexor in hyperidrotic skin.

(c) **Venous congestion and Lymph-stasis:**—Varicose eczema of the legs is a classical example. In India, elephantoid condition of legs and sometimes hands and forearms through fibrosis of lymph glands by microfilaria and consequent lymph-stasis in the area drained is another familiar example.

(2) General pre-disposing causes.

(a) **Age and Sex:**—Eczema is common in both extremes of life. Perhaps in the aged, atrophy and dryness of the skin strongly predispose. Male infants suffer more than female.

(b) **Heredity**—No doubt, plays a part. Eczema runs in certain families as asthma, diabetes, rheumatism, etc.

(c) **Auto-intoxication:**—In some cases at least, absorption of toxins from the alimentary canal is a probable cause. It is not uncommon to find constipation in eczematous patients; its presence is further demonstrable by the finding of indican and aromatic sulphate in urine.

Food:—During the process of digestion, foods are chemically split into simpler products by enzymatic action of digestive fluids, and then further transformed by the metabolic activities of the intestinal bacteria. It seems reasonable to presume that the small quantity of toxin set free in the alimentary canal, in a healthy individual, is easily detoxicated by the liver. When putrefactive and fermentative processes are high, and the liver is also deranged, amino-acid and bacterial decomposition products get into general circulation and produce eczema in an allergic individual. Burgess, as a result of extensive experimentation, is of opinion that the vast majority of positive intra-dermal reactions was given by toxic metabolic end-products arising from bacterial action on food products, as cadaverine, cadaverine hydrochloride, scatol, histamine, tyramine, putrescine hydrochloride, etc.; a few was caused by amino-acids occurring in the normal process of digestion,

The problem of food with regard to eczema is a complicated one. Persons can partake of such foods as oyster, crabs, mushrooms, pork, etc., without any discomfort, but these very persons, at a different time, may be the subjects of urticaria, eczema, etc. This is explained by assuming that the particular food has undergone rapid changes and deterioration producing toxins. Again, a few persons are sensitive to such harmless articles as cheese, oatmeal, eggs, etc., and some infants react unfavourably to milk (the kind that is rich in cream). This kind of sensitiveness or unfavourable reaction is designated as Anaphylaxis or hypersensitiveness, and the altered reactivity of the person is known as "Allergy". Anaphylaxis is not limited to foods, as foreign proteins, sera, drugs, etc., may also produce the identical phenomena. Bloch adduced evidence to show that allergy is an antigen—anti-body phenomenon, wherein a certain group of cells of the living organisms react in a special manner when brought in contact with foreign substances as animal, vegetable and mineral; and ingested drugs—antigens. When antigen comes in contact with its specific cellular fixed anti-body, a disturbance of cellular life takes place resulting in an inflammatory reaction (local or general.)

The nature of cutaneous reaction to drugs is still undecided. While desensitization can be effected in cases of anaphylaxis to foreign proteins, hypersensitiveness to drugs is a stable condition and cannot be overcome by the injection of small amounts of the sensitizing substance.

(d) **Focal Sepsis**:—Septic infections are met with in the teeth, tonsils, accessory sinuses, gall-bladder, appendix and genito-urinary tract. In certain cases of eczema, removal of septic teeth or tonsils is followed by the disappearance of the lesions; but this happy result is not the common experience. It cannot also be vouched that the removal of a diseased appendix or gall-bladder will cure an obstinate eczema. Colon irrigation and implantation of *Bacillus acidophilus* per rectum have shown a certain measure of success while vaccines made from cases in which a copious flora has been reported on bacteriological examination of the stools gave very little encouragement.

(e) **Endocrine disinfection**:—Hypothyroidic states predispose the skin to eczema.

(f) **Nervous influences**:—It is well-known that an eczematous process can be aggravated by mental worry, shock, strain, etc. How far nervous influences can precipitate an eczema *de novo* has not been determined. Reported changes in the cervical sympathetic

were not of a convincing character. The skin, which receives a rich supply of sympathetic and possesses a number of specialized end-corpuscles may have its reactivity altered in some mysterious way in eczematous processes, is at best a conjecture.

Pathology:—In essential details, the pathology of eczema is much the same as that of dermatitis. It is essentially a catarrhal inflammation. All the classical signs of inflammation are present. As the process is superficial and there is free scope for expansion, the subjective sensation of pain is replaced by burning, itching or general discomfort. The initial stage of hyperæmia of the papillary tufts is rapidly followed by a serous exudation into the mucous layer (the rete). The intercellular protoplasmic fibrillæ are burst and vesicles form in the deeper layers of the rete, and by gradual growth from below, reach the surface. The individual cells of the rete are also oedematous. The whole process is designated as "Spongiosis."

The vesicles by confluence may form bullæ. When the stratum corneum is sufficiently stretched, vesicles burst, and exudation takes place on the free surface—weeping. In eczema, the vesicles are amicrobic as shown by Willan and later by both the Foxes. When pyogenic infection takes place, leucocytic infiltration speedily sets in, the contents of the vesicles become turbid through pus-formation and the condition is termed "Impetiginisation".

The serous exudation makes the cells of the mucous layer oedematous, and the proper evolution of the cells of the corneous layer is prevented. The cells of the corneous layer are imperfectly keratinised and retain their nuclei. The presence of moisture makes the individual cells cohere and desquamate in the form of scales instead of as normally cell by cell and insensibly. This process is described as "para-keratosis". In chronic cases lichenification takes place through hyperplasia of the prickle-cell layer and inter-papillary prolongations.

Symptoms:—Subjective symptoms of itching, burning, a sensation of heat and discomfort are usually present severally. These vary a good deal with regard to intensity, in different patients at different times; some may not experience anything beyond a slight discomfort, while others may complain of itching, burning, etc., much out of proportion to the lesion. The patient may be made sleepless by intolerable itching. As a general rule, constitutional symptoms are absent; in acute and extensive cases, slight fever attended by chilliness may mark the onset. Whatever the type of the inflammatory process—acute, sub-acute or chronic—the

disease is long continued and persistent, and in most cases, shows little tendency to disappear. Though a seasonal influence is recognised, no rigid rules can be laid down.

Certain types are marked out by special characteristics. It will add a good deal to clarity to consider them under those headings. The division is based on (1) primary elementary lesions and also on (2) special clinical features.

- Group 1. Erythematous
Papular
Vesicular
Pustular.
2. Eczema rubra
Eczema madidans
Eczema fissum
Eczema sclerosum
Eczema verrucosum

There may be a combination of any two or three of the above.

Erythematous eczema (*Eczema erythematosum*):—This is commonly seen on the face, though any part may be affected. It may start as a single hyperaemic area, or several areas may appear simultaneously; they may later coalesce. The size of the areas varies and the borders are irregular in outline and ill-defined. The part is swollen and oedematous. The reddening of the area deepens and in some places scales or vesicles may appear. A serous exudation may take place spontaneously; it usually results from rubbing and scratching.

This type may retrogress and heal or may persist and become modified into one of the other types, as *Ec. squamosum*, or *rubrum*. Subjective sensations of itching and burning may be present in varying degrees.

Papular Eczema: (*Ec. papulosum*):—Here papules, varying in size, from a pin-point to a pin-head may be found discrete and irregularly scattered about, or may be in clusters. Here and there vesicles and pustules may be found. This type of lesion is very common about the flexures, arms and legs. Itching is usually intense. Blood-tinged crusts may form on the top of the papules through scratching and rubbing. This is always marked by chronicity. Sometimes the lesion may persist indefinitely. It may heal in one place and relapse in another.

Vesicular Eczema: (*Ec. vesiculosum*):—Discrete or clustered

vesicles appear over an inflamed and oedematous-looking area. The vesicles vary in size from a pin-point to a split pea. The vesicles rupture in the course of hours or days leaving a weeping surface. (*Ec. madidans*); if oozing is slight, it dries up into crust. The commonest site is the face and scalp of infants and in adults flexor surfaces, fingers and neck. The course is commonly chronic with a variable period as regards remission and exacerbation. This type usually results in *Ec. rubrum*.

Pustular Eczema: (*Ec. pustulosum* or *impetiginosum*):—Usually affects debilitated children and adults. Its common site is the scalp of children. This resembles the preceding type in all respects except that the clear vesicles are turbid through pus-formation.

Squamous Eczema: (*Ec. squamosum*) is a well recognised clinical variety arising from erythematous or papular varieties. Its course is marked by great chronicity. Itching is variable; it is intense when the scales are adherent. The affected area is greatly infiltrated; if located over joints, movement produces painful fissures.

Eczema rubrum:—Commonly seen on the face and scalp of children and the legs of adults who are over forty years of age. It is characterised by a red, weeping, raw-looking surface with a varying amount of infiltration of the cutaneous tissues. There is usually a combination of weeping and crusting. Sometimes the oozing is so copious and persistent that crusts do not at all form (*Ec. madidans*). Varicose veins may complicate the condition. This type shows no tendency to disappear spontaneously; is very resistant to treatment, and usually an end-result of vesicular or pustular eczema.

Fissured Eczema: (*Ec. fissum*):—As the name implies, the leading feature is fissuring and this type of lesion is commonly found over areas subjected to constant movements. There is a certain amount of inelasticity arising from infiltration.

Eczema Sclerosum and *Ec. Verrucosum*:—are two rare clinical types which are very resistant to treatment. Common sites are lower third of legs, ankles and feet. There is infiltration and thickening of the affected area; the surface is rough and has a board-like rigidity to feel. In addition to the foregoing, this type has a distinct warty, verrucous or tuberculated appearance.

Infantile Eczema calls for very little notice. It differs in no way from the adult one except that the tender tissues of the child show more of the inflammatory reaction. The face, scalp and

napkin area are very commonly affected. The disease tends to a spontaneous cure after the age of six. Some authorities consider that milk rich in cream is an aetiological factor, while others attribute it to a high acidity in the tissues.

Diagnosis:—Of no disease can it be truly said that the diagnosis is mainly by exclusion. In this protean disease with its polymorphism varying day after day, one should make an endeavour to exclude all diseases with known and clear-cut distribution. The large group of external irritants must be excluded by careful enquiry. The individual's occupation, his hobbies, etc., should receive attention. Drug eruptions and exposure to dyes ruled out by careful interrogations. In a word, all dermatitides separated and the diagnosis of eczema established. The advantage of this procedure in treatment was insisted on in the introductory remarks. Only common cases will be differentiated:

Erythematous type has to be differentiated from erysipelas and rosea. Constitutional symptoms, boardy infiltration with clear cut margins of the lesion, leucocytosis etc., will help us in erysipelas. Rosea (*Acne Rosacea*) is a chronic affection of skin; seborrhoea, dilated venules in face, gastric or uterine disturbance, history of addiction to alcohol, tea or coffee can always be elicited.

Papular type has to be distinguished from a good many skin lesions as papular syphilide, erythema multiforme, prurigo, lichen planus, pityriasis rubra pilaris, etc. Taking the last first, *pil. rubra pilaris* is a chronic skin disease characterised by branny scaling, redness and follicular papules. When the papules affect the back of hands, the diagnosis will not be in doubt. White scales of scalp with little tendency to reform on removal will also be helpful. *Lichen planus* is confined to flexor aspects, papules are angulated and show milky streaks on top. The colour is of a distinct lilac or purple on a slightly fair skin; appearance of papules in mucous membrane of mouth will clinch the diagnosis. Syphilide is hard, non-itching, erratic in distribution with no tendency to grouping. W. R. or Khan reaction should be sought in all ambiguous cases.

Vesicular type will have to be differentiated from dermatophytosis, dermatitis herpetiformis, drug eruptions, scabies etc. *Dermatophytosis*—Interdigital clefts (common 4th interspace); when spread beyond—ring form.—Demonstration of fungus by culture and microscope. Pot. iodide and bromide eruptions will have to be taken into account. *Scabies*: Distribution: burrow and

acarous scabiei. *Dermatitis Herpetiformis*:—rare, chronic, papulo-vesicular eruption with a tendency to grouping.

Pustular type: Differentiate from sycosis, favus impetigo, pediculosis, etc.

Squamous eczema:—Differentiate from the following: *Seborrhoeic dermatitis*, (common dandruff,) etc. *Psoriasis*. Silvery, mica-cious or asbestos-like scales showing a reddish base with vascular points (not bleeding), extensor areas, usually over joints, and scalp affected. Marked by chronicity, tendency to remission and relapses. *Pityriasis Rosea*. Rare. Herald patch, fawn-coloured lesion, crinkled at centre showing separation into scales (collarlette scaling). *Dermatitis cafoliata* is one of the erythrodermias. Extensive generalised erythema with scaling; constitutional symptoms, itching, burning and great discomfort.

Note:—In all cases of doubt, W. R. or Khan should be carried out before final decision. Sometimes arsenical injections in xerodermic skin react in a peculiar way resembling eczema in patches; hyperpigmentation and hyper-keratinisation of hands and feet are not apparent in these cases.

Prognosis:—This should be considered as a curable disease, if properly treated. Some chronic resistant cases may carry one, over one or two years. The patient's general condition should be well-maintained. Every minute detail should be seen to by the Dermatologist in person. How often the removal of an external irritant which passed unnoticed, effected the cure of a long-standing case!

Treatment:—One extreme view holds that eczema should not be treated for fear that the disease may be driven in; in this connection, note the derivation of the word eczema given above. The usual method of treatment is both by internal remedies and external application.

Internal Remedies:—**Diet:**—Simple, nutritious and easily assimilable diet should be aimed at. Bulkley advocated a diet of boiled rice, eaten slowly with butter, and bread and water. In widely spread and chronic cases, a vegetarian diet is an advantage. Alcohol should be interdicted in all cases, as it causes cutaneous vaso-dilatation. This may also be said of tea, coffee and cocoa. Restriction of salt from diet has been reported to have given good result. Abstinence from acid fruits may be beneficial. All digestive disorders should be corrected and putrefaction and fermentation prevented.

Internal medicine:—Rest in bed in extensive lesions, and when both legs are effected should be insisted on. This stabilizes the

circulation and changes in the skin vascularity is maintained at one level. Internal remedies like arsenic, antimony, etc., have been discredited. Arsenic finds its use now in only a few types of chronic cases. Antimony is of value in acute and wide-spread cases. This is given in the form of vin. antimonale (m. 3 to 7) thrice a day. In persons with nervous debility Quin. Sulph (grs. 5 thrice a day) has a well-marked action. When the lesions show an urticarial reaction, calcium lactate could be given a trial.

The skin being an excretory organ, purgatives may lighten its labours, by disposing of the gastro-intestinal toxæmia—a potent pre-disposing cause as already shown. Sulphates of magnesium and sodium, which are not at all absorbed, may be chosen, and these two salts have another advantage over other saline purgatives in that they combine with toxic materials in the gut and make them innocuous.

Colonic lavage aims at the same result, i.e., ridding of toxins mechanically. Bulkley's diet discussed above leaves little residue and is bland; hence noxious material is reduced to a minimum. Implantation of *Bacillus acidophilus* is a means of getting a speedy change in the intestinal flora.

Local application:—In the very nature of things and in a disease which is protcin in its manifestation as shown above, one cannot look forward for a specific and *there is no specific*. Each stage will require special form of treatment.

Certain general principles for guidance may be indicated:—

- (1) Removal of crust.
- (2) Disinfection when pyogenic infection has taken place.
- (3) Protection from external irritation.
- (4) Topical remedial measures to suit the particular stage of the disease. In this connection one may be pardoned for quoting Veiel's dicta:—(a) More acute the inflammation, the milder the remedy. (b) Exercise great precaution in the use of strong remedies; experiment with small doses over limited area. (c) Persevere in the treatment till the last traces have vanished; if not, relapses are bound to occur.

(1) Crusts are removed by a boro-starch poultice and allowing it to remain from 12 to 24 hours. Starch should be well cooked, till the granules are burst. And the quantity of boric acid need not be more than a level teaspoonful to four tablespoonfuls of starch powder. Poultice made from wheat flour is more tenacious than the one made from rice. Spread on thin mull, $\frac{1}{4}$ inch thick and apply when cold.

Strips of cloths soaked in olive or cocoanut oil and allowed to remain for the same period may also be used to remove crust. Thinly-spread sticking plaster will also help us to attain the same end. In non-inflammatory cases, scrubbing with soap and warm water may be safely carried out. Care should be taken to remove all traces of soap. It may be noted in passing that water produces irritation of acutely inflamed parts. Addition of a little starch to the water raises the specific gravity to the level of blood serum; less serous exudation takes place and hence less irritation.

Disinfection. This is best carried out by means of 2 to 3% of AgNO_3 (in spiritus altheris ritrosi) painting for small areas. It also acts as an astringent at the same time in weeping cases. The same object may be attained, in addition to protection of the lesion by the addition of 3 grains of Hydrargyri Oxidi Flavi or 5 grs. of Hydrargyri Ammoniatæ to an ounce of zinc paste (Lassar's paste minus the salicylic acid). The following example will illustrate:—

Hydrargyri Oxidi Flavi	grs. 3
Zinci Oxidi	
Pulveris Amyli	
Adipis Lanæ Hydrosi	
Vaselini	aa 3 2
Fiat Paste	Misce

Sign:—For external use. Spread on strips of clean linen and apply over affected parts. Change twice or thrice. The old paste is easily removed by means of cotton-wool swab (small) dipped in oil. The swab is gently rubbed and the paste (or ointment) will stick to it and be removed. When there is reason to believe that disinfection is complete, the yellow oxide of mercury or the ammoniated mercury may be omitted from the paste.

Protection:—In acute erythematous and papular stages, soothing and cooling application should be used. Resort may be had to pure lotions with the addition of spirit or a combination of lotions and powders. The following is a good formula for the former:—

℞	Liquoris Plumbi Subacetatis	...	3 2
	Spiriti Vini rectificati	...	3 2
	Aquam Distillatum ad	...	3 10
	Ft. lotio.		

The addition of spirit hastens evaporation and the cooling effect is intensified. The lotion should be mopped on freely and

frequently to the part. This part may be covered with lint and the lotion allowed to drip keeping it continuously moist. For lotions combined with powders, none is so popular as Lotio Calaminæ. The following formulæ gives the proportion :—

Calamine Lotions :—

R	Calaminæ		
	Zinc Oxide	...	3 2
	Glycerine	...	3 2
	Aquam Calcis ad	...	m 30
	For Lotio	...	3 6
	Or,	Misce.	

R	Calaminæ Preparata		
	Spt. Vini Rectificati	...	3 3
	Zinc oxide	...	3 2
	Glycerine	...	3 2
	Aquam Rosæ ad	...	3 1
	Sig: For external use only.	...	3 8

Mop on to the affected part.

It the above measures are carried out properly, a slight thickening and reddening of the skin result. Tar in some form is indicated. A drachm of liquor carbonis detergens may be added on to the zinc paste or a paint which is a cleaner preparation, may be used.

Tar Paint :—

R	Picis Carbonis		
	Benzol	...	1 part
	Acetone	...	2 parts
		...	7 parts

The paint shown above is one of medium strength; it may be made stronger or weaker as desired. The paint is applied once daily, and it dries in about 5 minutes. There is no necessity for an external dressing over it. Watch should be kept for any irritation that may arise; if so, the paint is stopped for a time and zinc paste substituted.

Weeping eczemas, of late, have been treated by painting with pure tar with good results. Tar from gas works, freed from leucol and soluble alkali, by repeated washing with cold water, is used without dilution. The black treacly liquid is painted on as a thin

coating which takes one to two hours to dry; it may then, if desired, be covered with talc powder or linen. The paint causes a brisk burning sensation for 15—20 minutes, followed by a sense of comfort and freedom from itching. The paint need not be repeated for 2 or 3 days; If there is discharge, early renewal is necessary. Freedom from pyogenic infection is the *sine qua non* of this treatment; if sepsis is present, it should be delayed until disinfection could be satisfactorily insured. If it is desired to dilute the tar, lard should be used as vaseline and lanoline are unsuitable. It may also be incorporated with equal quantity of casin ointment, which forms a varnish, easily drying and less messy. Diluted tar does not produce such satisfactory results. Tar is contra-indicated in erythematous and papular stages.

Warty and sclerosing types of eczema require prolonged treatment. Hebra's method is still the best. The affected part is ringed with vaseline and then scrubbed with a 20% or 50% solution of potassium hydroxide till the surface becomes covered with small due-drop-sized watery exudate. The process stopped, surface cleansed, and Hebra ointment, composed of equal parts of Emplastrum plumbi and vaseline, is applied on lint or plaster mull. If indurated and hornified, 15 to 30 grains of acid salicylic may be added to the ointment. Biersdorf series of salve-and-plaster-mulls containing Keratolytics may be used. Scrubbing the parts with soap and water daily will yield similar results at a longer interval.

Itching may be relieved by a dusting powder recommended by Jackson :

R	Camphoræ	...	3 1.
	Zinc oxide	...	3 2.
	Pulveris Amyli	...	3 4.

Fixed dressings have a certain amount of merit as they are more protective and give support to the part—a point very much desired in varicose eczema. They can also be combined with various active medicines as salicylic acid, tar, carbolic acid, sulphur, resorcin, etc. The following three are typical examples of this series :—

(1) Unnas Glaco-Gelatin :—

R	Zinci oxidi		
	Gelatin		
	Glycerine		
	Aquæ		
		partes æqualis	

Salient features are:—(a) It is a means of fixing dressings on any part where it is difficult to apply a bandage. (b) It gives an all-round compression. (c) Relieves itching. (d) Acts as a protective which can be made stronger by blowing powder (talc) on or dabbing on loose wisps of wool, the fibres of which will adhere and strengthen the protective effect and support.

(2) **Acacia dressing**:—

R

Mucilage of acacia	...	5 parts.
Glycerin	...	1 part.
Zinci oxidi or calaminæ, or both	} ...	2 parts.

This is another fixed dressing that is easy to apply and active drugs can also be incorporated as in the above. Powdered coke will obviate the stickiness and delay in drying.

(3) **Pick's varnish**:—Linimentum Exsiccans.

This is a clean and cheap dressing—a potent factor to consider with regard to the poor and out-patient practice where cost is to be cut down. The formula is as follows:—

R

Tragacanth	...	5 parts.
Glycerin	...	5 parts.
Water boiling	...	100 parts.

If properly titrated in a mortar, a translucent jelly is obtained. When evenly spread with the finger or a narrow paste brush, it leaves a thin invisible film; it contracts on drying and confers a cooling effect in addition to soothing inflamed lesions. Various drugs can be incorporated as desired. Note should be taken that a drug with an alkaline reaction cannot be incorporated in this varnish.

Biersdorf series of salve mulls and salve plasters can also be made to serve the purpose of fixed dressing.

X-ray, W-ray, radium and U. V. L. have been used extensively in chronic cases during the last two decades. Time cannot be found to go into a lengthy discussion of the subject. Fractional and sub-fractional in acute cases, of an erythema, dose has yielded best results. Filtered and unfiltered radiation utilized. Acute and erythematous cases give better result with U. V. L.

Vaccine treatment has not given satisfactory results. Erythematous papular and papulo-vesicular stages are a-microbic and as such,

vaccines are not indicated. When secondary coccal infection has taken place, an autogenous vaccine from the whole organisms grown and in the proportion in which they are found will yield better results. In an out-patient practice, one should resort to stock-vaccine.

Injection of proteose isolated from urine was tried in a number of cases. I cannot speak with any enthusiasm from the results obtained.

Non-specific protein therapy was tried in refractory cases. Over 60% of cases have given uniformly satisfactory results. 2½ to 10 c.c. of sterilized cooled milk were used as a routine, time interval being twice a week, unless the patient was weak and had reacted violently as shown by persistence of fever for more than a day and other constitutional symptoms as malaise, headache, sleeplessness, etc. T. A. B. vaccine (curative) may be used, starting from 20 millions and increasing by 10 millions at each subsequent injections. Aolan, Collosal Manganese and manganese Butyrate have been tried. Eczemine and thio-eczemine (Bengal Immunity Company) have been of great assistance in secondarily-infected cases and also in chronic cases, particularly the latter.

I have obtained good results in scaling types by intravenous injections of sodium thiosulphate, enesol, aurothysin, and solganol. I cannot say definitely how these substances act; the favourable clinical results are always apparent.

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SOME COMMON INFECTIONS OF THE SKIN AND THEIR TREATMENT.

BY

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I PROPOSE to consider briefly to-night the following common skin infections:

1. Impetigo contagiosa.
2. Scabies.
3. Tinea.
4. Some aspects in the diagnosis and treatment of Leprosy.

Below is given an extract from the Annual Administration Report of the Govt. General Hospital, Dermatological Dept. for 1931, showing the incidence of the above diseases.

Total Number of Cases for 1931: 3,376.

1. Impetigo Contagiosa	...	667
2. Scabies	...	282
3. Tinea	...	661
Epidermophytosis	...	67
4. Leprosy, all types	...	647

Nos. 1, 3, and 4 are very close competitors for the first place, each of them being a little over 1/5th of the total cases. It is significant to note the great incidence of leprosy.

1. Impetigo Contagiosa.

This is a superficial infection of the skin caused by streptococci. It is highly contagious and also extremely auto-inoculable. The initial lesion of erythematous spots is followed by the vesicular stage. The clear serum turns turbid by secondary staphylococcal infection. The vesicles burst rapidly and the exudation dries up as an amber-coloured crust. The crust is uneven on the surface and the edges are not regular. Tilbury Fox graphically described the crust as "Stuck on". Removal of the scab reveals a raw moist surface. The large crusted lesions show satellite lesions of varying sizes all around. On healing, a slight staining is left and this usually disappears in three weeks.

Scabies, pediculosis and prurigo become complicated by secondary streptococcal infection along the scratch marks. Though

face is the site of election for impetigo contagiosa, any part of the body may be attacked. It has been also shown that certain strains of staphylococci may produce identical lesions. Bullous impetigo of infants should also be considered here. The positive organism is much disputed; both strepto and staphylococci have been demonstrated. Ritter's Erythrodermia of the infants is also regarded as pyoderma.

Treatment:—Treatment is simple and effective. The crusts may be removed by olive oil soaks, and a 1 to 2% of ammoniated mercury ointment applied. Healing takes place in 2 to 3 weeks. The crusts may also be removed by gentle coaxing with moist swabs wrung out of 1% sterile boric lotion for washing the areas. We have also used DeHerelle's Bacte-streptophage and also bacteriophage (A. F. D.) with gratifying results. The patient is made comfortable within 28 hours by this method and then ammoniated mercury ointment may be used for purposes of economy. We found very little assistance from the use of streptococci vaccine.

2. Scabies.

Scabies is caused by *Acarus scabiei*. The female acarus, after impregnation burrows into the stratum corneum and lays from 25 to 50 eggs in a period of 2 months. The female dies after laying the eggs and the male after copulation. The eggs hatch out in 4 to 8 days. The larvae take two months to reach the adult stage. The burrows are seen as a slight elevation, straight tortuous or dotted in the skin. The point of penetration by the female acarus is marked by a vesicle or a pustule and the parasite is at the further end of the burrow. When a burrow is opened up with the aid of a magnifying lense, the excrement of the acarus is seen as a tiny black spot.

The primary eruption is either a papule or a vesicle. The burrow above described is pathognomonic. Impetiginization takes place in the unwashed more readily from presence of dirt and epidermal cocci. Lichenification and eczematization appear when the disease has lasted for some time.

It should be noted that the tender tissues of infants and children react strongly by a violent inflammation as the female acarus can easily reach the prickly cell layer. The palms, usually free in adults are also involved in infants; these areas are usually free in adults. The favourite sites of distribution are: thin skin

on the webs of fingers; anterior and inner sides of the wrists; anterior axillary folds; areolar of the nipples in females; lower abdomen and genitals of males; gluteal folds and nates. Infection usually starts in one hand from materials handled by infected cases; later-spread over the body is mainly determined by the patient; it spreads to all places accessible to the patient's fingers, while half-asleep. The back is rarely affected. When the patient gets the infection by sleeping on infected beds or wearing underlinen worn by a scabitic, the trunk is attacked, the back more than the front. In people of cleanly habits and those who bathe frequently, hand infection is rare; this fact should be kept in view in arriving at a diagnosis of a papular lesion of the trunk when the sites of predilection are not affected.

Diagnosis:—The pathognomonic burrows, sites of predilection and itching (worse at night) are sufficient guides. Generalized pruritus with itching of the nipples of women and itching papules on penis and scrotum and itching of a widespread character in men will be presumptive enough to suspect a scabitic infection. The face scalp is generally spared in the adult, whereas these parts are affected in infants and younger children. In typical cases acarus should be demonstrated under the low power of the microscope. Other members of the family may also be examined for scabies.

Treatment:—The treatment should be thorough. Personal linen, night clothes and bed linen should be thoroughly disinfected. If a fresh disinfectant is available, this will be ideal. If not, the clothes should be boiled in a weak lysol solution for two hours and put out in the sun to dry for six hours. The other members of the family should be examined and treated as well as the servants.

The method of applying the ointment should be fully explained to the patient. Where many patients have to be dealt with as in an out-patient department of a hospital, printed instructions will be a time-saving factor. Illiterate patients will have to receive verbal instructions. The patient takes a warm water bath after having thoroughly smeared his body with soft soap for 20 minutes. Rough Turkish washing gloves may be used to rub in the soap by gentle friction. Thus the burrows are opened up for the penetration of the ointment. All traces of soap is got rid off in the bath; the skin is then dried and the prescribed ointment is rubbed into all the affected parts. The patient should be instructed to take the bath later in the evening and the ointment is applied after the night meal and he gets into bed. He is given another

bath in the morning to get rid of the ointment. He is free during the day time. Most of the proposed remedies have to be applied for 2 or 3 consecutive nights, interrupted for 3 or 5 nights and repeated for 2 or 3 nights.

The following formulae are suggested:—

I	
R	
Sulphur Praecip	... 3 2.
Cretae praep.	... 3 3.
Saponia Mollis	
Vaseline ā ā	... 3 1.
Ft. Ungt.	Misce.

II Wilkinson's Ointment.

R	
Sulphur praecip	...
Ol. fagi ā ā	... 3 3.
Cratae praep	... 3 2.
Saponis Viridi	
Adipos lanae ā ā	... 3 6.
Ft. Ungt.	

III	
R	
Balsam of Peru	
Spts. Vini ā ā	... partes equales
	or,
Balsam of Peru	... 1 part
Glycerine	... 3 parts

may be used in cases intolerant to sulphur. Young children or older ones may be given 2 to 4 % of B. Naphthol in vaseline.

IV
Equal parts of styrax and olive oil may be used.

V
"Danish Ointment" or "Danish Treatment for scabies" was devised by Mr. Marcussen of Professor Ehler's clinic. The formulae is:—

- (1) One kgrm. of sublimed sulphur dissolved by gentle heat in 2 kgrms. in 50% solution of KOH. This gives a yellowish clear solution.
- (2) 225 grms. each of vaseline and anhydrous lanolin are mixed together without heat.

- (3) Add to No. 2 mixture 375 grms. from No. 1 solution.
- (4) Prepare fresh zinc hydride by mixing 28 grms. of zinc sulphate and 40 grms. of 20% NaOH; this is added to the ointment.
- (5) Liquid paraffin is added to get a total weight of 1,000 grams.
- (6) 5 grammes of Benzaldehyde (or 5 grms. of oil of bitter almonds) added to mask the smell of H_2S .

3. Tineasis. (Ring-worm).

From a clinical and therapeutic point of view tineasis may be considered as follows:

- (a) Tineasis of hairy scalp and beard region.
 - (b) Tineasis of the glabrous skin.
 - (c) Tineasis of the nails (onychomycosis).
- (a) Scalp ring-worm affects children of the school-going age. It is rare after 14 years of age. Infection takes place from child to child through combs, hats, pillows, etc. We do not consider this a common disease in Madras. During the year, 6 cases were seen; 2 of these were pustular in type—Kerion.

The affection starts as a small scaling lesion which gradually extends peripherally. It may be left unnoticed by the patients and parents as it gives rise to very little discomfort. The hairs over the affected regions may be found bent, broken or twisted; they have also lost their natural lustre. The hair is brittle and breaks readily when pulled by the forceps. If one or two hairs are boiled on a slide after addition of 15% KOH till thoroughly macerated, the fungus can be demonstrated with a high power objective dry lens. If required for culture a Sabouraud proof medium, the hairs and scales should be washed in spirit (95%) for 30 minutes to get rid of the contaminating cocci and then planted on the medium. Another aid to diagnosis and treatment is Wood's glass or Correx-filter. The former glass is made of nickel oxide. A beam of ultra-violet light with an admixture of a few rays from the infra-red is passed through the Wood's glass and falls on the scalp. The fungus on the infected hairs shows up as brilliant beads with efflorescence. Thus the location and extent of the infection are quickly and accurately determined. Wood's light is also of use in revealing infected hairs that have escaped in treatment by X-ray, thallium acetate or local medicinal remedies. Correx-filter is a blue-purple glass and may be used in the same way as a Wood's glass.

Diagnosis:—Ring-worm of the scalp has to be distinguished from *Seborrhoea*, *Psoriasis* and *Alopecia areata*. In seborrhoea the whole scalp is affected; scales are branny, non-adherent and "flake off upon the hair and clothing." There is no loss of hair. Psoriasis affects the scalp in patches and it is only very rarely that the scalp alone is involved. The affection of the extensor areas, particularly over knees and elbows, and the micaceous or silvery scales, the removal of which shows the Bulkley's membrane with the red papillary points should leave no doubt as regards the diagnosis. Alopecia areata:—"Billiard ball smoothness," "mark of exclamation hair along the periphery" and the unimpaired general health of the patient should provide a sufficient guide to diagnosis.

Treatment:—Epilation by X-ray is carried out by one of the standard methods—Keinboch-Adamson. The head is continuously protected by linen caps, and antiseptic ointments applied to prevent spread of infection to healthy areas and other children. Epilation begins after the third week and is complete by the end of the fourth. Examination is made under Wood's light, and infected hairs that have escaped epilation dealt manually by forceps. Thallium acetate is given by the mouth. The dose is calculated on the basis of 8 mgrms. per kilogram weight of the naked child. Epilation begins by the end of the second week and is complete during the third week. Its action is through the sympathetic trophic nerves and not directly on the hair papillae.

(b) **Ring-worm of the Glabrous skin:**—There is very little difficulty in spotting this condition. The circular and festooned affections show a spreading periphery, while healing or eczematization is taking place at the centre. Itching is present, both by day and night. Impetiginization takes place readily through scratching and this in its turn infects the free edges of the nails. When the spread is active, the periphery is red and surmounted by small vesicles. Since the margin is always clear-cut, the iniquinal one takes the name of *Tinea marginatum* and Dhoby's itch from the supposition that the infection is from the washed dresses brought in by the dhoby. Many varieties are described. One special form attacking the fourth interdigital space of the feet is commonly found on those who walk bare-footed. This is a form of epidermophytosis. The epithelium of the inter-digital cleft is white and sodden, and the part feels indurated. When the infection invades the soles and dorsa of the feet, the ringed or circinnated appearance becomes evident. The condition is very chronic, and infection of the toe nails and particularly of the finger nails takes place readily.

Treatment:—The removal of the superficial epithelium containing the fungus by means of liquor epispasticus or linamentum iodi is still used. In sensitive skin, this causes a violent reaction. Even then a parasiticide becomes necessary to get rid of the fungi that have penetrated into the mucous layer. 2% ammoniated mercury ointment yields better result after the blistering treatment. If the blistering agents have left a violent reaction, the part may require 2 to 3 days treatment by a zinc cream.

The following formulae may be found useful:—

Whitfield's Ointment:—

R	I		
	Acid Salicylic	...	grs. 15
	Acid Benzoic	...	grs. 25
	Coconut oil	...	3 2
	Vaseline	...	3 6

Or,

Double-strength Whitfield:—

R	II		
	Acid Salicylic	...	1 3.
	Acid Benzoic	...	1 3.
	Vaselin	...	1 3.

III

Kerolysin. (Upjohn's).

IV

Unna's Unguentum chrysarobin Co.

R			
	Acid Salicylic	...	10 grs.
	Chrysarobin	...	25 grs.
	Ichthyol	...	25 m.
	Vaselin	...	1 3.

Whitfield's ointment, when made up with white vaseline is clean, mild in its action and useful in all cases. In indurated and chronic cases, a double strength Whitfield ointment has to be ordered. The progress of treatment need not be watched by the physician and may be left to the patient. The ointment has to be applied till the affected area becomes quite normal in every respect. The ointment is applied overnight and washed off every morning; during the day, the part is lightly dusted with talc to keep it dry

and allay irritation. Drying prevents moisture—one of the desiderata required for the growth of the fungus.

Chronic and indurated cases will require the compound chrysarobin ointment of Unna, Kerolysin (Upjohn's) or a double-strength Whitfield. Chrysarobin stains the part and under-linen a deep purple and cannot be applied near face as it produces a severe conjunctivitis and chemotic eye-lids. Kerolysin is a cleaner ointment and is fairly uniform in its action. It does not leave any staining on linen. Cignolin, a derivative of Chrysarobin may be used in half to one per cent. strength in a zinc cream. It has none of the draw-backs of chrysarobin.

(c) **Ringworm of the nails.**—(Onychomycosis). This is usually secondary to ringworm of some other part of the body; very rarely it is primary. The affection shows itself as a discolouration of the nails, and when the inflammation spreads to the matrix, the nail becomes spongy, uneven, transversely striated and brittle. Under the free border of the nail, a mass of discoloured and friable debris is usually seen. Fungus can be easily demonstrated under the microscope. In advanced cases, after the shedding of the disintegrating mass, the nail appears very short and the free border assumes a crescentic shape.

Commenting on the chronicity and resistance to treatment, Sir Norman Walker aptly said "Ringworm of the nails is a calamity which no decent person would "wish on" his worst enemy". The condition is very resistant to treatment; even surgical avulsion of the nail followed by the application of strong parasiticides might fail as the fungus is entrenched in the substance of the nail matrix.

Treatment:—The Harrison treatment consists of the following 2 solutions:—

A.			
R.	Potassi Iodidi—	...	3 1
	Liquor Potassae	...	
	Aqua distillata	...	āā 3 1
B.			
R.	Hydrargyri perchlor.	...	grs. 4
	Spt. Vini rectific	...	
	Aqua distillata	...	āā 3 1

Solution No. A. soaked in lint is applied for 15 minutes under a protective and this is followed by solution B, which is allowed to act for 24 hours—soaked on lint under a finger stall. The action

of the two solutions is explained as follows:—Pot. iodide penetrates through the nail cells softened by the liq. Potassae and combines with the mercuric perchloride to form red iodide of mercury which destroys the fungus in situ.

Sir Norman Walker uses Fheling's solution on lint, the surrounding parts being protected by zinc paste. Evaporation prevented as in the previous method by a finger stall. If properly applied the nail is softened enough in 24 to 48 hours and can be easily and entirely removed. Surgical avulsion may be carried out by block anaesthesia, 4 c.c of a 1% solution of Novocain being sufficient. It is better to soften the nail by the Fheling's solution beforehand. The softened nail is grasped from the free end and rolled back by means of an artery forceps. The nail-bed will require treatment by a parasiticide—(1 to 2% of ammoniated mercury ointment) to ensure that all residual fungus is thoroughly dealt with and the new nail is free from infection. In ordinary cases it takes 5 to 6 months to grow a new nail.

(4) Leprosy.

As I have nearly run through my allotted time, my remarks on leprosy will be cursory in the extreme. The treatment as adopted at the present time was thoroughly reviewed by me in the Medical College Magazine No. 3 of Volume XI, 1931. If one wants to apply Koch's Postulates as regards an organismal infection, (1) the organism should be constantly demonstrated in the lesion (2) grown on suitable media, (3) transmitted to a susceptible animal and (4) recovered from the characteristic lesion in this laboratory animal. The first—isolation of the organism—is possible in a good many cases, but not in all cases. The other three points are still awaiting solution. *Bacillus leperae* has not been cultured. Most of the current reports under this heading have never been convincing. Diagnosis of leprosy by early macular lesions rests entirely on clinical data, that is, anaesthesia, depigmentation, loss of hair on the area, absence of sweating, alteration to heat sensation, etc. The depigmented patch has no sharply-defined border; it fades into the surrounding area and is non-scaling. The scaling on a xerodermic skin is an exception to this. The patch is erythric in the early stages and sometimes it is slightly raised and dusky-coloured. The patch may have a band of redness all round the periphery and there may be an appearance of grouped minute vesicles on this band.

The patches and nodules on the skin outside are not a measure

of the amount of involvement of the internal organs. The nerve-type patient is effectively resisting the disease, while the patient with nodule does not show sufficient resistance to the disease. In Madras, we have more of the nerve type. Transmission of the disease is not known. Arguing from accidental infection through needle-pricks, it is presumed that a biting insect is the vector. One always finds the bed-bug handy, but the presence of leper-bacilli in them has not been proved. Since the mode of transmission is not known, the incubation period of this disease cannot be definitely stated. For the same reason, special prophylaxis cannot be carried out; only general prophylaxis on hygienic lines is indicated. The following table shows some of the injections that have been used:—

Solutions.	Route.	Dose.
1. Alepol aqueous soln. 2%—6%.	Intra-dermal Sub-cutaneous Intra-Muscular Intra-Venous (2%).	... 1—5 c. c. 2—10 c. c. Vary.
2. Antileprol (Bayer).	Oral. Intra-dermal Intra-muscular.	$\frac{1}{2}$ —1 Gram Perles 1—6 per day. ... 2—6 c. c.
3. E, E ₂ E ₃ General Hospital.	Intra-muscular.	Varying.
4. E. C. C. O.	"	1—10 c. c.
5. Pharmasol Chaulmoogra (A. F. D.) (0.1 & 0.5%).	Oral Intra-dermal Sub-cutaneous Intra-muscular Intra-venous.	} 1—10 c. c.
6. Pure Hydno- carpus oil.	Intra-dermal Sub-cutaneous Oral.	
7. Tai-Fony-chee treatment.	Cannabis Indica seed in powder mixed with powdered Hydnocarpus seed. (1:4).	Used in China and Federated Malaya states
8. Moogrol. (B. W. & Co.)		2 Gr. tablets 1—3 t.d.s.
9. Sod. Hydnocarpate.	Oral.	

Of the different preparations used, one form of injection, in my opinion, is as good as another. Pain at the site of injection should be eliminated as much as possible and the injection chosen should be such as to give a good therapeutic effect when clinically assessed. There are times—I should have said very often—when a patient becomes stationary under one kind of treatment, but responds better to another type of injection. This cannot be explained satisfactorily; perhaps the patient gets a tolerance for the drug in that form. When all the available areas are fibrosed by intramuscular and subcutaneous injections, an intravenous method becomes urgently indicated. We have used with satisfaction Pharmasol Chaulmoogra of the Anglo-French Drug Co. We have four patients in our clinics who have been treated entirely by Pharmasol Chaulmoogra and they have all shown marked improvement. Neuritis disappears in six injections and the nodules begin to retrogress by the same time. The patient is relieved from a good deal of pain and is induced to continue the treatment. Intravenous injection of alepol ends by occlusion of veins and the patient loses weight. This is also followed by gastro-intestinal upset as vomiting, diarrhoea, anorexia, etc., if intolerance sets in. A 2 % solution of alepol intra-muscularly is well-borne, causes very little inconvenience and if kept at a constant dose of 2 to 3 c.c. (twice a week), the treatment is not interrupted at any time as it would be when higher percentages and larger quantities than the above are administered. We have uniformly followed the above method and can recommend it to those who wish to try it.

LEPTOSPIRAL INFECTIONS

BY

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IN the choice of the subject of my lecture to-day, I have been guided by two main considerations. Firstly, I have devoted some attention to leptospirosis in recent years. Secondly, I want to acquaint you with some of the more important features of the disease so as to enable you to diagnose these cases, because I think that cases of leptospiral jaundice do occur in India.

The symptom—complex of fever, jaundice and haemorrhage was first described by Weil in 1886 though cases of epidemic jaun-

dice have been reported in ancient medical literature. Records of epidemic jaundice in India are also available. Wolley believed that cases of jaundice seen in the Andamans were distinct from those of ordinary malaria. To Barker (1926), however, belongs the credit for the definite recognition of the disease as Weil's disease on clinical grounds. He also found leptospiræ in stained specimens of the centrifuged urine and in films from the liver of a fatal case.

Before describing the clinical features of the disease, it is necessary to tell you something about the causal organism.

Leptospira Icterohaemorrhagica.

This organism was first identified by Inana and his co-workers as the cause of Weil's disease in 1914. Dark ground illumination is the method *par excellence* for the study of *Leptospira icterohaemorrhagica*. It gives the impression of a long bright flexible and curved filament which spins extremely rapidly on the long axis of the body. On closer examination, one notices the exceedingly fine numerous spirals throughout the entire length of the organism which appear as refractile particles, and give the organism a beaded appearance. In length it varies from 6u to 12u. It is 0.25u to 0.3u in thickness. The organism is usually bent at one or both ends simulating the appearance of the letter L or C and when bent to opposite sides that of letter S. It shows two types of movements, viz., progression and rotation. The combination of the various flexures with the rotary movement produces the appearance of loops of figures of eight which are extremely characteristic.

When stained, the organism is smaller than in the fresh state and the finer structure is obscured. Tribondeau's modification of Fontana's silver impregnation method gives satisfactory results. The organism appears yellow and shows various forms—S, C, L. In section, it appears black, much thicker and shorter without the graceful appearance seen under dark ground illumination.

Clinical Features.

The following account is based on the study of sixty-four cases of infectious jaundice in the Andaman Islands (1931).

Incubation period varies from 6 to 8 days, but may be longer.

Stages of the disease:—The course of the disease can be roughly divided into three stages:

(a) *Febrile stage*—from onset to 5th day; is characterized by

The test most commonly employed is the agglutination test. Additional possible methods are the adhesion test, Pfeiffer's reaction and complement fixation.

Treatment:

This is mainly symptomatic. Rest in bed is essential as there is tendency to cardiac weakness.

Serum treatment has been found of marked value in this disease. It reduces the mortality, destroys leptospirae in the peripheral blood, lessens the severity of symptoms and assists in the formation of antibodies. The main points about the use of therapeutic sera are:

- (1) The serum must be of high potency.
- (2) It must be used early.
- (3) Large dosage (up to 60 c. c. in 24 hrs.) is required.
- (4) Intravenous injection is advisable.
- (5) As there are many serological races of leptospirae, it is advisable that the serum to be used is prepared against the strain of leptospira responsible for the cases in any one area.

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NEPHROSIS AND NEPHROSCLEROSIS.

BY

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The modern Conceptions of the function of the kidney.

THE ingenious experiment of introducing a delicate cannula into the glomerular space has taught us that Carl Ludwig's theory is mostly true and that the function of the glomerulus is merely to filter off a watery protein-free fluid from the blood. The function of the tubule is to absorb water and secrete those substances that are found in great concentration in the urine. These are urea, uric acid, creatinine, and indican, and salts like sulphates and phosphates. These are found only in traces in the blood, but are concentrated by the kidney. Sodium chloride, potassium and calcium are excreted in a slightly less concentration than in the blood, since traces are reabsorbed by the tubules. The modern tendency how-

ever is to look upon the functional unit of the kidney as the glomerulus together with its attendant tubule, the whole forming 'the Nephron'. Bowman's epithelium and capillary endothelium of the loops of the tuft together act as a colloidal membrane, an ultrafilter which keeps back the albumin molecules, the larger globulin molecules, and the still larger fibrinogen complexes in normal conditions. It is thus easy to understand how, in disease of the kidney, when the ultra-filter is damaged and its function altered, the albumin complex is no longer kept back but escapes in the urine. With atrophy of the tubules and degradation of their epithelium, the concentrating power of the nephron is altered so that nitrogenous waste products are allowed to accumulate in the blood instead of being excreted in the urine.

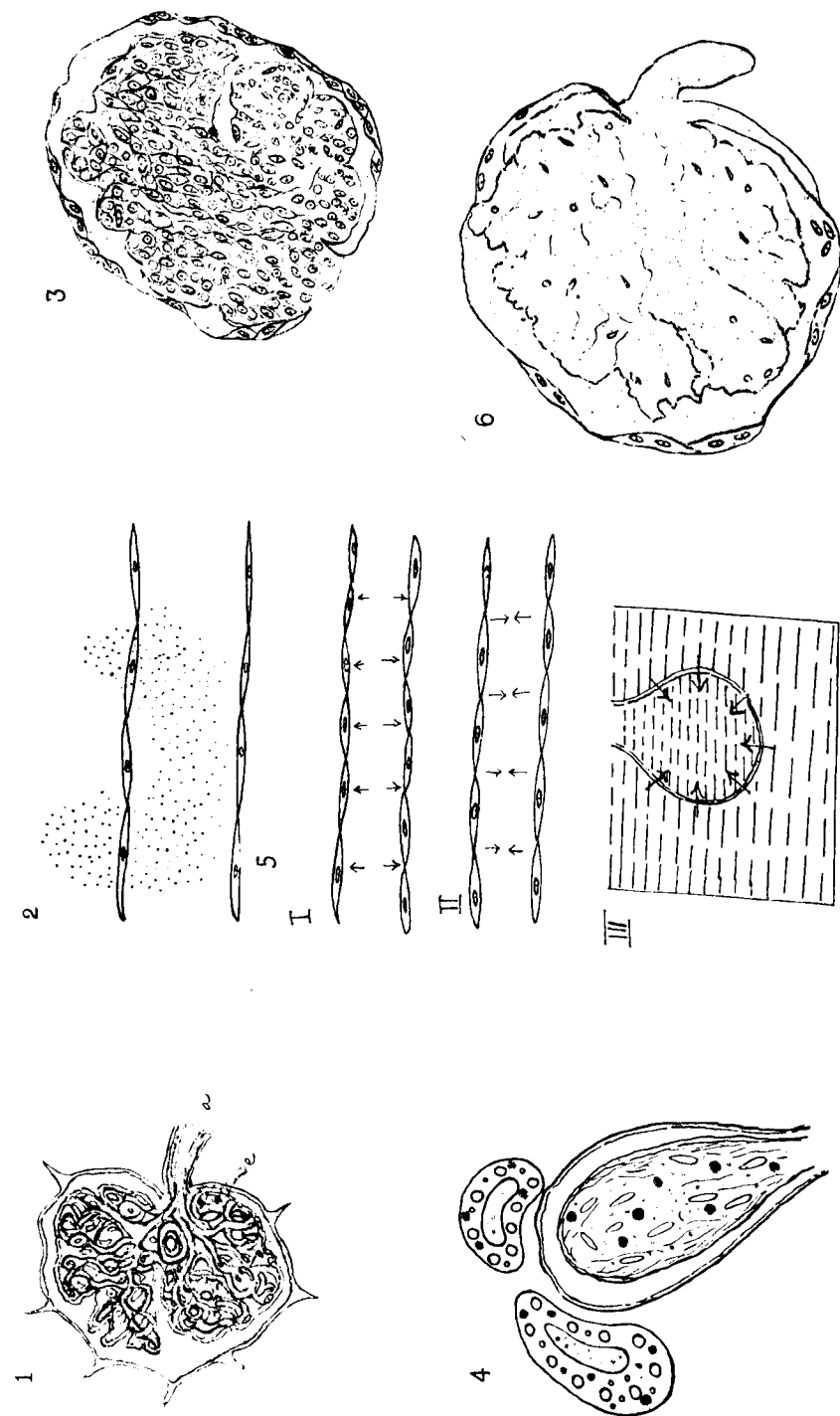
Ever since Richard Bright noted the association between oedema and disease of the kidney, and described the symptomatology of Bright's disease with such marvellous accuracy, little advance of Bright's disease with such marvellous accuracy, little advance was made in understanding the pathology of the condition. Much light, however, has been thrown on this problem in recent years, mostly through the pioneer work of pathologists, Volhard and Fahr of Munk, of Muller in Germany, through the biochemical investigations of Epstein in America, and through the clinical observations of Widai and Javal in France, and MacLean in England. Recently Fishberg of New York has attempted to correlate the whole in a brilliant monograph on the subject.

The conception of nephrosis:—The older clinicians had noted how cases of acute nephritis with oedema, scanty high coloured urine, often recovered, but came in again with subsequent attacks and gradually passed on to a more or less sub-chronic stage of oedema, albuminuria and a rising blood pressure, and how these types passed on to still another phase, where the oedema disappeared, but the blood-pressure gradually rose, the urine became paler and more profuse and the albumin appeared only as a trace, and how these types often died of uræmia. A classification of nephritis into a parenchymatous type with oedema and albuminuria with the pathological basis of a large white kidney, and an interstitial type with high blood-pressure and polyuria with a shrunken kidney, thus arose. This was followed by the clinical classification of Widai into a hydræmic or oedematous type and an azotæmic type with nitrogen retention as the prominent feature. Nearly thirty years ago Frederick Muller pointed out that under the term Bright's disease are included two different pathological conditions, one an inflammation of the kidney which is nephritis and the other a

widespread damage to the capillary system. Thus, the oedema that starts with the onset of acute Bright's disease, is an expression of a damage that is not only renal, but extra-renal, a pre-renal deviation". The explanation of Widal and Javal that the oedema of acute Bright's disease is due to the retention of sodium chloride is now no longer tenable. The salt retention is now regarded as the result of the oedema and not its cause. The retention of sodium chloride occurs in varying clinical conditions which do not show oedema. It is true however that the oedema fluid attracts the sodium ion; but why it is, we don't know. Thus the albuminuria of acute nephritis is only part of a wide-spread albuminous exudate into the tissues. Beckman has demonstrated that the oedema fluid of acute nephritis has a protein content of 1% while the fluid in cardiac dropsy has a protein content of less than .5%. Thus, it is not a mere transudation into the tissues, that occurs in acute Bright's disease.

How acute nephritis alters in type with succeeding attacks, passes through a stage of subacute inflammation and ends up in a chronic stage where the oedema has gradually disappeared, the blood-pressure has gradually risen, the concentrating power of the kidney has gradually become impaired, so that the urine has become dilute and watery—these form a chain of events that have been noted from the time of Bright, but have puzzled these earlier clinicians. How the blurred red kidney of acute nephritis passes through the stage of the large white kidney of sub-acute nephritis to the stage of small white kidney of chronic nephritis is a chain of events in even sequence that delights the soul of the morbid anatomist even to-day. How with repeated attacks of inflammation and blockage of the glomerulus filter, the blood-pressure gradually rises to compensate for the renal lesion, how with the blockage of the afferent vessel, the blood supply of the tubule is gradually cut off, how the epithelium becomes atrophied and degraded in type and no longer able to perform its function of concentrating the urine and excreting the nitrogenous waste products from the blood, in fact the explanation of alteration in type of the case, is now no longer obscure.

Sub-acute nephrosis:—Long before Muller distinguished nephrosis from nephritis, the older clinicians have noted a type of renal disease found mostly in children and young adults where the oedema was persistent in spite of its duration, where the albuminuria was profuse and unaltered, where the blood-pressure never rose, in spite of the long duration, where nitrogen retention and



1. The afferent and efferent vessels. 2. Capillary permeability: Krogh's experiment. 3. Proliferative glomerulitis. 4. Fat droplets in the kidney in nephrosis. 5. I. Hydrostatic pressure. II. Colloidal osmotic tension. III. Osmotic tension on a sac of gum sol. in water. 6. Hyalinization of the afferent vessel; the lesion in hyperplasia.

its resultant uraemia did not occur, and where the patients recovered after a protracted course. In such cases, albuminuria and oedema were the most striking features. Examination of the urine showed in such cases large amounts of fat beside albumin. Later, it was found that the fat differed from neutral fat in that it was double refracting and not isotropic like neutral fat. Pathological studies on this condition showed that the oedema fluid contained only a trace of albumin less than 1%, unlike the oedema of acute nephritis. The mechanism of oedema was also found to be different. It was recognised that the profuse albuminuria brought about a lowering in the colloidal osmotic tension of the blood, that binding force that prevents diffusion of fluid through the vessel wall which depends on the concentration of protein molecules in the blood. When the blood protein is lost, the tension falls and more of fluid escapes into the tissues and oedema results. The two forces that act on the capillary wall may be regarded as opposed. The first is the hydrostatic pressure which depends on the 'head' of fluid inside the capillary; the other is the 'colloidal osmotic tension' which may be regarded as a pull on the fluid in the vessel that is exerted by the tissue fluids. With the diminution of proteins in the circulating blood, fats and lipoids are mobilised from the storage depots possibly as a protective mechanism. Thus it becomes clear, why the oedema of subacute nephrosis goes side by side with alteration in the amount of circulating protein and the lowering of the colloidal osmotic tension. The diminution is most with albumin which escapes in the urine. This results in an alteration in the albumin-globulin ratio in the blood. Here the essential lesion would appear to be something in the glomerular filter, some degenerative change with alteration of permeability to albumin. No inflammatory changes are found in the filter. Or is it possible that, as Epstein contends, we are dealing with a metabolic disease where some abnormal protein is circulating in the blood, a protein that is promptly picked up by the kidney and excreted? Proteinurias with such abnormal protein are not known, as with the Bence-Jones' protein of multiple myelomata. Epstein regards subacute nephrosis as a metabolic disease with some changes in the ductless glands such as the thyroid, since changes such as colloidal atrophy and degeneration have been described in the gland. Again, administration of thyroid has a beneficial effect in such cases. It has also been put forward notably by Bell that nephrosis is only a variety of glomerulo-nephritis where glomerular lesions are minimal and can only be demonstrated by special staining. Atrophy of

the tubules does not occur since there is no blockage of the glomerular tuft. Whatever may be the exact mechanism of its pathogenesis, it cannot be denied that in nephrosis the clinical features of nitrogen-retention and uraemia do not occur. The defect in the kidney, whatever be its nature, does not affect the renal function. This has an important bearing on the course of the case and its ultimate prognosis, which is much more favourable than that of nephritis.

Sub-acute nephrosis is a comparatively rare condition. Some cases appear to be the result of an acute infection. One type distinctly occurs in the secondary stage of syphilis and has long been described under the name of syphilitic nephritis. Administration of mercury has been held as a cause, until it was proved that cases occurred where no form of treatment was carried out. Tuberculosis is a well recognized cause, but the possibility of amyloid disease has to be excluded. Among other infections, diphtheria is important. Pyogenic infection is also a possible cause. Malaria has not yet been described to cause nephrosis, but I have a specimen here where the lesion is typical. Possibly some of the cases of malarial nephritis described by Giglioli where recovery occurred after quinine, are really cases of nephrosis.

It is not within my province to discuss how a clinician should arrive at a diagnosis, but to a clinical pathologist there are some simple tests that are conclusive. Examination of the oedema fluid early in the disease may give an indication. Blood analysis will certainly be of value in the subacute types in late stages. The simplest test appears to be the microscopic examination of the urinary sediment for fat and lipoids. They look like granular or fatty casts but by a simple polarising device attached to a microscope, the appearance of bright globules when the two prisms are at a right angles is sufficiently indicative.

The Nephrosis of Pregnancy.—The kidney of pregnancy with its clinical manifestations of albuminuria and oedema, occurring during the second half of gestation, has been a subject of great interest. The pathological anatomy is one of cloudy swelling and fatty degeneration of the renal epithelium without any trace of inflammation. Volhard's hypothesis of vascular spasm affords the best explanation for the lesions. The hypertension that is a common feature in these cases is due to peripheral vaso-constriction. The hypothesis of a toxæmic state to account for the varying clinical conditions such as the albuminuria of pregnancy, hyperemesis gravidarum, eclampsia, acute yellow atrophy, etc., is merely speculative. The nephrosis of pregnancy differs from other types

of nephrosis in that, though the renal functions are normal, there is very often a rise of blood-pressure, and a type of encephalopathy known as eclampsia gravidarum.

Amyloid Nephrosis.—Occurring in chronic cachexias and in long-standing suppuration, a general amyloidosis might show well marked lesions in the kidney. The amyloid material is generally deposited in the walls of the vessels either of the glomerular tuft, or in the vasa afferentia or in the basement membrane of the tubules. The degenerative changes which occur in the tubular epithelium are the result of changes in the blood supply and not toxic. In this feature, amyloid nephrosis resembles the nephropathies due to vascular lesions. However, marked albuminuria, polyuria and sometimes oedema are the out-standing clinical features.

Nephro-sclerosis.

Just as modern ideas have helped to differentiate two distinct conditions the result of toxic damage of the kidney, so recent research has taught us that a form of renal disease exists which is purely degenerative and caused by vascular changes, that has been grouped till now under the eponymous title of Chronic Bright's disease. Since dense fibrosis of the kidney was the main feature of its morbid anatomy, the term chronic interstitial nephritis was regarded as more in point. That dense fibrosis of the kidney followed by contraction is often the end result of nephritis is well recognized. Pathologists have distinguished this type of granular contracted kidney as a secondary type, the result of previous nephritis. The primary contracted kidney that is sometimes met with in gout, in lead poisoning, and in other obscure conditions has been looked upon as the result of a slow inflammation which is chronic from the beginning, is insidious and slowly progressive, knocking out one glomerulus after another, till in course of time, the whole kidney becomes gradually sclerosed and failure of renal function sets in. This primary contracted kidney is often found associated with cardio-vascular sclerosis. Thickening of the small arterioles of the kidney is an important feature. It is now becoming increasingly clear that this type of renal sclerosis is not due to a nephritis at all, but is merely the expression of a general condition of cardio-vasculo-renal sclerosis which itself is only the morbid picture of an obscure disease, called hyperpiesia. Thanks to the accurate clinical observations of Clifford Albutt, the profession has learned to recognize a primary condition where high blood-pressure is the predominant symptom, an essential hypertension, affecting people

in the prime of life and continuing for years with gradual development of cardiac hypertrophy till 'cardiac defeat' or a cerebral catastrophe ends the scene. Such cases have nothing whatever to do with renal hypertension following Bright's disease. The kidneys are affected late in the disease and only when the renal vessels are affected. It is believed that some toxic metabolite is circulating in the blood. 'There is a slip in the delivery of protein elements into an alternative space of a lattice'—as Allbutt would have it, that causes peripheral vaso-constriction. Modern study of the vessels has taught us that this is followed, not by a muscular hypertrophy of the vessel wall as George Johnson believed, but by a thickening, a progressive fibrosis and hyalinization with the result that the entry to the capillary bed is definitely narrowed. This change is almost universal and affects the smallest arterioles—a diffuse hyperplastic arteriolo-sclerosis, that has nothing to do with atheroma. This hyalinization and narrowing is most marked in the vessels of certain organs, particularly the spleen, the pancreas, the brain and the kidney. In the kidney, it affects mostly the afferent vessel of the tuft, so that there is a progressive ischaemia and atrophy of the tuft followed by atrophy of the tubules. The degenerative changes in the tubules are the result of diminution of their blood supply. With atrophy of the renal parenchyma, there is a replacement fibrosis and the whole kidney becomes shrunken and granular. This type of granular kidney—the primary contracted kidney, the ischaemic kidney of Volhard and Fahr—is thus not a nephritis at all, nor the end-result of a nephritis, but is merely a local expression of a wide-spread vascular reaction to a primary hypertension—hyperpiesia.

Sclerosis of the kidney might occur as a result of another type of vascular disease, atheroma or athero-sclerosis. Here the change affects the larger arteries and is often part of a similar change affecting the aorta and other large and medium-sized vessels. This occurs in old people and is not specially associated with hypertension. It is an expression of wear and tear of the vessels in old age, case of 'inferior rubber in the tubing,' the decrescent type of arterio-sclerosis where Aschoff has taught us, there is some disturbance of cholesterol metabolism so that this cholesterol is imbibed by the intima and deposited just below the internal elastic lamina, a cholesterol steatosis with attendant intimal thickening followed by ulceration or calcification. This senile change might affect the vessels of the kidney and might result in a patchy atrophy of the parenchyma from obstruction to the blood supply. It is followed

by fibrosis so that in the senile kidney we might find irregular scars on the surface or there might be a more diffuse but irregular contraction.

If one were to study the working of the kidney in nephrosclerosis, where large numbers of glomeruli are thrown out of action, we have a condition very much similar to compensated heart failure. The renal failure is compensated by the occurrence of polyuria so that the nitrogenous waste products are flushed out by the kidney in a dilute watery urine, even though the concentrative function of the nephron is diminished. Thus the defect in the kidney is compensated and this state of compensated renal failure might continue throughout the patient's life in benign nephrosclerosis. Here the biochemical syndrome of decompensated renal failure called uræmia is seldom met with. In a small percentage of cases of nephrosclerosis, the vascular changes are more acute and end in necrosis of the vessel wall. In such types of "malignant nephrosclerosis" renal failure sets in early and a state of compensation may be broken so that nitrogenous products accumulate in the blood in increasing compensation till uræmia ends the scene.

It may not be out of place here to mention that the trend of modern thought is to regard uræmia as a condition of intoxication due to the accumulation of urea and other nitrogenous waste products in the blood. An increasing concentration of urea in the blood is now regarded as the cardinal feature of uræmia. We no longer believe in an unknown poison which acts as a convulsant. The convulsive attacks that have been looked upon as typical of uræmia we now regard as to vascular changes in the brain associated with hypertension. They are not uræmic but form a picture of hypertensive encephalopathy. The typical uræmic state is one of slowly-deepening coma with perhaps slight fibrillary twitching of the muscles and an increasing blood urea and blood creatinine. Thompson has recently described a case where nephrectomy was done in a patient for a severe traumatic haemorrhage from the kidney. Later it was found that there was a congenital absence of the other kidney. The patient complained of headache, and gradually passed on to a state of coma with increasing blood urea. The convulsive, gastro-intestinal, ocular and other phenomena that were so long looked upon as uraemic were conspicuously absent.

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THE CLINICIAN AND THE LABORATORY

BY

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THE first essential step in the management of disease—diagnosis—is the most important function of a practitioner. Whether he is the last of a host of advisers or the first of many to follow, whether the patient will be directed towards the restoration of health or carried into the blind bye-paths of symptomatic treatment is dependent upon the ability of his adviser to recognise the nature of the ailment. To this end greater or less study may be required and specialised methods of examination may be called upon to elicit the necessary information.

The extraordinary advances of modern times in the elucidation of the ætiology of disease, the tremendous strides made in the elaboration of methods for the study of the effects of disease, have added greatly to the diagnostic armamentarium.

Few divisions of medicine—by which I mean all that has to do with the recognition and management of disease—have undergone more extensive or more constant changes in recent times than that which concerns itself with the laboratory investigation.

But the very number of these newer methods applicable has produced an embarrassment as a result of which, sometimes they are neither wisely used nor intelligently interpreted, so that the introduction of laboratory procedures in the study of disease, has somewhat paradoxically contributed difficulties rather than assisted in their elucidation.

There are many reasons which may be looked to for an explanation of this situation.

First is the common tendency to look upon laboratory procedures as tests. To think of them as indicating the presence or absence of specific pathological condition.

Laboratory procedures should be looked upon simply as *methods of examination*, methods designed to secure information attainable in no other way, methods for the detection and measurement of the response of the patient to various stimuli.

The application of a stethoscope to a chest is not a test for tuberculosis. The stethoscope is applied to hear plainly such sounds as may be produced in disease. Unless the sounds be heard, their mechanism understood, they cannot be translated into a diagnosis of tuberculosis or of pneumonia.

In the same way, the results of an agglutination reaction or the complement fixation test do not depend upon the mere presence of the disease but upon the reactions of the patient's mechanism to the stimuli produced by the disease.

In other words both kinds of examination require *interpretation*, if they are to furnish correct information, and their correct interpretation depends upon a thorough understanding of the mechanism involved.

Though it is not essential for the practitioner to be familiar with the technicalities of the different laboratory methods, it is essential for him to be thoroughly familiar with the significance and clinical interpretation of their results.

Without under-rating the value of laboratory aids in diagnosis, the tendency to rely on them, to the exclusion of thorough personal examination, is to be deprecated.

Too much dependence on laboratory aids leads to lack of care in other methods. The laboratory should be relied on to assist or confirm a diagnosis, rather than to make it.

The tendency nowadays is for too much attention being paid to laboratory results. The laity is more satisfied if a diagnosis of Enteric is made by the laboratory rather than by the clinician.

Laboratory diagnostic procedures are legion and I shall restrict myself to the consideration of a few of them.

Widal.

The occurrence of a positive widal reaction has but one clear-out meaning namely that the serum contains agglutinins for the typhoid bacilli.

A positive widal may signify that—

1. The individual has typhoid fever.
2. He has had typhoid fever.
3. He has received anti-typhoid vaccine.
4. He is a carrier of the typhoid bacilli.

In the differentiation of these possibilities, not only must the other clinical findings be taken into account but also the dilution of serum in which agglutination occurs.

I am of opinion that the best way to apply the widal test to the diagnosis of typhoid fever is by repeating the test after 5 or 7 days. An increasing agglutinating content or a rising titer is evidence of continued agglutinin production which is only possible in the presence of typhoid bacillus.

The production of agglutinins requires a certain period of time. The incidence of positive reaction therefore varies in accordance with the duration of disease, and also with the ability of the patient to react.

Occasionally however, a positive reaction may not occur until the patient is well on the way to convalescence. In the patient who has a past history of typhoid fever or who has received anti-typhoid vaccine, a single positive widal reaction has no diagnostic value. It is here that repeated tests are of value.

For reasons not yet satisfactorily established positive widal reactions may be encountered occasionally in other diseases, but they are usually in low titre.

The agglutinin titre bears no relation to the degree of immunity and also has no relation to the severity of the disease. As agglutinins are a species of anti-bodies it was originally thought that they possess protective and curative powers, conferring immunity in proportion to their content in the serum. This however has been shown not to be the case. Relapses have occurred in typhoid fever when the agglutinin content of the patient's blood is at its highest level.

It is possible that the production of the agglutinin is associated with the concomitant production of other anti-bodies more directly protective. The mere fact that an individual's blood contains a large number of agglutinins therefore is not necessarily an indication that he is effectively protected, nor can they be taken as a direct measure of the degree of immunity.

The culture of *B. typhosus* obtained from the blood of a patient is certain proof that he is suffering from typhoid fever.

A positive or negative widal by itself is of little value in diagnosis unless all the facts of the case are known, and the physician in charge alone can rightly interpret the significance of the reaction, for not infrequently a patient giving a positive widal is not suffering from Enteric fever at all, whilst one who gives a negative widal reaction is in reality suffering from the disease.

A laboratory can only say that a widal reaction is positive or negative but can never give the diagnosis that a patient is or is not suffering from typhoid.

Bacterial Blood Cultures.

In many Protozoal infections, parasites appear in blood as to be readily recognizable.

Few bacterial blood infections can ever be recognised by this simple technique.

Cultural methods are essential for the effective diagnosis of septicaemic infections in general.

The circulating blood of a healthy individual is sterile. Organisms constantly enter the blood stream; but in a state of health, the bactericidal power of the blood and the filtering property of the reticulo-endothelial system will remove them. It is probable that even in severe septicaemia, little actual multiplication of the organisms takes place in the circulating blood. But a positive blood culture is usually an evidence of a severe generalised infection.

Indications for Blood Cultures.

1. Patient with a valvular disease of heart with a temperature failing to react to salicylates.
2. Puerperium with temperature over 101° F. for over 48 hours.
3. Skin wounds with temperature over 101° F. especially with rigors.
4. Severe sore throat with rigors.
5. After surgical operations where high temperature persists.
6. Any patient with rigors.
7. Acute infections of middle ear.

Temperature is a crucial one—earlier the disease the better. It is not implied that all patients with high temperature are likely to have septicaemia, but it does imply that until the temperature reacts, positive results are improbable.

It is essential to recognise that while a positive blood culture is significant, a single negative culture is of no value.

Even in severe septicaemia, only a very few organisms are present per c. cm. It is therefore necessary to take the cultures under optimum conditions of which the most important is the temperature. Positive cultures are most likely to be secured during a rigor. Sterilisation of the skin is of more importance.

10 c. c. of blood should be directly inoculated into the culture medium. Media should be liquid and five times as much as blood. Cultures should be examined daily for 14 days. Contaminated cultures are common, the organisms being derived from skin or air. *Staphylococcal* septicaemia is by no means uncommon. *Streptococci* are to be accepted as evidence of blood stream infection. This and typhoid group are the organisms most commonly found. *Pneumococci* are also found in subacute infective endocarditis and after post-operative wound. *Streptococcus* occurs in blood in a patient with valvular lesion, malignant-endocarditis, localisation of abscess.

One negative result or even a series of negative results need not necessarily invalidate a diagnosis which is rendered probable on clinical grounds.

The significance of a negative blood culture is influenced by various factors.

The character of the suspected infection.

The time at which the culture is taken.

The duration of incubation.

Cerebrospinal Fluid.

The evidence of disease of central nervous system furnished by a sample of C. S. F. is partly given by clinical observations as pressure, rate of flow and general appearance, and partly by laboratory tests.

Laboratory examination involves an accurate enumeration of the cellular content, examination for bacteria, for anti-bodies and an analysis of chemical constituents. Many of these tests are unreliable or even valueless unless the sample is perfectly fresh.

For example, the cell count of a specimen rapidly decreases with age owing to the disintegration of the cells. Further, delicate bacteria soon die out and chemical substances such as glucose become hydrolysed.

So samples should be examined immediately after collection. Another disturbing factor is the presence of adventitious blood derived in the process of making a lumbar puncture. Blood makes an accurate cell count impossible.

General appearance:—Turbid and cloudy specimens imply an acute meningitic process. Specimens containing fresh blood throughout the whole time of collection are evidence of haemorrhage—cerebral or meningeal.

Cells:—Normal spinal fluid contains 2-5 lymphocytes per c. mm. and an increase in cells is invariably the result of an infection of the meninges.

If we remember that a cellular reaction demonstrable in the spinal fluid is an indication of inflammation of the tissue bathed by the fluid then the cell count when combined with clinical probabilities is most valuable aid to diagnosis.

But however valuable cell count is it can never be used for specifically diagnosing a given disease. Mahy have quoted figures as diagnostic of, say, tuberculosis or syphilis. This is entirely fallacious; each case must be considered on its merits and from all aspects.

In acute pyogenic infections of the meninges, the cellular reaction will always be of a gross nature. The turbid fluid will contain thousands of polymorphs per c. mm. Such may be found in infections with meningococcus, strepto, and pneumo. Tuberculous meningitis is a process in which the cellular reaction is somewhat variable. In acute and fulminating infections, the fluid is usually cloudy and contains hundreds of cells per c. mm. (polymorphs). In more chronic infections, the cellular content is not high and from 50 to 60 cells are lympho. All grades of tuberculous infections may be met with.

In syphilitic infections, the cells may number a hundred or more or they may be as low as 8 or 10.

Encephalitis Lethargica, acute anterior poliomyelitis and a few other less defined central nervous system diseases sometimes have a meningeal involvement. This occurs mostly in the very early stages—very variable—may be absent altogether.

The intrathecal administration of serum frequently causes an irritation of the meninges leading to an increase in lymphocytes.

Bacteria:—In purulent specimens bacteria are usually visible in a stained film of the deposit. Meningococci however are often difficult to find. Cultures should be made of all specimens containing an increased number of cells and if meningococcus is to be cultivated, the culture should be made by the bed side and incubated at once.

Tubercle bacilli are not commonly found.

Wassermann reaction:—It is always worth while to do a

wassermann test of the spinal fluid in any obscure nervous lesion. A test of the blood serum should be made at the same time.

Lang's colloidal gold test:—This test depends upon the fact that abnormal protein constituents in the spinal fluid have the power of precipitating gold from a colloidal solution. This test is useful in differentiating early cases of General paralysis from Tabes dorsalis.

Chemical constituents:—The most important is the determination of the chlorides. These are generally reduced in tubercular meningitis.

Genito-Urinary Infections.

Urine:—A catheter specimen affords the only reliable positive information as to bacterial infection at any point higher than the urethra. It is reasonable argument that if an ordinary specimen contains no bacteria, then a catheter specimen certainly will not. The preliminary examination of a cleaned-up mid-stream specimen is therefore a useful procedure and if negative is entirely reliable; but if such a specimen contains organisms, then catheterisation must be performed. The first morning specimen supplies most information and is in all cases the only specimen of any value for quantitative and comparative work. Specimens should be examined as soon as possible after collection. If there is undue delay, delicate organisms tend to die out, pus is liable to disintegrate and become un-recognisable, whilst in hot weather Coli form organisms may so multiply that the number present gives a false idea of the severity of the infection.

Males:—Mid-stream specimens are however relatively satisfactory as an index of infection of the bladder and higher parts of the urinary tract.

In all males over 50, a catheter is advisable owing to the frequency of mild and chronic B. coli infection of the prostate.

When an examination for tubercle bacilli is required it is always preferable to use a catheter.

Females:—It is almost impossible to ensure that an ordinary specimen of urine is un-contaminated by the numerous vaginal and vestibular bacteria, or that pus epithelium, blood or mucus have not been derived from the genital passage.

For bacteriological examination all specimens from females should be taken with a catheter.

Child and Infants:—The examination of a cleaned-up specimen may well precede the passing of a catheter.

A 24 hours specimen is only of value when examining for

tubercle bacilli. With such a specimen, a large quantity can be centrifugalised with a greater chance of finding the bacilli.

Cultures of urethral discharge are best made by experts. Where this is not possible, clean the glans with a little spirit, wipe away the first drop of discharge and take a loopful of the next drop avoiding touching the meatus. The cultures should be made on Hydrocele Agar and incubated without delay.

In Gonococcal cases, it is useless to submit a specimen of a vaginal discharge. Smears and cultures must be made from the urethra and from the cervix. The cervix must be mopped up through a speculum and the specimen taken from the mouths of cervical glands. The most productive specimens are those taken when the cervix is congested during the pre-menstrual period.

General Principles for the Interpretation of reports.

The presence in the urine of small numbers of cells or of organisms does not necessarily indicate a pathological condition.

a Large amount of pus indicates acute condition. Deposits consisting of numerous epithelial cells suggest chronic catarrhal infections; whilst numerous bacilli without cells are associated with long-standing symptomless infections.

Of bacteria, Staphylo albus and Diphtheroid bacilli derived from the meatus may find their way into a specimen during the passage of a catheter and yield a growth on culture.

A question frequently raised is:—Whether the finding of one or two definitely pathogenic bacteria in a catheter specimen of urine may not be due to the power of kidney of removing organisms from the blood stream. It is believed that a healthy man will not pass micro-organisms. The presence of Tubercle bacilli in the urine always implies a tuberculous lesion of the kidney.

Microscope is the only instrument suitable for the examination of a urinary deposit—the detection of pus by macroscopic appearance, the KOH or ozonic ether test, is extremely unreliable and the Guaiacum test for blood is ludicrously insensitive compared with the detection by the microscope.

B. Coli:—Is particularly associated with Pyelitis in women and children, but in adult males it is much more suggestive of Cystitis or Prostatitis.

In Pyelitis the clinical condition usually shows marked improvement long before the urine ceases to contain organisms.

Cystitis is suggested when the specimen of urine is obviously

offensive and contains mucus and bladder epithelium, as well as pus and *B. coli*.

A *B. coli* infection is frequently complicated by additional organisms. Further a tuberculous infection is frequently complicated by a secondary invasion with *B. coli*.

As to treatment—*B. coli* is sensible to sudden changes in the reaction of the urine; the alternative switching of the urinary reaction from the acid to alkali definitely helps to eliminate the infection.

The results of vaccine therapy have been very erratic; nevertheless many cases are obviously benefitted even when vaccine treatment has been employed as a last resort.

Treatment by vaccines should extend over a period of months or more. Autogenous vaccine is superior to Stock vaccines.

Staphylococcus:—A heavy staphylococcal infection is either the result of the passage of an unclean catheter or a super-imposed infection.

Streptococcus:—Always associated with lesions of the kidney which arise from the lodgment of organisms circulating in the blood. Infective endocarditis, acute septicaemia, acute tonsillitis—acute rheumatism—or heavy dental infection.

Tubercle bacilli:—In urine in numbers sufficient to be detected in a stained film of the deposit usually indicate that the lesion is extremely advanced.

Suspect Tubercle:—if the urine is acid containing a small quantity of pus with a few red cells, but with no bacteria demonstrable in film or cultures.

Guinea pig inoculation affords the earliest absolute positive evidence. A negative Guinea pig test is by no means conclusive for it is estimated that 10-160 living bacilli according to virulence and type must be inoculated into the animal before tuberculosis is produced.

Inoculation of a Guinea pig necessitates a delay which may last from 6 to 8 weeks.

Faeces.

When a practitioner seeks the aid of a laboratory in the examination of faeces certain conditions must be fulfilled if the result is to be of some value. Culture material and time has to be spent on the examination of the material and it is disappointing to submit a negative report.

It is equally disappointing to the clinician when he receives

the negative report after waiting for 3 or 4 days: and it is equally misleading if the result is negative because the material sent for examination was unsuitable or arrived too long after collection.

There are certain routine investigation which a laboratory can make on a specimen submitted for examination; but an indication of the special features to be investigated in the way of a note as to the clinical condition of the patient, and the suspicions of the medical attendant will help materially in the methods of examination.

The material sent to the laboratory should be as fresh as possible. Most of the bacteria in formed faeces are always dead. It is preferable to work with a liquid or a semi-solid stool.

The best specimen is the fresh liquid evacuation following a saline aperient. Recently passed mucus is the best material for examination. The faeces should be collected separately from urine and no time should be lost in getting the specimen sent to the laboratory.

In all cases, the examination of a single specimen is never conclusive.

There are four great groups of bacteria normally present in faeces—coliform bacilli, streptococci, anaerobes and the acidophile bacilli.

In addition to the normal inhabitants of the bowel certain pathogenic organisms occur in disease—Typhoid, Dysentery, Cholera, Tubercle—Typhoid group organisms appear in the stool from the 2nd week onwards. Though other methods of diagnosis are more reliable (Cultures of blood and widal), culture of the stools is useful as a control. The bacilli continue to be excreted in gushes, sometimes a patient though apparently well continues to pass enteric bacilli at intervals, becomes a carrier, and a source of unwitting infection to the rest.

It should be realised that the chances of finding the specific organisms of *B. Dysentery* are extremely small except in the early and the acute stages of the disease. If the specimens are sent for examination late in the course of the disease, it is more a matter of luck than skill if a laboratory can isolate a casual organism.

The usual bacteriological sequence in a case of dysentery is for the *Dysentery bacillus* to become scarce when once the acute phase has passed and for specific organisms to be replaced by abnormal coliform organisms most of which are non-lactose fermenters.

When interpreting a laboratory report of a case of ulceration of intestine, the significance of a large number of typical organisms

is that they indicate a previous infection with a true Dysentery bacillus. Morgan, B. Asiaticus, B. Gartner.

Streptococci form one of the important groups of normal intestinal flora and there are several varieties which may at times be pathogenic. The usual differentiation is by their action on blood corpuscles. The Non-Haemolytic variety is the commonest, and it is not usually pathogenic.

Tubercle bacilli:—The presence of the Tubercle bacilli will occur only when there is gross clinical evidence. Special methods of concentration with antiformin and inoculation of a Guinea pig may be necessary.

Vaccines from Fæces.

The value in treatment by vaccines made from the fæces, though widely assumed, is not proved by bacteriological criteria, does not rest on the same scientific basis as typhoid preventive inoculation or the treatment of Diphtheria or Tetanus with serum, nor has it the support of clinical proof.

In view of the great difficulties which confront one who attempts to assess the pathogenic significance of faecal organisms, no clear indications can be found for their use in vaccine therapy. Anti-bodies may be formed in a patient in whom they are injected but there are no means of knowing whether they have any specific action in helping the patient to resist his disease. Until further positive evidence accumulates, we have no warrant for using any but those derived from organisms with known pathogenic action.

At the risk of repetition a few short directions on the taking of specimens are summarised as follows:

Specimens forwarded for examination should generally be sent for a definite object, not in a vague hope, that the laboratory can take the place of a careful examination of the patient and in this way supply a clue.

Pus:—Identification of organisms accomplished by staining, film and by cultivation. Specimen should be fresh. Swabs from purulent cavities or sinuses are unsatisfactory. For making a good culture—the specimen should be moist and fresh. Stained smear preparations give an almost certain diagnosis in infection with (Staphylo, Strepto and Pneumo) gram positive cocci. The identity of Coli, influenza and other gram negative bacteria can only be established by culture.

Tissues:—Appendix, synovial membrane, gland, pieces of bone, etc. must be sent fresh. The specimens should be wrapped in

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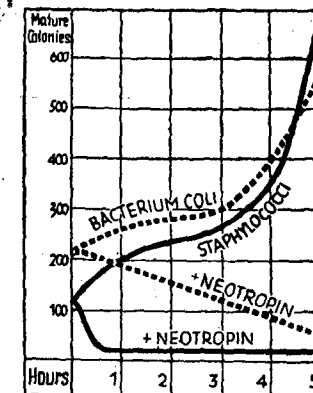
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sterile gauze or placed in sterile saline. Delay in transit prohibits a successful bacteriological examination owing to rapid development of putrefactive bacteria.

Effusions:—Serous effusions from the chest, abdominal cavity or a joint, should be submitted in two parts—one of which contains a citrate to prevent clotting. The unclotted sample—for examining cells and tubercle bacilli.

The syringe used for exploring should be sterilized by boiling in plain water; no alcohol or other antiseptic should be used for washing out the syringe.

Cerebrospinal Fluid:—When a lumbar puncture is made, the first few drops should be discarded—collected in a clean dry sterile test-tube and examined without delay.

Delay results in inaccurate cell count, alteration in chemical constituents, and sometimes in death of contained bacteria.

Tubercle bacilli rarely found during life.

Urine:—For bacteriological purposes, the first morning specimen yields the most information. Catheter specimen is essential in the case of females. 'Cleaned up mid-stream' specimens are useful preliminary in males and children and if sterile the taking of catheter specimen is necessary.

In tuberculous cases, a catheter specimen entirely excludes any possible fallacies from the smegma bacillus. Tuberculous urine rarely contains Tubercle bacilli in any numbers until the disease is well advanced.

Feces:—Fresh specimens are always the best. Specimens need not be of large bulk for bacteriological examination, but any definite piece of mucus or flakes of blood should be picked out and included in the sample. At least five or six daily specimens should be examined before accepting a negative result. Cultivation for pathogenic organisms such as dysentery and typhoid bacilli are successful in only a small percentage of cases. Negative examinations by no means exclude this type of infection.

Blood serum:—3 or 4 c.c. of blood drawn by vein puncture provide enough serum. Small quantities may allow of no margin for the repetition of a doubtful test.

A common error is to collect the blood in a syringe that has been washed out with spirit, ether or water. All these cause a certain amount of haemolysis so that the serum is tinged with blood pigments instead of being clear; a haemolysed sample is extremely unsuitable for a Wassermann test. Syringes should be washed out in physiological saline.

the treatment is started, the greater the chance of the cure of the disease and the ideal period is the stage of sero-negative primary syphilis, when the spirochaetes are still untrenched in the tissues. Every day or week of delay in instituting treatment lessens the chances of cure. The importance of starting treatment early in the disease is not only from the point of view of the individual sufferer but has a wider sociological significance, the object being to render the patient non-infectious to contacts as quickly as possible. The modern treatment of syphilis has become complicated requiring prolonged clinical observation and control, and repeated serological tests.

None but rich patients could afford treatment under private auspices. Most patients at the age when they acquire syphilis are penniless, just trying to earn a livelihood. Hence the establishment of free venereal clinics supported by state or corporate bodies, has become a matter of urgent necessity in the fight against the disease. Another point is the question of the duration of treatment. In spite of the powerful antisyphilitic remedies at our disposal in modern times, the necessity for prolonged treatment over a minimum period of two or three years, should not be forgotten. It is a great pity that in our country syphilis is either notoriously under-treated or not treated at all, for which both the medical profession and the lay public are equally responsible.

Four drugs are used in the treatment of syphilis :—

1. Mercury and its compounds.
2. The organic arsenical preparations.
3. Bismuth and its compounds.
4. The iodine compounds.

Three objects are to be gained with these drugs :—

1. The destruction of the spirochaetes.
2. The stimulation of the natural resistance of the body.
3. The breaking down of fibrous tissue barriers.

None of these drugs individually will satisfy all the three requirements. Hence the modern method of treatment is known as the combined treatment with multiple therapeutic attack. Mercury is the oldest drug which has been in use during the past 500 years. The drug has had many vicissitudes of fortune during all this period. At one time it was applauded as a sovereign remedy and at another condemned as a poison. At the present moment mercury is almost replaced by bismuth. There is no doubt that it has its place in the treatment of syphilis, but on account of its extreme toxicity for the tissues of the host, the danger of giving it

in doses sufficient to destroy the organisms, its very slow and uncertain action both clinically and serologically, has been almost supplanted by the newer drugs. But the drug can be used in the follow-up treatment of syphilis. Next come the salvarsan preparations. It is not a truism when I say that Ehrlich's discovery and elaboration of these synthetic drugs are the most outstanding features in the history of medicine of the present century. "It was not an accidental discovery but a logical and crowning achievement of a laborious and pains-taking research covering the greater part of his scientific career." He is the sole founder and father of modern Chemo-therapy. Working with Atoxil, a pentavalent arsenical compound which was largely used in the treatment of African sleeping sickness, he found that its action in vitro on trypanosomes was practically insignificant and he inferred that its therapeutic efficacy in tissues must be due to some change which the drug undergoes in the body. He proved that this change in the body is a conversion of the drug from the pentavalent state to the trivalent form. Further, he set about altering the chemical composition of Atoxil and making it less toxic and in this laborious task, he discovered Salvarsan familiarly known as 606 which represents the number of synthetic drugs, he elaborated and discarded before he could achieve success. He also discovered that trypanosomes and spirochaetes have similar chemotherapeutic reactions and the new drug was tried in animal spirochaetosis and later in human syphilis with brilliant results. It was Ehrlich who enunciated the principle that the therapeutic effectiveness of a drug, is in direct proportion to its affinity to the parasite and in inverse proportion to its affinity to the tissues of the host.

The organic arsenical preparations used in the treatment of syphilis may be classified into two groups—the trivalent compounds and the pentavalent compounds. The common trivalent arsenicals are Salvarsan, Neo-salvarsan, Myo-salvarsan and Silver Salvarsan. Salvarsan is dioxydiaminoarsenobenzoldihydrochloride. It is a yellow powder containing 31% of arsenic, soluble in water and forms an acid solution. It is liable to undergo oxidation by exposure to air. It is the most powerful antispirochaetal remedy in the series. But on account of its toxicity, the greater frequency of side effects and the technical difficulties in its administration, it is not in extensive use to-day. The two drugs that are most in common use are Neo-salvarsan for intravenous administration and Myo-Salvarsan for intramuscular use. Neo-salvarsan is a

condensation product of formaldehydesulfoxylate of soda with the salvarsan base. It is a yellow powder containing about 22% of arsenic. It is soluble in water, is neutral in reaction and can be given in concentrated solution. It is extremely unstable and is more liable to undergo oxidation than Salvarsan itself. Myo-salvarsan or Sulfarsenol is a slightly modified product of Neo-salvarsan with an additional atom of oxygen. It is much more stable than Neo-salvarsan and is intended to be given only intramuscularly. Its therapeutic action when given intravenously is much inferior to that of Neo-Salvarsan. The Silver Salvarsans are supposed to be as good as the original salvarsan and are not much used except in certain continental clinics for late and resistant forms of syphilis. The trivalent arsenicals above enumerated are powerful spirillicidal drugs, the organisms rapidly disappearing from clinical lesions in from 5 to 18 hours and bringing about the dramatic healing.

The great disadvantage of the trivalent arsenicals is their inhibitory action on the defence mechanism of the body tissues. They are mainly excreted by the liver and their toxic action fall on the liver, skin and vascular system. They have a tendency to produce a local or general exacerbation of syphilitic lesions, the so-called Herxheimer reaction. Hence, their use is attended with some danger at the beginning in acute involvements of vital structures. The arsenicals have a low renal toxicity. They have a stimulant and tonic action on the weight curve.

The pentavalent arsenicals used in the treatment of syphilis are Tryparsamide and Stovarsol. Tryparsamide is a white crystalline powder containing about 24% of arsenic. It is soluble in water forming a slightly hazy solution and is usually given intravenously. It is a feeble spirillicide but its great penetrative power and stimulant action makes it a useful drug in the treatment of Neuro-syphilis. In spite of its large arsenical content, the drug may be administered in quantities of 2 to 3 grams weekly without any ill-effect. The only danger in the use of this drug is retrobulbar neuritis resulting in ambliopia. But in actual practice, we rarely come across this complication. Stovarsol is a French preparation. Unlike other organic arsenical preparations, this drug is administered in tablet form by mouth. Levaditti, by animal and human experiments demonstrated that the drug when administered from 2 to 18 hours after inoculation of spirochaetes prevented the development of syphilis and the Wassermann reaction continued to be negative for a period of nearly seven weeks. Hence he

advocated its use as a prophylactic against syphilis. Certain other workers have failed to confirm Levaditti's results. It is being used in the treatment of acquired and congenital syphilis but it is reported to be distinctly inferior to the trivalent arsenicals both on account of its spirillicidal action and its influence on the Wassermann reaction.

The third drug is Bismuth. Since the introduction of bismuth in the treatment of syphilis by Levaditti and his associates in 1921, no less than 250 different preparations of Bismuth have been put on the market and it is certainly a bit confusing for the practitioner to choose his drug. Broadly, this drug can be classified as 1. Water soluble preparations; 2. Water insoluble; 3. Oil insoluble; 4. Oil soluble; 5. Colloidal preparations; 6. Combination of bismuth with arsenic. According to Levaditti it is the metal bismuth that counts for therapeutic effect and not its chemical composition. All the preparations of bismuth except the colloidal ones are to be administered intramuscularly. The water-soluble preparations (e.g. the tartro-bismuthate of sodium and potassium and bismuth thio-glycollate) are rapidly absorbed and excreted. Hence, they are likely to throw too great a strain on the excretory mechanism. Secondly, the injections must be repeated more frequently to maintain a continuous therapeutic action. Water and oil insoluble preparations of which some examples are metallic bismuth and bismuth oxichloride, suspended in isotonic glucose solution; bismuth salicylate and iodo-bismuthate of quinine suspended in oil. These preparations are slowly absorbed and excreted so that they form a depot in the tissues from which continuous absorption takes place. The water insoluble preparations are to be preferred to the oil insoluble, for their more constant and regular absorption. The oil soluble preparations of which Embiol and Bivatol are good examples, occupy an intermediate position between the two rapidly absorbed water solubles and the too slowly absorbed water and oil insoluble preparations. Recent reports by Levaditti, Fournier and others have testified to their superiority over other bismuth preparations. The colloidal preparations are not used as they have been found to be extremely toxic. A combination of bismuth with sulfarsenobenzene under the name of Bismarsen has been synthesised in America and reported favourably on by American physicians. It is a brownish yellow powder containing 12 to 15% of arsenic and 23 to 25% of bismuth. It is freely soluble in water and is administered intramuscularly in doses of .2 gram. It has been reported to be

particularly useful in latent syphilis, cardio-vascular and congenital syphilis.

Choice of the Preparation:—In the combined therapy where arsenic and bismuth are used concurrently, an insoluble preparation of the latter is to be preferred on account of its slow absorption. But in cases where arsenic is contra-indicated or in cases where a preliminary bismuth treatment is advisable, an oil-soluble preparation is recommended and in my experience the least painful. Bi-weekly injections should be given on account of the lower content of the bismuth and more rapid absorption.

The action of bismuth in syphilis:—Bismuth is supposed to be converted into an active spirillicidal compound known as bismoxyl by a transforming principle derived from the tissues. In view of the fact that only infinitesimal quantities of bismuth are found in primary chancres, it is contended that it could not have a direct destructive action on the spirochaetes. Its action is that of a catalyst which stimulates the anti-spirochaetal substances elaborated by the body. Bismuth in actual clinical practice has been found to be distinctly superior to mercury. It is only 20 to 40 times less toxic than the latter. Hence, larger quantities can be administered without any ill-effect. As a direct spirillicide it is inferior to arsenic. But on account of its indirect action in stimulating the immunity response of the body, it is an extremely valuable drug. It forms a depot in the tissues from which a continuous and constant action is kept up on the spirochaetes. In late forms of syphilis, in syphilis involving vital structures, and in cases with a resistant Wassermann reaction, the use of bismuth has been followed by very favourable results. Bismuth is mainly excreted by the kidneys and its toxic action falls on the kidneys and the mucous membrane of the mouth.

The last of the drugs used in the treatment of syphilis are the iodides. In the nineteenth century they were mainly used for the treatment of tertiary syphilis. But now we know that its use is indicated in all stages of syphilis. They have no direct spirillicidal action, but they break down the fibrous tissue fortifications in which the spirochaetes get themselves entrenched. They have a remarkable affinity to granulation and fibrous tissue.

Mode of Action:—"The proteolytic ferments normally present in the cells of the body are held in physiological check or equilibrium by the unsaturated carbon atoms of the lipoids of the plasma, constituting the anti-ferment or anti-trypsin of the body fluids. The administration of iodides is followed by the saturation of the

carbon groups which thereby removes the anti-ferments, thus permitting the proteolytic ferments acting on the granulation and the fibrous tissues of the body". The two common compounds in use are potassium and sodium iodides. The former is for oral and the latter for intravenous administration. They are administered in between courses of arsenic and bismuth. Potassium iodide is not a very pleasant drug to take. It should be given in moderately large doses on an empty stomach and in great dilution. In cases where rapid action is desirable or where there is gastro-intestinal irritability, sodium iodide 10 to 20 c.c. of a 20% solution should be given intravenously on alternate days.

The experience of the past 20 years in the treatment of syphilis has brought to light certain factors and facts which I cannot sufficiently impress on your minds. In the first place, though the organic arsenicals are the most powerful weapons at our disposal in the fight against the disease, they cannot be solely depended on for complete cure. The combination with a heavy metal like bismuth has been found to be necessary for several reasons. The arsenicals by their rapid destruction of the superficially situated and easily accessible spirochaetes, stop completely the inter-action between the spirochaetes and the tissues of the host with the result that the defence mechanism of the body is inhibited; and unless the tissues are continuously kept saturated with the arsenicals for a long period of time, those surviving spirochaetes in strategic situations in the nervous system and internal organs, in the absence of arsenic and with the inhibited immunity mechanism of the body flare up into activity and produce relapses of various kinds, the most serious being the so-called neuro-recurrences or neuro-epidives. It has been found that spirochaetes develop a kind of arsenical fastness when arsenic alone is administered. It is also observed on good grounds that large doses of the arsenicals have a correspondingly more inhibiting action on the immunity response than smaller doses. The therapeutic effects of the arsenicals is enhanced when a heavy metal like bismuth is exhibited simultaneously. The three drugs that are now used in the treatment are the trivalent arsenicals, bismuth and iodides. The arsenicals may be compared to a kind of heavy artillery which has an immediate and telling effect on the spirochaetes but which requires time in between firings. Bismuth is a sort of light artillery which keeps up a continuous, constant though mild action on the spirochaetes, at the same time developing the natural defensive reactions of the body. The iodides are the mobilisers which break down the fibrous tissue

bulwark which the spirochaetes have thrown round themselves and expose them to the full fury of the arsenicals and bismuth.

Arsenic and bismuth should be exhibited concurrently. The alternating scheme of treatment is not recommended. There is some controversy regarding the question of continuous versus interrupted treatment. The American school favours continuous treatment at least during the first year, but the British and the Continental schools recommend suitable rest intervals in between courses of treatment. We favour the latter for two reasons. One, the drugs we are administering are cumulative in action and toxic to important organs of the body and it is but rational to allow for suitable rest intervals in between courses for the drug to be completely excreted. Further arsenic and bismuth fastness of the spirochaetes is encouraged by continuous therapy. With regard to the route of administration, neosalvarsan intravenously and bismuth intramuscularly should be the routine mode of therapy. During the later part of the treatment, in resistant cases, in cases with poor veins and in syphilis of vital structures sulfarsenobenzene may be substituted for intramuscular administration. It has been repeatedly observed that the intramuscular route of administration ensures a slower absorption and a slower excretion of the drug and hence therapeutically more effective. But on account of the pain associated with it and the greater frequency of toxic reactions, the intramuscular route is not recommended for routine purposes.

Before starting treatment a thorough clinical examination of the patient should be undertaken and blood tested for Wassermann reaction. The age of the infection, the general physical condition of the patient, the presence or absence of involvement of vital structures and of gross organic diseases in the organs, the functional efficiency of his excretory mechanism should be gauged as far as possible. Examination of the urine for albumin and bile, the skin for itching and dermatosis, the mouth for stomatitis, the recording of the weight of the patient—these form part of the routine management of syphilis. A diet rich in carbo-hydrates and fats is recommended as a safety against intoxication of the liver. Preliminary purging and starvation of the patient though adopted in the early days of therapy are not recommended now. It is more rational to administer a mild purge, the day after the injection of an arsenical with a view to promote the excretion of the drug. Glucose by mouth an hour before injection is useful and may be adopted in private cases.

In view of the fact that one never knows in advance of the

reaction of a patient to the intravenous administration of a powerful drug like the arsenicals, it is always a safe rule to begin with smaller doses. The average weight of the adult Indian male in this part of the country varies from 90 to 100 lbs. and the doses mentioned in European text-books are unsuitable and dangerous. We always start with a '3 neosalvarsan and never exceed '45 during the whole course of treatment except in certain hefty individuals. '2 grms. of metallic bismuth is given intramuscularly at the same time.

Routine course of treatment.

Sero-negative Primary Syphilis:—The minimum period of treatment should be two years. During this period, the patient receives 8 courses of injections, each course lasting 2½ to 3 months. There should be rest intervals of one month between courses of injections during which he takes potassium iodide by the mouth. Before starting each course blood is examined for Wassermann reaction. Whatever be the result of the blood-test, the courses are continued. The patient should receive to an aggregate 6 to 8 grams of arsenic and 14 to 16 grams of bismuth. At the end of the 1st year of treatment a spinal test is performed to exclude involvement of the nervous system.

Sero-positive primary and secondary syphilis:—The same minimum period of two years treatment should be followed, but the total dose of arsenic to be given is from 10 to 12 grams. A spinal test is more important in this stage of syphilis than in the sero-negative primary stage. During the third year it is advisable to give short doses of mercury by mouth. If the patient with sero-negative primary syphilis, after two years of intensive treatment as suggested above, should show no clinical or serological evidence of the disease during the whole of the third year he may be safely declared as cured. In the case of sero-positive primary and secondary syphilis, a period of two years of clinical and serological negativity should elapse before he can be declared free from infection.

Treatment of late forms of syphilis. No definite time-limit can be fixed for the duration of treatment. Each case is a law unto itself and treatment should be individualised as far as possible. There are certain general principles which may profitably be followed in these cases. 1. We can only aim at symptomatic arrest of the disease in these cases. 2. Therefore, treatment should be continued up to the limit of tolerance of the patient.

3. These patients with late entrenched infection usually develop an allergic instability of the tissues, and the functional efficiency of their excretory mechanism is usually below par. Hence, extreme caution should be observed in giving them the combined treatment.
4. In latent or visceral syphilis, the arsenicals should not be administered at the onset. A preliminary course of iodides and bismuth for four to five weeks should precede exhibition of arsenic.
5. A person over 60 years of age with no clinical evidence of disease but with a positive Wassermann reaction is better left alone without any treatment.

Treatment of Women:—The treatment of the non-pregnant female does not differ from that of the male except that a smaller dosage should be employed. But it is a remarkable fact that women and children stand the modern intensive therapy much better than men.

Treatment of Pregnant women:—The following points should be borne in mind. 1. It is the most poignant feature of syphilis that the disease is transmissible to the off-spring born of syphilitic parents resulting in antenatal death and postnatal morbidity. 2. In the vast majority of cases the transmission is maternal. 3. Though the disease is much milder in women than in men and is not followed by the late tragic accidents of cardiovascular spring, an infected woman is capable of transmitting the disease during the whole period of her reproductive activity, no matter whether she had treatment or not before. 4. Therefore, a syphilitic woman should receive treatment during every one of her pregnancies. If the treatment is started before the 3rd month of pregnancy, a healthy viable non-syphilitic infant can be assured in nearly 100% of cases. 5. The treatment should be continued right up to the time of confinement. 6. There should be no rest intervals during the whole period. Since there is a double load on the excretory mechanism of the pregnant woman, and the drugs we administer especially bismuth, have a tendency still further to increase that load, a careful watch should be kept on the excretory organs especially the kidneys. A scheme of treatment that may be adopted is as follows:—During the first three months, combined therapy with neosalvarsan and bismuth weekly may safely be given. In the second three months, alternating short courses of the drugs may be given. In the last three months a course of neosalvarsan with an occasional bismuth is advisable. But the most important thing is the exhibition of neosalvarsan throughout

pregnancy. Iodides are not well tolerated by the pregnant women and are best omitted. After confinement the treatment of the mother should be continued in the same way as for men.

Treatment of congenital syphilis:—The dosage of the drug employed depends upon the age, the weight and the clinical condition of the child. The combined treatment of the arsenicals and bismuth have been found to be most effective. Sulfarsenol or Myosalvarsan by the intra-muscular route should be the routine mode of administration in infants and children with poor veins. The treatment should be commenced soon after birth and may be divided into periods of 3 months as in the case of adults. Children tolerate these drugs remarkably well and toxic side-effects are extremely rare. In very marasmic infants dribble doses of an arsenical on alternate days may be given in the first instance. During the rest interval syrup of the iodide of iron should be given. Two years should be the minimum period of treatment and these children should be kept under prolonged observation especially during the period of second dentition and the period of puberty when they are likely to show evidence of tardive syphilis. The doses recommended are:—Infants under 1 year of age. '025 gram of Myosalvarsan and '05 gram of bismuth are the starting doses and they may be gradually increased to '05 gram of the former and '1 of the latter.

Children 1 to 5 years of age. The dose of Myosalvarsan is '05 gram gradually increased to '1 gram and that of bismuth is '1 gram.

Children 5 to 10 years of age. Myosalvarsan '075 gradually increased to '15. Bismuth '1 gram to '15 gram.

Recently stovarsol has been tried in some of the continental clinics and reported on favourably in cases of congenital syphilis. There are several schemes of treatment recommended of which the following is an example. For an infant under 2 years, one tablet of '06 gram is given by mouth once a day half an hour before the morning feed, for seven days; then a rest interval of 5 days is allowed and so on, each course lasting for eight weeks. In addition to this, bismuth should be given weekly. In America, to obviate the inconvenience of giving two separate injections of arsenic and bismuth the recently-elaborated drug bismorsan is being tried in congenital as well as in other forms of syphilis. Within the compass of a single lecture, it will not be possible for me to discuss the treatment in detail of other forms of late syphilis

especially cardiovascular and neuro-syphilis and I hope to have another opportunity to speak about them.

Before closing I would like to tell you something about the prophylaxis of syphilis. As early as the middle of the sixteenth century, Fallopius, the great Italian physician, devoted a special chapter on prevention of syphilis in his great book on the disease. He advocated thorough washing of the parts after exposure and the application of a cloth impregnated with various drugs. In the eighteenth century, mercury ointment was advised as a local application. But the epoch-making study of the method of prophylaxis by Mechnikoff and his associate on chimpanzees and a human medical volunteer in 1903 has placed this aspect of the subject on a more certain foundation. He tried the local application of a 33% calomel ointment on experimentally-produced abrasions inoculated with syphilitic secretions and found it completely prevented the infection if applied within two hours of inoculation. At present there are three methods of prophylaxis advocated.

1. Chemical prophylaxis.
2. Mechanical prophylaxis.
3. Systemic prophylaxis.

Chemical Prophylaxis:—Following on the researches of Mechnikoff, this method was introduced on a large scale in disciplined communities like the army and the navy in different parts of the world. The last world war offered a good opportunity to try this method on a large scale and the low percentage of failures, speaks adequately of the value of this method. The methods employed are intended to prevent all the three venereal diseases, syphilis, gonorrhoea and chancroid. The time factor is all-important to ensure success. Since experimental studies showed that the spirochaeta pallida rapidly disseminated along the lymphatics within a very short time after inoculation (In rabbits they were found in the nearest lymphatic glands within half an hour of inoculation of the scrotal skin.), prophylactic measures should be taken immediately after exposure. Every hour of delay lessens the chances of prevention. Delayed treatment may suppress the primary chancre without getting rid of the infection and the person, months or years afterwards, may develop serious involvement of important organs. The routine instructions recommended are as follows.

1. The patient is advised to urinate immediately after suspicious sexual contact.

2. The external genitals including the pubic region, thighs and perineum are washed with soap and water.

3. Then the parts are soaked in 1 in 1000 Binioidide of Mercury in spirit.

4. The parts are dried and a drachm or two of 33% calomel ointment in equal parts of vaseline and lanoline is rubbed into every nook and cranny of the genitals, pubic region, inner aspect of the thighs and perineum for at least five minutes.

5. As a preventive against gonorrhoea a dram of 2% protargol solution or 10% Argyrol solution is gently instilled into the urethra with a hand syringe and retained for at least 5 to 10 minutes.

Next we come to the use of the mechanical devices, the common being the condom or rubber sheath. The use of the condom protects only those parts that are covered by it and cases are not wanting where a primary chancre has developed in the uncovered parts which come in contact with the genitals of the opposite sex. Of course, the condom will protect against gonorrhoea and even here, the rubber might give way with the patient realising it too late. Hence the use of the condom should always be followed by chemical disinfection.

Lastly, we come to systemic prevention. This method is recommended in cases where immediate prophylaxis has not been undertaken and within 2 or 3 days of exposure. It consists in giving 3 intravenous injections of neosalvarsan on alternate days, 15, 3 and 45 grams. In cases where more than 2 or 3 days have elapsed from the time of exposure, it is safer to wait for the appearance of the primary chancre and treat the case in the usual routine manner. Another method of systemic prevention strongly advocated by Levaditti is the administration of stovarsol by mouth. 3 to 6 tablets of 25 grams of stovarsol are given daily half an hour before food for one week with a rest interval of 5 days followed by a second course. This method is not approved by the generality of syphilologists on account of its uncertain action. Whatever methods are employed, it is a matter of utmost importance to keep the patient under observation for a period of 3 to 4 months.

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SOME ASPECTS OF GONORRHOEA.

BY

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I WANT to address you to-day on some aspects of Gonorrhoea in the male and my observations, though they might be discursive, will, I hope, enable you to understand better this most ancient of all human maladies.

Anatomical considerations:—It appears as if the human urogenital mucous membrane has been specially designed for the harbouring and colonisation of the *Gonococcus*; otherwise it is difficult to understand the architectural and anatomical defects of this region both in the male and the female. We will take up the anatomy of the male. The urethra in the male is a very complicated tube subserving both urinary and genital functions. The size of the external meatus, the narrowest part of the urethra, though it might have been designed to accentuate the propulsive force of the urinary stream in normal individuals, acts at a great disadvantage in gonorrhoea since it tends to increase the intra-urethral pressure favouring extension of the disease and interfere with efficient and free drainage. The presence of a number of mucous glands and lacunar spaces on the roof and lateral wall of the anterior urethra, makes it an ideal place for gonococcal stay. The bulb being situated at the lower level than the peno-scrotal junction favours the retention of purulent products. The mucous membrane of the membranous urethra is poor in blood supply and is constantly in the grip of the external sphincter. This voluntary muscle by its tonic contraction is theoretically supposed to prevent the infection spreading to the posterior urethra. But when once the infection has crossed the threshold, the presence of the sphincter has the effect of producing fissuring of the inflamed oedematous mucous membrane giving rise to stricture-formation later on. The posterior urethra situated between two tonically contracted sphincters is placed at a great disadvantage from the point of view of drainage except during the act of micturition, and its intimate connection with the prostate and the vesicles, favours the spread of infection to these organs. The prostate gland with its numerous ducts and acinar spaces confined in a fibromuscular stroma and surrounded by an inelastic fibrous sheath has very poor drainage possibilities. Hence gonococci lurk in them for years. The seminal vesicles on

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account of its thin walls, extreme vascularity and innumerable diverticulae, favour chronicity, relapse and metastatic dissemination. The vas deferens is not often affected in gonorrhoea though it serves as a channel for the infection to spread to the epididymis. This latter organ is very frequently infected in the disease and what with its narrow calibre and great length it suffers damage by blockage of its lumen. The bladder, urethra and kidneys seem to be rarely involved in gonorrhoea.

Histological peculiarities:—Apart from these anatomical defects of the male urethra and its adnexa, the histology of the membrane lining the canal and the glandular spaces, has a considerable influence on the incidence and severity of the disease. The meatus up to the Fossa navicularis is lined by stratified epithelium consisting of many layers of flat cells bound together firmly by cement substance and cell bridges. It offers considerable resistance to gonococcal invasion. The rest of the anterior urethra is lined by the most susceptible type of epithelium, a single layer of cylindrical epithelium and the gonococcus loves to stay and prosper in this part of the urethra. The posterior urethra is lined by transitional epithelium which is more resistant to infection than cylindrical epithelium. But, on account of the numerous columnar cell-lined ducts opening into this part of the urethra, its intrinsic resisting power is not much in evidence in clinical practice. This arrangement of epithelium though found in a large number of individuals is yet subject to variations. Sometimes the meatus may be lined with cylindrical epithelium which probably explains the complication of balanoposthitis in some cases. The membranous urethra may be lined by cylindrical epithelium which probably explains the rapid spread of infection to the posterior urethra in some cases. There may be islands of squamous epithelium in the penile-urethra and islands of columnar epithelium in the posterior part of the canal. All these variations in the cell type explain the varying severity of the infection in different individuals.

The Gonococcus and its peculiarities:—The organism is a strict parasite which finds its ideal dwelling place in the human urogenital mucous membrane with which it seems to live in a sort of symbiotic amity. It dies quickly outside the human body and is very susceptible to desiccation and antiseptics and this explains the rarity of indirect infection from one person to another. It is not pathogenic to lower animals. The gonococcus, in the earlier stages of the invasion of the male urethra abhors other bacterial

company and monopolises the entire field to itself. But later in the infection it finds the open mucous membrane uncongenial to its living with the result that it gets into more protected places, the mucous channels, leaving the open field to other secondary organisms. It is this peculiarity of the organism to colonise in sequestered spots that accounts for the clinical phenomenon of latency and chronicity. The gonococcus is identified under the microscope by its coffee bean shape, its intracellular position, and its failure to take on the Gram stain. But the last two characteristics are not always to be relied on. In the later stages of infection gonococci may be found outside the leucocyte. Rapidly-dividing staphylococci or staphylococci which are digested by leucocytes may be Gram negative. Further there are Gram negative diplobacilli frequently found in smears which to the inexperienced may closely look like gonococci. It is a well-known fact that the organism is difficult to grow in cultures as it requires epicurean nutritional conditions for its growth. A rich medium, sufficiency of moisture, a hydrogen-ion concentration of a very limited range between 7.3 and 7.6, an optimum temperature between 37 and 38 degrees centigrade are the *sine qua non* for successful culture. In this connection it may be interesting to know that the hydrogen-ion concentration of the urethral secretions have the same narrow range of variation. Laboratory studies show that the gonococcus is rendered inactive at a temperature of 41 degrees centigrade and killed at a temperature of 45 degrees. On this extreme susceptibility of the organism to temperature is based the diathermic treatment of the disease. In actual clinical practice diathermy has not fulfilled its theoretical laboratory expectations.

The toxins of the gonococcus are endocellular and are set free only on disintegration or death of the germ. The inflammatory phenomenon of the disease is caused not by the presence of viable gonococci but by the toxins liberated after death. The toxins have been found to be lethal to small laboratory animals and when they are injected into the normal human urethra they provoke a purulent response.

Pathology:—A proper understanding of the pathology of the disease is essential to rational treatment. When the gonococci enter the urethral mucous membrane, they spread in two ways. 1. By surface progression along the lumen. 2. By downward penetration into the deeper tissues. For the first 24 hours after exposure to infection, the gonococci are all on the surface of the mucous membrane; while at the end of 36 hours they have penetrated in

between the epithelial cells and reached the sub-epithelial spaces. This fact is very important because successful abortive treatment of the infection is possible only within the first 24 hours when it is only a surface infection. The migration of the organisms into the deeper tissues sets up the usual inflammatory reaction, dilatation of capillaries, exudation of serum and diapedesis of leucocytes. The leucocytes escape into the lumen of the urethra engulfing the gonococci. The result of the struggle is the appearance of pus in the urethra. This inflammatory phenomenon is most marked round the mouths of the glandular ducts and crevices. The spread by surface progression along the urethra, is supposed to be at the rate of 1 inch per day, so that by the end of five or six days, the entire anterior urethra will be involved. The presence of the compressor urethræ muscle might delay the spread to the posterior part for sometime. But sooner or later, in the majority of cases, the posterior urethra is involved. Once the infection reaches the posterior part of the urinary canal there is nothing to prevent the infection from spreading to the prostate and the vesicles. When the inflammation subsides and in the stage of repair the cylindrical epithelium lining the canal undergoes a remarkable change, the cells undergo multiplication consisting of many layers, the superficial cells become flat or cuboidal and the deeper ones remain columnar. At a further stage, the superficial cells become keratinised. The ultimate result is the conversion of a highly susceptible columnar epithelium into a more resistant stratified epithelium. In chronic uncured cases, foci of infection may persist in the sub-epithelial tissues and the mucous channels, resulting in the infiltration of these spaces with round cells. These sub-epithelial, and perifollicular infiltrates are recognised clinically as soft infiltrates, hard infiltrates and organic stricture. The infection of the mucous channels and glandular crypts may end in one of three ways. With complete permanent occlusion of the ducts, sclerosis and atrophy of the glandular epithelium may result. But if the obstruction is only intermittent, we may get a follicular abscess discharging its contents periodically into the urethra or in acute cases we may get a perifolliculitis, and periurethral abscess which may burst either into the lumen of the urethra or outside through the skin. The same pathology holds good in infection of the prostate and the vesicles.

Defensive mechanism in Gonorrhœa:—It is conceded that every human urogenital mucous membrane is susceptible to this infection in varying degrees. Cases of escaped infection from contact with

a known gonorrhœic are not cases of absolute immunity to the diseases but are only those in which the freedom from infection is due to the absence of gonococci on the free mucosal surface of the partner. It is a notorious fact that in women after the acute stage is over, gonococci hide themselves in the mucous channels and come out only under special conditions of either prolonged sexual excitement, alcoholism or after menstruation. Women are very often carriers of gonococci without actually exhibiting any signs or symptoms of the disease. From clinical experiences it is known that there is a sort of relative immunity developed between married couples. Once the infection has subsided into quiescence and latency, married couples cease to be infective to each other though either of them will infect a third person. This is supposed to be due to an immunity developed to the particular strain of the gonococci. In discussing immunity in gonorrhœa we have got to distinguish between actual infection of the gonococci and the so-called toxin response. Though a latent gonorrhœic is insusceptible to fresh infection of the same strain, his mucous membrane rarely develops a desensitisation to the endotoxins of the organisms with the result that when the products of gonococcal death contained in the mucous channels of the urethra are poured out into the lumen of the latter, they induce a quick purulent response and this is the cause of the so-called relapse in chronic and latent cases. That this relapse is not due to actual reinfection of the mucous membrane with the gonococci but is only the inflammatory response of the mucous membrane to the toxins of the organisms, is inferred from the fact that it comes on usually from 4 to 12 hours of an event which causes the outpouring of the toxins. Further, such a purulent response subsides in 24 to 48 hours. A true gonococcal reinfection requires at least 48 to 72 hours for the symptoms to appear and it does not subside in such a short time. Hence the Viennese aphorism that every attack of gonorrhœa is curable except the first, meaning thereby the short-lived nature of the relapse. But a person with latent gonorrhœa can be infected with gonococci of a strain different to the one he harbours. We have had many cases of newly-married men coming to us with an attack of acute gonorrhœa after the post-nuptial coitus. In such cases the newly-wedded innocent wife is liable to be suspected. Though such a possibility is not to be lost sight of in modern conditions of living, in the majority of such cases, it is the husband who is the culprit. He has been carrying a latent, uncured infection for a long time before his marriage. When he marries he transfers the old gonococci to

a virgin soil. Once in a different and fresh soil, the gonococci become virulent again and undergo some strain transformation with the result that the male gets reinfected with a different strain of organisms to the one he harboured before his marriage.

With regard to the development of resistance against gonococcal infection, certain facts have emerged from clinical experience and they are worth remembering. 1. In a small minority of cases gonorrhœa is spontaneously cured without any treatment. 2. In the vast majority the immunity response to infection is very slow to develop and is insufficient to cure the disease. 3. Except in the presence of distant foci of infection the immunity is purely a local one elaborated by the mucous membrane of the urinary canal. 4. This slow development of local mucosal resistance is very delicately balanced so that certain events tend to easily upset it. Sexual excitement, alcohol, faulty and injudicious local treatment and the too early exhibition of large doses of gonococcal vaccines, all these have been found to retard or even set back the natural curative processes of the mucous membrane. 5. The natural defence mechanism is augmented by the onset of certain complications like epididymitis and retarded or even completely suppressed in graver systemic infections like arthritis and endocarditis. 6. The quickness with which this function comes into play differs in different individuals. It does not depend upon the physical robustness of constitution. It is our experience that the disease runs a more prolonged course in the European than in the Indian and even among Indians the Mohamedans seem to suffer more than the Hindu under identical conditions of treatment. This may be due to anatomical and histological peculiarities of the urogenital tract as much as to tardiness in developing immunity.

Some of the major complications of gonorrhœa in the male.

Prostatitis:—Infection of the prostate occurs in 100% of cases of posterior urethral infection but the degree and extent of involvement varies widely. In the majority of cases, the infection of the prostate is asymptomatic and involves only the superficial part of the duct spaces, the so-called catarrhal prostatitis. If the infection reaches the deeper parts we get the follicular and parenchymatous types of prostatitis. In fulminant cases one or more follicular abscesses may form, and coalesce resulting in acute prostatic abscess. On account of its inaccessibility and poor drainage possibilities prostatic infection is the most common and frequent cause of chronicity of the disease and intractability to treatment. Apart

from the specific infection of the prostate, cases of prostatitis in chronic gonorrhœa are frequently met with in which repeated examination of the prostatic smear has failed to reveal, both bacteriologically and culturally, gonococci, but show only pus cells, and secondary organisms. This type of non-gonorrhœal prostatitis is an important sequel of past gonorrhœa. It appears that gonococci invaded the glands at the first instance, died out after sometime preparing the soil for other secondary invaders. The prostate in such cases serves as a focus of infection for the dissemination of bacteria and toxins into the blood circulation.

Seminal vesiculitis:—Infection of the seminal vesicles is nearly as common as that of the prostate. According to Picker's researches into the anatomy of these sacs, only 20 to 30% of vesicles have good drainage. In the others where drainage is poor, gonococci can lurk for prolonged periods. The danger of vesicular infection is two-fold. One is the transference of infection into the epididymis and the other is the dissemination of the organisms into the blood stream. As in the case of the prostate, infection of the vesicles may be devoid of symptoms.

Epididymitis:—The most frequent and common complication of gonorrhœa in the male is epididymitis. The mode of spread of infection to the epididymis is by a mechanical transference of the organisms and their toxins from the posterior urethra and the vesicles through the vas deferens. The older theories of causation, the hæmatogenous and lymphogenous spread or that by reverse peristalsis, do not hold good any longer. Experimental and clinical studies have shown that gonococci and their toxins reach the epididymis, as the direct result of increased intra-urethral and intra-vesicular pressure. It has been shown that there is a valve-like arrangement at the junction of the seminal duct, the duct of the vas deferens and the commencement of the ejaculatory duct. This valve works in such a way that fluids coming either from the vas deferens or the ejaculatory duct, are forced into the vesicles before they come out through the other channel. In a case of posterior urethritis anything which increases greatly the intra-urethral pressure will have a tendency to force the purulent products through the ejaculatory duct into the vesicle and when the pressure in the latter is greatly increased, the contents will be forced up through the vas into the epididymis. A greatly distended bladder, strenuous exertion, sexual intercourse, high pressure irrigations, passage of instruments into the inflamed urethra—any of these will greatly increase the intra-urethral pressure and one or more of these

events usually precede the onset of epididymitis. The development of this complication greatly augments the immunity processes so that the urethral infection is beneficially influenced. But it has the effect of occluding the slender, narrow, tubule of the epididymis and when the condition is bilateral, may produce sterility. Apart from its immediate sterilizing effect gonorrhœal epididymitis predisposes to Koch's infection and we have seen a good number of cases of tuberculous disease supervening on an old gonorrhœal epididymitis. Of all the metastatic complication of gonorrhœa, the most frequent and crippling is the so-called gonorrhœal rheumatism. Gonorrhœal rheumatism includes a variety of conditions, joint affections, involvement of tendons, muscles, ligaments and bursae. I am not going into the details with regard to these complications but I wish to place before you certain aspects. 1. In all forms of gonorrhœal rheumatism the condition is one of gonorrhœal septicaemia of varying severity. 2. In the graver types there is such a sudden flooding of the tissues and blood with gonorrhœal antigen that the immunity processes are retarded and even obliterated for a time. 3. Gonorrhœal endocarditis is one of the unrecognised events in the severe forms of gonorrhœal arthritis. 4. In the suppurative fulminant types of arthritis the accession of secondary organisms should always be suspected. 5. The tendency to recurrence is a great feature of this complication and unless the feeding foci of infection in the prostate and vesicles are effectively dealt with, the repeated attacks tend to produce permanent pathological changes in the joint structures.

Some points in the treatment of gonorrhœa:—So far there is no specific discovered for this disease and there is no short-cut to cure. Till such time that a really efficient specific is available we have got to go on with certain well-tried measures in the treatment of the disease. 1. It takes on an average 10 to 12 weeks to cure a case of uncomplicated urethral gonorrhœa and the duration of treatment for complicated cases is proportionately longer. 2. The tendency of the disease to latency and quiescence should always be borne in mind. 3. The determination of cure is a difficult matter and requires rigorous tests—clinical, bacteriological, cultural and instrumental. 4. The purely oral treatment of gonorrhœa whether with antiseptic dyes or balsams or our own indigenous oils and herbs, does not cure gonorrhœa though it may for a time suppress the discharge and alleviate the symptoms. A person with suppressed gonorrhœa is a social menace since he is likely to transfer the infection to others under a false sense of

security. 5. The local treatment of gonorrhoea by urethrovessical irrigations and injections forms an important part in the modern treatment. The substances used in the local treatment are not used so much for its direct antiseptic action as for its stimulating effect on the mucous membrane and making it an unsuitable soil for the growth of gonococci. Of all the substances, none can equal potassium permanganate the oldest of remedies introduced by Janet in the latter part of the 19th century. The use of strong antiseptics and astringents is irrational and harmful, the former devitalises the mucous membrane and the latter suppresses the infection. Massive low pressure irrigations by the gravity method is preferable to injections with the hand syringe.

The use of vaccines:—The beneficial effect of gonococcal vaccines is most marked in complicated cases and it is doubted whether it has any effect in uncomplicated urethral gonorrhoea. 1. Vaccines differ so widely in their antigenic value and their toxic effects that we get varying results from their use. 2. One should choose a vaccine prepared from a good immunising strain. 3. A polyvalent vaccine is certainly superior to one made from a single strain. 4. It seems better to withhold vaccine treatment in the first week or ten days of an uncomplicated urethral gonorrhoea. It is our experience that it tends to upset the delicate immunity response which the mucous membrane is trying to manifest. 5. Every case of gonorrhoea should have the benefit of vaccine treatment after the first week of the disease. It prevents distant metastatic complications and may aid in the local antibody formation. 6. Vaccines should not be administered by any rule-of-thumb method. At the beginning small doses should be given at intervals of 4 or 5 days with a careful watch on the local and general reaction. 7. Intravenous and intradermal methods of administration have been more efficacious than subcutaneous and intramuscular provided the dosage is small, say one or two millions of the organisms. 8. In chronic cases in which the condition is kept up by secondary organisms, the combination of stock gonococcal vaccines with an autovaccine prepared from the patient's discharge is beneficial. 9. In addition to the ordinary stock polyvalent gonococcal vaccines there are other specially prepared ones which are supposed to be a great improvement on the former. The detoxicated and sensitised vaccines have been advocated and reported favourably on by many workers. These vaccines are atoxic and may be given in large massive doses starting with 2000 to 5000 millions, and it is claimed that they have a correspondingly high antigenic value. There is another type



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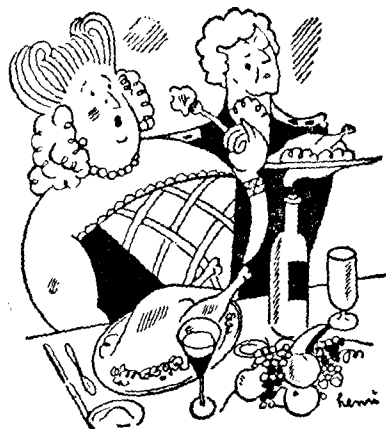
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of vaccine which is a combination of gonococcal vaccine with a substance which acts as a protein shock and this vaccine has the advantage of specificity with nonspecific stimulation of the defence mechanism. There is a third type of vaccine prepared from the products of gonococcal growth in a special medium. When gonococci are grown in a medium rich in nucleo-proteins they form a sort of spores or granules called babes bodies. When an emulsion of such gonococcal growth is centrifuged it separates into three layers, the bottom-most containing the gonococci, the middle the spores and the top, the fluid portion. The middle portion containing the spores is pipetted off and a vaccine made of it. These spores are supposed to be the real antigenic substance.

Prostatic and vesicular massage:—It is not sufficiently recognised that a posterior urethral infection cannot be completely cured without prostatic and vesicular massage. Massage does four things. 1. It drains these organs of their purulent products. 2. It improves their blood circulation. 3. It assists in their contraction. 4. It promotes the absorption of locally-elaborated antibodies. There are certain precautions to be observed. 1. Massage should never be performed in the acute stages of the disease. The first glass of urine should have almost lost its cloudiness and the second glass should be clear before starting treatment. 2. The massage should be gentle and not cause pain to the patient. 3. The direction of massage should be from above downwards in the case of the prostate and the last portion to be massaged should be the middle portion overlying the urethra. The vesicular massage should be done in a horizontal direction from without inwards. 4. Massage should not be performed for more than half a minute at a time. 5. It is always advisable to perform this operation with a full bladder. 6. It should not be done oftener than twice a week. 7. Massage should be followed by urethro-vesical irrigation. 8. The frequency and duration of the massage should be controlled by regular microscopic examination of prostatic secretions for pus cells and organisms. 9. Microscopic examination of the prostatic secretion is the only certain means of determining the presence of infection and its response to treatment.

Dilatation of the urethra by sounds:—This forms another important item in the treatment of gonorrhoea. Sounds should not be passed in the acute stages of the disease and as long as the smear is positive for gonococci and the urine continues hazy. Dilatation with sounds helps in several ways. 1. Gentle massage of the urethra over the sounds helps to drain the infected follicles.

2. They improve the blood supply of the urethra. 3. They promote the absorption of the subepithelial infiltrates and finally they restore the elasticity and resiliency of the mucous membrane. Straight and curved sounds should be used for the anterior and posterior urethra respectively. Full size sounds should be passed not oftener than once a week and the sizes gradually increased. The bladder should be emptied before the passage of the sounds.

The roll of the urethroscope in gonorrhoea has been greatly exaggerated. From the point of view of diagnosis of localised infections or other pathological conditions of the urethra it is an invaluable instrument but its utility in treatment is exceedingly limited and for the ordinary practitioner the use of this instrument is neither practicable nor necessary.

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TREATMENT OF PNEUMONIA.

BY

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I PROPOSE to deal with the treatment of *Pneumonia* and make such other remarks as may be useful.

A patient suffering from *pneumonia* should always be treated in a room with the best ventilation possible and in this country, in the coolest room. Treatment in the open air, such as in tents with the sides fastened up, has been very successful in the Military Department, even in cold weather.

Ventilation is of the first importance in the treatment of all respiratory diseases—the air so to speak can be regarded as an aseptic dressing to the lungs and bronchi, and the less contaminated it is with microbes, the better.

The second point is that nurses should always be in charge night and day; it is not too much to say that it is more important to have a good nurse than to have a good doctor; a good nurse will see that the patient does not waste strength in any way; feed him,

turn him over, sponge him, give him drinks, give him the sputum cup when necessary, so that the patient will not perform any unnecessary movements, but conserve his strength.

Clothing:—Clothing should be adapted to the climate: warm in cold weather, thin wool or cotton in warm countries, and should be so arranged that it could be removed easily; one or both sleeves should be slit right up to the neck, so that it could be removed or put on without disturbance of the patient for the doctor's examination.

Rest:—The patient must be strictly in bed; let the patient lie in whatever position he is most comfortable. Breathing is easier when the patient is slightly raised. *Pneumonia* patients never want to sit up; if they do, it is a sure sign of some complication, such as *Pericarditis*.

Diet must be liquid on account of the difficulty in swallowing owing to the fast breathing. It should consist of milk, with or without sugar, and flavoured with cocoa, ovaltine, according to taste. If there is a tendency to distension of the intestines, it is better to substitute butter milk or whey and albumin, or Horlick's malted milk may be tried. Haliverol one to three drops may be added to the milk. It should be well mixed; otherwise it tends to collect on the top and the patient gets the taste. This is to be given three times a day. This remedy is specially indicated when the patient is badly nourished. Plenty of fluid should be drunk—either water or minerals; if minerals, only after the gas has been swizzled off. Orange juice and water is also good. Free drinking should be encouraged in order to dilute toxins and to protect the kidneys.

Specific Treatment:—Anti-pneumococcus serum 60 c.c. hypodermically. This should be given as early as possible. It is not necessary to type the *Pneumococcus*, seeing that 45% of the cases belong to Group 4 which is the commonest infection in old people; the remaining 55% belong to Group 1, 2 and 3.

Pneumonia in young adults.—Of this 55% including most young adults, 40% belong to Group 1 & 2 which are the groups which re-act to the serum. Group 3 comprises a small number of cases often very severe on which serum has no effect.

Stimulants.—Brandy is often given. I think brandy should always be used, unless there are contra indications. Results in the treatment of *pneumonia* are better in hospitals where brandy is used than in hospitals where it is totally avoided. It is important that the brandy should be diluted; two teaspoons to two ounces of

water every 2 hours is the usual amount for an adult. The object of diluting with water is to prevent the toxic action of the brandy as far as possible. By this means the patient will sleep better, be calmer and feel less uncomfortable. Delirium if present will be less or totally annulled. The skin will be moister, pulse slightly slower. If on the other hand, the patient sleeps badly, or becomes delirious or delirium increases or the pulse rate increases, then the brandy will have to be stopped forthwith, and other stimulants substituted. The best brandy available should be used. What has been said of brandy applies also to arrack which is often as suitable as brandy.

Tinct. Digitalis or preferably Digifortis or Digalen in 10 m. doses can be given every 6 hours or every 4 hours, according to the severity of the case. It is best to prescribe in drops as Tinct. Digitalis does not keep well in a mixture. If there is no nurse and the patient's attendant is not likely to count the drops properly a mixture should be made, but for one day at a time only. Some doctors recommend giving 5 m. of Digifortis or Digalen from the very beginning with the idea of getting the patient mildly under the influence of Digifortis so that if heart failure follows the patient can be sooner got under its influence. I think this is a very good plan. More recently it has been shown that many cases of Pneumonia do not die of heart failure, but of vaso-motor failure. In such a case, Strychnine is the drug to use, but where the pulse is fast it should be combined with Digitalin.

When the patient is practically unconscious or the breathing is very rapid and he is very ill, all medicine by the mouth should be stopped and patient treated with injections.

For instance

Pituitrin	...	1 cc.
Digitalin	...	1/100th c. c.
Strych. Hydrochlor	...	1/60th c. c.

dissolved in the Pituitrin—sixth hourly. If there is much exudation in the bronchi, Atropine may be used instead of Strychnine or in addition to it.

Pot. Iodid, is frequently used in cases of Pneumonia (5 grs. t. d. s.) the object being to break up the fine fibrous tissue in the alveolar exudate and to facilitate its absorption. I do not use it as a routine.

Oxygen should always be used when there is the slightest trace of cyanosis or when the respiration rises over 40. In using

it, the doctor or nurse should be guided by the patient's state at the time. A routine order of 15 minutes per hour is not at all satisfactory; it is far better to give discretion to the nurse to use it whenever necessary. If the patient is at all cyanosed it should be continued until the cyanosis passes off or until the respiration is easier. The oxygen should be bubbled through water and the water should be warmed if the weather is cold. Alcohol is sometime added to the water but I think it is better not to do this. I much prefer alcohol given by the mouth.

Treatment by Artificial Pneumothorax brings about an artificial crisis. The procedure is as follows:

1. Preliminary medication one hour before induction with morphine gr. $\frac{1}{4}$.
2. Thorough local anaesthesia with novocain down to and including the parietal pleura.
3. Very thorough asepsis during induction.
4. A preliminary fill of 400–600 c. cm. of air run in very slowly during the negative phase of the pressure swing cycle and with the needle clipped off during the high positive phases.
5. A second fill 12 hours later of 300–400 c. cm. air.
6. If the pneumonic process is not completely controlled a third fill of 100 c. cm. air may be given in another 12 or 18 hours.
7. Simultaneous exhibition of a suitable diaphoretic and of Felton's serum in appropriate cases at the discretion of the operator.
8. Owing to the very profuse perspiration the comfort of the patient is much enhanced by warm sponging and nursing between blankets.
9. In cases where it is deemed inadvisable to provoke defervescence by crisis and a gradual fall by lysis is aimed at, 3 fills of 100–150 c. cm. at intervals of 6 hours might be given and further treatment judged by results.

The first and most obvious clinical result was that induction of artificial pneumothorax initiated a series of events almost indistinguishable from the crisis which normally occurs in this disease. The second conclusion is that this control of the pneumonic process is at first only temporary persisting merely as long as air remains in the pleural cavity.

A striking feature of all the cases was the rapidity of onset of the artificial crisis; the fall of temperature was well established in

two to three hours and the patient lost that appearance of acute distress characteristic of Pneumonia.

Observation of the Case:—During examination move the patient as little as possible; First of all the heart; the first sound is usually well maintained and the second pulmonary sound may be accentuated; if the heart fails, the first sound becomes feeble and the rate more rapid, as well as the accentuation of the second pulmonary sound. In severe heart failures the pulse is very weak and fast and the first sound weak at the apex and the accentuated second pulmonary sound disappears. This is of very serious import. Heart may also be dilated. The blood pressure if below 60 mm. diastolic shows a dangerous condition. Pulse above 140 and respiration above 40 also show the patient has entered the dangerous time. A pulse respiration ratio of 1—2 is also a sign of a severe attack.

The doctor should always listen to the lungs on the normal side as well as the side affected; if the breath sounds there are exaggerated but normal in character, this shows that the unaffected lung is responding well to the strain. If however the expiratory sound is prolonged (evidence of some Emphysema developing), it shows that the lung is not bearing the strain as it should.

It is most important that the patient should get satisfactory sleep if possible. If there is much pain, Morphia is by far the best drug to use. It should be given hypodermically $\frac{1}{4}$ or $\frac{1}{3}$ rd gr. or as a mixture containing Liq. Morph. Hydrochlor $\frac{1}{2}$ drachm (equal to $\frac{1}{4}$ gr.) or one drachm. The injection is more certain and there is no risk of the morphia habit in such circumstances. Morphia should be used only in the early part of the disease and never if there is cyanosis, or much exudation in the bronchi. If the patient is sleepless but without pain—Chloral—20 grs. Bromide—30 grs. will probably give satisfactory sleep or Medinal $7\frac{1}{2}$ grs. If the patient is very restless or delirious, Sulphonal (20 grs.) is very good. Allonal 3 to 4 tablets is a good hypnotic.

Trouble might arise in the abdomen—Tympanites. This is dealt with by treating immediately the slightest trace of Tympanitis is noticed. Milk may be continued, but it should be diluted and citrated. If this does not give a satisfactory result Horlicks may be tried or buttermilk or whey and albumen. If the distension is sufficient to call for any drug, turpentine enema or turpentine stupes or both are the best.

Urine should always be recorded in Pneumonia; take care to see the patient excretes a moderate quantity; watch should be kept on

what the patient drinks, to see that he takes enough, also on albuminuria if present; if albuminuria is present alkaline diuretics along with drinking of sufficient water may be prescribed. This is not necessary if the volume of urine is satisfactory.

Complications—(a) Delayed Resolution: This is a matter which needs serious attention. Pot. iod. or the use of counter-irritants, such as Mustard, Iodine, Cantharides, or Antiphlogistine are not satisfactory, but the use of vaccine made from the sputum is the best method of dealing with this. (b) Abscess is only likely to occur in the aged, the badly nourished, and in those suffering from chronic diseases, as alcoholism, diabetes, nephritis etc. If the abscess is one sided, the best treatment is Pneumothorax. Liberal diet to maintain the strength, and alcohol are required. Vaccines may also be helpful, starting with quite small doses, such as $\frac{1}{2}$ million. A stereoscopic X-ray photograph should be taken to locate the abscess if surgical treatment is considered. (c) Gangrene is also likely to occur in aged persons. Small areas of gangrene may liquify and be spat up without further harm. If it spreads, death is sure to occur. (d) Empyema is chiefly a complication in children. The best treatment is aspiration which may be repeated. Continuous aspiration may be used as practised in the hospital for sick children in London. An ordinary trocar is passed into the pleura and rubber tube attached with the lower end in a basin of boric lotion. This can be left in position until the pleural cavity is evacuated. Same practice may be tried in adults, but if not successful (as is probable) an operation will have to be done. (e) Arthritis. Pneumococcal arthritis is a virulent form of arthritis very prone to suppurate and disorganise the joint. It can only be diagnosed as Pneumococcal Arthritis by the fact that it occurs soon after an attack of pneumonia. Clinically it is characterised by extreme pain and tenderness, so great that the patient cannot even bear the weight of a single sheet on the joint. The only treatment likely to be successful is the immediate use of anti-pneumococcal serum. This will cause almost immediate subsidence of the pain. If the serum is not available the joint is likely to suppurate and the patient will probably get a stiff leg. The joints commonly affected are the knees and ankles. (f) Neuritis. There is nothing particular about the treatment of this—treat in the same way as any other form of neuritis. (g) Acute peritonitis occasionally arises and should be treated as acute peritonitis by the surgeon. (h) Endocarditis. If the patient already has Endocarditis, e.g. Rheumatism, the heart should be watched with extra care as

patient with pneumonia is then apt to develop acute infective Endocarditis (Malignant Endocarditis) which is invariably fatal.

(i) Pericarditis sometimes occurs; attention would be drawn to this by the fact that the patient cannot lie down but has to sit up which alone should call for a close examination of the heart. In such cases the fluid should be drained by tapping. (j) Myocarditis is more likely to develop later; it is very important in the convalescing period to have the patient thoroughly rested and nourished before he is allowed to travel about. If he moves too early he is in danger of developing chronic myocarditis which will permanently limit his activity.

Treatment in Convalescence: One of the first things to do is to increase the diet: indications of this are:—appetite, clean tongue. The diet should be increased by degrees; sudden alterations of diet are always upsetting. The patient should remain in bed until (a) he feels really well, (b) the pulse returns to normal. Then he should be allowed to sit up, then walk about, and finally go out. It is always a good plan, especially in elderly adults to advise a rest and change of air for a month; during that time he should lead an easy life: plenty of sleep and resting in the afternoons; after that there will be no danger of heart complications. Some tonic is always advisable, such as Easton Syrup, or in patients who are badly nourished, Cod Liver Oil in one form or another.

Some patients die at the crisis, and in weakly or elderly patients this is a time of great danger, especially if the temperature drops very suddenly. In such cases the patient is apt to die of collapse. A good nurse will always be at hand with stimulants. It is well for the doctor to give instructions in case he is absent at the time, as he probably will be.

Prognosis.

The prognosis can only be given from day to day, for pneumonia is the most uncertain of diseases. Never give up a case however bad, and never be too optimistic when all seems right, for the case with a good prospect of recovery may become desperately ill in a short time.

Good signs are—a moist tongue, clear voice, bright intelligent expression, placid restfulness and ability to sleep, and loud cough.

Unfavourable signs are—an unduly anxious expression and appearance of distress, temperature over 105° (specially in the later stages), a pulse rate of over 130, irregularity of the pulse, weakened

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Some Atypical pneumonias.

1. **Apical pneumonia** in the adult is frequently streptococcal and the prognosis in such cases is more serious. In half such cases, the left apex is affected and then pericarditis is more apt to occur. Meningism may make diagnosis a difficulty but the pulse, respiration ratio and other signs of pneumonia and the presence of a normal cerebro-spinal fluid, though under pressure, settle the question.

2. **Massive pneumonia**:—In this the exudation extends into the bronchials, cough is often absent and when present is apt to be paroxysmal. The prognosis is worse than in ordinary lobar pneumonia.

3. **Influenzal pneumonia** begins like an ordinary pneumococcal pneumonia, but chest pain is slight or absent, the temperature more regular and the distribution of the lesion is lobular rather than lobar and the leucocytosis is absent. The sputum tends to be muco-purulent or purulent instead of the rusty type and the chlorides in the urine are not diminished and the temperature approximates the hectic type. The pulse rate is frequently of moderate rate. Cyanosis is early, and pronounced. Pulse rate not much changed and respiration rate relatively slow. The prognosis is very grave.

4. **Tuberculous Pneumonia**. The onset and cause in the first week is identical with that of pneumonia. The temperature then tends to be more irregular. Sweating is common at night. Hæmoptysis occurs rather than mere rustiness; crisis fails to occur but the temperature slowly falls and with the onset of caseation sputum increases and tubercle bacilli are found. They may be found quite easy. The prognosis is very grave, but death is not inevitable.

Acute abdomen may be simulated by pneumonia, but the signs of pneumonia are always present.

THE EYE IN GENERAL MEDICINE.

BY

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I. The Pupil.

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 - Papilloedema.
 - (b) Modifications of colour.
 - Optic atrophy (Partial ; Total.)
2. Changes in the rest of the fundus, and in the vessels.

Retinitis :

 - i. In albuminuria.
 - acute—in pregnancy, in acute parenchymatous nephritis.
 - chronic—in chronic interstitial nephritis.
 - ii. In diabetes.
 - iii. In arterio-sclerosis.

Dr. James Anderson wrote the following words in 1889 :—

"It seems to me the best and most hopeful feature of ophthalmology is that it has relations closer or more remote, with every branch of medicine and surgery ; indeed with almost every branch of Science". And Arnold Knapp comments on these words and says that these relations are closer to-day and are of

importance not only to the eye specialist but also to the general practitioner.

I propose to deal with this subject under three main headings:

1. The normal and the pathological pupil, and its significance in general diseases.
 2. The optic pathways, and the changes that may be produced by their involvement in certain diseases of the brain.
 3. The normal fundus of the eye, and the pathological changes that may occur in it as a result of certain general affections.
- And finally, I propose to discuss some of the changes that may be noticed in the eye in the course of some general diseases of the body.

I. The Pupil.

1. **Anatomical considerations:**—The pupil is a circular opening in the centre of the iris. The iris acts as a diaphragm and performs the function of shutting out excess of light from the retina, and of cutting off the marginal rays. To suit these two functions, under varying conditions, the pupil is alterable in its size. This alteration is affected by two muscles—the sphincter pupillæ and the dilator pupillæ.

The sphincter pupillæ lies near the free margin of iris, and by its action contracts the pupil. It is supplied by the 3rd nerve, stimulation of which causes contraction of the pupil and paralysis dilatation.

The dilator pupillæ is situated in the periphery of the iris, and its action is controlled by the sympathetic from the cilio-spinal centre of the cervical spinal cord. Action of this muscle causes dilatation and paralysis causes contraction.

The nerve centres for the supply of the muscular fibres of the iris are in the third nerve nucleus and in the cilio-spinal centre. The third nerve nucleus lies in the floor of the aqueduct, underneath the anterior corpora quadrigemina. The centre for the sphincter most probably lies in the anterior and median part of the nucleus. The majority of these fibres do not decussate but pass directly to the pupil of the same side. The nuclei of the two sides lie close together in the median line.

The sympathetic centre lies in the cilio-spinal centre of Budge. This is located in the cervical cord, at the level of the 7th cervical and the 1st dorsal nerves. Fibres from the centre pass along the cervical sympathetic, the superior cervical ganglion, the carotid plexus and the ophthalmic ganglion and thus reach the muscle.

Physiology:—The normal pupil is about 3.5 mm. in diameter

depending upon the age of the individual and the amount of light falling on it. It is large in infants, and small in the aged. The two pupils are normally equal in size except occasionally, when, as a congenital condition or rarely as a normal phenomenon they may be unequal.

In man and mammals the pupillary reflex to light acts only when the reflex arc is intact, unlike the lower animals in whom the iris possesses the power of contraction by mere exposure of its muscle fibres to light.

In irido-contraction, the centripetal fibres of the arc are the pupillary fibres of the optic nerve and branches of the 5th nerve (in contraction due to irritation of the cornea). Impulses are carried by these fibers, in the former case to the anterior corpora quadrigemina and in the latter case to the ophthalmic ganglion which completes the reflex arc. From the corpora association fibres pass to the neighbourhood of the nucleus of the 3rd nerve. Centrifugal fibres consist of branches of the 3rd nerve which pass through the ophthalmic ganglion and the short ciliary nerves. The associated contraction of the two pupils is secured by a decussation of some of the centripetal fibres at the chiasma and by an association of the two nuclei in the middle line.

In irido-dilatation there are two arcs: (1) The *orbital arc*, consisting of centripetal and centrifugal fibres to and from the ophthalmic ganglion, the ganglion serving as the centre; and (2) the *basilar arc* where, the centripetal fibres lie in the optic nerve the 5th nerve, and in the nerves of general sensation. The centres are in the bulb, and in the spinal cord. The centrifugal fibres of the arc pass in the 5th nerve and in the sympathetic, and arrive at the Gasserian ganglion and from thence are carried to their destination through the nasal nerve, the short ciliary nerves and the ophthalmic ganglion.

A third arc, which is voluntary, has also been described, called the *cortical arc*.

Methods of Examinations:—The pupil should be examined as a routine in all general examinations of the body. Such an examination should include an inspection of the form, size and shape of the pupil, and its reflexes. The pupils should always be examined under identical conditions of intensity of light. The size of the two pupils should be considered. An inequality of the two pupils is almost always a pathological phenomenon. In examining for such inequalities the two pupils should be equally illuminated, preferably with a feeble illumination. A more sensitive method for the

detection of latent inequality is by use of a few drops of cocaine. Examination is best made in a dark-room and about 8 to 10 minutes after the instillation of the cocaine when the pupils have begun to dilate. An inequality is then more easily made evident. This method is called the method of provocative mydriasis. In all inequalities one should examine the general condition of the patient, especially the apices of the lung.

(a) Reflexes:—

(i) *Light reflex.* The most important of the pupillary reflexes is the light reflex. To elicit this, the eyes should be examined against a window. Both eyes are covered and each eye is uncovered alternately, while the patient is asked to look at a fixed point in the distance.

(ii) *Consensual reflex.*—When light is admitted to one eye, the pupil of the other eye contracts.

Other reflexes, which are of very little significance clinically, are certain sensory reactions of the pupil. Such are:—

(iii) *Psychic pupillary reflex.*—The pupil dilates in a mental work, or in a mental state of fright, grief, fear etc.

(iv) *Cortical pupillary reflex.*—also called Attention reflex or Thought reflex—the reflex produced by the thought of a bright or a dark object, or a distant object.

(v) *Sympathetic reflex.* This is the reflex that is produced by all forms of sensory stimuli.

(b) Associated movements:—

The pupil also reacts in association with other actions of the 3rd or other nerves. Such movements are (i) *accommodation and convergence reaction.* The pupil contracts when the eye is accommodating and converging.

(ii) *Lid closure reaction.*—also called the Pilz-Westphal reaction. This consists in a contraction of the pupil on an attempted closure of the lid.

(iii) *Tournay's reaction or Lateral reflex.* This occurs in association with lateral movements of the eye. An inequality of the pupils is seen when the eyes are turned strongly to the lateral side. The eye in abduction shows dilatation and the one which is adducted shows contraction.

5. Pathological Modifications of the Pupil.

The chief modifications in the size and form of the pupil are:

1. Miosis or contraction of the pupil.

2. Mydriasis or dilatation of the pupil.
3. Anisocoria or inequality between the two pupils.
4. Hippus or an alternate contraction and dilatation of the pupil.

(i) *Miosis*:—a contracted state of the pupil—may occur:

(1) In lesions of the globe, when it is generally unilateral.

(2) In acute general intoxications, especially in poisoning by opium, morphia, chloral, chloroform, alcohol and in uræmia. In such cases miosis is usually bilateral.

(3) In certain chronic general affections. Of these, the most important is syphilis. It is especially seen in tabes, generally in the pre-ataxic period, and in general paresis. It may also be seen in disseminated sclerosis, and in affections which interfere with the sympathetic centre or conducting paths. Such lesions are wounds of the cord, tumours, Pott's disease, syringomyelia, hæmorrhage into the cord etc.

(ii) *Mydriasis*:—a dilatation of the pupil—may occur:

(1) In lesions of the globe.

(2) In fractures of the skull or orbit.

(3) In the course of certain general affections. Such general affections are nuclear lesions, particularly syphilitic, meningitis, abscess, tumours of the brain etc. In tabes it is less frequently observed than miosis. It is also seen in internal ophthalmoplegia, in the late stages of chloroform anæsthesia, and in poisoning by most of the mushrooms. A type of alternating mydriasis in which a dilatation of the pupil is observed in one eye at one time and in the other eye at another time, is seen in certain nervous diseases such as in the early stages of general paresis, in tabes, multiple sclerosis etc., in certain lesions of the cord, and in certain neuroses (hysteria, neurasthenia).

(iii) *Anisocoria*:—an inequality in the size of the two pupils—may be a physiological phenomenon in a few people. Occasionally it is congenital, but not necessarily physiologic. It may arise from local causes such as iritis, glaucoma etc. It is often seen in affections of the nervous system. Of these affections, it is most frequent in general paresis where it may be seen in 50% of the cases. Tabes comes next. In cerebral syphilis it is seen when any part of the pupillary reflex path is affected. Other conditions in which it is seen are tumours, injury, hæmorrhage, multiple sclerosis etc. In affections of the pleura and lungs, it is often present. In the early stages of such affections, the pupil of the affected side, or the more affected side when both sides are involved,

is larger than the other. In the later stages of the disease, more often a contraction of the pupil on the affected side is seen. According to one observer, mydriasis with slight exophthalmos and enlargement of the palpebral fissure is a frequent sign in the pre-tuberculous person.

In pleurisy with effusion, a large percentage of cases show a slight mydriasis on the affected side. Pneumonia frequently shows a mydriasis on the side affected.

Aortic affections, such as aneurysm and aortitis, also produce anisocoria. If the condition co-exists with an Argyll-Robertson pupil, the aortitis is likely to be of syphilitic origin.

The condition has also been noticed in acute meningitis, in epilepsy and in neurasthenia.

(iv) *Hippus*:—is an alternate incessant and rapid contraction and dilatation of the pupil. This condition is occasionally seen in chorea, epilepsy, neurasthenia, exophthalmic goitre etc.

Modifications of the reflexes:—The most important of these is the modification of the *light reflex*. When interruption of the reflex arc takes place between the optic nerve and the motor conducting paths, we get the condition known as *Argyll-Robertson pupil*. In this state light does not cause any contraction, but the associated movements of the pupil to accommodation and convergence are intact. Both eyes are generally affected. The pupils are fixed, a little unequal, and do not show direct or consensual reaction to light.

This sign may occur as a permanent or as a transient condition. A permanent form is almost always a sign of syphilis of the nervous system. It may also be occasionally seen in certain non-syphilitic affections such as multiple sclerosis, syringomyelia, affections of the protruberance, encephalitis lethargica etc. As a transient condition, it may occasionally be seen in certain neuroses, in meningitis, typhoid fever, influenza, and in certain forms of intoxications such as from atropine, mushrooms, ptomaine poisoning etc.

Syphilis however, is the most frequent cause. Of the syphilitic affections, tabes comes first, the sign being present in 70 to 80% of tabetics. It is an early sign in tabes. Neither time nor treatment alters the reaction.

In general paresis, the sign is less frequent. In this affection, a mydriasis may alone be noted at first. Later, there is a paresis complicated form of Argyll-Robertson pupil also. We then get a rigid to all reflexes. The pupil remains

Occasionally, an Argyll-Robertson pupil is seen as a congenital condition, together with an inequality of the pupils. It is then a sign of congenital syphilis.

(ii) *Loss of consensual reaction*:—is seen in the presence of paralytic mydriasis or an Argyll-Robertson pupil; or again, when blindness in an eye is due to peripheral causes in the retina or optic nerve. When a blind eye is illuminated and the pupil of the other eye contracts, the blindness is due to changes in the cortical or sub-cortical visual areas or to a hysterical condition.

(iii) *Wernicke's hemianopic reaction*:—is the reaction that is seen in cases of hemianopia. It is observed in affection of the peripheral sensory paths, namely the chiasma, optic tracts, or primary visual centres. We shall consider it more fully when dealing with the optic pathways.

Paradoxical pupillary reaction:—in which the pupil dilates in light, is an extremely rare condition. It is a pathologic phenomenon and may be seen in dementia paralytica, cerebral syphilis, tubercular meningitis etc.

(iv) *Convergence and accommodation reaction*:—This reaction may occasionally be lost, but it is less often observed than loss of light reflex. Sometimes, loss of both reactions are observed together. We then get a complicated Argyll-Robertson pupil. In such cases, generally all the intrinsic muscles are involved causing mydriasis, loss of light reflex, and loss of accommodation and convergence reflex.

Occasionally, light reflex may be present but convergence reaction is lost. An inverse Argyll-Robertson pupil then results. This condition may be observed in general paresis and dementia praecox.

Tonic pupil:—Lately, Dr. W. J. Adie has collected and described a condition in which absence of tendon reflexes especially of ankle jerk coexists with a tonic pupil. The condition is most often unilateral and is seen generally in healthy females. The affected pupil is usually larger than its fellow and does not respond to direct and consensual reaction. But its chief feature is its behaviour at convergence. It contracts very very slowly to convergence becoming smaller than its fellow and even reaching to a pin point size. When convergence is over, it slowly dilates again to its original size. This condition has been observed in young healthy females and has nothing to do with syphilis. According to Dr. Adie, these reactions are probably the expression of a kind of perversion of nervous activity.

It will take us too long to enumerate the changes in the pupil that may occur in various diseases. But the changes in 2 or 3 general conditions may be mentioned as they are of importance from a diagnostic point of view.

Tabes.—Pupillary changes are very frequent in this condition and are of great diagnostic value. They are early signs and may be the only signs present in the beginning. Miosis is very frequent. Mydriasis is less often seen. The pupil is generally oval. An Argyll-Robertson pupil is present in 70 to 80% of cases. In juvenile tabes it is less frequent. An A. R. pupil once present always persists. A complicated A. R. pupil is sometimes seen. Inequality of the pupils is of great frequency. Occasionally, a paradoxical reaction may be seen.

General Paresis.—Pupillary changes are seen in over 80% of paretics. There may be miosis or mydriasis. Hippus is sometimes seen. The shape of the pupil is usually obliquely oval. Bilateral Argyll-Robertson pupil is seen in about half the cases. The changes are those of a progressive internal ophthalmoplegia where one eye advances quicker than the other. Sometimes an inverse Argyll-Robertson sign is seen where light reflex is retained and accommodation reflex lost. Paradoxical reaction of the pupil is sometimes present.

In *Cerebral Hemiplegia*, an inequality of the pupils is seen in 4 out of 10 cases, generally at the time of coma. The larger pupil is on the same side as the lesion, that is on the opposite side to the paralysis. In the non-comatose condition the inverse obtains.

In *Hysteria*, miosis or mydriasis may be present. Often it is unilateral. Light reflex is always present even if the eye is blind. The pupil reacts by jerky movements.

In *Pneumonia*, unilateral mydriasis on the side of the affection especially in apical cases, is frequent. Bilateral mydriasis, with a more pronounced mydriasis on the side affected is the rule in cases which are recovering. A point of some prognostic value is that in those cases which terminate in death, mydriasis and inequality are generally absent.

In *Pulmonary Tuberculosis*, inequality of the pupils, with spasmodic unilateral mydriasis on one side, has been noted. The dilatation is on the side affected or on the more affected side. This results from irritation of the sympathetic by the apical pleura or the summit of the lung.

In *Pleurisy*, inequality is very frequent. There is a moderate mydriasis on the side affected.

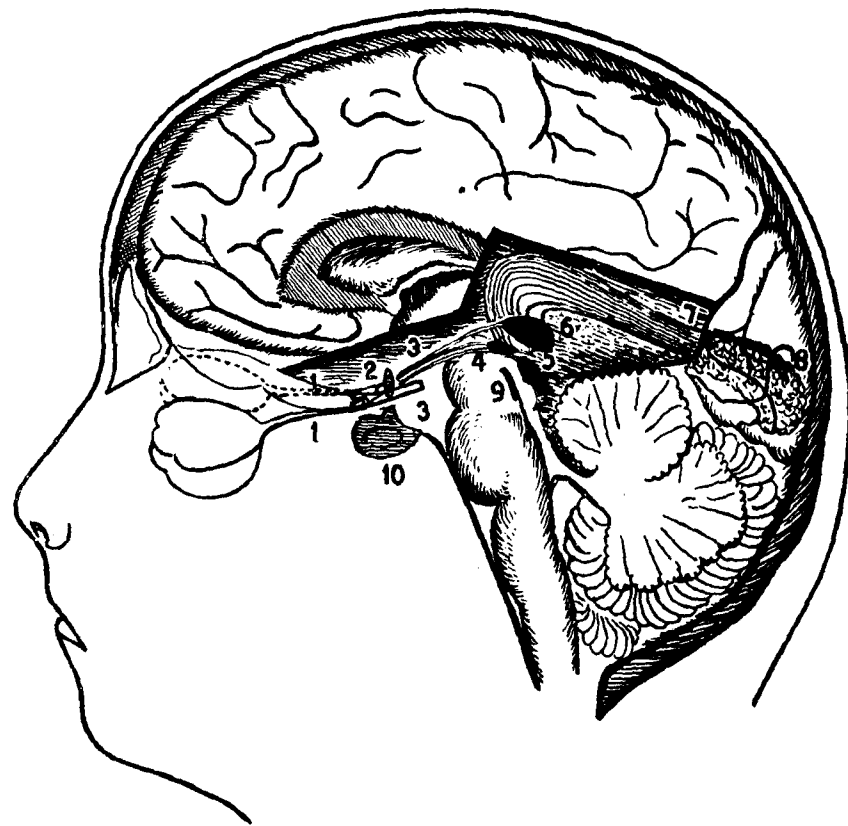


DIAGRAM TO SHOW THE OPTIC PATHWAYS.—

The Optic Nerves (1), enter the cranial cavity through the optic foramina and decussate partially at the chiasma (2). The chiasma more often lies on the diaphragm sellae and is in relation to the infundibulum which lies sometimes behind it but more often in front of it.

The Optic Tracts (3), consisting of crossed and uncrossed fibres, wind round the crura and end in the primary optic centres. These centres are the external geniculate body (4), the superior colliculus (5), and the pulvinar of the optic thalamus (6). Fibres connect the colliculus with the nucleus of the third nerve (9), lying on the floor of the aqueduct. From the optic centres fibres pass as the optic radiation (7), to the cerebral cortex in the occipital lobe. Some of the fibres of the optic radiation pass outwards into the temporal lobe before passing backwards into the occipital lobe. The visual centre, area striata (8), lies in the occipital cortex on either side of the calcarine fissure and extends to the occipital pole. (10) Pituitary body.

II. The Optic Pathways

The retina is an outgrowth from the brain and consists of a neuroepithelium with a peripheral and a central neuron. The cell bodies of the central neuron form the inner ganglion cell layer of the retina. From these cells, fibres run together to the optic disc or papilla and pass out in the optic nerve.

In the retina, the fibres have a regular arrangement. From the papilla the fibres run radiatingly all round. But, to the outer or temporal side, they pass out in an arch so as to encircle the macula. These encircling fibres coming from above and below meet beyond the macula and form a raphe in the horizontal meridian. Hence in certain visual field defects, when these fibres are unequally affected, we get a defect called the "nasal step." The macula itself is supplied by delicate fibres which run a straight course from the temporal half of the papilla. These fibres are grouped together in the papilla and are called the papillomacular bundle.

The optic nerve being a prolongation from the brain carries its coverings along with it up to its entrance into the eye ball. It has thus a covering of pia, arachnoid and dura mater, and between them the subdural and subarachnoid spaces, as in the skull.

In the orbit, the optic nerves run in the form of an S-curve. At the apex of the orbit, it passes out through the optic foramen which is 1 cm. long. At this point it is in relation with the sphenoidal sinus. In the skull, it extends from the foramen to the chiasma. In this portion, it is flattened and rests on the dura and the convexity of the carotid artery. It is covered by the frontal lobe and the internal root of the olfactory nerve from which it is separated by the anterior cerebral artery. The two optic nerves converge to form the chiasma.

The Chiasma:—At the chiasma the two optic nerves meet and form an intimate anastomosis. From the posterior end of the chiasma they emerge as the optic tracts. The chiasma is usually described as lying in the optic groove of the body of the sphenoid, directly in front of the infundibulum and above the hypophysis. But Schaeffer's investigations have shown that this relationship holds good only in about 5% cases. In the large majority of cases, the chiasma was found to lie over the posterior half of the diaphragm, with its posterior part projecting variously over the dorsum sellae.

Optic tracts:—From the chiasma the optic tracts pass backward, diverging as they go and wind round the crura cerebri and arrive at the primary optic centres. The primary optic centres consist

of the external geniculate body, the anterior corpora quadrigemina, and the optic thalamus. The fibres of the tract end in these centres. From the centres, fresh fibres pass to various parts of the brain. Two of these groups of fibres are important. One of these goes to the nucleus of the 3rd nerve, and the other goes to the cerebral cortex in the occipital lobe. The former controls the movements of the ocular muscles and the latter effects the perception of objects. These latter fibres are the optic radiations. The optic radiations as they leave the external geniculate body turn outwards into the temporal lobe before turning backwards into the occipital cortex. Hence, lesions of the temporal lobe, such as tumours or an abscess complicating otitis media, are likely to affect these fibres and cause characteristic defects in the field. Field charts are therefore of great value in the early recognition of temporal lobe lesions, "the partial field defects short of hemianopia being especially characteristic of involvement of the optic radiations in this region." (Cushing). Often, it is found that the field defect on the side of the lesion is in advance of that of the other eye.

Visual representation in the cortex is in the neighbourhood of the calcarine fissure in the occipital lobe. This area is called the area striata. The macula is represented at the posterior poles and on the lateral surface of the brain. The periphery of the retina is represented in its anterior portions.

The fibres that originate in the retina can be divided into three distinct groups:—a temporal group, a nasal group, and a central or macular group. At the chiasma where the two optic nerves intermingle, a partial decussation of the fibres takes place. The fibres from the nasal side of each retina cross over to the other side, but the temporal fibres pass directly on to the ganglia of the same side. The macular fibres have a partial decussation.

It will thus be seen that impressions from the outside world that come from one side—the right or the left—are collected up in each eye in fibres that reach the same side of the cerebral cortex, the right field being represented in the left cerebral hemisphere and vice versa.

Hemianopia:—This arrangement of fibres gives rise to a variety of visual disturbance called Hemianopia. A lesion of the optic tract, (the part lying beyond the chiasma), will affect the uncrossed temporal fibres of the same side and the crossed nasal fibres of the opposite side. Hence the temporal side of one retina and the nasal side of the other retina will be affected. Both these collect impressions from the same side of the external world. Such a

defect is called a homonymous hemianopia, and will result from lesions anywhere beyond the chiasma. If the chiasma itself is divided through the centre, the crossed nasal fibres of each eye will be affected and we get a heteronymous hemianopia.

Field of vision:—The field of vision is that portion of space in which objects are visible at the same moment during steady fixation of the gaze in one direction (Traquair). The normal limits of the field for white objects are:—

Outwards	... 90°
Upwards	... 65°
Inwards	... 60°
Downwards	... 70°

For coloured objects the limits are smaller and vary to some extent. It is largest with blue and smallest with green, red coming in between.

Defects of field:—Alterations that may occur in the visual field are:—

(1) *Contraction*—Contraction may occur concentrically or irregularly, either in one eye or both eyes at the same time.

(2) *Scotomata*—These are blind areas in the field of vision. Normally, there is one portion of the field which is blind. This is called the blind spot and is due to the presence of the insensitive papilla in the fundus. It is situated 15° temporal to the point of fixation and 3° below; and it extends to about 5° to 6°.

Pathological scotomas are of two varieties. Subjective and objective. Subjective scotomas are those that cannot be charted on a field. Such are scintillating scotoma, muscae volitantes etc. They vary their position constantly. Objective scotomas are definite losses in the field. Such scotomas may appear in the centre of the field. They are then called central scotomas. A central scotoma may be unilateral. It may then be due to a local eye condition, or to an affection of the optic nerve as in multiple sclerosis, syphilis, sinus disease etc. When bilateral it may be due to alcoholism or tabes, or less frequently, poisoning by lead, carbon disulphide etc. When one half or a segment of a field is affected we get a hemianopia. A hemianopia is really a scotoma which affects symmetrical areas in the two eyes. A complete half of each eye is not always affected. A section only may be affected. Such a condition results from lesions of the chiasma, optic tract, central ganglia, optic radiation, or cortical visual centre.

There are two varieties of hemianopia.

(1) Homonymous hemianopia.

(2) Heteronymous hemianopia.

Homonymous hemianopia:—The more commonly observed of the two forms is the homonymous type. In this condition, the nasal half of one eye is affected along with the temporal half of the other eye. There is an absence of light perception in the nasal field of one eye and the temporal field of the other. Central vision is generally preserved.

The hemianopia may be complete, or only in sectors, may be paramacular, or macular. The lesion may be in the base of the brain or in the brain substance itself. When the lesion is in the base of the brain the nerve is affected in its extra-cerebral course. When the lesion is in the substance of the brain it may be (1) in the optic tract, or in the basal ganglia, the pulvinar and external geniculate body, or (2) in the cortical and sub-cortical areas. When the optic tract is involved the hemianopia is complete. But in lesions of the basal ganglia the hemianopia is partial or incomplete, as the fibres have already begun to dissociate at this level.

Wernicke's pupillary reaction:—A sign of some importance in the diagnosis of hemianopias is the Wernicke's pupillary reaction. This consists in a loss of reaction of the pupil to light when light is flashed on the blind half of the retina, whereas when the seeing half is illuminated the pupil reacts. It occurs in lesions in front of the ganglia, but in lesions behind the ganglia pupillary reflex is not disturbed.

When the optic tracts are affected, other motor nerves are also likely to be affected at the same time, such as the 3rd, 4th, 6th and even the 5th and 7th. If the lesion is in the ganglia, a hemiplegia of hemianaesthesia may also be seen at the same time, for, the internal capsule is also likely to be affected.

Central hemianopia. In lesions of the cortical and sub-cortical areas affecting the visual centre and paths we get what is called a central hemianopia. In these cases, the hemianopia is almost always incomplete and often very limited and the pupillary light reflex is preserved. Other associated symptoms are usually present, as the lesion generally affects adjoining cortical and sub-cortical areas. Sensory aphasia, characterised by a dissociation of words and the objects representing them, is often seen associated with cortical hemianopia. In very severe cases, the patient is unable to make out even the letters. In less severe cases, the patient is able to read slowly or sometimes, even fluently, but without understanding the meaning.

The causes of homonymous hemianopia are cerebral syphilis,

tumours of the brain and meninges, tubercle, exostosis, intoxications and auto-intoxications, and injury to the cortical centre for vision. Cerebral syphilis is the most frequent of these causes. This may occur as gumma in the basal forms, or as syphilis of the vessels, an arteritis of the branches of the sylvian artery, in the central form.

Heteronymous Hemianopia. There are two forms of heteronymous hemianopia: bitemporal and binasal.

Bitemporal hemianopia is the more important and the more usual form. In this condition, usually the temporal fields of the two retinae are affected. But different degrees of the affection are often seen. Thus, the two temporal halves may be completely blind and the nasal field may also be affected to some extent; or, one eye may be completely blind and the other show temporal blindness; or, again, the nasal fields may be encroached upon in the superior or inferior segments. Central vision is almost always affected. An optic neuritis is also present.

Bitemporal hemianopia is most frequently the result of lesions affecting the chiasma, either directly or by pressure on it. Such conditions are pituitary lesions, dilatation of the 3rd ventricle etc. Pituitary lesions that cause compression of the chiasma are enlargements of the gland, as in acromegaly, adiposo-genital syndrome, and myxoedema, and tumours of the pituitary. The 3rd ventricle dilates in cases of basilar tumours. The chiasma may also be directly affected by gummata, tubercle, fracture of the base, arterial aneurysm etc.

Binasal hemianopia is a rare condition. Both the nasal fields are affected. This occurs when both the external angles of the chiasma are affected at the same time. Such a condition may occur in fractures of the base, meningeal lesions or aneurysm.

Double Hemianopia. Occasionally hemianopia may be double. In such cases the lesion is a bilateral one affecting both the optic pathways and producing both right and left hemianopia. Central vision is usually preserved. The field in such cases shows a tubular form. The condition is rarely double in the beginning. Such double hemianopia involves considerable difficulty in orientation. Sometimes, central vision also is completely abolished, either in the beginning of the affection, or in the later stages. We then get cortical blindness. This is characterised by an absence of lesions in the fundus, and by persistence of the pupillary reflex. Vascular lesions are the most frequent causes of cortical blindness.

Superior and Inferior Hemianopia. Sometimes we may get

a superior or an inferior hemianopia where the superior or inferior halves of the fields are affected.

Superior hemianopia is rare, the lesion being in the inferior fibres of the optic radiation. Such lesions generally extend to the bulb and cause death of the patient before the hemianopia is noticed.

Inferior hemianopia was frequently seen during the late war, from gunshot wounds.

Amaurosis, Amblyopia. Amaurosis is the term applied to a condition of complete blindness. When vision persists in part it is called amblyopia.

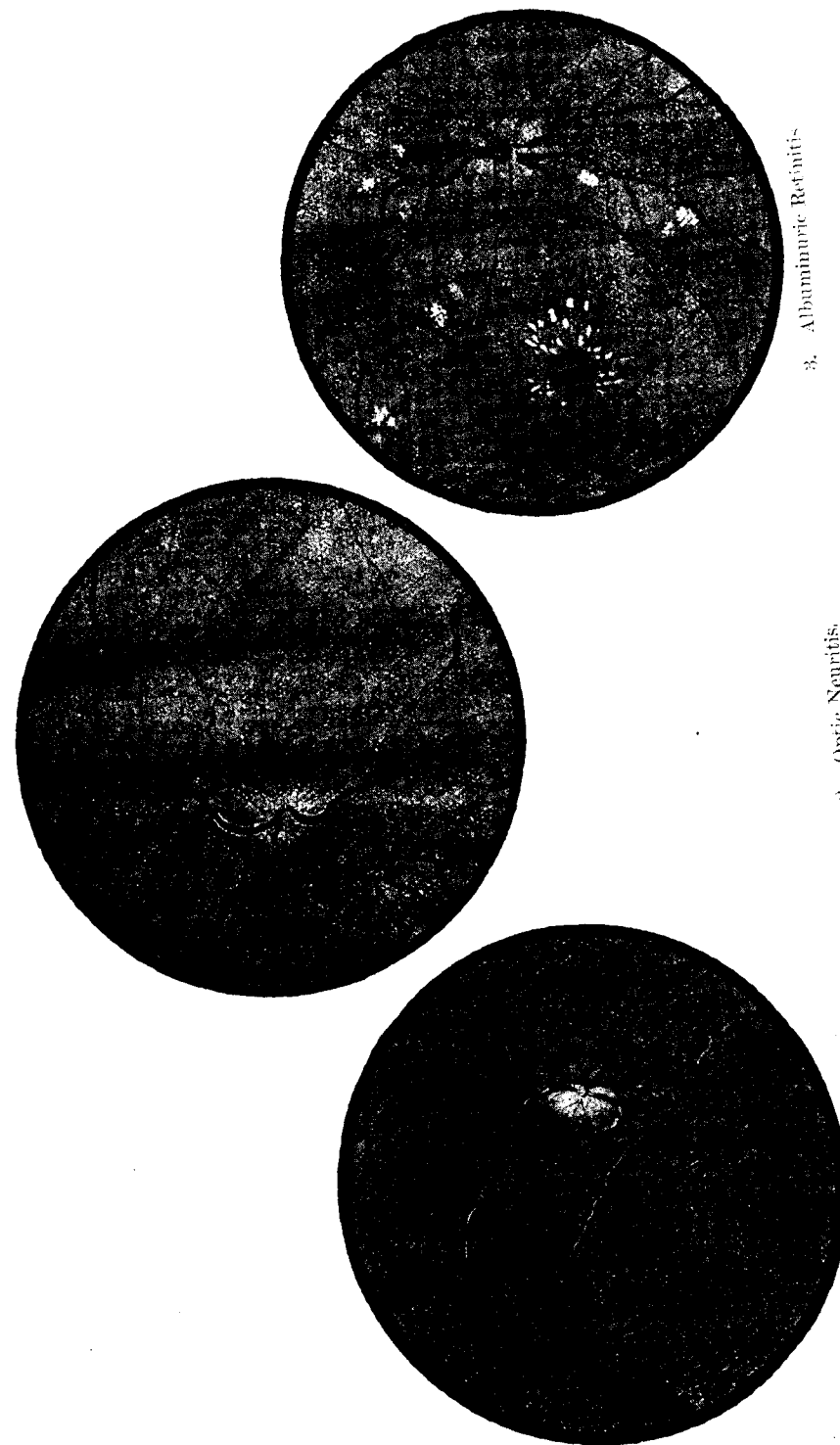
Amaurosis is sometimes seen in *Uræmia* and in *Hysteria*. In uræmia temporary loss of vision may occur in the crisis. Characteristic of uræmic amaurosis is the sudden onset, complete loss and the rapid and complete recovery. In some cases no prominent cerebral symptoms of uræmia are present. In hysteria there may be a sudden and complete blindness in one or both eyes. The sudden loss of vision may completely return just as suddenly. Pupillary reflexes are present and the fundi are normal.

Amblyopia is frequently observed in retrobulbar neuritis. Tobacco and alcohol are the most common causes of such neuritis. Other causes are multiple sclerosis, sinus troubles, uræmia, diabetes etc.

III. The Fundus of the eye.

Anatomical considerations:—The normal fundus presents near the centre of its posterior surface a small circular or slightly oval reddish white area from which vessels are seen to emerge. This is the optic disc or papilla. It is surrounded by two circular lines, one white and lying internally and the other slightly pigmented and lying externally. The papilla is reddish white in colour. It is paler in old people than in infants. Its external or temporal half is paler than the inner or nasal half. It is situated in the same plane as the rest of the fundus and has a small depression in its centre. This depression is called the physiological cup. Normally, this cup never occupies the whole extent of the papilla.

From the centre of the papilla arteries and veins emerge. These consist of four of each—a superior temporal, a superior nasal, an inferior temporal and an inferior nasal. The veins appear larger than the arteries and are darker in colour. Normally, upon the large vessels a bright line is noticed running in the centre and parallel to the axis of the vessels. This appearance is



3. Albamuric Retinitis

2. Optic Neuritis

1. Arterio Sclerosis

due to reflection of light from the column of blood. When the arterial wall shows any change such as thickening or sclerosis this normal reflex disappears.

The general colour of the fundus is dull red; the colour is due to the highly vascular choroid which lies behind the transparent retina. The colour varies according to the amount of pigment present in the external layer of the retina and in the choroidal stroma. It also depends upon the general pigmentation of the body. In blondes and white people it is sometimes bright red or even pink, whereas in the dark-skinned, the colour is much darker.

Macular Region:—At the posterior pole of the eye, about $1\frac{1}{2}$ to 2 disc diameters to the temporal side of the papilla, is the macular region. In young people, the macula appears as an oval area of a darker colour than the rest of the fundus and surrounded by a bright circle, a little larger than the papilla. There are no vessels in this area and no other details can be seen.

Modifications:—The central vessels divide and subdivide and go to all parts of the fundus. These vessels can be followed to their termination. In certain diseases modifications in the normal appearance of the fundus are seen. These modifications may effect the papilla, the macula or the rest of the fundus.

Changes in the papilla:—Modifications of the *aspect* of the papilla.

The chief modification is a loss of clearness of the disc margin.

(1) The loss of clearness may be slight. We then get the condition called optic neuritis. The papilla is hyperaemic, slightly oedematous, and its margins are ill defined. The vessels are larger than normal, especially the veins. Vision is rapidly diminished and the visual field is markedly contracted.

Optic neuritis may occur in the following diseases.

(a) Syphilis, directly or indirectly acting on the papilla, as by an inflammation, gumma etc.

(b) Infectious diseases such as the eruptive fevers, pneumonia, influenza, typhoid etc.

(c) Cerebro-spinal meningitis, very frequently.

(d) Albuminuria, diabetes, anaemia etc.

(e) Menstrual troubles in the female, or in the course of pregnancy or lactation.

(2) The blurring of the papillary margin may be very marked. We then get the condition of papilloedema, a swelling of

the papilla. The papilla is elevated, its limits are blurred, and its diameter increased to 2 or 3 times the original size. The veins are very much enlarged and tortuous, the arteries almost or completely obliterated. There are fine haemorrhages on its surface. The projection of the papilla may be two mm. or more. In the early stages the haziness of the disc margin is first seen in the upper nasal quadrant. Sometimes small haemorrhages on the papilla may precede other signs of oedema by as long as several weeks. Once developed, the oedema may remain unchanged for months.

Vision and field remain normal in the early stages, even when there is considerable swelling of the papilla, unlike optic neuritis, where the vision rapidly deteriorates from the beginning. But after a variable period, the field begins to contract on the nasal side first and later, concentrically everywhere.

When the oedema subsides optic atrophy sets in and the papilla takes on a gray colour, the veins become smaller, and the vision and field deteriorate. The border of the papilla is irregular and diffuse.

Causes:—The causes of papilloedema are both *local* and *general*. Local causes are tumours of the orbital cavity, gummatous periostitis etc.

General causes are the more important. 1. Foremost of these are tumours of the brain. Other causes are:—2. basal meningitis, 3. abscess of the brain, 4. fractures of the base of the skull, 5. certain cranial malformations etc.

Modifications of the colour of the papilla. The papilla may be partially or totally de-coloured.

Partial decolouration. One half of the papilla appears paler or whiter than the other. Usually this happens on the temporal half. The most important general conditions producing such a change are *chronic intoxications* from tobacco, alcohol and lead, and *multiple sclerosis*.

In chronic intoxications the vision is diminished, the papilla shows pallor of the temporal half, and the field shows a central scotoma for red and green. The affection is bilateral.

In multiple sclerosis also, there is temporal pallor. The temporal half of the papilla looks matt or pearly white and is generally deprived of small vessels. The pale area is generally sharply outlined from the rest of the papilla and the line of demarcation is sometimes marked by a vessel. Vision is greatly diminished but not regularly.

Total decolouration. When there is a total decolouration we get optic atrophy. Optic atrophy is the termination of all inflammations or traumatisms of the optic nerve, retina and central vessels. Optic atrophy may be simple (or primary), and secondary. In simple atrophy the papilla loses its red colour and becomes pale at first. Later, when atrophy is complete, it becomes white with a pearly surface. The margins of the disc are clear and sharp. The physiological depression is not altered, or if it alters it remains shallow. Central vessels are little altered.

The most important condition in which a simple atrophy is seen is *tabes*. In *tabes*, the colour of the papilla is at first grayish and later, as the disease progresses, it becomes white. Both eyes are affected, but one may be affected more markedly than the other. A tabetic atrophy is generally preceded by an Argyll-Robertson pupil.

A simple atrophy is also seen in *general paresis*, but less frequently.

In *multiple sclerosis* a simple atrophy is occasionally seen, but the atrophy is more often partial. When it is total it is usually unilateral. It may be total on one side and partial on the other, but it never progresses to blindness so rapidly as in *tabes*.

Other conditions in which a simple atrophy may occur are, destructive lesions affecting the nerve, compression of the nerve by tumours, exudates, aneurysms, and cranial malformations etc. Most important of these are *tumours of the pituitary*. It is sometimes difficult to diagnose this condition from *tabes*. In *tabes* pupillary changes generally appear first before functional troubles are noticed. In tumours, functional troubles appear long before pupillary changes.

Secondary atrophy:—In secondary atrophy the papilla is white and its borders are irregular. Vessels are altered. The veins are tortuous and the arteries show white lines along their borders. This condition is secondary to an optic neuritis, or a papilloedema.

There are some other varieties of atrophy also. They are:

(1) *Atrophy following glaucoma*. Here, the disc is white, and there is considerable excavation of the papilla. The excavation is always total extending to the borders, which may be undermined.

(2) *Atrophy following vascular lesions*. Here the vessels are altered. Borders of the papilla are sharp.

(3) *After profuse haemorrhages* sometimes an atrophy supervenes within a short time. The condition is bilateral. Vision is diminished first, within 24 to 48 hours; and in 2 or 3 days there is complete blindness. At first, ophthalmoscopic signs are nil. Later,

a slight oedema may be present and very soon after an atrophy is seen. It may sometimes be partial.

(4) In poisoning from certain drugs, such as quinine, arsenic, etc. an atrophy develops. The disc is white with sharp borders. Vessels are narrow.

Changes in the rest of the fundus:—The fundus back-ground or the vessels, or both may be affected.

In the fundus, we may find spots of various colours. *White* spots generally mean areas of atrophy. *Yellow* spots mean exudation. *Black* spots are seen when pigmentary alteration takes place and *red* spots in haemorrhages.

Patches of exudation may appear in any part of the retina. They may be large and solitary, as in tubercle, or small and numerous, as in retinitis due to albuminuria etc.

Red Spots:—The red spots due to haemorrhages may be of various shapes and sizes. They may be small and round, or larger and flame-shaped, or extensive. They may be few or numerous. Haemorrhages may occur in the fundus in diabetes, nephritis, passive congestion of vessels in menstruation, compression of thorax, arterio-sclerosis, cardiac disease, especially valvular disease, etc.

Vessel Changes:—Changes in the vessels may affect the arteries or veins or both.

Arteries:—(1) Calibre of the arteries may become narrow. This change is generally seen in arterio-sclerosis. (2) Dilatation of the arteries may occur, but is rare. (3) An arterial *pulse* is sometimes seen in such conditions as aortic insufficiency, aneurysm of aorta, Grave's disease, anaemia, chlorosis etc.

Veins show generally a dilatation, as in optic neuritis and papilloedema. A venous pulse is observed in increased intraocular pressure as in glaucoma, and also in tricuspid insufficiency.

In certain general diseases, the fundus may show many of the changes enumerated above producing a definite picture more or less characteristic of the particular disease. This is especially so in albuminuria, diabetes and arterio-sclerosis. It will be useful therefore to consider the fundus changes seen in these conditions.

Fundus picture in albuminuria:—During the course of pregnancy we may occasionally get a retinitis if albuminuria is present. A retinitis may also occur in chronic interstitial nephritis and occasionally in acute parenchymatous nephritis.

In pregnancy and in acute nephritis the fundus picture shows a similar appearance.

Retinitis of pregnancy generally occurs in the later pregnancies. It is probably due to a toxin which affects the retina, kidneys, liver and other organs at the same time. Onset is sudden. There is a good deal of exudation into the retina. The papilla shows hyperaemia and oedema. Haemorrhages are seen, most frequently in the central region. Exudation into the retina is seen as large soft-edged woolly-looking white patches and as small white spots. The small spots may occasionally be seen arranged in the form of a star round the macula. Veins are engorged. Not infrequently, detachment of the retina also occurs. Prognosis is generally good. When the cause is removed, symptoms subside and vision is restored. If nephritis continues after pregnancy optic atrophy may supervene. There is no tendency for recurrence.

In the retinitis of chronic nephritis the appearance is slightly different; oedema of the papilla is generally slight; the margins of the papilla become indistinct. Fine haemorrhages may be present. Exudates are seen in the form of superficial clear brilliant white spots of variable size chiefly round the papilla and in the macular area. The spots in the macular area are often arranged in a star figure; but it is rarely a complete star. Large woolly patches are much less frequent than in the acute type. Prognosis is grave in these cases, death coming on within two or three years after the appearance of the retinitis.

30% or more of the advanced cases of chronic nephritis show a retinitis.

These two types of albuminuric retinitis are most probably only varying degrees of the same affection. In parenchymatous nephritis the toxic element being more pronounced we get appearances which suggest an oedema of the retina. In the arterio-sclerotic kidney, on the other hand, the disease is primarily vascular in origin and hence the retinal appearances approximate to the vascular type with small white spots, star figure formation, vascular changes and haemorrhages. (Foster Moore).

Diabetic Retinitis:—Here we see a similar appearance to the above. But there are certain special features. These are: (1) The patches are sharp-edged, solid and waxy-looking and distributed irregularly. (2) Star figure is not common. (3) Soft-edged exudative patches are not seen. Oedema is very slight or absent. And (4) Haemorrhages are more frequent and more extensive, and generally occur into the deeper layers and are therefore roughly circular. (Foster Moore).

Diabetic retinitis usually occurs in elderly people. Prognosis is not so bad as in renal retinitis. When retinitis is present, it has been noticed that knee-jerks are generally absent.

Lipæmia Retinalis:—Occasionally in young diabetics, when the fat content of the blood reaches an abnormal degree, a condition called lipæmia retinalis may develop. The retinal vessels appear as if filled with milk. Vision is not affected. The condition is generally noticed shortly before death.

Fundus picture in Arterio-sclerosis:—In the great majority of cases of general arterio-sclerosis evidence of the disease can be detected in the retinal arteries by the ophthalmoscope; hence arterio-sclerosis is one of the diseases which is often discovered by the ophthalmologist.

Investigations of the various observers show that arterio-sclerotic changes in the retinal vessels denote a similar condition in the cerebral vessels; but even advanced cerebral disease does not necessarily show itself in changes in retinal arteries. Marked changes in the retinal vessels are of somewhat serious prognostic importance, as such cases have been observed frequently to develop cerebral hæmorrhage.

In general arterio-sclerosis, the retinal vessels show the following changes:—

1. The translucency of the vessels is lost first. This is observed at the arterio-venous crossings.
2. Next, the thickened artery presses on the vein where it crosses it and the blood is dammed back beyond the crossing.
3. The vein becomes deflected beyond the crossing.
4. The reflex from the arteries is broadened and there is an increase in the brightness.
5. The central light streak becomes beaded or dotted.
6. The smaller vessels become tortuous.
7. White lines are seen on either side of the artery, first at the crossings.
8. Later, white lines along the arteries are seen at other places also.
9. In more advanced stages, narrowing of the lumen of the vessels is seen here and there, followed still later by obliteration and hæmorrhages.
10. Aneurysmal dilatations of the veins may also sometimes be seen.

The disc has a congested appearance.

After these conditions have been in existence for some years, exudates form in the retinal tissues, a retinitis develops. This indicates a later stage in the progress of the disease. Small, white, roughly circular, sharply outlined spots are seen here and there, mostly near the papilla and the macula. Occasionally, an incomplete star figure may also be formed. The kidney also becomes affected, and albumin is frequently seen in the urine. In nearly half the cases the retinitis may be unilateral. The arteries may show a further change and some of them may become reduced to white cords; here and there, lengths of the artery may be sheathed in a solid white plaque of material.

Retinal arterio-sclerosis does not necessarily mean a grave prognosis as regards life; but when retinitis also develops the prognosis is more serious. (Foster Moore).

Eye changes in certain general affections of the body.

I can only touch on a few general diseases in the short time at our disposal.

Multiple Sclerosis:—Multiple sclerosis is hardly ever seen in children and rarely after 40. Ocular symptoms are frequently the first to be noticed; hence, the patients are often first seen by an ophthalmic surgeon.

Blurring of vision is one of the earliest symptoms complained of. Onset may be acute. Frequently it is unilateral. Partial or complete isolated scotoma are common. Ophthalmoscopically, the most important sign is a varying degree of optic atrophy. The atrophy is rarely complete. More commonly, a temporal pallor of disc alone is seen. It is often unilateral, or if both eyes are affected they are unequally involved. Occasionally, a slight neuritis may be present, with probably a few hæmorrhages. This quickly passes off leaving little or no evidence of its existence.

Paresis or paralysis of one of the ocular muscles is frequent. The 6th nerve is most often affected. Nystagmus is one of the classical signs. Pupillary changes may occur.

Encephalitis Lethargica, an acute infectious epidemic disease, is another of those diseases in which ocular symptoms are very frequent and early. In this condition, we get an acute or subacute general infection with lethargy and great muscular debility. The ocular symptom consists chiefly of paralysis of the various muscles. The first symptom complained of is often a diplopia which may last from 2 to 6 days. There is no apparent deviation of the globe. It is due to a paresis rather than a paralysis. The movements of

the eye may become jerky and nystagmoid. In the later stages, a slight paralytic squint may be observed, with limitation of movement. The paralyses are often evanescent or incomplete, and hence it may be over-looked at the first examination.

Generally, both eyes show paralysis of the external muscles; but they may be of different degrees. The same muscles are not always affected on the two sides.

Piosis is often an early sign. It may sometimes be passed unnoticed because of the sleepiness. It is usually incomplete, and may last only for 7 or 8 days, or may remain for a long time.

Internal muscles are not so often affected. An inequality of the pupils may be present. Paresis of accommodation is common, and bilateral, and may persist for a long time. Paresis of convergence is usual and often persists for a long period, as a sequela.

The optic nerve is not often affected. Optic neuritis and papilloedema are very rare. Their absence, therefore, may be a negative sign of some value.

Amblyopia and amaurosis have been reported. Facial nerve may be affected giving a Parkinsonian look.

The disease sets in with a febrile stage followed by sleepiness and ocular paralysis. In recovery, sleepiness first disappears. Paralysis often remains and is only gradually recovered from.

The manifestations of the disease have varied in different countries and in different epidemics. According to Gordon Holmes, the most common feature in encephalitis was a difficulty in convergence, even a palsy, associated with inactivity of the pupils on attempted convergence, or a deficient reaction. The fixation of the pupil occurred on accommodation also.

An interesting feature often seen is the tonic eye fits or oculogyric crises, in which spasmodic attacks of conjugate deviation of the eye balls, most frequently vertical, occur.

Prof. Edwin Bramwell considers a loss of upward movements of the eyes and an oscillation of the eye balls as two signs of some value in diagnosis.

Hysteria. In hysteria the most important eye manifestation is loss of vision. Loss of sight may be of high degree and is most often unilateral. There are no changes in the fundus, and pupillary reactions are unaffected.

The field when taken on a perimeter, is often found contracted especially for white objects. This contraction is not real. It is only a result of suggestion. Spiral fields which are the natural results of continued suggestion are always obtained. An inward or

an outward spiral can be obtained, according to the method of taking it. No hysterical patients have ever complained of disabilities from a narrow field.

Ophthalmoplegic Migraine. This is a form of migraine in which the attacks are accompanied by paralysis of the ocular muscles. The headache is severe, usually one sided and localised to the neighbourhood of the eye, forehead and temple. This is accompanied by nausea and vomiting, after which a paralysis of the eye muscles supervenes on the same side and the headache is relieved. The 3rd nerve is most often affected. Usually we get a complete paralysis, both external and internal branches being involved. As a rule, the paralysis disappears in a day or two. The period between the attacks varies. In the later attacks the paralysis may not completely disappear.

Cerebral tumours. In cerebral tumours ocular symptoms are of great importance on account of their frequency, and of their early appearance. They permit the early diagnosis of a tumour even when general symptoms do not yet present a definite picture. These ocular signs can be divided into two groups.

Diffuse general signs denoting the existence of a tumour and localising signs.

1. The first group consists of only one sign, namely *papilloedema*. Papilloedema always implies increase of intracranial pressure. Its frequency varies with the site of the tumour, its nature, its rapidity of development etc. It is most frequent in tumours of the midbrain and quadrigeminal tubercles and less frequent in tumours in other regions. Size of the tumour does not determine the extent of the papilloedema. Basal tumours and meningeal tumours are more apt to produce papilloedema than those on the convexity.

Vision remains normal at first. Field is not altered. The blind spot may be increased in size. Momentary visual troubles may sometimes be noticed. Sudden and short attacks of vertigo of two, three or four minutes duration and often repeated during the day, often indicate the presence of a cerebral tumour.

2. Localising signs.

(i) **Inequality of the swelling.** Often, the papilloedema is more marked on the side of the tumour.

(ii) **Hemianopia.** (a) Homonymous hemianopia results from compression of the optic pathways. Its value as a localiser is only relative. (b) Heteronymous hemianopia is caused by basal

tumours in the vicinity of the sella and chiasma where the nasal fibres of the two retinae cross. A bitemporal hemianopia is caused by tumours of the hypophysis or basilar region which grows towards the chiasma. More often, the compression is indirect and due to an internal hydrocephalus, which distending the base of the 3rd ventricle, compresses the half of the chiasma. Binasal hemianopia is due to injury of the two lateral angles of the chiasma.

(iii) **Paralysis of the nerves.** These when present are good aids to localisation. (a) Oculomotor paralysis is seen in a proportion of about 34% cases. If the external oculomotor alone is paralysed, it is rarely due to a direct compression of the nerve. Even mere increase of intracranial pressure is sufficient to cause a paralysis of this nerve. Such paralysis is probably most frequent with tumours of the frontal region. If the common oculomotor is affected it is usually due to a direct pressure on it by a tumour of the base.

(b) Conjugate deviation of the eyes is not very useful as a sign of localisation. The eyes are usually turned to the side of the tumour.

(c) Nystagmus is probably most frequent with tumours of the thalamic region.

(d) Lesions of the sensory nerves:—Affections of the trigeminal have a considerable localising value. It indicates a basal tumour affecting the nerve either on the protuberance or on its antero-superior surface at the level of the gasserian ganglion, or in the cavernous sinus. One gets anaesthesia of the parts supplied by the three branches, that is, in a half of the face. A neuroparalytic keratitis may sometimes be seen and if present confirms the presence of a basal tumour.

(e) Affections of the olfactory and acoustic nerves have a very high localising value, especially if it is associated with motor paralysis or optic atrophy. Anosmia with optic atrophy means a lesion of the anterior cerebral area, attacking both these nerves.

(iv) **Modifications of the pupil:**—*Anisocoria* is frequent in frontal tumours. The tumour is on the side of the dilated pupil. Loss of light reflex is rare except in tumours in the region of the oculo-motor nucleus or at the level of the quadrigeminal tubercles.

(v) **Exophthalmos** may be due to a basilar tumour which has penetrated into the orbit, or exceptionally, from compression over cavernous sinus.

Hypophyseal Tumours:—Ocular symptoms are very frequent in this condition. We get alterations in the visual field, diminution of visual acuity and rarely pupillary modifications and ocular paralysis. *Bitemporal hemianopia* is often present, central vision remaining normal or nearly so. Fields are greatly contracted. Occasionally, central vision is also diminished and then the visual fields are contracted everywhere. At first a pallor of the disc is seen. This finally leads to atrophy. Papilloedema and optic neuritis are rare. Ocular paralyses supervene only if the tumour extends to the lateral sinus and its walls.

Adenoma of the anterior lobe of the pituitary without acromegaly is the commonest and the most important of the pituitary tumours in adults. The cardinal sign is *loss of vision* and there may be nothing else. There may be a tendency to adiposity, a smooth skin and scantiness of hair.

"Pituitary tumours should be suspected in every case of failing vision without an obvious cause. I go further and say that we should search for a pituitary tumour even when some other cause seems to be present.....Toxic amblyopia is diagnosed too readily, and valuable time is wasted while harmless septic foci are being sought for and removed." (W. J. Adie).

Gliomata and Sarcomata. The most frequent tumours of the brain are *gliomata* and *sarcomata*. Gliomata are infiltrating tumours. They easily degenerate into cysts. Sarcomata are primary and are relatively benign. They do not infiltrate but compress and displace brain substance.

Other tumours which may occur in the brain are *tubercle* and *gummata*. Tubercles may be miliary, conglomerate flat extensive growths on the surface of brain, and solitary. Solitary ones are most frequent in children. They especially invade the cerebellum and base of brain, particularly the pons. Gummata appear usually on the convexity or in the substance of the brain.

General symptoms of brain tumour are those of increased intra-cranial pressure, namely disturbances of consciousness, headaches, vomiting, slow pulse etc.

Exophthalmic Goitre. This is one of those diseases in which there are a number of eye symptoms. Some of these are:—

- (1) Stellwag's sign or a widening of the palpebral aperture
- (2) Græfe's sign, or dissociation of the movements of the globe and of the upper lid.
- (3) Moebius' sign, or paralysis of convergence.
- (4) Exophthalmos, the last cardinal symptom to develop.

According to Sattler it is absent in about 20% of the cases.

- (5) Pulsations of retinal arteries.
- (6) Frontal sign, either an immobility of the frontal on looking up, or a retardation.
- (7) Occasionally pupillary signs, such as mydriasis, anisocoria etc.

Ophthalmic Migraine :—This is a condition in which transitory visual troubles are associated with a hemicrania. Visual disturbances consist of scintillating scotoma or a homonymous hemianopia or even complete blindness. This lasts from a few seconds to a few minutes and is immediately followed by an intense, generally one-sided, headache. This lasts from a few hours to 1 or 2 days and is followed by vomiting. The condition is due to an irritation of the cortical centre for vision from an angiospasm of the calcarine artery. It is supposed to be due to a hypothyroidism.

Diabetes :—The chief eye changes that may be seen in diabetes are :—

1. Accommodative troubles. These are generally slight. Occasionally there may be a complete paralysis of accommodation.
2. Changes in refraction. Myopic changes are not uncommon especially in old people. It is a good rule to remember that if myopia is seen to develop rapidly in persons beyond 50, diabetes should be suspected.
3. Cataract. Diabetic cataract is not uncommon. However, what is commonly called diabetic cataract and described as a soft cataract, bilateral and quickly developing does not differ in structure, or quickness of development from ordinary senile cataract and should rather be called cataract in a diabetic person—the opacification being influenced by the presence of sugar and general nutritional troubles but not having any other relation to diabetes.
4. Retinal changes. Haemorrhages are fairly frequent. They may be small punctiform haemorrhages or large flame-shaped ones or more rarely, profuse haemorrhages into the retina and vitreous.
5. Iritis occasionally occurs.
6. A retrobullar neuritis is sometimes observed.
7. Paralysis of the external and internal muscles may occasionally be seen.

Leukaemia :—Changes in the fundus in leukaemia are frequent. At first, an engorgement of the veins is noticed. Later, veins and arteries are both distended. Haemorrhages may be present.

Later still, the fundus gets a pale or greenish reflex. Disc edge becomes blurred, and the veins show broad white lines along them.

Poisons—Drugs etc. :—Of these, we shall consider tobacco, alcohol, quinine and lead.

Tobacco :—Changes in the eye are very liable to occur from tobacco poisoning. Tobacco acts whether used for smoking, chewing or as snuff.

The chief feature of the toxæmia is an impairment of central vision, first for red and green objects, and later for white also. It is usually thought that such amblyopia results only if alcoholism is combined with tobacco, but it has been shown that tobacco alone is capable of producing such defect.

The condition is most often due to pipe smoking with strong tobacco, less often to cigar smoking and least to the use of cigarettes. Quantity of tobacco required to produce amblyopia varies in different cases.

Both eyes are almost equally affected. The chief change is a pallor of the temporal half of the papilla. The field shows a scotoma for red and green between the blind spot and the point of fixation. Later, field for white also is affected.

Most cases improve when the use of tobacco is stopped or even when reduced.

In cases of tobacco amblyopia other ill effects of tobacco are not commonly seen.

Alcohol :—Alcohol by itself is less frequent as a cause of amblyopia. It acts more often in association with tobacco. However, it has been found that chronic alcoholism by itself can produce amblyopia.

In the early stages there is a relative central scotoma for red and green: sometimes the scotoma is absolute. Ophthalmoscopically, the temporal half of the retina appears white. Pupil reactions are normal. Prognosis is less favourable than in tobacco poisoning.

Wood-alcohol is a more potent toxin than ordinary alcohol. Ingestion of this even by inhalation, may cause permanent damage to sight. Acute symptoms are also noticed such as headache, vomiting, abdominal pains, slow pulse, delirium etc. Recovery is more difficult. On the other hand rapid and complete loss of sight may follow.

Quinine :—Another drug which produces amblyopia is quinine. Quantity required to produce ill effects varies. Small quantities have been known to be toxic and to produce amblyopia.

At first, there is tinnitus and deafness which may be only temporary. Loss of sight follows soon after and is often severe and may be absolute. Pupils are dilated; disc is pale; and vessels extremely contracted. Onset may be gradual. Occasionally it may set in suddenly or in a few hours. Visual field is concentrically contracted. The condition may last from a few hours to several weeks.

Lead:—Poisoning by lead may seriously affect vision and produce paralysis of ocular muscles.

Lead may be absorbed by the skin, inhaled as dust or taken by the mouth. Most cases of lead poisoning occur in industrial pursuits. Males are more often affected.

The condition develops slowly as a rule. Other signs of chronic lead poisoning are usually present, such as wrist drop, colic, headaches, blue line on the gums etc.

As ocular symptoms we may get,

1. Transient amblyopia, with a rapid onset and a rapid recovery.
2. Permanent amblyopia without any distinct fundus changes. This condition is due to a retrobulbar neuritis. Optic atrophy may develop later.
3. Optic neuritis or a neuro-retinitis, occasionally.
4. Various types of retinitis.

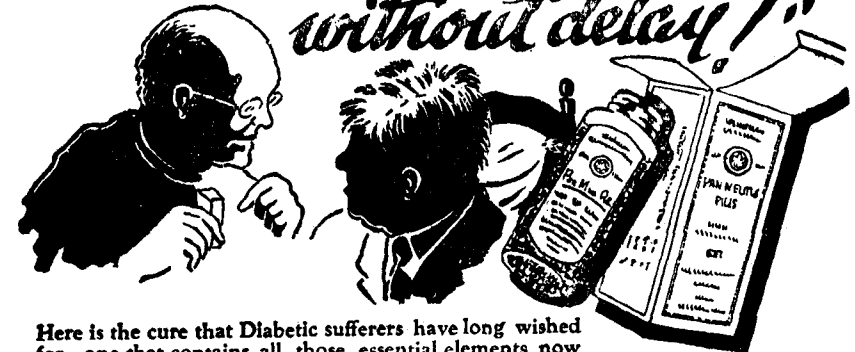
Accommodation power is often affected. Nystagmus is sometimes present. Visual fields are contracted and occasionally a central scotoma is seen.

External ocular muscles may be paralysed: the external rectus is most commonly affected.

In early cases prognosis is good and improvement takes place when the poison is removed.

In later cases with atrophy there is little chance of recovery.

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