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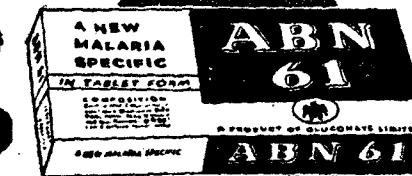
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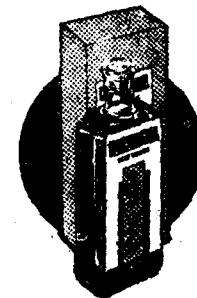


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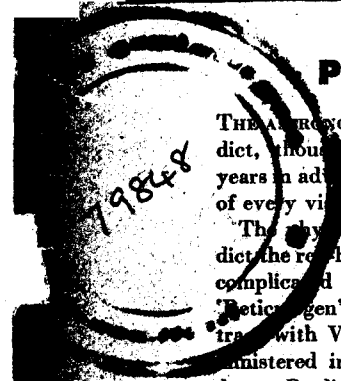
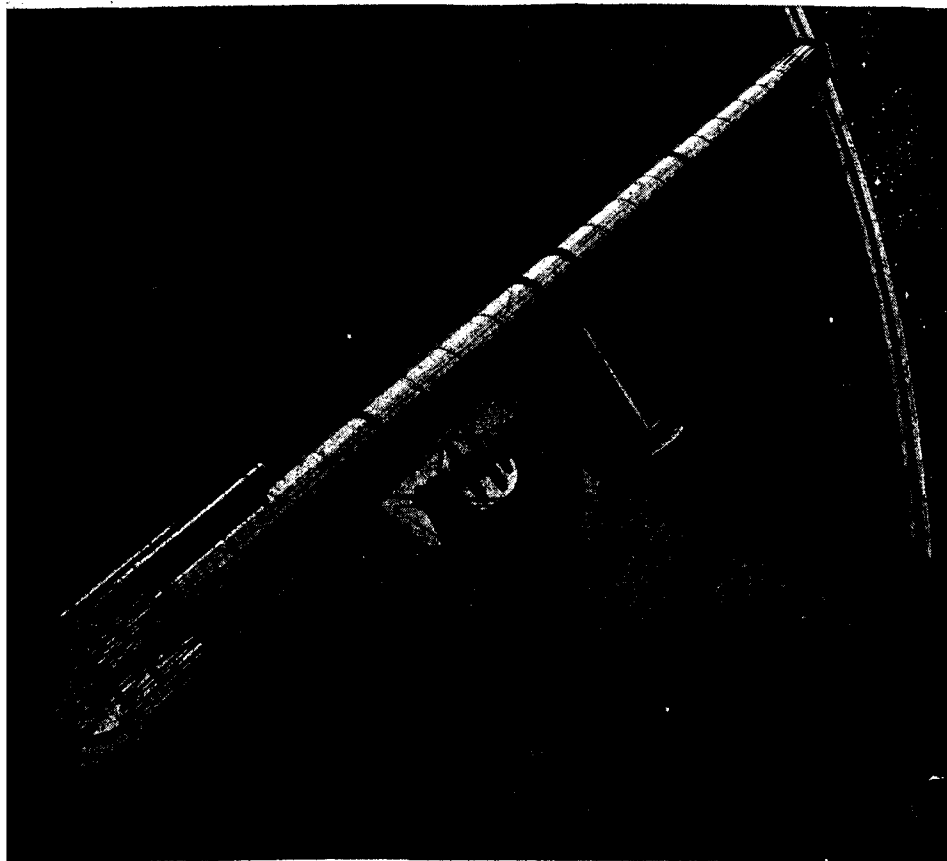
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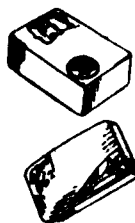
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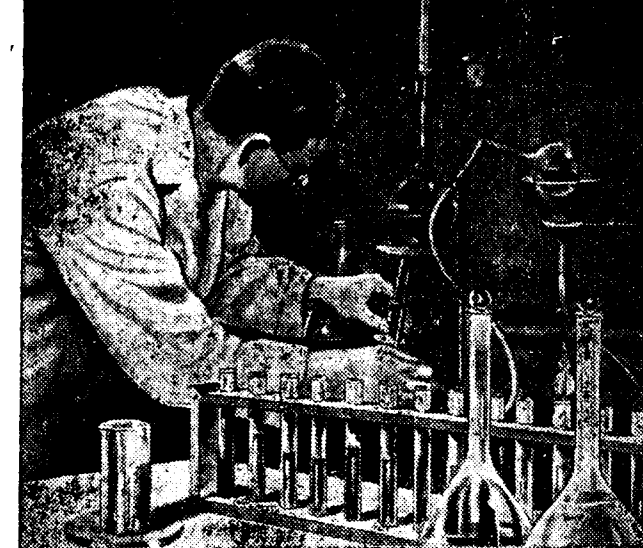
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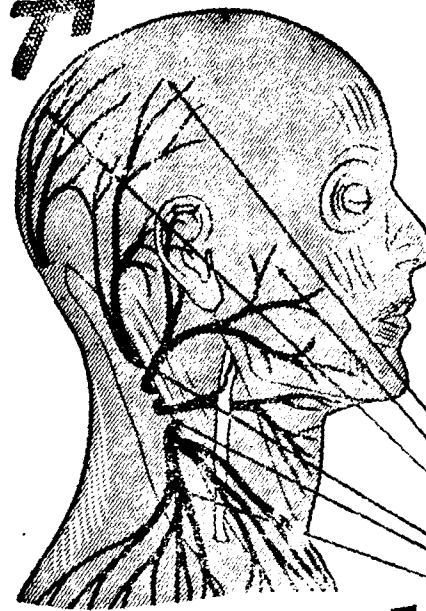
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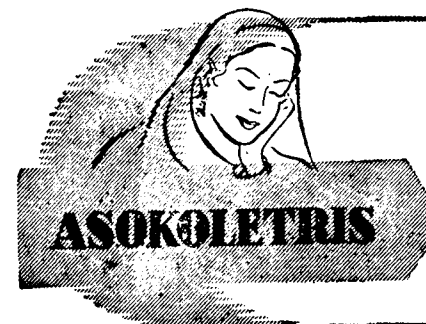
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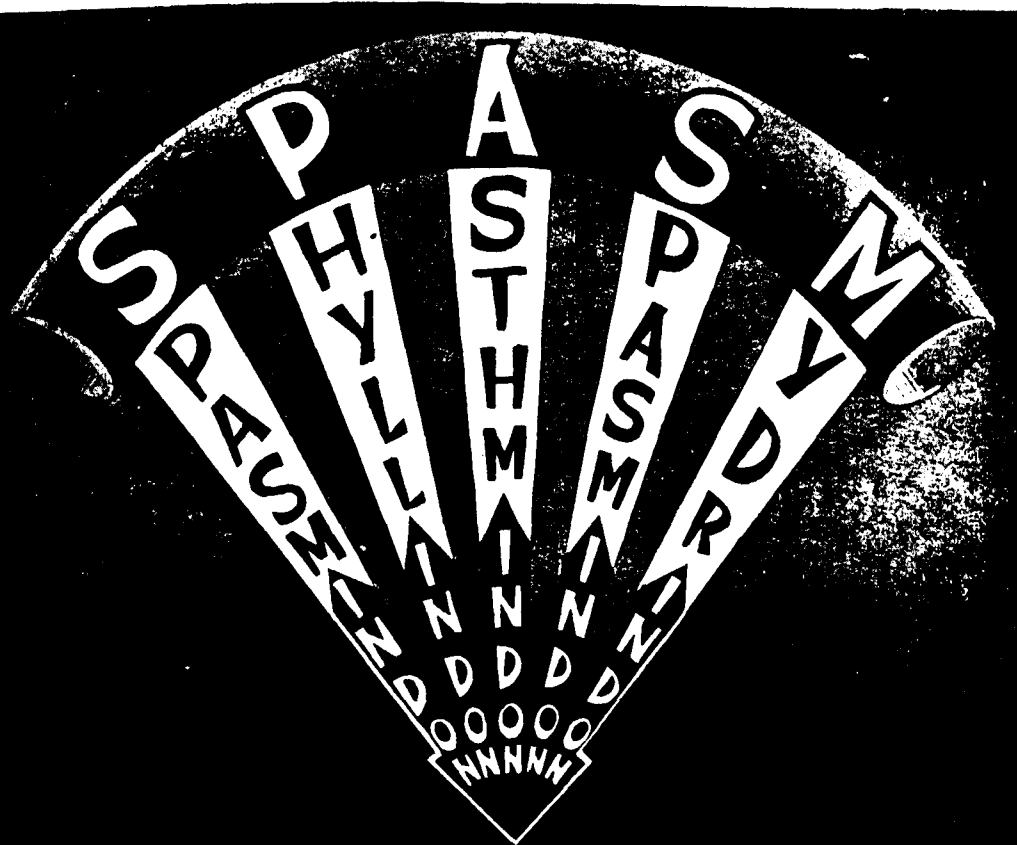
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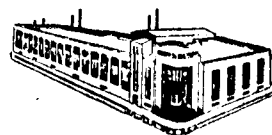
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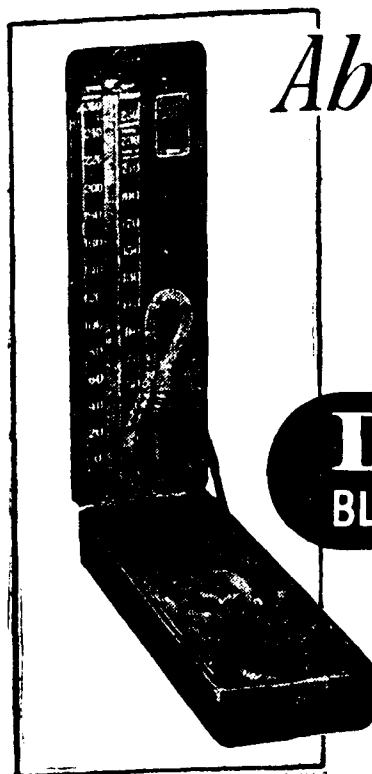
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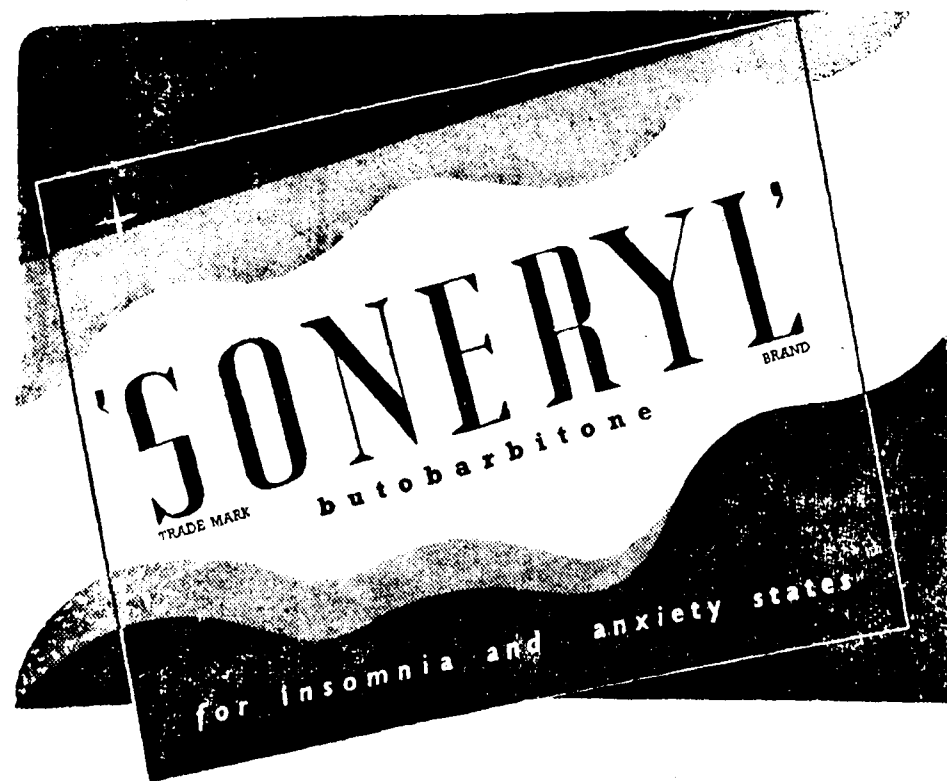
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Original Articles

Congestive Cardiac Failure—Its Management*

P. RAGHAVAN, M.D.,

Hon. Physician to the K. E. M. Hospital, and

Hon. Lecturer in Medicine at the G. S. M. College, Bombay.

WHEN the heart is unable to maintain a circulation adequate for the daily needs of the body, a state of cardiac failure exists. If this failure is associated with signs of venous congestion, the condition is termed congestive cardiac failure.

The clinical signs that indicate congestive failure are:—(1) engorgement of the superficial veins of the neck; (2) tenderness and enlargement of the liver; and (3) œdema of the dependent parts.

Mechanism and causes of failure.—There is no structural defect that is characteristic of congestive cardiac failure. The only abnormality present in a majority of these cases is hypertrophy and dilatation. The cause of this hypertrophy lies in an abnormal stretching of the heart muscle fibres due to 'injury' (Horvath). This 'injury' exists in one of the three forms, either as—(1) mechanical strain in valvular deformity and hypertension; (2) nutritional impairment in coronary athero-sclerosis and anæmia; or (3) toxicity in infective states and acute rheumatic fever.

When the underlying cause involves the left side of the heart, there is an engorgement of the pulmonary vascular bed. The vital capacity is diminished and the patient experiences breathlessness on exertion. Left sided failure ends ultimately in failure of the right side of the heart and the patient develops signs of systemic venous congestion in addition to the breathlessness on effort. This sequence of events is particularly seen in hypertension, coronary athero-sclerosis, aortic and mitral valvular defects. In these cases the cause of the congestive failure is the antecedent left sided failure.

Congestive failure occurs as a primary condition in chronic pulmonary diseases, especially chronic bronchitis, asthma and emphysema. In

* Specially contributed to THE ANTISEPTIC.

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Bombay our experience indicates pulmonary diseases to be the cause of congestive failure, in a fair number of cases. Thus VAKIL¹ found pulmonary diseases to be largest single ætiological factor (30% of cases) in the causation of congestive failure in an analysis of the clinical material at the King Edward VII Memorial Hospital, Bombay. My own experience with the autopsy data in 4,335 autopsies (conducted by the Department of Pathology of the K. E. M. Hospital, Bombay, during the period between 1926 and 1939) is summarised below. Of the 4,335 cases 13.1% (568) showed major cardio-vascular lesions. The causes of death in these 568 cases is listed in Table I.

TABLE I
Causes of death in 568 cardiac cases.

Cause	No. of cases	Percentage of the total
Congestive cardiac failure	128	22.2%
Other cardiac causes	163	28.7%
Non-cardiac causes	279	49.1%

Thus a little over one-fifth of all heart cases died of congestive failure. It is also of interest to note, that nearly half of the cases died of non-cardiac conditions like accidents and infections. The antecedent ætiological states responsible for congestive failure are shown in Table II.

TABLE II
Incidence of various ætiological types in congestive failure.²

Ætiological type	Total No. of cases encountered in the type	No. of cases, that died of congestive failure	% of the total No. that died of congestive failure
Pulmonary diseases	45	38	84.4%
Rheumatic heart diseases	35	12	34.3%
Syphilitic heart diseases	170	37	21.7%
Hypertension—nephritic and essential	69	10	14.5%
Athero-sclerosis*	56	10	17.9%
Sub-acute bacterial-endocarditis	10	1	10.0%
Other conditions†	193	18	9.3%

* Cases with minimal aortic athero-sclerosis alone have been excluded from the study.

† Under other conditions have been put congenital lesions, acute infective conditions, acute bacterial and terminal endocarditis, and miscellaneous conditions. In cases with multiple conditions, the lesions were included once under each head.

The heart muscle has a sufficiently large reserve capacity like the kidney and the liver. It can compensate for any single mechanical or functional defect. For instance, it is not unusual to see a case of advanced mitral, aortic or uncomplicated pulmonary stenosis in an individual 30 years of age capable of indulging in ordinary physical activity without discomfort. It is only when the heart is subjected to continued additional strain, in the form of an infective episode or prolonged mental or physical over activity, that congestive failure supervenes. Sometimes it is coronary

1. Vakili, R. J. Ind. Phy. 1, 12, 1942.

2. Data on total incidence taken from Raghavan, P., Jour. of Indian Med. Association, C. L. (June) 1941.

insufficiency incidental to advancing age added on to a previously existing hypertension or valvular disease that precipitates failure.

Degree of failure.—From the point of view of management it is necessary to assess the degree of failure, as well as the antecedent and immediate causes of failure. The classification, suggested by the American Heart Association,³ is convenient to the clinician and is as follows:—

CLASS I.—Patients with heart disease and no limitation of activity. Ordinary physical activity does not induce symptoms of cardiac insufficiency or anginal pain.

CLASS II.—Patients with heart disease and slight limitation of activity. They are comfortable at rest. If ordinary physical activity is undertaken, discomfort results in the form of undue fatigue, palpitation, dyspnoea or anginal pain.

CLASS III.—Patients with heart disease with marked limitation of activity. They are comfortable at rest. Discomfort as noted above is brought on by less than ordinary exertion.

CLASS IV.—Patients with heart disease who are unable to carry on any physical activity without discomfort. Exercise increases discomfort.

Patients in Class III and IV show some signs of venous congestion.

Prevention of congestive failure:—Prevention here as elsewhere is always better than cure. This to a certain extent depends upon the ability of the patient to follow the instructions of his physician, and involves a careful consideration of the type of heart disease, and the social and economic background of the patient, with a view to place him in a position most conducive to his continued welfare. Perhaps it will be covered in the future by the Department of Social Medicine. Patients with cardiac disease should live within their 'capacity of the heart.' It means avoidance of any activity, physical, mental or otherwise, which brings on precordial discomfort, undue fatigue, palpitation or breathlessness. The physician should judge the opportune time to start Digitalis and continue it for the rest of the patient's life. CHRISTIAN, years ago, advised that the moment a diagnosis of hypertension or valvular disease is made, to digitalise the patient and maintain digitalisation for the remainder of his life. This advice should be followed particularly when there are clinical evidences of cardiac enlargement. It is also necessary to prevent episodes of minor infections and treat any such infective episode with adequate rest, and unhurried convalescence. With these measures we can hope to keep the patient in a reasonable state of health but failure comes on occasions in spite of the best precautions, due to factors beyond the control of the patient or his physician.

Treatment of established failure.—The conventional summarisation of the treatment of congestive failure in three words "*Rest, Digitalis and Diuretics*" still holds good and puts the therapeutic problem in a nutshell.

Rest is as important if not more than any other measure. The therapeutic classification suggested by the American Heart Association⁴ is again useful and divides them according to the functional reserve present, into five groups, namely:—

(1) Patients whose activities need not be restricted;

3. Nomenclature and Criteria for Diagnosis of Disease of the Heart—New York Heart Association—New York, 1942.

4. Nomenclature and Criteria for Diagnosis of Diseases of Heart—New York Heart Association, New York, 1940.

- (2) Who should be advised against unusually severe or competitive efforts;
- (3) Whose ordinary physical activity should be moderately restricted and advised against more strenuous habitual exertion;
- (4) Whose ordinary activities should be considerably reduced; and
- (5) Who should be at complete rest in a chair or bed.

In lesser degrees of failure rest alone may be enough to tide over a crisis. When there are minimal signs of venous congestion a preliminary period of complete bed rest and digitalisation followed by gradual return to activity, is indicated. It may be necessary to enforce absolute rest both mental and physical in a patient who is dyspnoic at rest. He is looked after best in his own home, and it is not necessary to shift a patient to the hospital or nursing home, which perhaps is miles away, unless the conditions at home are such that the necessary rest is not possible. A comfortable bed in a well-lighted and ventilated room away from draughts can be easily improvised. The patient can be propped up with a sufficient number of pillows to a position at which he is comfortable. Continued recumbency may be impossible in the presence of orthopnoea, and even otherwise prolonged recumbency is unsafe⁵ as it will increase the liability to pulmonary complications and thrombosis of peripheral veins.

Interviews should be reduced to a minimum and restricted to a few immediate relatives. The use of sedatives are indicated to secure adequate rest and sleep. There is no contra-indication for the use of Morphine, and when the patient has already spent a number of sleepless nights, it is best to give the patient hypodermically 1/4 grain of Morphine with 1/100 grain of Atropine. It can be safely repeated on two or three successive nights and then replaced by oral administration of Phenobarbital Sodium or a preparation like Ortal or Dial. They could be stopped gradually as the patient is able to sleep unaided by these drugs.

Diet for the first day or two in grave congestion should be restricted to sips of Glucose water or orange juice. For the next few days he could be given Karell diet or the modification suggested by SMITH and BANNICK.⁶ The Karell diet consists of 200 c.c.s. of milk, given four times a day, with no fluids in between. By about the end of the first week boiled rice and boiled vegetables could be added. When the signs of congestion have cleared up, the patient could be left to his own taste, provided the feeds are small and well spaced. He should avoid those articles which give rise to abdominal discomfort, distension, diarrhoea, or constipation. Fluids should be taken in between and not with meals.

Digitalis:—Digitalis is indicated whenever there is evidence of congestive failure. Any standardised preparation by a reliable firm will do.⁷ It is not within the scope of this article to go into the pharmacology or methods of standardisation of Digitalis.⁸ It is enough to know that most preparations are so standardised that 0.1 gram of the powdered dry leaf (1.5 grains), 1 c.c. (15 minims) of the tincture, 1/4 mg. (1/240 grain) of Digoxin is equivalent to 1 cat. unit. For prolonged administration, it is

preferable to use powdered dry leaf in the form of tablets or one of the Glucoside preparations.

It has been calculated by EGGLESTON⁹ that the full therapeutic effect or minor toxic actions could be produced by 0.146 cat units per pound of body weight. Thus a man weighing 120 lbs. will need 17.5 cat units. In order to manifest the full digitalis effect he will have to be given 17.5 c.c. (4½ drachms) of the tincture or 1.75 grams (26½ grains) of the powdered dry leaf. In clinical practice it is found that the optimum dose necessary to produce the desired 'therapeutic effect' is considerably less than the dose calculated on the basis of the body weight, and there is a fair margin between the therapeutically effective dose and the maximum tolerated dose. When there is, in addition, fever or thyrotoxic state, this margin is greatly reduced and caution must be exercised in pushing on digitalis to the limit of tolerance.

Whether the calculated dose should be given in one or two massive doses to achieve the so-called 'rapid digitalisation,' or in repeated smaller doses, will depend upon the urgency in a given case. When the condition of the patient is not grave, it is not certain whether he had or not digitalis in the preceding two weeks, the quantity of Digitalis he had taken is not known, or he is suffering from fever, it is unwise to administer a massive dose. A patient can be brought under in 48 to 72 hours if one-half drachm of the tincture or 3 grains of the powdered leaf is given three times a day. The directions of Withering¹⁰ 'let it be continued until it acts either on the kidneys, the stomach, the pulse or bowels, let it be stopped upon the first appearance of any one of these effects,' leave nothing to be improved upon and is worth remembering whenever Digitalis is used. Once the patient is brought under the Digitalis effect, as evidenced by an improvement in the subjective condition of the patient, slowing down of the pulse, and excretion of larger quantity of urine than before, the dose should be reduced and the patient put on the 'maintainance dose.' The maintainance dose in an individual, is the dose necessary to compensate for the quantity of Digitalis excreted daily by the individual, and maintain the digitalis effect. This is usually round about 15 minims of the Tincture or 1½ grains of the powdered dry leaf. The quantity excreted is not the same in different patients as some require considerably smaller dose and others much more. It has to be worked out in a given patient by clinical trial, and should be continued indefinitely so that the effect does not wear off. Digitalis is a cumulative drug with slow excretion and after stopping Digitalis, the effect can be expected to continue for a period of three to six weeks. The drug may be stopped intermittently for short periods, but should be started again within this period. There are a group of patients with congestive failure, particularly the cardio-syphilitics, who do not respond to digitalis and in them it may be worthwhile combining digitalis with a small dose of opium.

The toxic effects of digitalis are, diminution in the quantity of urine passed, anorexia, nausea, vomiting and diarrhoea, slowing of the pulse to rates below 60, disturbances in the cardiac rhythm like marked sinus arrhythmia, premature systoles, coupling of the pulse and various grades of auriculo-ventricular block. It is worth bearing in mind that the vomiting of digitalis is a central effect. It comes on after absorption and vomiting

5. Levine S. J. A. M. A. 126: 80, (Sept. 9), 1944.

6. Bannick, E. C., and Smith, F. H., Jour. Am. Diet. Assn., 2: 246, 1927.

7. Stroud, W. D., et al Am. J. M. Sc. 187, 746 (June) 1934.

8. Goodman and Gilman—Pharmacological Basis of Therapeutics—New York, 1941.

9. Eggleston, C., Digitalis Dosage—Arch. Int. Med. 16: 1 (July, 1915).

10. William Withering; reprinted in Med. Classics 11: 294 (Dec., 1937).

which occurs a few minutes after taking the drug is probably due to some other cause and may not constitute a toxic effect. If any of these toxic effects occur, a dose or two should be stopped and the subsequent doses reduced to the limit of tolerance. It is very seldom that parenteral administration has to be resorted to and the majority of patients will tolerate the drug orally. When there is marked dyspnoea amounting to orthopnoea with advanced signs of congestion in association with a rapid heart rate in a patient who has not had any digitalis in the preceding two weeks, it may be necessary to give intravenously in a single dose $\frac{1}{2}$ gr. of Strophanthin (Ouabain) or $\frac{1}{6}$ grain of Digoxin, and start with the maintenance dose orally 24 hours later.

Strophanthus, Squill, Apocynum and Convallaria Majolis, belong to the same group as Digitalis and have digitalis-like action. Excepting Strophanthin (Ouabain) used intravenously as indicated in the previous paragraph, in grave emergency these drugs have limited use. The use of Uginin (Glucosides of Squill) has been recently commented upon favourably^{11, 12}. It is very unlikely, when a reliable preparation of Digitalis has failed to act beneficially, that other drugs of the same group will do any better.

Diuretics:—An uncomplicated case will do well with rest and digitalis. But cases of congestive failure, especially those with normal rhythm without tachycardia, may fail to respond to rest and digitalis alone and in these cases the use of diuretics is indicated. I shall not go into details of the pharmacodynamics or the advantages and disadvantages of a particular diuretic. Those commonly employed among the Saline group are Ammonium Chloride and Potassium and Ammonium Nitrate (30 grains doses thrice daily). Diuretin (15 grains thrice daily) or Aminophyllin (3 grains thrice daily) are popular amongst the group of diuretics. These drugs have the disadvantage of producing nausea and vomiting. Amongst the organic mercurials, Salyrgan Novurit, Neptal or Esidrone, are the ones that are employed. Combinations of Amino-phyllin and Salyrgan like Mecuripin¹³ have been claimed to be more effective than organic mercurials alone. They can be used as suppositories (Novurit¹⁴ and Mecuripin) or by intravenous or intramuscular injection. After a preliminary injection of 0.5 c.c. to exclude any untoward reactions, it can be used in doses of 2 c.c.s. every fourth or fifth day. Sometimes the response even with the test dose is good and there is a profuse diuresis after an injection of 2 c.c.s. intravenously and the oedema clears up rapidly. It is rarely necessary to repeat more than three or four injections.

Sometimes when the response to Salyrgan or Neptal is not satisfactory, preliminary administration of Ammonium Chloride for one or two days produces the desired diuresis. Combined use of Magnesium Sulphate (15 c.c.s. of 50% soln.) and Procaine Hydrochloride (2 c.c.s. of 5% soln.) with Salyrgan deep intramuscularly has been reported upon favourably by SHELLING and TARR¹⁵. These measures usually suffice to relieve oedema and I have had

11. Stroud, W. D., and Vander Veer, J. B., Trans. Am. Clin. and Clim. Ass. 55: 226, 1940.

12. Stroud, W. D., the Diagnosis and Treatment of Cardio-vascular Disease—Philadelphia, 1941.

13. New and non-official remedies, 1944, Am. Med. Assn., Chicago, 1944.

14. Parkinson, J., and Thomson, W. A. R., Lancet 1-16, 1936.

15. Shelling, D. H., and Tarr, L., quoted by Marvin, H. M., Pharmacopeia and the Physician, Am. Med. Assn., Chicago, 1943.

no occasion to resort to Southey's trocars or paracentesis so far. In a desperate case these procedures may have to be used.

Every effort should be made to prevent pulmonary complications and thrombosis of the peripheral veins by adequate precautions.

Other remedial measures like oxygen inhalations for relief of dyspnoea Heroin or Codein orally for relief of cough, appropriate measures for relief of abdominal distension should be used whenever indications arise and these are valuable accessories.

Last but not least in importance are a cheerful attitude on the part of the practitioner and words of encouragement and assurance to the patient. Even if it does nothing else, it will help the patient to go through his illness with greater fortitude. If we remember that our business is to cure when we can and to relieve when we cannot, even an attempt to relieve the patient's distress is worth the trouble.

Indian Village Obstetric Emergencies

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(Continued from page 83 of Feb. 1945 issue).

Chapter XVIII.

Operations—Version

• I. **Maxims.**—1. All versions should be bipolar and bimanual, each of the foetal poles being acted upon simultaneously by one of the operator's hands.

2. External version may be cephalic or podalic. As the name implies all the work is done from the outside by the two hands of the operator working through the walls of the abdomen and uterus.

3. Combined version often called internal version is always podalic. As a rule only one hand of the operator is introduced into the cavity of the uterus while the other hand functions on the exterior. Where it is necessary for the operator to utilise both hands for internal manipulations an assistant must aid with abdominal pressure.

4. In podalic version, which is the commonest variety in an emergency, the foetus is turned so that the breech becomes the presenting part. Podalic version may be external or combined (internal).

5. In cephalic version, which is always external, the head of the foetus is made to present.

6. Braxton Hick's version is too difficult for the average general practitioner and is not dealt with here. Those competent to perform it are not in need of instruction.

II. **Time and indications for version** provided the conditions mentioned in (IV) below are fulfilled and the contra-indications mentioned in (III) below do not exist:

A. **CEPHALIC VERSION** FOR transverse, oblique or breech presentations when seen before labour commences or in labour provided there is: (1) Sufficient liquor amnii to enable the foetus to revolve; (2) no prolapse of a limb; (3) no placenta praevia.

[But where the child is lying with the breech in one iliac fossa and the liquor amnii is too scanty for free mobility press the breech into the pelvis.]

B. TIME FOR PODALIC VERSION: (1) By the external method before labour commences or in labour while there is sufficient liquor amnii. After the version has been completed, as soon as the external "os" is sufficiently dilated, the operator can, if necessary, introduce two fingers through the cervix, rupture the membranes and draw out an ankle until the knee appears at the vulva.

(2) By the internal combined method when there is insufficient liquor amnii for external version, but for this to be practicable—

It is necessary to wait until the external "os" will admit a hand [see Chapter XV, (III)].

[Braxton Hick's version may be performed by an expert where the external "os" admits one or two fingers. It is not advised for general practitioner.]

Warning: (i) The operation is not complete until an ankle has been drawn out sufficiently far for the knee to appear at the vulva.

(ii) In case of hæmorrhage due to placenta prævia or abruptio placentæ in the absence of Willett's forceps, with a vertex or face presentation, and no disproportion it will be safer to give the patient a "hypodermic" of $\frac{1}{2}$ to $\frac{1}{4}$ grains (10 to 16 mg.) Morphine, apply a tight binder or Spanish Windlas [see Chapter VII, (III) Treatment (2)] and then inject "I.M." posterior lobe pituitary extract $\frac{1}{2}$ unit by $\frac{1}{2}$ unit at 20 to 30 minute intervals. This is especially indicated where the placenta prævia is central and the child is premature. It is no easy matter to bore through the placenta in order to introduce the finger tips for either version or the application of Willett's forceps because the resulting hæmorrhage is nerve-racking and the cervix is liable to be torn unless the greatest gentleness is maintained. When the child is dead it may sometimes be easier to perform craniotomy than version.

(3) *Perform podalic version by external or by combined internal method according to the time.*

(a) For transverse or oblique presentations where placenta prævia is present or suspected or in the absence of placenta prævia when it is too late to perform cephalic version or when cephalic version has failed. Where the breech of the child occupies one iliac fossa and the liquor amnii is too scanty for cephalic version the breech can usually be pressed into the pelvis by external manipulation (suspect placenta prævia). There is usually no need to turn a premature fœtus of under 32 weeks gestation, except for placenta prævia, since spontaneous evolution is to be expected.

(b) For a double monster or for an anencephalic monster before labour commences or early in labour.

(4) *Perform (internal) combined version and draw out an ankle until a knee appears.*

(a) For prolapse of an arm where replacement has failed or is not practicable provided the head or shoulder of the fœtus is not impacted in the pelvis. (For impaction of the head try "tentative" forceps and if that fails or the child is dead perform craniotomy. For an impacted shoulder the only remedy is embryotomy.)

(b) Where the 2nd stage of labour has lasted over 2 hours with strong uterine contractions and the parietal bosses are still above the brim of the pelvis (i.e., too high for the application of forceps) or forceps are not available and it is not possible to get the patient to hospital before the uterus would rupture i.e., an hour or so. (Craniotomy will be safer as a rule.)

(c) In occipito or mento-posterior positions where conditions are unsuitable for the production of an anterior position by bimanual rotation or where an attempt at such bimanual rotation has failed, where the membranes have been ruptured upwards of 24 hours or maternal exhaustion threatens.

(d) For brow presentations which cannot readily be converted into occipito or mento-anterior positions.

(e) For uterine inertia or slow completion of dilatation of the cervix or external "os" where Willett's forceps are not available, the liquor amnii is all draining away or membranes have been ruptured over 24 hours.

(f) For prolapse of the funis (cord) where, after reposition of the funis, Willett's forceps and light weight traction are not available or fail to keep the head sufficiently engaged to prevent a recurrence, or where replacement fails [(i) Where the child is dead, prolapse of the funis ceases to be an indication for version. (ii) Where the uterine contractions are frequent and strong the prospects of the child are unlikely to be improved by version].

(g) Where there is need to hasten delivery on account of maternal or fœtal distress provided: (i) The cervix and external "os" are dilated; (ii) the parietal bosses are above the brim of the pelvis (i.e., not engaged); (iii) there is no more than slight disproportion.

(h) In the absence of forceps or instruments of destruction to enable the head to be perforated by a pair of long sharp scissors and then extracted by means of traction using a blunt hook or a bent piece of strong wire. In such a case the contra-indications and conditions mentioned in (III) and (IV) below will have to be ignored and the risks accepted in the interests of the patient.

III. Contra Indications.—A. FOR ALL TYPES OF VERSION:

- (1) Tonic uterine contraction, threatened or extant;
- (2) The presenting part wedged into the pelvic cavity, especially impacted shoulder presentation (Deep anæsthesia may overcome this);
- (3) Loss of all or most of the liquor amnii;
- (4) More than slight disproportion;
- (5) Dead child (unless the version will be easier than destructive operation);
- (6) A constriction ring. (An early or mild degree of constriction ring may be overcome in combined (internal) version under deep anæsthesia by Siegemund's manœuvre but great care is necessary to avoid rupturing the uterus. [See (VI), 2, (k) below; and
- (7) Multiple pregnancy.

B. FOR PODALIC VERSION: Hydrocephalus (more easily drained through a bulging presenting fontanelle or gaping suture).

IV. Conditions which must exist or be produced for version to be practicable:

1. The uterus must be relaxed or made to relax sufficiently to avoid being ruptured.
2. For external version the membranes must be intact or only recently ruptured.
3. For (internal) combined version the external "os" and the cervix must be dilated sufficiently to admit the operator's hand.

[4. For Braxton Hicks version, which is not described because it is too difficult for the general practitioner, the external "os" must admit one or two fingers.]

V. External version—cephalic or podalic.—1. Preliminaries:—

(a) The patient's bladder must be empty.

(b) The patient should be in the supine dorsal posture. Some operators prefer to have her legs almost extended and some prefer the legs flexed.

(c) The abdominal wall of the patient must be relaxed. This is easier in a multipara than in a primipara. In the latter full surgical anaesthesia may occasionally be necessary. Slightly raising the head and shoulders of the patient on a thin cushion or folded cloth helps relaxation.

(d) The uterus must not be contracting frequently or powerfully. Full surgical anaesthesia may sometimes be required to stop the contractions.

(e) There must be sufficient liquor amnii, which will only be found before labour has commenced or early in labour before the membranes have ruptured or very soon after rupture.

(f) The exact position of the child must be determined by careful abdominal palpation and, if necessary, with full antiseptic presentations, by vaginal examination. Vaginal examination should, however, be avoided where possible.

(g) Full surgical anaesthesia has one great drawback, it prevents the patient experiencing the pain incidental to placental separation. Placental separation is liable to be attended by disastrous results for the foetus and possibly for the mother too. All manipulations must therefore be performed with great gentleness.

(h) The patient's abdomen must be bare or covered only by a very thin cloth.

(i) Where difficulty is experienced in pushing the presenting part up out of the mother's pelvis raise the foot of the bed on blocks, bricks or something as high as required.

The Trendelenburg posture thus produced invokes the aid of gravity.

2. Operation:—(a) Locate accurately the head, breech and back of the foetus.

(b) By means of gentle pushing and stroking movements with your hands endeavour to manoeuvre the foetus into the desired position. You should rotate the two poles (the head and the breech) of the foetus round the circumference of a circle, the centre of which is rather below the umbilicus of the mother.

(c) Whenever you feel the uterus contract suspend your manipulations until the contraction passes off.

(d) Since you make most of the pressure upon the walls of the uterus and not directly on the child you have to make many pushes with perseverance and with great gentleness.

(e) Displace the presenting part from the maternal pelvis into one or other iliac fossa. The choice of fossa depends entirely upon whether the foetus accepts rotation more readily in a clockwise or counter clockwise direction.

(f) Where you have difficulty in disengaging the presenting part

from the maternal pelvis raise the foot of the bed or the patient's buttocks or have an assistant, after full antiseptic preparations, push up the presenting part *via* the vagina.

(g) With one hand on the infant's breech and the other on its head press them both medially towards the mother's umbilicus in order to flex the foetal body and thus approximate the two poles.

(h) Keeping the infant flexed, work it round until the poles are in the long axis of the uterus with the desired pole presenting and if possible the back of the foetus anterior. Flexion is usually easier to maintain if the breech is made to lead and the head to follow.

(i) Return the patient to the horizontal and/or raise the head of the bed or the patient's shoulders and thorax.

(j) With both hands grasp the presenting pole (part) and push it into the pelvis, keep one hand on the presenting part and move the other hand to the opposite pole upon which exert steady pressure to flex the foetal body until contractions of the uterus fix the presenting part in the pelvis. Where the patient is under an anaesthetic such contractions may only return slowly as she comes round.

(k) The new position must be verified from time to time to guard against spontaneous reversion to the original presentation.

VI. Combined (internal) version.—1. Special requirements:— Sterile towels to cover the patient's abdomen and save your hand from contamination in case you should require both hands for internal manipulations. Where sterile towels are not available you must render the patient's abdomen as well as her pubic and vulval regions and thighs surgically clean.

Four pieces of tape or cloth $\frac{1}{2}$ inch wide and about 4 feet long for making nooses.

A noose (sling) carrier such as Morales' which consists of a double ring joined by a short cross bar to fit on your middle and ring fingers. This can be made in the village.

Several long slender forceps of the ring type or plugging forceps blocks, boxes, bricks, etc., on which to raise the foot of the bed.

"Lubafax," antiseptic soap or other sterile antiseptic lubricant for your hands and forearms.

It is of great advantage to possess long rubber gloves reaching above the elbow as designed by POTTER.

(2) General remarks:—(a) The twin dangers are rupture of the uterus and sepsis.

(b) Where instruments of foetal destruction are available do not attempt version if it appears probable that the uterus will be ruptured as a result of the version.

(c) During each contraction of the uterus cease moving your hand in the vagina or uterus. You may only perform manipulations in the interval between contractions.

(d) Your internal hand must be constantly on the alert for any commencing tear of the uterine wall. Whenever a parting of the muscle fibres is felt, provided instruments for foetal destruction are available, abandon the version.

(e) Where you cannot turn the foetus easily you will kill it by employing force which will also risk rupturing the uterus.

(f) Anæsthesia to a surgical degree is always desirable but it is more important to carry out version at the opportune time than to wait for an anæsthetic.

For combined (internal) version the most favourable moment is when the external "os" is almost fully dilated and the membranes are still intact. The longer the membranes have been ruptured the more important becomes the anæsthetic and the deeper it will require to be. Atropine should be injected in every case before the operation. Where an anæsthetic is not available a large dose of Atropine (1/33 grain = 2 mg.) or Pethidine (200 mg.) will aid in relaxing the uterus. Beware of Morphine until the operation is completed.

(g) The patient should be lying on her back with her buttocks about a foot higher than her shoulders (slight Trendelenburg posture). It is sometimes advantageous to extend the patient's thighs on a level with her trunk and this can be done by placing two chairs back to back and two feet apart as leg rests.

Where no anæsthetic is available the patient will probably insist in flexing her thighs. Extending the thighs relaxes the pelvic floor and prevents the effective contraction of the patient's abdominal muscles.

(h) Determine the exact position of the foetus by abdominal palpation.

(i) Whatever may be the position of the foetus the fingers of one's left hand can as a rule reach its abdominal surface. Where the foetal limbs are directed to one's left one supinates one's left hand and where the foetal limbs are directed towards one's right one pronates one's left hand. The choice of which hand to introduce into the uterus is immaterial and if you prefer to do so introduce your right hand where the child's limbs are directed towards your right.

(j) It is important for you to remember to lubricate the whole fore-arm upto the elbow as well as the hand and wrist, which you intend introducing.

(k) Have ready two or three (running) slip nooses on double tapes or strips of cloth, each strip being about four feet long (two feet when doubled). Each noose should have a diameter of about 3 inches and the knot should be held in the tips of the blades of ring plugging or other long thin forceps.

Such nooses are to be placed on the wrist of any hand prolapsed or brought down.

Where your finger tips have difficulty in obtaining sufficient purchase on an ankle, or where you have difficulty in getting the foetus to turn, slip a noose over your thumb, index and little fingers. If you possess it, slip your middle and ring fingers through the rings of Morales' sling carrier and lead the free ends of the tape across the bar and down the dorsum of your hand, otherwise place the blades of the forceps holding the slip knot of the noose between your middle and ring fingers and the handles of the forceps in the fingers of your other hand. Advance your finger tips carrying the noose and the noose carrier or forceps tips upto and around the foetal ankle. Work the noose over the toes and heel and when it is securely in position open the blades of the forceps and pull on the free tape ends to draw the noose tight.

You can now hand over the external manipulations to an assistant. With one of your hands you pull on the free ends of the tape and with the finger tips of your other hand you gently push up the foetal head, shoulder, etc., and dilate any constriction or release it from any obstruction which may be interfering.

This double internal manual manœuvre is named after SIEGESMUND.

(l) It is not always possible and it may be dangerous for you to advance your thumb as far as the ankle you desire to seize. Pass the abducted tips of your index and middle fingers above the maleoli or over the instep and tendo-achilles. By adducting your two fingers and then flexing them you can draw the ankle down to within reach of your thumb.

(m) Where a foetal hand is found prolapsed or is brought down, place a noose of sterile tape or cloth on the wrist and it is now under your control and may be disregarded. A prolapsed limb must be rendered surgically clean before any operation is commenced or before you put a noose on it.

(n) Where the operation is difficult, as it usually will be, it does not matter which leg you bring down. The important thing is to reach any ankle or knee and to withdraw it without rupturing the uterus. So take hold of the ankle or knee which is first to hand.

If however you have a choice then (a) where the foetal abdomen is to the front take the upper leg; (b) where the foetal back is to the front take the lower leg; (c) where the foetal abdomen lies over the pelvis or the breech is at the fundus take the anterior leg; (d) where a hand is outside take the leg nearest to it, that is the one on the same side of the foetus.

(o) The two maleoli and the heel are absolutely distinctive of the heel. If you bring down a hand in mistake for an ankle no harm is done, in fact it is often advantageous to do so. Place a noose on the wrist and the arm is under your control and may be disregarded. Return to your search for an ankle or knee.

(p) Where it is not possible to get a noose round an ankle you may be able to grip the ankle in the jaws blades of a ring, vulsellum or other long slender forceps but such forceps are liable to damage the ankle, possibly severely.

(q) Occasionally with an arm prolapsed, the shoulder of that arm becomes caught against the brim of the pelvis, a myoma in the uterine wall or the internal "os"; or a localised constriction tends to cause a narrowing or ring between the foetal head and the point of the foetal shoulder. This prevents the shoulder from rising and makes it impossible to turn the foetal body by pulling on a leg. If you recognise this difficulty you can usually overcome it, if you are able to insinuate your finger tips between the shoulder and the wall of the uterus in order to draw the point of the shoulder medially, until it will clear the obstruction. A noose on the foetal ankle is especially valuable in this type of case since with one hand you can pull upon the tape ends while the finger tips of the other hand guide the point of the shoulder past the obstruction.

(r) The half breech forms a better dilator for the cervix, the external "os" and other soft parts of the mother than the two foetal thighs side by side. Only bring out an ankle unless you have difficulty in getting the head to rise to the fundus.

(s) It is important that you should continue traction upon an ankle until the knee appears at the vulva.

(t) After you have completed the version by bringing a foetal knee to the maternal vulva leave the rest of the delivery to nature with the possible exception of light weight traction from a noose on the ankle and a 2 to 4 lb. weight over the foot of the bed (where you have a pulley reduce the weight to 1 or 2 lbs.). Extraction performed by an unskilled operator is lethal for the child and dangerous for the mother.

[(u) By way of a warning against extraction and to stress its difficulties I quote IRVING and MILTON POTTER who emphasise that where version is to be followed by extraction :

(i) It should not be attempted until the lower uterine segment is thinned out; the external "os" completely dilated; and partial moulding of the head with flexion has taken place. But where there is danger of all the liquor amnii draining away, leaving the uterus firmly contracted around the foetus, there must be no delay in manually dilating the external "os" and proceeding with the operation.

(ii) The patient must be chloroformed to a surgical degree of anaesthesia in order that full relaxation may be obtained.

(iii) The patient must be supine on her back with her legs held extended either by two assistants or supported on two chairs with their backs facing each other but with an interval of two feet or so between them, at a distance of two feet from each other.

(iv) The operator must introduce his hand into the vagina, dorsal surface towards the hollow of the mother's sacrum, pass the tips of the fingers through the external "os", dilating it manually, if necessary, before rupturing the membranes.

(v) Once inside the uterus the operator should not withdraw his hand until one or both ankles have been seized. *But before searching for an ankle both arms of the infant must be folded across its chest under its chin.*

(vi) When the two ankles have been brought outside the vulva the operator must allow the child a few minutes, in which to recover from the shock, before proceeding to extract it.]

3. *The operation* :—Carry out the routine ritual of antiseptic preparations with the patient in the dorsal posture.

Where the infant's back is posterior raise the foot of the bed or the woman's buttocks 12 to 18 inches. See (vi) (2) (vii) above.

Place a sterile cloth on the patient's abdomen. See (vi), (1), above.

The bladder must be empty and the rectum should be empty. Lubricate from finger tips to elbow the forearm you intend to insert into the uterus.

With the fingers of the other hand separate the labia widely.

Holding the lubricate finger tips together in the form of a cone, introduce them in a downwards and backwards direction into the vagina aiming at the hollow of the sacrum.

(Where you find a foetal hand in the vagina or cervix draw it out and fix a noose round the wrist. Return the fingers into the vagina).

When any strong contractions and expulsive efforts caused by your fingers in the vagina have died down pass your finger tips through the external "os". Simultaneously your external hand must steady the fundus uteri through the sterile towel and abdominal wall.

When your finger tips are past the external "os," rupture the membranes, if still intact, and separate the finger tips in order to flatten the hand. See (2) (c) above.

A. TRANSVERSE OR SHOULDER PRESENTATION: As your finger tips penetrate into the uterine cavity, verify the diagnosis by identifying the foetal ribs and axilla which you first encounter and from them the direction of the head and neck.

Place your external hand (still protected by the sterile towel) on the breech of the foetus.

Return your internal finger tips to the lower shoulder and on the way inform yourself whether there is any constriction of the uterus between the head and this shoulder.

Where you find such a constriction endeavour to free the shoulder either by gently stroking the uterine wall to cause it to relax or by drawing the projecting point of the shoulder medially and thus enable it to clear the projecting constriction. Be very gentle and careful because should there be a constriction ring which cannot be relaxed your attempt at version must be abandoned.

With your internal finger tips displace the lower foetal shoulder out of the maternal pelvis in the direction of the foetal head and at the same time rotate it in the direction of the foetal back (stop if the uterine wall is felt commencing to tear) in order to produce a position where the foetal abdomen lies across the brim of the maternal pelvis. Simultaneously your external hand must exert counter pressure on the foetal breech in the opposite (appropriate) direction.

If possible pass your internal finger tips over the ventral surface of the child.

When you encounter an arm, flex it across the infant's chest and place the child's hand under its chin or where this is difficult draw the foetal hand out of uterus and through the vagina and place a noose on the wrist.

In such a case where an arm is not already prolapsed and you have a choice it is better to draw out the lower foetal hand.

It now remains for you to seize an ankle or a knee. When your finger tips encounter one then grip it and draw it out slowly and gently at the same time feeling for any separation of the uterine muscle fibres, which would of course demand immediate cessation of the version.

Simultaneously your outside hand must push the child's head medially first and then upwards towards the fundus uteri.

Where an arm is out it is usually best to pass the tips of your internal fingers away from the foetal head and shoulders along the child's lower flank until you reach its thigh. By following the thigh your finger tips will reach the knee. Your outside hand must help by pressing the knee towards your internal finger tips. You may now hook a finger over the popliteal surface of the knee and, on the alert for any commencing tear of the uterus, slowly and gently draw the knee into the pelvis of the mother while your external hand pushes the foetal head medially and then upwards towards the fundus of the uterus.

Or you may, if it appears easier, pass the tips of your internal fingers along the foetal leg until you can grasp the ankle between your index and middle fingers. On the alert for any commencing tear of the uterus, slowly and gently draw down the ankle while your external hand simultaneously pushes the child's head medially and upwards towards the fundus.

In the former case when you have drawn a knee into the pelvis it is an easy matter for you to work your finger tips along the leg to grip the ankle and draw it out.

Complete the version by traction on the ankle until the knee appears at the vulva and the head of the foetus is at the fundus of the uterus.

Where you have difficulty in getting the foetus to turn see (vi), (2), (xvii), above.

If you feel that the uterine wall will give or is giving way have resort to embryotomy or decapitation.

The leg that has been brought out almost invariably turns to the front during delivery. Where it fails to do so when the buttocks begin to appear aid rotation by taking hold of the thigh and during each contraction of the uterus very gently twist the thigh in such a way as to bring the back of the foetus to the front. After you have brought a foetal knee to the maternal vulva resist the temptation to pull upon the foetal leg unless there is undue delay in which case see Chap. XIX, (II), (7), below.

When the foetal head refuses to rise to the fundus of the uterus in spite of one leg having been drawn out you will have to draw out the other leg.

B. VERTEX PRESENTATION:—As your finger tips penetrate into the uterine cavity verify the presentation. Place your external hand (still protected by a sterile towel) on the breech of the foetus.

With the internal finger tips endeavour to displace the foetal head into the iliac fossa towards which the occiput is directed, in order to do this it may be necessary to grasp the head firmly between the tips of the fingers and thumb but beware of a constriction ring beyond the head. Advance your finger tips past the foetal face and notice whether there is any dangerous thinning of the uterine wall or a constriction ring.

If all is well draw down the breech with your external hand to meet the finger tips of your internal hand which you must advance across the ventral surface of the child in order to seize an ankle, where both ankles are easily within your reach, choose the ankle of the anterior leg.

Where you have any difficulty in reaching an ankle hook a finger into the popliteal aspect of the anterior knee.

Aided by pressure on the breech from your external hand, draw down the ankle or knee at the same time watching for any separation of the uterine muscle fibres. When you have drawn the knee down to the lower uterine segment, work your finger tips along the leg until you reach the ankle.

Transfer your external hand (still protected by the towel) to the foetal head and press it medially at first and then towards the fundus of the uterus as with your internal hand you draw the ankle through the vulva until the knee appears. The foetal head *must* be taken up to the fundus by your external hand.

Where you have difficulty in getting the child to turn after you have succeeded in bringing one ankle down to the cervix, pass your internal fingers back into the uterus and draw down the other ankle. Slip your middle finger between both foetal ankles and your other fingers around them and exert traction while your external hand first draws down the breech and then presses the head medially and towards the fundus.

Where you cannot hook a finger into the flexure of a foetal knee nor obtain a satisfactory grasp upon an ankle it is necessary for you either to

apply a noose round the ankle or to grip the ankle in the blades of a pair of long forceps.

It is much easier to apply the noose to an ankle with a Morales' sling carrier. Pass the two rings of Morales' carrier over your middle and ring (fourth) fingers, spread the loop of the noose over your thumb, index finger and little finger and load the free end of the tape over the bar of Morales' sling carrier between your middle and ring fingers and down the dorsum of your hand.

Advance the tips of your fingers around the foetal ankle in such a way that the toes and heel pass through the noose and then draw the noose tight by pulling on the free ends of the tape.

When no Morales' sling carrier is available, the running knot of the noose must be gripped in the blades of a ring forceps. You place the loop of the noose over the thumb, index finger and little finger and hold the blades of the ring forceps between your middle and ring fingers. The ring forceps being relatively heavy their handles must be supported by your other hand until the noose is round the foetal ankle. By opening the forceps and pulling on the free end of the tape you draw the noose tight around the ankle.

An assistant must now externally press the breech down towards the pelvis with one hand and the head medially and towards the fundus with the other hand while you pull on the tape, or if you have seized the ankle in the blades, on the handles of the forceps with one hand and with the finger tips of the other hand inside the uterus you push up the head and feel for any commencing rupture of the uterus.

Having drawn the knee or knees into view resist the temptation to pull upon the legs unless there is undue delay for which see Chap. XIX, (II), (7), below.

C. FACE AND BROW PRESENTATIONS.—As for vertex presentation, but since the child is in a condition of extension instead of flexion, you may have great difficulty in reaching a knee or ankle unless you first press on the foetal sternum with your internal finger tips, while simultaneously drawing over the breech with your external hand. If one or both of the foetal arms is/are handy fold it/them across the chest either before you attempt to flex the body or afterwards but if an arm or arms is/are behind the back in the nuchal position or even prolapsed leave it/them as it/they are unless folding it/them across the chest is easy.

Where the child is grossly hyperextended with its heels touching its occiput you may have to change your internal hand in order to displace the foetal face or brow into the iliac fossa towards which the chin points. Your object is to make the child turn a back somersault. Advance your finger tips past the occiput until you can reach an ankle while at the same time press (draw) down the projecting foetal hip or knee with your external hand.

Having secured an ankle draw it down and out while with the external hand you push the head medially and to the fundus.

Where there is difficulty in getting the child to turn apply the noose (as described under vertex presentation) to an ankle. Get an assistant to exert the correct external pressure on the child, pull on the free end of the tape with one hand while with the finger tips of the other hand introduced into the uterus you push up the face.

Beware of rupturing the uterus. Deep anaesthesia will almost certainly be required.

(To be continued).

Malaria and its Oriental Treatment

A STUDY BY

HIS HOLINESS SHREE SWAMY VAIDYANATHENDRA BHARATHI,
Mysore.

(Continued from page 89 of Jan. 1945 issue).

XI. Takma Bhesaja or treatment of malaria.—In the early periods the exotic treatment was borrowed from *Bhalik desha* itself, comprising of *bahlik twacha* which perhaps is identical with Peruvian bark or cinchona bark of modern medicine, which was reported to have been used in a number of modalities including *kinvaka* or alkaloids. But, from the deafness, abortifacient and other evil after effects evidenced, investigation was necessitated into indigenous methods and measures of treatment. Then, the emphasis in the maxim "*Yasmin deshehi yo jaatah, tat janyam tasya oushadham hitam*" was shifted from the habitat of the disease to the habitat of the patient and active research into indigenous drug therapy was instituted.

Again, following the single drug therapy of the Vedists, *koshtu mooli* was recommended as singularly effective on the fevers caused by the flagellated parasites, while a bulk of the profession still insisted on the Peruvian bark treatment. But, with the recurrence of Devasura Yudhas as wars between the continentals and the islanders, as now, supply of the *bahlik twacha* was cut away, necessitating countrywide compulsory adoption of indigenous recipes; and impetus was given for active further research for improved methods both for prevention and cure of malaria.

From the records of the Aswini Shastra of the Rig Veda a number of herbal recipes were prepared, but none of them did come up to the standard of the efficacy of Koshtu. Koshtu is the *Costus Indica Radix* and out of the seven varieties of the species only the yellow and heavy root called *pushkara mooli* was preferred for its maximum potency. The radix was later treated by a number of metals, arsenicals and antimonials and greatly activated so as to exert uniform results on all the types of protozoal fevers and plasmodial fevers alike.

It will be interesting to note that the primitives recognised the fundamental physiological values of metals, and their studies of iron, silver and gold, detailed in the *Tri-dhatuveeya Ishti in Yajur Veda, canda II* and again in the Atharva Veda, are marvellous. They are asked to be employed as fundamentals in all recuperative treatments—iron for its action on the liver and spleen and the process of blood formation; silver for its action on the lungs and the elasticity of the lung tissue and air tubes; and gold on the bone marrow and spinal fluid and on the structure of nerve fibres and their luminosity and transmitting capacity. It was also adduced that the three metals neutralise the three above described protozoal toxins in the three anatomical cavities and again they act on the three main physiological systems, (1) the gastro-intestinal and blood vascular system, (2) the respiratory system, and (3) the nervous system as covered by the three *dhatu*s the *kapa*, the *pitta* and the *vata* in the text corresponding to the three *dhatu*s the metals.

Turning into *Upa-dhatu*s or non metals, the Vedic studies describe the actions of sulphur, arsenic and antimony in combination with mercury, in potentiating the metals and their calxes for both primary and auxiliary treatments. Arsenicals were evaluated on their sulphide and oxide strength

and were used variously and in different combinations of radical strengths or "Chandasas", arranged into seven groups according as the radicals are simple or complex or compound complex.

During the course of further investigations, a new hypothesis was formed by ANGIRASA, that the frequency of the paroxysms on the one hand ranges proportionately with the sexual activity of the parasites and the frequency of their sporulation, while, on the other hand, that their refractivity to treatment increases with their sex inactivity and indifference. ANGIRASA proved and established that not only the remedy should be more frequently repeated corresponding to the frequency of the sporulation and the repetition of the paroxysms in consequence, but also the strength of the dose should be proportionately increased in correspondence to the refractivity of the parasites.

Following this dictum, it was observed that it is wise to fix up the adult dose in the daily cases to one *matra* or pill and to repeat it thrice a day i.e., morning, noon, and evening in all the types on the day of the paroxysm and the noon dose omitted during the intervals. In the daily fevers, however, it was asked to double the number of times in the double fevers on the day of the fever and also the next day and reduced to three times a day for the next two or three days. The dose in alternate day fevers will be two *matras*, three *matras* in certain and four *matras* in quartan fevers on the fever day and may be reduced after control was effected and in the interval.

Diet and dietetics in takma.—*Takma* being primarily a *pitta jwara* the dictum "*feed a fever and starve a cold*" was followed, and in practice, therefore, there was felt no need ordinarily to restrict the diet. It was, however, said that the liver function and digestion being deficient as a rule, mild acids were advised, like tamarind rasa, buttermilk etc., to be freely prescribed, and all the more freely when the temperature persists or biliousness set in. Other light and refreshing beverages were also permitted to prevent and control the vomiting, preferably by the sip method.

Spleen index.—Enlargement of the spleen is common in the long interval fevers like the tertian and the quartan, more than in the daily fevers, and indicates the chronicity of the disease and the refractivity of the parasites. Although antimony, arsenic, copper and iron do specifically prevent the involvement of the spleen and the liver, if the treatment is instituted from the beginning, in late and chronic cases, adjunctory treatment for breaking up the old colonies and the hardened cyst formations in those organs should be instituted on the post pyrexial side and after the measures indicated for *galma chikitsa* or tumour treatment.

XII. Takma swasthi or preventive measures.—Prevention of malaria and its expansion was rendered so easy and effective by the Orientals that at one time it was practised on a countrywide scale, and the whole of the plains was cleared of the pest so completely that the disease was at that time driven away and got limited to the hills and agencies and came later to be called *vanya jwara* significantly.

Takma swasthi may roughly be considered under three main heads, namely (1) *Aatma Raksha*, (2) *Griha-Vasa Raksha* and (3) *Grama Raksha*, i.e., personal prophylaxis, domestic prophylaxis and town and village prophylaxis.

From the very early times, the Orientals conceived the advantage of prevention of any disease, especially seasonal and epidemic diseases, and

devised effective measures first to increase the individual resistance to disease by augmenting and activating the "*Pramadha Ganas*" appropriately and keeping the balance of "*Aapaana-lolbana*" or the Hydro-oxi-ion balance. In the case of *vritra* infections or malarial infections, it was adduced that in the spring-summer, *analanila analolbana* being in the rise, indicating the oxygen ion concentration potentiality in the ascendent, half of the humanity will be susceptible to the *greeshmaka takma* or spring-summer malaria, while the other half of them will be susceptible to the *vishwa sharada takma* or the æstivo-autumnal malaria in the winter-autumn months due in their turn to the hydrogen ion concentration potentiality being in the ascendent or what the Orientals call *Analanila aapolbana*. Appropriately therefore, "*Ashoka kalika praashana*" or the administration of a few buds of *Sharaka Indica* for one or two weeks was advised in the early spring to keep down the oxygen ion concentration and again the administration of one or two draughts of "*Astanchana*" or sour and thin butter milk, "*Prapa*" or water acidulated with *badari*, *nimboo*, *matulunga*, etc., and sweetened, if liked, during the summer, in order to raise the hydrogen ion concentration for balancing the oxi-hydro ions and at the same time to augment and activate the "*Vartraghna Parmadhas*" or antipaludic blood buffers in the blood.

On the other hand, in the winter-autumn months of *Sharad rithu Aapolbana* or hydrogen ion concentration being high, the oxygen ion concentration was asked to be raised for balancing the metabolism by the appropriate administration of "*Madhwadbhya*" or mixture of honey and water was prescribed once in the morning on the empty stomach and additionally an occasional dose of "*Arghya*" for gastric lavage especially after return from the infected area or on suspicion. *Arghya* is a very common commodity employed in religious medical practice in the country to evacuate and wash the stomach and it consists of a mixture of eight ingredients usually and an extra ingredient *Kutaja Beeja* or *Kutaja pushpa*, i.e., *Anthylmintics Indica* or *Kurchi* seed as recommended by the hoary *Kalidasa*, as an additional precaution in the early rains against dysentery and other surface water-borne diseases. The eight ingredients are (1) *Aqua* or water; (2) *pīas* or milk; (3) *kushagra* or couch grass tendrils; (4) *dadhi* or curd; (5) *sarpi* or ghee; (6) *tandula* or *vayavidange* or *Embilia Ribes*; (7) *yava* or Indian barley; and (8) *sidhartha* or red mustard seed. They are all mixed in and given in one to four ounce dose and after the lavage, an ounce of "*Madhu-parka prashana*" comprising of "*dadhi-madhudaka*" or curd-honey-water according to one school and "*payo-madhugrita*" or milk-honey-water according to a second school and "*payo-madhugrita*" or milk-honey-ghee according to a third school as a sedative recuperator. The same procedure should be repeated for some days continuously in every case of known disease carriers.

In some parts of the country, especially *Kishkindha* and other Central Indian States, a number of *rashalas* or sharbaths and *sikhirinis* beverages are prescribed during the spring-summer—a list of which was standardised by *SUSHENA*, the famous Ape physician of *VALI-SUGREEVA* Court of the *Ramayana* Age.

Next, in the routine preventive measures, the daily administration of a few spoons of "*Tulasi teertha*" or water into which the resins of the Holy Basil are dissolved by electrolysis during *abisheka* over the *Aalagrama* or *Spatika* linga in the course the daily *Devatarchana*. In well

known susceptibilities, a Sun bath or *Soorya namaskara* also is prescribed with a *pradakshina* or go round the Holy Basil, exposing the whole body for half an hour to the naked Sun and absorbing the natural thermal ray called *Sooryamsha* every day between 9 and 12 in the morning. This is made compulsory once a week on Sundays for every individual, whether susceptible or not.

Similarly, "*Apamarga dhooma pana*" and "*Apamarga dhooma snana*" and likewise "*Apamarga parna bhakshana*," or fumigation with the leaves *Achhyanthus aspera* or their internal administration as *modaka* or other form was well advised in the winter and autumn months.

Although it is true that *vraties*, i.e., who are clearly pious and regular in their habits and religious exercises of *praanayam*, etc., procedures will successfully resist every infection in the seasons, these special procedures should be adopted as an additional precaution.

Under *griha-vasa raksha*, in addition to the usual vrathic sanitary and hygienic routine, "*Rangavalli*" or decoration of the fronts and flanks of dwelling houses with Calcium Chloride and Calcium Carbonate powder, certain *vartraghna measures* were prescribed for the prevention of malaria, among which, the first is the admixture of *apamarga* ashes to the *rangavalli* calciums. The next is "*Dik Prokshana*" with *Apamarga* and *Gudochi* lotions. *Apamarga* and *Gudochi* are asked to be burnt when they are fresh so that the fumes disinfect the air, and the resultant ashes may be mixed up in water and sprayed over the walls and floor and ceilings for killing mosquitoes, just as the modern pyrocidal lotions are sprayed and just for the same purpose. In some places, branches of *Snuhi* and in others, aloes are hung up low under the ceilings and verandahs and air ways to keep the mosquitoes away. Some *Shruties* of the *Aagama School* also prescribe that the *Apamarga* and *Gudochi* ashes should be hung in small pots and wetted daily with turmeric water to destroy the mosquito pests which perch in the corners during the day.

Grama raksha covers a wide range of disinfection. It includes in the first instance, *Gartha Vidhi* and *Gartha Sudhi*, i.e., clearance of dung and dirt heaps from the water sides and cleaning their approaches sufficiently before the monsoon. Next, the destruction of the bats and the owls in the abandoned temples and other places periodically, by fumigation and spraying. Again during the æstive autumnal *rithu sandhi*, in the first half of the *Sharad rithu*, are prescribed country wide fumigation with sulphur and salt-peter in the name of *Deepavali*, and again in the second half sky-lighting the temples and mutts to prevent the bats and owls returning to them. It will be interesting to learn that even water tanks and rivers are asked to be lighted by floating lights with *Gulgul*, a well known pyrocide fume, evidently to destroy the sporulation and multiplication of mosquitoes. The *jwala thorana* in the Shiva temples on *Kartika* full moon with *guddochi* creepers hung in arches across the street to which *Apamarga* fresh plants are tied with some dry straw and set on fire for high and floating fumigation of the whole atmosphere, is self significant. In the same way, the road spraying on *Gokula Ashtami* and the spraying of the *Goshalas* and cattle sheds with the above native pyrocidal lotions, and the red oxide of lead and arsenic yellow sulphide mixtures during the *Holi* feast are evidences of country wide anti-plasmodial and anti-plaudal and anti-protozoal indigenous oriental measures, prescribed by *Parashara*.

Bhavani yatra or health propaganda was also periodically prescribed

for one or two weeks in *Vasanta* or *Chitra Masa*, as *Bhavani yatra* and again as *Shravani yatra* in the *Shravana Masa* evidently to disseminate the whole of the Vartraghna measures in every village, the details of which will be found in Homadry and other mannuals. The vedic dictum was *Yasya Vyadheh Janma vedino Tasya Vyadheh alabhah phalam*. It means that the full knowledge of how any disease arises and spreads should be fully disseminated to every man, woman and child, in order to achieve perfect freedom from that disease. *Bhavani yatra* and *Shravana yatra* were therefore made compulsory for the Professors of Hygiene and Health and their institutions were also provided with regular itenerating staff, which was seasonally enlarged by extra hands and volunteers from the senior students and old boys.

The Oriental Almanac will also give us the *apoltelismatical variations* peculiar to each year and approximately when any particular epidemic or endemic disease will show up their heads and also prescribes appropriate local and general measures for their prevention.

Much of this useful information and knowledge was lost to the modern Indians by reason that the whole of it was included in the religious scriptures and the modern mind is not inclined to look at or examine its nature and utility. On the other hand, some people will fully discountenance the primitive Oriental culture, especially on the subject of health and medicine; but we are sure that all of them will certainly refuse to discount at least a large part of it if only they are shown the scientific import.

Comparative research in this line is badly wanting, and it is high time to eschew bigotedness for any one system of medicine and the Orientals should learn to accomodate Oriental science at least as a stop gap in the numerous expedienices created by the present world war.

With the progress of events and the need for investigation into indigenous drugs and methods, pertinently growing with the dearth of allopathic drugs acumin and instrumentation, it is hoped that there will be country wide impetus for dispassionate and intensive study of Oriental Manuals on the subject of health and medicine, and for adopting the useful fossils for the benefit of the world and its professions.

The full purpose of this small bit of research and investigation will be served and realised, if the departments of health and medicine co-operate in the scheme of evaluating the material herein furnished and propagate it for public benefit with all the necessary improvements.

Appendix

Other classic anti-malarial remedies.—Most of the following simple remedies will be found in common use in the countryside in South India, and deserve scientific investigation and therapeutic evaluation. So far we had the opportunity to try some of them with amazing success and leave the pathologic tests to the departments.

1. *Apamarga modaka*:—Red apamarga leaves, locally called *Kompu uttareni soppu* (*Achylonthus aspera*) black pepper and garlic in equal quantities, well ground and made into pills and administered in dram doses, roughly the size of a *nellikai*, just before the expected paroxysm will effectively prevent its onset and may be given morning and evening for some days for cure.

2. *Barbara modaka*.—Bark of the fresh roots of *pooti-barbara* (*Ocimum Pilosum*) well ground with equal quantities of the fresh leaves of *Krishna tulasi* the black holy bassil and black pepper, given in one dram dosage will act similarly.

3. *Phalodaka paana*:—Four to eight ounces of tender cocoanut water to which a dram of old Calcium Carbonate is added preferably what is obtained by scraping an old wall given as above will also stop the paroxysms.

4. *Tinduka modaka*:—Fresh leaves and flowers of *Tinduka* or *Shiva tumbi* ground and massed with black pepper and black bassil leaves and given in dram doses thrice a day for two or three days will cure malarial fevers. *Tumbi* is the vernacular name of *Plomis Indica*.

5. *Karambha taila*:—Five to eight drops of the fresh extract of *Karambha* leaves (*Odina Wodier*) in $\frac{1}{4}$ to $\frac{1}{2}$ ounce of gingelly oil every morning for seven days will cure malaria. *Karambha* belongs to *Pooteeka* and *Snuhi* species and is a caustic by nature and should be administered in oil base.

6. *Amritavalli ghrita*:—One or two tea spoonfuls of the fresh extract of the tender leaves of *Amritavalli* (*Tinsofora Cardifolia*) with three times of the quantity of cow ghee every morning on the empty stomach and exposure of the whole body to *Sooryaatapa* or sun-bath for 20 minutes between 9 and 11 a.m. for one week.

7. *Poushkari quatha*:—Half to one ounce three times a day for one week of the decoction obtained by powdering, macerating, and boiling ten tolas in one seer of water and straining to quarter seer of *quath* of a mixture of equal quantities of *pushkara moola*, (*Costus Indica*), *Bharangi* (*Clerodendrum serratum*), *Haroothaki* (*myrobalam*) *Katuka Rohini* (*Vigrum Holloborus*), *Mangishta* (*Rubia Mangishta*), *Parpata* also called *Parpaataka* (*Oldenlandra Biflorum*), *Mustta* (*Cyporus rotenda*), *Pippali* (*Poper Longum*), *Sunthi* (*Ginger*) and *Dasha-moola* or the mixed ten roots. This quatha should be continued for one week after the temperature passes away.

8. *Sindura modaka for malarial spleen*:—Soak a few pepper seeds (one dram weight) overnight in cow's butter-milk, and in the next morning grind them into paste and add to the mass three to five grains of *Rasa Sindoor* or Mercuric Mono-Sulphide and give as one dose in the morning on the empty stomach for two weeks to reduce the malarial spleen. For quicker results, give one to two grains of *Navasara* or Ammonium Chloride well powdered and mixed with one dram of honey and dissolved in one ounce of water after the midday meal for two weeks, to stimulate the liver and hasten resolution.

9. Another primitive Vedic remedy for speedy and safe resolution of malarial spleen and bilateral enlargement of the abdomen in severe and chronic cases is standardised and is made available for public use, in the name of *Sirosplin*.

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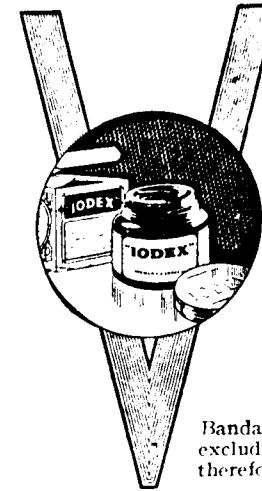
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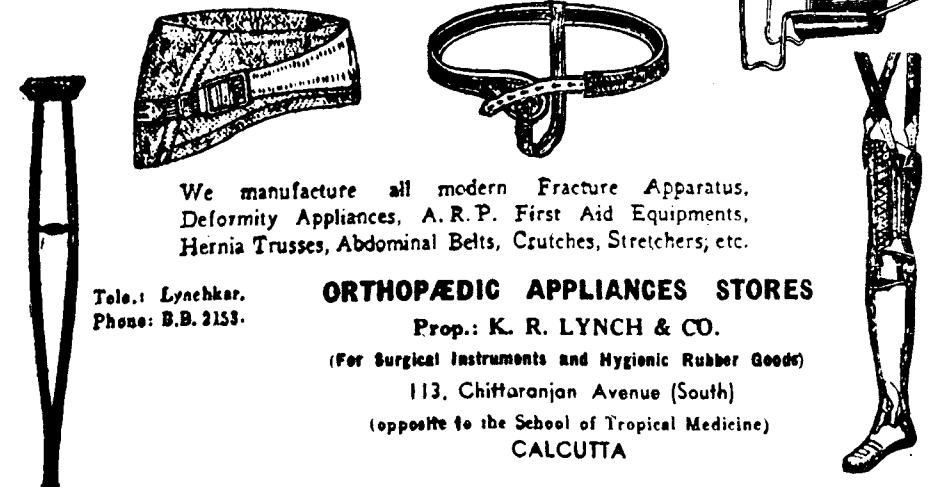
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Surgical Aspect of Diabetes*

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In diabetic patients operative interference is called for surgical maladies. In a majority some preparation time is available while in a few cases it is forced as an emergency. It is realised that these class of patients have to be prepared differently from the routine for the surgical ordeal.

In diabetics there is deficiency of insulin and as such they are not able to store glucose as glycogen in the liver and the tissues. There is also difficulty for the tissues to utilize the same glucose even though there may be hyperglacæmia in the blood and the excess may be leaked out by the kidneys.

The minor grade of diabetics may be made sugar-free in the urine by adequately controlling their diet. In the pre-insulin days and the early twenties the carbohydrate diet was restricted and substantiated by a large quantity of fats and proteins. The pendulum has swung to the opposite side and quite correctly. We do not now restrict the carbohydrates—an average adult being given about 115 grams, thereby avoiding post-operative ketosis. On the contrary, the bulk of fat may be curtailed as weight for weight fats have a higher caloric value.

Those who cannot be controlled by a modified diet and those who are passing sugar as well as acetone in urine require Insulin in the pre-operative period. The quantity of Insulin will depend on the blood sugar and leakage in the urine. An average case can start with 10 units of Insulin covered by 10 or 20 grams of Glucose by mouth, or in 6% solution intravenously. It will be a good rule to give Insulin before breakfast or dinner after examining the urine with Benedict's solution. In cases waiting for operation, blood sugar can be balanced better with Protamine Insulin. This reduces the number of injections as well as the fear of sudden hypoglycæmia with ordinary Insulin. I know of a doctor requiring 40 units of Protamine Insulin per day to keep him sugar-free in the urine. He had multiple carbuncles on his back.

Heavy pre-operative purgation with large doses of Magsulph, should be totally discarded. Dehydrated diabetics are dangerous cases to operate on. Simple enemata or Castor oil 1 oz. should be sufficient in an adult. Pre-operative determination of blood sugar and CO₂ combining power of the blood would give a guidance in the management of these cases. If the pH of the blood is towards the acid side adequate measures should be taken against potential ketosis. Pre-operative starvation is equally bad. After the reserves of carbohydrates are depleted, the fats are inadequately metabolised and the danger of ketosis becomes real.

In an emergency no such interval may be available to prepare the patient. In such a case the % of sugar in the urine may be a rough guide. The units of soluble Insulin injection may be covered by Glucose by mouth or intravenously as 1 unit of Insulin to 1:1.5:2: grams of Glucose. This may be repeated after the operation 4 hourly till the urine is sugar free. Then the dose of Insulin may be reduced or stopped.

After adequate pre-operative preparation the anæsthetic agent has to be selected. Chloroform and ether are not suitable for these types. They

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may precipitate diabetic coma. Under chloroform anaesthesia the patient may suddenly collapse after the preliminary skin incision. In the absence of Nitrous Oxide—if general anaesthesia is to be given—Ethyl Chloride spray for short duration is ideal. It brings the patient under very soon as well as the effects pass off with equal rapidity. I have found intravenous Hexon Barbitone Soluble to be a good agent when small carbuncles are to be incised. For lower limb and lower abdominal operations spinal anaesthesia should be preferred. Stovaine 2 c.c. with a sp. gr. of 1025 is without any ill effect. The fall of blood pressure is not marked. For fistulae and whitlows 1% Procaine infiltration suits the purpose.

Carbuncle:—In Ludhiana, carbuncles have a seasonal occurrence. The large majority of sedentary *Lalas* are irregular about their dietary and fall a prey to this complication in August or September in the early monsoon. The rains and the finish of the mango season both contribute to infection and glycosuria. Over and above, in the early period they are handled by "Jaras" with the result that before they turn up for scientific treatment the dimensions of the carbuncle are more than 5" x 5". They have been found on the back of the neck, back and on the forearm. The urinary sugar may be as high as 7%. A few small sized carbuncles have escaped with conservative treatment but the majority have to undergo operative treatment. Excision of the carbuncle has been a favourite treatment with some surgeons but in our hospital we stop short at crucial incision and dissecting out the flaps. If the skin edges in the flaps are gangrenous they are excised.

In the post-operative period milk, "gram-bread," wheat bread, vegetables are given associated with adequate soluble Insulin injection.

So long as there are sloughs B.I.P.P. dressing has been found to be excellent in their removal and producing a nice granulating wound. Later on if the bacterial flora is persistently high, Glycerine Magsulph paste is applied. Once the wound is clean Boric ointment dressing is continued. A few may require skin grafting, Cibazol 3 grams per 24 hours in the early period followed by 1½ grams in 24 hours in the later period helps to overcome the infection.

In a few, inspite of all adequate care and sugar control, there is a tendency to form multiple carbuncles. Each one of them has to undergo treatment outlined above.

Diabetic foot:—Unfortunately in this class of cases the mortality is high. In diabetics, due to secondary disturbance of fat metabolism there is lipaemia of the blood and the blood vessels undergo changes similar to arterio-sclerosis. These changes occur at an earlier age in diabetics than in senile gangrene. Over and above, the tissues are saturated with Glucose which forms a good culture medium for the bacteria. As the blood supply and resistance of the tissues are below par, the tissues are easily victimised by the bacteria, and as inflammation cannot end successfully in favour of tissues, gangrene sets in. The gangrene remains moist and produces severe toxæmia. Even the limitation of the gangrene is not adequate. From the starting point in the great toe or webs it remains for a long time as a blister, then an ulcer and spreads up the limb by sloughing of the tendons underneath the intact skin. At times there is an abortive attempt to form a demarcation line but that also fails. It is difficult to keep the gangrenous area dry. I had a case of a medical student's mother where

gangrene was in patches all over the lower limb like multiple carbuncles cropping up simultaneously.

We have noticed that the gangrene foot patients behave peculiarly when attempts are made to control the high blood sugar. They are passing sugar and acetone in the urine. After starting with small doses of Insulin the patient starts getting drowsy. Even if the dose of Insulin is covered by Glucose the behaviour of the patient remains the same. The day he becomes sugar-free in the urine he becomes semi-conscious. This has led us to believe that these patients remain better if they are kept leaking sugar in the urine rather than controlled by Insulin.

As far as the local treatment goes, I was at one time keen about high amputation. The limb was amputated in the lower third of the thigh. Now it is found that conservative surgery gives better results. The great toe is amputated at the metacarpo phalangeal joint if the gangrene is localised. The incision is racquet-shaped with the handle of the racquet in the sole of the foot. This incision may be prolonged and the sloughing tendons can be excised from the sole of the foot. In spreading gangrene the amputation is done at the site of election in the leg. The high thigh amputation is rarely needed. The ultimate outlook remains gloomy in diabetic foot. A good many patients succumb before or after amputation from severe ketosis and coma.

Notes on Diseases in Famine Areas*

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78, Field Ambulance.

TREATMENT in famine area is slightly different, in that due to starvation, under nutrition and other irregularities in food, the resistance of the individual is so lowered that toxic systems of any drug manifest themselves early and unexpectedly; hence dosage has to be adjusted according to the condition of the individual. In starvation cases all suspicious diseases are treated with small doses from the beginning. Effective and early nourishment with the addition of minerals and vitamins are more necessary for any disease in the famine areas than medicines. Judicious and watchful dieting is another important factor in the treatment of cases in the famine areas; for this, patience and continuous and careful observation on the part of the physician and his assistants are absolutely necessary because starvation affects mentally and morally more than physically.

Here it is proposed to give brief notes of the main disease:—

- I. Malaria. II. Skin Infection—Scabies. III. Dysentery.
- IV. Two main epidemic diseases (1) Smallpox; (2) Cholera.

I. **Malaria.**—Acute febrile malaria was not a common feature and always the febrile character is latent in starvation cases. The malarial pyrexia flares up as the patient gets nourishment and generally it manifests between the 6th and 10th day of admission. A clinical cure can be had by 10 to 12 grs. of Quinine a day for 7 days. Usual doses of Quinine give a terrible depression and fainting fitness, deafness and loss of appetite. Occasionally you get cerebral symptoms as the first sign of infection for which 5 grs. of Quinine I.V. with the usual precaution for 2 days is sufficient

to tide over the dangerous period. Since latent malaria imitates almost all kinds of diseases it was my practice to give 5 to 10 grs. of Quinine a day to every patient, unless contra-indicated, i.e., suffering from dysentery, diarrhoea or extreme type of starvation with general anasarca. This practice has definitely reduced hospitalisation.

There was no case of black water fever in my series.

Although acute febrile malaria was not a common feature, malaria cachexia superimposed on emaciated starvation case was frequent and for these iron in small doses (Hæmosan 1 tab. t.d.s.) for at least 2 months are necessary to remove their emaciated and cachectic look. Even these small doses of iron sometimes produce intestinal colic and diarrhoea, when iron should be stopped and, after a few days of careful nourishment only, iron could be resumed. The havoc malaria caused in the past and will cause in the near future can be judged from the observation that out of a village of 700 inhabitants, there are about 95 children under 12 yrs. and out of that 88 were seen in O.P.D. with huge and hard spleen of more than 4 fingers below costal margin. (Kala-azar was also endemic in these parts.)

The following are two illustrations:—

CASE I:—M. A., aged 32, male Mohamadan (an agriculturist and fisherman) was admitted at 10 a.m. on 29-1-'44 with a complaint of feeling cold of 2 weeks' duration; he was fairly built, fairly nourished individual, with a restless and emaciated and anæmic (conjunctiva and nail very pale) look. His temperature was 98°F., pulse 92, volume fair, no œdema in any part of the body. His appetite was good and his bowels normal. Heart and lungs N.A.D. Liver and spleen not palpable. He was put on milk diet with vitamins and mixture Soda Salicylas one oz. t.d.s.

On 29th January at 6 p.m. he was laughing loudly and muttering something. He told me that he brought plenty of money with him and now it was all missing. At the same time he was very restless, gazing here and there, with a very suspicious look. His temperature was normal in the evening.

On 30-1-'44 at 8 a.m. I saw him tear his own pillow (which he brought to the hospital), scattering all the cotton around and searching for something. He was very restless with a suspicious look. When asked what he was doing, he replied that the money he had brought was taken by the nurse and hidden inside the pillow. After about 10 minutes he began to wander here and there in a very restless and suspicious manner, sometimes asking me to give his money back. He had to be tied in the bed and on examination of his nervous system, nothing abnormal was detected. His pulse was 102°F., Tem. 98, Respiration 26 p.m. He was put on gruel diets (convalescent diets) and mixture Bromide $\frac{3}{4}$ i t.d.s. (30 grs. to an ounce). He was given $\frac{1}{4}$ gr. Morphia st. At 6 p.m. he was quiet a bit but was curled up in bed and told me that he was feeling cold. The temperature at 4 p.m. was 98.4°F. and at 6 p.m. 98.4°F., Pulse 106 p.m.; Resp. 22 p.m. At once 1 pt. of Glucose Saline with 7½ grs. of Quinine was given I.V. and he was put on mixture Quinine $\frac{3}{4}$ i t.d.s. (5 grs. to an oz.)

On 31-1-'44 he was quiet but his physical manifestation was still present, sometimes laughing and sometimes in a very serious way asking me to give the money from the pillow; he was given 5 grs. of Quinine I.V. with Glucose of Saline. Afterwards he made an uneventful recovery with Quinine mixture alone and was discharged on 17-2-'44 (his anæmia being treated with Hæmosan tablets and liver injections).

The above case shows an afebrile malaria with psychic manifestations.

CASE II:—B. K., aged 48, Hindu labourer, was admitted on 2-2-'44

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Sulphaguanidine 10 grams I.V. and 3 grams every 3 hours for a normal male weighing 140 lbs.; Glucose Hypertonic Saline (5% Glucose 120 grs. Sodium Chloride and 4 grs. Calcium Chloride) 2 pts. I.V., 1st pint to be given as rapidly as possible, as given irrespective of his dehydration; another 1 pint after 12 hours and rarely another pint was given after 12 hours (if necessary). Generally 3 pints of Glucose Saline in the 1st 12 hours is quite sufficient to tide over to safety. For patients who sought treatment after 12 hours, since dehydration is marked with acidosis, 90 grs. Soda Bicarb in 5% Glucose Normal Saline in a pint was given as rapidly as possible, followed by Glucose Hypertonic Saline 1 pint as before; after 6 hours another pint of Glucose Hypertonic was given slowly and after 12 hours another one pint was given. Generally 5 pints of intravenous infusion with Sulphaguanidine as stated above was found to be sufficient to turn the picture in a large number of even hopeless cases. But Sulphaguanidine cannot replace Saline infusions since dehydration with biochemical alterations of the blood is faster than action of Sulphaguanidine is in the intestinal flora.

Cases treated with Sulphaguanidine and Saline who came in	No.	No. of deaths.
within 12 hours ...	11	Nil.
after 12 hours ...	8	1
Cases treated "with essential" oil mixture and Saline who came within 12 hours ...	3	1

Two patients admitted in a moribund state died within 2 hours of admission; they had only Sulphaguanidine first dose; Saline infusion could not be given due to sudden rush of patients with limited (only two) infusion sets. There were no complications of cholera in my series. Recovery as usual was rapid; the diet during the acute phase (generally 4 days) was Glucose water with a few grains of Soda Bicarb and tender coconut water and afterwards convalescent diets for the rest of their stay.

I thank all who worked with me in Bengal famine for their help and co-operation.

Jaundice in the Newborn*

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JAUNDICE in the neonatal period presents some special types which are peculiar to this age period. It is a well-known fact that the new-born is in a potential state of increased bile pigments in the blood, but in only 25-30% of cases a variable degree of visible jaundice is seen.

If one is confronted with such a case the following six common conditions should always be considered:

- I. Icterus neonatorum simple.
- II. Icterus gravis neonatorum.
- III. Acholuric jaundice.
- IV. Congenital atresia of bile duct.
- V. Sepsis neonatorum.
- VI. Congenital syphilis.

The first three are hemolytic and the others are obstructive types of jaundice. Rarely catarrhal jaundice and Winkel's disease occur.

I. **Icterus neonatorum.**—This is the most common cause of jaundice in the new-born and is a physiological phenomenon.

ETIOLOGY:—Leaving aside the old ingenuous theories about the occurrence of this condition the accepted view at present is that it is a true hemolytic jaundice. The prenatal polycythemia which is due to inefficiency

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of the placenta as a respiratory organ, is not needed after birth. After oxygenation of blood through lungs, hemolysis of red cells occurs, which brings the number down to five million per c.mm. and the liberated hemoglobin is converted into bilirubin, whose quality is more than the liver can successfully eliminate. Every infant shows high blood bilirubin than older infants and children even in the cord blood, but clinical jaundice only appears if bilirubin goes above 2 mg. per 100 c.c.

There are three points which support this theory:

(a) Van Den Bergh reaction is indirect positive, figures even up to 20 units are sometimes obtained.

(b) Experimentally by keeping Guinea pigs at half atmospheric pressure the hemoglobin and R.B.C. increase to 30% above normal, and when removed to normal pressure there is a fall in R.B.C. and a rise in colour index (GOLDBLOOM and GOTTLIAB).

(c) Increased fragility of R.B.C. has been noticed at birth returning to normal at the end of a week.

But one unexplained fact which antagonises these views is that nobody has been able to correlate the amount of polycythemia at birth with the amount of circulating bilirubin, viz., the infants with greatest degree of polycythemia do not show the greatest amount of circulating bilirubin. SNELLING thinks that the cells of the liver which were previously engaged in hemopoietic activity cannot at birth immediately assume the role of removing bilirubin from the blood. This is supported by the fact that premature infants show visible jaundice more frequently and for a large period and also certain liver tests on the new-born show a decreased liver function (SANFORD). [The increased tendency towards the development of jaundice of these prematures is probably due to thin skin and the increased capillary permeability (ARSELMINO).

SYMPTOMS:—The jaundice is visible on the second or third day and rarely later than fourth day. It lasts usually two to three days, occasionally one week and if it persists for several weeks, as in prematures, is known as icterus neonatorum prolongatus. The order of appearance is trunk, face, sclerae, and extremities and fades in a reverse order. Usually three degrees are met with: (1) Bile salts are increased in blood but no clinical jaundice; (2) slight icterus due to the pressure of bile in the capillaries; and (3) true icterus with the staining of tissues.

In severe cases buccal mucous membrane, conjunctivae and secretions of body are stained. Faeces are of normal colour and no bile in the urine. Delayed coagulation time due to icterus alone is sometimes found. Blood picture is normal with few nucleated red cells. Slight irritation of the skin or muscular twitchings and somnolence are observed. In severe cases vomiting and loss of weight may occur. Prognosis is always good.

TREATMENT:—No treatment of any kind is required.

II. **Icterus gravis neonatorum.**—This is divided into two groups: (1) With erythroblastosis; and (2) nuclear icterus.

Icterus gravis with erythroblastosis:—This is a familial condition. Parturition is generally normal but if vernix caseosa is of golden yellow colour its development can be anticipated. A history is usually obtained that successive infants are affected and die within the first few weeks of life. The first and the second born are more likely to escape than the later ones.

SYMPTOMS:—The onset is more rapid than icterus neonatorum simple. Jaundice is noticeable on the first day only or the infant may be born

for the swelling of feet and ankles and weakness of one month's duration. He was a well-built, fairly nourished individual with œdema of both the feet and ankles. His appetite was fairly good, his bowels regular. Physical examination reveals nothing abnormal except a one finger hard palpable spleen. His temperature was 97.8°F. , pulse 68 and of low tension, resp. 24 p.m., and his urine did not contain any albumin.

He was put on milk diet with vitamins and mixture Carminative 1 oz. t.d.s. on the first day and from the 2nd day onwards he was put on ordinary gruel diet (convalescent diet) with vitamins and mixture Carminative 1 oz. t.d.s.; he was rapidly improving with this, the œdema diminished and his appetite returning to normal and he was feeling and looking better. On the 7th morning, i.e., on 10-2-'44, he was found to be unconscious and restless, his temp. being 105.6°F. , pulse 106, volume poor, and resp. 28 p.m. On examination and lumbar puncture nothing abnormal could be detected. He was given $7\frac{1}{2}$ grs. of Quinine I.V. and 50 c.c. of 50% Glucose I.V. at 4 p.m. Glucose I.V. was repeated and he swallowed $\frac{1}{2}$ oz. of Quinine but his temp. still remained the same. On the 11th morning at 9 a.m. his temp. was 104°F. , pulse 118, poor volume, resp. 30 and shallow. He was again given $7\frac{1}{2}$ grs. Quinine and Glucose 50 c.c. 50% I.V. At 11-30 A.M. he died. The above case illustrates how a latent malaria flares up as the cerebral form. Laboratory investigations could not be carried out but clinical and therapeutic tests amply prove that there were latent forms of malaria.

II. Scabies.—This is a major problem in famine area; in 2 unions there were 28,000 inhabitants in 18 villages and I was not able to see more than 2 dozen people unaffected with scabies (due to inoculation and vaccination campaign it was possible to see almost all of those inhabitants during my stay of 20 days). It was very common for the whole family to be affected with scabies and hundreds are practically laid up. This has a further detrimental effect on the whole economy of the people; often there was secondary infection superimposed on scabies and it was very difficult to find a space for inoculation and vaccination. What determined this high incidence is not exactly understood. Perhaps a concatenation of all factors such as climate, water (high mineral contents), under nutrition, past malarial epidemics and local habits may all play a part. Simple Sulphur ointment B.P. with 5% Boric acid gave extremely satisfactory result and this made our inoculation and vaccination campaign easy (village people always view inoculation and vaccination with suspicion).

III. Dysentery.—Of the intestinal diseases dysentery comes first and is another major problem in famine areas; in Bengal there was more of the chronic amœbic type for which Emetine alone was not of much value; for the bacillary type Sulphaguanidine 80 grams (20 grams to be given in the first 24 hours) gives a clinical cure in the majority of cases. Very rarely you do come across allergy for Sulphaguanidine when the 20 grams Sulphapyridine in 5 days can be replaced and is equally effective.

The following case shows allergy to Sulphaguanidine:—

CASE III:—N., aged 16, male Mohamadan, emaciated, anæmic (conjunctiva very pale) was admitted on 15-12-'43 for passing loose motions (20 to 30 times a day) with blood and mucous of 2 days' duration; previous history and family history are not of much significance except that in the former there was occasional attack of fever; physical examination reveals the following:—

Circulatory system:—Heart apex beat 4th intercostal space and $\frac{1}{2}$ "

internal to the left nipple, other borders normal; no thrill, on auscultation a hæmic murmur was heard; pulse 108 and volume very poor.

Respiratory system:—Lungs N. A. D., resp. 28 p.m. and shallow.

Digestive system:—Teeth clean, tongue coated, liver 2 fingers enlarged, not tender, spleen 4 fingers below costal margin, not tender. Tenderness present in lower abdomen especially on the left side. His temp. was 101.2°F. . The patient was a very thinly built, emaciated boy with a dry and pigmented skin.

His motion contained only bright blood with mucous and was alkaline in reaction and he had extreme tenesmes. Bacteriological and microscopical examination of his stools could not be done (his serum gave a positive Napier test). He was put on 6 grams (12 tablets) of Sulphaguanidine statum and 4 tabs. every 4 hours and was given 1 pint of Glucose Saline I.V. He got his first dose of Sulphaguanidine at 10 A.M. on 15-12-'43; after 15 minutes of the 2nd dose, i.e., at 2 P.M. on 15-12-'43, he had typical epileptic convulsions with loss of conjunctival and other reflexes and he came to consciousness after an hour (this was thought to be due to the virulence of the dysenteric infection); after 10 minutes of each of the 3rd, 4th, 5th and 6th doses, he had the same kinds of attack which was gradually increasing in intensity and the patient was very much depressed and upset even though the number of motions since 6 p.m. on 15-12-'43 was very much reduced and his tenderness and pain in the abdomen greatly diminished. From 10 A.M. on 16-12-'43 he was put on Sulphapyridine 1 gram with Soda Bicarb 10 grs. every 4 hours and he never had any more of those fits. His motion became normal after 6 days (his bacillary dysentery clinically cured).

IV. 1. Small-pox.—This raged in an epidemic form in Bengal after the famine. In a small island 7 miles by 5 miles, surrounded by rivers, there were 28,000 inhabitants in 18 villages; and there were always 200 to 300 cases for 3 months. There is considerable evidence for the advocacy of Sulphanilamide in small-pox. Sulphanilamide 3 grams a day for a week for an adult, not only reduced the mortality but reduced hospitalisation to a certain extent. Complications such as purulent arthritis, eye infection, pyæmic abscess and toxic symptoms were unknown in Sulphanilamide treated series. (Sulphapyridine was found to be toxic and intolerable in these cases). As for the diet for the small-pox cases, 2 pts. of milk and 3 pts. of tender cocoanut water (3 tender cocoanuts) for an adult is an ideal diet during Sulphanilamide treatment after which it should be increased gradually and by the 12th day they can be put on normal diet. Milk and cocoanut water are relishing, readily available and have the simplicity to administer in villages.

2. Cholera.—In March 1944, an unusual time for cholera, there was a mild outbreak in the people of the captured paddy boats in a thana (Government paddy procurement policy). More than 1,500 people in 200 country boats were living in a very insanitary condition and naturally cholera broke out in these boats. There were 4 deaths on the day of my arrival in this place. Perhaps further spread was prevented by disbursement of these boats and cholera inoculations (1,200 inoculations were given in 24 hours).

Sulphaguanidine in sufficient doses with Saline infusion has changed the prognosis of this dreaded epidemic. In patients treated with Sulphaguanidine and Saline, within 12 hours of the onset of symptoms, the mortality was nil. My procedure was as follows:—

jaundiced. It becomes deeper on the second or third day and the colour of the skin is mahogany brown. Severe anaemia is associated but this is marked by the intensity of jaundice. The infant is drowsy and does not take the breast properly. Blood picture is very characteristic. Severe macrocytic type of anaemia is present. Large numbers amounting to 25,000—200,000 of erythroblasts per c.m.m. are seen. Megaloblast and normoblast appear in each field in such a manner which is rarely seen in any other known disease. Leucocytosis with few immature forms is seen. Eosinophilia is said to be common. Van Den Bergh is indirectly positive but in some cases has been found to be biphasic and even direct. Urobilinuria is usual. Bile is present in faeces. With deepening jaundice haemorrhages may occur. Purpura, umbilical bleeding, melena, haematuria and cerebral haemorrhage may occur. This is due to prothrombin deficiency and partly as a result of platelet reduction. Bleeding time is greatly prolonged. Liver and spleen are enlarged. In cases where recovery occurs the jaundice disappears in 3-4 weeks and may last even for two months. Infants remain anaemic for a long time but eventually the anaemia improves.

The incidence of this disease in Clifford's series is 1 in 340 and in Senford's 1 in 750 and varies somewhat with locality. Mortality is high, 50—80% die. But if treated very early with consideration of all the recent procedures employed, prognosis is favourable. Complete recovery can occur. It is not known whether juvenile cirrhosis, Bantis' disease and Von Jack's anaemia are originally derived from icterus gravis.

ETIOLOGY:—In 1940 SANFORD suggested germ cell inheritance from one of the parents but the most recent explanation is the presence of Rh. factor.

Important additions to the knowledge of the pathology of the condition have been made since 1941. This is known as the isoimmunisation theory. 86% of a sample of population taken at random have Rh+ blood. The Rh factor is inherited as a dominant mendelian factor. If a Rh+ factor fertilises a Rh negative woman and if her foetus is Rh+, she may produce anti Rh agglutinins as the result of her immunisation by the blood of her foetus. These anti bodies pass through the placenta and cause haemolysis of the foetal red cells. The variations of the clinical forms is probably due to varying degrees and duration of isoimmunisation during pregnancy. As a result of haemolysis many extra and active foci of haemopoietic tissue are found in such foetuses.

Nuclear icterus:—(ORTH 1875). This is rare and forms a small group. Only 26 cases are recorded. Intense generalised jaundice occurs in the new born period just as the above-mentioned condition, but here involvement of the basal ganglia occurs. This also appears to be familial. The onset is just like that of erythroblastic form but with marked cerebral symptoms as convulsions, spasticity and apnea. Jaundice is intense and Van Den Bergh directly positive, with high icterus index. Prognosis is hopeless, death usually occurs before the fifth day of life and those who survive may cripple due to residual extra pyramidal cerebral lesions as spastic diplegias, athetosis or idocy. A generalised osteitis fibrosa and an olive green pigmentation of teeth $2\frac{1}{2}$ years after the disease has been described. No increase of nucleated cells is seen and the blood picture is more or less normal. That is why it is surprising where the jaundice comes from. Deep staining of the basal nuclei of brain with bile pigments and toxic degeneration of nerve cells is the chief lesion found in these cases. Cause of predilection for this site is unknown. The following theories have been advanced: (1) attraction of bile pigments for ganglion cells; (2) damage of

ganglion cells by trauma or respiratory paralysis followed by pigmentation; (3) necrosis of ganglion cells by a lipolytic substance released by the liver followed by pigmentation.

In some cases a family history of blood dyscrasias may be available.

ETIOLOGY:—This is unknown. This condition was considered to be a part of the picture of erythroblastosis but only 23% of cases of nuclear icterus were associated with erythroblastosis. Anyhow three views are advanced to explain it: (1) it is a result of dysfunction of the blood and the bile-forming organs of the foetus. (PFANNENSTIAL 1908); (2) some sort of septicæmia is responsible (BARK 1907); (3) and there may be a hepato-cerebral pathology simulating Wilson's disease (GUTHRIE).

But majority of the cases do not conform with any of these views.

TREATMENT OF ICTEROUS GRAVIS:—Repeated I.M. injections of blood amounting 10—20 c.c. were recommended by HAMPSON in 1929, but they have not met with any great success. Time should not be wasted on I.M. methods. Small repeated blood transfusions are specific and a rise in R.B.C. counts should be taken as guide. These should be carried out every 4-7 days until count is maintained at 4 million. 10 c.c. blood per lb. of body weight is quite sufficient. One to four transfusions may be required. Treatment has been revolutionised by the discovery of the cause of the condition. In mild cases recovery is spontaneous but in moderately severe ones repeated transfusions should be persisted. If Rh antigen is the cause, the Rh negative blood of the same group should be given. If the cause is maternal anti A agglutinin, then group O Rh negative blood is preferable. If the father's group is not known then group O Rh negative donor with low serum agglutinins is best to use. Mother should stop breast feeding. Where anaemia, which is always associated with this condition, does not respond to transfusion, splenectomy has been recommended by COOLEY. Vitamin K parenterally prevents haemorrhages. Calcium assists the absorption of bilirubin and 10 c.c. 10% Calcium Gluconate is better added to the first transfusions. For cerebral symptoms sedatives may be employed.

III. Acholuric jaundice.—This is a hereditary type of haemolytic jaundice and in many instances has been traced to several generations. Jaundice may develop shortly after birth and sometimes 2-3 weeks later. Not all the children of a family are affected. Latent cases in the relatives can usually be traced by an abnormal fragility of their cells but without jaundice. A feature of the jaundice is that it is not well marked until a few weeks old. Spleen is enlarged. Blood shows persistent and marked reticulocytosis with increased fragility of red cells. Van Den Bergh indirect positive and stools are of normal colour. Prognosis is usually favourable but sometimes death may occur during a severe crisis.

TREATMENT.—Mild cases do not require any treatment. Only exciting causes should be avoided. Splenectomy is almost always followed by symptomatic cure which is permanent. Operation is done during the remission periods. Prior to the operation small blood transfusion is advised but this is often followed by a hemolytic crisis, but if really needed drip method is preferable. STEEN considers splenectomy a contra indication at this age, for which he gives no reasons. Irradiation of the spleen is not effective and this method by producing adhesions makes future operative procedures difficult.

X'Ray.—Generally in X'Ray we find mottling over both the lungs. At times we find in the picture the appearance just simulating miliary tuberculosis, whereas in some we find nothing in the picture.

Blood examination.—This is the most important and constant feature of the disease. There is always a high eosinophilic count with high total of W. B. C. count. The eosinophilic count varies from 20 to 70% or even more.

Below I cite the few cases I have come across :—

1. A Hindu female, aged 36, came under my treatment on 22-3-'44. She complained of weakness, pain in the chest, cough and slight temp. going up to 100° F. Physical examination revealed nothing except few scattered moist sounds in the lungs. I treated her for simple bronchitis but she was no better and cough became very troublesome and weakness was increasing. So I got her chest X'rayed. The X'ray report marked peribronchial infiltrations with hilar shadows enlarged. The blood report: Total W.B.C. 15000. per cmm. D.L.C.; Poly. 14%; Lympho 33%; L. Mono. 5%; Eosino. 48%. This examination gave clue to the diagnosis of eosinophilic lung. Then she was given Acetylarsan on every third day and the pt. made an uneventful recovery. But one point of importance I noticed was that, on every day I injected Acetylarsan she used to get much coughing which subsided on the next day.

2. A Hindu female, aged 25, complained of weakness, loss of appetite, intermittent temp., slight cough, and pain and burning sensation in the chest. Cough was dry. Clinical examination revealed nothing in the lungs. X'ray nothing abnormal detected in the lungs. Blood examination—Total W. B. C. 33,125 per cmm. D. L. C.; Poly 14%; Lympho 31%; Large Mono. 4%; Eosinophil 51%.

I started with Acetylarsan on every third day with Redoxen. I gave her four such injections during which she was feeling better, but again she had relapse. Yet I continued Acetylarsan, but it did not give her much relief. Then I started Sodium Cacodylate 3 grs. in 1 c.c. on every third day. After two injections she showed marked improvement. I gave in all six Sodium Cacodylate injections which cured her completely.

3. A Hindu girl, aged thirteen, came under my treatment on 23-10-'44. Her complaints were very bad, incessant, dry cough, slight temperature and frequently attacks of asthma. When I saw her she was dyspnoic, and anæmic. Physical examination revealed few moist sounds in both the bases of the lungs. Blood exam: Total W.B.C. 15600. D.L.C.; Poly 60%; Lympho. 29%; L. Mono. 4%; Eosino. 12%. I gave her eight injections of Acetylarsan (Children) and she made an uneventful recovery, and since then as yet no relapse is reported.

4. A Hindu boy, aged 14, came under my treatment on 28-5-'44. Complaint: Severe cough, slight temperature in the evening and loss of weight. Duration one month. Physical exam.: Impaired note on the right side just below the scapula on percussion. Few moist sounds at both the bases, no other signs in the lungs. X'Ray: Marked infiltrations in both the lungs giving an appearance like that of miliary tuberculosis of the lungs. Sputum exam. was done twice at the interval of a week for acid fast bacillus which was negative. From the sputum report, and the X'Ray report together with the clinical exam., I thought it to be a case of pseudo-tuberculosis of the lungs with eosinophylia, and hence I got his D.L.C. done. The report was as follows: Poly. 21%; Lympho. 12%; L. Mono. 3%; Eosin. 24%.



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IV. Congenital atresia of bile duct.—This is a congenital defect sometimes associated with the absence of gall-bladder and a secondary cirrhosis in the liver. ROLLESTON after finding cellular infiltration of fibrous tissue in some cases considered cirrhosis of liver primary and the bile duct stenosis a secondary feature, but this is not true in all cases.

SYMPTOMS:—The onset of jaundice is from birth or soon after birth, occasionally delayed until third and exceptionally sixth week. This happens even with complete atresia as the liver is able to store extra bile pigments for some time. It is steadily progressive and presents all the features of an obstructive jaundice. Rarely bile is present in the stools due to the aberrant bile duct. Spleen and liver are enlarged. Bleeding from mucous membranes may occur. Fat metabolism is disturbed. Nutrition keeps well and these infants surprisingly thrive well except for jaundice but sooner or later death occurs. Prognosis is always poor. Blood picture is normal, only two cases are on record which showed erythroblastosis.

TREATMENT.—Only surgery may give some hope if obstruction is low down. Junction operation between gall bladder and duodenum may be successful but chances of success are small. Operative mortality is not unduly high. Cases are on record which are living after operation for years without inconvenience except occasional attacks of light jaundice.

V. Sepsis neonatorum.—Jaundice in the newborn can occur under septicæmic infections. It is usually due to umbilical sepsis causing a thrombophlebitis of the portal vein involving the liver, or infection may occur through the skin. This appears always later than icterus simple or gravis and usually after 4 days. There is high fever with jaundice. Petichiae on the skin and bleeding from the portal of entry may occur. Mortality was high but nowadays the chemotherapy and better methods of prophylaxis have reduced it to a great extent. Any of the bacteria may be responsible, but strepto, staphylo and *B. coli* are commonest. Blood rarely shows anæmia but a high leucocytosis is usually found. Blood culture is positive and is imperative in all the cases.

TREATMENT.—Sulfonamide therapy is the method of choice. Blood transfusion is most helpful and even life saving. 5% Glucose I.V. should be given and breast milk continued.

Winkel's should be included under sepsis. It is rare. The onset is sudden on the 4th or 5th day with fever, jaundice and cyanosis. Hemoglobinuria is an important feature and albumin is present in the urine but no bile. It is usually fatal with convulsions or collapse.

VI. Congenital syphilis.—In our country this is not a rare disease but jaundice is seen only in 10% of such syphilitic infants, even then it is not marked.

SYMPTOMS:—The onset is usually later than those of previously mentioned conditions, frequently after 6th week. A shallowness of the skin is more often found than marked jaundice. Spleen and liver are enlarged. Shiny soles and palms and snuffles, if present, point towards its diagnosis. Bile may or may not be present in the urine and stools of normal are colour. Blood shows secondary anæmia but no other feature is characteristic. Rarely erythroblastosis has been observed. A negative W.R. or Kahn test is not reliable at this age. Mother's blood should also be examined. Where nothing helps roentgenograms of the long bones of the infant may show

TREATMENT.—Stovarsol. The daily dose is divided into two or three times daily and given with sugar in water 15 minutes before a feeding. A 4 grain tablet is given as follows:

Weight	...	5 lbs.	Daily dose in tablets.	...	1/8
"	...	6 "	"	...	1/5
"	...	7-8 "	"	...	1/6
"	...	9-10 "	"	...	1/4
"	...	11-12 "	"	...	1/3

This is given for five consecutive days each week for 8 weeks followed by 4 weeks' rest and W. R. exam. Sulfarsenol is the drug of choice. It should be given intramuscularly. For a baby weighing from 5—8 lbs. 0.015 g. per kilo. of body weight with $\frac{1}{2}$ c.c. of distilled water should be injected. (N. A. B. 0.02 g. per kilo I. V.) and for infants of 9—25 lbs. 0.02 g. per kilo. in 1 c.c. of water. (N.A.B. 0.01 g. per kilo I.V.) Bismuth is given intramuscularly every week, and water soluble compounds should be used. Dose is 0.005 g. per kilo. of body weight. Mercury is employed by rubbing the ointment on alternate days for 20 minutes for a course of 20—30 rubs. Blue ointment is good, 0.25—0.3 g. of this for each rub for a child of below one month of age, and for 1—12 months of age 0.3—0.5 g. should be prescribed. Mercury by mouth is less effective and produces gastro-intestinal disturbances. Hyd with creta gr. $\frac{1}{2}$ —1 t.i.d. for one month followed by other measures as Arsenic or Bismuth is usually employed. Mercury Chloride intramuscularly for 6—10 doses followed by other treatment gives better and quicker results. For a child of 2 weeks—6 months, gr. $\frac{1}{10}$ in 1 c.c. of distilled water with Butyn added is injected. Iodides are not advisable as they are not tolerated by children.

References:

1. Samford—Practice of Pediatrics, 1943.
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Cases and Comments

Eosinophilic Lung

DR. TRILOK M. SHAH,
Sri Lakhaji Raj Road, Rajkot.

THIS is a disease entity, on which many papers are written recently with case reports. During the last two years I have also come across a few cases. From observations of these cases and the literature I have come across I give below the short notes on the disease, and the short reports of the cases.

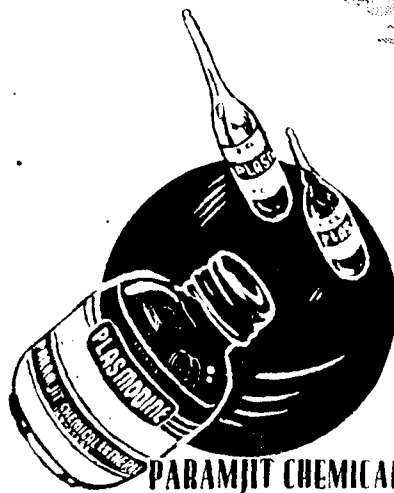
The disease entity is known variously as: (1) Pseudo tuberculosis of the lungs with eosinophilia; (2) Eosinophilic lung; (3) Tropical eosinophilia; and (4) Benign eosinophilic leukæmia.

Ætiology.—No definite ætiology is known. However an allergic theory is put forward. Recently another of mite infection is also put forward.

Symptoms.—Fever, loss of weight, slow intermittent temp. and very troublesome dry cough, at times amounting to actual asthmatic attack.

Signs.—Physical signs are not always definite in the lungs but, in some, one may find signs of bronchitis or simply few scattered rales and ronchi here and there in the lungs. In some there are practically no signs in the lungs clinically.

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GONORRHOEA	PERITONITIS
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I started with Acetylarsan. I gave three injections, but there was no appreciable improvement, so together with Acetylarsan I started Calcium Gluconate cum Redoxen intravenously alternately. In all I gave him 10 injections of each, and he made very good recovery. When I started treatment his wt. was 65 lbs. and at the end of the treatment it was 79 lbs.

Conclusion.—A short survey of the disease entity is given. Out of the four cases three were females, which is a point of importance because no case in females is reported in the literature upto now through which I came across.

The point of etiology is a question of debate as yet. As far as treatment is concerned various preparations of arsenic are tried by various people with good results. I have found Vitamin C and Calcium together with arsenic more advantageous. Autoblood is also suggested by certain people on the ground of this disease entity being of allergic origin.

N.B.—I am much thankful to my father, Dr. M. L. SHAH, for his invaluable help and guidance throughout.

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A Case of Acute Anterior Poliomyelitis affecting the Meninges of the Brain

(Polioencephalitis)

RASIKLAL L. SHAH, L.C.P.S.,

Clinical Laboratory, Lallubai Building, Rajkot.

A GIRL aged about 12 years was seen by me in the morning of 30th Aug 1944, at about 10 a.m. She was found semi conscious: complained of severe headache and marked dimness of vision since morning only. She could not see any object nor could she detect any article, nor could count fingers even. Pupils widely dilated and no reaction to light at the time. Axillary temp. 98.4°F. (as it was not possible to take the mouth temp. she being semi-conscious), P. 96 p.m. The family members gave the history that she complained of headache the previous day, but thinking it to be a minor complaint, it was neglected. All the other systems were normal. No rigidity of any part of the body. At this juncture one injection of Quinine 10 grs. was given I.M. and Alkaline mist. by mouth. Again about 12 noon the same day I saw her: this time she said she could recognise certain articles as well as count fingers also, but was not clear in identifying. Temp. 99.2°F. (mouth) P 96 p.m., R. 20 p.m. At about 2 p.m. she got severe convulsions and she became completely unconscious. During this attack of convulsions, her tongue was bitten. A gag was put in to prevent further biting. Axillary temp. 100.4°F. P. 130 p.m., R. 48 p.m. At this stage there was no rigidity of the neck nor of any part of the body. Kernig sign was also negative. Pupils widely dilated. At this stage her blood was taken and the lumbar puncture was also done. C.S.F. was quite clear, but under pressure. About 30-35 c.c. was removed. The blood and the C.S.F. reports are as follow :—

Blood report.—Total W.B.C's. 45,600 per cmm., polymorphs 90%, lymphocytes 10%, large-hyaline and eosinophils 0%, malarial parasites not found in thin and thick smears.

C.S.F. report.—Total cells, 40 cells, per cmm., Polymorphs 50%, lympho 50% (sugar and protein tests were not done).

At the same time injection Atebrin 0.1 gm. was given, thinking it to be cerebral malaria. (The blood report was not ready by this time). About an hour after, the patient got little relief and she came into semi-conscious state from the complete unconscious condition. Even at this time the complaint of dimness of vision was there. An eye specialist was consulted at this stage, if he could throw some light as regards dimness of vision. His report is as follows: pupillary reaction to light; pupils equal; no papilloedema.

Fundus report.—Retrolbulbar neuritis. No paralysis of external muscles.

Now looking to the blood report high leucocytes with absence of M.P. suggested some inflammatory focus somewhere in the body. Urine could not be examined as it was not possible to collect the sample. Nothing abnormal being detected in the eye and the patient being relieved a bit after lumbar puncture, it was thought the condition may improve by hitting high leucocytosis with Sulphonamides and accordingly inj. of Solutetacine 10 c.c. 10% was given along with inj. of Glucose 25 c.c. 25%. All these things were done between 2 P.M., and 7 P.M. on the same day.

At about 9 P.M. she had very violent convulsions, even severer than the afternoon attack, again biting the tongue, the froth stained with blood coming out of the angle of the mouth and the patient was in complete unconscious stage. Even at this time also, there was absolutely no rigidity of any part of the body. Axillary tem. 102.4°F. P. 140 p.m., R. 60 p.m. Inj. Morphia with Atropine was given, which checked the whole attack in about 20 minutes time.

Now at this stage thinking it to be some sort of irritation of the meninges (though the C.S.F. being quite clear) inj. Dagenan (M. & B. 693), 2 gms., was given I.M. The whole night patient was quiet except slight disturbances at intervals.

Next morning, *i.e.*, on the 31st, she looked better, of course she was in semi-conscious stage, and she complained of headache—but not as severe, as the previous day and of dimness of vision. Onemore inj. of Dagenan (M. & B. 693) 2 gms. was given, in the morning. M. T. 100 (axilla), P. 120 p.m., R. 30 p.m.

Till afternoon that day, she was practically in the same state as in the morning. N. T. 101°F. (axilla), P. 122 p.m. R. 30 p.m. It was decided to do the lumbar puncture again, so as to relieve the headache, as well as for further investigation. It was done in the evening at about 5 P.M. which showed clear fluid and without pressure: only 5 c.c. of it came out. Her eyes were once again tested by the specialist at this stage. Nothing abnormal was detected either with cornea or the pupil, no papilloedema. C.S.F. did not show anything abnormal. The blood was examined once again. The report is as follows:—Total W.B.C's. 24,800 per cmm., Polymorphs 80%, lympho 20%, large-hyal 0%, eosino 0%.

To-day it was possible to give liquids as well as 693 tab. per mouth as she could swallow easily. Two tab. of 693 were given in morning which were retained; another two tab. were given in the noon, half of which was vomited out.

Now looking to the 2nd blood report, high leucocytosis still persisted,

hence another inj. of Dagenan one grm. was given in the evening. She had very good quantity of fluids per mouth to-day. She quietly slept the whole night.

Next morning, *i.e.*, on the 1st September she looked much better than the previous day morning; she was conscious, and could recognise the relations as well; she had very much relief in headache too. M.T. 98.4°F. (mouth), P. 100 p.m., R. 20 p.m. She had very good quantity of fluids throughout the whole day. N.T. 99.2°F. (mouth), P. 96 p.m., R. 20 p.m. Two tab. of 693 were given thrice to-day. Whole day and night she was quiet.

On the next day, *i.e.*, on 3rd September she was brighter and cheerful, M.T. 98.4°F. (mouth), P. 90 p.m., R. 20 p.m. To-day only, she complained of pain in the whole left upper extremity; she could not lift the left forearm without the help of the other arm. Motor power was much diminished, compared with the right one; sensations were normal, but she could not move the fingers of the left hand.

Thinking this to be poliomyelitis, she was immediately put on inj. Vitamin B. 50 mgms. per c.c. daily as well as Vitamin B. per mouth. She was given successively 12 such inj. and then alternately upto 6 more. Gentle massage to the limb and passive exercise to the fingers, gradually showed more or less complete improvement. She could lift the whole extremity without the help of the other one, and could move all the fingers, there being very little defect in the movements of the fingers.

To sum up the whole case, the signs and symptoms put together in order of occurrence, headache, amaurosis, meningeal irritation, no rigidity, C.S.F. clear but under increased tension, temp. not going above 101°F, no apparent improvement or signs of getting worse during first four days, and lastly on the fifth day the whole left upper extremity seen paralysed (paralysis of the lower motor neuron type) may fit in the diagnosis of 'polioencephalitis affecting the meninges of the brain.'

I am very much thankful to Rao Bahadur Dr. T. M. Vakil B.M.S., and Dr. R. D. Dave, D.O., D.O.M.S., (Lond.), for their help and valuable suggestions.

Endocrinic Treatment in a Case of Senile Myocardial Degeneration

S. MANSUR HUSSAIN, B.Sc., M.B., B.S.,

Canning Street, Lucknow.

A PATIENT of over 80 years of age complained of oedema over the whole of the body, distension of abdomen, general weakness and diminution of urine.

Previous history and habits.—For some time his activities both mental and physical were becoming circumscribed but very slowly and gradually. He used to get slight swelling over the feet in the evenings or on walking which also made him somewhat breathless.

There was no history of venereal disease, rheumatic fever, alcoholism or rise of temperature before or during the illness. He always led a sober and regulated life. The only flaw in his otherwise good health was gastric ulcer from which he had been suffering for some 40 years.

Present illness.—The swelling he used to get began gradually to increase and ultimately involved his whole body. His abdomen became

enlarged and he became bed-ridden. His legs and thighs and buttocks became hard and he could not move them without help. The quantity of urine became greatly diminished. He developed a cough but had no dyspnoea probably because he was confined to bed. In this condition he continued for nearly six months in spite of constant and varied treatment.

When I examined him his condition was as follows:—

He had marked oedema over the whole body. There was fluid in the abdomen. There was no abnormality in the urine. Heart sounds were feeble, the first sound was short and weak. There was no abnormal sound or murmur. There was practically no enlargement of the boundaries of the heart. The pulse was generally slow and weak but regular, 70 or 72 per min. The systolic pressure used to range between 88 and 98 and the diastolic between 60–70 mm. of Hg. The diagnosis was senile myocardial degeneration.

Treatment.—The usual dietetic, hygienic, diuretic (alkaline diuretics, inj. of Mercurial diuretics with Ammon. Chloride Mixt. etc.), tonic (Nux Vom. Caffeine etc.), and stimulant (Coramine and the like) treatment was adopted. Inj. of Mercurial diuretics would slightly but only temporarily reduce the oedema. Bowels were kept open.

After having tried this line of treatment for nearly two months without any success I decided to try the endocrinic treatment. Six inj. of 25 mg. of synthetic testicular hormone were given daily followed by inj. of 10 mg. daily and 18 inj. of 10 mg. on alternate days (30 inj. in 2 months). Methyl testosterone was given sublingually concurrently and subsequently to the inj. Thyroid gland gr. $\frac{1}{2}$ T.I.D. was also administered. Along with the above a mixture containing Nux Vomica was also given.

After 1½ months the heart sounds were stronger and the B.P. began to remain above 100 and the pulse pressure had increased. The pulse rate remained the same but the pulse was stronger with better tension and volume. The quantity of urine gradually increased and the oedema had decreased by 50%. What was equally important was that the patient began to eat better, sleep better and feel better and stronger. The congestion of the lungs and cough had disappeared. To accelerate the drainage of the fluid only 4 Mercurial inj. were given every 5th day and all the oedema disappeared. The same inj. which were proving less effective before and were giving only temporary relief, this time proved very effective and the effect was lasting. The treatment was continued for one month more and afterwards the patient was placed on Neurophosphates.

Subsequent history:—He has been under observation for the last one year and has remained healthy. He moves about and is physically more active and mentally more alert than he was for some years past.

Conclusion:—The diuretic and tonic treatment was first tried for nearly eight months without any benefit and the same treatment gave lasting relief after the endocrinic treatment had been given. The cure has inevitably to be attributed to the reactivation the endocrinic treatment brought about.

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An Appeal to Reason

WE can lay claim to have laboured hard for two decades and more for the abolition of the caste system in the medical profession and for the registration of licentiates on equal basis in a common register along with medical graduates, thereby wiping out for ever and for all time to come the superiority complex which unfortunately dominated in the minds of a few medical graduates and the feeling of inferiority complex which oppressed the licentiates as a class. The large bulk of medical graduates who supported us in this move through thick and thin were no less sincere in the achievement of this noble and laudable object. We have therefore great pleasure in complimenting *The Indian Medical Journal* on the sumptuous fare it has provided to its readers in the special number on The Indian Army Medical Corps it has brought about in January. The special number starts with a longish editorial under the heading "The Indian Army Medical Corps—A Quintessence of Consolidation" and is followed up by a number of contributions from eminent men in the field, extolling the success achieved by the licentiates so far in securing, to a certain extent, equality of rank for themselves in the Army Medical Corps, and appealing to the rank and file to join the Corps in large numbers to enable them to utilise the success so far achieved as a stepping stone for the attainment of still higher aims for which the All-India Licentiates' Association has been striving hard for a number of years. A special section is devoted to messages from the high and the mighty, beseeching the licentiates as a class to come forward in large numbers to join the I.A.M.C. and avail themselves of the opportunity thus afforded to work on equal footing with others and thus assure themselves of a bright future. If in spite of these we venture to make an appeal to reason, we trust we will not be misunderstood and that our observations will be taken in the spirit in which they are made.

LIEUT. COL. G. VERGHESE, Deputy Director-General, Indian Medical Service, in his message, says: "My message to the licentiates is, that having attained the status which they now enjoy in the Army, they should put in their best endeavour to preserve that position. This will be possible only by enthusiastic response to the call of duty and by developing initiative, courage, leadership, enthusiasm, self-confidence and self-discipline

which alone can make a good Army Officer." They were at no time, to our knowledge, found wanting in any of these qualities, and it is only the Government that refused to recognise the existence of these in them and act justly. MAJOR-GENERAL SIR GORDON G. JOLLY, formerly Director-General of the Indian Medical Service, and now Red Cross Commissioner, India, goes one better. In his message he says: "They (medical licentiates) have made good and established their position as medical officers. Never can they, as a class, be thrust back to their former subordinate status and menial pay." May we ask SIR GORDON JOLLY, one time Director-General of the Indian Medical Service, in all humility, who was responsible for this reprehensible state of things, subordinate status and menial pay, which were the lot of licentiates for too long. When the medical profession as a whole, irrespective of qualifications or status, clamoured for the abolition of the caste system in the profession, the Government turned a deaf ear to these representations. Even now it cannot be said that equal status has been assigned to them. *The Indian Medical Journal* itself poses the question often asked: "Why, if there is now equality of status between the graduates and the licentiates in the Army Medical Service, have they not been made eligible to Commissions in the Emergency I.M.S., instead of being placed in a separate corps with differences in ante-date, gratuity and the like?" and answers, "One must face facts, however unpleasant they may be. The licentiates could not be given commission in the Indian Medical Service because it entails the recognition of their qualification by the Indian Medical Council. The Government have persuaded this Council to recognise for the duration of the war such licentiate qualifications as D.M.S. (Madras), M.C.P.S. (Bombay), M.S.M.F. (Bengal, U.P., and the Punjab), but the latter have declined to do so in the case of L.M.P. or equivalent qualification. They were left therefore with no other alternative but to do the next best by inaugurating the I.A.M.C., and thus make the licentiates eligible for Commissioned ranks in the Indian Army." As regards the still existing differences, it says, "it is well, and pertinent, to remember that to-day's ante-date, gratuity, etc. of the graduates in the Emergency I.M.S. are not the same as when they began to join it from September 1939. They have been considerably improved during the course of last five years, *because they are still joining in sufficient numbers*. The same is bound to happen in the case of licentiate officers of the I.A.M.C. as will be evident from the fact that the licentiate specialists are now made eligible for graded and recognised specialists posts in the I.A.M.C. This by itself is no small achievement. Others will follow, but follow more quickly, only if they join in numbers larger than the graduates."

It is clear therefore that the licentiates have not got all that they wanted, or what the medical profession, as a whole, asked for them. Inferiority still attaches to the licentiate, and much remains to be done if he is to be raised from the position in which the Government have placed him. Quick results can be achieved only if the medical profession, as a whole, joins together and insists upon the satisfaction of their demands. The licentiates or their leaders will be deluding themselves if they hug to their bosom the fond hope that all they want or that they are entitled to, can be achieved by a separatist movement of their own. We have had enough of experience of the results of separatist mentality in the political field, and we appeal to all the licentiates with all the earnestness that we can command not to fall a prey to fissiparous tendencies which will undermine the unity and strength of the profession, but to stand united with others in the

profession and work for the achievement of the aim all have in view. Self-interest is, no doubt, appealing to the baser instincts of men, but the larger interests of the profession as a whole will suffer as a result thereof. The I. A. M. C. certainly affords a very good opportunity to the licentiates to acquire extensive practical experience, and we want as many of the licentiates as possible to avail themselves of the opportunity to expand their knowledge and extend their sphere of usefulness to suffering humanity. But in the enthusiasm, of the moment or in their self-interest, they ought not to forget the larger interests of the profession as a whole, which has yet to fight many a battle with the bureaucracy for securing to the Indian medical men the dominant position to which they are by right entitled.

The war will not last long and peace times will be on us soon. We do not know what the future has in store for this country. If the Atlantic Charter buried five fathoms deep by MR. CHURCHILL so far as India is concerned but now revived by PRESIDENT ROOSEVELT has any meaning, Britain is bound to grant independence to India, sooner than later. Equal status to the licentiates can be granted only by the Government that will be then constituted. And that Government can be forced to give to the licentiates the status which legitimately is their due only if the profession as a whole stands united and speaks with one voice. Unity and not fissiparous tendency is the urgent need of the hour. We, therefore, appeal to the licentiates to take note of this all important factor, give up separatist tendencies, and work for unity among the members of the profession as a whole. That is the only royal road to success.

Exit the Ban

WE congratulate the Government of Madras on their belated but none-the-less welcome decision to lift the ban they had placed on the members belonging to their medical service from becoming members of, or taking part in the proceedings of, the Indian Medical Association. As we pointed out at the time the ban was imposed, it was a most unwise step to take, and the Government of Madras earned the unenviable notoriety of being the only provincial government to impose such a ban. In a subject country there is no subject that can be discussed without impinging on politics in one way or the other, and if government servants are to be deprived the liberty of joining in, or taking part in the proceedings of, their own associations because at one time or the other the subjects discussed by them may touch politics in some way or other, service will then lose all its charms. The two charges laid at the door of the I.M.A. were the two resolutions passed by the Association, one requesting the release of DR. JIVRAJ MEHTA, their President, and the other demanding the constitution of a national government for the advancement of the socio-economic welfare of the country. So far as the first resolution was concerned, no association worth its name can simply look on when its President is clapped behind prison bars for no valid reason to their knowledge. As regards the second, all we need say is, that the demand for a national government has been recognised even in high quarters as a most legitimate demand to make, and no body or association can be denied the liberty of pressing that demand merely because some of its members happen to be in the service of government.

The lifting of the ban, we take it, is the result of the interview the

President had with His Excellency the Governor's Adviser at Madras when the Working Committee last met here. The consequent change of heart on the part of the Government is a very welcome step and we hope this will re-establish the cordial relations that originally existed between the I.M.A. and the local and provincial Governments. We need hardly emphasise the necessity for all medical men in this country to join the Association without delay and make its influence and strength felt in all matters pertaining to the profession. We hope the day shall not be far off when as in America and Great Britain the Indian Medical Association, like the American Medical Association and the British Medical Association, will be the only body consulted by the Government so far as medical matters are concerned.

Gleanings From Medical Press

MEDICINE and THERAPEUTICS

The treatment of chronic amoebiasis.—Using a mixture of powdered ipecacuanha 0.15 gm. and yatren 0.40 gm. fifty cases of chronic amoebiasis have been treated at the Yarkon Government Hospital, Tel Aviv, and the results are recorded by S. Btsh (The Palestine and Near East Medical Journal, July-August 1944, 3, 107). The powder was given twice daily in the form of cachets or gelatin capsules, the best time for taking the mixture being three to four hours after breakfast or dinner, a period of at least one hour fasting being allowed after administration. The treatment is continued for twelve to fourteen days, and can then be followed by a short course of carbarsone (2 tablets daily for six to eight days). During treatment the patient should not be allowed too much freedom of movement, although he can get up; but the treatment is not recommended for ambulatory patients. In most cases the amoebic cysts disappear from the stools within eight to ten days of treatment; symptomatic relief occurs within the first ten days, the tenderness along the tract of the sigmoid colon disappearing. In some cases cysts may still be present in the stools at the completion of treatment but disappear within a few days. The only reactions noted were a slight nausea in some cases and a slight diarrhoea, neither severe enough to interfere with the treatment. Of the fifty cases treated only one relapsed; twenty patients were followed up for periods ranging from three months to one year and in no case did examination of the stools reveal the presence of amoebae or their cysts. In three cases in which a positive fixation test was present before treatment, the test was negative on examination six weeks later. The substitution of iodoform 0.20 gm. for the yatren in the mixture is not recommended as, although equally effective, it is less well tolerated.—*Practitioner*.

Medical treatment of pulmonary embolism.—Beckwith shows that the classic picture of pulmonary embolism is not difficult to recognize. When a patient who has been lying in bed sits up or strains at stool

and suddenly becomes dyspnoic and develops severe substernal pain, pallor, sweating, weak rapid pulse and low blood pressure, the diagnosis is obvious. At times the symptomatology may be bizarre. Pneumonia, pleurisy or progressive heart failure may be suspected. The finding of a hitherto unsuspected thrombosis of a deep leg vein may be a lead. X-ray examination may also be helpful. Characteristic electrocardiographic changes often occur. Careful clinical examination of the patient is very necessary and detection of signs indicating pulmonary hypertension and right ventricular failure is important. When an acute episode occurs and the diagnosis of pulmonary embolism is made, therapy should be immediately instituted. This should be directed at relieving the anoxemia by the administration of oxygen in high concentration and simultaneously making an effort to re-establish the impaired circulation. The latter can be done by the administration of atropine 1/50 grain (0.0013 Gm.) and papaverine ½ grain (0.032 Gm.) intravenously. Then atropine and papaverine should be given every four hours. The response is often dramatic, and a patient who looks moribund may be "responsive" in a short while. The heart rate becomes slower, blood pressure rises, the heart sounds become louder and the color improves. During the past two years the author has seen 3 cases of pulmonary embolism shortly after the condition occurred. All were treated as described and all obtained dramatic relief following the initial attack. Two died later with subsequent attacks and 1 recovered completely. It is probable that, had the focus of the embolus been found, the latter episodes could have been prevented. The cases are presented.—*J.A.M.A.*

Auto-hæmotherapy for asthma.—Auto-hæmotherapy and auto-serotherapy are on occasions employed in the treatment of allergic skin conditions, especially eczema and urticaria; and usually only in asthmatics who (a) resist other forms of treatment, or (b) have a cause that is unknown or cannot be determined, and the attacks

are thought to arise from substances occurring or manufactured in the body—for example, the treatment of menstrual asthma with serum derived from autogenous blood withdrawn during the premenstrual stage. Any improvement is usually of short duration.

It is thought that the blood in destruction liberates certain substances which on their own or on conjugation with other body proteins act as foreign substances and in some way alter the reactivity of the patient. Others consider that the blood contains the specific allergen and that the systemic administration of the minute quantities of this allergen present in the blood stimulates the production of antibodies. Hence it is thought that better results are likely to occur when minute quantities 10.1 c.c.m. intravenously or 1.0 c.c.m. subcutaneously each 2 days for 12 injections are given than, say, injections 10 to 30 c.c.m. intramuscularly once a week. Unfortunately for this suggestion it has been shown that blood or serum derived from a non-allergic person can lead to equal immediate temporary improvement.—*B.M.J.*

Disease of blood in infants and young children, including the hemorrhagic states.—H. G. Poncher, J. Pediat. 23: 680 (Dec.) 1943.

The broader clinical aspects of diseases involving the blood and the blood-forming organs constitute an important part of the daily practice of every pediatrician. Apart from the well recognized diseases of the blood-forming organs the daily work of the practising physician in clinical hematology is concerned with well defined reactions to a large variety of stimuli which act on the circulating blood cells or on the blood-forming organs.

While it is true that the general nature of the etiologic agents which affect the blood and the blood-forming tissues of adults and children may be the same, in children the reaction of those tissues may be quite different. This difference is a product of the anatomic aspects and the functional response of the blood-forming organs that are found in childhood. Some of these may be enumerated as follows: (1) wide distribution of the blood-forming tissues; (2) rapid expansion of the blood volume; (3) rapid response of the blood-forming tissues; and (4) the nature of the response of immature tissues to certain stimuli, such as infection.

Anæmia in infants and children has occupied the major interest of the clinician and the investigator, and most of the progress that has been made has been the result of a more rational understanding of the pathogenesis of this symptom. It is therefore essential that the physician have a practical understanding of the interrelationships of several physiologic processes which are concerned with the maintenance of a normal peripheral blood supply. These pro-

cesses are the synthesis of hemoglobin, the regeneration of the cellular elements in the blood-forming organs and the maturation of these products, the destruction of blood cells and hemostasis or the maintenance of an intact vascular system.

Anemia during infancy and childhood as well as during any other period of life may result from a disturbance of any one or a combination of two or more of such processes.

Disorders involving the leukopoietic tissues are not as circumscribed as we formerly believed. More frequent use of sternal marrow aspiration has also shown that granulocytopenia may be associated with a hypoplastic, hyperplastic (with maturation arrest) or a dysplastic, marrow. The prognosis is more favourable in those cases in which leukopenia and granulocytopenia are on the basis of arrest of maturation if the case is recognized early enough and causative factor removed to avoid secondary complications due to prolonged depression of the functional elements of defence. Acute leukosis in infants and children may be leukopenic throughout the entire course of the disease, and some of the mononuclear cells often designated as lymphocytes are immature cells of mistaken identity. Study of the sternal marrow in a questionable case of leukosis is a more conclusive aid in diagnosis.

Bleeding from free surfaces or into the tissues may result from a gross deficiency of any single factor or lesser deficiencies in a combination of factors. The factors of clinical importance are the integrity of the capillaries, the composition of the plasma and the quantitative and functional state of the platelets.

The use of standardized laboratory tests will materially aid effective diagnostic evaluation of the patient with hemorrhagic disease.

Clinicians have often expressed the desirability of having an accurate index for the selection of patients with essential or idiopathic thrombopenic purpura who will respond favourably to splenectomy. We have found that the megakaryocytic pattern of the bone marrow as revealed by sternal aspiration offers such assistance when considered with the other symptoms and signs.

Vitamin K as a therapeutic substance has a specific but limited field of use confined to those conditions in which the clinical manifestations are the result of prothrombin deficiency. In cases of extensive damage of the liver the therapeutic value of vitamin K is limited and transient.

Transfusions of freshly drawn blood still remain the treatment of choice in hæmophilia. It is not generally appreciated, however, that small amounts of blood are effective in producing mild to moderate prolongation of the coagulation time. When the physician has a person with hæmophilia under his care it may be practical to conserve his supply of donors by giving 50 to

100 cc. of blood instead of large transfusions unless the latter are indicated because of anaemia and reduced volume of blood. Instead of waiting for clinical symptoms of hæmorrhage to develop, one may study the coagulation time at routine intervals and give small amounts of blood to keep the rate of coagulation as close to normal as possible.

The recent work on "vitamin P" (citrin) should be closely followed for its place in the management of the hæmorrhagic state. As in the case of vitamin K and other factors which play a specific but limited role in the maintenance of the normal hemostatic equilibrium, its role will be established only by critical evaluation. Its effect appears to be on the vascular factor and not on the intravascular clotting mechanism.—A.J.D.C.

Hypoproteinæmia.—Hypoproteinæmia, or an abnormal lowering of the plasma protein level, may be caused by insufficient protein intake due to under nutrition; faulty digestion of protein, inability to synthesize protein from amino-acids due to liver dysfunction; malignant disease; bowel obstruction; and increased protein loss through suppuration, ascites, nephrosis, burns, external gastro-intestinal fistulæ, and hæmorrhage.

Hypoproteinæmia can be diagnosed by estimating the plasma proteins. The normal range is considered to be within 6.0 to 7.5 mg. per 100 c.cm. There are two pitfalls in the interpretation of the figures: a normal value may be found when actually the clinical manifestations of hypoproteinæmia may be present. The first pitfall is the effect of dehydration, which may increase the level of blood protein and so mask a true protein deficiency. The other pitfall is that the total protein (albumin and globulin) may be within normal limits, but the albumin fraction may be depleted. This is because the globulin fraction is sometimes increased especially in severe infections, so that a fall in the albumin fraction is masked, unless separate estimations of albumin and globulin are carried out. The average figures for the plasma proteins are albumin 4.51%, globulin 2.0%. It is a fall in the plasma albumin that causes the clinical manifestations of hypoproteinæmia since it is concerned mainly with the maintenance of fluid balance in the blood and tissues. To eliminate these pitfalls a red cell count or hematocrit determination should be carried out to see if there is any dehydration, and separate estimations of albumin and globulin should be made in doubtful cases. Some idea of the protein deficiency in the tissues can be gained if the plasma albumin and blood volume are known, because for every 1 g. of plasma albumin lost, 30 g. of protein are lost from the tissues. Thus, if the plasma albumin is 3.0 g. % (average 4.5 g.) and the blood volume is 5 litres, the degree of protein depletion in the body is $\frac{(4.5 \times 3.0) \times 5,000 \times 30}{100 \times 1,000}$ or 2.25

kilos. Such a figure is easily reached in patients suffering from cancer or starvation.—(B.M.J.)

Headaches.—Headaches related to the eye may be due to errors of refraction, accommodation anomalies, muscle imbalances and glaucoma. Patients with refraction errors complain of burning, stinging and a sandy feeling in the eyes. In glaucoma the headache at first is localized in the eye ball; later it radiates over the entire area supplied by the ophthalmic division of the trigeminal nerve. There is a rare type of ophthalmic migraine which is caused by glare, but this condition has other associated symptoms such as ocular paralysis, particularly that of the third nerve. Retrobulbar neuritis causes pain deep in the orbit and is worse when the eye is in motion. There are headaches caused by orbital tumours and by exophthalmos. Sinus headache is the most popular type of which patients complain. The public has been made sinus conscious and is aided by newspaper advertisements and radio broadcasts. The proprietary drugs advertised contain bromides and acetanilid. When first taken they will usually relieve headaches, but their continued use produces headaches and symptoms of poisoning. Many persons who have sinusitis of long standing never complain of headache; others have sinusitis and headache. The two, however, are not necessarily associated, and perhaps 5 per cent. of all headaches are due to sinusitis. Maxillary sinus headaches are mostly located in the cheek and zygomatic regions and in the frontal sinus over the eyes. The sphenoidal sinus usually causes temporal and vertex headaches. Infections in the ethmoidal air cells cause pain in behind and in the inner angles of the eye. While patients are under observation, barbiturates with ephedrine will give temporary relief. Many headaches are benefited by thyroid even though the basal metabolic rate is not too low. Unilateral headaches along the branches of the sphenopalatine ganglion have been confused with sinus headaches. Cocainization of this ganglion often leads to dramatic relief. Acute otitis media may cause diffuse dull headaches around the mastoid and deep in the ear. Paracentesis usually relieves them. Where the pain is noted constantly in one area, an extradural abscess should be suspected. Occipital headaches usually point to cerebellar abscess. Headaches, plus diplopia, dysphagia and facial pains due to involvement of the sixth, ninth and fifth cranial nerves may be caused by carcinoma of the nasopharynx.—J.A.M.A.

Treatment of malarial chills.—By far the most uncomfortable symptom of malaria, from the standpoint of the patient, is the chill that usually precedes the fever. In an attempt to relieve these chills a clinical trial was conducted in fifty cases of malaria, using calcium gluconate intravenously. Very satisfactory results have been obtained in

most cases, with but few and mild untoward symptoms recorded.

Although reports of serious toxic effects from the therapeutic use of calcium gluconate intravenously are uncommon, the following precautions are nonetheless recommended: (a) Venipuncture should be carefully carried out, since extravacation of the calcium solution into the subcutaneous tissues may be followed by necrosis; (b) the injection should be given slowly; (c) the patient should remain recumbent for about fifteen minutes after the injection; (d) the use of intravenous calcium is definitely contraindicated in most cardiac cases particularly those with arrhythmias and bradycardia, because of the initial vagus stimulating effects that may cause marked slowing down of the cardiac rate. However some claim that no real danger exists, if the calcium is given slowly; (e) it is also contraindicated in patients who are receiving digitalis therapy, as calcium and digitalis have an additive, or synergistic effects on the heart.

Intravenous calcium gluconate, when given soon after the onset of the chill, produces a complete termination of the phenomenon within one to three minutes, in most cases.—STEVENSON, D. S.: Use of calcium gluconate in treatment of malarial chills. Puerto Rico J. Pub. Health & Trop. Med. 19: 602-613, June 1944.—U.S. Na. Med. Bull.

Estivoautumnal malaria.—Quinine, intravenously, in the treatment of falciparum malaria is a serious and dangerous form of treatment which may be disastrous for heavily infected patients because of too rapid destruction of too many parasites. Intravenous quinine should be given only when absolutely necessary, using very slow injections of not more than 0.5 gm., quinine-Hcl. at a time, diluted with approximately 300 c.c. hypertonic saline and dextrose solution. Intravenous Quinine is most often indicated in certain cardiac and cerebral forms of falciform malaria with symptoms of parasitic emboli, in comatous or semi-comatous patients, or in complications, such as pronounced delirium, tetanic signs of cyanosis definite diaphoresis, certain psychoses, and temporary paralysis. The simple bilious remittent type of falciparum malaria is best and safest treated with 1-1.5 gm. Quinine-Hcl. intramuscularly at 24 hr. intervals. Since in these instances yellowish discolouration of the skin other than that due to hematogenous or hepatogenous jaundice is attributable to adrenal degeneration, epinephrine should be given with intravenous and intramuscular Quinine. Malaria treatment with neo-arsphenamine or Atabrine is preferably preceded by quinine administration. Quinine hydrochloride, dihydrochloride, and bisulfate are the salts of choice, but sulfate, tablets and the comparatively tasteless ethyl carbonate, have also distinct advantages. For prophylactic purposes small amounts of plasmochin should be given with oral Quinine or Atabrine.—J.A.M.A.

Yohimbine in the treatment of functional sexual impotence.—Yohimbine is a drug which is difficult to get at the present time. The only preparation that I know of is made by Knoll in tablets of 1/13 grain. One of these tablets should be given for two days before the intended intercourse. It should not be taken as a routine medicine for two or three weeks at a time. Some authorities recommended that each tablet of yohimbine should be combined with 1/20 grain of strychnine. Yohimbine should never be given in any case of heart disease. The drug must, however, be placed amongst the placebos, because it is only in the rarest cases that it appears to have any beneficial effect, and this is probably psychological. There is, however, a new drug which is far more efficacious, and that is methyl testosterone. This can be prescribed in several ways:—

(1) By injecting 25 mgm., into the buttock twice a week. This may occasionally be pushed up to 50 mgm., but in giving these larger doses it is important to see that there are no undue symptoms of strain, such as rapid increase in weight or feelings of lassitude. The treatment in adults seems to increase sexual activity so that the individual experiences stronger and more frequent erections and increase in sexual feelings. It also has a definite action on sexual development in younger adults, in which case it must be given with extreme caution. If it is administered too early it may cause closure of the epiphyses. There are several proprietary preparations on the market of which perandren is well known.

(2) An alternative method is to give two to six tablets of methyl testosterone by mouth every day for about a month. Such tablets are made by Organon Laboratories Ltd., under the name of neo-hombreol (M). Each tablet contains 5 mgm. of methyl testosterone. This is a convenient method of continuing treatment, if the injections appear to have been satisfactory to start off with. The drug can also be administered in the form of linguets made by Ciba in 5 mgm. tablets, to be sucked under the tongue.

(3) Methyl testosterone may also be administered by means of an ointment and suppository, made up in various strengths, but these are of more use in the treatment of certain conditions of frigidity.

It is important to realize that in a large proportion of cases of functional male impotence the condition is largely psychological and needs the most careful investigation from that point of view. Any drug treatment must be regarded in the nature of an adjunct to this psycho-therapy. Investigation must be made into the individual's up-bringing, life pattern, attitude to sex, possible frights and sexual shocks in childhood, and such-like. In addition the co-operation and understanding of the partner is essential, and it is most important to inquire into the methods of sexual technique, contraception, and so on. I have

one year after treatment, and 85 per cent. were not followed beyond the second year. A considerable part of the cases were treated in 1942 and 1943 and hence could not have been observed as long as two years.

"In evaluating the results obtained," the report says, "four broad groups were defined as 'final outcomes': 1. A case negative for at least three months when last seen was considered to have experienced a 'satisfactory result.' 2. A case still positive or fluctuating when last seen a year or more after treatment was considered to be 'serologically fast.' (A fluctuating case was defined to be one in which the serologic test on the blood had been negative at some time after treatment, but never for as long as three consecutive months, and had subsequently become positive. The last observation might be either positive or negative.) 3. A case positive or fluctuating at last observation which had previously fulfilled the criteria for satisfactory result was considered to be a 'serologic relapse.' 4. A case experiencing relapsing secondary syphilis was considered to be a 'clinical relapse.' As far as possible, reinfections were excluded from this last category. . . .

"For each treatment method included in the study, a greater percentage of satisfactory results was obtained among primary cases than among secondary cases. . . . Likewise, among patients with secondary syphilis there developed more serologically fast cases, serologic relapses and clinical relapses proportionately than among primary cases. An average of 85.7 per cent. satisfactory results was obtained in primary syphilis, as opposed to 70.4 per cent. in secondary syphilis. Six and four-tenths per cent. of the primary cases exhibited clinical relapse and 13.1 per cent. of the secondary cases. . . .

"The therapeutic (treatment) results, then, that can be expected from present methods of massive arsenotherapy are at best about 85 to 90 per cent. 'cure' among cases in which treatment is started in the primary stage of the disease and 70 per cent. among cases in which treatment is started in the secondary stage. Primary cases show about 5 to 6 per cent. clinical relapse, and secondary cases from 10 to 13 per cent."

The benefits from bismuth are shown by the fact that among patients receiving this drug there were 92.4 per cent. satisfactory results, compared with 70.4 per cent. among those not receiving it.

"With regard to age," the report says, "a very definite bias in favour of older patients was found. . . . Eighty-one and one-tenth per cent. of the older group (25 years or older) reached a satisfactory outcome as opposed to 71.7 per cent. of the younger patients, and whereas only 7.4 per cent. of the older patients experienced clinical relapses, 13.6 per cent. of the younger ones did. These differences are too large to be ascribed to chance. . . . There are both race and sex differences in the response to rapid treatment for syphilis. The proportion of satisfactory results obtained was consistently

higher for the white race than for the nonwhite races and was also higher for males than for females. These differences remain significantly great when the four race-sex groups are considered separately: white males show a greater percentage of satisfactory results than nonwhite males; white females than nonwhite females; white males than white females; nonwhite males than nonwhite females. . . .

"The outstanding conclusion to be drawn from the foregoing analysis by patient population characteristics is that the group most resistant to treatment was that of young nonwhite females. . . .

It is pointed out in the report that the present study is primarily concerned with the treatment efficacy of massive arsenotherapy, and that the detailed analysis of reactions to the treatment is not yet complete.

"It was noted, however," the report says, "that encephalopathy occurred more than twice as frequently among white persons as among nonwhites, and also that this type of reaction appeared to be more frequently fatal among white females than among white males or among nonwhites of either sex."—*North West Medicine*.

Bladder instillations of cod liver oil.—It has been known for some time that fats have a high antiseptic power which is directly proportional with their content of unsaturated fatty acids. Since cod liver oil is composed largely of fatty acids it is an unusually effective antiseptic. A decade ago, the bactericidal effect of cod liver oil on staphylococcus, streptococcus, bacillus coli and the tubercle bacillus was demonstrated. The first three organisms were entirely destroyed in four days, while the last took somewhat longer.

The success is due not only to the antiseptic properties of the oil but also to its stimulating effect on granulation and epithelization, resulting in a remarkable regeneration of all sorts of tissue defects. The observations were made on the treatment of skin burns, and possibly the same pertains in the bladder. It is hypothesized that the oil permeates the necrotic tissue and demarcates it from the healthy tissue. Thereupon the former sloughs and the fresh tissue epithelizes rapidly.

A study made of 25 selected cases of urinary bladder disorders treated by cod liver oil instillations confirmed the alleged analgesic bactericidal and epitheliogenic properties of the oil. The results obtained in the treatment of leukoplakia of the bladder were so encouraging as to prompt this preliminary report in the hope of stimulating further trial by others. The results further warrant its use as an adjunct in the symptomatic management of tuberculous cystitis and in bladders with delayed healing after cauterizing procedures.—Ewert, E. E. and Hoffman, H. A.; Use of cod liver oil in urinary bladder. *Lahey Clin. Bull.* 4: 27-30, July 1944.—*U. S. Na. Med. Bull.*

Proceedings of Associations

The All-India Medical Licentiates' Association (Vellore Branch).—The annual general body meeting of the above Branch was held at the Hindu High School, Ambur, on the 11th February, 1945, at 4 p.m.

Dr. S. Ponniah of Ranipet, Vice-President occupied the chair.

Dr. Venkappa in the course of his speech on "LICENTIATES AND THEIR FUTURE" characterised the inauguration of the I.A.M.C. as the correct step for the future consolidation of the profession. The differences still existing between Licentiates and the rest of the profession with regard to the emoluments in the I.A.M.C. are bound to go by the efflux of time and their continued agitation; and the fulfilment of these grievances entirely lay upon themselves in responding to the call of the Army in greater numbers.

The following office-bearers were elected: *Patron*:—Dr. S. Gurubatham of Vellore; *President*:—Dr. S. Ponniah of Ranipet; *Vice-President*:—Dr. T. K. Padmanabhan of Tiruppattur; *Honorary Secretary*:—Dr. C. Nathamuni of Ambur.

RESOLVED that the proposed All-India Medical Register be constituted on a democratic basis placing all the medical practitioners statutorily registered in the Provincial Medical Councils alike without the taint of caste distinction in the profession; that the Medical Councils in India have a single common Register as is obtaining in Madras; that the President in every Medical Council whether Provincial, State, or Indian shall be non-official; that the pay and allowances offered to private medical practitioners on recruiting medical

duties be on a uniform scale both for graduates and licentiates alike; that medical officers employed in Ordnance Factories be also treated likewise; that this branch condemn the attitude of the University of Bombay in not admitting medical licentiates into the recently instituted Diploma Courses in venereology and dermatology, ear, nose and throat diseases, anaesthesia, etc.; and that the President of the A.I.M.L.A. be requested to lead a deputation to the Chancellor of the University of Bombay and represent the injustice done to the majority of the profession.

An interesting paper on "Lung Abscess" was then read by Dr. C. Nathamuni and several members took part in the discussion.

West Godavary District Branch Association.—The March meeting of the association was held on 4.3.45 at Ellore with Dr. V. Venkataratnam in the chair. Drs. C. P. Satyanarayana and K. V. L. Narasimham were at home to the guests.

After tea, the secretary Dr. R. N. Raju, gave a brief account on the medical relief work organised by the Andhra Provincial Branch.

Resolutions congratulating the Madras Government on lifting the ban and requesting the members to contribute liberally to the North Vizag. Medical Relief Fund were passed.

At the Scientific Section Dr. G. Suryanarayan spoke on the subject of 'Medical Ethics' and Dr. R. N. Raju reported a case of: (1) Torsioned Ovarian Cyst, and (2) Collis Fracture treated in Osler Hospital, and there was interesting discussion on both subjects.

Book Reviews

The Surgery of Repair Injuries and Burns.

By D. N. MATHEWS, M.A., M.D., M.Ch. (Cantab.), F.R.C.S. (Eng.); Published by Blackwell Ltd., Scientific Publications, Oxford, pp. 386. [Price: sh. 45/- net.]

This book which has been written by the author while serving in the Royal Air Force, deals with the treatment of common war injuries which come within the purview of the plastic surgeon. The treatment of injuries which come under the care of the orthopaedic surgeon has been omitted. The book is dealt with in 4 parts—the first part deals with the technique of immediate repair and describes pre-operative management, immediate operative treatment of soft tissue injuries, and immediate operative treatment of facial fractures. Part II deals with the technique of subsequent repair and describes pre-operative considerations, scar excision, the repair of skin loss, the repair of mucosal and conjunctival loss, the repair of subcutaneous loss, the repair of nerves and tendons, the repair of skeletal injury of the face and camouflage. Part III deals with the special problems of facial repair in

the nose, the lips, the eye, the cheek, the ear, and the facial bones. Part IV gives a detailed classification of burns. The illustrations are very good and the general get-up is very satisfactory, and reflects great credit on the part of the publishers. The book is an authoritative treatise on the subject.

A Handbook of Ophthalmology.

By HUMPHREY NEAME, F.R.C.S., and F. A. WILLIAMSON-NOBLE, F.R.C.S.; Fifth edition, with 12 plates, containing 46 coloured illustrations and 189 text figures; published by J. & A. Churchill Ltd., 104, Gloucester Place, Portman Sq., 1944. pp. 333.

This book is primarily intended for under graduate students and general practitioners. Rarities of ophthalmology have been omitted and the authors have correctly confined themselves to brief notes upon these uncommon affections. Greater attention has been given to those diseases of the eye which form the bulk of the hospital outpatient practice. The technique and the usual methods of examination of the eye, have been described at very great length and

often found that the discontinuation of a sheath by the male and the employment of an adequate contraceptive method by the woman, i.e., cap and chemical, have a most beneficial effect on these conditions. Nevertheless, there can be little doubt that in many of the cases which appear to be mainly psychological there is an element of endocrine dysfunction which is often benefited materially by the judicious administration of methyl testosterone. Thus the effective treatment of this troublesome condition is best effected by a combination of endocrines, psychotherapy and re-education in the sexual field.—EDWARD F. GRIFFITH, M.R.C.S.—*Practitioner*.

Masked hypoglycemia.—Dyer thinks that there are probably many cases of spontaneous hypoglycemia masquerading as epilepsy, psychoneurosis, neurasthenia, menopausal neurosis and the like. The symptomatology is varied and often bizarre. Patients mildly affected may simply have a feeling of weakness, slight dizziness, perhaps a sense of hunger or some excessive perspiration. Patients more severely affected will often complain of diplopia, headache, occasionally nausea, extreme weakness, ataxia and loss of mental equilibrium. Severely affected patients suddenly become unconscious, have

convulsions, break out into cold, clammy perspiration and are revived best by the use of glucose intravenously. The diagnosis in these cases can be established by a sugar tolerance test if care to insist on a normal diet preceding the tolerance test and a five hour examination rather than the conventional three hour test. Important factors in the evaluation of spontaneous hypoglycemia are: (1) the level of blood sugar at the time of the reaction, (2) the rapidity of fall of the blood sugar and (3) the previous level of blood sugar. It is just as possible to have hypoglycemic reactions when, in the course of one to three hours, the blood sugar is brought from a level of 300 to 100 as when the blood sugar is brought from a level of 150 to 60. In addition to the sugar tolerance test, the patient must be given a complete medical examination. Many of these patients respond to a low carbohydrate, moderately high fat and high protein diet divided into the three usual meals with interval and bedtime feedings. In the presence of other complicating disease this treatment should be carried out in conjunction with recognized forms of therapy for the attendant disease. One of the author's patients had hypothyroidism and in addition to the prescribed diet was given thyroid. Failure to respond to the dietetic treatment calls for further diagnostic study.—*J.A.M.A.*

SURGERY

Intravenous infusions.—The large-scale use of intravenous infusions in the treatment of shock has emphasized the difficulty which is often encountered in maintaining a sufficiently rapid flow of the transfusion fluid. As the result of a careful investigation of the whole problem, H. E. Pugsley and R. P. Farquharson (*Canadian Medical Association Journal*, July 1944, 51, 5) have found that the factors controlling the rate of flow of such infusions given by the gravity-drip method are: (1) the size of the vein at the site of infusion; (2) the temperature of the fluid as it enters the vein; (3) the nature of the fluid; (4) the pressure of the fluid. Infusions given into large veins (i.e., veins with an outer diameter of 5 mm. or greater), such as the median cubital vein, always flowed rapidly, the temperature and nature of the fluid having little effect on the rate of flow. In the case of small veins, however (i.e., veins with an outer diameter of 2 to 4 mm.), such as the long saphenous vein at the ankle, the temperature of the fluid had a marked effect, cooling of the fluid causing contraction of the vein with pronounced slowing of the rate; an increase in temperature produced veno-dilatation and accelerated rate of flow. A point that is emphasized by these workers is that cooling or heating the fluid in the container is of little avail, as the fluid may have returned to room temperature by the time it reaches the vein; the heating (or cooling) of the fluid has to take place immediately proximal to the needle. Human serum and reconstituted dried plasma were found to contain a factor which caused

marked sustained contraction of the vein with consequent slowing of the rate of flow; this factor was not demonstrated in fresh citrated whole blood, fresh citrated plasma, physiological saline, or 5 per cent. dextrose solution. It was found that blood stored for eight to eleven days flowed more slowly than did fresh preparations. Whilst increased pressure resulted in a more rapid flow when the vein offered little resistance, it was not only useless when the vein was contracted but also caused considerable pain at the site of infusion. The practical implications of this investigation are that in the shocked patient a large vein should be selected for the infusion whenever possible. Should it be necessary to use a small vein, and the rate of flow is unsatisfactory, fresh citrated blood or plasma should be used and the fluid should be warmed as it enters the needle; this can be accomplished by coiling the tube between hot-water bottles just proximal to the needle. Such heating will be just as effective in the case of serum and reconstituted dried plasma.—*Practitioner*.

Tyrothricin.—Tyrothricin is beginning to appear on prescriptions for topical use against a variety of gram-positive organisms. It is very effective against gram-positive bacteria and shows only slight action against gram-negative organisms. Its action against gram-positive organisms is due to both gramicidin and tyrocidine, whereas its action on gram-negative organisms is due to its tyrocidine content.

Due to its tyrocidine and gramicidin

content, tyrothricin has two actions on bacteria. Tyrocidine is very effective in lowering the surface tension of solutions. Its action on cells results in complete inhibition of metabolic function and disintegration or lysis.

Although gramicidin also has the property of altering surface tension, its bactericidal action is not related solely to this property. Heat will destroy the bactericidal properties of gramicidin but will not affect its power to depress surface tension.

The toxicity of tyrothricin limits its use to localized infections that permit topical application.

It is effective against infections caused by gram-positive bacteria such as streptococci, staphylococci, pneumococci and diphtheria bacilli. It has been used successfully in empyema, osteomyelitis, ophthalmic infections, in ear, nose and throat infections, and in lesions of skin and soft tissue.—Silbergleit, A. H.: Tyrothricin: new antibiotic from soil bacterium now available to combat localized infections. *J. Am. Pharm. A.* 5: 232-234, Sept., 1944.—*U. S. Na. Med. Bull.*

Differential diagnosis of intraspinal tumors and protruded intervertebral disks and their surgical treatment.—Love argues that if diagnostic errors are to be kept at a minimum, the mistake should not be made of considering every intractable low back and sciatic pain as being due to protruded intervertebral disk. Trauma may initiate symptoms of intraspinal neoplasm as well as those of a protruded intervertebral disk. It is important in planning and executing the operation for relief of intraspinal pressure to know which of the following is indicated, relatively extensive laminectomy for removal of a tumor, or a relatively short operation, with little or no sacrifice of bone for removal of a protruded intervertebral disk. The author and his colleagues at the Mayo Clinic encountered many intraspinal neoplasms masquerading as protruded intervertebral disks. In some cases the mimicry was so great that the differential diagnosis could not be made until the space-taking lesion had been uncovered at the operative table; this, in spite of the fact that every patient suspected of having a protruded intervertebral disk is subjected, in addition to a general physical examination, to an orthopaedic and a neurologic examination. In an analysis of the records of 26 cases of tumor of the spinal canal in which symptoms of root pain suggested irritation or compression of the spinal cord or nerve roots by a protruded intervertebral disk, it was found that diagnostic spinal puncture with or without visualization of the spinal canal, was essential to diagnosis and to localization of the intraspinal lesion. In 15 cases of tumor of the spinal cord, it was found that in 8 the symptoms were misleading, in that they suggested protruded intervertebral disks. Also, during the period when these 15 patients came to operation, 100 other patients were subjected to operation for protruded intervertebral disks. In any

case of unexplained, intractable, root pain and in almost every case in which a protruded intervertebral disk is suspected, diagnostic lumbar puncture should be performed and the protein content of the cerebrospinal fluid should be determined. A value for spinal fluid protein of more than 100 mg. per 100 c.c. usually means a neoplasm rather than a protruded intervertebral disk. (Love: *Journal of Neurosurgery* 1: 227-228, July, 1944.)—*U.S.O.W.I.*

Value of "Five Day" treatment of syphilis is shown by study.—A study of a group of 4,351 massive arsenical treatments for syphilis shows that the most effective method yields 85 to 90 per cent. satisfactory results in primary syphilis and 70 per cent. in secondary syphilis and also that patients over 25 years of age respond better than younger ones, the United States Public Health Service reports in an evaluation of results obtained in twenty-two co-operating clinics. The findings are reported in *The Journal of the American Medical Association* for October 28.

The massive arsenical treatment method has been referred to as the so-called "five day treatment." The method of treatment of the disease previously followed, as first developed by Ehrlich, required uninterrupted treatment over a long period of time, generally about two years. The massive treatment had first been attempted by Ehrlich but was discontinued because of unsatisfactory results. In 1933 it was revived. The present report deals with a study that was limited to cases in the first four years of infection with or without active manifestation of the disease, treated during the period 1933-1943 inclusive.

Among the other important findings of the study was the fact that men responded better than women and whites better than nonwhites. The least satisfactory results to treatment were obtained among young non-white women.

Six different schemes of treatment were employed. Except for the slow intravenous (into the vein) drip administration of neoarsphenamine, which proved to be highly reactive, the best results followed the use of multiple syringe injections of mapharsen combined with typhoid vaccine. About 5 to 6 per cent. of the primary cases relapsed and 10 to 13 per cent. of the secondary cases. The administration of bismuth during the period of treatment appeared to improve the results obtained.

Acute encephalopathy (a degenerative disease of the brain) was observed in 7.1 per thousand treatments. Of these 3.2 per thousand were fatal and 3.9 per thousand were followed by recovery. No difference could be demonstrated between treatments with regard to the frequency of this type of reaction.

The report points out that the follow-up observation on the case studied was far from complete, but it was adequate for purposes of analysis. Eighteen per cent. of the cases were not seen after discharge from the hospital, two thirds were not seen more than

this chapter especially is bound to be very useful to the student who starts his study of ophthalmology. The Chapter on Refraction and Accommodation is also very exhaustive. The Chapters on Operations, Ophthalmological signs and symptoms in General Diseases, Eye Diseases in the Tropics, and Therapeutics are well written. The section on intracapsular extraction of cataract has been re-written, and several new prescriptions have also been added in the chapter on Therapeutics. This book is well printed and well illustrated and forms a useful handbook of Ophthalmology and is bound to be useful to the students as well as practitioners.

The History of Cæsarean Section.—By J. H. YOUNG, M.B., Ch.B., D.T.M. & H. (Edin.), published by H. K. Lewis & Co., Ltd., London, 1944. pp. 254.

This book gives us a complete history of the origin of the term Cæsarean Section and also of the actual operation itself as found in the medical literature. The author deals with not only the unfolding of the indications for the use of the operation but also the stages through which the technique of its performance has progressed. A knowledge and due consideration of the very many historical details given in this book will be very useful to enable the obstetrician to make further progress towards making these common operations safer for the mother and for the infant than they are today. Any obstetrician proposing to study the origin or to modify the operation in any

particular should consult this work. It forms very interesting and useful reading.

The Sick African.—By M. GELFAND, M.B., Ch.B., M.R.C.P., D.M.R., published by The Post Graduate Press in association with The Stewart Printing Co., (Pty.) Ltd., Carlton House, Alfred Street, Cape Town, 1944, pp. 357. [Price: sh. 25/- net.

This book deals with the every day diseases encountered in the Natives of Africa. It describes how these may be recognised and treated and, what is more important, it emphasises the differences in the clinical manifestations of the same disease in the European and in the African. Beginning with the chapter which describes the Sick African and giving a description of him as a patient, the author proceeds to give details of the method of examination of the sick person in Africa and then proceeds to deal with the diseases. Most of the common tropical diseases such as malaria, leprosy, yaws, sleeping sickness, filariasis, yellow fever are dealt with in an exhaustive manner. Among other chapters may be mentioned those on nutritional disorders, disorders of the nervous system and venereal diseases. The book has been written purely from the clinical aspect and the author has omitted most of the details of helminthology, protozoology and parasitology. The illustrations are very good and illustrative. The general get up is also pleasing. It will be very useful for medical practitioners and for those who practise the profession in Africa.

Preparations and Inventions

Lithium antimony thiomalate. Recommended for the treatment of filariasis is issued under the name of **anthiomaline** by Messrs **May & Baker (India) Ltd.** and we are informed by the Bombay office of the firm (Karimjee House, Sir Pherozshah Mehta Road) that supplies of the preparation are available in reasonable quantities.

With effect from 15th March 1945, the **Indo-Pharma Pharmaceutical Works, Bombay**, are reducing the prices of **Vitamin B₁** (Thiamin tabs. of 1, 5, 10, 20 or 50 mgs.), **Vitamin B₂** (3 mgs Riboflavin) and **Phyllindon** by about 40%. This will ensure these preparations, made from purest American raw materials, a wider scope for prescriptions.

Correspondence

To The Editors, **THE ANTISEPTIC**, Madras. Sirs,

In view of the desired uniformity of medical education in India, Licentiates may be allowed to take up "Degree course" after a lapse of say six years in Government or State service, irrespective of whether they are actually medical groups or not (i.e., F.Sc. Biology groups). The experience in

service or private practice shall more than compensate the alleged lowering of the University standard, and the ambition of many debarred young men will be satisfied. If medical schools are to be made colleges, this shall be a way to help those who have already qualified.

Yours faithfully,
A. M. KHAN.
M.O., Sangner Dispy.

9-2-1945.

Corrigendum

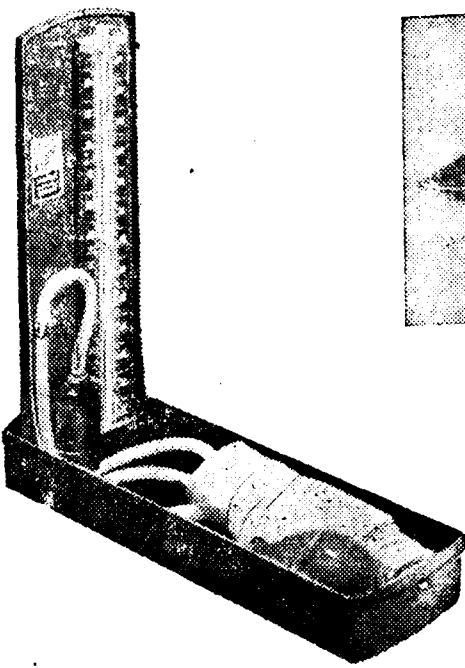
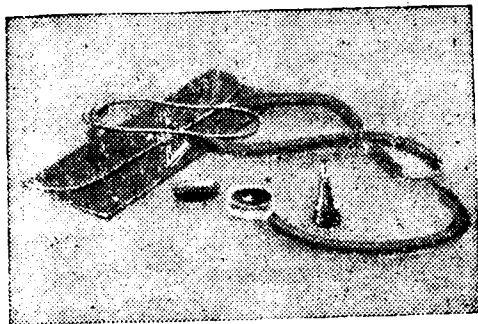
'INTRAVENOUS THERAPY.' This book was reviewed in the Feb. '45 issue. Therein it was erroneously stated that the year of its

publication was 1943 while it is 1944. The book is available of Kothari Book Depot, Parel, Bombay-12. Price: Rs. 8/8/.

A Query

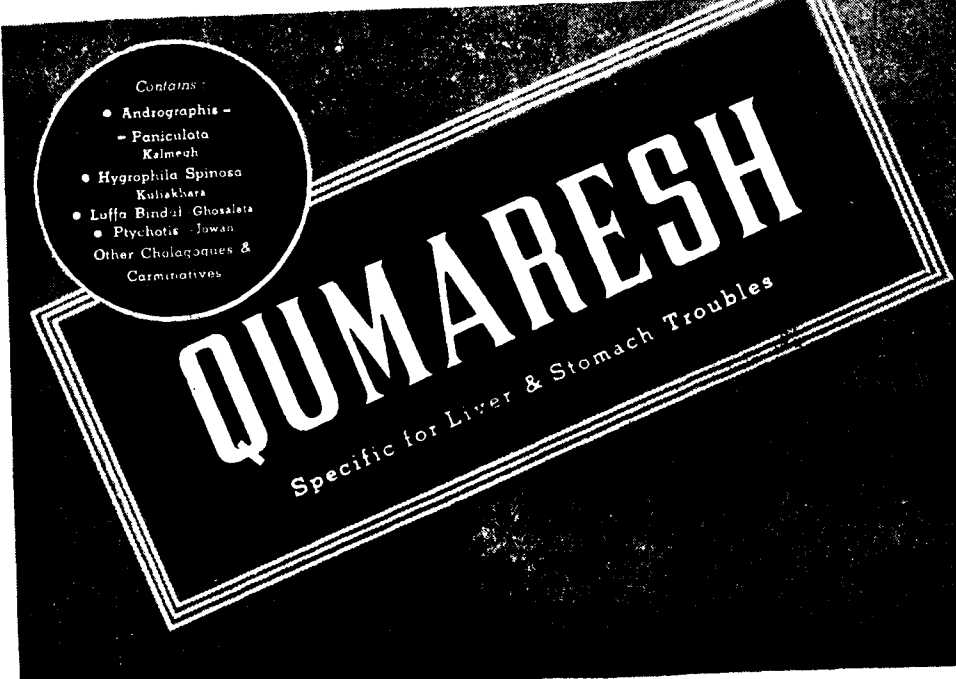
V. Raghava Menon, Medl. Practitioner, Vatanappalli, writes under date 12-2-'45 as follows:

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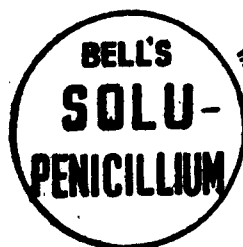
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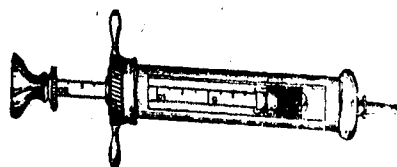
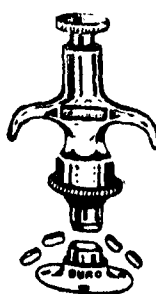
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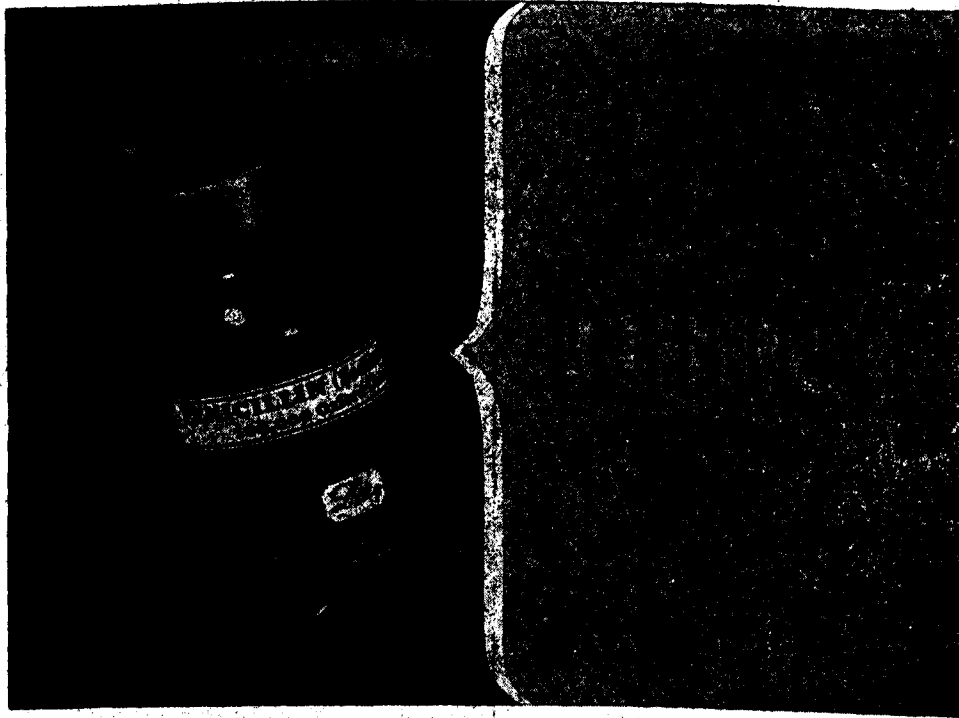
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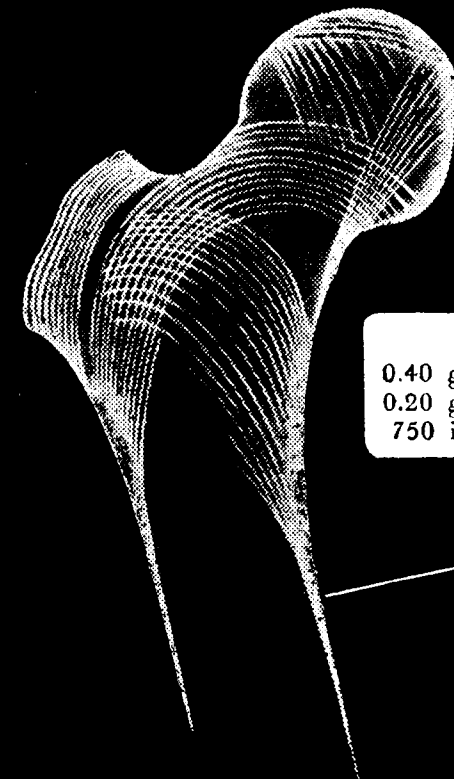
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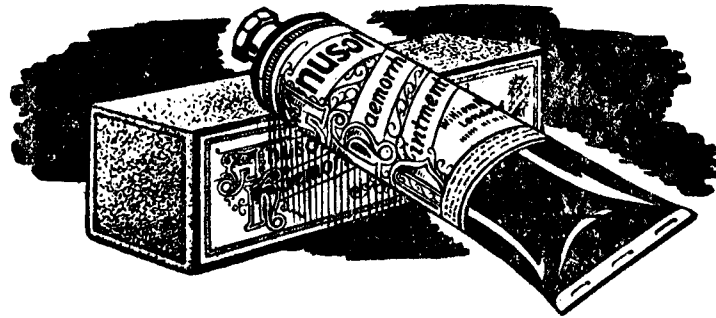


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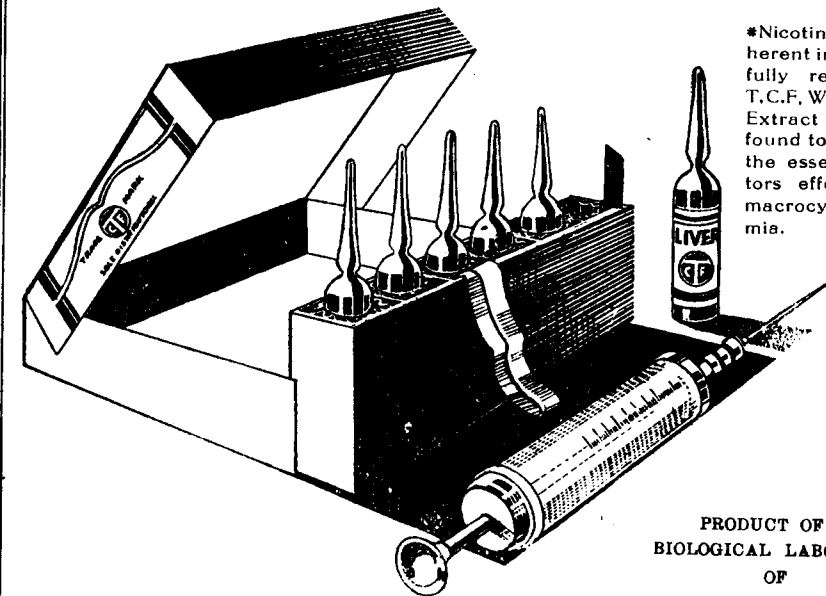
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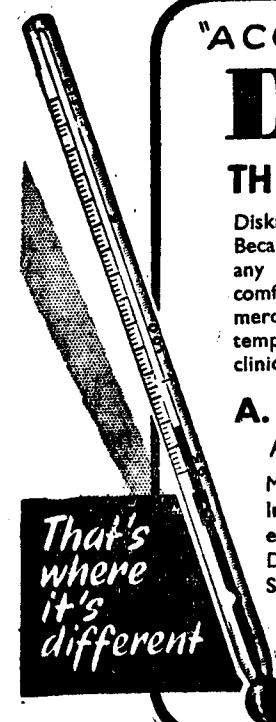
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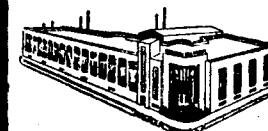
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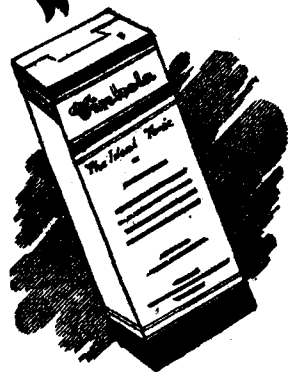
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Original Articles

Treatment of Eales' Disease*

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H.O.R. Institute, Calcutta.

EAL'S DISEASE is characterised by recurrent hæmorrhages in the retina and the vitreous in young adults with a preponderance in the males. According to Eales, it occurs in the absence of any obvious constitutional disease but associated with epistaxis and constipation. He attributed the former to a vasomotor contraction and subsequent muscular inhibition of the alimentary tract and the latter to compensatory dilation of capillaries and was associated with bradycardia, dyspepsia, headache and constipation.

Causes.—(1) Tuberculosis is probably the most common cause at least in the continent of Europe. GILBERT found tubercle bacillus in the neighbourhood of a vein, and the condition has been experimentally produced by the injection of tubercle bacillus by OTORI and others; (2) septic foci; (3) thrombo-angiitis obliterans; (4) endocrine deficiency; (5) delay in blood coagulation time; (6) calcium deficiency; (7) menstrual disorders; (8) oxaluria; and (9) disorders of blood and circulation.

Little alteration in metabolism has been found.

The clinical picture is the same whatever the cause. It occurs in young adults, between 14 and 30, with an average of about 23 years. One eye is first attacked, and then, the other. Males are in majority affected, although females are not rare.

Symptoms—There is sudden obscuration of vision which may be completely lost. Ophthalmoscopically, the hæmorrhages are generally found to be peripheral, and the macula is usually spared. Generally the vitreous is invaded by blood although they may remain intra-retinal. The fundus is seen very indistinctly or may be quite invisible.

Early changes in the fundus are irregular tortuous vessels with white sheathing along and around them, usually at the extreme periphery with or without small hæmorrhages alongside them. Recurrences are the rule. After sometime, the hæmorrhage may become less frequent and without

* Specially contributed to THE ANTISEPTIC.

any obvious cause may completely stop altogether, and the vitreous may slowly clear, so that useful vision may be regained after a long period.

Complications are: (1) Secondary glaucoma; and (2) retinitis proliferans, ending in detachment of retina. Other associated symptoms are (1) indicanuria; (2) enterogenous infection; (3) adrenaline deficiency (ZENTMAYER); and (4) myocardial changes (DE SCHWINITZ). To these may be added frequent attacks of insomnia, nocturnal emissions, extrusion of prostatic fluid after micturition or mixed with urine.

Mentally they are of a highly emotional type, easily elated or depressed, feel very acutely anything said against them, and keep it in their minds for a pretty long time. They can be made to do any service if few sweet words are spoken to, or they are patted. They are highly ambitious, and are either good students or young men who have begun to make a mark in their career. Many of them have ambitions which, situated as they are, are either impossible to fulfil, or it will take a long time to reach the goal, but they are impatient and always worry and fret within themselves so that high intensity of internal mental struggle is always going on, and this continues sometimes to keep on and they pass sleepless nights. In addition, to fulfil their desires they always over-exert themselves. The net result is that the whole autonomic system is wrecked. To these belong symptoms of dyspepsia, heart-burn, acid eructations, loss of appetite, constipation, or constipation alternating with diarrhoea, palpitation of heart, etc., specially after a mental shock. Youth saves them to a great extent and there are periods when they enjoy comparatively good health.

An analysis of the symptoms seem to indicate they are more or less para-sympathetic with labile autonomic system from the beginning. To these are added the always planning nature of the highly ambitious mind of a youth when all the desires of the world are at the highest level, but whose capacity to execute the plans into action is greatly hampered by a weak sympathetic system, so that the whole sympathetic and para-sympathetic work at a high speed without the desired effective result. The more he is unable to realise his desires, the more he frets and worries, the net result being that the already weak nervous system is overworked and becomes more and more exhausted. He is however saved to a certain extent by his youth whose autonomic system and the endocrine glands have not yet passed through the turmoils of life, so that there are frequent periods when he physically and mentally approaches almost normal. But these patients are more or less fastidious about their diet, that the food is often ill-balanced, so that normality cannot be maintained for a long time, and now and then, other exciting factors acting on the mind brings them below par. Thus the periodic cycle of bad and good health goes on, with progressive damage to the nervous system, and the blood vessels, when hæmorrhage occurs in the eye which was probably weak from the birth. The mechanism of extravasation of blood is probably the same as in the case of hyperpyrexia. There is probably a primary fall of pressure in the carotid sinus due to afferent impulses from the vagal and sacral division of the autonomic system (the latter containing about $\frac{1}{3}$ of the large nerve trunks) and a reflex spasm of the arterioles occurs, and a transient rise in the pressure takes place. This may also be due to psychic effects on the vasomotor centre and a transient rise of pressure occurs on the venous side during the spasm also. According to one conception such continued or intermittent rise may lead successively to hypertrophy, exhaustion and degeneration of the arteriolar muscles and

secondary fibrosis. Veins are also affected secondarily, pathology and ophthalmoscopy seem to indicate that the veins are already weak, as shown by perivasculitis, tortuosity of the walls which are either degenerative or a compensatory phenomenon for the veins to receive the extra pressure in them. When the intravenous pressure rises suddenly, a hæmorrhage occurs. This rise of blood pressure may not be above the average normal, but relatively high, relatively in relation to the vessels of the eye or in the particular patient.

It is likely that in this state of the autonomic nervous system, the endocrine glands such as the adrenals, the gonads, etc., may also be below par, since they are intimately inter-related and work together, since these individuals have been described by various authorities including Eales himself as below the par, and as the mental and physical capacity of an individual depends much on the internal secreting glands, these facts are also strongly suggestive of the low condition of the internal secretive glands. That metabolism has been found normal is no proof of the abnormal condition of the health at the particular moment when the hæmorrhage occurred, and even at other times, for it is very difficult to know what is normal for the particular individual.

It is therefore conceivable that on this substratum of the autonomic nervous imbalance, any infection, e.g., tubercle or other septic foci, metabolic disorders, psychical trauma, excitation or depression, are sufficient to cause a hæmorrhage in the eye. A tubercle bacillus is an accident, a septic focus a chance coincidence.

That tuberculin reaction is positive in many cases seems simply to indicate that the autonomic nervous system is hyper-excitable to the same degree as are found in tubercular infection, or it may mean that the nervous system or the defensive mechanism is in such a state that a tubercle bacillus may enter the system and incidentally the eye, and do mischief, since it is the sympathetic system, whether local or general, which plays a most important role in the defensive mechanism of an organ and of the body. It would be interesting to imagine that of all the organs in the body, the ocular condition was in such a state, i.e., local ocular defensive mechanism of the eye including blood vessels and the autonomic was in such a state, that a tubercular bacillus found there only a suitable nidus for its growth, not in the lungs, or in the abdominal cavity, as in meninges although it might have passed through these organs before entering the eye. Similar remarks may be applied to septic foci. It must be remembered that the eye is an organ which is never at rest, excepting perhaps in deep sleep; even then it may be imagined, it sees things though not related to the external world, but something of the inner world. When an eye looks to objects in the external world, or when the mind thinks within itself, in the particular individual, the eye always works and probably more so, when the mind works at high speed, since a kaleidoscopic picture of the quick successions of the mental imagery is being seen. The result is that the more a mind is excitable, the brunt on the eye is greater, so that the pathological changes in the eye may be in advance of changes in other organs of the eye. Fortunately for the eye, the higher psychical thinking involves liberation of the inhibitory influence of the higher portion of the brain on the subcortical centres such as thalamus, sympathetic nucleus, etc.; the connection with the outer world is temporarily cut off, and the anger, avarice, greed,

jealousy, ambition and sex find little opportunity to work to its full extent during the period. And human being must for certain periods of the day think of something higher. Thus although the eye works, the excitation of the lower centers being inhibited, the organ of eye is spared constant devastation to a certain extent at certain periods of the day.

The treatment of these conditions therefore includes treatment of the body and mind. In fact unless the mind can be controlled, it is almost impossible to prevent recurrences in many cases, just like a tubercular patient who has been treated in a Sanatorium again falls a prey to the disease when he comes back to his previous environment.

Treatment.—In the beginning, absolute rest in bed should be strictly enjoined, preferably kept in a dark room free from any sound, light or any other disturbances. Some such sedatives as the following may be prescribed :

(1) Pot. Bromide	...	10 gr.
Syrup Codeine Phosp.	...	$\frac{1}{2}$ 3.
Syrup Hypophosphate of lime	...	1 3.
Aqua to be given		

at 7 A.M. and 7 P.M.

(2) Embinal (M & B)	...	5 gr.
Arrhenal	...	$\frac{1}{8}$ gr.
C Vitamic acid	...	20 mg.
Atropine Sulph	...	$\frac{1}{400}$ gr.
Calcium Lactus	...	5 gr.

at 2 P.M. and 10 P.M. Locally Eserine Sulph. (1/8%) lotion may be dropped twice a day. In the temples and in between the eye-brows, the following ointment may be rubbed twice a day :

Sandalwood oil	...	1 3.
Menthol	...	2 gr.
Ung. Hydras Oleatis (10%)	...	1 3.

This may also be advantageously rubbed over the cardiac region and around the umbilicus. The patient should be given a warm bath in the morning and at night at 10 P.M., with cold water to the head. A piece of lint dripped in cold water and placed over the forehead up to the temples and the eyes, with particular attention that the lint or cloth does not get warm for a period of 15 to 20 minutes, repeated at intervals of 3 or 4 hours, may be advantageously given. During this stage expressed juice* of green, yellow and red leafy vegetables such as lettuce, red leaves of beets "palang," etc., mixed with juice of a tomatoe and one or two oranges mixed with sugar and ginger should be given morning and evening in empty stomach. If preferred, the juice of the leafy plants may be given mixed with fresh warm milk. This juice should be given between 6 and 7 A.M. and 3 and 6 in the evening. Between 7 and 8 A.M. the principal solid food of the day, rice or bread with vegetables, is taken. Rice should be given in the form of

*It may be pointed out in this connection that in administering the expressed juice of fresh leafy plants, we are not only administering the vitamins, salts, and chlorophyll, but also the energy of life which is common to all living beings, plants or animals and which has not yet disappeared from the just torn plants, since otherwise the plants would have crumpled, the "milieu interne" of plants. Thus we transfer the energy which is sustaining the life of plants directly to the human stomach from which it easily enters the whole system and adds to the vital energy of the particular individual. Fresh animal food also does the same thing to a certain extent, but we are not accustomed to take them raw, and decomposition also takes place more easily in them. Fresh vegetables also do the same thing to a certain extent; but as leaves are portions of plants where plant metabolism is greatest, it is best to use leafy plants and leaves supplanting them with raw vegetables. By this, it is not meant that cooked or other foods are prohibited or are useless.

of "Khichuri," i.e., rice and pulses should be boiled together along with fresh vegetables. Meat, eggs, onions, chillies and fish should be avoided in this stage. Rice prepared in the following way will be found to be palatable and easy of digestion :—

To the required amount of rice, just that amount of water is put in a vessel which will boil the rice but there will be no excess of water when the rice is fully boiled just as in preparing "palau." To it whole spices such as cardamom, elach, "labanga" (Sans.), "haridra" (Sans.) and slight ginger, and few drops of the milky juice of fresh green "papaya" should be added. To it also add fresh carrots, beets, bentils, beans, peas, white cucumber, "palwal" and other vegetables containing vitamins B and A. Fresh tomatoes will give a better taste and will be a useful addition from its vitamin content. The whole boiling process should be done in slow heat and the vessel covered in such a way that very little steam gets out of it. This rice should be taken with a vegetable soup in which enough leafy vegetables have been added. Just before eating, powder of slightly heated "Jira" (cuminum cyminum) say one or two tea-spoonful should be added to the soup. In preparing bread also a decoction of spices should be prepared to which has been added milky juice of papaya when it is just warm. This should be used instead of ordinary water and the role should be kept about one to three hours in slightly heated state before breaking, (if prepared with some amount of powdered fried wheat or gram, about $\frac{1}{4}$ the amount of total wheat, it is palatable to taste) and a little baking powder may be added. At noon, at about 12 o'clock, a pint of milk mixed with the juice of two oranges should be taken. This mixing should be done in the following way :

To the required amount of very hot milk are added the expressed juice of the orange drop by drop and very quickly stirred, so that fine emulsions of cheese form. To it sugar is added to taste. Large curds are liable to cause wind and diarrhoea and colic. At about 3 P.M. sauce containing carrots, peas, white cucumber, tomatoes, cabbages, peas, beets which have been cut to very small pieces and soaked for 3 hours in lemon juice to which salt, sugar and ginger have been added and milk should be given. At 5 P.M. pomegranate juice about a glass mixed with grape and orange should be given. At 7 P.M. bread or "puri" prepared as above with vegetables and milk may be given. At 10 P.M. milk and orange, 5 A.M. fruit juice should be given. After each feed juice of two green "amlaki" (Sanskrit) phyllanthus emblica should be given.

This regime should be kept for about a week or two or according to the necessity for a month. The above diet is only a specimen diet. The idea is to supply the minerals, vitamins and the salts in sufficient amounts, and in as much natural state as possible, and by supplying chlorophyll to increase the haemoglobin content quickly. In fact in these cases a non-irritating, yet stimulating, diet is necessary whose nutritional value should be very high. Any other diet may be substituted.

The sedative mixtures and powders should be gradually withdrawn, say one powder at noon and dose of mixture in the noon and another powder consisting of the following should be substituted :—

Calcium Lactus	...	5 gr.	Hydras Iodide Vinidic.	1/8 gr.	
Makaradhwaja	...	1 gr.	Atropine Sulph.	...	1/300 gr.
Zinc Phosp.	...	1/10 gr.	Berin (Vitamin B)	...	1 mg.
Strychnine Sulph.	...	1/300 gr.			

Mft. Pulv. one-twice a day after food.

After about 15 days Codein Phos. mixture should be omitted and Embinal powder given only when sleeplessness or mental excitation is present. Instead the following mixture may be given morning and evening in empty stomach followed by milk :

$\mathcal{R}$ Liqr. Auriet Arsenic Bromide ...	2 $\mathfrak{m}$	Tr. Nux Vomica ...	2 $\mathfrak{m}$
Elisir Bromo-Valerian (Gabail) $\frac{1}{2}$	3	Tr. Belladonna ...	2 $\mathfrak{m}$
Penta-Bromides ...	10 $\mathfrak{m}$	Syrup Hypophosphate of lime.	1 $\frac{3}{4}$
Ephedrine Hydrochlor ...	$\frac{1}{2}$ gr.	Decoc. Sarsæ Co. ...	1 $\frac{3}{4}$

After a month a course of Vitamin B (25 mg.) mixed with Sodium Cacodylate (1 gr.) and alternating with Calcium Gluconate (10%) 2 c.c. and Sodium Morrhuate (3 grs.) should be given twice a week.

He should be allowed to sit after a week and do some light work. As most of the cases clear up in the 1st instance rapidly unless there is a large amount of extravasation, he may be allowed to do work after its disappearance.

If the case is seen after several recurrences, the same line of treatment may be adopted only in old cases, locally, in increasing strength on alternate days, beginning with a grain to an ounce along with Eserine Sulph. (1/8%) lotion and Pilocarpine 1% lotion should be given thrice a day. Calcium Iodide (2%) lotion may be alternated with it; a Sulphanilamide* ointment (2%) mixed with mercury and sulphur in traces should be applied at bed time. At this stage, ultra-violet rays applied over the closed eye lids, and general body radiation are helpful. It should be administered from about 6" distance for 2 or 3 minutes. Glucoiodine (Calcium Gluconate with Iodine, 2% solution †) may be injected once a week intramuscularly if there is a tendency to fibrosis. In no case should a subconjunctival Mercury Cyanide injection be given. Pilocarpine or other sweats may be advisable in selected cases. It pays in the long run to have patience in these cases. If recurrences can be prevented, they clear up in the long run and useful vision may be restored, sometimes a year or two may be necessary in very bad cases.

But in these cases a sense of utter helplessness and despondency overcomes the patients and they frequently speak of committing suicide rather than lead a blind life. Secondly, they do not believe that they will again regain a useful vision, so that even when they have some restoration of vision, they cannot have mental peace. Constant assurances by the surgeons with full confidence of ultimate recovery of vision helps a great deal. Any weakness, any faltering or vacillation in the mind of the doctor is sure to have a very bad effect on the patient, the patient can never be cured.

In these cases, if mind can be fixed to some other object for any length of time, the patient gets relieved, the relief depending on the length of time thus occupied and thus sympathetic and para-sympathetic centres in the diencephalon and the vasomotor centres will escape from the excessive strain put on them, since it is through the autonomic nervous system that the physical expressions of emotions are exhibited, and thus the vascular and the autonomic nerves of the eye will also get some rest and in consequence there is a greater chance of rapid improvement. A study of the conditioned reflexes and the functions of the cerebral centres suggests a method for it.

* 'Raganol' prepared by S.O.C.W. of Calcutta contains such drugs in ideal combination.
† Prepared by Gluconate Ltd. of Calcutta.

The function of the cerebral cortex as revealed by such studies may be enumerated as, "(1) Excitation; (2) inhibition; (3) irradiation of these effects; (4) reciprocal induction of excitation and inhibition; (5) formation of suitable synaptic connections; (6) analysing and differentiation between various forms of external and internal stimuli" (WIGGERST). Advantage may be taken of three functions specially, *viz.*, excitation, inhibition and irradiation of these effects for this purpose.

As an animal may be conditioned to several types of stimuli, such as flash of light, a sound, and a tactile stimulus, or smell, visual, auditory tactile, or smell sense organs may be used as an effector organ either singly or simultaneously since in the latter case a summation of effects may be obtained. Of these, it has been found by experience in human subjects that the visual end organs and vision are most potent in this respect.

A survey of functions of the brain seems to indicate that the whole cortex must act as a whole for the formation of any of its multifarious functions. The various "centres in the different lobes are merely" nodal points of a complex system. Upon the integrity of these depends the existence of all sensory reflexes involving more complicated forms of synthesis and finer shades of analysis. Extirpation of these centres leads to loss of these functions, but in lower animals some activity of a crude nature remains dispersed over the whole cortex, by means of which reflexes conditioned or otherwise can be established, *e.g.*, reactions to changes in luminosity after extirpation of occipital lobes, conditioned reflexes to sound after extirpation of parietal lobes. With conceptions of centres, it would be useful to recall the functions of the different lobes of the brain and the centres contained in them, as well as some of the subcortical centres.

Frontal lobes.—A large portion of the frontal lobes anterior to pre-motor areas is chiefly concerned with: (1) consciousness; (2) memory; (3) judgement; (4) and intellectual processes in general. Pathological changes in the brain including the frontal lobes cause both in men and lower animals many psychological disturbances and abnormalities of behaviour such as torpidity, inertia, inattention, indifference to surroundings, lack of feeling and absence of spontaneity, prolonged reaction times and incapacity in exercise of choice. Memory is poor or lacking, whilst orientation as to time and space and persons is defective. Recently acquired habits and conditional responses are said to be specially affected, while those of longer standing are more apt to be retained. The moral and social attributes may be completely changed. Consciousness is permanently lost after ligature of the anterior cerebral arteries on the left side, but not by ligature of the corresponding right branches. Thus at least a part of the left frontal lobe is necessary for consciousness. The only demonstrable function of the frontal lobes to the motor activity appears to be that it is essentially for memory of how to execute learned acts involving temporal sequence of movements. In the posterior part of the second frontal convolution is an area which produces movements of the eyes to the opposite side, stimulation above this area produces a downward movement and stimulation above this area produces a conjugate upward movement. Stimulation of these areas produces all the symptoms which stimulation of cervical sympathetic evolves and is evident only so long as the cervical sympathetic are intact. Stimulation of calcarine fissure in occipital lobes may give rise to similar symptoms (part concerned with ocular movement).

In the posterior part of the superior frontal convolutions is an area, which reacts in man to intense faradic stimulation. The movements obtained are:—(1) Rotation movements of the head, eyes and trunk in the opposite direction, and the opposite limbs carry out complex co-ordinated movements of a flexor and extensor character. FOERSTER attributes these impulses passing down by an extrapyramidal route to subcortical and lower levels which can be proved to have special descending paths. Similar movements may be obtained by stimulation with strong faradic currents of an area occupying the greater part of the summit of the Rolandic convolution, provided connection with the pyramidal tract or the motor area is severed; otherwise the same type of movements as is obtained in the motor area, but the threshold of stimulus is higher.

Temporal lobes.—The auditory centre is usually placed in the small turned in area of the superior temporal convolution—the Heschl convolution. Destruction causes complete blindness.

Occipital lobes.—The sensory visual cortex comprises an area situated mainly on the medial aspect of, and at the posterior pole of, the occipital lobes with slight extensions laterally. This region is characterised by the white line of Gennari which is situated in the fourth layer, being formed by a thick stratum of cells associated with coarse medullated fibres wherein the geniculo-calcarine pathway has been traced to end. This area is called area striata.

Peri striate and para striate areas.—The striate area is surrounded by a band of cortex called area para striata, which is itself surrounded by a second called area peri striata. It was at one time considered to be visuo-psyche for the elaboration and storing of visual sensory impressions, their injury resulting in mind blindness in which objects are seen but their images convey nothing to mind. Recent work ascribes it to left macular area, the function of the former being maintenance of fixation.

The angular gyrus.—It is the visual word memory centre. Injury to it causes word-blindness; a condition in which written matter is not understood, although spoken words remain intelligible. Other functions are: ocular fixation; functions of stereoscopic vision; disturbances of visual space perception. Thalamus is intimately connected with angular gyrus. This lends support to the view that it takes some part in visual perceptions of a highly complete nature. It is specially concerned in the association and co-ordination of reflex movements of ocular fixation, injury to which results in ocular apraxia and a disorientation of spatial localisation, so that objects seen cannot be grasped. There are abundant association fibre-connections with both frontal and occipital lobes. It is not the centre for spatial orientation.

Speech centre.—The strip of cortical surface especially concerned begins in the posterior portion of inferior frontal lobes, stretches across the ascending central convolution, island region of the sylvian fissure, superior temporal convolution, supramarginal and angular gyri, and perhaps to superior parietal gyri. The form of aphasia differs with the particular region involved, because it *interrupts the orderly process* necessary for speech. Use of language comprises a number of habitual, mental and psychological actions under control of will and therefore there is no definite localisation in the older sense.

Thalamus.—It consists of three nuclei; the anterior connected with mammillary body. This together with the mesial part of the dorsal nucleus

fibres to the striatum. The dorsal nucleus receives no ascending fibres, but is *intimately connected with cortex*, and may be regarded as inhibitory centre for thalamic and subthalamic structures. The ventral nucleus is the relay station for sensations called vital, and is the region for crude sensations. It is probable that *emotional* reactions, certainly those of rage, are mediated by a reflex arc in which the ventral nucleus of thalamus serves as the centre. *Pain sensibility centres consciousness* in the thalamus itself. "The functions of thalamus, when deprived of cortical inhibitions by destroying the cortico-thalamic fibres are: (1) Loss of light touch, tactile localisation discriminations; (2) heat and cold are recognised but not intermediate temperatures; and (3) painful stimuli are felt and arouse *excessive* discomfort. There is a parallel over-action to pleasurable stimuli. Warmth applied to skin, tickling and *erotic stimuli* excite an *unusual degree* of pleasurable emotions. In intact body these abnormal emotional accompaniments are normally inhibited by the cortico-thalamic fibres. It is very important to note that certain elements of sensation actually enter the consciousness here. Bilateral destruction of pyramidal tracts causes abolition of all voluntary movements, but emotional expressions remain intact, the patient may laugh uproariously and continuously. In disseminated sclerosis, cerebral vascular degenerations, the patient tends to show emotional overactions at slightest provocation when feeling no emotion" (WRIGHT).

Localisation in space. The power of localisation in space depends on—factors of experience, such as a real geometric perspective, the overlapping of contours, the distribution of light and shade, our conception of size, and so on, combined with adjustment factors and physiological in an extremely complex way to form an unitary perceptual pattern, which is appreciated and interpreted by consciousness as a whole." (DUKE ELDEN, p. 1069, Vol. 1.)

After images.—Visual activity may continue after the stimulation of the retina has ceased, and produce after-images which are of two kinds, one positive, another negative. Several theories have been put forward to explain it. JUDD (1927) considered it to be due to secondary emanation of light by bio-luminescence by the nerve fibres of the retina. FROLICHS compared them to *other rhythmic reactions of the cortex*, the periodic reflexes of perception.

Occupying the greater part of the summit of Rolandic convolution is an area with a higher threshold, which obtains same movements as ordinary motor area, provided the latter and the connections with pyramidal tracts are intact. If connections with pyramidal tract or motor area are severed—*strong faradic stimulation* produces—rotation movements of the head, eyes, trunk in the opposite direction, and the opposite limbs carry out complex co-ordinated movements of flexor and extensor character. FOERSTER attributes these movements to impulses passing by an extra-pyramidal route to sub-cortical and lower levels using tracts which have not yet been identified.

In the posterior part of the second frontal convolution is an area which produces movements of the eye to opposite side and occasionally in an upward direction. In irritation of this area, there is movement of both eyes to opposite direction.

The mind may be considered to be that form of energy which is intimately connected on the one hand with the process of conveying the

This effort to stimulate the cortex also may be advantageously aided by stimulating the auditory centre by means of a musical note *pleasant* to the worker. Thus such music has an inhibitory and quietening effect on the nervous system has been frequently seen in nervous excitable patients who frequently fall asleep. The note should always be struck during the period in which the attempt to vision is being made.

The same type of aid may also be obtained if a name denoting the object is also continuously uttered at that particular period. Because, understanding of a spoken word denoting the name involves a complex mechanism involving vision and the cortex as a whole. Constant repetition of the name at other periods also tries to bring the memory picture of the object from the subconscious to conscious level, and by constant repetition, frequently flashes of the memory pictures are actually seen before the mental eyes, the effect of this constant uttering of the name being a continuous stimulation of the brain cells. This also aids to constantly inhibit the animal instincts such as pride etc., to a certain extent.

By associating the musical note with the after-image, a conditioned reflex may also be developed, so that whenever the note is heard, the image will be seen, so that when the body and mind refuse to concentrate on any thing, the particular note will bring forth the mental image of the particular object.

Thus a sense of quietness, a mental peace is attained with which a young man may start fully equipped to fulfil his mission in life and that mission is sure to be a useful one for the society. He will be made a man of the most superior type. In old age, when the nerves are exhausted, when the spark of energy inherited from the forefathers are going to be extinguished in that particular casing of the human body—being dissipated either in fighting with adverse forces, and transferred to children, the endocrines are exhausted and the autonomic system tired and fatigued—very little useful purpose can be served by this method of attempt, excepting by those gifted few who have been able to conserve their energy and body in their tempestuous journey of life. Of course, even in those cases certain amount of result is sure to be gained, the amount depending on the earnestness and the physical condition and the surroundings. For, just like Pavlov's experiments on dogs, the more successful a man will be, the greater the peace in the environment. This is the special opportunity for the young when most of the responsibility lies with the parents or guardians. It is my experience, that when a young man is threatened with blindness throughout life from whatever cause, when all ambitions and hopes are extinguished, they find intense relief in this method and thus help the physician to a great extent in the restoration of their sight, since inhibitory influence gives a rest to the nerves and blood vessels of the eye also. Thus by establishing a conditioned reflex by means of images and sounds, a sedation of the whole nervous system may be gradually obtained (amounting sometimes to the inhibition of all external signs of life) which sedation is certainly the most effective curative agent in all eye diseases. During such time that the reflex is not established, medicines, diet, naturopathy and other means have to be adopted, and the patient must never be allowed to despair or lose heart and the black prognosis should never be given, because that is sufficient to keep him blind for the rest of his life. After all we cannot cure any patient, we can only with our most modern knowledge try to the best of our ability, the ultimate result lies with *some one else*. No one can

we give a correct prognosis in any case, since our prognosis is but the result of the average of the experiences of ourselves and others, and very limited is our knowledge.

In my experience, recurrences can never be prevented unless and until the nerves are soothed either by drugs, etc., or from the upper level of cortex. Continuation of drugs, etc., is not possible throughout life, but attempt to increase the force of the conditioned reflex is possible with ordinary avocation of life.

One word may be added before conclusion, that as fear, anxiety, sorrow and grief and joy are most felt generally in the region of the heart, if mentally the image is projected over the cardiac region and attempt be made to keep it for any length of time, perhaps these easily frightened attitudes gradually disappear and despondency, despair, sorrows, are not so easily felt, although the causes operating them are still there. For quietening the eye-ball, the placing of the after-image in between the eye-brows, or on the eyes acts best.

The above lines are merely suggestions which have up to now acted well in the small group of cases that I have dealt with. It is not claimed that it will cure every case, but it is put before the medical men with the idea that in such a serious disease whose treatment is practically very unsatisfactory, it may help to cure some who have not been benefited by the existing methods. One cannot always leave the patient to have his disease to natural termination.

7-B, Beadon Street,
Calcutta.

Results of Arterial Visualization Through the Technique of Prof. Reynaldo dos Santos*

DR. MARIO SOARES DA VEIGA, M.D. (Lisbon), D.R.M.E., (Paris),
Government Radiologist to the Medical Service of Portuguese India,

AND

DR. ARCHUTA RIVONCAR

THE history of arteriography as a method of clinical examination, widely employed nowadays, belongs largely to the work of PROF. REYNALDO dos SANTOS from de Lisbon Medical Faculty, previous experimental work on *vivo* (animal) or on dead bodies after injecting of some opaque substance, having begun some ten years ago.

Not less important is also the contribution made on the same subject in 1927, by PROF. EGAS MONIZ, whose experimental work led him to introduce the technique of injecting into the internal carotid a 25% Sodium Iodide solution and he obtained in this way marvellous results in visualizing brain arteries. So, he performed arterial encephalography which constituted a big advancement in modern radiological technique as well as one of the surest means for the diagnosis and localization of brain tumors by demonstrating the dislocation and abnormal situation of the brain vessels.

After the work of PROF. EGAS MONIZ, PROF. REYNALDO dos SANTOS tried to perform general (of the limbs) and visceral (aorta) arteriography and was as successful as his colleague in brain arteriography.

* Specially contributed to THE ANTISEPTIC.

physiological energies at the outlying districts of the central nervous system such as eye, ear, nose, taste, skin or the internal organs for the reception of impulses from the outside world, as well as with higher function of the brain, such as attention, judgement, intelligence, memory, consciousness, etc. Although it is associated with them it is probably not of the same type as those energies elaborated at these two stations. The seat of such energy must be in such part of the brain where the impulses from the external world or the internal visceral organs are primarily received, and memories of them are stored, *i.e.*, in the cortical centres. Some evidence of this may be found in the occipital cortex in that part of the brain where the left macular vision is concerned, *i.e.*, in the striate area specially concerned with macular vision which has been found to be intimately connected with visuo-psychic process, being concerned with the elaboration and storing of visual sensory impressions. Its injury leads to mind blindness whereby objects are seen but their images convey no meaning. Similarly, injury to angular gyrus results in word-blindness; a condition in which written matter is not understood although spoken words are intelligible and so on. It may perhaps be imagined that, either, just as the physical energy of light is converted into physiological energy of nerves in the retina, so the physiological energy from the end organs after its arrival in the cortex is changed to mental energy, its production being indicated by an action current (which is about 30 sigma in the visual cortex). The action current probably radiates by means of association fibres to enter into consciousness and to other parts of the cortex for inhibition and excitation of, and association with, other centres including subcortical centres according to necessity. Either after having entered consciousness, attention, memory, judgement, etc., are successively stimulated, or the reverse process occurs.

It is a well-known fact that if mind is fixed on any single object or thought through the help of attention to any single object for any length of time, all other impulses can be inhibited for the brief period during which time such process is being carried out. Advantage may be taken of attempting to behold the after-image of any object with closed eyes in between the eye-brows at the root of the nose or at any fixed distance. These after-images are nothing but a continuation of the visual activity after the stimulation of the retina has ceased. These after-images are, according to FROHLICK, but instances of the rhythmic reactions of cortex leading to periodic reflexes of perceptions, a function of the cortex as a whole, specially of the frontal lobes. Thus, by repeatedly attempting to see a picture placed in front, and trying to see it with closed or open eyes at certain fixed distance (the same results may be obtained by seeing the picture from memory), one can stimulate the cortex as a whole which is the seat of consciousness and super-consciousness. As the power of localisation in space depends on several factors, *e.g.*, areal and geometric perceptions, the overlapping of contours, the distribution of light and shade, our conception of size, and so on, combined with adjustment factors, physiological retinal processes in an extreme way to form an unitary perceptual pattern which is appreciated and interpreted by consciousness as a whole, the entire cortex is further intensely stimulated by this process. By repeated attempts, it may be possible to increase the duration of these after-images, and thus lengthen the period of stimulation of the whole cortical region, and a time will come when the rhythmic activity of the whole cortical cells will be very high and even the memory of the picture or the sound or word

directing the picture will have the same effect and a bioluminescence from the cortical cells and retina specially of the frontal lobes will be intensified and actual light may emanate. As said above, according to JUDD (1927), whenever there is an after-image there is an emanation of light from the bioluminescence of the nerve fibres of the retina, really meaning probably the retinal cells conducted by the nerve fibres, possibly it comes from still higher centres, the cortical cells themselves, since perception of the image is a function of the higher portions in which the whole cortex takes part. By constant effort the length of the period of keeping the after-image before the eye can be gradually increased. The longer the period that the after-image remains before the eye, the higher is the stimulation of the cortical cells and more intense is the bioluminescence, so much so that actual light may emanate, which is somewhat different from ordinary light. At one intensity the after-image gives place to a glow of light, at still higher intensity a positive figure is seen. It has the same colour and form as the external one, but more brilliant and more beautiful. Probably this figure develops from the cortical light, as waves and corpuscles of light are interchangeable. To get a comparatively quicker result, the original image must be one for whom we have great reverence and love, because by the sight of this figure the portions of the frontal lobe where there are centres for higher psychical functions are automatically stimulated and this indirectly cuts off the lower qualities.

The intensity of stimulus of the brain, which is necessary to produce this figure before the eyes also arouses another function of the brain, *viz.*, its power of inhibition on the lower centres, specially the thalamus and the sympathetic centres in the mid brain to a higher degree. Thalamus being inhibited, many of the lower animal qualities of man, such as, erotic sensations, anger, etc., which enter into consciousness here are also inhibited, so that the sympathetic system through which these emotions are physiologically expressed, escape constant excitation by those qualities. The autonomic is also directly inhibited by this increased inhibitory influence of the cortex; the net result is that the autonomic nervous system gets rest. The intensity of this inhibition may be so high that all the physiological activities including the heart and lungs may be temporarily stopped. Being thus free from all the external and internal impulses, the former through the sense organs and the latter through one's own mind, one can make oneself in communion with real joy, and the latter is curative of all diseased conditions. This highly sensitive condition of the higher brain also performs another thing, namely, any irritating external or internal impulse entering the cortex, at once releases the inhibitory forces of the cortex to a greater extent than the impulses causing reactions in the physiological plane. For example, some insulting words are spoken to a mass, through the auditory nerves it enters the temporal and associated lobes concerned with spoken words. As full understanding of the word involves the whole cortex, so along with impulse of rage reactions, the inhibitory influences are sent to the lower centres. The higher controlling function being in highly sensitive condition, the amount of inhibitory impulses to the lower centres will be greater than the sum total of impulses for the rage reactions. Similar events also occur with all other impulses internal or external. Thus, the capacity to control the animal instincts is generally increased, although they can never be extinguished; similar results are also obtained with regard to pride, jealousy, etc. The results stated above may be visible in the beginning, but by constant practice realisation is sure to come.

Results of Arterial Visualization through the Technique of Prof. Reynaldo dos Santos

Dr. Mario Soares da Veiga and Dr. Archata Rivoncar.

RADIOLOGICAL FINDINGS



[Vide page 181.]

in the trigonum or adductor canal. The second is recommended for the carotid, sub-clavian, axillary and popliteal arteries.

III. Principles of injection.—Concentration and pressure and quantity of the contrast medium to be injected are important factors.

At the beginning all the arteriography work was performed by injecting into the artery some opaque substance with an ordinary syringe and under hand pressure; but, later on, as this pressure was variable and not measurable, producing in its consequence changes in output and velocity as well as in the concentration of the substance in the blood, it was tried to inject this substance under high pressure, regular and measurable, in order to get necessary concentration of this substance in the blood to make it opaque to the X-Rays. The minimum concentration of Iodide in the blood, required for the radiographic purpose, is about 5% and to obtain this it is necessary to inject some substance such as 25% Iodide or 60% Abrodil, with 3 cc. of output per second, with pressure approximately from 800 to 1,500 grs.

Basing on these principles, PROF. REYNALDO dos SANTOS invented a special apparatus for arteriography, which was prepared by the Firm, P. Gentile & Cie., Paris. It has been largely used nearly by all radiologists. We also employed the same apparatus in all our arteriographic examinations, because it allows to inject 50 cc. of any liquid in such a high pressure that it is possible to get a constant output of the fluid in any vessel.

The apparatus consists of: (1) One compressed air reservoir having in its upper part one manometer graded from 0–3 klgrs. to measure the pressure of the air contained in the same reservoir; (2) one 50 cc. graded glass cylinder wherein are introduced the substances to be injected through its upper end which is closed by a covering.

This cylinder is connected in its upper part to the air reservoir and in its lower part, by means of a rubber tube, to the needle. Both connections are made through the tapes.

This apparatus is represented in Fig. III.

Working of the apparatus.—1. The air reservoir is filled by means of a pump of the kind of the bicycle's till certain pressure is reached which is fixed according to the cases. Once this pressure is obtained the entrance tap is closed, and the rubber tube coming from reservoir is taken away in order not to disturb the operator during the injection.

2. We introduce 50 c.c. of opaque substance in the glass cylinder through its upper end. After opening the outlet tap, the liquid goes up to the needle expelling all the air contained in the rubber tube, which connects the cylinder to the needle; at this moment the tap is closed and also the cylinder after filling it fully.

The connection tap between reservoir and cylinder is now opened and after puncturing the artery, the outlet tap of the cylinder is also opened and the fluid is injected. Care should be taken to see, at the same time, the lowering of the fluid in the tube and closing it before emptying fully in order not to allow any air to go in the artery.

The pressure of the air reservoir is regulated according to the velocity under which the liquid is injected. It also depends upon the lumen of the needle and the length of the rubber tube connecting this needle to the glass cylinder. In order to determine the exact required pressure it is better to make a trial by letting flow the whole liquid and measure the time during which this is done. If the time obtained does not correspond to the required velocity, it should be filled more or less with air in the reservoir till the pressure is reached to the required degree. For this trial alcohol can be used.

There is no doubt that, later on, or perhaps at the same time, in other countries such as America, Germany and France, which are the pioneers of radiological progress, similar work has also been done, but we think that we will be right if we assert that the Portuguese author's method was universally adopted for radiological examination of the blood vessels as most perfect and satisfactory.

We, in our X-Ray institute, being deeply impressed by the great advantage of this new method, started immediately to employ it in studying some of the gangrene and arterial occlusion cases, often admitted into the Hospital Central, Nova-Goa, and the sole aim of this present short but practical work is to describe the technique used by us and the good results that we were happy enough to obtain during few years, in our technically perfect examination, performed through the apparatus specially made for this purpose by the eminent Prof. REYNALDO dos SANTOS.

This is the "*modus faciendi*" of the arteriographic technique :

- | | |
|-----------------------------------|---|
| I. Selection of opaque substance. | IV. X-Ray examination. |
| II. Arterial puncture. | V. Inconveniences and contra-indications. |
| III. Principles of injection. | |

I. Selection of opaque substance.—In order to render visible to the X-Rays any arterial injected field it is necessary to inject the opaque substance into the main artery. Various are the substances used for this purpose. Each of them should fulfil certain requirements; it should be water soluble and have preferably a viscosity similar to that of the blood. It should not harm the body and not precipitate with the blood. It should not produce within a short time, vascular damage or immediate or delayed toxic effects. Among these substances REYNALDO dos SANTOS preferred, basing on DR. MONIZ's studies, Sodium Iodide. Other substances such as Lipiodol, Colargol, Uroselectan B and Abrodil have also been used by him. The Lipiodol, used by SICARD and FORASTIER, to visualize the sub-arachnoid space, was tried also by REYNALDO dos SANTOS, but he rejected it afterwards on account of the slowness of its injection, its unequal distribution in the vessels and chiefly its tendency to develop arterial and capillary embolism acting as foreign body in the distal circulation of the limbs. Therefore, following the experiences of Dr. MONIZ, on brain arteriography, all works have been done with 25% Sodium Iodide solution whose toxic effects are negligible and whose diffusion and opacity are clear. The same author tried also five percent Colargol, but due to its untoward results it was abandoned afterwards by the same author. The 40% Uroselectan B is less toxic and painful than Sodium Iodide, but as its opacity was not quite sufficient it was substituted by 85% Abrodil.

II. Arterial puncture.—One of the essential features of the arteriography method is the innocuity of the arterial puncture on account of the retractability of its "media" layer. The experimental examinations on the arterial wounds, the macro and microscopic examinations of the punctured arteries, the works of GOJANNES and OPEL on arterial anæsthesia, and the experiences of REYNALDO dos SANTOS on more than 300 arterial punctures, lead us fully to admit the safety of this puncture. To puncture the artery, one may find it by making a small surgical incision by classical methods or puncturing the artery transcutaneously in places where it is easily accessible. For this, we use a needle of 8 by 10 millimetres for humeral artery and 9 by 10 millimetres for femoral or sub-clavian arteries. The first method is employed to the brachial artery in the ante-cubital fossa and to the femoral

Results of Arterial Visualization through the Technique of Prof. Reynaldo dos Santos

Dr. Mario Soares da Veiga and Dr. Archata Ribeiro.

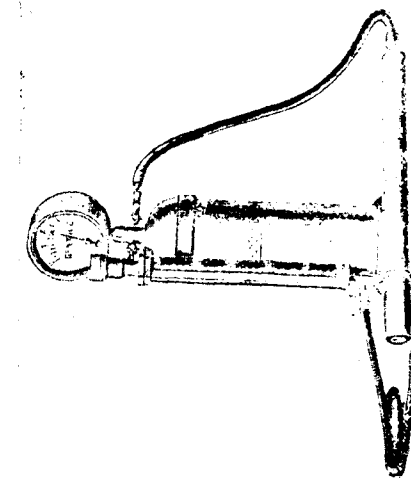


Fig. IV.

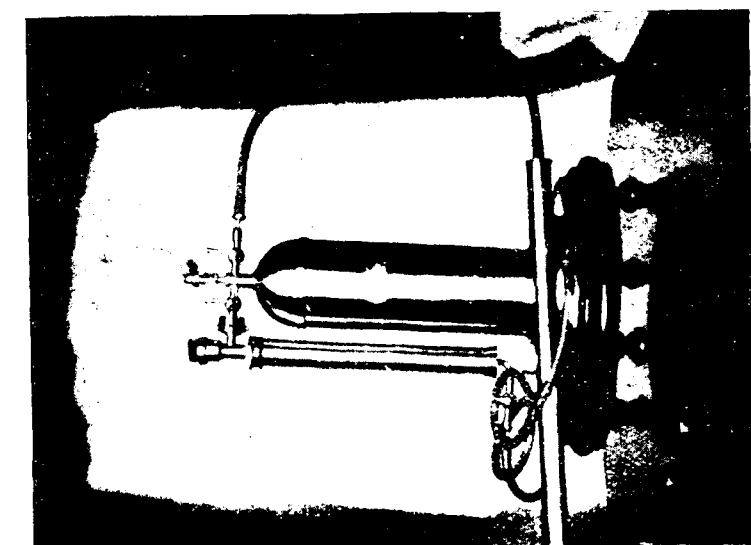


Fig. III.

[Vide page 183.]

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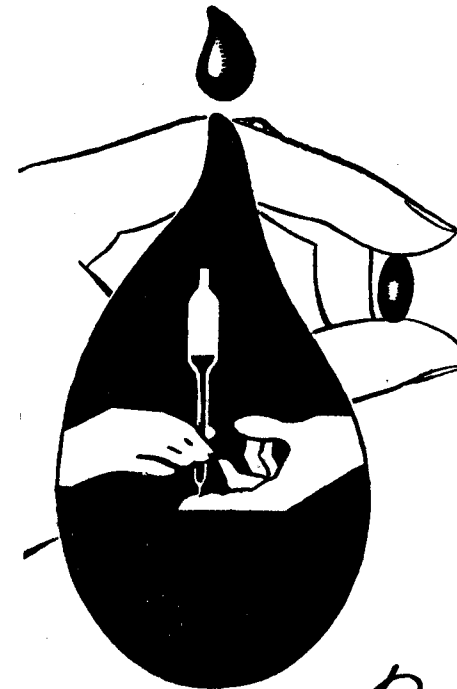
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The velocities of injection used by PROF. SANTOS, are: For aorta—needle of 120 mm. length and 12/10 in. of diameter. Velocity of injection: 5 c.c. per second (what is required is a pressure from 2 to 2.5 kgs.).

For femoral and humeral artery—needle of 60 m.m. length and 9 or 10/10 mm. of diameter. Velocity of injection: 3 c.c. per second (what is required is a pressure from 0.600 kgs. to 0.800 kgs.).

IV. X-Ray examination.—The radiogram should be taken while the solution is being injected at 0.5 per second, 70 KV. and 30 MA. with Potter Bucky diaphragm. The position of the limb is regulated according to the situation of the lesion; antero-posterior position to the upper limbs and lateral position to lower limbs. We in our X-Ray Institute have taken radiograms without Potter Bucky diaphragm with fine focus at 65 KV. 20 MA. and 0.2 second.

V. Inconveniences and contra-indications.—The not infrequent trouble of arteriography technique is the development of a slight remote pain. And to avoid it REYNALDO dos SANTOS used to do anaesthesia. To the upper limbs general anaesthesia and to the lower limbs spinal anaesthesia. He tried also Goyane's arterial anaesthesia by injecting previously in artery to be visualised 10 c.c. of 5% Novocain. But with the discovery of new contrast substance, such as Thorium compounds, firstly used in hepatolienography of Radt and later on in arteriography with splendid results without originating any pain, it was solved definitely—the pain problem of this technique.

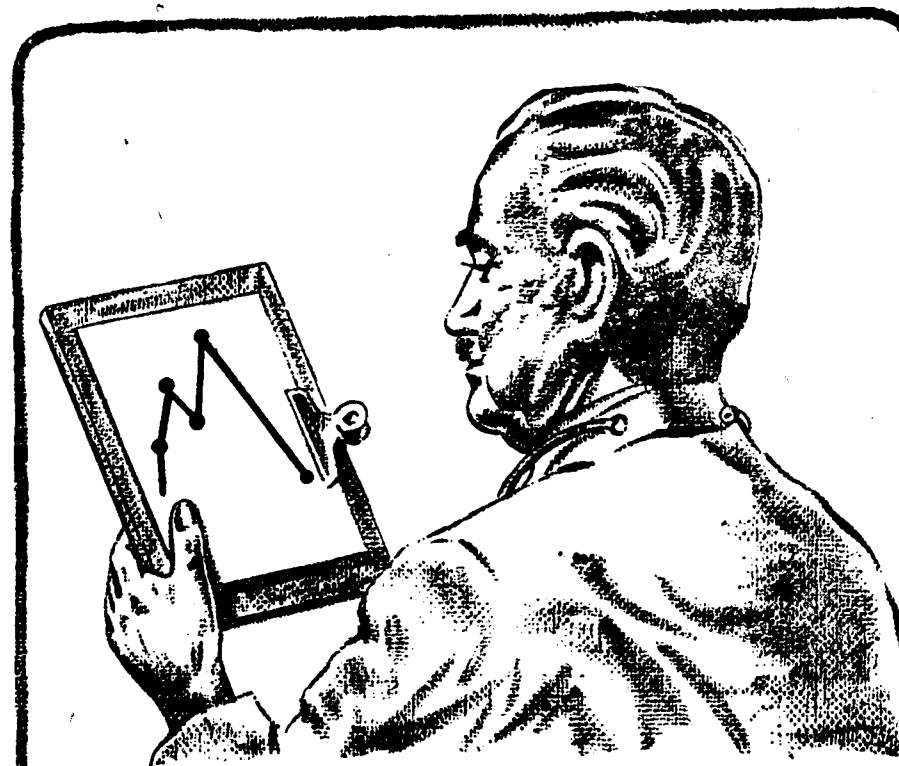
The thorotrast has changed completely the old technique of REYNALDO dos SANTOS—not requiring these nowadays, any anaesthesia into a easy one, so, for its performance only the puncture of the artery and injection of thorotast with an output of 2 c.c. per second are sufficient. This can be achieved with a pressure of 1 to 1/2 kilogram of the above described apparatus invented by PROF. REYNALDO dos SANTOS and a variable amount of contrast medium (15 to 30 c.c.) if it is dealing with upper or lower limbs. Without this apparatus, provided with special needles which regulate the output in arterial circulation, it is not possible to follow strictly the requirements of these arteriographic methods whose advantages are recognised in the medical world as efficient means of diagnosis of the arterial disease.

Amongst the different cases examined by us with this method one is described in this article as a most interesting one.

CASE I—History, R. V. Chari, 21 years old, was admitted to the hospital on January 13th, 1941, complaining of an ulcer and severe pain in the left foot. About 8 months ago he was suffering from muscular cramps in the legs (intermittent claudication) and sometimes sensation of weight and pricking in the same foot. Two months ago he got one wound in the second finger which afterwards spread to the whole finger. The extension of the respective limbs was painful in lying position.

Physical findings:—The whole foot was swollen and gangrened its anterior parts. Pulsation, perceptible in femoral artery, was absent in popliteal, posterior tibial and dorsalis pedis arteries.

Radiological findings:—Arteriogram of the left lower limb taken according to the technique of PROF. REYNALDO dos SANTOS after injecting into the femoral artery an opaque substance (thorotrast) showed arterial occlusion at the level of the popliteal artery visualized by the sudden stoppage of contrast medium. See Fig. II.



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THE liver is already damaged in syphilitic infection and further damage in the liver is brought about by the administration of arsenic in the syphilotherapy. Thus the total damage to the liver in a syphilitic may be so much that the detoxicating function of the liver is very much lowered resulting in development of grave arsenical intolerance, *e.g.*, dermatitis, jaundice and the like. MANN (1941) thinks that the detoxicating function of the liver appears to be in regard to hepatic activity protecting the organism from some harmful substances which may originate within the body or reach the blood stream from outside. Many substances are made innocuous by conjugation, a process which occurs in the liver. According to BOYCE (1939) the rate of synthesis of hippuric acid is governed by the physiological ability of the organ to produce glycine, while this ability is adversely affected in certain types of liver damage with the result that the output of hippuric acid is proportionately decreased. QUICK (1931) further observed that the factor controlling the rate of synthesis of hippuric acid is the rate at which the liver is able to produce glycine. Thus by administering glycine simultaneously with benzoate the rate of elimination of hippuric acid is increased, and this experiment has been repeated and corroborated by various workers in other countries and on Indians by the author (1942). SPIETHOFF (1931) observed good effect in arsenical intolerance with liver therapy and NAIR (1935) treated some cases of arsenical intolerance with success by giving liver by mouth and by injections. HARRISON (1941) also advocates liver therapy in cases of arsenic intoxication in syphilitics. The author (1941) reported the beneficial results obtained in some cases of arsenical dermatitis and reported in 1941 that some cases were cured with liver therapy. The author (1943) has shown that the detoxicating power of the liver even in normal individuals is improved by the liver therapy, observed by the increased rate of hippuric acid excretion after a test dose of Sodium Benzoate. The author (1942) has found that the hippuric acid excretion rate in the congenital syphilitics is much below normal and those with abnormally low results developed arsenical intolerance during syphilotherapy. The author (1942) has found that the liver function was much improved after liver extract injections in cases of congenital syphilitics and the hippuric acid excretion rate was increased both in cases of congenital syphilitics and acquired syphilitics. The author (1942) was able to continue treatment of congenital syphilitics with arsenic after the liver therapy even in those who developed intolerance and the liver function was found improved. The author (1943) has found the hippuric acid excretion rate increased after administration of liver extract in arsenical intolerant cases in acquired syphilitics and the arsenic therapy could be continued without relapse.

MACKEE and ASTRACHAN (1940) observed good results with liver extract.

IRGANG (1937) emphasised the importance of doing the liver function test in syphilitics undergoing arsenic therapy. The detoxicating function of the liver has been found out by the author's (1942) method which is a slight modification of the method of QUICK (1931).

* Specially contributed to THE ANTISEPTIC.

Experimental.—Sodium Benzoate was given in doses of 6 gms. immediately after the bladder was emptied in empty stomach, and the urine was collected after 4 hours.

The results obtained with liver therapy and reported by the author during 1941 to 1943 in various papers in India are briefly noted below:—

(1) The average hippuric acid excretion in normal Indians has been found to be 5.0 gm.

(2) The average increase in hippuric acid excretion in apparently normal Indians has been found to increase with liver extract injections (2,000 g.) daily for two weeks—about 1.0 g. increased.

(3) The average hippuric acid excretion in congenital syphilitic has been found before liver therapy as 2.2 g. and after liver therapy as 2.84 g.

(4) The average hippuric acid excretion in cases of grave arsenical intolerant congenital syphilitics has been found to be 0.76 g. and after three weeks treatment with liver extract 2,000 g. and vitamin C 300 mg. has been found to be 0.98 g. and again after three months 1.2 g.

(5) The average hippuric acid excretion in congenital syphilitics before and after treatment with only ascorbic acid 45 mgm. per for 10 days has been 2.2 g. and 2.3 g. respectively.

(6) The average hippuric acid excretion in acquired syphilitics before and after liver therapy has been found to be 2.0 g. and 2.65 g. respectively.

(7) The average hippuric acid excretion in cases of grave arsenical intolerance in the acquired syphilitics has been found to be 0.58 g. and after liver therapy for 2 weeks has been found to be 0.96 g. and after 3 months has been 1.67 g.

Conclusion and summary.—The possibility of a hepatic factor in the newer phases of syphilotherapy must always be considered. The author advocates the liver function test as a routine measure in the syphilitics and the liver therapy a very essential adjunct to syphilotherapy.

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Sulphonamides in General Practice*

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CHEMOTHERAPY with the Sulpha group of drugs has been a great boon to Medical Science and it behoves the profession to stamp out the abuse which has crept in since the inception of this line of treatment. Although Penicillin promises to be even more effective in the fight against disease, yet, as adequate supplies of this wonder drug are not likely to be available for a long time, we have to utilize what we have, to the best advantage. It is indeed surprising how few of us appreciate the difference between the various Sulphonamide compounds and a Sulphanilamide is often used where a Pyridine or Thiazole grouping should be the correct choice. The dosage scheme is another factor which has been grossly neglected. It shall be the aim of this article, therefore, to point out the various pitfalls to the beginner and to guide the practitioners in remote rural areas. This is not an exhaustive treatise or the last word on this large and still expanding group of drugs but a small introduction to this vast subject.

History.—It was in 1908 that GELMO, while working on the chemistry of azo dyes first synthesized Sulphonamide. EISENBERG showed in 1913, that the Sulphanilamides exerted a strong bactericidal action. Yet it was twenty years later that these chemicals were introduced into medical practice. It was in 1932 that MATZACH and KLARER synthesized a red crystalline derivative of chrysoidin which was subsequently named, 'Prontosil' by DOMAGK in 1935.

After further research TREFOUELS-NITI and BOVERI, in 1936, determined that the "Para-amino-benzene-sulphonamide," commonly termed "Sulphanilamide," was as potent as the parent drug Prontosil-Rubrum. Since then numerous compounds have been made using the Sulphanilamide molecule as a component, and many of these have considerable human therapeutic activity. In May, 1938, WHITBY, of London, showed that Sulphanilamide linked to a pyridine ring exerted an anti-pneumococcal effect. This preparation is of great importance, clinically, and is called Sulpha-pyridine. This is marketed by Messrs May & Baker, England, under the trade name, Dagenan or M&B 693. E. K. MARSHALL Jr. and his associates introduced Sodium compound of Sulpha-pyridine which can be administered parentally. The same firm, in 1939, introduced another compound in which a Thiazole ring is linked to the Sulphanilamide molecule and it was shown that this was the most active preparation, so far discovered, against staphylococcal infection. This is called Sulphathiazole or Thiazamide M&B 760. Messrs Ciba, of Switzerland, have introduced the same compound under the trade name, Cibazol. In 1940, MARSHALL and his group, announced the synthesis of a new derivative of Sulphanilamide, known as Sulphanil-guanidine or Sulpha-guanidine. This drug has been successfully used in the treatment of bacillary dysentery. The introduction of this compound invoked a unique pharmacologic principle in the use of intestinal antiseptics. Subsequently POTH and KNORR, of John Hopkins, stated that Succinyl-sulpha-thiazole (Sulpha-suxidine) had a marked anti-bacterial activity in the bowel. ROBLIN, in 1940, reported the synthesis of Sulphadiazine and its Sodium salt. YOUNG and his colleagues, in 1941, called attention to the therapeutic possibilities of Sulphacetamide (Sulamyd). This has been recommended as a substitute for Sulphanilamide in the treatment of bacillary, urinary-tract,

* Specially contributed to THE ANTISEPTIC.

infection. RUEGSEGER and his associates stated, in the same year, that Sulphapyridine caused few toxic manifestations, and gave favourable clinical results when administered to patients with pneumococcal pneumonia. This compound is not yet available for general distribution. When ROBLIN and his associates reported on Sulphadiazine in 1940 they also called attention to Sulphamethadiazine, known as Sulphamerazine. This compound appears to have the same therapeutic efficiency as Sulphadiazine, and, because of its pharmacologic characteristics, may be more desirable for clinical purposes. Reports have appeared in the Medical Press on the compound Sulphadimethyl-diazine, known as Sulphamethazine, but sufficient data is not available at present. These preparations have been found by empirical experiments and are not the results of previous deductions. The search continues for fresh drugs of even greater potency and lesser toxicity. High stakes are placed on Promin, a Sulphone compound, that has excited considerable attention. "Though this derivative has been used in clinical investigations since 1939, it is not yet available for general use. Promin has been found to be effective in the treatment of experimental malaria and tuberculosis and to a lesser extent of experimental leprosy."—SPINK. These reports justify a continued interest in the drug.

Sulphonamide therapy.—The sulphonamides used in the treatment of bacterial infections are Sulphanilamide or its derivatives. These derivatives fall into three groups according to whether a (1) substitution takes place in the amino, or NH_2 group, (2) in the amide, or $\text{SO}_2 \text{NH}_2$ group, or (3) in replacing one atom of each of the amino and amide groups, e.g. from NH_2 and $\text{SO}_2 \text{NH}_2$ groups. To the first group belong Prontosil, Proseptasine, Soluseptasine, Rubiazol and Sulphonamide-P, Septanilam "Glaxo" and Colsulanyde (Crookes). To the second group belong Sulphapyridine, Sulpha-thiazole, Sulpha-guanidine, Sulpha-diazine and Sulpha-acetamide. To the third group belongs Succinyl-sulpha-thiazole. The derivatives of the first group owe their activity mainly to Sulphanilamide which is released from the compound in the body. These are unlikely, therefore, to have an activity greater than that of the ordinary Sulphonamide, and, hence, the toxic effects which arise with the administration of Sulphanilamide must necessarily be a possibility with these compounds. Certain preparations in this group possess a greater solubility than that of Sulphanilamide and are, thus, more suitable for parenteral use. The derivatives of the second group possess greater activity than the parent, Sulphanilamide. The activity of the compounds in this group does not depend on the release of Sulphanilamide in the body but is an intrinsic property of the molecule. All recent advances have been made with compounds of this group. The anti-bacterial activity of the compounds in the third group depend upon the formation of Sulphathiazole in the gut by hydrolysis.

Pharmacology.—Sulphonamides administered orally are rapidly absorbed by the gastro-intestinal tract and traces of the drug may be found in the spinal fluid soon after administration. In doses larger than those used therapeutically it has no effect on the smooth muscles, heart, blood pressure, respiration or the basal metabolism. It is therefore, physiologically inert. Toxic effects noticed in experimental animals are referable chiefly to the central nervous system—GHOSH.

There are diverse views regarding the mode of action of these drugs. Stated briefly some of the more important are: (a) these have a stimulating

action on the specific and non-specific body defences; (b) these neutralize toxic bacterial products; (c) these act on the bacteria itself either as germicides (bacteriolysis) or in some other fashion by interfering with the invasive power or ability to multiply (bacteriostatic); and (d) some combination of two or more of these. There is a quantitative relationship between the amount of drug given and the amount of infection with which it can deal.

Absorption.—Both in animals and the human subject Sulphanilamide, when given orally, is quickly absorbed. Sub-cutaneous injection does not lead to a higher concentration in the blood than does oral administration; while after intravenous injections of 0.1 gm per kilo body weight, the rate of elimination is the same as after oral use. After a single dose the peak in blood concentration is reached in three hours, thereafter it falls gradually to zero during the following twenty fours. With repeated administration at four to six hour intervals a blood concentration of 20 to 10 mg per 100 c.c. can be obtained and maintained. The optimum blood concentration to be effective is about 10 mg per 100 c.c. of blood. The persistence in the blood has been ascribed to reabsorption from the renal tubules of about 75% of the drug in glomerular filtrate. With impaired renal function the blood concentration is raised both early and higher. The rate of absorption depends, to some extent, on the solubility of the drug. Sulphanilamide is soluble and is readily absorbed; next, in this order, comes Sulpha-thiazole and Sulphapyridine. Succinyl Sulphathiazole is sparingly soluble in water and is very poorly absorbed, only about 5% being detected in the urine. All soluble compounds, however, are not readily absorbed. Thus Sulphaguanidine, though soluble, is very poorly absorbed, and therefore, remains in the gut to exert its bacteriostatic action. Sulphadiazine again, though less soluble than any of the above, is fairly readily absorbed. On entering the blood Sulphanilamide quickly penetrates all the fluids and tissues of the body. In addition to normal body fluids such as saliva, sweat, tears etc., it is also found in pathological exudates, e.g., pleural effusion. It passes readily into foetal blood and amniotic fluid. It has been found in human breast milk. In the cerebro-spinal fluid its concentration is about 75% of that in blood and the drug appears to pass as readily into the C.S.F. of the patient suffering from meningitis as that of healthy subjects.

Excretion.—The kidneys serve as the major excretory channel for the absorbed drugs. Although the rate of excretion varies with the different compounds it is relatively rapid, and considerable caution must be exercised when prescribing these drugs, for those with renal disease. When toxic manifestations arise from the use of these drugs, liberal quantities of fluid should be administered to aid in eliminating them from the body. The fluid balance of the patient should be maintained so that a normal state of hydration exists. Usually there is little difficulty encountered in maintaining adequate blood concentrations, even when the fluid requirements appear to be great. The fluid intake may be decreased when it is desirable to concentrate the drug in the urine in urinary-tract infections.

Selectivity.—The different derivatives vary in their activity on the organisms as measured in the laboratory. The variation in their action is modified by various factors, such as their rate of absorption and elimination, degree of acetylation, distribution and concentration in the blood and fluids etc. Sulphanilamide is primarily of value in the treatment of streptococcal infections, specially those of the hæmolytic type. Sulpha-pyridine, while of value in most of the infections where the mother drug is used, possesses

special action on pneumococcus, gonococcus and the meningococcus. Sulphathiazole, while having the same therapeutic activity of both the above compounds is in addition specially active against the staphylococcus aureus. Sulphacetamide is primarily used for gonorrhœa and Sulphaguanidine in dysentery.

Dosology.—Therapeutic benefit is only noticeable when the concentration of the drug reaches a certain level in the blood, stated to be 5 mg. per 100 c.c. of blood in the case of Sulpha-pyridine and 5-10 mg. per 100 c.c. of blood in the case of Sulphanilamide and Sulphathiazole. The benefit continues only if this concentration is maintained by repeated dosage. As Sulphanilamides are quickly excreted there is little or no cumulative action. It follows, therefore, that, to secure effective concentration in the blood, an adequate dose must be given and repeated at regular periods which, in the early stages of treatment, should not exceed 4-hourly intervals. To take a concrete example, an adult with a moderately severe or severe infection should get an initial dose of six to eight tablets followed with two tablets every four hours till graver symptoms subside. In more acute conditions parenteral therapy may have to supplement oral administration. Infants require, 1 grain per lb. body weight to a maximum total of 80 grains. Children below 5 years should get a tablet every four hours and those between five and ten years require a tablet and a half every four hours. As a rule therapeutic results are obtained within two or three days from the commencement of treatment but the full dosage should be maintained for another forty-eight hours even though the temperature returns to normal. To prevent relapses, which occur too often as the result of a too early cessation of treatment, the drug should be continued in suitably decreasing doses for a few days after complete remission of symptoms.

[N.B.: To maintain a concentration of 10 to 15 mg. per 100 c.c. blood, 3.5-5 gm. may be given as an initial dose and then 1 gm. every 4 hours for the first 24 hours. Thereafter the adult maintenance dose is 0.75-1.0 gm. every 4 hrs.. A concentration of 5-10 mg. per 100 c.c. can be maintained with an initial dose of 2-30 gm. followed by 0.5 gm. every 4-6 hours. A blood concentration of 5-10 mg. per 100 c.c. can be maintained with an initial dose of 30-45 grains followed with 10 grains every 4-6 hours.]

The following table may be used as a guide for the correct concentration to be maintained referring to the free (non-acetylated) drug:

PREPARATION USED.	ORDINARY INFECTION.	CRITICALLY ILLPATIENT.
Sulphanilamide	... 8-10 gm. per 100 c.c. blood.	10-15 mg. per 100 c.c. blood.
Sulpha-pyridine	... 5-7 mg. "	8-12 mg. "
Sulpha-thiazole	... 5-10 mg. "	10-15 mg. "
Sulpha-diazine	... 5-10 mg. "	10-15 mg. "

Administration.—The sulpha drugs act as efficiently when given by mouth as when administered parenterally. The oral route, therefore, is to be preferred but the drug has to be given parenterally if the patient is in a comatosed condition or when dosage by mouth has to be supplemented. Absorption is greater when the drugs are in solution and alkalies hasten the process. Other methods of administration are: (1) nasal tube-preparations and doses as prescribed orally; (2) intramuscularly; (3) intravenously; (4) subcutaneously; (5) intrathecally; (6) intraperitoneal; (7) intrapleural; (8) drip infusion-intravenous or subcutaneous with saline if necessary; (9) rectal administration—usually unsatisfactory; (10) local application to

wounds and other accessible regions, e.g., nasal cavity, pharynx, vagina etc. As a general rule, when oral administration is not feasible, the nasal tube or the intramuscular route offer the greatest margin of safety. The chief disadvantage of parenteral therapy is the local irritation. For this reason and also because of the rapid penetration of the drug into the cerebro-spinal fluid, no matter how it is given, the intrathecal route is not advised. Needless to state, it is of course the soluble Sodium salt which is used parenterally. The lateral aspect of the thigh, about three inches above the knee-joint or the sacro-spinalis muscle offer the best sites for intramuscular injection, according to the best authorities. The parenteral route may be discontinued when the patient is again in a fit condition to receive oral treatment. It would not be out of place to state here that, wherever indicated, treatment with Sulphonamides should be supplemented suitably.

Toxicosis.—True reactions of this group of drugs arises either from the natural toxicity of the compounds used or through the hypersensitivity of the patient. Toxic symptoms include cyanosis, headache, nausea, anorexia, vomiting, diarrhœa, drug fever, hæmaturia, suppression of urine, rashes, hæmolytic anæmia and agranulocytosis.

1. *Gastric symptoms*:—These are the commonest, specially with Sulphapyridine. These symptoms may be counteracted by administering the drug suspended in mucilage of traganth. This suspension, however, must be freshly prepared every other day. The nausea and vomiting often give trouble. Thus, patients on giant doses of Sulphanilamide look ill owing to cyanosis while those receiving treatment with sulphanilamide present this appearance due to depression and nausea. Reducing the bulk and increasing the number of daily doses often helps to overcome this particular type of intolerance while another method is to combine the drug with 10-15 gr. Sodabicarb and 15-30 gr. Glucose-D per dose. It may also be necessary, sometimes, to give 5-10 minims Tr. Opii. (GHOSH).

2. *Drug fever*:—This may occur from the 4th-8th day after commencement of treatment. Sulphonamides usually produce a fall in the primary pyrexia within the first three days. A later rise in temperature, therefore, should be regarded with suspicion, and, unless there are concomitant signs of disease, the fever is attributable to the drug which must be withdrawn. Cessation of treatment at this stage is important as graver symptoms like agranulocytosis and hæmolytic anæmia are often preceded by fever. Various measures have been adopted to expediate recovery from these conditions, and diuretics, diaphoretics and Methylene Blue are often employed. These do not appear to be attended with much benefit, however, and probably large amounts of fluids are the best remedy.

3. *Cyanosis*:—This occurs when the drug used is the Sulphanilamide and is insignificant or absent when Sulphapyridine or Sulphathiazole are used. Cyanosis is usually due to methæmoglobinæmia and is not necessarily a reason for withdrawing the drug. "In general practice it is not easy to live upto the ideal," states SNODGRASS, "and the general practitioner is advised to adopt the following plan: (a) continue treatment, if clinically indicated, and increase the amount of fluid intake to a least minimum of 5 pints; (b) if cyanosis deepens but there is no other complication replace drug with Rubiazol in a dosage of 0.2 gm. every four hours for an adult or use 0.5 gm. Sulphadiazine every four hours; (c) if cyanosis deepens and sickness, lassitude, shallow breathing or mental distress appear discontinue treatment, administer large quantities of alkaline diuretics and

examine blood spectroscopically to differentiate between methæmoglobinæmia and sulphæmoglobinæmia."

4. *Haematuria* :—This condition is met with occasionally and a microscopical examination of the urine will show crystalline traces of the drug. These crystals appear as a result of the precipitation of the acetylated derivative of the sulphonamide in the renal tubules and ureters. This precipitation is so excessive, at times, that it leads to suppression of urine when the drug must be withdrawn, fluids must be given in abundant quantities and heat applied to the loins. If these symptoms still persist, as is sometimes the case, ureteral catheterization and lavage of the renal pelvis are indicated. An adequate intake of alkalis and fluids prevents hæmaturia. To avoid serious kidney complications when Sulphapyridine, Sulphathiazole or Sulphadiazine is used, chart the daily fluid intake and urinary output. The minimum urinary output for twenty four hours should be in excess of 1,200 cc's and an abrupt drop from this level, not attributable to reduction in the fluid intake or loss by vomiting, should forewarn the physician of trouble ahead.

5. *Agranulocytosis* :—This is a serious but, fortunately, rare complication and should be guarded against by a routine leucocyte count. Patients with a low leucocyte should receive premedication in the form of non-septic protein therapy and should not get Sulphonamides till the polymorphs are again normal. A noticeable drop in the leucocyte count, during chemotherapy with Sulphonamides, indicates immediate suspension of the drug, and treatment with iron and blood transfusion should be quickly begun. Agranulocytosis is often the result of a gross negligence of general principles and the administration of high initial and subsequent doses in acute stages of infection.

6. *Painful joints* :—This unusual reaction is characteristic of treatment with Sulphathiazole and appears as a sudden onset of pain in the larger joints, the overlying skin of which may appear reddened and swollen. One or more joints may be involved. The arthritic manifestations are usually associated with dermatitis and fever. The clinical picture has been mistaken for acute rheumatic fever, which it simulates closely. This condition is confusing when it appears in a patient receiving treatment for gonococcal arthritis. When Sulphathiazole is discontinued the pains subside—SPINK.

Contraindications.—There is no specific evidence to show that administration of other drugs with Sulphonamides is deleterious to the patient. Some workers believe that Magnesium Sulphate should not be used as a cathartic when Sulphonamides are given presuming that this results in sulphæmoglobinæmia. Others have given both drugs simultaneously to the same patient and recorded no ill effects (SPINK). Even the other Sulphates, Morphine, Codeine, Ferrous etc., may be used as desired or needed. The same applies to sedatives. There need, also, be no specific dietary restrictions when Sulphonamides are used. When these sulpha drugs are given, parenterally, however, similar procedures like blood transfusions and injections of Glucose solutions, etc., should not be carried out simultaneously. When the drug used is Sulphanilamide, in particular, ultra-violet therapy should not be given, because of the danger of photo-sensitivity. Ambulatory cases should guard against prolonged exposures to direct sunlight.

Precautions.—It is now generally recognised that all members of the Sulphonamide group, as used in chemotherapy, are potentially dangerous in

wrong hands and when used indiscriminately. Members of the profession using these drugs should be fully cognisant with such details as clinical indications, doses and limitations of each one of these sulpha compounds and should learn to differentiate quickly between serious and non-serious signs of toxicity.

Sulphonamides in pregnancy.—In general and when indicated sulphonamides may be prescribed in full therapeutic doses during pregnancy. It should be recalled, however, that these drugs pass through the placenta from the maternal to the foetal blood and there is always the possibility of toxic effects appearing in the foetus. In fact, one report has called attention to the dangers of foetal injury resulting from Sulphonamide therapy (HECKEL). In most cases adverse effects have not been recorded but popular opinion is not in favour of a prolonged administration of these drugs to expectant mothers whether large or small doses are given.

General Principles :—(1) Sulphonamides give better results, usually, in the sub-acute stages of infection; (2) after the large initial dose, the 4-hourly routine is sufficient and should be continued even at night to maintain effective concentration; (3) parental route is indicated only in comatose conditions or where oral therapy needs to be supplemented; (4) full therapeutic doses to be used; and (5) look out for toxic symptoms.

General causes of failure with or little benefit from sulphonamides : (1) Often given with insufficient clinical data; (2) given in insufficient doses and for too short a period; (3) Neglect or omission of the other indicated therapeutic measures; (4) neglect of signs of toxicity or the adoption of early precautionary measures; (5) debility, specially of the very young and very old; (6) failure to eradicate or sterilize metastatic foci or thrombosed vessels (LOCKWOOD ET AL); (7) presence of a strain of bacilli insensitive to the action of the compound used; (8) intolerance to the drug or onset of serious toxic reactions from the compounds; and (9) failure of the human organism to establish a competent immune mechanism which is a vital accessory with Sulphonamides in their destruction of bacteria.

Sulphonamides in order of choice for systemic use

Actinomyecosis	...	Sulphathiazole	...	Sulphadiazine
B. Coli. urinary tract	...	"	...	Sulphanilamide
B. Coli. colitis	...	Succinylsulphathiazole	...	Sulphathiazole
Chaneroid (Ducrey bac.)	...	Sulphathiazole	...	Sulphanilamide
Dysentery bacillary (Shiga)	...	"	...	Sulphapyridine
Eye diseases gonococcal	...	"	...	Sulphadiazine
trachoma	...	"	...	Sulphanilamide
Gonorrhœal vulvo-vaginitis	...	"	...	Sulphapyridine
Gonorrhœa in adults	...	"	...	"
Gonorrhœal arthritis	...	"	...	"
Meningitis (meningococcal)	...	Sulphadiazine	...	"
(pneumococcal)	...	Sulphathiazole	...	"
(staphylococcal)	...	"	...	Sulphadiazine
(influenzal)	...	Sulphadiazine	...	Sulphapyridine
Otitis media (staphylococcal)	...	Sulphathiazole	...	Sulphanilamide
Osteomyelitis (streptococcal)	...	Sulphanilamide	...	Sulphadiazine
Acute Osteomyelitis (staphylococcal)	...	Sulphathiazole	...	"
Chronic " " "	...	"	...	"
Pneumonia (pneumococcal)	...	Sulphadiazine	...	Sulphathiazole
(staphylococcal)	...	Sulphathiazole	...	Sulphapyridine
(streptococcal)	...	Sulphanilamide	...	Sulphadiazine
Furunculosis, carbuncles, abscesses	...	Sulphathiazole	...	"
STREPTOCOCCAL INFECTIONS				
Erysipelas, puerperal sepsis	...	Sulphadiazine	...	Sulphanilamide
Peritonitis, pharyngitis	...	"	...	"
Tonsillitis	...	"	...	"
Diarrhœa	...	Sulphathiazole	...	Sulphapyridine
Cholera	...	Sulphaguanidine	...	"

Sulpha drugs and their proprietary names

NAME OF COMPOUND	TRADE NAMES	MANUFACTURERS
Sulphamidochrysoidin ...	Prontosil Rubrum	Bayer, London 0.5 gm. tablets,
	Prontosil soluble	" 2.5 & 5 % amp.
Sulphanilamide ...	Septanilam	Glaxo, London 0.5 gm. tablets.
" ...	Sulphanilamide, M & B	May & Baker 0.5 gm. tablets.
	Sulphonamide P.	B. W. & Co. 0.5 gm. "
	Sulphanilamide	Boots 0.5 gm. "
		1 oz. Jar Ung.
	P. A. B. S.	Hewletts 0.5 gm. tablets.
	Streptocide	Evans 0.5 gm. "
	Sulfana	A. Wander 0.5 gm. "
	Sulfanilamide	Squibbs 0.5 gm. "
	Colsulanyde	Crookes 0.5 gm. "
		Susp. 0.5 Gm. Fl Dr.
		0.4% amp.
		Spray.
	Prontopil	Opil, Bombay 0.5 gm. tablets.
	Sulphanilamide	P.C.G.I., KPTLA 0.5 gm. "
	Proseptasine	May & Baker 0.5 gm. "
	Rubiazole A	Roussel Labs.
	Soluseptasine	May & Baker 10% & 20% soln.
		6 % Ung.
		10 % Spray.
Sulphapyridine ...	Dagenan M & B 693	" 0.5 gm. tablets.
		0.125 gm. "
		Oral Susp.
	Dagenan Sodium	" 1 gm. per amp.
Sulphathiazole ...	Thiazamide M & B 760	" 0.5 gm. tablets.
	Thiazamide soluble	" 1 gm. per amp.
	Cibazol	Ciba, Swiss 0.5 gm. tablets.
		5% Cibazol Ung.
Sulphaguanidine ...	Sulphaguanidine	" Antiseptic powdr.
	"	" 0.5 gm. tablets.
	"	" Squibbs "
	"	" Evans "
	"	" Boots "
	"	" May & Baker "
	"	" P. D. & Co. "
	"	" Lederle "
Sulphadiazine ...	Sulfoguanil.	" A. Wander "
	Sulphadiazine	" Squibbs 0.5 gm. tablets.
	"	" M. & B. "
	" Sodium	" Ampoules.
	"	" Laderle 0.5 gm. tablets.
	" Sodium	" 25% 10 c.c. amp.
		" 5% Ung.
Sulphamerazine ...	Sulfamerazine	" Squibb 0.5 gm. tablets.
	"	" Sharpe & Dhorne "
	" Sodium	" Eli-Lilly "
Sulphacetamide ...	Sulfacetamide	" Squibb "
	Sulfocid	" East India, Cal. 0.5 gm. tablets.
		" 30 % soln. Am.
		" 0.5 gm. tablets.
Sulphasuccinythiazol ...	Albucid	" Scherings "
Combination of Sul- }	Sulfasuxidine	" Sharp & Dhorne "
phonamide and Hexa- }	Sulfotropine	" Wander 0.5 gm. tablets
methylenetetramine }		" and
		Ampoules 5 c.c.

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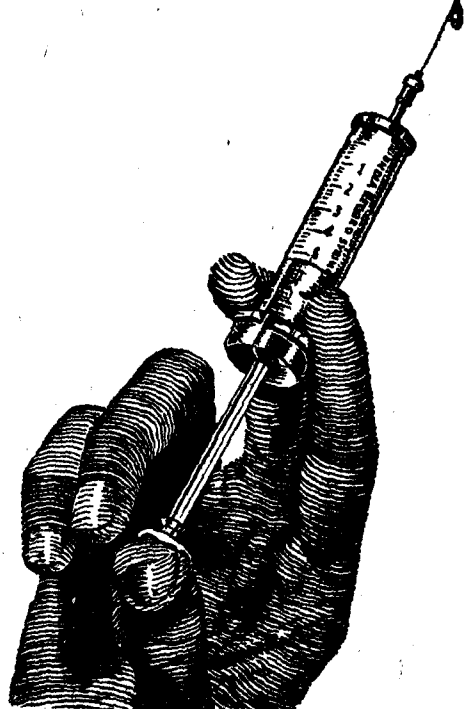
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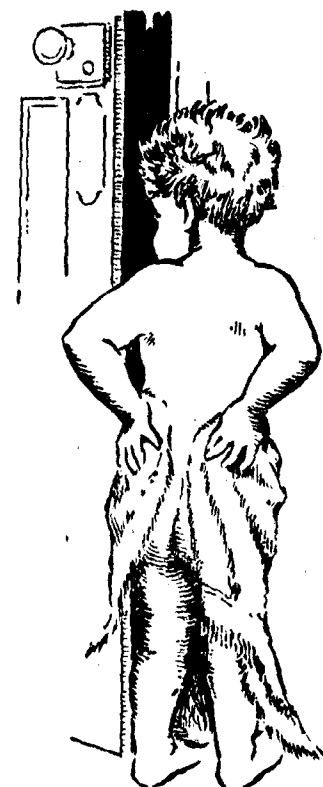
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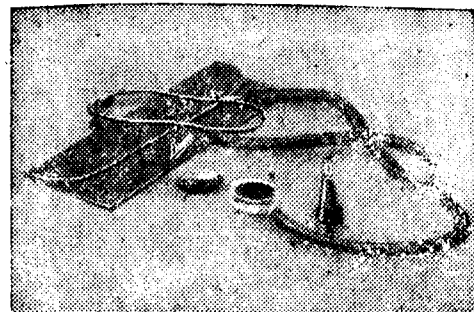
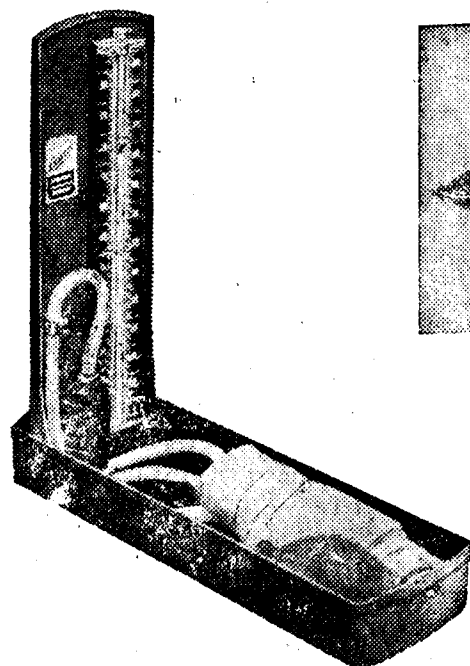
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Scabies*

MARTIN FRIEDMANN, M. D. (Hdbg.)
Yercaud, (Salem District).

It is just a hundred years since FERDINAND von HEBRA in his famous treatise (1844) put a definite end to an age old controversy as to the nature of the disease known as Itch (scabies). Further investigations by STANNIUS & KOHLER, HEYLAND, EICHSTATT, BOURGUIGNON, LANQUETIN, FURSTENBERG, GUDDEN brought the doctrine of itch to a certain issue, thus enabling HEBRA rightly to write in 1860: "There will be nowadays no scientific physician who still might be pleased with the chimera: 'scabies dyscrasy'."

When in the newspapers¹ we recently read reports that at a meeting of medical practitioners in Madras the general opinion was that the present prevalence of the disease is probably due to lack of proper diet, bad food, poor milk supply, bad weather or shortage of vegetables with the proper vitamins, playing in mud (AYYANGAR¹), and when we learn that scabies is treated by injections or internally (AYYANGAR) it seems as if all the results of trying scientific knowledge will again pass into oblivion as has happened so frequently in the past with scabies. I, therefore, feel justified to treat the theme of scabies here, especially since this disease seems to spread like an epidemic in this country.

History.—Itch belongs to the oldest diseases for which we have historical records; its aetiology and method of spread have been known for ages, and have always been forgotten again. "ZARAATH", the disease described in the Bible, and erroneously translated as lepra, can, according to HEBRA and others, only be regarded as scabies. Hippocrates meant that scabies is rather a pollution than a disease (*sunt atem talia turpido magis, quam morbi*). The Greek ARISTOTLE (384-322 B. C.), the Chinese CH'AO-YUAN-FANG (605 A. D.), the Roman Celsus (25 A. D.), the Arab EBN-ZOHR (about 1100 A. D.), the German SANCTA HILDEGARDIS (1150 A. D.), the Frenchmen GUY DE CHAULIAE (1390 A. D.), AMBROISE PARE (16th century), the Italians ALEXANDER BENEDICTUS (1533), GABRIEL FALLOPIUS (1584), the Englishman THOMAS MOUFFET (1634), and many others more knew of the itch mite as well as of the contagious nature of the disease. In spite of numerous works dealing with the itch mite, the majority of physicians up to the 17th century had either no knowledge of the existence of these animalcules, or they regarded the propagation of them as incidental or originating through 'spontaneous generation.' Itch itself, however, was considered a disease engendered through bad humours of the body (*acrimonia sanguinis*), such as sharp acids of the organism, own fermentation of the blood plasma or lymph etc. ZACHARIAS JANSEN's invention of the microscope (1619) led to many investigations of itch. The itch parasite was frequently found, and illustrated. Whilst physicians had a completely false conception of the character of itch, the people knew the ins and outs better. Old women gained great skill in digging the mite out of the skin with needles. For the scientific world, however, the parasite, again and again discovered and described, was forgotten, or at least not agreed with, until finally the Corsican student RENUCCI (1834) succeeded in allaying the last doubts by direct demonstration of the mite in ALIBERT's lecture at Paris. The fight for recognition might, notwithstanding, have

* Specially contributed to THE ANTISEPTIC.

continued if HEBRA, in his epoch-making publication, had not undone HAHNEMANN's theory of the scabies-metastases. "The history of scabies may prove that even infallible facts often find recognition with more difficulty than idealistic phantasms" (HEBRA).

After the ætiology and pathogenesis of the disease had been settled much labour was taken in the investigation of the biology and anatomy of the itch mite which, in spite of modern research work by REUBEN FRIEDMAN and others, are not known in every detail as yet.

At any time it can easily be demonstrated that itch is solely caused by the itch mite. We are entitled to state that scabies belongs to the purest skin diseases without having any ætiological connection with constitutional abnormalities, bad nutritious conditions, or disturbances of metabolism. The inner organism is by no means primarily involved. In principle itch has to be ranged with the groups of zoonoses of the skin, such as lice, fleas, bugs etc., and on the other hand with (1) *Demodex folliculorum*; (2) *Leptus autumnalis*; (3) *Ixodes ricinus*; (4) *Sarcopsylla penetrans* etc. The difference between the two groups is that the former are truly epizootic, whereas the latter living temporary (2 & 4), partly (3), or permanently (*Acarus scabiei* and 1) within the skin are dermatozootic.

The itch mite (*Acarus scabiei hominis* de Geer (1778) appears to the naked eye as just a visible pin-point-like whitish or grey-reddish dot which moves rather quickly on a warmed glass slide, or on the finger nail. It is an invertebrate. Our knowledge of the systematics of its genus is in an unsatisfactory state (Buxton), but, because it possesses jointed legs it is generally classified as a Phylum Arthropoda. Its resemblance to the spider places it with the latter in the class arachnoida, order acarinae ("uncuttable"), family sarcoptidae (because it lives by gnawing into the flesh upon which it exists) sub-family sarcoptinae, genus sarcoptes, species scabiei, variety *acarus scabiei hominis* (R. FRIEDMAN). It is not an insect (Hexapoda) as it has, besides other characteristics, four pairs of legs, as compared with three pairs in insects. Its larvæ, however, are six legged (descent from insects?).

The female (Fig. 1 see page 197) (average length 388 microns) possesses two pairs of suckers attached to the anterior legs, while the smaller male bears additional suckers on the fourth pair of legs. Instead of a detailed morphological description I submit some figures appertaining to the parasites. Coming in contact with the skin "the ovigerous female fixes on to the skin by the suckers and, propping the body up with the bristles of her posterior legs, assumes an almost perpendicular position, and commences cutting the skin. She very soon bores in, being completely concealed in as short a period as two and a half minutes" (R. FRIEDMAN). The mite continues boring, thus forming burrows just beneath the horny layer of the epidermis. She does not enter the network of Malpighi. The burrows appear as thin, serpentine, zig-zag or even round lines from a millimetre up to several centimetres in length. The burrowing is not a continuous one; it generally depends on the warmth of the host's body as can be proved experimentally (MUNRO). Under normal conditions, therefore, the boring period corresponds mainly to the time spent in bed. By the attacks of the mite to the integument that sensation is caused which is called "itching" and hence the English name of the disease. As the mite rests usually in the day time, and becomes vivacious during the night; itching is especially

pronounced at night. The female mite, once burrowed in, does not henceforth leave her tunnel, as her dorsal spines prevent retrogressive movements. By more and more boring the mite finds all that is necessary for its life. Epidermis particles and sero-lymphatic juice serve it as food.

The mite is dependent on air oxygen. Therefore it can never penetrate to deeper tissue layers, and it never can be found in the inner human body. It seems that females cut small air holes in the burrow's roof for air supply.

Almost simultaneously with the burrowing oviposition commences, and proceeds as the mite moves onwards until it dies. The number of eggs laid is not definitely known. HEBRA states that the acarus lays one to two eggs per day, and it is estimated that the total number of eggs laid is between forty and fifty. From these

data and the length of the gallery,—the mite advances daily at a rate of two to three millimetres—it was concluded that an adult female lives at least three weeks, probably four to five weeks or more.

The mite burrow (Fig. 3 see page 198) consists of the entrance opening, (a minute papule), the roof where the stratum corneum cutis is loosened, the floor where the horny layer is always renewed, and the blind end, wherein the mite stays: "*I'eminence acarieane de Bazin*". The mite is discerned here as a whitish dot. On the ground there is to be found: the eggs perpendicular to the axis of the burrow, brown fecal masses, empty egg shells, debris, mite larvæ, and nymphæ. The eggs near the opening are the older, those near the female the younger ones. The study of the burrow's contents may reveal the whole embryonic development within the eggs, and the different stages outside it: 2½–3 days after oviposition, the larva hatches, and moults 1½–3 days thereafter for the first time, further

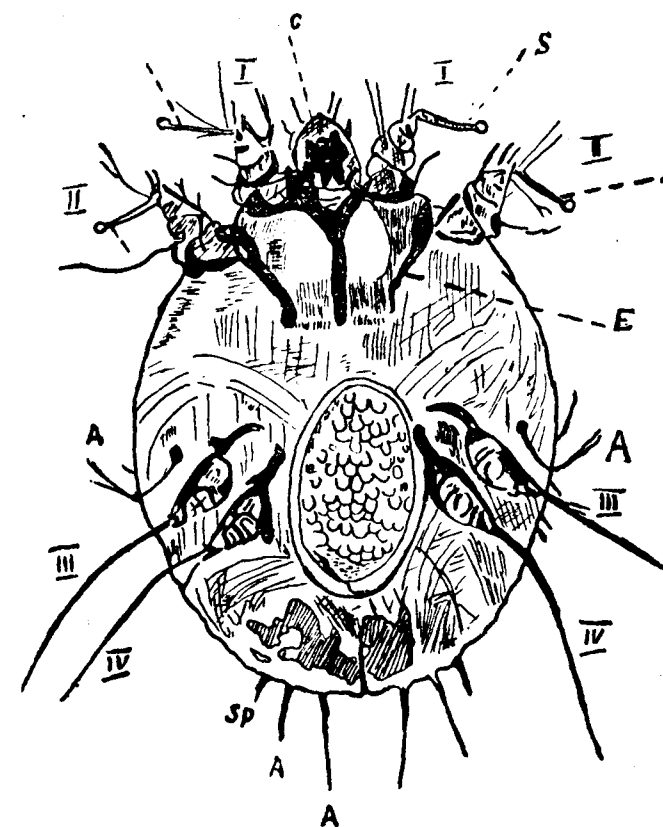


FIG. 1. *Acarus scabiei* female with ovum, ventral aspect, according to R. Friedman's photomicrograph.

I, IV=legs; C=capitulum; A=setae; S=suckers; Sp=spine; E=epimeres.

moultings follow, so that the first nymphal stage lasts $1\frac{1}{2}$ -2 $\frac{1}{2}$ days, the

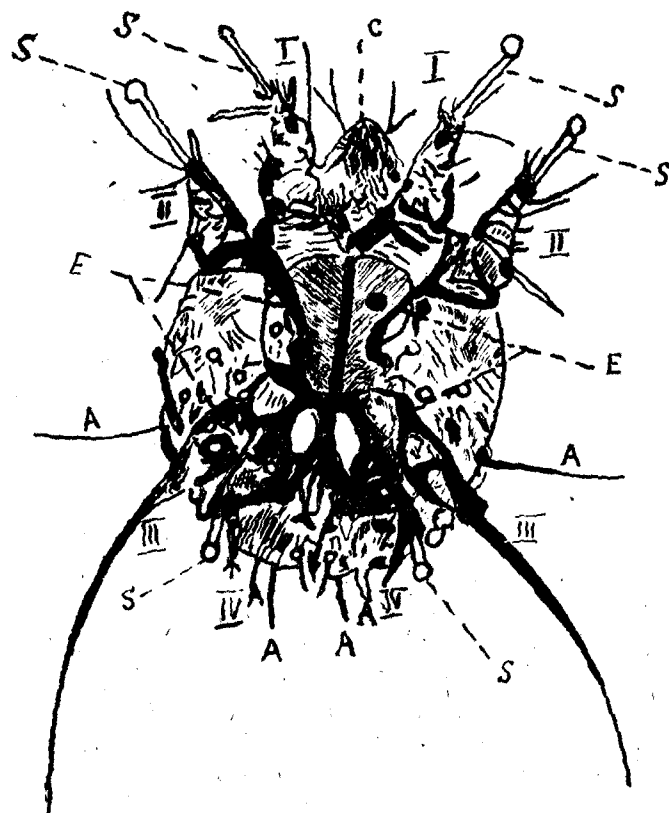


FIG. 2. *Acarus scabiei* male, ventral aspect, according to R. Friedman's photomicrograph.

I, IV=legs; C=capitulum; A=setae; S=suckers; E=epimeres.

second nymphal stage 2-4 days, followed by the adult stage. The nymph turns into females or into sexual males. 'It is quite probable that *Acarus scabiei*, may under some (unfavourable) conditions, be viviparous or ovoviviparous (R. FRIEDMAN). 'The larvæ bore more deeply either in the floor of the tunnel or away from it in the immediate neighbourhood of the hair follicles. The irritation caused by their burrows gives rise to vesicles containing serous fluid, probably food for the offsprings. Copulation most likely takes place in the burrows made by

the second nymphs; males having been observed in these burrows or small branch burrows off them (R. FRIEDMAN). 'The act of copulation has not been observed yet. In the burrows of the adult, egg-laying female males could not be found.

The burrows in persons with carefully attended skins appear white due to air entering through the

air holes; but they are mostly black punctuated by accumulated dirt particles. The male mite (Fig. 2 see above Fig. 2) (length from 205-230 microns) uses the suckers of the hindmost pair of limbs most probably to attach

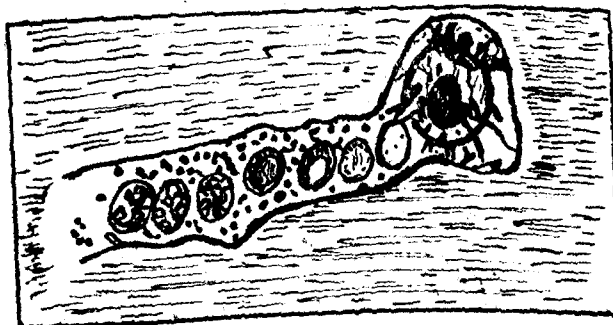


FIG. 3. Burrow with mite, eggs and scybala.

himself to the female body during mating. He does not construct galleries like the female. He hides himself under small pockets, or epidermis dimples during the day, and rambles actively over the surface of the skin at night when he is stimulated by the warmth of the bed. The males course along the skin with extraordinary speed, and are able, according to BOURGUIGNON, to run from the hand to the shoulder in ten minutes. They are difficult to be found as the proportion of males to females seems to be one to ten. As one male fertilizes several females they must be rather mobile. On one occasion I observed a male strolling near a burrow. Nearly no irritation seems to be caused by them. Most likely they have the same duration of life as the females.

Effects of scratching.—The itching caused by the mites forces the patient to scratch and results in efflorescences being scratched sore. This is advantageous to the mites. To get rid of the itch parasites most persons press the thumb to the itching spot, put the other fingers alternatively to the skin, and move the nails, scraping toward the thumb.* The scratching may result in secondary lesions: slight erythemata, wheals, serous exudations, formation of vesicles bullæ, papular efflorescences, excoriations with black blood crusts, eczematization, thickening of the skin, and squamous processes. Eczematous reactions may also originate from toxins excreted by the mites (JADASSOHN). When with the scratching nail pus-forming germs are inoculated into the skin all forms of pyoderma may develop from inconsiderable inflammations and redness to impetigo vulgaris, folliculitis, furuncles, abscesses, mastitis, ecthyma, and erysipelas with all their possible complications, such as edemata, and lymphangitis with swelling of the regional glands, phlegmons, sepsis etc. Whilst on the one hand the number of mites is doubtlessly reduced by the scratching defence reaction, the mites on the other hand are carried to other regions of the body. So it probably happens that the penis and scrotum are nearly never unaffected as contrasted with the back which is more difficult to reach with the fingers. According to the aforementioned facts itch offers the following aspect: The *primary* and pathognomonic lesion, the burrow, can be easily found with the naked eye, or with a magnifying glass especially on the interdigital webs and on the penis. It is sometimes contained in the wall and roof of the secondary blister. The predilection sites of itching and infestation are: webs and sides of the fingers, ulnar border of the hand, bends of the wrists, region of the elbow, anterior axillary folds, umbilicus and periumbilical zones, premamillary areas, penis and scrotum (even in the urethral mucous membrane burrows have been met with HEBRA), lower parts of buttocks, inner regions of thighs, back of the knee, ankles and toes. Efflorescences are particularly dense in spots which are exposed to permanent pressure by tied sitting clothings etc. Face, scalp and neck are almost unaffected in adults. The reason why, is unknown. In young children the soles and palms (sometimes also the scalp) and in women the undersides of the breasts are commonly involved. In rare cases the whole body over and over may be affected (scabies norvegica). Cases of pure scabies with burrows only present are not frequently to be found. More often we see the mottled picture of primary secondary lesions whereby the latter positively dominate the field of the disease, leading not rarely to generalisations: impetiginisation, eczematization etc. We should, therefore

* The technique of scratching in other pruriginous diseases is not necessarily the same. From the mode of scratching diagnostic conclusions often can be drawn e.g. for fungus infections, body lice, lichen ruber, scabies, prurigo (polished nails) etc.

be more correct in speaking of Scabies + Eczema, Scabies + Impetigo, Scabies + Furunculosis etc. (BLOCH). Nevertheless in different parts of the body the secondary effects usually show different characteristics. Pustules and blisters are common on the hands and feet, eroded papulovesicles occupy trunk, arms and knees, broad papules at the genitals, and deep excoriations (ecthyma when suppurating) at the buttocks and inner parts of the thighs. Edemata involve generally the limbs, and red, moist, oozing eczemata particularly the flexures. The facts why some places are more favoured by the mites than others cannot easily be explained, as some of these spots have soft, others stout, horny epidermis layers, some are protected by clothing, others uncovered (hands).

Methods of spread.—Scabies is acquired by the transmission of a fertilized female mite. Transference of eggs, larvæ or pubescent females does not seem to transmit scabies. This transmission usually occurs through intimate bodily contacts and in the warmth in almost every case in bed or during sexual intercourse. (Prostitutes are for that reason very often infested). The transmission from adults to children, and from children to children happens frequently, the explanation for this being the greater intimacy of bodily contacts with and amongst children (JADASSOHN) *e. g.* during children's games, certain occupations, etc. Even casual contacts, such as shaking hands permits of the passing on of parasites (SULZBERGER & WOLF).

Furthermore infections are undoubtedly brought about through beds which were used by scabious people. It is not known how long those beds remain contagious, as we possess no certain data on the duration of life of the mites outside the body. GERLACH thinks, that the mite is able to live in dry warmth at 62°C for one hour, in dry rooms about three or four days, in moist air up to ten days. MULZER succeeded in keeping a female mite for 3 days alive outside the burrow. R. FRIEDMAN writes: "In three instances the larvæ lived over thirty hours but none moulted and many lived only a few hours (three to eight). Probably the lack of food was one cause of their dying, but many shrivelled from lack of moisture and others appeared drowned by excess of it." It seems unlikely that the mite can be saprophytic outside the body. The complete loss of the eyes, of the apparatus of circulation and respiration, indicates its true parasitic character. The respiration is done through the skin, the circulation through lymphlacunæ without wall (GUDDEN). Attempts to rear acari always failed.

Scabies is a disease which in a great measure spreads mostly where people are living in crowded quarters: armies, schools, poor people's abodes, barracks, jails etc. A pair of itch mites may produce 1,500,000 descendants in three months! (STIRR). During wars itch always increases in geometric progression in both incidence and importance (R. FRIEDMAN). There exists no immunity or predisposition. It does not respect social or economic status, nor the stage of nutrition of the individuals. If the disease is more frequent in the poorer population, the reasons are unfavourable hygienic conditions, and scarcity of sufficient sleeping space.

Diagnosis.—The most important part of the diagnosis of itch is to think of its possibility especially in the well-to-do. The uncomplicated scabies in clean persons who bathe a lot belongs to the often mistaken dermatoses.

The diagnosis of scabies can be confirmed: (1) by demonstration of the parasite. With some experience the mite can be lifted out with the point of a needle from the blind end of the gallery, and then identified under the microscope. It is, however, easier to demonstrate the mite with the whole burrow by slicing off the entire burrow by means of a lancet as superficially as possible, adding a few drops of Xylol or oil (Cedar-oil), and putting the slice between two glass slides. There may be seen with a magnification of 50—100× the whole burrow with its contents. The discovery even of ova or the mite's scybala suffices for the diagnosis.

(2) The distribution of the eruptions is extremely characteristic of the disease. No other skin disease imitates the above mentioned distribution of lesions. The scabies papulæ on penis and scrotum must not be mistaken for syphilis. Sometimes, indeed, the scabietic genital eruptions may get infected with the germs of syphilis or chancroid (own observations). Itch must also be differentiated from pediculosis (here often brown scybala can be found on the skin surface around the bites), papular urticaria in children, prurigo etc.

(3) The prevailing symptom of nocturnal itching; but it has to be considered that most pruritic diseases also tend to itch more intensively at night.

(4) Identified source or endemic occurrence *e. g.*, in a family circle, military barracks, schools etc.

Treatment.—This consists of applying externally agents which destroy parasites, larvæ, and eggs. Several hundreds of medicaments have been recommended. Best known are B Naphthol (Kaposi), Peru Balsam, Styra, Pulv. Pyrethræ etc. The oldest and mostly used remedies are Sulphur preparations. The Israelites already treated the "Zaraath" by bathing in the sulphurous waters of the Jordan; in the same way the ancient sulphur baths at Wolkenstein (1657) were remedials against itch. CELSUS used a mixture of Pix liquida and Sulphur.

The sulphur salve is the most reliable remedy, as *e. g.* 10–30 per cent. Sulphur in simple ointment or Petrolatum. 5–7 ozs. suffice for an adult. To prescribe at least one pound, as AYYANGAR recommends, means a wastage of Sulphur. In thousands of cases of mine, Sulphur ointments proved a reliable and effective curative. Seldom I had to apply one of the other preparations.

Scabies does not yield to half measures. The course must be executed in an exact manner. Not the patient alone should be treated, but also at the same time all surrounding persons who have contracted the disease. Unless all these are treated constant reinfections can occur.

The first day the patient should scrub the entire body with soap, hot water, and a nail brush to soften the skin and open up the burrows. After drying the Salve is thoroughly rubbed into the skin. In most cases face and neck need not be treated; especial attention must be given to the genitals in men, to the finger webs and all the other predilection parts. Repeat the administration of the ointment on the two successive days. On the fourth day no treatment. The fifth day a hot bath should be taken again, and the clothes and bedding should be changed. All washable clothes which were used before and during the course must be washed. The unwashable clothing and bedding may be exposed to the sun for several hours. During the whole

For drip method, 6% Glucose solution in normal saline carefully filtered and sterilized. To cut down the bulk, 20% of the solution may be used without any obvious danger provided the injection is given too slowly to produce any reaction.

Indications.—1. *Infectious diseases*:—(a) Severe forms of malaria; (b) black water fever; (c) pneumonia; (d) diphtheria; (e) typhoid; (f) septicæmia; (g) membranous tonsillitis; and (h) cholera.

2. *Gastro-intestinal system*:—(a) Cyclic vomiting; (b) ketosis or acidosis; (c) chronic peptic ulcer; (d) stricture of the pylorus; (e) cancer of the pylorus; and (f) acute and chronic enteritis in children.

3. *Liver and gall-bladder*:—(a) Jaundice; (b) acute yellow atrophy of liver.

4. *Surgical*:—(a) Before operations when (i) liver efficiency is suspected, (ii) metabolic rate is high, (iii) patient under-nourished, (iv) blood transfusion impracticable, (v) there is profuse hæmorrhage, (vi) there is evidence of shock, and (vii) previous history of epilepsy; (b) Peptic ulcer perforation; and (c) As prophylaxis to post-operative shock.

5. *Circulatory system*:—(a) Congestive heart failure; (b) peripheral vascular dilatation.

6. *Urinary system*:—(a) Bright's disease; (b) anuria or uræmia.

7. *Obstetrics*:—(a) Pregnancy; (b) hyperemesis gravidarum; (c) toxæmias of pregnancy.

8. *General*:—(a) Dehydration; (b) œdema threatened of lung and collapse.

9. *Disease of metabolism*:—Diabetes mellitus.

10. *Nervous system*:—Neurasthenia.

11. *Poison*:—Arsenic poisoning.

Therapeutic hints.—1. *Malaria* (cerebral and algid forms):—Immediate I.V. injection of gr. x of Quinine bi-hydrochloride diluted in 5 to 10 c.c. of 25% Glucose solution together with 1 to 3 c.c. of 10% Calcium Gluconate solution.

2. *Black water fever*:—I.V. injection of 1 to 2 pints of 5 to 6% Glucose solution to assist heart's action and help to combat toxæmia and urinary suppression. 10 to 20% solution is a more potent diuretic.

3. *Pneumonia*:—10% solution when circulatory failure has commenced.

4. *Diphtheria*:—In severe infections, the serum may be, with advantage, diluted in 2 or more pints of a 5% Glucose saline and given by continuous intravenous transfusion. This should be followed by daily I. V. injection either of 200 c.c. of 25% glucose solution or 1 to 2 pints of 10% glucose solution by drip method until the toxæmia lessens. In such cases, it provides the best means for combating cardio-vascular failure.

50 c. c. of 25% Glucose solution with 6 units of Insulin given every 12 hours yields very promising benefit in severe cases. In cases where veins are not prominent, I. V. injection of glucose is often life-saving.

Rectally, 2 to 3 oz. of 5% Glucose solution in normal saline with one drachm of Sodium Bicarbonate to a pint, may be given by Murphy-drip method in all severe cases.

Orally, 100 to 200 gms. or 4 to 8 oz. of Glucose may be given well diluted either with lemon juice or in food and drink.

5. *Cholera*:—I. V. injection of Glucose saline in small amounts frequently.

6. *Membranous tonsillitis*:—5% Glucose in normal saline rectally by continuous drip method.

7. *Cyclic vomiting*:—After bowel wash, 10% Glucose in saline I. V. Care should be taken as to quantity and rate of flow. This should not exceed 300 c. c. per kg. of body weight. Given by gravity, funnel should be kept 12 inches above the level of the vein. 20 to 30 minutes should be allowed in injecting 200 to 300 c. c. of the solution.

A glucose drink made of 1 to 2 drachms of Potassium Citrate and 4 oz. of Glucose to a pint of water or normal saline may be given frequently, with the added advantage of not only supplying nutrition but also combating the loss of alkali reserve of blood. Plenty of water, glucose and salines are the best weapons to combat this serious malady.

Glucose by other routes may also be given according to the condition of the patient.

8. *Jaundice*:—I. V. injection of 25 to 50% Glucose solution with 20 units of Insulin daily for a week.

9. *Acute yellow atrophy of liver*:—I. V. injection of glucose with insulin frequently.

10. *Septicæmia*:—Continuous drip method, subcutaneously or I. V. injection up to 3 litres a day.

11. *Peptic ulcer perforation*:—I. V. Glucose injection helps to raise vascular tension lowered by sweating, vomiting and toxæmia.

12. *Congestive heart failure*:—I. V. injection of 25 to 50% Glucose solution 25 c. c. every 8 to 10 hours. Along with Strophanthin and Digoxin, this is the most effective therapy.

13. *Anuria*:—I. V. injection of 10% Glucose solution in normal saline with 4.285% Sodium Sulphate.

14. *Pregnancy*:—5 to 10% Glucose I. V. up to 4,000 c.c. in 24 hours.

15. *Dehydration*:—50 to 100 gms. of Glucose to resist the depleted glycogen reserve of liver with normal saline 1 or more litre by I.V. drip method.

16. *Edema threatened of lung and collapse*:—I. V. injection of 20 c.c. of 50% Glucose solution.

17. *Diabetes mellitus*:—Daily injection of 50 to 100 c.c. of 25% Glucose I. V. for weeks with insulin-dietetic restrictions essential.

18. *Arsenic poisoning*:—Daily I. V. injection of 25 to 50 c.c. of 40% Glucose solution.

Reaction.—Reports of reaction following intravenous administration of glucose is often heard. Hence, a brief discussion on this aspect will not be deemed out of place.

A. SYMPTOMATOLOGY:—The term includes rigor, rise of temperature, vasomotor disturbance or symptoms of shock differing in intensity in different patients resulting even in death. Given in a case of myocardial failure on account of osmotic disturbances, alarming symptoms and sometimes even death may issue.

B. CAUSES:—The reactions due to Glucose injection mainly depends on the factors as noted under: (1) concentration of the solution used; (2) quantity of the solution used; (3) temperature of the solution used; (4) impurities of the solution used; (5) time taken in injecting the solution.

1. *Concentration*:—The higher the concentration, the more are the chances of reaction. In severely toxic cases, solution above 12½% should better be avoided. It is safer to repeat the injections oftener than to use a higher concentration. Hence, for rapid efficacy, 12½% solution should be given intravenously, 50 c.c. of the solution should be given either

course no bath must be given so that the ointment covers the skin for four days. As the eggs are more resistant to sulphur than the mites and larvæ the four days treatment is in favour to enable the destruction of the larvæ which usually hatch after three days.

Pustulæ, furuncles, ecthyma etc. form no contraindication against Sulphur. On the contrary the suppurative processes improve generally very quickly. If extensive eczematous alterations are present, it is preferable to use less irritating substances than Sulphur, as for instance Peru Balsam in a form somewhat like Peru Balsam, Glycerinum Amyli, equal parts of each to make 2 ozs.

The smallest possible quantity should be rubbed into the largest possible plane.

In recent years Benzoyl Benzoate (not to be confused with the older preparations containing benzyl benzoate) finds many an adherer. It may be ordained as follows: equal parts soft soap, benzoyl benzoate, and rectified spirit. The treatment is carried out as with Sulphur, but the medicament is kept on only for 24 hours; then bath and change linen etc.

The method is cleaner and shorter but more expensive.

Another modern clean treatment is: (1) bathe, (2) apply a 40 per cent. solution of Sodium Thiosulphate; after 15 minutes (3) apply a 4 per cent. solution of Hydrochloric acid. Hereby Sulphur is set free according to the equation $\text{Na}_2\text{S}_2\text{O}_3 + 2\text{HCl} = 2\text{NaCl} + \text{SO}_2 + \text{S} + \text{H}_2\text{O}$. (4) After an hour rinse off.

This treatment should also be repeated on three successive days.

Consecutive irritations and persisting itching are treated with antipruritic or antieczematous remedies, impetigo and septic sores etc. according to the general management of these diseases.

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Glucose Therapy*

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Introductory.—Among the stimulants hitherto used in practice by the medicos, Glucose can unhesitatingly be called to be the foremost. Its value does not cease with its stimulant effects only, but as a nutriment (which is rapidly absorbed and metabolised thereby increasing the cardiac reserve power) its value is far more enhanced. Inclusion of Glucose, therefore, in the dietary of all the patients suffering from severe infection is undoubtedly of prime importance.

Hypertonic solution of glucose hastens the process of absorption, minimises toxæmia and restores a quick deposit of glycogen in the liver. This rise of glycogen contents forms a great protection to the hepatic cells from damage due to toxic effects of certain drugs and severe infections. A brief consideration of its therapeutic efficacy is, therefore, necessary.

Mode of administration. Glucose can be administered by five routes viz., orally, rectally, subcutaneously, intramuscularly and intravenously.

1. *Orally*:—Owing to its property of easy assimilation, it can liberally be given to patients in the form of sweetened lemon or orange juice drinks. 5 to 10 oz. of such drinks can readily be given without any appreciable ill-effect within 24 hours.

One lb. of glucose dissolved in 2 pints of water and flavoured with orange or lemon juice forms a concentrated solution which may be given frequently diluted to taste in: (1) Diphtheria; (2) follicular tonsillitis; (3) tympanites; (4) cirrhosis of the liver; (5) asthma of children—1 to 2 drachms after meals, (when nervous and poorly nourished); (6) as prophylaxis: (a) Against reaction:—in cases of arsenical or antimony compound or before chloroform anaesthesia. 1 oz. of glucose in 10 ozs. of water 3 to 4 hours before operation is advised; (b) against liver damage:—by poisons like Arsphenamine compound, Cincophan, Atophan, Quinolan, Gold, Phosphorus, Santonin, Carbon Tetrachloride, Bromethal and other basal narcotics and Trinitrothene etc.

2. *Rectally*:—Isotonic solution of glucose given by continuous drip method. The indications are the same as those of subcutaneous administration. In cases of membranous tonsillitis, when swallowing is rendered difficult or impossible, 50% glucose solution in normal saline given by Murphy-drip method acts like a charm.

3. *Subcutaneously*:—Isotonic solution 5 to 6% free from salt (as it will become hypertonic then) 2 pints or more may be given in cases of surgical shock, acute infectious fevers, tissue dehydration and various other intoxications where free supply of water is also needed.

4. *Intramuscularly*:—12½% solution is usually chosen. The advantage is that it is given easily and a sterilised solution can readily be available in the market. But the chief drawback is that more than 50 c.c. of the solution cannot be given by this route at a time as it will find difficulty in accommodation under muscle and will cause pain due to slow diffusion.

5. *Intravenously*:—6 to 25% solution is usually taken. More diluted is preferred in those cases where fluid is necessary but in conditions like ketosis or hydræmia, more concentrated solution is helpful.

* Specially contributed to THE ANTISEPTIC.

subcutaneously or intramuscularly to maintain the effect. Injections by latter route may be repeated every 4 to 8 hours.

2. *Quantity*:—To load the system with a huge amount of Glucose is very unwise. Introduction of Glucose into the blood stream induces liberation of Insulin from the pancreas. If large amount of Glucose is suddenly thrown in the system, so much of the Insulin may be thrown out in system that there may be hypoglycæmia. Hence, prior to the injection, the bulk of the solution and condition of the cardio-vascular system must be taken into consideration.

3. *Temperature*:—It has been observed that Glucose when injected after warming it to the body temperature does not produce any reaction while the cold solution does so. Hence, before injection of Glucose, warming the solution a little higher than body temperature is always safe and advisable.

4. *Impurities*:—Gum, resins and dextrin are few of the impurities commonly found in admixture with the Glucose powder meant for preparing the solution. Manufacturing defects in the forms of selection of distilled water, alkalinity of the glass ampoule and imperfect sterilization attribute to the reaction in a more elaborate scale than any other cause. Contamination and improper sterilization play fundamental parts in the production of such troubles.

5. *Time*:—Rapid injections are, in most of the cases, responsible for reaction. It, therefore, must be very very slowly injected along the course of the vein: the speed being so slow as to allow twenty minutes at least for injecting 25 c.c. of the solution.

Conclusion:—From the above, it is evident that Glucose has lots and lots of advantages, and owing to its marvellous action, it may safely be regarded as a very effective weapon to combat infections in the hands of a medical practitioner.

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Hospital Road,
Laheria Sarai.

Cases and Comments

A Case of Endarteritis Obliterans

MOHD. MOHSIN ALI ABBASSI, M.B.B.S., P.O.M.S.,
Assistant Surgeon, Samrala, Ludhiana District.

A Jat Sikh, aged 40 years, was admitted into the Civil Hospital, Samrala, on 4-5-'42, suffering from pain in the right leg, of ten/eleven days duration.

History.—After an exposure to cold, he all of a sudden got an attack of an acute pain in his right calf which was severe enough to make him lie down and to be brought back home, aided by others.

Previous to this he enjoyed a perfectly good health and was engaged in doing his ordinary work as an agriculturist.

Condition on admission:—Pulse 78, temperature 96.8° F.

Some œdema of the right knee and the right calf. There was nothing local in this leg to account for the œdema. He had a burning sensation in the calf which was referred to the foot. He could not put

ht on this leg and dare not step this foot forward. Kernig's Lasegue's signs were negative. Bowels acted under purgatives he using.

He did not sleep for the last four nights and was in an agony.
B. P. 170/110.

No venereal history, nor of smoking. Heart was normal, other general physical examination was negative.

Urine examination showed physically a smoky colour, chemically the presence of albumin, and microscopically the presence of large number of red blood cells and phosphates.

On the third day both his legs were found icy cold, with no arterial pulsations and had purpuric spots which were scattered on the right leg upto the knee and on the left above the knee. These did not pit on pressure. The feet had a bluish colour with some œdema.

Both legs were anæsthetic except on deep palpation. He had one bad attack of acute burning pain in the feet. His hands were cold and his temperature was sub-normal but his pulse rate was 140 a minute and he was perspiring in the face.

Next day.—When seen he complained of a bad sleep at night. Both the toes were bluish, right now less and showed wrinkles, whilst the left was œdematous. Similarly the right leg was less deep in colour, whilst the left was deep purplish in colour and swollen. Right knee joint was swollen. Both legs and hands were cold to touch, general condition was bad, he had to be propped up in bed. Bowels moved.

4th day:—Legs cold, colour the same. Had one attack of burning in the feet. Blisters developed on both the legs, a few bursted leaving in a stinking smell.

Since signs of gangrene had developed, he was advised amputation high above the knees. The same evening they got in Major N. A. QURESHI, the then Civil Surgeon, Ludhiana, for advice, who expressed the opinion regarding early amputation but it was not agreed upon by the attendants and the patient.

Next day condition worsened, the right thigh became emphysematous up to the hip joint with a resonant percussion note. Pulse 120, temperature 98.4° F.

Today change was also noticed in the right arm, in the way of a hot, tender infiltration in an area of about 4 inches.

Since patient was rapidly losing ground and his relations saw his end drawing nearer and nearer, they removed him to his village, where he expired on the next morning.

Points of interest.—(1) Shifting character of the gangrene from the right to the left; (2) prominent sensory symptoms which is a characteristic of thrombo-angitis-obliterans (Lea Buerger); (3) setting in of a wet gangrene at the end of the phase; (4) appearance of the symptoms of local gangrene in the right arm; (5) absence of the febrile symptoms.

My thanks are due to the Civil Surgeon, Ludhiana, for his permission to send these case notes for publication.

A case of Cerebro-Spinal Meningitis

DR. GOVINDLAL M. SHAH, L.C.P.S. (Bom.),
Shuklatisha (Broach).

NO. 4

ns by

BEING amazed at the wonderful result obtained by Sulpha group drugs in a case clinically diagnosed as C. S. meningitis, I am tempted to report this case. Though C. S. fever is not so common in this area, yet it is not so rare to find it.

On 1-2-'45 I was called to see a case in a village, 5 miles from this place, who had become delirious and trying to run out from the bed and go to the verandah.

Rama, aged 35, got fever with rigor on 31-1-'45 in the evening and about 12 o'clock in night he became delirious, running out of bed and was complaining of severe headache occasionally. When I saw him he was in the condition mentioned above with temperature 100°F., pulse 110, respiration about 24. Lungs, nothing abnormal; spleen, nil; jerks + + no Babynsky-Sign. But Kernig's sign was present and there was stiffness of neck. He could not recognise anybody, nor he would reply to any questions, all the time trying to go out of bed.

Previous history.—Nothing special. On ground of Kernig's sign being positive and unusual symptoms developing in a healthy person, and there being no history of having suffered from malarial fever before, I was led to diagnose it as meningitis clinically.

Treatment.—20 c.c. 25% Glucose with 5 c.c. 40% Hexamine intravenously and 5 c.c. Soluseptasine intravenously were given. The patient was spitting out water, yet he swallowed some medicine. Hyoscine Hydrozon $\frac{1}{100}$ was injected for delirium.

Paraldehyde	...	3 iii	Tr. Hyd.	...	3 i	} 4 T.D.S.
3. Bromides	...	3 iii	A	...	3 iii	

At about midnight he became conscious, was the report on the next day.

2-2-'45 and 3-2-'45, Soluseptasine 5 c.c. was injected intravenously and 8 tablets of Sulphindon were given, 2 tablets every 3 hours. With sedative mixture and urotropine, the patient improved mentally, but stiffness and rigidity of neck and back were present. He complained of pain. Virundon 4 tablets were given for pain to be taken when there was excessive pain.

On 4-2-'45 the patient complained of pain and swelling in left knee joint and that he could only pass urine with great trouble, Urine was less. M & B 693, 4 tablets one every 3 hours and diuretic mixture and fomentation on hypogastrium were advised. Glycerine Belladonna with Icthyol for joint. After 4 days rigidity of neck and back was very much reduced and only complaint was about joint. Swelling was much more in popliteal fossa and it was very painful. About 1 oz. of turbid fluid was tapped out. Iodine injection (Idopil) was given. With fomentation and antiphlogistine on the knee, swelling and pain of joint disappeared. The patient became quite all right without any other complication.

Lumbar puncture was thought of but the patient was improving and as there was no clinical need for it, it was not done. Thanks to Sulpha group of drugs, such deadly diseases could be treated by a rural practitioner with very little equipment. Early administration of drug alone could have brought about such a satisfactory result.

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A Wrong Lead

WE had fondly hoped that the "Appeal to Reason" which we made in the last issue of THE ANTISEPTIC will have a resounding echo from the platform of the All-India Licentiates' Conference which was programmed to meet during the Easter holidays in Calcutta, and that the first steps towards amalgamation will be taken to bring the members of the medical profession belonging to various sections under one banner so that the battle that lies ahead of us may be fought in unison, and the interests of the profession as a whole safeguarded. But our hopes have been dashed to the ground; our appeal to reason has fallen on deaf ears. The President of the Conference assumed more the role of a protagonist of a particular cause than the role of the champion of the larger interests of the licentiates whose cause he was expected to espouse. He cannot but admit that "the ideal of one consolidated medical organisation for the country as a result of amalgamation of our Association with the Indian Medical Association is indeed too good to be opposed in principle." But throughout his longish address we find him at considerable pains to establish that amalgamation is not worth trying, and that it is not in the interests of the licentiates to seek such amalgamation at the present juncture. While he advised the delegates not to yield to emotional appeals for unity, his whole speech is an emotional outburst in justification of a stand-aside policy rather than a right lead from one at the helm of affairs, for the lasting and abiding interests of the licentiates.

We doubt very much if even a sun-dried bureaucrat, deeply steeped in the policy of "divide and rule" would have excelled him in this art. But the permanent interests of a large section of the medical profession cannot be sacrificed to the caprices of any individual, however highplaced he may be. It is therefore, our duty, however unpleasant it might be, to show how the very reasons which he has laboriously advanced for the separatist policy are themselves sufficient justification for the amalgamation. Our licentiate friends should not be carried away merely by the rosy picture that RAI SAHEB DR. MANOHARLAL KAPUR has drawn of the benefits that has accrued to the licentiates by the formation of the Indian Army Medical Corps and the admission of the licentiates into that cadre. They have to think of the future also.

[209]

We agree that the formation of the I.A.M.C. afforded an opportunity to the licentiates to prove their worth. But the worth was always there; it did not come overnight. But in spite of the continued efforts of the A.I.L.A. ever since its inception, the Government of India and its subordinate provincial governments have consistently and persistently refused to give due recognition to it. If the compelling necessity of the war for more and more medical men had not arisen, it is a matter for doubt if the Governments in the land would ever have come forward to pat the licentiates on their back, and if the high and the mighty who now speak in glowing terms of the worth of the licentiates would ever have opened their lips to support their claim for higher status. And even the I.A.M.C. is not a permanent organisation. It is a war child, and it is bound to disappear when the war ends and the country returns to normal times. The mere fact that the officials who, for too long, heeded not to the legitimate demands of the licentiates should, of their own accord, have now come forward to champion the cause of the licentiates to a certain extent, should, by itself, give rise to reasonable suspicion in the minds of the average people. But no such suspicion arises in the mind of DR. KAPUR, and with the zeal of a propagandist he sees in it the dawn of a new era to the chequered career of the licentiates. Nothing would give us greater pleasure than to see that the licentiates are accorded a status befitting their merit and service, but we are not of those who are easily carried away by big promises and half-hearted and half-baked actions. In the words of DR. KAPUR himself, "it is too unreliable to be depended upon, either now or in the post-war period."

In his overwhelming zeal for the separatist policy he has advocated, DR. KAPUR charges the Indian Medical Association, with failure to discharge its duty by the licentiates, and with monopolising all the advantages that have accrued in the course of long years. He says: "I am one of those who believe, like many others, that there were many excellent opportunities during the last twelve years when this amalgamation could have been a *fait accompli*. These were unfortunately missed and the situation became progressively complex. If the Indian Medical Association had defeated the formation of the Indian Medical Council in 1933 in its present form, as our Association defeated the main provision of the Medical Council Bill, viz., the All India Medical Register, it would have created such a tremendous goodwill between these two Associations that close on such a defeat the amalgamation would have been achieved then and there. The opposition of the Indian Medical Association to the Medical Council Bill, as it emerged finally from the Select Committee, was unfortunately feeble and fictitious. Subsequent events materially justify this conclusion. We actually see today that the Indian Medical Council is more or less the bastion of the Indian Medical Association. Almost every Indian Member of this Council has been an ex-president or a leader of the Indian Medical Association... While the leaders of the I. M. A. fight with bated breath for the abolition of the I.M.S., do they fight equally vigorously for the abolition of the subordinate medical service and for equal opportunities for both the licentiates and the graduates in the Provincial Medical Service? Do they really fight for equal privileges in the Provincial Medical Councils? Do they even show the semblance of a fight in the University medical faculties for helping the licentiates to qualify for M. B. B. S. on reasonable terms and conditions? These are all facts about which the I. M. A. as a matter of duty and conscience should take cognizance and set to itself the task of bringing relief to its own licentiate members who form the largest

part of their strength." Ingratitude can go no further. In the words of a well-known saint, "there is redemption for men who are guilty of every other crime; but the ungrateful shall know of none."

We have already stated that before the compelling necessity of the war arose, the authorities paid little heed to the legitimate demands of the licentiates. If, in spite of it, the licentiates have made considerable headway, it is not a little due to the fight that the I.M.A. and the medical graduates put up on behalf of their oppressed brethren. It will do no good to the licentiates to forget this. If still the hearts of the licentiates and the graduates are not warmed by mutual respect, sympathy and help, if equality is not attained between the licentiates and the graduates, they are not a little due to separatist policies and dangerous doctrines preached by men at the helm of affairs of the A.I.L.A. Such a dangerous doctrine has been put forward by DR. KAPUR also in his presidential address: "It is not natural nor reasonable for any group of men to work and strive for benefits from which they would be excluded." It is also neither natural nor reasonable, it may be argued *per contra*, for any group men to work and strive for benefits by which they would be affected. This is a vicious circle and it can be broken only if the graduates are made to feel that the licentiates are one with them and work in unison with them in mind and spirit for the common good of both. How can equality of status and mutual self respect be obtained in the present state of affairs and when one section of the profession oppressed by inferiority complex fight shy of amalgamation and keep themselves aloof from the Indian Medical Association, preaching such pernicious doctrines? The licentiates form a majority of the profession at present, and the only way in which equality and mutual respect can be established is by amalgamating the A.I.L.A. with the I.M.A., the licentiates taking part as equals in that body for the common good and proving to the hilt that they are in no way inferior to the graduates in any respect. Their numerical strength is bound to give them a dominating voice in the counsels of the I.M.A. If instead of taking this royal road to victory they allow themselves to be oppressed by a sense of inferiority complex and keep aloof from the I.M.A., "the day of the national fruition of amalgamation" will never come. DR. KAPUR says: "The Licentiates' Association would not *actively* (the italics are ours) oppose the amalgamation as that would be denying the ideal to which its heart is set." Is it then going to be passive opposition? Whatever the nature of that opposition, whether it be active or passive, that will only retard the growth of the licentiates to their full stature. It will also do no good either to the licentiates or to their Association if people at their helm think themselves the repositories of mercy and the spirit of service and cast aspersions insidiously on their brethren as if they are subordinating these considerations to political issues. We would only say that it would indeed be a bad day if an organised section of the profession subordinates the larger and permanent interests of the profession to self interest.

Regarding the post-war period, DR. KAPUR had some interesting and useful suggestions to make. If medical relief has to be planned not as an isolated item of work but as organically related to other national problems; if the Indian Medical Council should lay down the uniform minimum standard of medical education and qualification and thus conform to the standard laid down in other advanced countries; if the existing channels of medical relief are to be extended on the lines suggested by him; if the central and provincial governments are to be made to recognise the

unfairness of the present arrangements and to bring into effect an unitary type of service in all the provinces; if the uneven distribution of available opportunities for private medical work and uneven distribution of income are to be remedied by the practitioners in the larger towns, at any rate, forming themselves into teams and organising co-operative clinics and nursing homes to give a complete and comprehensive medical attention to each and every patient under their care; if the licentiates entered in the proposed All-India Register are to be made eligible for election to the Medical Council; if all but the Madras provincial governments are to be made to give up the state of antiquity now prevailing; if a change is to be made in these Medical Councils; if licentiates are to be given administrative opportunities; these and the other reforms which Dr. KAPUR advocates can be brought about only by the profession fighting in unison. Such a condition can be brought about only by the amalgamation of the two Associations. A rank in the I. A. M. C. is no doubt worth something, but that is not the *summum bonum* of the existence of the licentiates. The achievement of the abovementioned objects are far higher and far nobler than rank or position for a few, and that is all the I. A. M. C. can give. The higher ideals and objects can be achieved only if the sense of inferiority complex disappears from the minds of the licentiates and their leaders and the profession as a whole speaks with one voice. We therefore appeal to the licentiates with all the earnestness we can command to think deeply over the matter and take early steps to bring about the much-needed and long-delayed amalgamation which alone can bring about the real dawn of a new era. United we stand, divided we fall.

Gleanings From Medical Press

MEDICINE and THERAPEUTICS

Diagnosis of coronary thrombosis.—Myocardial infarctions, resulting as a rule from coronary thrombosis, may cause acute substernal pains, of a crushing, burning character, the onset of which is frequently at rest or during sleep. The pain may radiate to either arm or to the neck or to the back; it is not relieved by cessation of activity, nor by nitrites. Its duration may be from hours to days. It is often associated with vomiting. The damage to the myocardium may cause acute failure, shown by severe dyspnoea. There may be grave shock, marked by ashy pallor, fast pulse, low blood pressure, sweating, and a subnormal temperature. Illness, fever, leucocytosis commonly follow the attack. Syncope may occur at the time of onset. Physical signs may be inconspicuous. The mitral first sound may become weak; gallop rhythm may appear; some new enlargement to the left may be detectable. Sudden signs of failure shown by oedema of the bases of the lungs and venous engorgement may be seen. A pericardial rub is sometimes heard later. In a fairly high proportion of cases the condition is painless; dyspnoea, or vomiting even to acidosis, may dominate the picture. Although coronary occlusions may occur during exertion, persistence of the pains on rest serves to

differentiate from angina of effort. Severe substernal pain at rest may be provoked by a rise in pulse rate and blood pressure. But it is controlled by nitrites. A mild case may masquerade as one of severe indigestion, but careful inquiry and the usual sequelae should distinguish it. Sometimes the symptoms are so mild that the patients forget all about it.

Dissecting aneurysm of the aorta causes similar pain. It is rarely survived, and is almost always associated with hypertension. Gall bladder colic and a perforation of a peptic ulcer produce upper abdominal pain which may be painless thoracic and cause great rigidity of abdominal muscles. Spontaneous pneumothorax causes thoracic pain usually to one side dyspnoea, and its own peculiar signs.

The electrocardiographic changes are recognised as two main types, depending on whether the infarct is at the front or at the back of the left ventricle. In the early stages of the former there is positive deviation of the RST phase from isoelectric line. This is soon followed by T₁ negativity, which is often marked by the typical Q₁ T₁ pattern. In Lead 3 the converse is seen. 4R, and better 4F, show a negative T wave, and may be diagnostic when the limb Leads are

doubtful. In posterior infarction there is positive RST deviation in Lead 3, often followed by a negative Q₃ T₃ pattern. Lead 1 shows the converse. Lead 2 tends to follow Lead 3, and the pre-cordial leads are rarely affected, except for enhanced T voltage. In some cases these changes give place to normal appearances; in others they remain as long as the patient lives, or until another infarction alters them.—B.M.J.

Hazards of hypertherm treatment.—Wallace and Bushby investigated changes occurring in patients undergoing hypertherm treatment to ascertain whether chemotherapy increases the risks and to discover prophylactic or therapeutic means of eliminating or minimizing the danger inherent in the treatment. They report clinical observations on 251 cases undergoing hypertherm treatment at 106.6 F. for eight hours. Of these, 37 were the subject of a detailed clinical, hematologic and biochemical investigation. The most constant and prominent features were the development of anoxia and of bilirubinemia progressing to definite clinical jaundice in 37 cases. Hippuric acid tests for liver function showed a considerable reduction in this function. Patients with jaundice should be treated as if they had hepatitis and should be kept warm in bed for at least three days or until the jaundice clears. Continuous oxygen and carbon dioxide therapy lessens, though it does not abolish, the anoxia. It appears to prevent circulatory collapse. Vomiting was less frequent after its introduction. Circulatory collapse is a failure of the vasomotor and respiratory centers and is not due to a reduction in the volume of the circulating blood or to myocardial failure. The use of morphine is contraindicated. Hypertherm treatment causes a transient polymorphonuclear leukocytosis and a transient hemodilution. There is a small transient rise in nonprotein nitrogen and a tendency for plasma chlorides and urinary chlorides to fall. The treatment has considerable dangers. The duration must be decided by the medical officer observing each case, but the following are suggested as indications for terminating treatment immediately: (1) fall of systolic blood pressure below 100 mm. of mercury, (2) disorientation, (3) pulse rate persistently over 160 per minute, (4) respiratory rate persistently over 50 per minute, (5) temperature of 107° F. for a quarter of an hour, (6) restlessness and violence, (7) coma, (8) pallor superimposed on cyanosis, (9) intolerance on the part of the patient, the restlessness of an intolerant patient adding greatly to the risks inherent in the treatment, (10) persistent vomiting. Catarrhal infection and nasal obstruction should be regarded as contraindications to treatment. The patient should be examined preparatory to the hypertherm treatment so as to exclude those with cardiovascular, respiratory, renal or hepatic diseases. The treatment should be carefully explained beforehand to prepare the patient for his physical and mental ordeal. Oxygen and carbon dioxide should be given for at

least an hour after treatment or until color improves. Premedication with 6 Gm. of sulfathiazole does not increase the hazards of hypertherm treatment.—J.A.M.A.

Romberg's sign.—Romberg's sign is used to demonstrate a defect in the ability to maintain posture. The ability to stand up right with the eyes closed depends upon the afferent impulses from joints, tendons and muscles, and skin. Some of these impulses make the subject conscious of where his limbs are and where his body is in regard to his limbs. Some do not reach consciousness; but nevertheless help in the maintenance of posture. All these impulses are co-ordinated and the resulting pattern of nervous activity maintains the postural muscles in the appropriate tonic state, through the efferent nerves. A lesion anywhere in the pathway will give rise to a defect in maintaining posture for instance—a man with weak muscles cannot stand up right efficiently. Usually, however, the defect is in the sensory, afferent fibres, when inability to maintain posture, giving a positive Romberg's sign, is associated with loss of joint sense. This sign is therefore found in diseases where this defect occurs for example, tabes dorsalis, disseminated sclerosis, or peripheral neuritis.—B.M.J.

Pathologic changes of sub-acute bacterial endocarditis.—It becomes apparent when the pathologic changes of subacute bacterial endocarditis are subjected to analysis that four cardinal conditions occur, the first directly determining the others: (1) The development of bacterial vegetations on previously damaged valves or on congenital cardiac defects; (2) the dissemination of minute bacterial emboli into either the systemic arterial or the pulmonary circulation, or both, the emboli finding ultimate lodgment in various organs and tissues of the body; (3) the transportation, at times, of massive emboli and gross infarction of various organs; and (4) varying inflammatory tissue changes depending on the characteristic response of the organ or tissue concerned.—WILLIUS, F. A.: Cardiac clinics. CVIII. Subacute bacterial endocarditis: Pathology. Proc. Staff Meet. Mayo Clin. 19: 497-503, October 4, 1944.—*Na. Med. Bull.*

Pyruvic acid.—Pyruvic acid or acetylformic acid has the formula CH₃. CO. COOH and is so massed because it is obtained by the action of heated tartaric acid which is found in grapes. It is an intermediate product of carbohydrate metabolism and is probably formed in the tissues by the anaerobic oxidation of glucose according to the following scheme: Glucose hexomono and diphosphate-phospho glyceric acid-phospho-pyruvic acid-Pyruvic acid. It is found in the tissues, blood and urine. There is no evidence that it neutralizes the effects of vitamins B and D. Vit. B, however, in the form of its phosphate, catalyses the decarboxylation of

pyruvic acid to lactic acid $\text{H O O C. CH}_2 \text{ CO. COOH}$. Pyruvic acid is a product of metabolism and is not known to have any specification. In patients with Vit. B₁ deficiency it is stated that the blood pyruvic acid is elevated, although this has been disputed. Some of the symptoms of Vitamin B₁ deficiency has been ascribed to the accumulation of pyruvic acid in the body. Calcium has not been shown to have any effect on the pyruvic acid level in the body. If the latter is raised and is associated with vitamin B₁ deficiency, administration of B₁ brings the blood pyruvic acid down to normal levels. The blood pyruvic acid is also raised in insulin, hypoglycemia, hyperthyroidism and mild diabetes.—B.M.J.

Some toxic aspects of digitalis therapy.—Digitalis preparations are used extensively in the treatment of heart disease. In obesity they have been used to reduce food intake and weight by causing loss of appetite. Their use in ointments for the treatment of indolent ulcers and for protection against the lethal effect of high altitude has been suggested. Probably their medicinal use may have unintended toxic by-effects. The toxic action of digitalis glycosides on the cardiac function has been fraudulently used to cause simulation of heart disease for the collection of life insurance. While physicians

are usually well acquainted with the functional cardiovascular and cerebral manifestations of digitalis poisoning, they are less familiar with some recent clinical and experimental evidence pointing to the induction of anatomic cardiovascular and cerebral reactions and hematic effects which are of medical and medico-legal significance. Experimental subjection of animals of different species to lethal and sublethal doses of digitalis glycosides resulted in myocardial hemorrhages, necrosis and fibrosis as well as in cerebral degenerations, necrosis and gliosis. Travell and her associates were unable to demonstrate in patients receiving large oral doses of digitalis for varying periods of time any myocardial hemorrhages at necropsy, but the occurrence of myocardial and cerebral lesions in man as the result of digitalis poisoning is nevertheless suggested by the resulting functional disturbances. Gilbert, Trump and de Takats observed an increased incidence of thrombosis in cases treated with digitalis and found that the clotting time was appreciably shortened following its use. Confirmatory results are reported by Massie and his co-workers, who suggest that digitaloids exert a thromboplastic action. Digitalis glycosides are saponin-like substance; crude digitalis preparations contain appreciable quantities of saponins, which may favor thrombosis by their effects on the vascular wall.—J.A.M.A.

SURGERY

Fractures of the carpal scaphoid.—The fractured carpal scaphoid presents one of the most difficult and unsatisfactory problems in traumatic surgery. The basis of the problem would seem to be the appreciation of the various pathological lesions and the application of the proper treatment to them. In this presentation is given the results of a study of 257 cases of fractured carpal scaphoids occurring in a period of approximately three years in the Canadian Army overseas. The system of central filing of all medical documents pertaining to each soldier ensures accurate statistics on each of the cases, and also accurate follow-up, in that recurrent complaints on any particular case, if present, would be encountered.

In summing up this study of 257 cases of fractured scaphoids, certain positive points stand out. These are not new—they have been pointed out by many writers before, but they need re-emphasis. There are apparent, however, certain unsolved problems regarding this fracture to which the authors would draw attention. The primary problem in this fracture is early diagnosis. With careful clinical and roentgenological examination, repeated if necessary, the diagnosis should not be missed. The fractured scaphoid diagnosed early and properly treated will almost invariably unite. By mobilization with the wrist in extension and radial deviation until union occurs. Roentgenographic examinations must be made during the course of treatment. The plaster should be removed only for the few moments required to take

the roentgenogram, and the surgeon should handle the wrist during this time to ensure that no disturbance of the fracture occurs.

A vascular necrosis may occur in the proximal fragment. This will delay union but not necessarily cause non-union. With uninterrupted immobilization, revascularization will likely occur and union take place. Whether or not multiple drill holes will hasten the revascularization of such a fragment and thus shorten the period required for union, cannot be said from the evidence of this study. In one case the drilling operation effected the cessation of revascularization of a proximal fragment when this was one third completed.

The fractured scaphoid diagnosed late is a very difficult problem. It is probably true that a fractured scaphoid never unites if left untreated. Will such a fracture if left untreated invariably lead to a painful wrist in later life? The authors have shown that in some cases patients carry on for long periods with only a minimum of discomfort. They have also shown that some are symptom-free for a long period, and when injured a second time their symptoms are relieved by a short period of immobilization, and that they are again able to carry on for considerable periods symptom-free. But these are people in third and fourth decades of life. What will happen to them in the fifth decade? That question the authors are unable to answer either from this study or from a perusal of the literature. That

some of them develop marked disability in later life is undoubtedly true, but if others may go through life with no significant disability then we must learn to select those that will not develop symptoms from those who will.

How to obtain union consistently in these late diagnosed fractures within a reasonable time is still an unsolved problem. Immobilization was often unsuccessful in the cases presented in this report. The criticism might be made that the immobilization was not carried on long enough. This may be true, but the authors would point out the apparent danger of persisting in this form of treatment too long without evidence of progress toward union. Complete or partial excision is of no use in these fractures. Unless this operation is carried out soon after the fracture occurs the results will be uniformly poor. The drilling procedure may be of help in non-union, but no opinion can be formed from this study. If non-union becomes established, union may be obtained by a grafting operation. This is, however, a difficult operation, and a technique has not yet been devised that offers a reasonable hope of success.

The late fracture with degenerative arthritis is an arthritis problem and must be treated as such. Union of the fracture will not relieve the symptoms, and palliative treatment is all that can be offered—fusion of the wrist being the last resort of the surgeon, and warranted only by severe disability.

Finally, the authors would point out that the period required for healing in any fractured scaphoid may be very long. The patient may be able to carry on his occupation while undergoing treatment. Often, however, this is impossible, in which case there is a serious economic loss. They have no suggestions for shortening this period, but would point it out as another problem facing all surgeons who treat this fracture.—(Dickison, Captain J. C. et al.; *Surgery, Gynecology and Obstetrics* 79: 225-239 September, 1944.)—U.S.O.W.I.

Amicrobic Pyuria.—Cook stresses that in the presence of an infection of the urinary tract the site of the infection must be established. He and his colleagues have seen a number of women patients who have been

taking mandelic acid or one of the sulfonamides to the point of tolerance in an effort to eradicate an infection of the bladder and kidneys which did not exist. These patients have burning and frequent urination and pus in the urine. It often is found that only voided specimen is examined and when a catheterized specimen is examined it is entirely free of pus or organisms. Local treatment usually relieves the existing urethritis. When females have pyuria or other symptoms of urinary infection a specimen of catheterized urine must be examined and when males have these symptoms the two glass test of urine should be done routinely before treatment is instituted in order to determine whether the infection involves the kidneys, ureters or bladder. Simple Gram's staining of the urinary sediment should be done in every suspected case. Examination of slides after Gram's staining will divide the cases into those with demonstrable organisms and those without demonstrable organisms. Physicians have been taught that sterile or amicrobic pyuria is indicative of tuberculous infection of the urinary tract. This is the usual cause but it does not account for all such cases. Because of the occasional difficulty in finding the tuberculous organisms in stained slides of urine and the length of time required to carry out the guinea pig test, a tentative diagnosis of tuberculosis is made. Failure to find certain clinical signs of tuberculosis of the urinary tract should tend to exclude this condition even before the laboratory reports are received. Cystoscopic findings in cases in which nontuberculous, sterile pyuria is present are a reduced vesical capacity, extreme irritability and diffuse involvement of the vesical mucosa with redness, edema and at times ulceration. The chemotherapeutic compounds that are so efficacious in combating the ordinary infections of the urinary tract are of little value in the treatment of amicrobic pyuria. Local treatment gives only palliation, but the intravenous administration of arsenical compounds is almost specific. The author makes a plea for the appreciation of the part which foci and infection play in many of these cases. Permanent cure will frequently be impossible unless existing foci are eradicated. The teeth, tonsils, prostate gland and uterine cervix are the most common foci.—J.A.M.A.

OBSTETRICS and GYNÆCOLOGY

Progesterone for sterility and abortion.—The problem of sterility is extremely complex, and in many cases no cause can be found. It has been shown that in some cases, even when the menstrual periods are apparently regular and normal, ovulation does not occur and a secretory endometrium is never formed. It is difficult to imagine, however, how the administration of corpus luteum hormone could help such cases, which are due to failure of ovulation. It may be that other cases of sterility are caused by a deficiency of the corpus luteum, and thus the endometrium is improperly prepared for the reception of the fertilized

ovum. Such cases may benefit from the administration of corpus luteum hormone in the second half of the menstrual cycle. Three to five units 13 to 5 mgm. should be given twice weekly in the fortnight before menstruation is expected.

Habitual abortion is also a condition which may arise from a variety of causes. Some authorities believe that in many cases abortion takes place because of deficiency in the secretion of corpus luteum hormone. In such cases progesterone may be given. The usual dose is 5 units (5 mgm.) twice or thrice weekly until the 16th week of pregnancy. Large doses 10 or even 20 mg.

medical administration so that their interests may be safeguarded and their views find proper discussion and attention from the administrative points of view.

ONE MEDICAL ORGANISATION.—He said that there is no use tackling the question of amalgamation of the Licentiate's Association with the Indian Medical Association on an emotional or sentimental basis. He assured the profession that it is not the big financial assets of the Licentiate's Association that stand in the way of amal-

gamation. The need for amalgamation was there. But the main causes of delay were the feeble and fickle grappling of the problems that directly affect the licentiate by the Indian Medical Association. "If these are resolved by mutual agreement and corresponding action nothing else would or could come in the way of 'putting our heads together and joining hands,'" as Dr. Jivraj Mehta said in his recent Cawnpore Address at the last plenary session of the I.M.A.

Rural Medical Relief

The Advisory Medical Board of the Kasturba Gandhi National Memorial Fund held its first sitting on 18-2-45 in Sevagram. Besides Dr. Jivraj Mehta, Chairman of the Board, who presided, Dr. M. D. D. Gilder, Dr. T. S. S. Rajan, Dr. R. H. Bhadkamkar, Dr. B. C. Das Gupta, Dr. Mrs. Nalini Appa Saheb Pant, Dr. Hariprasad V. Desai, Dr. Jai Soorya Naidu, Dr. Dinshaw Mehta, Dr. Mrs. Soundaram Ramachandran, Dr. Gurupadam, Shri Gune Shastri, Dr. Manubhai Trivedi and Dr. Miss Sushila Nayyar (Secretary) were present. Drs. Tuli, Director of Public Health, C.P., Choube, Civil Surgeon, Wardha and Miss Alankaram, Superintendent, Dufferin Hospital, Nagpur, were present by invitation.

Dr. Jivraj Mehta in his opening address laid stress on two points which were dear to Gandhiji's heart; that all medical relief under the scheme should be fully in rural areas and that the various systems of medicine should strive to bring to the villager the cheapest remedies possible and obtainable in the village environment. The Sevagram Ashram would conduct a model maternity and child-welfare centre in Sevagram and it was Gandhiji's wish that the progress of this centre should be studied before such institutions were started in other rural areas.

After Dr. Sushila Nayyar had given a brief resume of the rural medical work in Sevagram, the Board took up for consideration a draft scheme for maternity and child welfare training centres which was previously circulated to the members. After a lengthy discussion the scheme was adopted with various amendments. As finally adopted the principal features of the scheme may be summarised as follow: a maternity and child welfare training centre should serve villages in an area of five miles radius and of a population of 15,000 to 20,000. Those selected for training should as far as possi-

ble come from villages. The training given should fit the candidate not only for midwifery work but also to be of some real nursing and medical assistance to village women and children when not engaged in maternity work. The idea was therefore to create a new type of village medical worker.

As many as nine sub-committees were constituted. The first sub-committee was authorised to prepare a syllabus for a three months' course in child welfare work; the second sub-committee was appointed to prepare the detailed syllabus for training village medical workers; a third committee was asked to draw up the syllabus for training general nurses; the fourth sub-committee was set up to work out proposal for a balanced diet suited to villages; the fifth sub-committee was for the purpose of framing a scheme of work in regard to village sanitation and anti-malarial work; the sixth sub-committee was authorised to suggest cheap remedies available for village medical work; the seventh sub-committee was authorised to prepare a syllabus of the course for health visitors and sanitary inspectors suitable for village conditions; the eighth sub-committee was asked to prepare pamphlets for publication on the maintenance of normal health and regarding the various habits of the people affecting health; the ninth sub-committee consisting of three members of the Board was authorised to get into touch with various missionary organisations already doing rural medical work with a view to obtaining the data of their experience and to find out how far they could be utilised to train workers under the Board.

Mahatma Gandhi who attended the sitting of the Board spoke to the members for a few minutes emphasising the need for various schools of medicine to evolve a common plan of village medical relief. The next meeting of the Board was fixed for the first week of May in Bombay.

Reply to Query

With reference to the Query on p. 188 of the March issue, I have to state that I usually adopt the following method to recolour the marks of the thermometer:

Clean the thermometer with Ether swab. Take some quickly drying black varnish, e.g., black enamel paint, from the bottom of the tin without stirring with a probe. Apply

it (thick varnish) evenly on the marks and gently rub in with some soft substance so that it fills up the etched marks well. Gently wipe away the excess from the surface. Let it dry well before use.

Narsinghgarh, } L. K. UPAMANYU, M.B.B.S.,
26-3-45, } State Surgeon,
Supdt., Central Prison.

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Applications for a permit to purchase should state the nature of the case, the quantity required, and also that proper facilities exist for the administration and storage of this valuable preparation; an undertaking must also be given to furnish a case report in a prescribed form.

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are recommended by some, and others state that treatment should be continued until the 34th week of pregnancy.—*B.M.J.*

Zondek's simplified treatment of secondary Amenorrhoea.—A series of 30 patients with secondary amenorrhoea due to pituitary or ovarian deficiency is presented by the author and the results with the simplified two-day treatment plan described. This method, devised by Zondek, consists of the injection of a combination of oestradiol benzoate, 2.5 mg., and progesterone, 12.5 mg., on two consecutive days. Uterine bleeding was produced in 25 patients (80.6 per cent.). Among the six non-reactors were four patients with marked uterine hypoplasia. In two of the unresponsive patients, the amenorrhoea has persisted for more than two years. By restricting the simplified treatment plan to patients with an amenorrhoea of less than two years' duration, the percentage of favourable responses (80.6 p. c. in this series) can probably be further increased. No marked changes were produced in the endometrial pattern with the two-day treatment as evidenced by the pre and post-medication biopsy specimens which are presented.

The advantages of the simplified method are discussed. The two-day treatment plan should be employed in all those instances of functional amenorrhoea of less than two years' duration where thyroid medication

has failed to yield results and where for some reason or other it is desirable or imperative to obtain uterine bleeding in as short a period of time as possible.—[R. S. Finkler: *American Journal of Obstetrics and Gynaecology*, July 1944].—*Medical World*.

Hydatidiform mole.—Hydatidiform mole is believed to be due to a developmental anomaly of the trophoblast of the young ovum. Just as such defects as anencephaly and spina bifida involve the tissues derived from the embryoblast, so does hydatidiform degeneration attack the trophoblastic tissues. The parallel may not be exact, but the principle of developmental anomaly of the chronic tissue holds. The cause is, of course, unknown, nor can any predisposing factors be distinguished. The morbid histology is also unsatisfactory, for there is no explanation of the method of formations of the vesicles. The proliferation of the cytotrophoblast leads to profound alterations in the endocrine balance, so that the ovaries become cystic and the excretion of chorionic gonadotropin in the urine is greatly increased. As the fault lies in the ovum there is no objection to a subsequent pregnancy at an early date. An interval of four to six months might be suggested. There is much to be said for determining the Aschheim-Zondek reaction of the urine during the interval to exclude the development of corion epithelioma.—*B.M.J.*

OPHTHALMOLOGY

Recent advances in intracapsular cataract surgery.—Gill, E. G., and Gressette, J. H. *Virginia Med. Monthly*, 1943, v. 70, Oct., p. 501.

The authors state that the technique described has given them uniformly good results. The article is accompanied by six illustrations of the various steps in the technique. Using silk sutures in the lid and under the superior rectus muscle, the eye speculum need not be used. This allows the surgeon to close the eye quickly without removing the sutures. The conjunctival flap is made and sutures placed before the keratome incision. The keratome incision is enlarged with scissors. Using a central suture for traction the iris is brought clearly into view. Iridectomy can be done carefully and deliberately, and the coloboma can be inspected. By use of the traction suture the lens can be seen the moment it presents itself in the wound, and the Verhoeff capsule forceps can be placed accurately, the lens being grasped at the equator. In the author's experience, astigmatism with this type of incision has been one fourth to one half less than with the

Graefe-knife incision.—*A. J. Ophthalmology*.

Chronic blepharitis.—Chronic blepharitis is apt to be obstinate and may not clear for several months. General treatment should aim at improvement of the patient's condition and hygienic surroundings, and avoidance of too much sugar. Local treatment involves attention to any infection of the tarsal glands, and expression of such as are choked by pressure between a finger outside and a glass rod inside the margin of the lid. Complete epilation helps in obdurate cases. Attention should be given to any lacrimal sac infection. Before the application of any ointment or paint can be effective, all crusts must be removed thoroughly with warm H_2O_2 or sodium bicarbonate 2% lotion. The lid should be dried, and the following ointment applied: Ung. hydro. ammon. dil. 1% or ung. resorcin 1%. A good excipient is equal parts of lanoline and vasoline, but it must be fresh; a rancid ointment keeps the condition alive. Silver nitrate 1% or 2% applied, not more than three weeks, clears up any raw spots. As a last resort a vaccine may be tried.—*B.M.J.*

DERMATOLOGY

Falling hair.—Loss of hair may be attributed to both general and local causes. Thus the sudden loss of hair after fevers and the less abrupt thinning accompanying debilitating conditions are well known

changes in the hair in certain hormonal diseases, represent a part of the symptom-complex, as in myxoedema, where the phenomenon may render a patient almost unrecognizable. Men tend to become bald

women do not—a sex distinction which may be relied upon, with, of course, certain exceptions, to base a reassuring prognosis in women where the hair is falling out and where, there is fear, without reason, of the onset of complete baldness. If seborrhoea is present, even if only represented by dryness or a little dandruff, the outlook is favourable, and with treatment a considerable improvement may be expected. Pomades and lotions are not favoured because of their messy nature, but this disadvantage can be avoided by applying a small quantity of an ointment containing 6% sulphur and 3% salicylic acid, a soft base to the ounce. This is well rubbed into the

scalp one night in the week and washed out the next morning, a simple procedure easily carried out provided only a small quantity of the pomade has been used and well rubbed into the scalp. A resorcin lotion applied every morning enhances the result, but this is unsuitable for light or grey hair as it stains a yellow-brown. The application of ultra-violet radiation, or a high frequency, the hair dresser's 'violet ray' is no better than a thorough brushing. It is well, however, always to inform the patient that hair coming out following the application of a pomade or shampoo is to be disregarded, as it is only the loose hair which has been cast.—*B.M.J.*

Proceedings of Associations

Licentiates in Conference

PRESIDENTIAL ADDRESS

The following is a summary of the Presidential Address delivered by Dr. Manohar Lal Kapur at the 33rd Session of the All-India Licentiates' Conference held in Calcutta, on 31-3-45:

I. A. M. C.—Raj Sahab Dr. Manohar Lal Kapur, President-elect of the 33rd Conference of the Licentiates' Association of India said, in the course of his address that it would indeed be a bad day for organised medicine if it subordinates its functions of mercy to political issues, and that it was in conscious fulfilment of this ideal the Association has been exhorting the licentiates to join the I.A.M.C. in increasing numbers. "So far as the licentiates are concerned," he said, "there is no other practical way of consolidating their position than by realising the intrinsic values of the I.A.M.C. If at the time of demobilisation the number of licentiate commissioned officers is equal to or greater than the graduate commissioned officers, our main demands would be automatically conceded and the Government would have no valid excuse to perpetuate our *status quo ante*. Referring to the criticisms that there are still some differences between graduates and licentiates in the I.A.M.C. he said, "In the last war the graduates were started as Lieutenants. In this war the licentiates are given the like position to start with immediately after training in an Army Medical Training Centre. This by no means indicates individualism. What the graduates have to day they have earned by devoted service. The licentiates too could earn what they had earned. It is a question of time between two equals and not a demarcation between them. Equality can by no means be rendered in terms of equation to the last decimal point. Equality of opportunity is what is meant when we say there must be equality. It is because this word is not understood in this natural sense, the graduates think we overstate our claims and the licentiates feel disappointed."

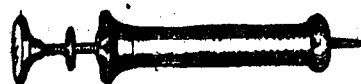
POST-WAR RECONSTRUCTION.—"Those who are qualified to express their views have said that the health of our people is much below the mark, due not a little to lack of employ-

ment, lack of food, lack of clothing, lack of Public Health amenities and next only in importance, lack of medical relief on a scale within the reach of our people. Therefore it is a safe conclusion to make that Public Health and Medical relief have to be planned not as isolated items of work but as organically related to other national problems." Regarding proposals of the Planning committee, he said that it would be vain and fruitless to indulge in academic disputation about them and that what was more important was to get something moving aiming at the more important targets, like pure water supply in rural areas, prevention of epidemic and endemic diseases by appropriate public health measures, proper distribution of cereals and protective foods through State-organised Marketing Boards and extension of medical education and public health, and medical research. As for medical relief itself, he said, we have to choose the best from each system and produce an effective and workable combination of state medical service, different types of compulsory health insurance—industrial, municipal, state and voluntary—and private medical service, to the utmost possible extent.

ONE MEDICAL SERVICE.—"Any large scale planning of medical relief such as is intended for the post-war period," he pointed out, "could only be worked satisfactorily by changing the present format of the State Medical Service which is now divided by castes and compartments." He hoped that the Provincial and the Central Governments would recognise the unfairness of the present arrangements which have caused and are causing discontent and frustration in the profession, and bring into effect an unitary type of medical service in all the provinces with equal opportunities for all medical men, who choose service, for work and recognition.

SHARE IN ADMINISTRATION.—Adverting to the chances given to the licentiates to share administrative work and responsibility, he regretted that they were not given any chance at all to rise to administrative positions. The association felt that the licentiates should be closely associated with

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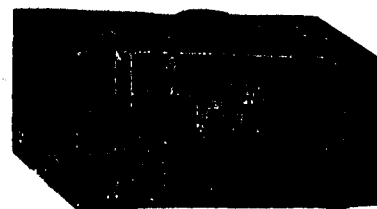
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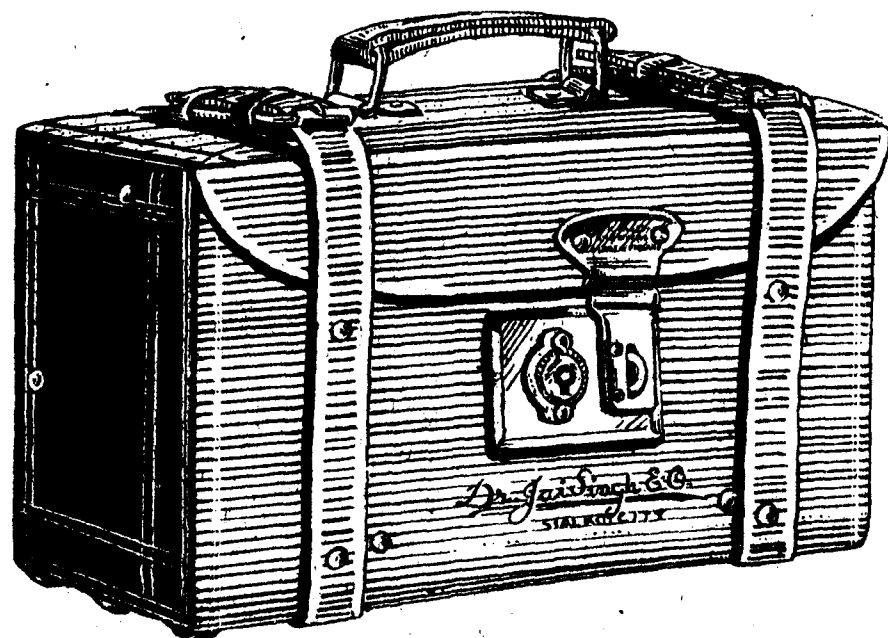
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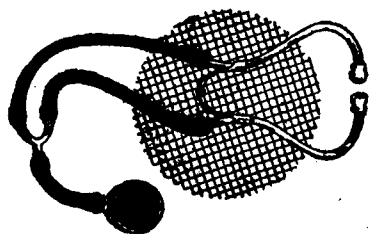
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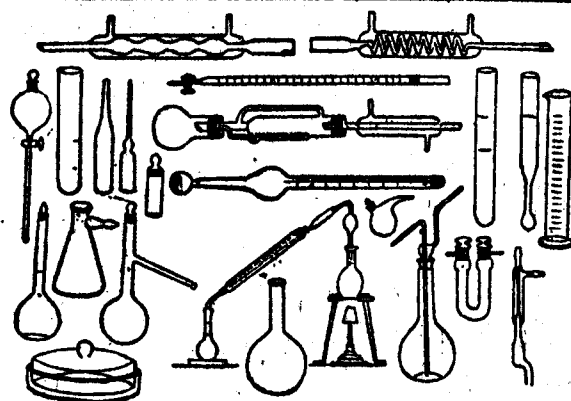
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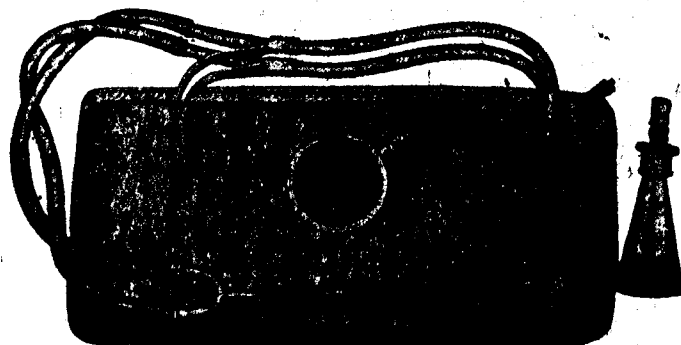
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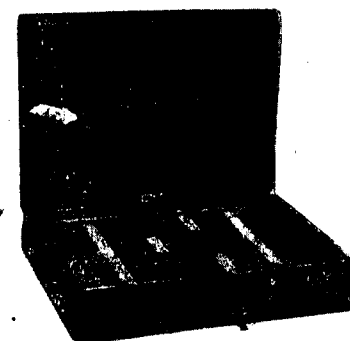
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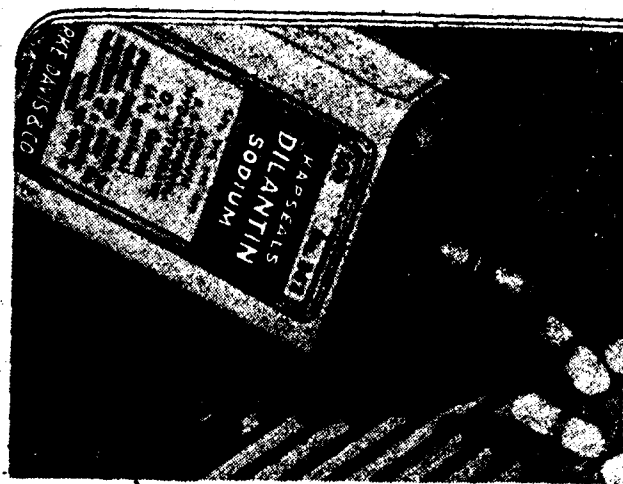
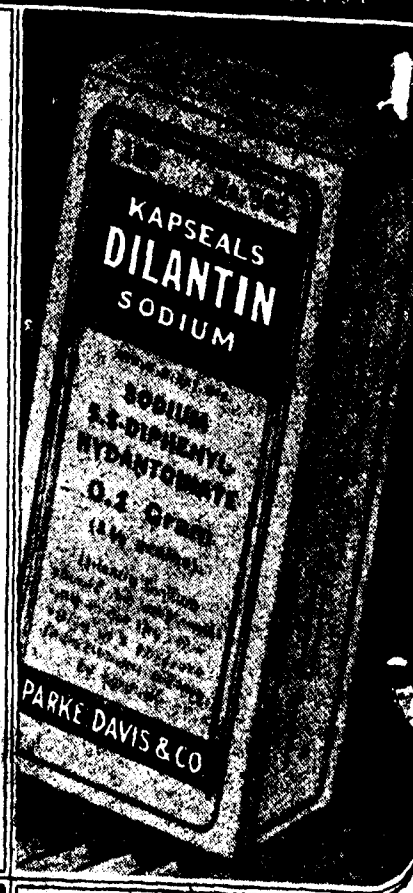
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