

The Antiseptic

A Monthly Medical Journal

Edited by

Dr. U. Rama Rau, M.L.C. & U. Krishna Rau, M.B., B.S.

17 JUL 1941

MADRAS

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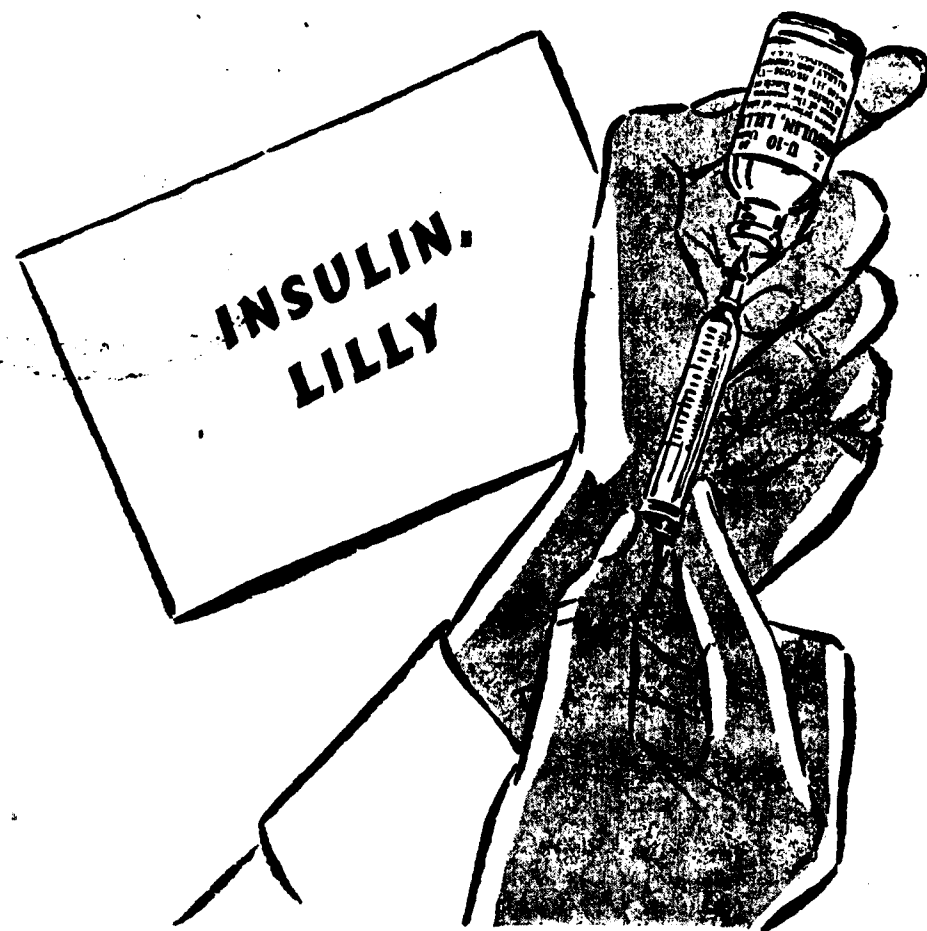
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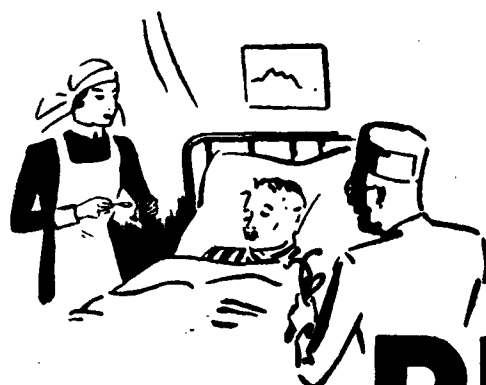


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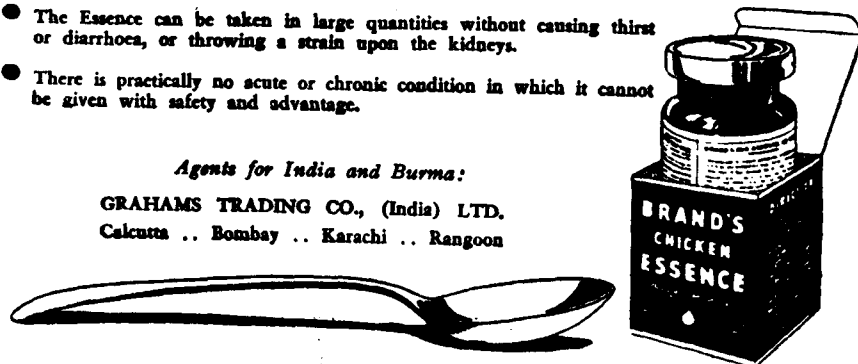


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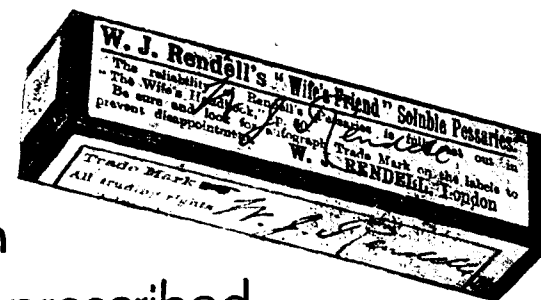
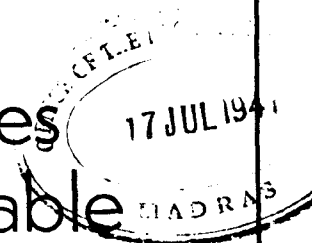
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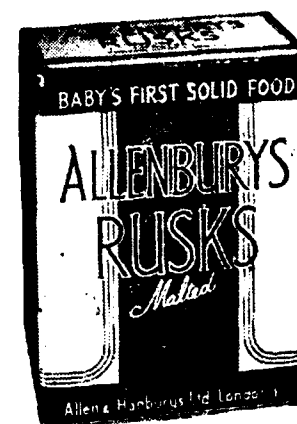
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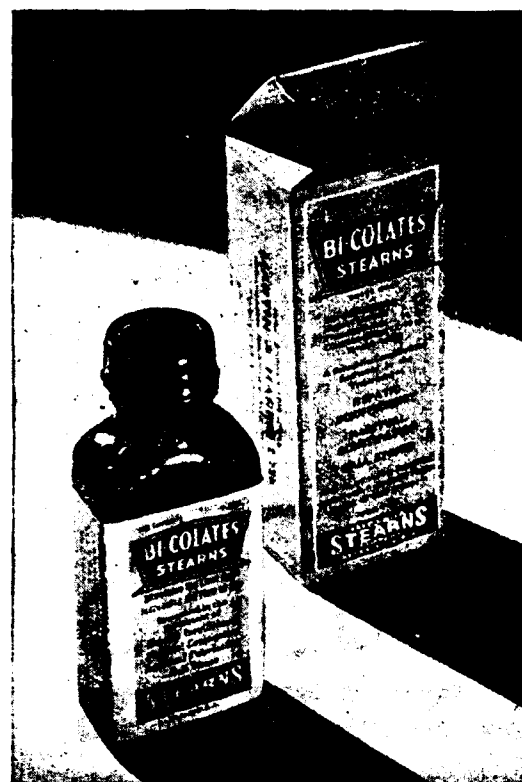
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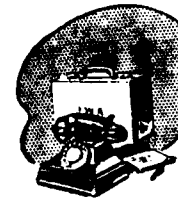
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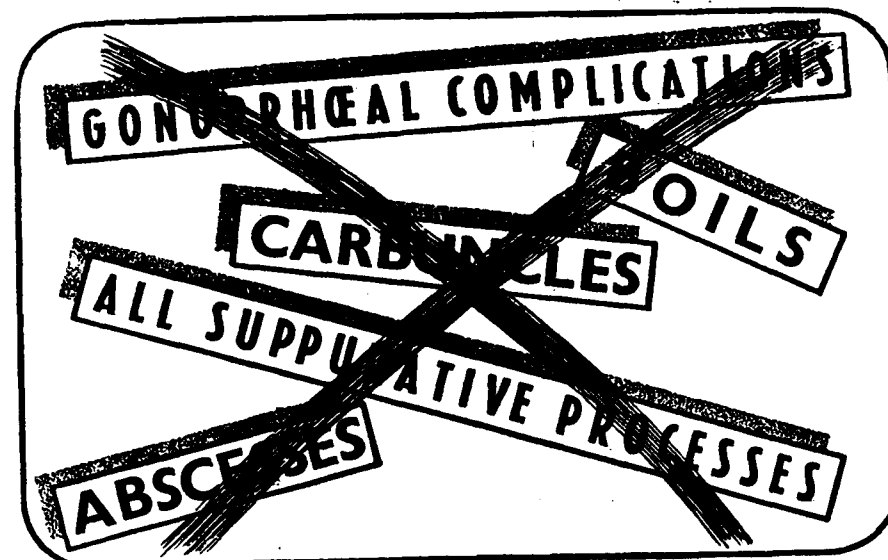
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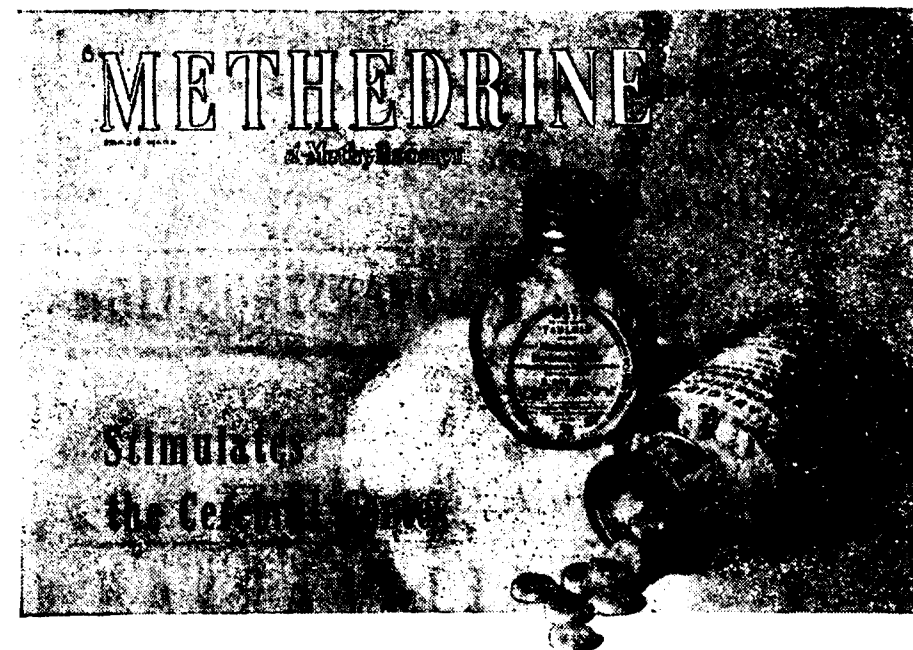
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Original Articles

**Clinical and Epidemiological Features of
Meningococccemia in Goa***

BY

PROF. COL. I. FROILANO DE MELLO,

Director-General of Medical Services in Portuguese India.

Introduction—Having read with great interest the paper that appeared in the Feb. '41 issue of *The Antiseptic*, on *The Recent Advances in the Management, Control and Treatment of Common Infectious Diseases*, by Lt. COL. MALLYA, I have been particularly struck by his statements concerning meningitis.

The idea prevalent among many medical practitioners in India is that cerebro-spinal meningitis must be present under the rigid clinical type described in text books and on this ground many clinical forms, which do not show the classical type, have been overlooked and misinterpreted under the most varied diagnostic labels.

A short description of what happened in Goa, and of the clinical and epidemiological features of meningococccemia (I purposely avoid the term *meningitis*) in our country will be, I hope, of some interest to the profession. But, before entering into the subject, I would quote here those statements of Lt. Col. Mallya, for which I would like to call the attention of the medical profession in India:—

(1) *On clinical ground*:—"The patients hardly show the prominent signs and symptoms of meningitis and the lumbar puncture fluid is invariably clear....." (*Vide page 83*).

(2) *On epidemiological ground*:—"The distribution of the disease is always scattered through a particular place and is not confined to any particular locality and the source of infection cannot be traced from one case to the other." (*Vide page 82*).

Meningococccemia is a new entity in the nosology of Goa and has become now endemic.—The first records of meningitis in Goa date from 1904: some cases occurred in Nova-Goa in the Royal Navy soldiers, the germ

* Specially contributed to 'The Antiseptic'.

being imported from Portugal, *reliquat* indeed from a severe epidemic which raged in Lisbon in 1902-03. This focus was rapidly extinguished and did not leave any trace in the nosology of the country.

In 1919, the disease appeared in three southern villages of our department of Salsete, firstly in sporadic form and assuming in 1921-22 such a wide extension that between December-March, out of nearly 5000 houses in those villages, at least 300 had each one case of the disease, ending either by cure or in death.

I have good reasons to believe that the new germ was imported from British East Africa, where, at this epoch, a strong epidemic occurred in Nairobi and in Mombasa, through the medium of our emigrants returning on leave.

The cases, seen mostly in children under 6 years, then among those of 7-12, and very rarely in adults (in 1921-22—1 in a boy of 18; 1 in a woman of circa 30; 1 or 2 in persons over 45), were *diagnosticated* (death certificate) under the most various labels: gastro-enteritis, diarrhoea, indigestion, fever with convulsions, acetonemia, fever with vomitings, (a popular designation which remained for ever) epileptic convulsions, toxic gastro-enteritis, pernicious fever, cerebral congestion (often in children under 2 years!) lumbricosis, verminosis, cerebral malaria and convulsions, *tout court*.

From all these diagnostics, one can see that three main symptoms were frequent and impressed upon the clinical mind of the practitioners: gastro-intestinal troubles leading often to the oral expulsion of ascarides, fever and cerebral symptoms with convulsions and lethargy (hence the label of *acetonemia*, corresponding to, at this time, vulgarised theories and facts in the medical press on infantile acetonemia). Here and there, however, the diagnosis of meningitis and cerebro-spinal fever had been clearly put!

If it is perfectly comprehensible that the clinician could overlook the true nature of the disease which appeared under such a new feature, and specially because in a great number of cases, a child, being suddenly struck by a rather mono-symptomatic form, returned afterwards to normal in two or three days, it is to be regretted that the professionals did not consider that we were dealing with a disease hitherto unseen in the country and that the character of the epidemicity, with so many cases and so many deaths and their inter-relations and similarity with benign cases, was not taken into consideration by the local health officer who should report such a normal situation to the higher health authorities!

Clinical features of the disease.—I will quote here the description of the disease such as it has been found by most practitioners. One of the most benign forms is characterised by the appearance in children, in full good health, of one or two vomits, more commonly by one single vomit, throwing away the food taken at the last meal; after some time or immediately after vomiting, the child becomes apathetic, sleepy, falls into a kind of stapor from which it is difficult to awake the child unless by violent excitations such as hot bath, scarified cupping glasses on mastoids and so on.

The child, roused up in this way, falls again into sleep, an irresistible lethargy, and far from showing any muscular contractions in any member or region of the body, is found in a stage of a true muscular resolution. The pulse accelerated reaching 100-120; respiratory movements 20-30; seldom pupillary inequality; plantar reflex often abolished; pupils generally

dilated; no trismus; liver, spleen and urine—normal; persistent obstipation; abdominal tympanismus.

Such forms are generally cured spontaneously in 24-48, rarely 72 hours and may be preceded, when the vomit fails, by one or two liquid stools of normal or slightly mucous consistence.

There are cases, however, where the vomits are constant and incoercible. They are often complicated by convulsions, sometimes subinfrant and causing death within 24-48 or 72 hours. So, in a maximum delay of 3 days, the case ends by cure—and this is the most common occurrence—or in death.

Other, more rare forms: a child, absolutely normal, having a calm sleep, suddenly awakes the mother and asks for water to drink; soon, it becomes agitated and falls into lethargy or even coma, accompanied generally by obstipation with no fever, till the appearance of convulsions. Abdomen soft, flabby. The patient dies in less than 24 hours, having expelled, through purge or enema, some jambul seeds swallowed, some undigested guava pieces, and death is attributed to such undigested bodies.

An interesting fact to be noted is that in all these forms, the fever does not appear, and when it exists, it is mostly in benign forms, appearing at the end of the 1st or on the 2nd day (99-100° F.). In many fatal cases, with contracture of the neck (but no Kernig) fever was totally absent.

In children under two years, the following cases have been observed: during a meal the child has a vomit, to which nobody gives importance as the child becomes normal afterwards. Suddenly, the syndrome is seen with the most discouraging brutality: *viz.*, lethargy, coma, general muscular resolution, convulsions, death.

From the different clinical reports received and from what I have observed myself, the clinical forms may be reduced to three main types:—

(1) *Malignant forms*:—Sudden onset, with one or two liquid stools, without any peculiar character; abdominal meteorism, slight or very pronounced; some hours after this sudden beginning, one or many vomits, with or without nausea, the vomited matter being either food or a kind of aerated mucus. The little patient which was rather normal till the first vomit falls into lethargy which may, however, follow the first stool. The disease shows now a second phase: a strong constipation follows the initial diarrhoea, transitory and sudden starts are stated as well as contracture of the neck and a more or less pronounced trismus. The pupils are dilated, unequal but react strongly to light. The temperature during the first 24 hours is subnormal; the patient shows convulsions, either generalised or partial, often localised to the oculo-palpebral region or to the tongue. Hyperesthesia at the beginning, loss of sensibility, and of patellar reflexes afterwards. Plantar reflex abolished. Brady, or tachycardia. Dispnoea *sine materia*. Death in 2 or 3 days.

(2) *Serious forms*:—Beginning by vomits or diarrhoea. Lethargy, contractions, trismus. Generally no convulsions. Ulterior constipation, meteorism.

(3) *Benign forms*:—Vomits or diarrhoea with some starts and slight meteorism.

Some particular forms must also be noted:—(a) *Fulminant forms*, death occurring among subintractant convulsions, 5 hours after the beginning of the disease; (b) *recurrent forms*, the little patient having often shown 4 accesses during a period of three months, being perfectly healthy during the intervals; seldom *slow evolutive forms* ending in death after 19-24 days; (c) but what constitutes the most striking peculiarity of this epidemic is the extraordinary frequency of the *formes frustes* which might pass totally unnoticed by the practitioners besides the notion of the epidemicity, so slightly mono-symptomatic they are and so easily misinterpretable under the most varied diagnostic labels.

The clinical and epidemiological features of meningococccemia such as they occur in Goa have already been described in Europe.—1. *On clinical point of view*:—NETTER and DEBRE give a detailed account of the symptomatology of meningitis in children: sudden onset; in full good health, the child has a vomit and malaise; the initial symptom may also be a convulsion, the child giving sometimes a cry and showing epileptiform convulsions, generalised to the whole body and falling afterwards into coma (DOPTER); sometimes, the onset is apoplectiform or comatose, preceded or accompanied by many vomits; rigidity of the neck or of the members may be noticed, pulse accelerated and dissociated in regard to temperature; the vomits are sudden and without nausea in the initial phase, but may, afterwards, become incoercible during the course of the disease (N. and D.; DOPTER); often diarrhoea as an initial symptom; temperature variable, growing sometimes rapidly but not constant and in many cases, normal or subnormal, especially in the 1st and 2nd days, becoming feverish in subsequent days.

Hyperacute forms, the child unconscious with delirium and strong agitation, incoherent movements of the face and members' muscles, starts, tremors, irregularity of pulse and respiration, incontinence of sphincters; *fulminant forms*, occurring specially in the beginning of the epidemics, attacking children in perfect good health or during sleep, with vomits suggesting a pure indigestion and convulsions and coma, the patient dying in 4-8 or 10-30 hours, as if he was poisoned (TOURDES); *attenuated or abortive forms*, especially frequent in an epidemic area to the same extent as the gastric, febrile troubles in epidemics of typhoid, have been described by NETTER and DEBRE.

These authors have particularly insisted on the clinical type of meningitis in small babies, without Kernig nor neck contracture, rather with muscular paresis, the baby's head wavering in the arms of the mother and being agitated from time to time by violent convulsions. Such cases are often attributed, say the authors, to gastro-enteritis, dental troubles, intestinal worms or to some kind of digestive infection or intoxication. HUTINEL said in one of his lessons: "What do you see in children affected by this disease? Generally, digestive troubles of an anodyne appearance, hiding the true nature of the infection and leading to frequent errors of diagnosis."

2. *On epidemiological point of view*:—DOPTER and NETTER & DEBRE have emphasized the rather restricted diffusion of meningitis, whose propagation is confined not to very dense, but to limited foci; the disease becomes then endemic with some sporadic cases which establish its continuity with the next epidemic season. Specially prevalent in children,

meningitis shows a recrudescence during other infectious diseases such as grippe, pneumonia and mumps. Its incidence is domiciliary, however it does not spread *de proche en proche*, but jumps rather spontaneously from one focus to another, from one village to another, being evidently transmitted by healthy carriers of Meningococci, sometimes very difficult to be detected or suspected.

All these epidemiological features had their fullest realisation in the infected villages of Goa. Some further informations will not be devoid of interest.

VILLAGE A.—In one quarter infected since long, 75% of the houses with one single case, 12.5% with more than one case but occurring beyond the habitual period of incubation (2-5 days), and only 12.5% with more than one case occurring within the period of incubation.

In other quarters, infected after my arrival to the place—5, 3, 2 cases, all sporadic and isolated.

VILLAGE B.—Quarter C.S.M. Number of houses 283. Infected between March-April—45, from which only 6 with more than one case occurring within 2-5 days. Other houses: 31-1 single case; 4 with 3, 2, 2, 2 but occurring in less than 24 hours (hence not to be taken as cases of definite contagion occurring during the average period of incubation, but more probably due to the same cause occurring *simultaneously* on the infected children), 4 with 2 cases after intervals of 12, 13, 15, 22 days.

Quarter B. 14 houses with one case, 2 with 2 cases occurring within 2-4 days.

VILLAGE C.—Quarter B (infected after my arrival). Number of houses 141, among which 9 only with 1 case each.

Quarter M. Number of houses 195, infected 10, from which 8 with 1 case, 2 with 2 cases each, occurring in less than 24 hours.

One interesting point to be noticed is that the Hindu population, although living in those villages in conditions, hygienically inferior to those of the Christians, has scarcely been affected, probably because they had no contact with the Christian patients on account of their different social habits.

Epidemiologically, therefore, we can state: evident epidemicity, direct contagiousity not patent with that degree of evidence which characterises other epidemic diseases.

Another point worthy of interest is that in the neighbouring village Ca, in some quarters, the first sporadic cases have been preceded by a true epidemic of amygdalitis, to which the local practitioners did not, of course, attach any special importance.

Summary of the epidemiological and clinical features of the disease such as observed in Goa.—Having occurred firstly under sporadic cases, becoming soon endemic, giving later on epidemics and being actually endemo-epidemic, the disease is contagious but its diffusion is not so great as that of grippe; it attacks frequently children and young people, from some months to 16 years old, being more frequent in children of 4-5 years.

Weak morbidity when compared with the whole population; but considering only children, the absolute incidence is rather high.

Lethality not exceeding 15%, or even 10%, taking into account the abortive forms.

1. *Clinical forms*.—1. Rare typical cases of classical meningitis, but even in these, the predominant note is constituted by flaccid contractures (*con-tractures flasques* of French authors), which created such a confusion among the clinicians.

2. The most predominant form of more or less a rapid evolution is characterized by a fundamental triad (vomits *en fusée*, abdominal tympanism with constipation and lethargic stage) and an accessory triad (muscular resolution in flaccid contracture, convulsion and fever appearing generally on the 2nd and 3rd day of the disease).

3. Extra-ordinary abundance of *abortive forms* (*forms frustes* of French authors) which contributed not only for the non-acceptance of the diagnostic, but specially for rendering the disease endemic in that region.

Pathology and bacteriology.—Very few examinations on this point of view have been possible owing to the reluctance of the people. In one acute case, the autopsy revealed meningo encephalitis hæmorrhagica diffusa.

The lumbar puncture showed sometimes hæmorrhagic fluids, sometimes turbid and purulent fluids, but in most cases, the fluid was perfectly clear.

The germs isolated belonged mostly to B type, more rarely to A.

Prophylactic measures.—Notifications of the cases, domiciliary isolation which was rather a failure when the disease was largely spread. The measure which gave us the best results was the disinfection of the throats of the family and contacts, twice daily, during 8 days, with nebulisations of Chloretone. Such treatment was sometimes applied to the whole population of the infected quarters.

In the course of the last fifteen years, the *meningococemia* in the infected villages of Goa has followed the same march as described everywhere: after some strong epidemics, it has gradually declined *per se*, without vaccination (which people did not accept here) and has now become endemic, giving now and then some sporadic cases, rarely mortal and showing the same symptomatology, which should be described as a special and more common modality of meningococemia in India.

The Medical Treatment of Aural Affections*

BY

LT. V. R. KAMATH, I.M.S.,
Indian Military Hospital, Peshawar.

“WHAT ear-drops shall I use?” is a question often put by patients and general practitioners to the otologist, who is apparently presumed to possess some secret formula, a panacea for all the ills that the ear is heir to. Conversely, there seems to be a prevalent impression that the otologist's pharmacopœia consists of a handful of well-known drugs, which he prescribes either by intuition or rotation among his patients. It must be admitted that the study and practice of rational medicinal therapy in aural affections has suffered neglect at the hands of specialists, owing chiefly to their interest and absorption in the remarkable progress of aural surgery during the last two decades. It may be of advantage, therefore, to review the various methods employed in the medical treatment of aural conditions, to assess their respective values, and to endeavour to place them on a rational, scientific basis. In presenting this paper, which mainly comprises my own observations, both in hospital and private practice, my purpose is to stimulate discussion and to profit by the experiences of others. For convenience, I shall divide the subject into three parts, dealing in turn with the therapeutic measures employed in diseases of the external, middle and internal ear.

The external ear.—1. **LOCAL TREATMENT**.—(a) *Fomentations*.—This is the best known of all therapeutic measures for acute inflammations, but when used in otology, the question arises,—whether dry or wet? It is usual to advise hot bran or salt enclosed in a muslin bag, for this purpose; but it is necessary to suffer from external otitis oneself, to appreciate the discomfort and additional pain caused by a heavy object applied repeatedly to the pinna. A hot-water bag is open to the same objection, and a bottle cannot adapt itself to the contours of the auricle. I think that the best method is to use flannel or lint, well wrung out of hot water, taking care to dry the pinna gently after the fomentation is finished. An elegant, though more expensive, alternative is to use a Sollux lamp (of 500 Watts) at a distance of six inches from the ear, for about twenty minutes at a time.

(b) *Applications*.—In eczematous or infective conditions of the auricle, the otologist has often to encroach upon the domain of the dermatologist, and it would be well for us to remember some of the axioms of our sister-speciality; for instance, that strong antiseptics should not be used, that the skin is liable to show idiosyncrasy to certain drugs like Lysol and Carbolic Acid, that moisture favours the infection, and that over-treatment can do more harm than no treatment at all. The commonly used and effective remedies, in my experience, for eczema of the pinna and retro-auricular sulcus, are Aluminium Acetate (7% solution), Unguentum Hydrargyri Nitratis dil. (mixed with some bland base, 1 in 3), and Silver Nitrate (5 to 10% solution in sweet spirits of Nitre), in the wet, dry, and crusting stages respectively. I would put in a plea for the use of Antivirus in resistant cases of weeping eczema. I use mixed (staphylococcal and streptococcal) Liquid Antivirus (Glaxo Laboratories) which is applied either directly or through a layer of gauze; the chief points in this method are

* Specially contributed to 'The Antiseptic'.

that the skin must be previously cleansed and freed from antiseptics, and that the whole area to be treated should be kept moist with the Antivirus *continuously* for 24 to 48 hours. I have seen several intractable cases clear up amazingly with this therapy, whose only drawback is its expense. I need not stress the point that Antivirus should always be used fresh (it does not retain its properties for long, after the vial is opened), and that it should not be injected. Another efficacious medicament, for the obstinate dry stage of eczema, is Crookes' Compound Halibut Ointment, the special value of which lies in its vitamin A content. Sulphur-containing ointments are best avoided, since they sometimes tend to aggravate the lesion.

(c) *Instillations*:—The formula that is almost universally employed for external otitis is Ichthyol in Glycerin (5 to 10%). Some otologists prefer a solution of Alum, but it may give rise to a troublesome degeneration. Here, I would like to say a few words about fungus affection of the external meatus. At a meeting of the Section of Otology, Royal Society of Medicine, (4th February 1938), DR. EWART MARTIN of the Edinburgh Royal Infirmary, speaking of otomycosis, said that *Aspergillus niger* is possibly "the most common infective fungus, and the most often missed". If that is so in Scotland, it is far more important for us here to recognise and treat otomycosis, for it is an exceedingly common affection of the ear, in Madras at any rate. The characteristic 'blotting paper' appearance of the epithelial sub-stratum, with the black (or brown, yellow or grey) 'pollen-grain stippling'—seen either on otoscopy or in the material syringed out of the meatus—is unmistakable, if only the existence of such an affection is known and remembered. If, in a case diagnosed as 'wax' in the ear, large masses form rapidly and repeatedly after being syringed out, fungus should always be suspected. Glycerin is an excellent medium for the growth of fungus, and the use of Glycerin ear-drops after removal of 'wax', often serves to produce a large colony within a day or two. Of the numerous remedies recommended for this connection, I have found Salicylic Acid in Rectified Spirits (10 grains to 3 i.) the most reliable. It is important to use it, not only immediately after syringing out the fungus colony, but once every day for at least ten days thereafter, in order to make sure that the last remnant of the mycelia, lurking in the epithelial skin-layers, has been eradicated. In private practice, I prescribe solution Merthiolate (Lilly) which is an excellent fungicide and has the advantage (over spirits) of not giving rise to a burning sensation in the ear. The dry, scaly condition of the external meatus which sometimes results from its use, may be easily corrected by instilling a little Olive oil into the ear for a few days.

(d) *Packs*:—I believe that the device of using a pack impregnated with Ichthyol in Glycerin (10%) in cases of furunculosis of the external meatus, is definitely more effective than the mere instillation of the drops into the ear. A cylindrical pack of absorbant cotton-wool, of a size that will snugly fit in the external meatus of the patient, is dipped in the drug and gently insinuated into the meatus with a pair of long, slender dressing-forceps. The pack is then kept continuously moist by pouring in a little of the drug every two hours or so; and it is renewed after twentyfour hours, if necessary. It is not uncommon for the patient to say, as soon as the pack has been inserted, that his pain is much relieved; the gentle outward pressure exerted by pack (of proper size and properly introduced), as

well as the continuous contact of the medicament with the inflamed area, contribute to a rapid alleviation of the symptoms. For wet eczema of the external meatus, a pack of liquid Antivirus works wonders; and ointments can also be applied in this manner. In a few cases, I have found a pack moistened with Alcohol (70%) useful in the early stage of furunculosis, when the patients could not somehow tolerate Ichthyol in Glycerin.

2. *GENERAL TREATMENT*.—(a) *Drugs*:—Analgesics are of very little help in the agonising pain of external otitis. To prevent recurrence, Collo-sol Manganese orally (3i thrice daily) is useful. Mistura Ferri Arsenicalis is a serviceable substitute. Vitamins A and D may be needed in some cases.

(b) *Diet*:—There is no doubt that the excessive consumption of carbohydrates, especially in children, can be a contributory factor in furunculosis;—witness the crops of boils during the mango season! Cutting out sweets may, therefore, be a good plan, when a well-to-do child suffers from recurrent furunculosis. Similarly, in adults, diabetes must be thought of in such cases, and treated if present.

(c) *Vaccines*:—I have reason to believe in the efficacy of staphylococcal vaccine in furunculosis. But a good make must be used, the vaccine should be administered intramuscularly, as early in the course of the disease as possible, and should be repeated twice or thrice at intervals of a few days. I do not employ the method of graduated doses, preferring to start with the full dose (about 200 millions).

The middle ear.—1. *LOCAL TREATMENT*:—(a) *Fomentations* are useful in the early stage of acute suppurative otitis media.

(b) *Irrigation*:—There has been a great deal of controversy over the question to syringe or not to syringe; so long as one understands the physiological and pathological reasons for such a cleavage of opinion, I think it is unnecessary to be a strict adherent to either school, dry or wet. The skin lining the external meatus differs from that elsewhere, in being covered by a thin layer of cerumen which renders it water-proof. Irrigation of a suppurating ear may drive the pus from the depths of the meatus through the tympanic perforation, thus converting a pure middle-ear infection into a mixed one and heightening its virulence. It has been shown by experiments on the cadaver, as well as by syringing a coloured solution into the ear just before a mastoid operation, that the irrigating fluid finds its way into the mastoid antrum in a fairly large proportion of cases. ERIC WATSON WILLIAMS goes so far as to say that "except when syringing for foreign bodies, water should on no account go into the ear." On the other hand, free drainage of a suppurating ear is very essential, and it is often difficult and impracticable, especially when the patient first presents himself, to clear the external meatus of thick pus and epithelial debris, without having recourse to the syringe; the use of cotton applicators for this purpose is not only tedious but is liable to injure the abraded skin and to set up a troublesome external otitis. Then again, one may not be able to obtain a satisfactory view of the ear-drum unless its surface has been cleared by syringing, and we know how important it is to get such a view, both for assessing the prognosis and for selecting the method of treatment in each individual case. I personally feel that irrigation is not irrational, especially at the first examination of the patient, provided it is done gently, with the limited objective of cleansing the meatus, and the ear is dried scrupulously afterwards. It should certainly not be performed

as a daily ritual in every case of otitis media. The best irrigating fluid is plain water, which should be tepid in order to avoid giddiness and syringing is of course positively harmful in cases of traumatic perforation of the drum.

(c) *Instillations*:—Carbolic acid in Glycerin (5%) has stood the test of time, and is universally employed by otologists in suppurative otitis media. Its lubricating, dehydrating, antiseptic and analgesic actions render it ideal for routine use. For children, however, a weaker solution (2 to 3%) is advisable, and it is well to substitute the Carbolic acid with Boric acid in the case of infants. If the aural discharge is thin and scanty, Boric acid in Rectified Spirits (10 grains to 3 i) serves to dry it up; solution Merthiolate is also effective at this stage. A liquid Antivirus may sometimes cure cases which have resisted other measures. I attach as much importance to the technique of using ear-drops as to their composition. The usual method of asking the patient to bend his head slightly, and allowing him to return to the erect posture immediately after instilling the ear-drops, implies too much faith in the momentary contact of the medicine, or too little thought about the rationale of the procedure. I instruct the patient to lie down with the affected ear uppermost, and to ask someone to straighten the pinna by pulling it gently upwards and backwards and to fill the ear with the solution, running the fluid along the wall of the meatus; the posture is maintained for five to ten minutes, after which the head is turned to allow the solution to run out, and the ear is wiped dry. In this way, adequate and prolonged contact is obtained, the solution has a chance to enter the middle ear (by the pressure of the column of liquid filling the meatus), air-bubbles between the fluid and the drum are avoided, and the meatus is cleansed of secretions by the return flow of the solution used. The widespread habit of plugging suppurating ears with cotton-wool is to be strongly deprecated; it interferes with drainage, prevents ventilation, and serves no useful purpose; the only exception to this being that the ears must be so protected while bathing, as to prevent water from entering them. In cases with a large anterior perforation and a mucoid discharge, which is evidently maintained by a catarrhal inflammation of the eustachian tube, the device called 'pumping the tragus' is useful. With the patient lying down as described previously, and with the meatus full of whatever solution is employed, the tragus is rhythmically pressed inwards with the index finger, about half a dozen times. If the patient feels the solution coming into his throat, it indicates the success of the manoeuvre, though such a result may not be obtained on the first few occasions. Argyrol or Protargol solution (10%) used once every few days in this manner in selected cases, may serve to clear up an aural discharge of long duration.

I would like to say a few words here about Hydrogen Peroxide, which is regarded by the lay public as a first-aid measure for all ear troubles, and as an indispensable otological adjunct by most general practitioners. The antiseptic value of Hydrogen Peroxide is momentary and negligible; as soon as it has parted with its extra oxygen, it becomes plain water which, as we all agree, is the worst enemy of the ear; it contains a certain percentage of Sulphuric acid (put in commercially to keep the oxygen in combination), which is irritant to the skin and tympanic membrane; and last, but not least, its use may result in a sense of security quite unwarranted by any real merit that it possesses as a remedy. The traditional faith in this

glorified oxygenated water is perhaps partly dependent on the spectacular bubbling that results from its instillation into suppurating ear. As a matter of fact, this fizzing is fraught with danger, for the tiny bubbles laden with infective material may pass through even a small perforation which would prevent a liquid from entering through it, and they may reach an uninfected mastoid antrum through the aditus. I shall quote from a few eminent British otologists in support of my plea against the misuse of Hydrogen Peroxide in aural affections. HORACE MATHER says that its "wholesale use is a most disadvantageous thing." EWART MARTIN observes that it "only seems to irritate, and very often leads to eczema of the ear." ERIC WATSON WILLIAMS is of opinion that it should be "rigidly excluded from the ear, and indeed from the otological department altogether." I agree with him.

Before finishing with the subject of instillations, I wish to be permitted to add a few 'Don'ts'. Cocaine instilled into the ear is quite useless for the relief of pain in acute otitis media; if there is a large perforation of the ear-drum, the drug may find its way into the throat, and if the patient uses the ear-drops frequently in a frantic attempt to ease his pain, he may suffer needlessly from the effects of Cocaine absorption into the system. Coloured drugs, like Mercurochrome, should not be employed, especially in acute suppuration of the middle ear, for the reason that they mask the true appearance of the tympanic membrane and thus interfere with the periodical otoscopic examinations, which are so important from the point of view of prognosis and the possible need for surgical intervention. In the case of attic perforations, no watery solutions should be employed, as such perforations almost always indicate the presence of cholesteatoma.

(d) *Insufflations*:—It is not uncommon to find cases of acute or chronic suppurative otitis media which have 'got stuck' at the last stage of healing, namely the stage of scanty catarrhal exudate, and which resist all kinds of ear-drops intended to render the ear dry. In such cases, insufflations of finely powdered Boric acid, once every few days, may bring about a cure. Sulzberger's powder is very efficacious for this purpose, and is prepared by dissolving a grain of Resublimated Iodine in a little Alcohol, adding two drachms of Boric acid, mixing to an uniform paste, and allowing it to dry, thus giving a 0.75% concentration of Iodine in Boric acid. In traumatic perforations, myringitis bullosa, and herpes oticus, where instillations are contra-indicated, insufflations of Boric acid may be employed to please the patient.

(e) *Inflations*:—Eustachian catheterization and inflation of the middle-ear is well established as a part of the treatment in the later stages of suppurative otitis media and in catarrhal conditions. I have little experience of introducing drugs or vapours into the eustachian tube through the catheter, and would like to know about the results of such measures.

(f) *Ionisation*:—There is no doubt that Zinc ionisation is a valuable mode of treatment in selected cases of chronic suppurative otitis media—those having large central perforations, and no septic focus elsewhere. I hope that members who have had extensive experience with this method will relate their views and observations.

(g) *Applications*:—Silver Nitrate (10%) is useful in controlling exuberant granulations growing from the meatal walls or from the margins

of the tympanic membrane. It is carefully and sparingly applied by means of a slender cotton applicator. It should never be instilled into the ear, nor applied to the inner tympanic wall. Trichlor-Acetic acid and Chromic acid are, in my opinion, too strong and are liable to originate or exacerbate an otitis media.

2. **GENERAL TREATMENT.**—(a) *Drugs*:—Sulfanilamide has proved its value in the treatment of acute otitis media and some of its complications. I have observed, in hospital practice, a decided fall in the number of operations for acute mastoiditis, since this drug came into use. I feel, however, that there is a tendency to employ it rather too freely and indiscriminately, and that its potential dangers are not sufficiently realised. Its main deleterious effect is, of course, on the blood. I have observed quite a few cases, especially women, who have been administered the drug for prolonged periods with the idea of curing a chronic otitis media or a chronic tonsillitis, suffering from profound anaemia with all its attendant symptoms, and with the impending menace of agranulocytosis. I have found that relatively small doses suffice for acute otitis media or the early stage of acute mastoiditis,—one tablet every four hours for an adult; if there is no satisfactory response within a few days, there is not much use in continuing the therapy. I do not think it is of any great value in chronic inflammations of the middle-ear or mastoid. The blood should be periodically examined while the drug is being administered, and apparent clinical improvement must be confirmed by skiagrams. It has been suggested recently that Sulfanilamide has a certain analgesic action also, and if this is the case, it necessitates still greater caution in assessing the progress of signs and symptoms of acute middle-ear or mastoid inflammations after exhibition of the drug. Analgesics, as such, are of course contra-indicated in such inflammations, for the reason that they mask the pain and tenderness which are valuable guides to prognosis and surgical intervention.

(b) *Diet*:—The incidence of chronic middle-ear suppuration is far higher in the hospital class of patients than in private practice. The chief reason for this difference is, to my mind, the nutritional factor. I believe that the best medicine one could give to the children with discharging ears who attend an out-patients department, is a glass of milk every day. Even among the better class of patients, there is often a relative vitamin deficiency in diet. The correction of this faulty diet, the cutting out of excessive carbohydrate intake (which interferes with the absorption and utilisation of vitamins), and the administration of vitamins A and D, play a part in the treatment of chronic aural suppuration. In this connection, I would like to suggest a trial of vitamin C therapy in chronic otitis media, as it has been favourably reported upon in recent literature. I have tried it in a few cases, with apparently good results.

The internal ear.—The main symptoms referable to the labyrinth are deafness, tinnitus, and vertigo (with its associated gastric manifestations). When these occur together in attacks, they are usually diagnosed as Meniere's syndrome. It is essential, however, to discover the cause of the symptom-complex, rather than to give it a name. Apart from local causes, like wax in the ear, eustachian obstruction, fistula of the labyrinth etc., it is in this group of cases that the systemic background assumes importance, much more than in external or middle-ear affections. It is out of place here to deal with the aetiology of internal ear disorders, but from the

point of view of their amenability to medical treatment, one might discuss them under five headings:—

1. *Systemic disease*:—Syphilis claims the first place. Blood dyscrasias (anaemia, leukæmia etc.), cardiovascular disease (endocarditis, hypertension, hypotension), and nervous disorders (especially disseminated sclerosis) may be discovered while investigating a case with internal-ear symptoms. And toxic factors such as tobacco, alcohol, drugs, and septic foci, should be looked for and eliminated.

2. *Endocrine dysfunction*:—In women especially, this factor has always to be considered. The correction of such dysfunction may be difficult in practice, but gratifying results are often obtained by oestrogenic therapy in tinnitus, vertigo and in otosclerosis. Thyroid and parathyroid are said to be useful in certain cases.

3. *Autonomic imbalance*:—I have indicated in previous discussions, my predilection for Bellerger (Sandoz) as a corrective of amphotonia (inco-ordination between the sympathetic and para-sympathetic systems.) One has only to observe the good effects of this therapy in properly selected cases of tinnitus or vertigo, to be convinced of its value.

4. *Allergy*:—It is well recognised that vertigo may be an allergic manifestation. If there is a family-history of asthma or its equivalents (migraine, urticaria, eczema, vasomotor rhinorrhoea etc.), a careful enquiry may elicit the relationship between the vertiginous attacks and the allergising factor. I had a patient who suffered from giddiness every time he drank coloured aerated waters or ate coloured ice-cream. Calcium therapy is useful in these cases, besides the elimination of the exciting agent.

5. *Metabolic disorders*:—MYGIND, DEDERDING and FURSTENBERG, have done a great deal of work in connection with the aetiology and treatment of Meniere's syndrome. They believe that in many cases it is due to imperfect salt and water metabolism. Their treatment consists essentially in drastic reduction of fluid intake, a salt-free diet, and the administration of Ammonium Chloride in capsules. I have no experience of this therapy; but I think there is much to be said in favour of a simple Calomel and Saline purge in some cases of vertigo.

Finally, we should not expect any single formula or mode of treatment, however carefully chosen, to cure an aural affection in every case. A thorough local and general examination of the patient, repeated observation of the progress of the condition, meticulous attention to details of therapy, and a judicious variation or combination of drugs and methods, will often enable us to obtain satisfactory results, while empirical medication and the neglect of the systemic background of symptoms, are apt to lead to cynicism or an attitude of despair.

A Modified Technique for the Preparation of Celloidin Casts of the Porto-Hepatic Venous Trees*

BY

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OUR method has been essentially that of COUNSELLER and MCINDOE (1926) with some modifications.

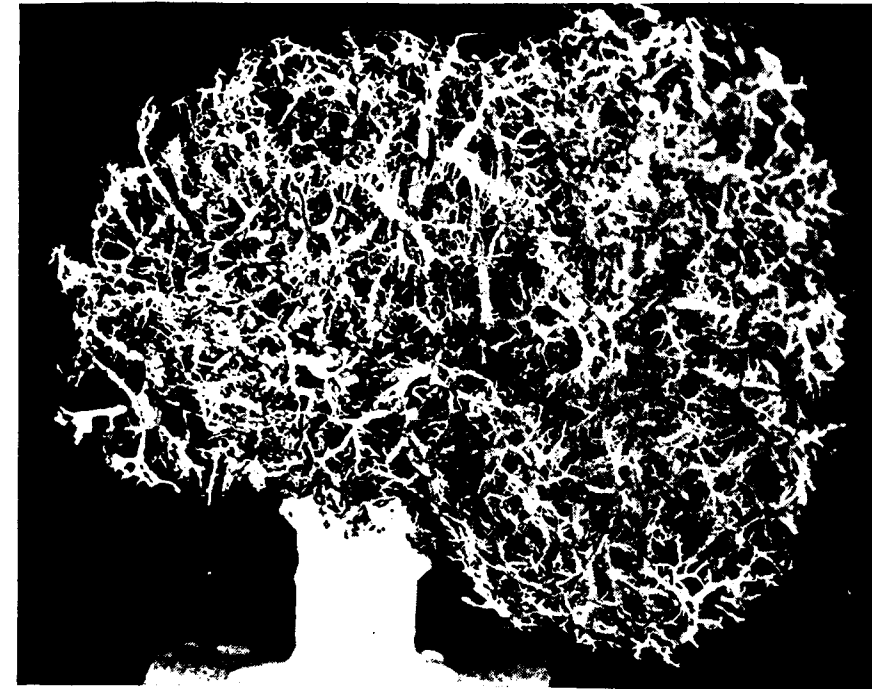
The liver is dissected from the abdomen, complete with the diaphragm, retaining about 1½ inches of the inferior vena cava as well as the gastro-hepatic omentum containing the portal vein, hepatic artery and the bile-duct, severed as close as possible to the duodenum. Great care is taken not to injure the capsule of the liver at any situation, so as to prevent leakage that would naturally occur at the torn areas.

After having been canulised, the portal vein is connected by rubber-tubing to an ordinary cold water faucet and the liver immersed in a tank of cold water. The tap is gradually turned on until there is free flow from the hepatic veins and the liver itself is tense almost to bursting point. HINMAN and MORISON (1923) used Saline to wash out the liver, but we find that the use of ordinary tap water is quite satisfactory. COUNSELLER and MCINDOE perfused the liver for varying periods up to 12 hours. But we find that ½ to 2 hours being enough for washing out the liver, as we usually stop the procedure when the outflow from the divided inferior vena cava becomes clear. The upper end of the divided bit of inferior vena cava having been firmly sutured, the lumen of the lower end is suitably reduced by means of a purse-string suture to fit a canula. When the washing is complete, the liver is removed, wrapped in towels, and weights up to 10 pounds are then laid on it. The towels are then repeatedly changed so that in an hour or more, the accumulated fluid within the organ is removed and it assumes a shrunken appearance and clayey consistency.

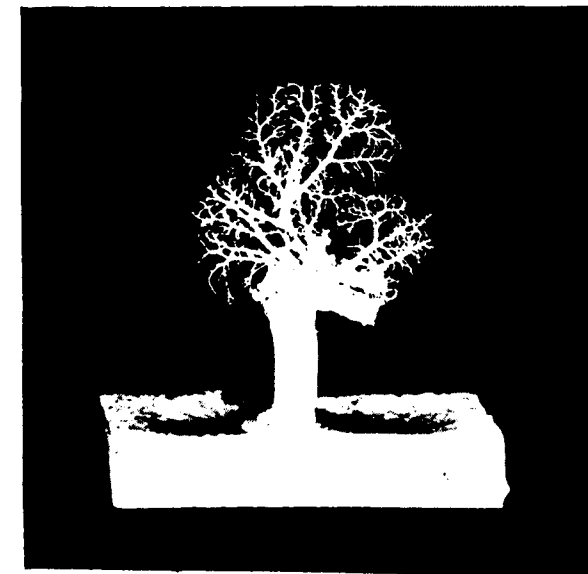
We do not use the elaborate injection technique of COUNSELLER and MCINDOE or of HINMAN and MORISON. Neither do we use the two strengths of Celloidin solution as advocated by the above workers. A suitable solution of commercial Celloidin in equal parts of absolute Alcohol and Ether, of the consistency of thick syrup, is used by us. The preparation of this right type of consistency of the solution requires some experience. This solution is injected into the hepatic vein through the canula in the inferior vena cava by means of 10 c.c. syringe. When the surface vessels of the liver are seen filled with the solution, the injection is stopped. The exact amount of the injected solution varies according to the size and type of the liver, the average being 100 c.c. The same procedure is repeated at the portal venous side and both ends (portal and hepatic) are later tightly closed.

To distinguish the two veins, we add colouring agents to the Celloidin solution. After having obtained failures with such dyes as Carbol-fuchsin and Methylene Blue, which were de-colourised readily by concentrated

A Modified Technique for the Preparation of Celloidin Casts of the Porto-Hepatic Venous Trees.—By U. Srinivasa Rao.



Picture 1



Picture 2.

* Specially contributed to 'The Antiseptic'.

Two Cases of Surgical Operations—By K. S. Appu Mudaliar.
Case No. 1.—Huge Swelling of the Scrotum.



Before Operation



After Operation.

Case No. 2. Cyst Adenoma of the Right Ovary.



Before operation.



After operation.

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Hydrochloric acid, we find artists' oil paints of standard quality to be the best, as they firmly resist de-colourisation. We use the colourless plain Celloidin solution for the hepatic venous tree and solution coloured moderately heavily with Prussian Blue oil paint, for the portal venous tree. After having injected both the porto-hepatic venous trees, the liver is kept immersed in a jar of water, in the cold storage overnight, so as to harden the Celloidin solution.

The next day, after removing the gall-bladder, the liver is kept fully immersed in a jar of concentrated Hydrochloric acid, for a varying period not exceeding 24 hours. This period of corrosion depends on the size of the specimen. We find that commercial hydrochloric acid to be as good as the pure one and by far cheaper. Amounts varying from 2 to 4 pounds of the acid are required for each specimen.

When the whole liver is corroded, the acid turns black and the liver parenchyma softens to the consistency of putty. It is carefully washed and any material adherent to the branches of the finer vessels is washed away with a stream of cold water. A perfect specimen results and it is best mounted on a cylinder of hard Paraffin at the hepatic venous stump and on a base of hard Paraffin. It is sealed in a jar containing a bit of Camphor to prevent the Celloidin from drying and becoming brittle.

This technique is used very successfully to study the porto-hepatic venous systems in the normal and cirrhotic livers of man, as well as in experimentally induced cirrhosis in animals like pups and albino rats. The picture (fig. 1) of the cast of the portal and hepatic veins of the liver in portal cirrhosis illustrates clearly the mutilation in the portal side of the vascular system in portal cirrhosis. The other illustration (fig. 2) shows the Celloidin cast of the hepatic venous tree alone, of the normal liver of an albino rat.

I am indebted to DR. P. RAMACHANDRA RAO, M.B. (MADRAS), PhD. (LOND), Professor of Pathology, Madras Medical College, and Director of the Infantile Billiary Cirrhosis Research, for his invaluable help, guide and advice in all my endeavours and also to the Indian Research Fund Association for the research grant. My thanks are also due to the Director, Barnard Institute of Radiology, Madras, for the excellent photographs of the corrosion preparations.

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Pterygium—Ancient and Modern Concepts*

BY

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PTERYGIUM is a triangular fold of fibro-membranous or fibro-vascular expansion of the sclero-conjunctival tissue, attacking primarily the sclerotic region of the eye, and extending forward from the vicinity of the inner canthus up to and invading the corneal tissue.

Pterygium was first studied extensively and described in full by the world's first Surgeon-Ophthalmologist, SUSRUTA, in the pre-historic age thousands of years before Christ; in subsequent ages, it was described by CELSUS (45-50 A.D.), VAGBHAT (3-4th century A.D.), PAUL (660 A.D.), RHAZES (932 A.D.), AVICENNA (1037 A.D.), CHAKRADATTA (1060 A.D.) and others in the pre-antiseptic days. FUCHS and others have dealt with it most elaborately in the modern days.

To SUSRUTA, however, will go the credit of having studied the disease in all its forms most elaborately and of having dealt with its surgical treatment in an original and masterly manner.

SUSRUTA describes five different forms of pterygium (Armanas) viz:—

1. *Prastayarma (Pterygium Crassum of Fuchs)*:—It is an extensive, thin, red-coloured, or slightly bluish-grey fleshy membrane on the scleral conjunctiva.
2. *Suklarma (Pterygium alba)*:—It is a soft, slowly growing, white coloured and plain membranous expansion.
3. *Raktarma (Pterygium Vasculosum)*:—Characterised by a fibro-vascular membrane of the colour of red lotus on the sclerotic coat.
4. *Adhimansarma (Pterygium Carnosum of Fuchs)*:—Characterised by an extensive, soft, thick and succulent or liver-coloured, deep red, fleshy membrane on the sclerotic coat.
5. *Snayarma (Pterygium tenue membranaceae)*:—A rough, greyish, fibro-fleshy patch slowly growing in size.

Pterygium may be single, in which case it is invariably situated in the nasal side, and when double, it occupies the temporal side of the globe.

In its early phase of development, pterygium is thickly vascularised, and, therefore, red-looking; as it grows on becoming older and older, it becomes gradually de-vascularised and fibrosed, till, ultimately, it assumes the appearance of a greyish, tendinous membrane.

The apex of the pterygium is attached either to the cornea or the limbal region, and its base spreads out and merges with the conjunctiva near the inner canthus.

Pterygia are mostly genuine; often times, they are non-genuine in which case they are known as pseudo-ptyeria or cicatricial pterygia, which are caused by some sort of inflammatory process.

So long as the pterygium is small, it makes very little trouble, besides causing a disfigurement to the eye. It is only when the pupillary area of

the cornea is reached that the disturbance of vision becomes felt by the patient and this invariably increases with the further growth of the pterygium. Very large pterygia make disturbances of motion and thereby cause diplopia (FUCHS).

Etiology of Pterygium.—According to SUSRUTA, the incidence of pterygium is due to the derangement of one or a combination of the bodily humours; SUSRUTA holds that when the person suffers from the derangement of one or a combination of the bodily humours, the general nutrition of the body suffers, the ocular nutrition being impaired in its train, thus favouring the incidence of growth of pterygium. Thus, *Suklarma* (Pterygium alba) is due to intra-ocular lymphatic derangement; *Raktarma* (Pterygium vasculosum) is caused by malnutrition of the eye as a result of diseases of the blood, and *Adhimansarma* (Pterygium carnosum) occurs when the person's eye suffers from malnutrition as a result of constitutional diseases. The first stage in the development of pterygium, according to Susrutian teachings, is a small, slightly raised, greyish-red or dark-brown speck, or nodular body resembling flesh in colour, which gradually ramifies and spreads forward assuming a triangular shape.

About the etiology of pterygium, FUCHS speaks as follows:—"It follows from the circumstance that pterygium and pinguecula have exactly the same location that they must also have the same or a very similar etiology. Yet the pterygium dare not from this be classified as a higher grade of pinguecula. The formation of pterygium is preceded by a shrinking of the corresponding sector of the conjunctiva sclera, which, visible only in the very first stages of the pterygium, is shown by the tenseness of the conjunctiva and the displacement of the semilunar fold. In general, the causes of pterygium are far from being clear. It occurs especially in older people who are much exposed to wind and dust (farmers, cabmen, stone-masons), whereas it is a rarity among the better-maintained classes."

PARSONS says, "Pterygium is not due to a fold of conjunctiva being dragged across the cornea by a progressive ulcer, as was once taught. It is probably due to malnutrition of the cornea, resulting from the pinguecula. Granulation tissue grows in under the epithelium destroying Bowman's membrane. When it ceases to progress, dense fibrous tissue is formed."

The writer's observations from the study of a series of cases is that pterygium occurs as a result of devitaminisation and malnutrition of the cornea, resulting from pinguecula. Its incidence has been detected in persons whose eyes are exposed to constant sources of irritation, i.e., those exposed to dust, wind, heat, constant dazzling light (farmers, labourers, stone-masons, silver-smiths, iron-smiths, engine workers, workers in electric furnaces etc). It is also found in the eyes of persons who are addicted to drinking as a habit and of those suffering from chronic constitutional diseases. Its incidence is rare in healthy people and in well-to-do people living in hygienic environments. It is rarely found in healthy young persons. In females, its occurrence is much less than in males.

T. J. DIMITRY has very ably discussed the dust factor in the production of pterygium. "It is maintained in this paper that dust is not the factor in the production of pterygium. Statistical studies coming from reliable sources justify the correction of a belief that has existed throughout the ages. 1,35,000 eye-operations entered into the study in the hospitals of United States of America. Louisiana, with the greatest percentage of

* Specially contributed to 'The Antiseptic'.

pterygiae operated upon, is a verture-clad state as contrasted with states in the dust bowl. In New Orleans, pterygia are as common amongst women as in men. The author favours the polyhypothesis which reasons a development from a polyp to a pinguecula advancing into a pterygium."

Prevention consists mainly in improving the corneal nutrition by attending to the general health of the patient. Devitaminisation of the eye should be combated by giving enough of vitamins to the patient. Milk in sufficient quantities, fruit juice, and vitamin-producing fruits and vegetables should be regularly given to the patient. Any sources of irritation to the eye, whether extraneous, *i.e.*, exposure to wind, dust, heat, dazzling light, or internal *i.e.* from the nose (septic rhinitis), teeth (pyorrhœa) or septic and inflamed ocular appendages must be removed by proper medications. Any constitutional disease, from which the person is suffering, must be adequately and promptly attended to. Soothing and invigorating eye-lotions and *anjanas* (eye ointments) should be given at regular intervals. The general health of the patient must not be neglected with impunity.

Treatment.—Ever since the Susrutian age, eye surgeons all over the world have advocated that the treatment of pterygium is surgical. SUSRUTA was the world's first ophthalmic surgeon to teach that the treatment of pterygium was surgical *i.e.* it consisted in its removal by excising it by a sharp cutting instrument. Since then, ophthalmic surgeons, all over the world, have adopted SUSRUTA'S method with slight modifications in individual cases. SUSRUTA'S technique for the surgical treatment of pterygium is most elaborate. We shall now give a brief description of SUSRUTA'S method for the perusal of our learned readers.

Technique of Susruta's method.—*Pre-operative treatment:*—A mild purgative should be given to the patient the day before operation and the patient should be given light and non-stimulating diet.

Operative technique:—The patient should be laid down comfortably in an operation table. The Arman is loosened and disturbed by sprinkling powdered Saindhava (Sodii Chloridum) salt into the socket of the eye. The surgeon thereafter fomentes the Arman (Pterygium) thoroughly with *karasveda* (fomentation with palm heated by rubbing with the finger). The patient will then be asked to look at his *apanga* (exterior corner) of his own affected eye. Then taking the Vadisa Jantra (sharp hook—*Fig. I*)



Fig. I.—Susruta's Vadisa Jantra.

in the left hand, the surgeon would secure very carefully the Arman at its loosened and upturned part, and hold it up with a Muchundi instrument (toothed forceps), or a threaded needle is to be passed from below the part which would be held up with the thread. SUSRUTA rightly warns that it is very dangerous to lift up suddenly the Arman by stretching it, as thereby it will rupture. The two eyelids should be drawn asunder so as to safeguard against their being in any way injured during the manoeuvre. Then, the Arman, held up and disturbed by the three aforesaid measures, should

be got rid of by scratching it with a sharp Mandalāgra (round-topped instrument. *Fig. II.*) The root of the Arman should be pushed asunder from the black outline (cornea) of the eye to the extremity of the kaninika



Fig. II.—Susruta's Mandalagra Instrument.
(round-topped sharp instrument.)

(mesial angle of the eye) and then excised and removed, thus freeing the organ from the fibro-vascular growth. SUSRUTA emphatically warns the surgeon to guard carefully the kaninika (mesial angle of the eye) from being injured. If during the operation the mesial angle of the eye is cut inadvertently, hæmorrhage and later on lachrymal fistula will result. If in any case, a quarter of the Arman is left intact by chance, it does not harm the organ. If the excision of the Arman is less than half, or if it is cut insufficiently, the Arman will grow up again very soon.

An Arman which has expanded like a fishing net and which is situated on the sclera near the inner canthus should be tortured and loosened by rubbing it mildly with Saindhava salt. It should be held up by the sharp hook (Vadisa) and then carefully excised by the Mandalagra instrument. The excision over, the part should be rubbed with a compound consisting of Yavaksara (Pot. Bicarb), Trikatu (Piper longum, dry ginger, black pepper) and Saindhava salt pounded together, then fomented with Yavaksāra (Pot. Bicarb) and bandaged up by the surgeon. Oily medications should thereafter be prescribed with due regard to the nature of the place, season, time and vitality of the patient. The incidental wound is to be treated as an ulcer. The bandage is to be removed after three days and the affected part should be mildly fomented with *Karasveda* (Palm heated by rubbing with the finger), and treated with the ulcer-healing remedies.

In the event of pain in the eye, Aschyotana (sprinkling eye lotion) should be done, twice a day, with a fluid preparation made of milk duly soaked with Karanja seeds (*Gongamia Glabra*), Amalaka (*Embelika Officinalis*), and Yastimadhu (*Glycerrhiza*) and mixed with honey when cold. A cold application composed of Yastimadhu, pollens of lotus (*Utpala Kesara*) and Durba grass pasted with milk and mixed with clarified butter should be applied to the forehead in such cases.

If there be any remnant of the Arman after the excision, it should be done away with by means of scarifying ointment (*Lekhya anjana*).

The variety of Arman which is small in size, white like curd, bluish-red or grey, should be treated like a case of corneal ulcer (*Sukra*).

That type of Arman which has become fibrosed, thickened and has become fleshy and vasculous and has encroached upon the cornea should be excised off.

PAUL, a distinguished eye surgeon of Greece of the 7th century A.D., describes his method for the operation of pterygia—"Having separated the eyelids, and seized upon the pterygia with a hook-like instrument, having a small curvature, we stretch it, and taking a needle having a horse

hair and a strong flaxen thread in its eye, and a little bent at the extremity, we transfix it through the middle of the pterygium, and with the thread we bind the pterygium and raise it upwards, while with the hair we separate and saw, as it were, the part at the pupil away into its extremity, but the remainder of it at the great canthus we cut off from the base with the scalpel used for the operation by suture, but leaving the natural flesh of the canthus, lest there be a running of the eye when it is taken away. Some stretching, as aforesaid with a thread, dissect away the whole pterygium with the instrument called Pterygotomos, taking care not to touch the corner."

Chakradatta's method.—CHAKRADATTA, an eminent eye surgeon of India, who flourished about 1060 A.D., also gives a description of the operation for pterygium. He says that if the pterygium extends to the black part of the eye, the membrane is to be raised by the point of a needle, transfixed by a Vadisa (hook), and leaving the pupil free, is to be excised, as SIVADASA explains, by the Mandalagra (round-topped) instrument.

Thus we see that PAUL'S and CHAKRADATTA'S methods were but modifications of SUSRUTA'S method.

Coming to the modern times, we have got ARLT'S method, which is followed by FUCHS who describes the operation as follows:—"Special stress is to be laid on carefully removing the grey seam at the head of the pterygium. To do this, one grasps the pterygium by the neck with the forceps and separates it from the transparent corneal tissue as completely as possible with the iridectomy knife. Any fragments of the head remaining are removed by curettage. In so far as the conjunctiva is only displaced by tension, it can be preserved. This duplicature again smooths out and supplies useful material for covering the loss of substance which remains after the excision of the altered part of the conjunctiva over the sclera. The wound is united by 1—2 vertically placed sutures."

Some cases exhibit an unusual tendency for recurrence, even after removal. Both Radium and Carbon dioxide snow (ten seconds' application on alternate days) have lately been successfully employed (MAY and WORTH).

We have so far enumerated the different methods of surgical treatment of ARMANS. It would seem that all methods are but modifications of the Susrutian technique. It is, therefore, clear that SUSRUTA'S teachings on surgical treatment of pterygium have greatly influenced the prehistoric, the mediæval as well as the modern eye-surgeons.

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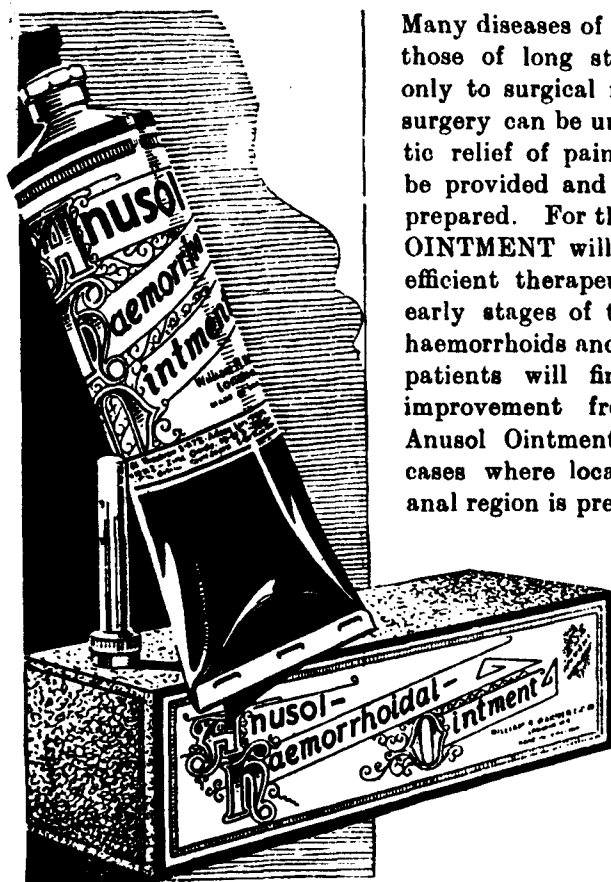
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Further Observations on the Mischief played by Bile absorbed into the Blood in Man*

BY

Major A. K. NANDI,
Pilani (Jaipur State), Rajputana.

IN February 1930, there appeared a paper, which I had the honour of contributing, in the "Medical Review of Reviews", Calcutta, under the title, "**The mischief played by bile in the human subject under certain conditions.**" Recently, I had an occasion to study a rather unusual sequence of events which, I am inclined to believe, is very nearly related to the phenomena as described in the above-cited contribution.

A medical man who prefers to remain anonymous—let us call him Mr. A.—found that he had not been keeping very fit for some three months preceding the onset of the symptoms described in this present paper. Very irregular in his habits, he would often subsist on tea (and that made up in the Russian way—a weak infusion, served without milk but with a slice of lemon instead, plus sugar) and forego frequently, his normal meals. He felt that his bile, instead of being eliminated as normally, was, in part, being absorbed into the blood, as evidenced by the burning of the palms and eyes, occasional headache, a persistent bitter taste in the mouth, a hepatic type of dyspepsia, clay-coloured stools, etc. Even then, he was careless enough not to mend his ways, when towards the end of April last (1940) he happened to have had a mild attack of dysentery. He stopped work for a week, put himself on a regimen of milk and a good daily dose of Castor Oil, this last running for 5 or 6 days. This improved his condition, and to secure better results, he took six 1 grain dose injections of Emetine Hydrochloride. His abdominal condition improving, he resumed work but took care to place himself on a relatively restricted diet. Within a week of his receiving the last dose of Emetine (which was about the 10th or 11th of May 1940) he had to perform a *long* (over 1,000 miles by road and railway train) and *tiresome* journey. This journey proved *very hot* and *dusty*, and Mr. A. was compelled, while undergoing this, to abandon whatever little restrictions he had imposed on his dietary. In short, he was compelled to misbehave (if I may use the expression, and for which I ask Mr. A's pardon) himself, though a convalescent in every way from about the middle of May onwards. He had, since the commencement of the journey, to put up with all sorts of irregularities in the matter of the items of daily life, and this continued until about the close of May, that is, for a period of nearly a fortnight. Although not obviously ill during this period, one little circumstance used to bother him during the latter half of this period, and that was **Aches** in his body, most pronounced in the lower limbs. These continued for days together and no amount of "kneading" would serve to chase them away—they seemed to have come to stay.

About the 28th or 29th of May last, he started, without notice, a swelling of his body. This was general and not limited to the limbs alone, although the lower ones felt more tense from sitting on a chair for any length of time. The subcutaneous tissues, everywhere, were unmistakably infiltrated. Soon, there appeared difficulty in breathing, and

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lying down in the horizontal posture became positively uncomfortable, the orthostatic position being the only one found easy. A careful examination of the serous cavities failed to reveal the presence of free fluid in any, and although the scrotum looked very much enlarged, free fluid was not detected in the sac (tunica vaginalis testis), the swelling being due entirely to fluid infiltration of the scrotal wall. It was, again, a case of œdema of the subcutaneous tissues. There was intractable "burning" of the palms and soles, and Mr. A. had often to dip his hands and feet in cold water just to obtain a temporary relief from this extreme annoyance.

Temperature :—Was present for the first five or six days of onset of the symptoms, ranging from about 99°F in the morning to 101°–102°F in the evening. The rise would occur invariably in the evening, the morning temperature being always low. Evening baths did not have any influence on the rise of the evening temperature—it would persist to rise, and punctually too.

Abdominal Organs :—There was a sense of fulness in the abdomen. Violent nausea would sometimes be felt, indifferently after food and when the stomach was empty. None of the organs were found enlarged or otherwise abnormal on repeated and careful examination.

Urine :—The quantity was decidedly less than normal, and noticeably high coloured, during the first few days of the onset of the trouble. A fair amount of albumin was present but no casts or other abnormal constituents.

Stools :—Solid and less in quantity than normal; a little less soft sometimes, and rather greyish in colour—lacking in the stain of bile—than was habitual for Mr. A. to have.

Chest :—Examination, as already mentioned, showed the pleural cavities free from any collection of fluid therein. There was just a suspicion of accentuation of the aortic second sound, entertained at one examination only, and it is supposed to have lasted for a couple of days only.

Pulse :—No departure from the normal noticed (as felt by the fingers) except the increased frequency as would be accounted for by the heightened temperature.

Dyspnœa :—By the elimination of other likely factors, this was found to be due to an œdema of the submucous tissues of the abdomen, specially involving the small intestine. This would, perhaps, explain the violent efforts at vomiting, felt in all about 3 or 4 times, during the course of the illness. That very little of this condition, if any, involved the stomach is proved by the fact that Mr. A. could eat a fair amount of his prescribed food and retain the same without any discomfort.

œdema :—This was quite marked everywhere on the body surface and most evident in the lower limbs, which looked very markedly enlarged and would pit on deep pressure. Here the œdema was almost solid. Hypostasis would aggravate the condition.

Beyond the "burning" of the palms and soles—the most distressing symptom, by far, of the lot—and the orthostatic posture that Mr. A. had to assume for a few days, the patient did not feel any very great inconvenience. In fact, he would go up and down a flight of twenty steps a number of times a day without any manifest discomfort.

Within the first week of the onset of symptoms, medical opinion was sought, and this inclined to the view that the grain dose injections of Emetine Hydrochloride (six in all) had set up nephritis. Mr. A. was accordingly placed on a regimen ceremoniously befitting that condition—bread with milk and sugar, whey, buttermilk, a little tea, a little water, *plus* a rigorous exclusion of table salt etc., a rather uninteresting and monotonous course to which, in all loyalty to his profession, Mr. A. ungrudgingly submitted.

MEDICINAL TREATMENT.—(1) A large tumblerful of hot water into which the juice of a fresh lemon had been squeezed in was allowed to be taken (with the desired amount of sugar) on empty stomach in the morning.

(2) Saturated solution of Magnesium Sulphate. It was found that as much as six drachms of the Morton product would dissolve in a fluid ounce of water. To start with, half an ounce of this saturated solution was ordered to be taken early in the morning every other day—that is, 3 drachms of the salt. This did have some action and was taken *twice*. But Mr. A., desirous of a brisker action, requested his medical attendant to increase the dose, which was then raised to 4 drachms of the salt, and this dose was also taken *twice*. Subsequently the generous dose of the entire fluid ounce, that is, 6 drachms of the salt, was solicited and allowed and taken *three times* in all. This was, practically, all the medicinal treatment received with the exception of occasional intercurrent doses of accessory medicines taken 2 or 3 times in all.

EFFECT OF THE TREATMENT.—The $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ —even the 3 drachm dose of the salt—levied a fair toll on the fluid logging the tissues, but the action failed to be repeated to the extent desired. The 4 drachm dose gave better results, while the generous 6 drachm dose of salt made Mr. A. feel really happy—the resulting action being decidedly prolonged, as many as 5 or 6 satisfying fluid motions being the result.

After he had taken the fourth dose of the saturated solution, Mr. A. began to feel easier and lighter in the body. The urine was being examined every third day, and at the second examination, findings were much the same as at the first. After he had two more doses of the saturated solution, the œdema was noticed by everybody in the house to have become very appreciably less; while at the third examination itself the urine ceased to show its albuminous content. Since then, five careful examinations of the urine, made at intervals of 3 days, failed to reveal the presence of the slightest trace of albumin or sugar or any other abnormal constituent.

The saturated solution was taken twice more and the œdema disappeared completely without leaving behind any trace of its recent unwelcome visit. That in the lower limbs was the last to make its departure.

After about a fortnight or so of the emergence of the symptoms, and the simultaneous imposition of the rigid restriction regarding the dietary, a little table salt was allowed to be taken tentatively. As this did not lead to any change whatsoever in the patient's condition—neither re-inducing the œdema nor the re-appearance of albumin in the urine—the allowance of this eagerly-sought-for item was judiciously increased. As even this did not have any adverse effect, soon Mr. A. resumed his usual habits as regards feeding and was very soon quite himself again, perhaps enjoying now a better health than before he fell ill. This illness, however, has set

him thinking, and he appears to be a better man now. "Illness sanctified is better than health" says the poet COWPER.

Comment.—Now what, really, was the matter with Mr. A.? I shall consider the possibilities as follows:

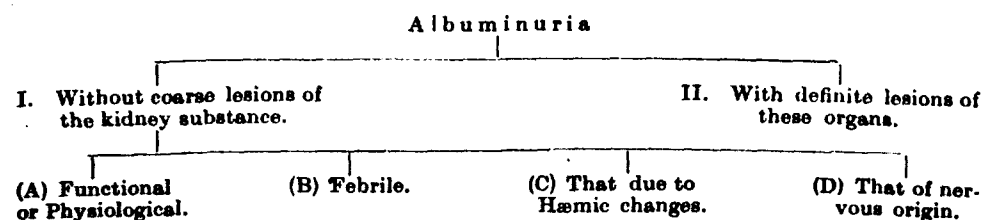
I. Action of Emetine on the Kidneys.—Would Emetine, given daily in grain doses, six times over, take as long as *three weeks after* exhibition of the last dose to manifest its toxic action on the kidneys and not touch the heart at all? Would it not rather be more likely (if at all) for its toxic action to be manifested *during* the course, or *soon after* the termination, of the treatment? The calamity was rather late in its occurrence. Mr. A. has had experience of injections of Emetine on his own person before without any such untoward consequences. If at all due to the Emetine, the heart, admittedly, must have been spared—the organ *par excellence* to suffer in such cases. Admitting, even, that this was the case, it must have been rather unusual for acute Nephritis to have cleared up completely in so short a time, just by the abstraction of the fluid accumulated in the subcutaneous and submucous tissues, and perhaps also, by ridding the blood of some deleterious material in the circulation, and leaving the kidneys at the end of that time quite normal. Would genuine Nephritis be so readily amenable to such simple treatment and within so short a time?

II. Nephritis induced otherwise.—Mr. A. positively cannot remember having done anything that might remotely have led to such an effect. His kidneys have been normal all along, and he has done nothing of late that might, within reason, have precipitated the onset of this supposed calamity. Admitting, then, that the phenomena were due to Nephritis, one is fully warranted to ask—**What caused the Nephritis?** As already mentioned—and we can take his word for it—Mr. A. simply cannot think of any of the usual factors in the ætiology of the condition having been present in his case.

The diagnosis of Nephritis was based chiefly on the evidence as furnished by the œdema and on the presence of albumin in the urine, which, however, showed no other abnormality on chemical or microscopical examination.

That 'Conclusions based on urinary findings alone are as brittle as the urinal itself', is a very wise saying. Just because the urine shows the presence of albumin and there is an accumulation of fluid in the tissues of the body, it would be erroneous to jump to the conclusion that the case is one of Nephritis, as albumin may appear in the urine under very many different conditions where the kidney substance is not at all inflamed.

A working classification may be attempted as follows:—



I begin by passing by the second division, where definite lesions of the kidneys are present. That leaves for consideration only the first, where

such lesions of the kidneys are *not* demonstrable. I shall consider the subdivisions one by one.

(A) FUNCTIONAL OR PHYSIOLOGICAL ALBUMINURIA.—Acting normally, the kidneys should just allow the passage of water and salts from the blood, and nothing more. The transudation of albumin, however, is supposed to be associated with nutritional disturbances in the capillary epithelium of the tuft or of the circum-glomerular cells. But this conception is not of general acceptance and has, indeed, been called into question.

Physiological albuminuria, occurring in a person of unimpeachable health *always* has for its cause, some very unusual and excessive departure from the ordinary rounds of daily life, such as:—(1) Excessive muscular work; (2) The intake of large quantities of food rich in albumin; (3) Violent emotions; (4) Cold bathing following vigorous exercise; and (5) Dyspepsia of certain types.

(1) *Excessive muscular work*:—A very long and hard cramp, a vigorously played foot-ball match, a cross-country race, etc. may induce this condition.

(2) *The intake of large quantities of food rich in albumin*:—A person, I happen to know of, badly wanted to pass the Medical Board for albuminuria—a condition to which, really, he could lay no claim. He swallowed the "white" of a dozen eggs, raw, one after another, a couple of hours prior to appearing before the Board and had the satisfaction of getting through!

(3) *Violent emotions*:—*Excessive* grief, anger, fear, etc. are known to be followed by the passage of albumin in the urine. The shock causing this must needs be *intense*; a slight amount of such stimuli may fall short of producing this effect.

(4) *Cold bathing—specially when following some vigorous muscular exercise and when the person is still perspiring freely*—may lead to the appearance of albumin in the urine.

(5) *Dyspepsia* in a variable number of cases.

However divergent the cause leading to the appearance of albumin in the urine, the essential underlying factor consists in some change—however transient, slight and unimportant—in the renal or glomerular epithelium, as brought about by variations in the circulation or by the irritant action upon these cells of substances taken with the food or, otherwise, temporarily present in the circulation, as in the albuminuria during fever.

(B) FEBRILE ALBUMINURIA.—Pyrexia, however caused, is usually associated with a slight degree of albuminuria. This is extremely common in the infectious fevers, such as pneumonia, diphtheria, typhoid fever, malaria—specially the malignant type—and not unusually in acute tonsillitis, where the temperature shows a sharp rise. The amount of albumin present is usually slight and disappears with defervescence. Hyaline and epithelial casts may sometimes be present in addition.

The presence of albumin in such cases has been regarded as due to a *cloudy swelling* in the glomerules induced by the fever. But this cloudy swelling must not be regarded as anything of the nature of an organic lesion at all.

(C) HÆMIC CHANGES.—Purpura, scurvy, chronic poisoning by Lead or

Mercury, syphilis, leukæmia and profound anæmia may all be associated with slight albuminuria.

Abnormal ingredients in the blood, such as **bile pigment** and **sugar**, may lead to the passage of small amounts of albumin.

The transient albuminuria of pregnancy probably belongs to this group, although in a good many of such cases demonstrable changes in the renal tissues are present. Perhaps these are of later development.

Also under this group comes the transient albuminuria, following Ether or Chloroform anæsthesia.

(D) **ALBUMINURIA OF NERVOUS ORIGIN.**—Albuminuria may be present in association with a number of diseased conditions of the nervous system. That found in *young nervous persons* is not easy to differentiate from the so-called orthostatic forms. It has been found present in cases of tumours of the brain following attacks of epilepsy and in cases of meningitis. In meningeal hæmorrhage, the quantity of albumin present may be very large.

There just remains a very curious form of albuminuria to mention, known variously as—

(E) **THE ALBUMINURIA OF ADOLESCENCE, CYCLIC ALBUMINURIA, ETC.**—In such cases, the albumin is present only at certain times during the day—**Orthostatic** albuminuria. *Young boys* are more prone to this than girls. Such subjects are often the *children of neurotic parents* and exhibit evidences of *pronounced vaso-motor instability*, while the very fact of their passing albumin is often discovered by the merest accident. Some of these cases last only during puberty, others throughout life. The condition is quite common among young men while undergoing physical training, and is then known as athletic albuminuria. As many as 130 men out of 156, undergoing physical training, have been known to have had it—a very high figure, indeed, but still a fact. It has further been observed that *the passage of the albumin is synchronous only with periods of low pulse pressure*. Usually, the quantity passed is small, but sometimes this may be quite large. The most curious feature of this form of albuminuria is its variability. Thus, it may be quite absent in the morning and *appear only after exertion*; or it may be *greatly increased after taking food*, particularly *proteins*. Even the change to the upright position may suffice to induce its appearance—orthostatic. The quantity of urine passed may be normal in amount, or if increased at all, very slightly, and the colour may be high. Sometimes, *hyaline casts* may be found, and in some cases, a *transient glycosuria* may be present. The *pulse*, as a rule, does not show any increase of tension, while the *aortic second sound* is not accentuated. This class embraces a number of varieties, as is suggested by such names as neurotic, dietetic, cyclic, intermittent, paroxysmal, etc.

The **Prognosis** of such cases is of great practical importance. Should the subjects under this group be ranked along with those of genuine Bright's Disease? An observer of unquestioned ability (Doctor GOODHART) after a patient and careful study of the subsequent history of more than 250 of such cases, has pronounced the very reassuring verdict that *the albuminuria of the adolescent has no sinister effect upon the health or on the duration of life of its subject* and that, with due circumspection, *such cases ought not to be excluded from the benefit of life assurance, or from clerkships in offices, private or government*. This is a most gratifying statement from one who has made a very special study of the subject.

The above classification is based upon OSLER.

As shown in my previous paper, bile in the blood permits transudation of fluids through the capillaries to a large extent, leading to the evolution of oedema. If, on top of that, the Calcium content of the tissues—and of the capillaries as a part thereof—falls low, this process of transudation is facilitated ever so much more.

I want to mention here that Mr. A. is a man used to a mixed diet. But placed as he was for some three years or so, he had to behave as a vegetarian, subsisting mainly on non-appetising meals made up of a very limited variety of vegetables and cereals. Milk, as such, he never liked, but would have curds whenever available at infrequent intervals. Would it be allowable to suppose that the Calcium content of his tissues, under such circumstances, was very likely to have suffered diminution, and thus the pathological action of the bile, as described in the previous paper, was favoured by the increased permeability of the capillary walls as brought about by the diminution of their Calcium content? Would this not account for the rather rapid evolution of the oedema as this actually occurred? The following facts favour such a supposition:

(1) The various muscles of his body would go on twitching at intervals as observed during the waking hours.

(2) Mr. A. has a *polypus recti*, quiescent normally, which used to bleed frequently during the four months preceding the onset of the illness. Although the quantity lost was slight, still its behaviour was most foolish, as this would occur even when the stools were quite soft or fluid. When compelled to use milk during the last illness, the bleeding stopped and the polyp does not bleed now even when the stools happen not to be quite soft, whereas, previously under such circumstances, it would bleed for a certainty.

III. I thus venture to conclude that:—

(1) The symptoms as exhibited by Mr. A. were due to the action of bile absorbed into the blood as favoured by a diminution of the Calcium content in his system.

(2) There was really no gross lesion of the renal tissues—at best a cloudy swelling which cleared up quickly as the salines did their work by abstracting the accumulated fluid from the tissues and purging the blood of the bile salts circulating therein, as evidenced by the complete disappearance of the albumin from the urine, *for good*, and only in a week's time.

(3) Admittedly, the face value of the case would naturally make one think of Bright's disease. Hence, a patient investigation of all such cases, with a view to their differentiation from genuine Bright's disease, is of the utmost importance, as the **Prognosis** in the two cases differs ever so widely from each other, *very hopeful* in the one, holding out little such promise in the other.

Dieting in bile cases need not be so rigorous as in the other.

I shall feel thankful for comments on this paper.

Studies on Nutrition*

BY

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PART I.

THE attention to food problems, associated with health conditions, is mainly a post-war (1914-1918) problem, 'consequent on the social and scientific developments in the West'. The League of Nations in June, 1935, at the 19th Session of the International Labour Conference, voted the following resolution¹ :—

" Seeing that—(i) nutrition, adequate both in quantity and quality, is essential to the health and well-being of the workers, and their families ;

(ii) in various countries, evidence has been brought forward to show that large number of persons, both in town and country, are not sufficiently or suitably nourished ;

and (iii) increase in the consumption of agricultural food-stuffs would help to raise the standards of life and relieve the existing depression in agriculture ;

This Conference instructs the office to continue the investigation of the problem, particularly in its social aspects, in collaboration with the Health and Economic Organisations of the League of Nations "

The nutrition problem has to be adopted to the varying geographical, economic and social conditions, in the different States, in the various aspects of nutrition, " internal medicine, social medicine, public health, pediatrics, and school-hygiene ".² In other words, it is one of harmonising the economic and public health departments.

According to this resolution, *two committees* were set up. One committee of experts reported on what constitutes *adequate dietary*. The second committee considered—"what *economical policies* should be adopted by various Governments, what *social legislation* should be passed and what *education* should be given."

The second committee reported that in all countries, there was a social problem due to malnourishment with resultant damage to physique, efficiency and welfare. This was the case even in wealthy countries with relatively high standards of living. After two years of careful research, this second committee, (presided over by Viscount ASTOR), recommended that every Government should have a definite *nutrition policy*, just as they have an agricultural or educational, or any other policy, so that all sections of the population have a reasonable opportunity of getting a *satisfactory diet*.³

The nutrition policy of Russia, Germany, England and America, are all based on the knowledge that " all raw products and food-stuffs must be produced with full consciousness to answer the call of the Nation." ⁴ The same idea is echoed by SIR JOHN ANDERSON, His Majesty's Lord Privy Seal (ex-Governor of Bengal), when he remarked that " the vast resources of India should be mobilised for the good of the Nation." ⁵

* Specially contributed to ' The Antiseptic '.

The nutrition policy as defined by the Government of India is the pursuit of the question of co-ordination of agricultural and nutritional studies for the improvement of human nutrition.⁶

The nutritional studies in India have been mainly concerned with :—

- (i) dietetic surveys ;
- (ii) analysis of common Indian food-stuffs ;
- (iii) discovery of suitable cheap diet ; and,
- (iv) training of *Nutrition Officers*, to do propaganda work.

These *Nutrition Officers* attend a series of lectures, covering the scientific and practical aspects of nutrition, with particular emphasis on the latter. The relation between nutrition, public health and agriculture is also stressed. These officers are trained "to carry out diet surveys, to organise school-feeding schemes, to advise about diet in institutions : to lecture to medical students, health visitors, sanitary inspectors, etc., to help in maternity and infant welfare schemes ; and to devise suitable propaganda for educating the people."⁷

The nutrition workers' duties (*a salvage operation*) advocated by McCOLLUM and accepted in India by the Medical Research Workers' Conference, Calcutta (1936) are :—

- " (a) To segregate *under-weights* and defective children ;
- (b) To keep the child under constant supervision—women are the best workers ;
- (c) To make a special study of the individual problems of the child, who needs attention ;
- (d) He or she must have a sound scientific training ;
- (e) To give regular instructions to children—an intelligent discussion of what *right living* is and what it means in later life and *not health chores*.
- (f) To give attention to personal habits of children ;
- (g) Physicist and physiologist must work in co-operation with the physician—as a professional dietitian." *

In America, these nutrition officers, in addition to all these above, are taught *child psychology*, "for they must understand the mother, her parental pride, and various other things, that will make her do what is necessary to have the child gain in height and weight".⁸

The main *objective* of the Nutrition Advisory Committee of the Indian Research Fund Association is "to obtain a clear cut picture of the problem of nutrition in India, and to discover methods which are feasible under the present economic conditions, to improve the diet of the population."⁹

Dealing with nutrition and agriculture, the British experts made the following recommendation :—

" The first need is to make a nutrition survey in each Province

* American Child Health Section : Report of International Health Education Conference of World Conference, (1923).

so as to discover what are the chief deficiencies in dietary ; the medical authorities should then meet the agricultural experts to decide what crops, including fruits and vegetables, should be grown to supply the missing elements. The approximate quantities needed should be indicated, and the agricultural staffs, acting along with the rural development authorities, would then encourage by all means in their power, the growth of these crops." ¹⁰

In other words, the agricultural policy should ensure that the '*food-supply of the nation is sufficient for its health and is available at a price within the reach of the poorest*' ¹¹ The resources of the country should be properly utilised by the improvement of agriculture in affording a diversity in diet and by easy transportation, so that the great wealth of food which we have or can produce would be brought within the purchasing power of the poorest. Due to the intense activities of the Agricultural Department, we have *improved* crops production schemes, whereby more and more land will be sown with *improved* varieties of food crops, like rice, wheat etc.

Nutrition or food problem involves the questions of poverty, employment, prices of food-stuffs, agricultural production and distribution. Therefore, it is largely a question of economic distress.

The League of Nations has internationalised the food problem and brought out its significance in the body-politic of each country. A general report on nutrition by W. R. AYKROYD and E. BURNET mentions that—

- (i) "Nutrition in relation to health is one of the most important aspects of preventive medicine ;
- (ii) Nutrition is put forward, not only as a physiological problem, but also as an economic, agricultural, industrial, and commercial problem." ¹²

The subject of Nutrition has been assayed from many points of view *e.g.*, nutrition and population, nutrition and health, nutrition and climate, nutrition and agriculture, nutrition and labour, economic aspects of nutrition problems, nutrition and psychology etc.

Therefore, solving the nutrition problem is no easy task. It requires economic statesmanship of the highest order. And in framing a nutrition policy for our country, all these points must be taken note of, and co-ordinated with an agricultural policy, which is admittedly for the benefit of the children of the soil.

PART II.

Questions relating to Nutrition problems.

Voluminous literature has grown round the subject of nutrition. New scientific knowledge and data regarding the food-contents and food-stuffs are daily being given out from the nutrition research laboratories. It may safely be said that even the medical profession have not yet fully digested nor understood this ever-growing information. As such, they are themselves unable to keep abreast of the times. On the other hand, the lay public is deluged with information, published in the daily press, the platform, and the journals. Apart from this, there are the motivated food advertisements. The foodstuff that was bad yesterday is good to-day and may be the best to-morrow? The once condemned banana is now recommended as a good source of minerals and good for the body. The

potato, condemned for its starchy contents, is now hailed as a saviour in preserving the decay of teeth in children, caused by the use of cereals, pulses, and sugar.* The gooseberry (*amla*), well known to Indians for its beneficent properties, is now advertised as a new discovery for its vitamin content. The lay public are really puzzled by this growth of scientific knowledge and wonder when this flow of fund of knowledge would cease. Therefore, they have become prejudiced against the present activities of the nutrition workers. We cannot blame the public. The public prejudice is one of the first hurdles, yet to be jumped over by the Coonoor Nutrition Research Laboratories. The saying that *little knowledge is dangerous* might be truly applied to the attitude of the public towards food problems.

India is indebted to the brilliant researches of McCARRISON on dietetics, and also to the persevering work of AYKROYD. Within the last few years, DR. W.R. AYKROYD has brought the food problem to the primary attention of the public in many ways. The analysis of the common Indian foodstuffs has been carried out thrice, first by McCARRISON, and subsequently twice by AYKROYD. The revised *Health Bulletin* No. 23 (1940) is the latest. I have been informed ¹³ that the 1940 edition is again being revised and would be re-printed by the end of 1941.

Enormous data, regarding the various diets in the Indian Provinces and States have been collected, and the diet surveys are carefully studied for the formulation of a cheap and suitable diet for each community. We are not at the end of our work, for food is practically an individual's, a community's, or a racial problem. *One man's food is another's poison* is a trite saying, worth remembering in chalking out a diet card.

Our scientific knowledge of food-stuffs, and of food values, by feeding-experiments on animals and children, and also our knowledge of the various Indian diets have advanced so much, that to-day, we may safely and justly take a retrospective view of all our previous nutritional activities, so that we may get a clear cut picture of our community's diet, which is to build and also to preserve health and physical fitness.

The *questions* that arise to clinch the issue of a satisfactory diet (after having done enough research work, field work and possessing all the available knowledge) are mainly *four* in number :

1. Whether the results of experiments on rats, regarding nutrition could be applied to human beings and an analogy drawn on the same basis? Why not *monkeys* be chosen instead of *rats*, for feeding experiments, as the next kin of mankind?

The British Medical Research Report ¹⁴ points out that the results obtained from rats should *not* be compared to results from human beings, but that monkeys should be experimented upon.

It may not be out of place, if I should mention that in his latest Report ¹⁵ the Public Health Commissioner with the Government of India has mentioned that feeding experiments on monkeys have been tried and studied.

2. What is the diet to be established—balanced, standard, satisfactory, adequate, or optimum diets?

* Problem of Nutrition : Vol. II, Part II Page 18.

All these different standards of diets have their own weak points. In India, we are worried about a *balanced* diet. The Technical Committee of the League of Nations recommends an *adequate* diet, American workers and VISCOUNT ASTOR's non-technical committee, a *satisfactory* diet. SIR JOHN BOYDORR advocates *optimum* diet. We should know what we are aiming at. We should not evade the question. It cannot be all these but only one. It is with the hope that the nutrition workers would come to a definite conclusion, that the above question has been wantonly raised. This question is fully discussed in a subsequent chapter.

3. What is the standard of health and physical fitness for each community, depending on its own diet problem? What is good for the North Indian need not necessarily be the same for the South Indian, and *vice versa*.

4. Whether our agricultural resources and food crops are enough for the present population and how to improve the same, for the benefit of our health, without resorting to foreign food-substitutes of whatever kind it be?

Only a definite and satisfactory answer to all these separate questions would help to build and maintain health, physical fitness, and happiness of the individual, the community, the nation, and the race, at large. All our thoughts must be devoted accordingly to the solution of our food problems.

PART III.

Food-supply and Population.

As early as 1933, the Public Health Commissioner with the Government of India drew an alarming picture of the increased population and the inadequacy of food-supply, than the 1931 census:

"The birth-rate is more than double the death rate..... Contrary to some recent statements, the population in India is increasing at an alarming rate, and by 1941 will probably reach 400 millions. The total land area of British India amounts to only 2.44 acres per head of the population, but allowing for forests, uncultivated, and fallow lands, only 0.72 acre per head is under food-crop, quite insufficient for even the present population."

The Government of India pointed out that every Province has recorded an increase of food crops cultivation, during the last 3 years, from 1935¹⁰. And yet, RADHAKAMAL MUKHERJEE of the Lucknow University estimated the deficiency at 12% of population¹¹. RAO BAHADUR B. VISWANATH had also estimated that the supply of food-stuffs was deficient by 33.3% of the population. DR. P. J. THOMAS of the Madras University challenged these statements, remarking "*their scientific basis was slender*."¹²

MR. H. C. PRIOR informed the Central Assembly on 10th March, 1941 that rice production has definitely fallen by 13.3%¹³—very near to R. MUKHERJEE's figures—as compared with the average of the last 3 years.

DR. W. R. AYKROYD has also stressed the shortage of rice production:

"It is thus probable that the rice-eating population of Madras is increasing more rapidly than rice production and that the gap between internal production and requirements is being filled by increasing imports."¹⁴

The All India Census Report (1931) draws attention to the fact that the

"possibilities of agriculture on present methods have more or less reached a maximum and the Presidency can *no longer feed itself*." (Italics mine).

Therefore, it may be safely surmised that the State knew the shortage of food supply or of the food-crops cultivation, for sometime back. And yet from 1937 onwards, as the Indian sea-borne statistics reveal, we have been exporting rice and wheat to the tune of 14 crores of Rupees. We have thus become indifferent to the food supply of the nation. It may be now taken that RUSSELL's forecast of food-famine has come true to-day.

Various reasons have been advanced for this deficient food crops cultivation, in spite of the efforts of the Imperial Council of Agriculture, viz., unattractive agricultural labour, lack of interest among the ryots about the food-supply, for *he grows what it pays*, lack of interest among the general population regarding their own food problems, increased industrialisation of the country (this is only *apparent* and not *real*), and other trivial reasons.

From the table † of the rate of growth during 1921—31, in certain typical *occupations*, it is evident that the *cultivation* has declined, while road transport, stock raising, tobacco manufacture, and instruction have progressed. It is an obvious observation that cultivation is still less attractive and therefore declined to-day, in a degree, greater than in 1931. On account of the present War (1939), a fillip has been given to skilled mechanics. When the full Census Report of 1941 is published, it would definitely show by how much proportion, the agricultural profession has fallen.

War is the latest factor to be reckoned with, from 1939, and our armies must never suffer from primary wants. It may be safely stated that the public leaders and the Government have been adopting *laissez-faire* attitude, and hence, we are in real difficulties to-day. It is our own *inaction* and nothing else.

Having thus landed into difficulties by our own selves, to-day, we are trying to import Burma rice to replace the shortage of Indian rice, at the eleventh hour, in the hazardous times of the present war. We are forced to give concessions to Burma rice¹⁵. Verily, the land of *Bharata* is going abegging to the land of *Buddha*?

Arranging shipments and transportation can only facilitate to tide over a crisis, but can never solve the food problem of India.

According to the 1941 census, the population has increased by about 12% to 14% over the 1931 census figures. COL. RUSSELL's prediction has again become true, with regard to increase of population.

N. BHOJWANI (1941) discusses the question, *is India over-populated?*¹⁶ He agrees with the estimates of the increase by 50 millions or 13% since 1931 census. This increase exceeds the entire present population of United Kingdom, France or Italy.

"The term *over-population* has a strictly relative meaning. If under given economic circumstances, a country cannot support its population at a specific minimum standard of living, it is said to be

* 'Report of the Census of India', (1931), Vol. XIV, Madras, Part I, page 47.

† 'Census Report of India' (1931), Vol. XIV, Part I, page 195.

over-populated. India is such a country.....our economic resources are as yet only partly exploited.

"The actual rate of growth of the Indian population *cannot* be described as amazing. A comparison of the numbers added by every census to populations in different countries is *misleading*, for numbers must be related to the size of each country, its economic conditions, and its pre-census population.

"So long as the standard of living in India remains low, the rate of growth of population cannot be checked. The two help each other in a vicious circle.

"The beneficent services of the Medical and Public Health Departments, and of the Famine-relief have aggravated the problem of feeding and educating the teeming millions.

"The common belief that India's people have been continually and furiously multiplying themselves is highly *erroneous*. Not only this, equally erroneous is the belief that the rate of growth here (India) has always *exceeded* the rate of growth in European countries. The fact is that till recently the Indian population was growing at a *less* rapid rate than the population of all European countries, with the exception of France.

"Any policy of social and economic planning has to take account not merely of the present population but also of its age-composition in the near future".

Chart showing comparative population growth in India and European countries from 1872 to 19141.

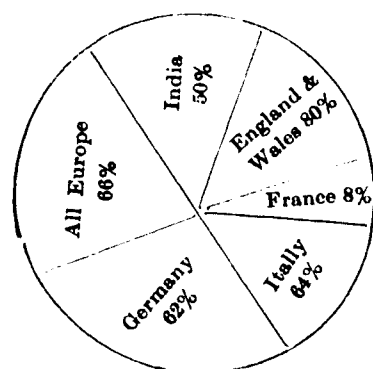


Chart published with courtesy to Mr. N. Bhojwani.

In the wake of the admittedly *insufficient* crops cultivation and food-supply and of the *increased* population, follow the diseases of malnutrition, which have been shown conclusively to impair the health and physical fitness of the population. All these are in addition to the present low economic prosperity and ill-health, and especially, when there is a cry of at least *one square meal a day*. No wonder then, India's death-rate is high, the infantile and maternal-mortality rates are increasing, the level of general health is low, and the physical fitness below par ²¹.

Suggestions.—The fruits of the labours of the Imperial Council of Agriculture are readily available to us. So also the studies of human

nutrition, carried out under the auspices of the Indian Research Fund Association. SIR JOHN RUSSELL's Report²² stresses the intimate connection of agriculture with human nutrition. The reports of many scientists and economists on the various closely connected problems of health, nutrition, and agricultural food-stuffs are easily got for references.

What we definitely need to-day is a bold *agricultural policy* and programme, for the benefit of the children of the soil—a policy adopted in all advanced countries—that *all raw products and food-stuffs must be produced with full consciousness to answer the call of the Nation*.

In other words, the agricultural policy should ensure that the *food-supply of the Nation is sufficient for its health, and is available at a price within the purchasing power of the poorest*²³. Along with this agricultural policy, we should work out a *nutrition policy*, so that all sections of the population have a reasonable opportunity of getting a *satisfactory diet*. The veteran administrator, SIR JOHN ANDERSON, stressed that the *vast resources and man-power of India should be mobilised for the good of the Nation*²⁴.

Unless the Government and the leaders rise to the occasion and tackle the agricultural problem in earnest and in the right spirit, we can never rid India of food-famine and attendant ill-health.

(To be continued.)

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Cases and Comments

Two Cases of Surgical Operations:

- (1) Huge Swelling of the Scrotum;
- (2) Cyst Adenoma of the Right Ovary.

BY

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I. A male, 45 years, native of Tanjore district, was admitted in this hospital for a huge swelling of the scrotum. The lower level of the swelling was on a level with the junction of the upper two third with the lower third of the leg. The man could not walk by himself a few yards and the swelling had to be supported by a second man. Even then, he could make up a few yards by a sort of swaying gait.

The history was that the swelling was of the size of a small cocoanut and grew in the last five years rapidly. Defaecation and urination were a problem to him. Since the penis was deeply buried, he used to use cocoanut leaf cut into as a device to pass urine without the urine coming into contact with scrotal skin. He gave a history of a few attacks of lymphatic fever during the last five years, though he used to get frequent attacks when, originally, he started the lympho scrotum. The skin of the scrotum was very much thickened: Haemoglobin 70 per cent. Blood pressure 135 m.m. 85 m.m. No temperature on admission.

Pre-operative treatment.—Two small doses of N.A.B. 0.15 once a week. (2) A course of filarial vaccine. (3) Liver injection—a course of six. Rectal Saline with 5 per cent Glucose and Amm. Brom: gr. 20 a pint, every evening, for three days, before the operation.

Day of operation.—Morphia and Atropine combined tabloid, one at 9 a.m. One tabloid of Ephedrine subcutaneous at 10 a.m. Spinal 12 c.c. Percaine 1 in 1500. Intravenous Saline Hypertonic adjusted—a drop a minute before amputation of the scrotum—was started.

Two chords spermatic on either side exposed by an inguinal incision blocked with Novoacine 2 per cent and cut in between clamps and the stumps ligatured. Then the penis was dissected out and a sound passed into the urethra as a guide not to injure the perineal urethra during the excision of the scrotum and the whole scrotum excised, care being taken to leave the healthy skin to cover up the raw area and also to have as little bleeding as possible. The patient stood the operation well.

Post operative treatment.—Rectal Saline with Glucose Am. Brom. gr 20 drop method was administered 3 times a day. Patient was encouraged to drink Glucose water in sips. Intravenous Glucose 25% 25 c.c. administered twice a day. Except for an extreme thirst for 3 days soon after operation, the patient made an uneventful recovery.

31-7-40	weight of patient with swelling before operation—221 pounds.
	do. a few days after operation—130 pounds.
4-9-40	do. after operation, on day of discharge—136 pounds.
	Weight of the Elephantoid Scrotum—91 pounds.

II. The patient, a Hindu female, 35 years, noticed a small tumour 9 years ago. The tumour was gradually growing in size and attained the huge size. Patient sought admission since she found difficulty in walking and had respiratory embarrassment. The tumour was of cystic feel and for palpation looked it was movable from side to side.

Pre-operative treatment.—Rectal Saline with 5 per cent Glucose. Am. Brom: gr 20 and Adrenalin m. 10 given daily for a week. (2) Sub-mammary Saline one pint was given a day previous to the operation. (3) Given Morphia and Artopine combined tabloid, one subcutaneously, the previous night of operation (4) Morphia and Atropine repeated at 8 a.m. on the day of operation and Ephedrine tabloid at 9 a.m. Blood pressure 115 m.m. 80 m.m. Spinal in the lying position 10 c.c. of one per cent Novocaine in saline. Laparotomy done. Tumour was multilocular cyst-adenoma of the right ovary, and taping to reduce the size was of no use, since the tumour was multilocular and fleshy. The whole anatomy of the abdomen was changed. Caecum transverse colon, sigmoid, omentum, here and there and loops of small intestine were all adherent to the tumour. All the adherent bowels were carefully separated out and the tumour with the right ovary and tube was excised and the pedicle ligatured carefully. The caecum and sigmoid were re-peritonised and abdomen closed.

Post operative treatment.—(1) Glucose 25% 25 c.c. twice a day, intravenously for 48 hours (2) Rectal saline with 5% Glucose Am. Brom. thrice a day, a pint-drop method. (3) Glucose sips plenty and after 48 hours dilute citrated milk and after the 5th day, Barley congee and then after the 9th day, milk and bread. 13th day full diet.

Patient's weight on admission with tumour was 150 pounds: weight of tumour 66 pounds. Patient made an uneventful recovery and was discharged on 27-11-40.

Vide Pictures Facing Page 381.

An Interesting Case of Traumatic Pyo-Pericarditis

BY

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AND

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Assistant,

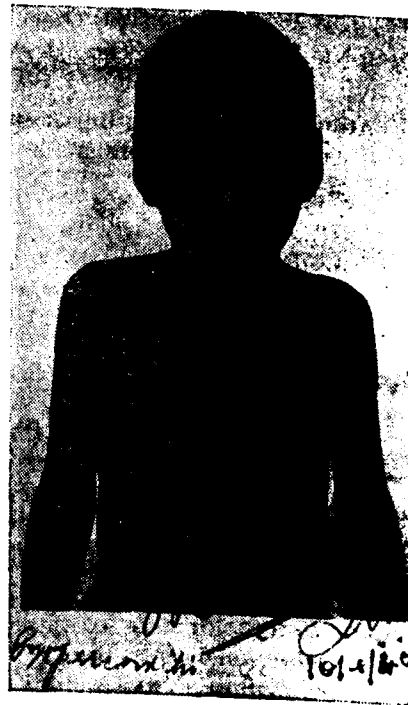
The Nursing and Maternity Home, Vaniambadi, N. Arcot.

AROGIASAMI, a boy aged about 11 years, was brought on 11-1-40 with a complaint of pain and swelling in the left side of the chest, for nearly 3 weeks.

The boy fell off a tree while playing, and sustained injury on the left side of the chest. He never informed of this to any one till after the 2nd day of the subsequent operation. After the accident, he was playing about like any other normal child for over 10 days, after which period, he complained of pain in the chest and developed temperature.

Condition on admission.— The boy was ill-nourished and had a temperature of 102°. His face was flushed, tongue slightly coated and tremulous. The left side of the chest was swollen, inflamed and very painful. There was a large fluctuating abscess, occupying the whole of the left side of the chest and nipple area. The diagnosis of an abscess was confirmed by a hypodermic needle. His pulse was regular and rapid, quite proportionate to the temperature. It was very difficult to auscultate his heart, owing to the abscess and the swelling. His lungs were normal and also the pleuræ.

The following day, the abscess was opened and nothing serious was anticipated as the case was taken as a simple abscess of the chest. Dressings were changed daily and no appreciable result was obtained. He was going down-hill, his general condition was not good, the temperature continued to be still high, the discharge profuse, offensive and thick. An exploratory examination was made on the 4th day of admission. To our surprise, there was sinus about 3½" long going right in towards the sternum. An X-ray photograph could not be taken as there is no plant available in these parts and hence the patient was posted for operation and further investigation.



Arogiasami.

Under Chloroform and Ether, a 3" incision was made in the 3rd left intercostal space and the skin flaps were well retracted and the sinus that was coming out from the sternum was enlarged. The 4th rib was found fractured in a spear-head shape. The tip of the lateral piece was bent inwards about 2" from the seat of fracture. We followed it and to our surprise, we found that it was penetrating pericardium and the pus was flowing out from it. About 1½" of the rib was excised and the pericardial opening was enlarged for drainage. No drainage tube was inserted and the wound was left to heal by granulation. We could not say for certain whether the cardiac muscle was also involved and affected.

The patient was put to bed and nothing but Cod-liver oil was given by way of medicine. 12 intravenous injections of Soluseptasine, one every alternate day, were given. The wound was not washed by any antiseptic lotion or Saline, as we were afraid of disintegrating and spreading the infection further. The patient made an uneventful recovery and was discharged cured on 16-4-40.

The patient was under our observation till about January last and we are glad to say that he was quite good in health excepting that he had slight pericardial adhesions which gave him no discomfort and uneasiness even while playing games. The points of interest are:—

1. How he was able to walk about for some days after the accident, with a broken rib penetrating pericardium.
2. The use of Sulphonamide preparation in the form of Soluseptasine by vein. This method of giving Sulphonamide does not seem to produce the untoward symptoms of vomiting and giddiness that are so common when tablets are given orally.
3. The advisability of leaving the pericardial wound to heal by granulation without washing it with any lotion or Saline. It may be remembered that 2 similar cases which were operated upon in England, were given Saline washes and both of them ended fatally.

Notes of A Few Cases of Interest

BY

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Medical Officer, L. F. Hospital, Uthamapalayam.

In an out of the way place like Uthamapalayam, which is 67 miles away from Madura, it falls to the lot of the Medical Officer, in-charge of the hospital, to do emergent surgery, as serious cases of injury to the head, chest and abdomen, which cannot be taken to Madura, due to distance and lack of safe transport, are admitted. Herewith are appended the notes of a few cases, which it had been my privilege to attend, and which may interest many of your readers, placed in similar positions like myself.

Case No. 1.—Male, aged 26 years, was admitted into hospital, for a penetrating wound of the left side of chest (the result of a bull-gore wound in Jullicattu) fracturing the 7th rib and penetrating the lung.

Condition on admission:—Marked pain and dyspnoea, and severe hæmoptysis. Air sucked in and out through the wound in the lung. Patient in a state of profound shock.

TREATMENT:—Intravenous injection of Saline and Glucose was given to combat the shock. Under local infiltration anaesthesia, the margins of the wound were excised and pieces of broken bone removed. The wound in the thorax was enlarged, the lung pulled up and examined and the wound in it was sutured with catgut. The wound in the chest-wall was then completely closed. It healed by first intention and the patient made a rapid recovery, except for cough and severe pain in the chest.

As the pain was thought to be due to localised pleurisy in the vicinity of the wound, a Potassium Iodide mixture was given. The patient was completely relieved of his cough and pain after a long course of the mixture.

Case No. II.—Male, aged 24 years, was admitted into hospital in a comatose condition. The relatives gave a history of injury to the head (hit with a stone).

Condition on admission:—On examination, a large hæmatoma of the scalp was found in the left parietal region. Patient unconscious. Breathing slow and stertorous. Pulse full and slow. Temperature 100.2° in the rectum. Pupils were unequal in size and there was difference in reaction to light. Right sided hemiplegia with convulsions present. Under the hæmatoma of the scalp, a depression of the skull could be elicited. A diagnosis of depressed fracture of the skull in the motor area of the brain was made.

TREATMENT:—A lumbar puncture was made as a therapeutic measure, with temporary improvement in the symptoms. But, an hour after, the patient again developed convulsion and became violently boisterous and began to shout and cry. An operation by trephining was decided upon in order to free the brain from the pressure of the depressed bone and the effused blood. The scalp was shaved and cleansed and a flap turned down. The site of fracture was exposed. As there were no loose fragment, trephining was performed and the depressed bone removed and the wound on the scalp closed by sutures.

Chloroform and Ether anaesthesia was used. The patient made a rapid recovery with complete relief of symptoms and was discharged after being observed for any after effects of injury to the brain.

Case No. III.—A male, aged 20 years, was brought into hospital, two hours after injury, by his relatives, for a bull-gore wound (during Jullikattu) of the abdomen, penetrating the omentum and small intestines (jejunum) and with external protrusion of omentum. The protruded omentum was covered with sand and small pieces of straw, and was tied around with a dirty-cloth.

Pulse feeble and rapid. Respiration hurried and general condition bad.

TREATMENT:—As a preliminary measure of improving the patient's general condition, intravenous Saline and Glucose solution was given. An exploratory laparotomy under Chloroform and Ether anaesthesia was made by enlarging the wound in the abdominal wall, after the protruded omentum had been ligatured and excised. The wound in the intestines was invaginated by a double purse-string suture and the abdomen closed in the

usual manner. The patient made a rapid recovery and was discharged from the hospital. The patient was seen one year after his discharge from the hospital and is reported to be doing well.

Case No. IV.—Male, aged 20 years, was admitted into hospital for a penetrating wound of the abdomen with protrusion of small intestines, 8 hours after the receipt of the injury. Bleeding externally through the wound in the abdomen. Pulse weak, respiration hurried and general condition bad. The wound, which was on the right side and in the lower part of the abdomen, was covered with a dirty cloth.

TREATMENT.—Preliminary Saline and Glucose infusion was given intravenously. Chloroform and Ether mixture was given as anaesthesia. The protruded bowels were washed and cleaned with hot Saline and examined carefully for injuries. The rest of the gut was gently pulled out from the abdomen and explored after enlarging the external wound. Small intestine was found perforated in three places each about 1" x ¼". The wounds were closed with double purse-string sutures and the abdomen closed in the usual manner.

As the patient's condition became worse, further injection of Glucose and Saline was given. Improvement was not noticeable and the patient died four hours after the operation.

Case No. V.—Woman, aged 20 years, was admitted into hospital for abnormal labour, with a history of four days in labour, primi-para, roughly handled out-side. P.V. Os 4/5 dilated, membranes ruptured, oedema of the labia, retention of urine and uterine inertia. A lot of gritty particles were felt in the vagina, which, on examination, were found to be sand. (Patient's relative narrated how the barber midwife applied Castor-oil around the cervix and the head of the child to pull the child's head out. As her oiled hand began to slip, she dipped her hand in sand for a good grip and began to pull again with no effect.) After cleaning the vagina with a hot and high vaginal douche, it was found to be a case of face presentation with chin pointing towards the left.

TREATMENT:—After catheterising the bladder, conversion of the face into vertex was tried under C. E. mixture anaesthesia, with no effect. So, internal podalic version was done by pulling down the foot and delivery of the after coming head completed by the "Villis Maurice grip". Still-born child. The placenta was removed bimanually. as serious hæmorrhage started and the pulse was getting very weak.

Patient's condition of shock was combated with Pituitrin and sub-mammary infusion of Saline. Septic condition of the uterus was noticeable on the 2nd day with a lot of foul lochia and high temperature. A hot vaginal douche followed by intra-uterine injection of 7 c.c. of 3 per cent Tr. Iodine in Glycerine, with 3 tablets of Sulphanilamide daily by mouth, for five days, brought her temperature to normal, with noticeable improvement in the lochia. Patient was discharged cured from the hospital on the 14th day.

Besides the above cases, several equally bad and serious ones, were operated with a low percentage of mortality. In penetrating wounds of the bowels, the sooner the operation, the better will be the results.

It is remarkable to note the wonderful resistance of the village folk to infection and how they survive even after the infliction of serious

injuries. The dictum of survival of the fittest is amply illustrated in these simple, but rustic villagers.

Finally, I have to mention a word about anaesthesia. Although Chloroform and Ether mixture was our main-stay, local or infiltration anaesthesia was quite effective in a good many cases. Novocaine was invariably used for the purpose in 1—2 per cent solution. In a few cases, spinal analgesia was tried. 4 c.c. to 6 c.c. of a 2 per cent solution of Novocaine was used in operations for piles and fistulae and amputations.

My thanks are due to MAJOR F. A. B. SHEPPARD, M.B., B.S., F.R.C.S. (EDIN.), I.M.S., District Medical Officer, Madura, for allowing me to publish the notes of the above cases.

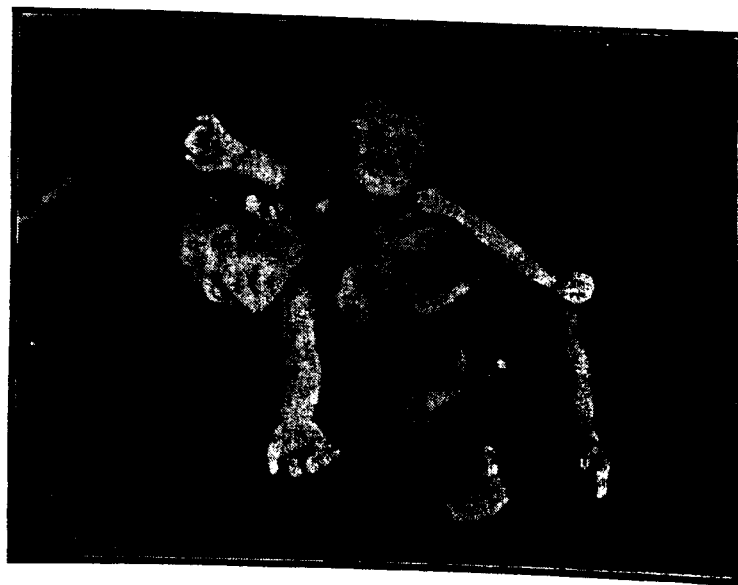
A Case of Thoracophagus Monster

BY

B. R. RANGANATHA RAO L.M.P.
Kursi.

THIS monster was recently given birth to by a 4th para.

One noteworthy point is that the patient's mother and sister had each delivered "short lived" twins in their 4th pregnancies.



A Case of Thoracophagus Monster

The other point is that this mature monster merely slipped out of the uterus, while an examination P.V. was being made without instrumental delivery. The central arm and the right head were in the vulva for several hours when the case was seen.

As the case was seen very late, there was puerperal sepsis. The patient is now in good health but for a vesico-vaginal fistula.

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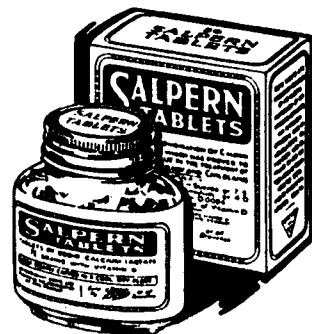
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Editorial

The Present Position of Sulphonamide Therapy

SOME two years have elapsed since the new Sulphonamides were introduced into therapy and it is now possible to say, with some degree of certainty, what particular compounds are useful in actual practice and what is the best procedure for combating infections by organisms within their range of activity.

The beginning of chemotherapy in its present form was the synthesis, by JACOBS and HEIDELBERGER in 1917, of a number of Azocuprein Sulphonamides which were highly bactericidal in vitro. No further study of these and allied compounds was undertaken until 1933. In that year, it was demonstrated that Sulphonamido-chrysoidin was likely to be of value and was used in clinical medicine and was found to be effective against Streptococci of the B-hæmolytic type, Meningococci and Gonococci. While interest was centred on the action of this drug came the fundamental discovery by TREFOU I and others who, in 1935, discovered that the activity of this compound lies in its Sulphanilamide nucleus. This observation that Sulphanilamide was a therapeutically active drug has made possible most of the chemotherapeutic researches of recent times. The Benzyl derivative of Sulphanilamide (Proseptasine) is active against streptococcal infections and seems to be less toxic than Sulphanilamide. Sulphonamido-chrysoidin, the red compound presented in tablet form as Prontosil Rubrum, is held by some to be a more active streptococcicidal agent than Sulphanilamide. A soluble dye marketed as Prontosil Soluble is also available for therapeutic use. The risk of toxic reaction with these red compounds limits their sphere of usefulness and activity and so new and better drugs have superseded them. It has been found possible to prepare a compound of Sulphanilamide with a solubilising group suitable for parenteral administration. This drug is marketed under the name of Soluseptasine. The therapeutic range of the earlier compounds is thus limited and continued search has been made for derivatives of Sulphanilamide with wider activity. In 1937 and 1938, there was synthesised a new class of compounds in which one Hydrogen atom of the Sulphonamide group was replaced by various substituents. Four compounds produced in this way deserve attention: Uleron, Albucid,

M. & B. 693 or Sulphapyridine and Sulphathiazole. Of these, Uleron has been used in the treatment of gonorrhœa. Albucid has also been used for the same purpose. The outstanding merit of Sulphapyridine is its activity against pneumococcal infections of all types, but it also appears to be useful for gonorrhœa and meningococcal meningitis. The Thiazoles are capable of further substitutions in the Thiazole ring to produce Methyl and Phenyl derivatives. These Thiazoles as a class are moderately active against the common pathogens, but are found to be of great value in the treatment of staphylococcal infections.

To obtain the best results from these new remedies, it is very important to pay more attention to the underlying organisms. In all cases, the infecting organism should be determined whenever possible. The hazard use of these new drugs to all and sundry infections is most undesirable, for there are still a number of infective processes which prove irresponsible to chemotherapy, and in these, prolonged administration may be not only useless but actually harmful. The organisms affected by chemotherapy can be divided into two groups—those which are highly susceptible and those on which the drugs exert only a moderate activity. In the first group are B-haemolytic streptococci, all types of Pneumococci, Meningococci, Gonococci and certain strains of *Escherichiacoli* and *Bacillus pestis*. These organisms are the principal causes of illness commonly attended with a high mortality rate. In the second group are a large number of micro-organisms, which show a greater or lesser response to the Sulphonamides depending partly on the location of the infection in the body and partly on the manner in which treatment is carried out. The common organisms of respiratory catarrhs, with the exception of *Haemophilus influenzae* and the Friedlander bacillus exhibit only a sluggish response to chemotherapeutic agents. The Diphtheria bacillus has no response. Scarlet fever is not influenced by Sulphonamides. Gas gangrene, tetanus and anthrax are often successfully treated with Sulphapyridine. For staphylococcal infections, treatment is influenced by the nature of the lesions commonly present and also by the fact that the organism is only influenced by certain Sulphonamides in high concentrations. Local lesions in the acute febrile stage respond sporadically to Sulphathiazole, but there is still doubt about the best way of maintaining an effective level in the blood. Virus infections, except that causing lymphogranuloma inguinale, are unaffected by existing Sulphonamides, although, of course, they may control concurrent microbic infections.

The advances of chemotherapy have been entirely in the antibacterial direction and none of the new compounds affects toxins except in so far as they eradicate their source. On theoretical grounds, therefore, it is desirable to employ antitoxic sera as adjuvants to chemotherapy. With the exception of some cases of gas gangrene and acute staphylococcal infections, the results of chemotherapy alone are so consistently good that little harm results from failure to administer serum. Chemotherapy has revolutionised the treatment of certain acute infections. But the method is still subject to many limitations. A methodical approach to the treatment of acute infections is not difficult, now that laboratory facilities are readily available for doctors, who have neither the time nor the inclination to undertake clinical pathology. If the infecting organism can be identified with precision, the appropriate compound can be selected for treating it, but treatment should not be unduly delayed for laboratory reports; the doctor must

rely on his clinical acumen to decide the most likely nature of the infection. Close liaison between the clinician and the pathologist is of course desirable and important. Another direction in which clinical pathology can help is by periodical determinations of the Sulphonamide content in the blood of patients undergoing chemotherapy. The concentrations of different compounds necessary to attain the optimum effect have been determined principally by clinical experience, but modifications may be required to meet changing circumstances. When using Sulphanilamide, a blood level of 10 mg. per 100 c.cm. is required, and with Sulphapyridine, a level of 5-10 mg. per 100 c.cm. except in acute staphylococcal infections when at least 15 mg. per 100 c.cm. seems desirable. Agreement about the levels needed with Sulphathiazole has not yet been reached, but in pneumococcal and meningococcal infections, it seems about 20 mg. per 100 c.cm. should be aimed at.

It is also a fundamental rule in deciding on the dosage of any Sulphonamide that an effective level should be attained in the blood as rapidly as possible and then maintained by regular four-hourly administration. This may be done by giving two or three initial loading doses, consisting of twice the amount considered necessary for maintenance. If oral therapy is impracticable because the patient is vomiting or is too ill, some form of parenteral therapy must be given. The choice of soluble compounds is more or less limited to three or four drugs and there is considerable discussion about the best way of giving these. In severely ill or collapsed patients, the peripheral circulation is inactive, so that intramuscular injections may be sluggish in action and may be attended by local necrosis; intravenous route is, therefore, to be adopted. Provided that only one or two injections are necessary, little harm is likely to be done by giving them intravenously in the ordinary way, but if prolonged parenteral therapy is required, a continuous intravenous drip of the compound, dissolved in normal Saline, is the ideal technique. Intrathecal injections must never be given. Clinical practice has also shown that the giving of somewhat arbitrary quantities of the various drugs by mouth or injection is on the whole attended by good results. A common cause of failure is that owing to irregularities in absorption or over-rapid excretion, effective blood levels have not been attained. No patient is ever the worse for intensive treatment at the beginning of an infection and a few subsequent days of high dosage. Troubles arise through the so-called moderate doses being given, which are usually ineffective and have to be continued for longer than would otherwise have been necessary. If the organism is or has become drug-fast, a change to another compound is usually made. On the whole, the total dosage of between 20 and 30 g. is sufficient to control most infections.

The success of Sulphonamide therapy in difficult circumstances must not detract from the importance of ancillary methods which will help to overcome the general effects of an acute process. One point—the value of recumbency throughout treatment—requires particular emphasis. As a rule, the acuteness of the illness decides this automatically, but many less ill patients do take these remedies while walking about. There is a higher incidence of side effects among these people and it is questionable whether the drugs do much good in the doses given to ambulant patients except in gonorrhœa, where the causal organism is highly susceptible to Sulphonamides. We must distinguish between complications due to the disease and

those due to treatment and must recognise that many patients now live to develop complications who, without chemotherapy, would have died before they became apparent. Of the true side-effects of chemotherapy, nausea with or without vomiting is a particularly troublesome one. This is probably due to a local action in the stomach and also to a central action in the medulla. Local action may be prevented to some extent by suspending the drugs in milk or better still in mucilages. The Sulphonamide content of the blood must be a factor in the causation of general reactions, but on present evidence, it seems that fluctuations in the blood levels are a more potent cause of trouble than the absolute amount present, since high levels which are constant are better tolerated than irregular lower ones.

The principles involved in the treatment of wounds are not different from those of the control of acute infections elsewhere in the body by the same types of organism. At the present moment, as a result of war wounds, interest centres on the value of applying Sulphonamides locally to wounds and the results have been good. It seems to us whether the good results claimed came from the drugs or from the daily improving surgical technique. This question is one requiring much critical study.

Special Article.

The Rise of Modern Medicine in South India

BY

D. V. S. REDDY, M.B.B.S.,

Vizagapatam.

MODERN Medicine is, like Madras, scarcely 300 years old. But, look at the breadth and beauty of Madras. Even more wonderful to contemplate are the range and heights of Modern Medicine.

The foundations of Modern Medicine.—The Medical historians of the West regard ancient Greece as the birth place of scientific medicine. Let us, therefore, go back to the 5th century B.C. and to the eastern shores of the Mediterranean sea—the cradle of the European Civilisation. Out of the mists of the Greek antiquity and philosophy, stand out pre-eminently two centres of Medical education, the schools of Cos and KNIDAS. It was here that Medicine was first divorced from religion and metaphysics and re-started on a basis of observation. HIPPOCRATES was the great genius who was primarily responsible for this new turn to Medicine and is, therefore, called the Father of Medicine. The break up of the Macedonian Empire and the rise of the Ptolmeys made Alexandria the greatest centre of Medical teaching, and research, during the 2nd and 1st century B. C. Rome and its Greek writers and Physicians, like CELSUS and GALEN, studied and preserved for posterity all the medical lore of antiquity. GALEN added some of his own observations, interpretations and even new theories. His teachings and works dominated the medical mind of Europe till the 15th and 16th centuries. After the downfall of the Roman Empire, Europe passed through hard times, when countries were overrun by barbarous tribes and devastating armies. During the 8th, 9th and 10th centuries, when Europe forgot her Medical heritage and knowledge, the Islamic centres at Bagdad and Damascus, at Cairo and Cordova, were reading and commenting on HIPPOCRATES and DIOSCORIDES, GALEN and CELSUS, CHARAKA, SUSRUTA and VAGBHATA. Among the great figures of the Arabian Medicine, RHAZES and AVICENNA stand out supreme as great master-minds, who have left immortal treatises on Medicine, used as text-books in Europe for 500 years.

As Europe emerged gradually out of the dark ages, a few itinerant scholars carried back to Europe, not only their knowledge acquired in centres of Arabic culture, but also the rare and precious copies of the manuscripts of the great medical classics of Europe in their original language or in Arabic translations. At the beginning of the 12th century, to Salerno, a town in Italy and famous as health resort, came a scholar with a precious load of books. Very soon, Salerno became the greatest centre of Medical education in the early middle ages. Observation had no place in their curriculum. To doubt the wisdom of the ancients and to question the accuracy of their statements was to court trouble, if not prison or death. That was the age which persecuted COPERNICUS and GALILEO. The earliest of these medical revolutionaries was PARA-CELSUS, who publicly burnt the works of ancient authors like GALEN. For his iconoclastic zeal, he has been described as Medical LUTHER. As he was the originator of the Iatro-chemical school, he is also called the Father of Modern Chemistry. When the ground was thus prepared, came VESALIUS, one of the greatest

figures in the history of Science. His great work on the anatomy of the human body—"The Fabric"—was published in 1542. This bold thinker and daring scientist pricked the bubble of Galenic Anatomy and by demonstrating, once for all, the real structure of the human body, started a new era in the history of Medicine. He is, therefore, honoured as the Father of Anatomy, a science essential to the intelligent practice of Medicine. The next great step in Medicine was achieved by WILLIAM HARVEY, who startled the world by his discovery of the circulation of blood. The publication of his great classic 'De Motu Cordis' in 1628 blew up the Anatomy and Physiology of the ancient and mediæval Europe and laid the foundation for the Temple of Modern Medicine.

When and how did Modern Medicine (the so-called Allopathic or European Medicine) reach the shores of India? Where did it first get a footing? What factors or features in it helped it to find favour with Courts and Aristocrats? What circumstances brought about a rapid spread of the new cult in the Madras Presidency? What were the early institutions in the City? What were the other centres in the Presidency, where British Medicine obtained a footing early and continued to gain in popularity? There are many such questions, one leading to another, all of great interest to the historian and to the medical man. In a short article like this, only a very brief, nay, a fragmentary outline of this fascinating story of Medicine can be attempted.

Portuguese pioneers.—The great Portuguese navigator Vasco de Gama succeeded in reaching the west coast of India in 1498, by sailing round the Cape of Good-Hope. In the course of the next half-century, Calicut and Cochin, Bassein and Dieu became their garrison towns, where they had surgeons and hospitals. In Goa, the wealthy capital of the Portuguese India, there were not only army surgeons and physicians of the viceroy but also surgeons and physicians in charge of the justly famous Goa hospital, frequently mentioned with admiration, by the visitors of the 16th century to that great city. Gradually, princes and governors of the local kingdoms either came to Goa for treatment or requisitioned the Portuguese physicians to their courts or camps. Garciada Orta, the Portuguese physician, who came out to India as the Physician to the Portuguese Viceroy, settled down in his old age in the island of Bombay from where he used to command a wide and varied practice. In his great treatise on *The Simples and Drugs of India*, he described how he was at the courts of the kings of Guzerat and Golkonda and of many other local chiefs. By the end of the 16th century, even the Mogul Emperor Akbar and some cities in North India were fairly well acquainted with the trade and culture of Europe, brought to Indian shores by the Portuguese.

Now let us come nearer home. It was about the year 1520 that the Portuguese, having heard of the existence of the cave of St. Thomas on the east coast near Pulicat, sent a reconnoitering party. The port of Pulicat, now forgotten and perhaps wiped out or buried under the sea, was at that period a great city and was the chief port on the east coast for the prosperous Vizianagar Empire. When the Portuguese saw the shrine of St. Thomas, they started a colony and gradually built a city—the City of San Thome—one of the richest and most flourishing cities on the east coast in the 16th and the 17th centuries. Like Goa, this city had its churches and colleges as well as hospitals and doctors. The earliest European physicians and

surgeons that set foot on the soil of Madras were, therefore, Portuguese or Spanish in origin.

British surgeons.—Another century passed. In the year 1612, the ships of the East India Company arrived at Masulipatam, then a great port of Golkonda and other Deccan kingdoms. The Dutch were already there. During the next quarter of a century, when the English and the Dutch competed with each other for trade and colonisation, there were the Dutch and the English surgeons touching at the ports and also some who were, for varying intervals, in charge of the establishments. It was in 1639 that the English secured the grant of the land round Chennapatnam from the Damerla family who were the local agents of the Vizianagar Empire with its capital at Chendragiri. On the very first historic journey from Armegon to Madras, Francis Day brought with him an English surgeon. Unfortunately, we have no records to indicate his name or his activities during his stay at Madras. Though there are frequent allusions to the presence of a surgeon at Madras from 1645, it is only in 1650 that we come across the name of a surgeon for the first time, since the foundation of the Fort. This surgeon was Edward Whiting—surgeon of the Fort St. George, from 1650 to 1657.

The first hospital on Madras soil.—The next important mile-stone in the march of Modern Medicine in Madras, was the starting of the first hospital for sick soldiers. This happened in 1654. 8 to 10 sick persons were accommodated in a rented building in the Fort. Gradually, as the establishment increased, a large building was planned and constructed with the help of public subscriptions, on the site adjoining the St. Mary's Church in the Fort. The authorities, however, soon cast their eyes on the building, purchased and converted it into quarters for junior factors. Another building was then planned and built on the edge of the river i.e., to the north of the western gate of the Fort. The building cost 2,500 pagodas and it was completed about the year 1690. There was also a physic garden attached to this hospital. After another 20 years, this building was then pulled down and a bigger hospital, costing 7,000 pagodas and capable of accommodating 150 sick men, was constructed. Till 1752, the hospital remained on this site. Then, the hospital was shifted from place to place, during the next 20 years. Its first location outside the Fort was in Pedda Naickpet in a row of rented houses. It was later shifted southwards, near the present General Hospital. During the siege of Madras in 1759, it was taken back into the Fort. After the siege, the hospital was removed to the burial ground (cemetery) in the Armenian Street. Finally, in 1772 was built the first block on the present site of the General Hospital. This land was originally washermen's ground. A garden was planted in the latter part of the 17th century. Still later, a garden-house occupied the spot. It was a place for amusements or rest. It was also known as Hoghill. The building consisted of 2 blocks, one storey high, and were most westerly of the present buildings. It was then capable of accommodating 300 patients. The subsequent expansion of the hospital to the present proportions need not be related here.

Early private practitioners.—During the century and odd years, from 1664 to 1772, the surgeons of the hospital were not only looking after the soldiers in the hospital but also had to go about on a round of visits on a horse or in a palanquin, seeking the sick servants of the Company in their

own houses. Some of these doctors treated also prominent Indians, such as the Company's agents or merchants and the relatives of local Nawabs. Sometimes, one of the surgeons of the hospital was permitted to go and treat the Nawab of the Carnatic or his generals. In addition to these surgeons employed by the East India Company, there gradually appeared a class that we now call private practitioners. The earliest of these were surgeons, either discharged from the service of the Company or those who resigned their posts as Ship-surgeons to set up practice in the growing city. Occasionally, some soldiers whom the company's surgeons trained as Assistants, purchased their discharge, took a certificate and settled down to practice. Even medical adventurers of other European nationalities flocked to Madras in the latter half of the 17th century. Records mention a French doctor named Coutinueh. The most famous medical practitioner of the early days of Fort St. George was Manucei. An Italian by birth, he trained himself to the medical profession, practised at Lahore for 7 years, then became the Chief Physician to Prince Shah Allam, and in his old age, settled down in Madras. These early European private practitioners of Madras treated many Indian aristocrats and their dependents, in and around the city of Madras, and were the pioneers who hoisted the flag of Modern Medicine, whenever chance took them.

European surgeons and physicians were also appreciated and employed by the native potentates of South India. Muhammad Ali, Nawab of Carnatic, had many surgeons and physicians in his service, in the latter half of the 18th century. This Nawab, when staying at Madras, had as many as 6 surgeons and 2 physicians. Even a man of the status of a Physician to the London Hospital and with high qualifications like M.D. (Camb.), and F.R.C.S. (London), came out to Madras, as Physician to this Nawab.

Other medical institutions in the city.—A few words may now be added about the extension of facilities of medical relief to the citizens of Madras. The hospital built in 1772 developed into the General Hospital—an institution for the reception of the sick, both European and native. In addition to this, even as early as 1797, an assistant surgeon, John Underwood applied "for a site for an hospital for the indigent native sick" and it was actually started in 1799. Subsequently, the Native Infirmary and the Native Hospital were amalgamated and out of this combined institution, the Monegar Choultry was evolved, what is now known as the Govt. Stanley (Royapuram) Hospital—a sister of the General Hospital. Another medical institution, the Lunatic Asylum was also started in 1794. And the credit for starting it also belongs to another assistant surgeon, CONOLLY. DALTON rebuilt the whole asylum enlarging the accommodation. It was, therefore, known as Dalton's Mad House, and was on the site now occupied by the College Park in Kilpauk. The new asylum was constructed in 1871.

Spread of Modern Medicine in the country.— Even outside the municipal limits of Madras, Modern Medicine began to win the approbation of the people from the early days of the East India Company. Reference has already been made to the presence of English surgeons at Masulipatam. Narsapur and Vizagapatam in the Northern Circars had English surgeons looking after the Company's merchants, by the end of the 17th century. During the early part of the 18th century, Fort St. David, at Cuddalore, was rapidly growing in importance and had not only

surgeons but a well-planned hospital. In the middle of the 18th century, when the English and French armies were marching up and down the country, they had their own Army Surgeons.

European surgeons were also found scattered throughout the country. As early as 1684, there was a Dutch surgeon with the king of Golkonda. Even in the 17th century, there was an Armenian Physician to the Nawab of Carnatic. There were also European surgeons with the Mogul army in the Deccan about the same time. In the 18th century, these European surgeons became even more popular and numerous. In the first half of the 18th century, there were French and English surgeons at Arcot. About the year 1764, there was a French surgeon in the service of the Muhammadan Governor of Madura. In the last quarter of the 18th century, Hyder Ali, ruler of Mysore, had in his employ, many European surgeons including English, French and Dutch surgeons.

The Madras Medical Service, a Covenanted Service for Europeans, was founded about the year 1764. It was later amalgamated with other provincial services, to form the I.M.S. By 1767, there were 15 surgeons and 13 Assistants on the coast of Coromandal; some of them were surgeons at Cuddalore, Chengleput, Masulipatam, Vizagapatam, Madura, and Trichinopoly. A list of 1771 indicates that there were surgeons also at Vellore, Ganjam, Ellore, Palamcottah and Chicacole. By 1810, there were 60 surgeons in the Madras list. Out of these, only 9 were doing regimental duty and the rest were in charge of civil stations. It was about this time that the doctors employed in the mofussils were also allowed to treat the native population. Some of the early Public Health activities such as the improvement of sanitation (like water supply, and drainage) and introduction of vaccination against small-pox, were also suggested or started by the British doctors, stationed in various parts of India, in the early part of the 19th century. In addition to the hospitals at Madras and Cuddalore, another half a dozen hospitals had come into existence nearly a hundred years ago. Though the Chief was a British surgeon, trained natives were also available in most places. There were also natives trained in Modern Medicine, attached to the Indian regiments. Probably, there were some native practitioners of Modern Medicine, here and there. The princes and the people began, for some reasons best known to them, to depend on the practitioners of Modern Medicine, on the medicines newly imported and on the newer knowledge of the Art and Science of Medicine, based on the epoch-making discoveries of VESALIUS and HARVEY. Then, in 1836, was started a medical school. The seed sown in the middle of the 17th century on the banks of the Cooum took years to sprout and grow into a tree. It has been extending its branches, high and wide, and striking numerous roots throughout the length and breadth of the country. Gusts of breeze or even ordinary cyclones cannot now disturb it. Perhaps, a few leaves or a few twigs may be broken off. New branches and new roots, appearing after the storm, will add strength and extend the shadow and increase the beneficence of the mighty tree of miracles—the Modern Medicine.

Closing the Abdominal Incision.

Usually the closure of the abdominal incision is as important as any other part of the operation. There do not seem to be any two operators who close the abdomen exactly alike, and many operators frequently change their method of closure. As in other surgical problems, so long as adherence is held to certain established principles, method probably is a secondary consideration. In closing the incision, the following conditions should be met: (1) A dry wound. Bleeding vessels should be caught and tied separately, and not *en masse*. (2) Absence of dead space. (3) Like tissues should be sutured together, avoiding constriction. (4) Each layer of tissue should be sutured separately, avoiding suturing two or more layers together. Asepsis throughout the operation is taken for granted.

As suture material, silver wire, linen and cotton thread are employed by some operators, but catgut and silk are the usual sutures. Forty or fifty years ago, when the sterilization of catgut had not been perfected, silk was popularized by Halsted, the able surgical teacher. The ability to sterilize silk satisfactorily, however, was not the only reason its use was advocated so insistently. Another important advantage was the fact that fine silk cannot be tied too tightly without breaking, which lessens strangulation of tissue. The immediate pupils of Halsted have always preferred silk for ligatures and sutures, but when the sterilization of catgut became perfected most surgeons discontinued the use of silk. Lately, however, there has been a revival of the advocacy of silk, and the literature has been filled with articles by leading men recommending this suture. The choice depends upon the preference and experience of the individual operator. Equally good results may be obtained with either material.

Careful closure of the peritoneum is most important. Incomplete apposition is responsible for more hernias than any other factor. Number one or two plain catgut is satisfactory for this purpose, although the writer prefers chromic catgut, on account of the feeling that the plain variety might be absorbed too early. A vital precaution is to be sure that the edges of the peritoneum are so well coapted that omentum cannot leak through between the stitches. Such an accident often causes hernia. Closure of the peritoneum is facilitated by thorough relaxation of the abdominal wall, particularly difficult to obtain at times in the upper abdomen. This brings up the question of anesthesia. Gas anesthesia rarely supplies the relaxation needed. Ether, or one of the intravenous or rectal anesthetics, or spinal anesthesia, may be depended upon for ample relaxation. If the body has been raised to give better access to an upper abdominal operation, it must

not be forgotten to lower the body before attempting to close the peritoneum.

In suturing the peritoneum, usually done with a running stitch, only the the peritoneum should be included, the single exception being the transversalis fascia, when this tissue cannot be sutured as a separate layer. In the lower abdomen, the transversalis fascia may be demonstrated as a distinct sheath, but it thins out as it ascends until above the diaphragm it disappears entirely, or becomes blended with the overlying muscle. The abdominal wall is strengthened by bringing together the edges of the structure; certainly it should not be ignored. It is believed that catching bits of muscle tissue in the peritoneal suture may be responsible for some of the discomforts of which patients complain after operation, generally blamed by the patient and by the physician on "adhesions." It is easy to see how the contraction of muscle caught in a suture to the peritoneum may cause pain.

It should be recalled that below the semilunar fold of Douglas all of the external oblique aponeurosis lies in front of the recti muscles, whereas above this point the aponeurosis splits into an anterior and posterior sheath. Therefore in closing an incision in the upper abdomen care must be exercised to suture the posterior sheath as well as the anterior one. Many surgeons look upon the aponeurosis, or sheath of the rectus, as the paramount layer of the abdominal wall, the proper closure of which is essential to prevent hernia, or evisceration. This fascia certainly appears to be the stoutest tissue of all, unless it is the skin, and its perfect apposition is absolutely necessary. The writer, however, still chooses the peritoneum as the vital layer to be closed, although all are important. If the muscle falls together naturally, separate sutures for this tissue are not indicated. If there is a tendency toward separation, a few loosely placed sutures of interrupted plain catgut may be introduced. The fascia may be closed with plain or chromic catgut, either interrupted or continuous. If tension exists, interrupted mattress sutures may be utilized. It is well to reinforce a long continuous suture with a few interrupted stitches. A thin abdominal wall may leave but little subcutaneous fat and fascia to be closed separately. Usually, however, the subcutaneous, or superficial, fascia should be united as a separate layer.

It probably is in the suture of the skin that the most numerous methods exist. Most operators use silk or a prepared material like dermol. Silkworm-gut is too thick and stiff for this purpose. Catgut is condemned, although one of the best skin closures ever seen by the writer was done with number three chromic gut. This may be well to use in children, or frightened adults, in order to avoid having to remove

the stitches. Metal skinclips, used by many surgeons, furnish an excellent means for skin closure. Sutures may be interrupted or continuous, locked or not. Separate mattress stitches everting the skin afford a reliable way to insure accurate apposition of skin edges. Such apposition is essential to prevent skin overriding and a wide, conspicuous scar. This undesirable result, so unwelcome to the patient and a poor advertisement for the surgeon, may be obviated by avoiding undue tension on each stitch, and taking care to see that the skin edges come together perfectly. The subcutaneous skin stitch usually gives a narrow scar, unless it becomes necessary to open a part of the wound for any purpose. Fine, cutting-edge needles should be employed for skin closure, the gauge of the needle being but little more than the thickness of the suture material used. Drainage tubes coming through the skin incision increase the chances for an unsightly scar. Reduce drainage to a minimum.

Finally, are tension sutures necessary? The answer in the vast majority of instances is, no. The ordinary abdominal incision, even in an infected, or potentially infected, wound, does not require such accessory support. Tension sutures do not prevent wound rupture. They are painful *in situ* and in being removed. When the patient's condition is such as to demand rapid closure such sutures are urgently indicated. The peritoneum may be united separately, and through-and-through sutures of silkworm gut or other material placed to include all other layers of the abdominal wall. This formerly was the commonest method of wound closure, and although it violates all principles taught today, it must be admitted that the results usually were satisfactory.

When should the skin stitches be removed? This is another question about which practice differs. Between the eighth and tenth day seems to be about the best time, although in wounds which have been subjected to unusual tension, perhaps the stitches should not be removed until two weeks have elapsed. If subcutaneous sutures have been inserted very close to the skin, the skin sutures may be removed sooner than the eighth day. Sometimes it is better to remove only each alternate stitch one day, removing the remainder two days later. Less discomfort is caused if the sutures are cut on one occasion, and removed two days later. Often many of the sutures will come away with the dressing, much to the delight of the patient.

Two complications may mar the result of the closure of the abdominal incision, (1) infection, and (2) disruption, generally accompanied by evisceration. Infection usually indicates an error in mechanical or aseptic technique, whether or not such error is discovered. Elevated temperature a few days following operation generally means an infected wound. Other sources, such as the throat, respiratory and urinary tracts, should be suspected and investigated, but the dressing should be removed and the abdominal incision examined. Swelling, redness and

tenderness may at once demonstrate superficial infection, or, if the infection is deep, several days may elapse before pus can be located. When pus is discovered ample opening must be made for its evacuation. Gentle irrigation with a mild antiseptic will hasten recovery. A small drain should keep the skin edges open.

Many interesting papers have been written recently on the subject of disruption of the abdominal wound. Advocates of non-absorbable sutures claim that these give a smaller number of ruptures. This may be true, but it is true that an infected wound in which such sutures have been used requires a much longer time to heal than a wound closed with catgut. It is difficult to assign a cause in the majority of cases of rupture. It must be true, however, that the more carefully and thoroughly one carries out the established principles of proper wound closure, the fewer cases of disruption and other complications will be his record.—*Brand M. Times*.

A Classification of Forearm Fractures near the Wrist.—L. E. Snodgrass. *The American Journal of Surgery*, XLVI, 266, 1939.

This study of types of fractures and their variations is based on a review of roentgenograms of cases, tested with a circle drawn on the antero-posterior film. The center of the circle is the middle of the base of the ulnar styloid process and the circle is made by a compass passed through the middle of the articulation between the capitate and the proximal end of the second metacarpal. The circle is used as a simple device to show that the middle of the proximal end of the central unit of the hand is the same distance from the ulnar styloid process as the latter is from the point on the radius where the fracture line joins the lateral border of the bone. In suprazyloid fractures of the radius the distance from the center of the base of the ulnar styloid process to the second carpometacarpal articulation equals the distance from the base of the ulnar styloid process to the point where the fracture line joins the lateral surface of the radius.

The circle test is useful in differentiating typical from atypical fractures. The typical fracture sustained in a fall shows on the line or slightly distally but not proximally. The circle test also demonstrates that the suprazyloid fracture in children is governed by the same mechanism which produces the adult or Colles' type; and directs attention to growth changes in the distal ends of the radius and the ulna. It is also an aid in internal measurement based on anatomical landmarks.

The author concludes that the location of the fracture line on the distal end of the radius bears an unchanging relationship to the bones of the carpus, irrespective of the patient's age, and that epiphyseal separation on the distal end of the radius is the result of increased stress at the site during a certain age period and not of weakness of the epiphyseal line.—*Curtis Lee Hall, M.D., Washington, D.C.*—*J. B. J. S.*

Sulfanilamide Derivatives for Furuncles, Carbuncles and Abscesses.—Beling and Abel used Sulfamethylthiazole in 25 and Sulfathiazole in 15 consecutive cases of staphylococcal infections; 13 of the cases were carbuncles, 12 furuncles and 15 abscesses. Staphylococci were cultured from the lesions of each patient and were recovered from the blood stream of 1. Thirty-eight of the patients were definitely improved after receiving a considerable quantity of the drug; 1 result was questionable because of the prolonged course of the disease and concomitant administration of staphylococcus vaccine. Furuncles were affected most readily and disappeared within four days, except in 2 instances; 1 had about ten furuncles and responded satisfactorily although eight days elapsed before the last one disappeared and the other patient, the one who had received the vaccine, was not definitely improved. Response to Thiazole therapy depends in part on the developmental stage of the lesion when the drug is commenced. The earlier furuncles responded about 25 per cent more slowly than well developed lesions but receded without formation of pus. The latter quickly soften, discharge their contents promptly and heal. No core forms and the discharge is liquid. The induration and redness around the lesion disappear rapidly. Carbuncles responded more slowly because of the extensive nature of the lesion but did so with relative rapidity and in essentially the same manner. The surrounding infiltrated areas became soft and the redness disappeared, while the drainage assumed the character described for furuncles. Any cores formed prior to treatment were soft and easily dislodged. Diabetes mellitus is not a contraindication to treatment. It may prolong the time required for the lesion to improve, but this is not always true as the carbuncle of one such patient responded in six days. If it is deemed necessary to excise a carbuncle, the authors advise giving Sulfathiazole for twenty-four hours prior to excision, as they believe that this will tend to prevent spread of infection, the development of septicemia and residual local infection. Abscesses usually responded to treatment in from five to eight days, depending on their stage before treatment and on the presence of cellulitis. The authors state that, if staphylococcal cellulitis is treated before there is any tendency to localization, resolution may take place without formation of pus. If pus does form, the abscess will be insignificant. When an abscess has already begun to form, the time taken to clear up the cellulitis and the abscess together is usually several days longer. One case with cellulitis and abscesses cleared in twelve days, 1 with multiple intractable abscesses throughout both breasts cleared up within five days and in another case there was no effect from Sulfamethylthiazole. In the last mentioned case there were honeycombed abscesses throughout the scalp and subaponeurotic region following an injury to the scalp and extensive cellulitis; also diabetes was present. Chemotherapy alone is not sufficient treatment for

abscesses or any other collection of pus that is accessible. These various lesions should be handled in the customary manner with the addition of thiazole medication by a suitable route.—*J. A. M. A.*

Tuberculous Tenosynovitis.—Adams and his co-workers analyze the diagnostic and therapeutic features of the 36 cases of tuberculous tenosynovitis observed at the Massachusetts General Hospital during the last forty-five years. The youngest patient, complaining of symptoms for a year and a half, was 15 years of age; the oldest patient was 75 and had had symptoms for three years when first seen. The average age of the patients was 36 years. There were 21 males and 15 females. The right hand was involved twenty-two times and the left hand fourteen times. The volar surface was involved twenty-five and the dorsal surface thirteen times. The influence of use on incidence is shown by the high involvement of the right hand. The occupations varied widely. There were no laborers, but 30 patients made hard use of their hands. Eight patients complained of definite antecedent trauma. Thirteen of the patients had tuberculosis elsewhere in the body. Diagnosis in the early stages may be difficult. The typical feature is a gradually developing, painless or slightly tender mass on the volar aspect of the hand. Partial stiffness with inability completely to flex or to extend the fingers and diminished strength on grasping are common. One of the most valuable diagnostic aids is a four hour temperature chart over a period of several days. A daily rise in temperature to 99.6 or 100.6 F. is suggestive of tuberculosis and should lead to further study. In suspected cases, splinting should be employed from the beginning. Finger motion in the later stages of the disease may cause creaking or grating sounds because of degenerated fibrinous deposits within the tendon sheath—so-called rice bodies. Joint stiffness and a fluctuant mass often indicate osseous disease, which may be proved by roentgen demonstration of destruction of the carpus. The diagnosis was proved pathologically in 27 of the cases and established beyond a reasonable clinical doubt in 9. The diagnosis of tuberculous tenosynovitis has been equivalent to the recommendation of operation; 33 of the 36 patients were so treated. Incision and drainage of fluctuant masses was carried out in 9 cases and resection of the involved tendon sheaths in 24. Follow-up notes are available in 26 of the 36 cases and in 23 of the ones in which operation was performed. Two of the 3 patients not operated on recovered completely and resumed their work. The third is unimproved and suffers also from pulmonary tuberculosis. Of the 23 patients who were operated on 7 are unimproved; 8 are improved and 8 have the condition in an arrested form. The best results were obtained when operation was performed during the second or third year of the disease. These results are none too good.

No other tuberculous condition, with the possible exception of tuberculous lymph nodes of the neck, has been subjected to surgery with such casualness and lack of accessory data. Tuberculosis of the tendon sheaths should receive the same systemic treatment accorded to tuberculosis of the lungs or spine. Surgical attack on a tuberculous focus such as a tendon sheath without knowledge of how the lesion is progressing involves the likelihood of operating in the presence of advancing or exudative disease. Such knowledge can be gained only by periodic observation, during which time treatment in the form of splint immobilization and sanatorium type of care should be given. The tuberculous patient must demonstrate resistance and an ability to localize infection before operation is considered. Attempts at extirpation under other circumstances constitute meddling surgery. Drainage procedures for abscesses about the hand to relieve mechanical pressure often bring relief of symptoms but rarely arrest the disease, because the active focus remains. Kanavel has stated that complete removal of tuberculous tendon sheaths or tuberculous tendons will effect a cure. If true, this means that before excision the exudative phase must be over and the fibrotic phase well under way. Six of the authors' 10 arrested cases were instances in which the hand was disabled by the sequelae of an infection that became quiescent; that is, by fibrosis of tendon sheaths, adherent tendons and rice bodies.—*J. A. M. A.*

Lymphogranuloma venereum, treatment.—Observations on 35 Cases of Venereal Lymphogranuloma Treated with Sulfanilamide—Raymond O. Stein, M. D. Philadelphia, Pa.—*Am. Jr. of Syphilis, Gonorrhea and Venereal Diseases*—24: 454 (July, 1940).

Venereal Lymphogranuloma is a distinct clinical entity, with a characteristic histopathology and a specific diagnostic skin test (Frei test). Frei distinguishes two clinical types: the bubonic form (more common in males) and the ulcerative which produces elephantiasis, esthiomene, and rectal stricture (more common in females).

The histologic picture considered pathognomic by most observers consists of: "subacute adenitis with edema and hyperplasia of lymphoid tissue. At the periphery of numerous abscesses are epithelioid cells arranged in palisade formation. Cell debris, neutrophils and monocytes are found in the abscess cavities. Occasionally giant cells of the Langerhans type may be seen with numerous plasma cells and fibroblasts."

Many therapeutic agents have been tried. These include antimony, gold, copper, iodine, salicylic acid, arsphenamine, bismuth, x-ray, radium and, as a last resort, surgery.

The author presented 35 cases of lymphogranuloma venereum of the bubonic and related forms treated with Sulfanilamide. He has shown that the experimental and clinical evidence prove that the drug acts

specifically upon the virus of this disease. Complete resolution of the lesions occurred within 2 to 4 weeks in all patients adequately treated. The favorable results are obtained more rapidly in the acute stages and are slowed up by the degree of fibrosis that has set in. The final proof of specificity is demonstrated by the reversal of the positive Frei test into negative reactions.—(*U. S. T. J. of M.*)

Abacterial Pyuria.—Any patient whose urine contains pus but remains sterile on culture must be suspected of having tuberculosis of the urinary tract. It should be remembered, however, that where a patient with an acute or chronic urinary infection is being given a course of a urinary antiseptic the urine may be sterile on culture because bacterial growth has been inhibited by the antiseptic either in the bladder or the specimen bottle, and examination several days after the drug has been stopped may then reveal a flourishing growth of organisms. On the other hand, patients with urinary tuberculosis often have both pus and coliform organisms in their urine, and the true nature of their disease may then only be suspected when the organisms disappear under treatment while the symptoms and pyuria persist. Of 78 cases of sterile pyuria reviewed by Moore, a resolving urinary infection was the cause in 11, and 24 were tuberculous. In 20 patients the pyuria was associated with a stone, though in many such cases there is a superadded infection. In acute and chronic nephritis pus cells are rarely plentiful in the urine, but in chronic or healed pyelonephritis pyuria is of great diagnostic significance; and some of the 9 cases of "toxic nephritis" in Moore's series were probably examples of this condition. Another type of lesion which may lead to sterile pyuria is infection in structures adjacent to the bladder, such as a cervicitis or subacute prostatitis; in the latter prostatic massage may reveal the causative organism.

When all these common causes of sterile pyuria have been excluded there remain a few cases which have come to be regarded as true abacterial pyuria. Moore reports 5 such cases, in all of whom symptoms of urinary infection were present but no organism could be grown from the urine by any recognized technique. Urological investigation in 2 of these patients suggested infection of the upper urinary tract, in 1 the bladder was involved, and in the other 2 there was evidence of prostatitis. The occurrence of a non-tuberculous sterile pyuria has been recognized for many years, but urologists differ as to its frequency and even more as to its significance. Is it a true clinical entity, to be diagnosed only by the exclusion of all other causes, or is it merely an indication that investigation has failed to reveal the underlying lesion? Moore believes that it is a disease in itself. His view is supported chiefly by the result of treatment. The disappearance of all symptoms and the pyuria after the intravenous

injection of Neocarsphenamine has been the outstanding feature of similar cases published in the past, and in Moore's 5 cases, all of whom had failed to respond to ordinary therapeutic measures, a few injections of Novarsenobenzol led to rapid and permanent relief. This remedy has been widely and successfully used in the treatment of chronic staphylococcal infections of the urinary tract. When it is injected both formaldehyde and organic arsenical compounds

appear in the urine, and both have been credited with the resultant cure. It has also been shown that its injection may turn an alkaline urine acid, and it would be interesting to know what is the pH of the urine in case of "abacterial pyuria" and whether ammoniacal decomposition of the urine is present in this condition. However this may be, it seems that the injection of Neocarsphenamine presents a safe and valuable therapeutic test.—*Lancet*.

Ear Nose and Throat

A Comparative Study of Some Treatments of Inflammation of the Maxillary Antrum—The subject of this report comprises a total of 224 selected cases of patients suffering from purely maxillary antrum inflammation. Those with inflammation in the other nasal accessory sinuses, those with inflammation of dental origin, and those with nasal polyps were excluded. Our reason for this selection is to have a more or less uniform type of material; and thus the evaluation of the individual treatment may be understood better.

All the cases were subjected to the routine procedure of examination. Exploratory irrigation through the natural opening, or exploratory puncture through the naso-antral wall at the inferior meatus was always done to confirm diagnosis and for the purpose of grouping of the patient. These patients were divided into four groups, and each grouping depended upon the character of the return fluid of the antral washing. Four plus (++++) was applied to the case having foul, thick pus in the return antral washing; three plus (+++), to the case having thinner pus in the return fluid; two plus (++) to the case in which the return antral washing consisted of an admixture of thin pus and some mucus; and one plus (+), to the case with plenty of mucus with some pus.

In connection with the treatment of these cases it is not amiss to mention certain data pertinent to the clinical picture and management of the patients both individually and in general. All of these patients belonged to the indigent group of the out-patient service of the hospital. Most of them were from the laboring class. Both sexes were equally affected. Invariably the beginning of the ailment was an acute "cold" which was left untreated and persisted up to the time of consultation. Thus it could be seen that most of them were essentially chronic and only in a few instances did the patient come after the first two weeks of the acute "cold." The most common symptoms complained of were nasal obstruction and persistent nasal discharge, at times foul, with or without accompanying headache. In many cases the chief complaint was a long standing cough, with or without accompanying rise of temperature, many being cases referred from the Medical Department. Annoying symptoms referable to the larynx, as hoarseness, and those referable to the pharynx, as

itchy sensation and hawking, were not infrequent. Rheumatic pains, particularly muscular in character, were commonly encountered among these patients.

In the treatment of inflammation of the maxillary antrum surgical intervention in most instances gives a decidedly good result; but as we stated in the early part of this paper, these conservative treatments were devised to find a way of helping both the patients and the Philippine General Hospital. In the first place, in adopting these conservative methods of treatment it is also our aim to help the patients materially by not disabling them from earning their daily bread; in the second place, the Philippine General Hospital thus fulfills one of its missions—that of doing the greatest good to the greatest number. It is evident, therefore that before a patient was sent to the operating room, conservative treatment of the particular case was tried. This consisted in the washing of the maxillary antrum, through the natural opening or through the perforation at the naso-antral wall at the inferior meatus, with any of the following solutions, as shown in tables of results, viz.: (1) normal Sodium Chloride solution (normal salt solution, N.S.S.); (2) dilute solution of Potassium Permanganate (1:10,000); (3) normal salt solution followed by the injection into the cavity of 3 to 5 cc. of 20 per cent solution of Collargol or 3 to 5 c.c. of 2.5 per cent solution of Neoprontosil; (4) Potassium Permanganate solution followed by normal salt solution and then injection into the cavity of either 20 per cent Collargol or 3 to 5 cc. of 2.5 per cent solution of Neoprontosil. Before the injection or instillation of either the Collargol or the Neoprontosil, the cavity of the antrum was dried by forcing air into it through the antrum cannula left in place with an ordinary rubber bulb. Once the cavity was dry, the Collargol or the Neoprontosil solution was injected through the cannula. The medicine was often seen to have been retained in the cavity for more than twenty-four hours. The treatment was given every other day in bad cases and less frequently in mild ones. In some of these cases a simple normal salt solution irrigation was enough to effect a cure. The prolongation of treatment in some cases may have been due to the irregularity of the patient's coming for treatment. The longest period observed was one year.

Summary 1. A total number of 224 selected cases of maxillary antrum inflammation were subjected to conservative treatments.

2. The use of normal salt solution (N.S.S.) with or without injection of Collargol gave encouraging results.

3. The use of Neoprontosil in lieu of Collargol gave the highest percentage of recovery. In connection with this, it may be mentioned that Sulfanilamide and Frontylin were tried, but owing to their difficult solubility they were abandoned.

4. Potassium Permanganate solution seems to have given us poor results as far as recovery was concerned; but it is certainly a good deodorizing material.

5. Surgical intervention was recommended only after the conservative method had apparently failed.—(J.P.M.A.)

Aviation Deafness.—P. A. Campbell and J. Hargreaves (*Archives of Otolaryngology*, 32: 417, Sept. 1940) classify the deafness of aviators into four types on the basis of their study of hearing in army aviators. These types are: (1) Acute fatigue of the end organs of hearing and related structures; (2) chronic cumulative fatigue of the end organs and related structures; (3) changes in middle ear pressure resulting from changes in altitude if ventilation of the middle ear is faulty; (4) chronic deafness due to alteration in tissue resulting from faulty ventilation in the middle ear. The fatigue deafness, acute or chronic, is shown by a loss of hearing in the higher frequencies, around the 4000 area, and is a perception deafness. The deafness of the last two groups is shown by a loss of hearing acuity for the lower frequencies (128 to 1024) and is a conduction deafness. In any individual audiogram, two types of deafness may be "mixed." Fatigue of the end organs of hearing is due not only to noise produced by the engine, the propellers, etc., of the moving aircraft but also to vibratory forces "in the inaudible range." The decrease in oxygen at high altitudes may also be a factor in fatigue. It has long been recognized that changes in the pressure equilibrium between the outside and middle ear, such as occur in flying, cause changes in hearing acuity at the lower tone level. If such "insults" are repeated tissue changes take place in the middle ear, rendering the hearing loss permanent. These changes are intensified if there is any pathological condition in the Eustachian tubes. Advances in aircraft design and flight regulations should reduce the danger of loss of hearing in aviators.—*Medical Times*.

Acute Suppurative Otitis Media—1514 Cases.—J. H. Maxwell and D. H. Brownell (*Annals of Otolaryngology, Rhinology and Laryngology*, 49: 973, Dec. 1940), report a study of 1514 cases of acute suppurative otitis media that were under observation throughout the

course of the disease; in 896 cases, mastoidectomy was required. In the majority of patients in this series, early drainage of the tympanum was not established, i.e., drainage within three days of the onset of severe earache. Spontaneous perforation occurred in 828 cases, but was more apt to occur after three days than early. In this series there was no tendency for perforation to occur earlier in children than in adults. Spontaneous perforation of the tympanum does not necessarily establish satisfactory drainage but fewer secondary myringotomies were necessary in those cases in which perforation occurred early than in those in which it occurred late. In the majority of cases in which acute mastoiditis requiring mastoidectomy occurred, drainage of the acute suppurative otitis was established late (more than three days after onset), whether by spontaneous perforation or late myringotomy. The time and type of surgical drainage was found to have a definite effect on both the course of the otitis and the incidence of complications. In the non-septic cases of mastoiditis that came to operation, there was a sharp rise in the mortality rate after the age of sixty years; and in the septic cases, the mortality rate was more than doubled after the age of twenty. The findings in this series of cases emphasize the importance of early and adequate surgical drainage of the tympanum in acute suppurative otitis media, if "the deleterious effects of pressure retention of pus within the middle ear" are to be avoided. The "pressure factor" is not necessarily the only one of importance in the production of mastoiditis, but, the authors believe, "its role is one of major significance."—*Medical Times*.

Treatment of Sinusitis by the Displacement Method—L. K. Gundrum (*Laryngoscope*, 50: 989, Oct. 1940) points out that before treatment of sinusitis is attempted, it is important to establish the correct diagnosis. An allergic condition "that manifests itself only in the nose" is often quite difficult to differentiate from true sinusitis. To further complicate the diagnosis an allergic patient may develop sinusitis, or as most allergists now believe, a patient with sinus infection may become sensitized to the proteins of his own bacteria. In a typical allergic case the nasal mucous membranes are pale and edematous, the smear from nasal secretions or washings of the sinuses shows a preponderance of eosinophiles; in sinusitis, the nasal mucous membrane shows inflammation, the smear, pus cells and bacteria. Roentgenological examination is of value in differential diagnosis; if repeated examinations show marked variations in the cloudiness of the sinuses, this is suggestive of allergy. If the sinuses are filled with an opaque substance by the displacement method before roentgenograms are made, the method of filling of the sinuses differs in the two conditions. Failure to fill is more common in allergy than in sinusitis; if filling takes place, the

shadow in allergy is not so dense as in sinusitis, does not follow the bony outline so closely and is "ballooned rather than pebbled." Roentgenological examination with an opaque substance is also indicated before attempting displacement therapy to establish the patency of the ostia. The author has used Prøtz's method of displacement therapy in the treatment of sinusitis since 1929. At first he used the solution employed by Prøtz (0.5 per cent Ephedrine in normal Saline); treatments were given twice weekly. Of the 200 cases treated by this method, 58 per cent were definitely improved. Later bacterial antigens (stock antigens) were used for instillation; this method was first tried in 20 cases that failed to respond to the Ephedrine treatment; of these 14 (70 per cent) showed definite improvement with the antigen instillations. In employing bacterial antigens for displacement therapy, a dilute solution is first used, 0.25 c.c. of antigen in 6 or 8 c.c. of either 0.5 per cent Ephedrine or 0.125 per cent Neocynephren in normal Saline; lately Isophrin has been used as a diluent and appears to cause less irritation. The amount of antigen is gradually increased avoiding "unpleasant reactions." Treatments are usually given twice a week, but once a week is sufficient if the reaction to any treatment persists more than two or

three days or the course of treatment is prolonged. A total of 520 cases have been treated by this method of displacement therapy with definite improvement in 354, or 71 per cent. Before instituting displacement therapy, the nose "must be placed in as nearly a perfect anatomical condition as possible," by the correction of nasal deformities, such as deviated septum, hypertrophied turbinates, etc. A follow-up study was made of 100 patients, "originally classified as improved," selected at random two to six years after the completion of treatment by the displacement method. Of these 68 have had no recurrence of symptoms; in one case symptoms returned in a few months after the patient was discharged as improved. Recurrences or reinfections have occurred in 31 patients: always following an attack of acute rhinitis; in 7 the symptoms were mild and subsided without further treatment; 24 returned for treatment, and in all but one of these the recurrent attack was relatively mild and yielded promptly to treatment. Thus of these 100 cases who were improved by the treatment, all but 2 (or 98 per cent) have had "permanent favorable results." The displacement method has not been used in cases of acute sinusitis, and no complications have been observed other than a few Ephedrine reactions.—*Medical Times.*

Obstetrics and Gynecology

Treatment of Vaginal Thrush.—The frequency of thrush as a cause of leucorrhœa is not apparently generally recognized. Liston and Cruickshank found that it accounted for nearly 25% of cases in a series of 200 pregnant women. It appears necessary, therefore, to look for this fungus (*Oidium albicans*) in all cases of leucorrhœa, and to seek for the hyphal filaments in films made from the white patches which are characteristic of the disease or from vaginal washings. The infection is much commoner in pregnant than in non-pregnant women, and frequently clears up during the puerperium; non-pregnant women often get relief during menstruation. The presence of Glucose is favourable to the growth of the parasite, and diabetes mellitus is a predisposing cause, which should always be excluded in non-pregnant cases. While the infection is usually confined to the vagina and surrounding skin, it may affect the cervix and even the uterus and tubes. This should be borne in mind in those cases which either prove resistant to treatment or show a tendency to relapse. Should the infection have passed beyond the cervical canal the patient should be referred to a gynaecologist. In all cases of vaginal thrush it is first necessary to look for and to deal with any contributory factors such as cervical erosion, cervicitis, and tears of the cervix uteri, and then to remember that the infection may affect the surrounding skin, not only of the vulva but also of the pubic region, groins, and upper part of the

thighs, causing intense irritation. Various remedies have been recommended. Matters swabs the vaginal walls with Hydrogen Peroxide or dilute Liquor Potassæ, and after drying them insufflates the vagina with powdered Silver Picrate in Kaolin; alternatively, Bonney's blue may be employed as a paint. Many Michal-Shaw douches with Sodium Bicarbonate—one drachm to the pint—and follows this with a tablet of Stovarsol nightly for two weeks and then less frequently for four to six weeks or even longer. Negatol as used for trichomonas infestation—a douche of 2½% followed by painting with 100%—and "Monsol" 1/200 have given good results. Strong Negatol causes the mucous membrane of the vagina to become covered with a thick white film, which after a time is shed gradually or may separate as a complete cast, leaving a healthy epithelial surface underneath. Probably the most efficient remedy and the one that gives the greatest relief to the patient is Gentian Violet. This is used as an aqueous solution in a strength of 1% to 2% and should be painted on the affected parts twice weekly, special care being taken to include all vaginal folds and especially the posterior fornix. The treatment of vaginal thrush should not be stopped when the signs and symptoms subside, because of the tendency to relapse. The patient should be warned that cessation of symptoms must not be taken as evidence of cure.—*B. M. J.*

Treatment of Pernicious Vomiting of Pregnancy.—Irving discusses the treatment of 225 consecutive patients with hyperemesis gravidarum encountered among 39,724 pregnant women admitted to the Boston Lying-In Hospital or in the outpatient department during a period of twelve years. Only 73 were patients registered for care in the clinic; the remainder were sent in as emergency cases and were generally from a higher economic stratum than those usually accepted at the clinic. Contrary to the usual opinion, 61.3 per cent of the patients had been pregnant before. This proportion agrees with the usual ratio of multigravidas, which is about 60 per cent of the total. Of the 138 multigravidas affected, 70 had vomited excessively in one or more previous pregnancies. The greatest number entered between the sixth and twelfth weeks of gestation. Contrary to the many attempts to link pernicious vomiting to pre-eclampsia, the author points out that not only do the two diseases occur at different periods of pregnancy but the general signs and symptoms of each in no way resemble one another; nor do the organs of fatal cases show the same changes. His patients with pernicious vomiting showed later in pregnancy no more tendency toward pre-eclampsia than did the others in the clinic; the ratio in their case was 1:22.5, and the general ratio 1:21. All pathologic reports show the hepatic change to be the same fatty degeneration that follows extreme starvation. The necrotic changes reported by earlier writers were not seen. A pulse rate of 110 or more always indicates a very sick patient. Peripheral neuritis is the most serious complication. Other complications are puerperal psychosis, pyelitis, pulmonary tuberculosis, hydatidiform mole, renal tuberculosis and acute appendicitis. For the mildly affected patients not requiring hospitalizations, reassurance, a fat free diet rich in carbohydrates taken in small amounts six or seven times a day and a mild sedative usually suffice. For the seriously sick patient, hospital care under complete isolation from friends and family, including the husband, is necessary. The lower part of the intestine is emptied by enemas, and from 3 to 9 grains (0.2 to 0.6 gm.) of Pentobarbital Sodium or any suitable Barbiturate is given by rectum and repeated often enough to maintain the patient in a somnolent condition. Opiates are avoided, as they appear to increase vomiting. A hypodermoclysis of 1,500 cc. of physiologic solution of Sodium Chloride is then given and sufficient daily amounts are administered to maintain fluid balance. An intravenous drip of 5 or 10 per cent Dextrose is given at 30 to 40 drops a minute and repeated at from eight to twelve hours. From January 1928 to January 1934, 110 patients were treated in this manner; 6 died and 19 were subjected to therapeutic abortion. As the pathologic changes of the patients who died were those of starvation, the Levine nasal tube as a method of forced feeding was used and improvement was at once apparent. Up to January 1940, 115 patients were treated in

this way with no deaths and only three therapeutic abortions. At present, in addition to the described regimen the Levine tube is passed and the stomach gently washed with warm water. A half hour later a rectal drip is started. From 4 to 6 ounces (120 to 180 gm.) of milk containing 2 heaping teaspoons of Harris yeast concentrate is given by the Levine tube, followed in an hour by 4 to 6 ounces of orange juice sweetened with Karo corn syrup and one hour later by 6 ounces of a rich eggnog made with cream and egg, and one hour later by milk and the Harris yeast concentrate. This routine is repeated until fourteen out of twenty-five hours are completed. Each feeding requires about forty minutes and is given at body temperature. Thiamine Hydrochloride, Ascorbic acid and Liver extract are given intramuscularly. If in spite of these measures there is a steadily rising pulse which remains above 110 or if the vomiting with jaundice is intractable the pregnancy should be interrupted. If twenty-four hours may be devoted to the process, the safest procedure is to pack the cervix and vagina firmly and the next day, after sufficient dilatation, to remove the ovum with a placental forceps and a dull curet. If such time cannot be taken, vaginal hysterotomy may be performed. Avertin with Amylene Hydrate, because of its effect on the liver, is interdicted. Sacral or low spinal anesthesia, if skilfully given, is perhaps the best of all.—*J. A. M. A.*

Vaginal Discharge.—One of the most distressing complaints that the gynaecologist and general practitioner are called on to treat is vaginal discharge. To the patient it is demoralising, by reason of its intractability, and in a sensitive woman it may cause considerable mental trauma. To the laymen, moreover, a vaginal discharge carries a sinister innuendo—many an innocent woman has suffered unmerited blame from husband or family for a non-venereal infection, and a discharge has even been the starting point of an action for divorce.

The requisites for a proper investigation are experience, a good light, a large and small Cusco's speculum, and a microscope. Anyone who does not possess all these would be well advised to send his patients to someone who does. The experienced hand will exclude the simple and well-recognized organic lesions that give rise to discharge, such as polypus and submucous myoma, and the experienced eye will often divine what the microscope may be expected presently to confirm; hence the importance of a good light and a speculum that can be manipulated to expose to view the whole of the cervix and vagina. The naked-eye characteristics of gonorrhœa in the acute stage are vascular cervicitis and urethritis with a thick yellow-green discharge. Infection with *Trichomonas vaginalis* betrays itself in strawberry-red patches on the vaginal walls with a thin profuse and frothy discharge. A gram stain may clinch the diagnosis of gonorrhœa; and a drop of pus, diluted with warm normal

Saline, placed under a coverslip and viewed with the high power, will reveal the motile, flagellate, oval trichomonas parasite. There is a third type of vaginitis, more familiar to American writers than ourselves, caused by the *Monilia* or *Oidium albicans*. The same fungus is responsible for the thrush seen in children's mouths. MATTERS has drawn attention to the etiology and treatment of this type of vaginitis as met with in Australia. It remains to be seen whether this fungus is a common cause of vaginal discharge in the British Isles—meanwhile its presence should be sought in all cases where necrotic white patches are found in the vaginal vault and cervix in association with a profuse burning discharge, and sometimes with epithelial excoriation on the vulva and thighs. The diagnosis is established by the technique used for the trichomonas, and by the appearance of yeast buds and mycelia on the slide. The organisms are oval and 5u long.

MATTERS considers that monilia infections are best treated by swabbing the vaginal walls with Hydrogen Peroxide or dilute liquor potassæ, drying them; and insufflating powdered Silver Picrate in Kaolin. He uses a Sheianski insufflator and has the patient in the knee-chest position, which produces a natural ballooning of the vagina and smoothes out most of the rugæ so that the whole surface is covered with the powder. This may partly explain the success of the treatment; the vagina at rest is, of course, only a potential space, and the deeper folds in its mucous membrane are not accessible to the

ordinary douche. But it is worth while bearing in mind that insufflation in the knee-chest position is dangerous in that it has sometimes led to pneumoperitoneum; the danger is increased in pregnancy and near the time of a period. In any case the pressure exerted by the bulb of the insufflator should be kept low lest the upper reaches of the genital tract become infected by the introduction of organisms through the cervix and uterus. The powder is used daily for three days. Alternatively the vagina may be swabbed out with Bonney's blue paint, but this is less popular with the patients because it stains the under linen. MATTERS has tried various preparations for trichomonas infections, including Aluminium acetate packing, painting, with Merthiolate solution or Bonney's blue, and insufflations with powdered Quinine. His best results have again been with Silver Picrate insufflations; in the case of trichomonas, however, a seven-day course is needed.

Another promising line of treatment for trichomonas infections is reported by LLOYD and MASCALL independently. These workers used Negatol and agree on the rapidity with which symptoms and signs disappear. LLOYD is now using other methods in trichomonas infections, but he is pleased with the results of Negatol in cases of non-specific cervicitis with erosion. Of his original 47 cases in this group 45 were symptom-free at the end of the course of treatment and when followed up seven months later only 4 were found to have relapsed, though there were a few who could not be traced. —*Lancet*.

Medicine and Therapeutics

Hypoglycæmia.—Hypoglycæmia as a rule arises from hyperinsulinism whether endogenous (from overaction of the pancreatic islet cells usually associated with an adenoma) or exogenous (from an overdose of insulin), but it is not always realised that the symptoms of hypoglycæmia may occur without hyperinsulinism, and they may then be attributed to epilepsy, narcolepsy, intracranial tumour, psychosis, psychoneurosis, neurasthenia and gastro-intestinal disturbances, particularly peptic ulcer. The finding of a low blood-sugar value, however, does not necessarily mean that this is the explanation of the symptoms, for low fasting values are obtained in normal people on a low carbohydrate diet as well as in anorexia nervosa, Simmond's disease and idiopathic steatorrhea, without the symptoms of hypoglycæmia. For the diagnosis of hypoglycæmia it is essential that in addition to the low blood-sugar value the symptoms shall be relieved by the administration of Dextrose. Conn has classified the etiological factors of spontaneous hypo-glycæmia into two main groups. The organic group, with a recognisable anatomical lesion, includes hyperinsulinism arising from the pancreas, hepatic disease, pituitary and adrenal hypofunction, and lesions of the central nervous system. The functional

group, with no recognisable anatomical lesion, includes certain cases of hyperinsulinism, renal glycosuria, pregnancy and lactation. Four-fifths of all cases with hypoglycæmic symptoms fall into one of three main groups—hyperinsulinism of organic origin, functional hyperinsulinism and hepatic disease. For each of these three groups the treatment is different, so that it is essential to establish an accurate diagnosis at the outset. The clinical course in the organic hyperinsulinism and hepatic types is towards progression of symptoms, the attacks becoming more frequent and more severe. In the hepatic type there may be other symptoms suggestive of hepatic dysfunction, and the hypoglycæmic symptoms tend to come on in the early hours of the morning. Conn has found that the fasting pre-breakfast blood-sugar levels, the dextrose-tolerance test, and liver-function tests are of value in differential diagnosis. He considers the fasting blood-sugar data obtained after the patient has been on a restricted carbohydrate diet difficult to interpret, but a fasting pre-breakfast blood-sugar value of 50mg. per 100 c.cm. in a person who has been on a normal diet affords strong diagnostic evidence of organic hypoglycæmia. Cases of functional hypoglycæmia—and this group provides the majority of clinical cases—are

not associated with low fasting pre-breakfast blood-sugar levels. The factors influencing Dextrose tolerance and the difficulty of interpreting hepatic function tests have led most British workers to be sceptical of data based on the interpretation of the latter, but Conn, with the majority of American workers, considers the tests to be of value, provided standard conditions are used.

The treatment of the functional hypoglycæmia is entirely medical. Conn advocates a diet high in protein (120-140 g. a day) and low in carbohydrates (50-75 g.) with fat sufficient to ensure an adequate caloric value: The rationale for such a diet is that at least half of the protein is utilised by the body as carbohydrates and that the comparative slowness of the breakdown of the protein molecules provides a small but continuous supply of carbohydrate. In the treatment of organic hyperinsulinism and hepatic hypoglycæmia surgery must be considered. After the report of a case of islet-cell tumour by R. M. Wilder and his co-workers, numerous reports of laparotomy on supposed cases of hyperinsulinism have appeared, but only in about half of the cases has a pancreatic abnormality been discovered. Conn has therefore laid down what he considers to be the minimum conditions which must be fulfilled before a laparotomy is contemplated—absence of extra pancreatic causes of hypoglycæmia; abnormally low level of blood-sugar during the symptoms and the rapid relief of symptoms by administration of Dextrose; repeated fasting blood-sugar values below 50 mg. per 100 c.cm. when the patient has been on an adequate diet; and depression of the fasting blood-sugar below 40 mg. by carbohydrate restriction. If these criteria are fulfilled in a patient past middle life with progressive symptoms a malignant condition is probable and an operation must not be delayed. The indications for operation in the hepatic group are more difficult to define. Conn cites a case of chronic cholangitis in which there was no clinical evidence of hepatic disease, and only full investigation of the hypoglycæmia revealed evidence of hepatic damage, yet this patient was completely cured by removal of the gall-bladder and biliary drainage. If there is any evidence of a degenerative or a destructive lesion of the liver treatment consists in the provision of a diet rich in carbohydrates, vitamin A and Calcium, which is known to aid in the restoration of damaged liver cells.

Hypoglycæmia, then, is no longer a mere academic or diabetic problem, but must be considered a possible cause for syncope, altered mental states and atypical dyspepsia. Further, it affords a possible metabolic basis for a few more cases in that huge morass of clinical material all too readily classified as functional. —*Lancet*.

Jaundice after Arsphenamine—Numerous theories of the cause of post-arsphenamine jaundice have been put forward, the

most recent being that of Hanger and Gutman, who found evidence in twelve cases that the icterus was probably due to the formation of bile thrombi in the finer biliary radicles. There can be little doubt that no one explanation covers all cases. Some workers think that the condition is the result of toxic action of Arsphenamine on the liver cells, others that it is due to syphilis itself, and many consider that in most cases the jaundice is of the ordinary catarrhal type, either the drug or the disease acting, perhaps, as a predisposing cause. In the cases described by Hanger and Gutman the onset of the disease was usually acute, coming on some hours after the second or third injection. The jaundice appeared early, within a few days, and was remarkably persistent; the only symptom was pruritus. Laboratory test indicated obstruction, and biopsies showed not only absence of damage to liver cells but evidence of pericholangitis and bile thrombi in the finer bile passages. It is not suggested that these changes are typical of a large proportion of all cases, but the condition appears to be a definite entity and one that has not been widely recognized. Correct diagnosis is important, as treatment should be directed to promoting drainage of the biliary tract rather than to the conservation of injured liver parenchyma. Such treatment, which consists of intravenous hypertonic Dextrose and bile salt preparations, may save the patient from an exploratory laparotomy for suspected occlusion of the common bile duct. Further Arsphenamine therapy is contraindicated. —*B.M.J.*

Oil in the Lung.—We live in an uncertain world. Even liquid Paraffin, long reputed blameless, has its sinister aspects. Its action on the peritoneum was described by A. H. Cruickshank in our columns not long ago, and he mentioned briefly its effect on the lung. Cases of oil-aspiration pneumonia have been reported in America for several years and Freiman, Engelberg and Merritt last year recorded a group of 47 cases of which 41 were chosen from among 3500 consecutive autopsies performed at the Montefiore Hospital in the past ten years. The patients ranged in age from 20 to 82, but as the hospital is for chronic cases most of them were elderly, and many were suffering from debilitating illnesses associated in some with dysphagia. Oil had been taken in various ways; by mouth as an intestinal lubricant; intranasally as a spray or drops; and intratracheally as a lubricant for a tracheotomy tube. Analysing all cases reported as well as their own, these workers found that by far the commonest route was oral; out of 105 cases, 83 of which had come to post mortem, 49 took oil by mouth and 23 used it both orally and nasally. Various oils were implicated, but liquid Paraffin was easily in the lead. In young children Cod-liver oil and cream have occasionally produced the condition, but vegetable oils, such as iodized poppy-seed oil used in bronchography, rarely give trouble; Chaulmoogra oil is an exception to these. Liquid Paraffin,

being bland, can pass into the trachea from the pharynx without the patient realizing it, it excites no cough and since it clogs the cilia is not removed again at once, but trickles to the lung bases under the action of gravity. The immediate response of the lung is to throw out macrophages which take up the oil, developing in the process a foamy appearance. Macroscopically the affected areas of lung are grey or yellow and moderately firm, protruding slightly above the level of the surrounding tissue. Gradually the patches become firmer and greyish-white, when they may be mistaken for tumour metastases. Later the lung becomes fibrotic and may finally produce masses of hyalinised fibrous tissue in which oil is entrapped—paraffinomas in fact. Various stages of the condition may be found in a single lung if the use of Paraffin has been going on for years. The condition itself gives rise to no characteristic symptoms but in elderly people it seems to be sometimes associated with intermittent pulmonary infections, the episodes being accompanied by cough, fever and prostration. Radiography in the early stages shows increased markings in the lower lung fields. Later, shadows representing areas of consolidation are formed in the bases, extending from the hilum to the diaphragm. The upper lobes are only affected late. The differential diagnosis is from bronchiectasis, unresolved pneumonia, pulmonary metastasis, tumour, infarct and tuberculosis. The writers consider that though the condition is commoner than is generally supposed, the administration of oil does not necessarily mean that oil aspiration will occur; liquid Paraffin is taken by thousands with safety. It is as well to be on guard, however, and if the condition is suspected to stop the use of Paraffin. In elderly, debilitated and especially dysphagic patients its use is not without danger, and its use for old recumbent patients, patients with chronic mental illness or mental defectives might well be discouraged.—*Lancet*.

Adherent Pericardium.—Armstrong calls attention to a diversity of opinion as regards the effects on the heart of an adherent pericardium. The following beliefs have been held: 1. That it may cause a cardiac failure characterized by a small heart associated with edema and ascites. 2. That it may have no effect at all. 3. That it may cause failure with enlargement of the heart. In the light of modern knowledge the first two are undoubtedly correct, the third is unproved, and there is considerable evidence to show that it is untrue. An investigation was made into the histology of the pericardium in cases taken from the series of 114 necropsies at which complete adherence of the pericardium had been found; 4 cases of cardiac compression from which the pericardium had been removed at operation were added. The cases were divided into two groups: (1) adherent pericardium associated with chronic compression of the heart, the "constrictive" group, and (2) adherent pericardium without cardiac compression, the

nonconstrictive group. It appeared that in constrictive pericarditis the compression of the heart depended on the type of fibrous tissue present, on its thickness, density and situation. The microscopic picture in the two groups showed that the density and toughness of the fibrous tissue is the deciding factor in producing cardiac compression. It also explains the success of pericardectomy. The removal of an adherent pericardium will lead to further adhesions in healing, but the peculiar fibrous tissue which compresses the heart does not repeat itself. When adhesions form, they have no effect on the heart. The different microscopic appearances in the two groups suggest also a difference in etiology and explain the widely held view that cardiac compression never follows a rheumatic pericarditis. On pathologic grounds as well as clinical, rheumatism can be excluded from the etiology of constrictive pericarditis. It has been known to be tuberculous and in some cases, it has probably resulted from an unrecognized septic pericarditis. The author concludes that adherent pericardium may lead to cardiac failure associated with a small heart (constrictive type) or may have no effect on the heart at all (nonconstrictive type.) There is no evidence that it causes enlargement of the heart unless it is accompanied by valvular or other cardiovascular disease.—*J. A. M. A.*

Accidents and Complications of Artificial Pneumothorax, by P. M. Mattil and Frank L. Jennings. *Amer. Rev. Tuberculosis*, 41: 1 (January) 1940.

The authors enumerate certain accidents and complications that may occur in giving artificial pneumothorax treatment. These are summarized as follows:

1. Pleural shock is characterized by a weak pulse, dyspnea, pallor, cyanosis, and syncope. It is not considered a true clinical entity.
2. Air embolism: This entity may offer the same symptoms as pleural shock and may be followed by paralysis and even by death. Air may enter directly into a pulmonary vein from the pneumothorax needle or may pass directly, as a result of injury to the pulmonary veins, from the pleural space or from the alveoli to the pulmonary veins without having been injected from the apparatus. The symptoms produced are largely the result of air blocking the minute vessels of the central nervous system, and the early as well as the late effects depend upon the extension of this involvement.
3. Accidental pneumothorax: May occur not infrequently but usually not a serious consequence. It occurs more often in bilateral than in unilateral pneumothorax. Death may result from injuries of the lung in certain patients.
4. Mediastinal hernia: This complication may occur in 9 per cent of all patients receiving pneumothorax.

5. Adhesions: May be considered a complication of artificial pneumothorax in so far as they prevent collapse of the diseased portion of the lung.

6. (a) Pleural effusion occurs early. In the author's series it was registered in 77 per cent during the six months after the pneumothorax was started.

(b) Tuberculous empyema occurs in 14 per cent of all pneumothorax patients and in 46 per cent of all patients with effusion that were aspirated. Partial or complete re-expansion of the lung with surgical collapse, wherever this is indicated, has given satisfactory results with this serious complication.—*M. Q.—J. P. M. A.*

Correspondence

A New Glass Adapter for Blood Transfusion

Dr. I. David, Colombo, writes:

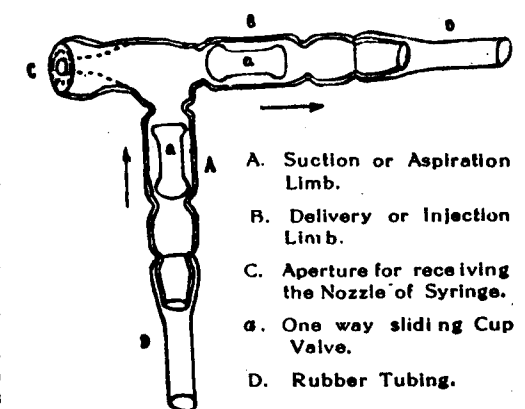
On a previous occasion an illustrated article dealing with the merits of this new adapter was published in the *Antiseptic* but it seems to have failed to convince the readers of the simplicity of its use. I am therefore writing again on this subject in order to prove the simplicity of this 'gadget' and point out that the difficulties met with in working this apparatus are imaginary and not real.

The chief difficulty first met with in working this apparatus is in driving out air bubbles present and in preventing new air entering it from without through the delivery needle. Air from the adapter cannot be driven out in the same way that we drive it out from a hypodermic syringe, because the air will be going out and coming into the adaptor with every stroke of the piston of the syringe which is attached to it until there is created in it sufficient pressure, both positive and negative, to enable the valves to act truly. But this difficulty is only apparent and is easily overcome if both the Suction end (AD) and the Delivery end (BD) are kept under the transfusion solution preferably contained in a conical glass before any attempt is made to drive out all the air. With both the ends of the Suction and the Delivery tubes 'under water' as it were and with the nozzle of the syringe directed upwards the piston is worked up and down until all the air from inside is driven out with no air from outside getting in. Once all the air bubbles are driven out the delivery tube with the injecting needle mounted on it is plunged into the recipient's vein taking care not to raise the needle above the level of the suction end. If the delivery end is raised above the level of the suction end air will be drawn in by the solution flowing back in to the conical glass. But by keeping BD below the level of AD the liquid will freely flow through the needle by syphon action started by the syringe and there will not be any more need to work the syringe except when the flow has to be accelerated. But slower the transfusion is given better will be the result. If for any reason there is stopping of the flow then one or two strokes of the piston will re-start the flow. The glass con-

necter in the delivery tube will show when the needle enters the vein by the blood flowing back immediately.

Another reason for your not using this apparatus may be the fear of clot-formation. I have used the apparatus for withdrawing half a pint or more, at a time, of blood from veins of patients and there was no clot formation in any part of it, probably because the blood was always kept moving and never allowed to stagnate in any part of it. It may be necessary to coat the interior with Paraffin. But the question of clotting will really arise only in a case of Direct or Hand Blood Transfusion which is rarely practised nowadays for obvious reasons. Owing to certain difficulties and risks connected with this operation and having no means of estimating the exact quantity of blood transfusion and the delay

Glass Adapter for Transfusion



and the inconvenience caused to the donor in having to remain in a recumbent posture, sometimes even for an hour this operation is rarely undertaken. It is being replaced by Indirect Transfusion with citrated or dried blood or plasma.

As for the difficulty in cleaning and sterilising the instrument simple flushing with ordinary water and then boiling it is all that is wanted. It was also reported that transfusion with a glass funnel and tube by gravity is much more simple. But it may seem simpler. Either due to blockage in

the bore or the tip of the needle or from the collapse or flattening of the vein, which is not uncommon in cases of serious hemorrhage and shock, mere gravity alone cannot overcome any obstruction to the free flow of any solution.

I have witnessed this happen in the operation theatres of the Edinburgh Royal Infirmary more than once. Failures from these causes in the Army and Navy are said to be over 15%. Since the introduction of this apparatus in a large Maternity Hospital in India the operation of transfusion has been done with rarely any failure, even

when performed, at times, by the nursing staff.

Any one following the above instructions closely will be amazed at the result. In giving transfusion, it is better to use a special intravenous or saline needle fitted with a metal connector. I also recommend using an all-glass 2 c.c. record syringe which is easier to handle.

The adaptor is also very useful for 'non-stop' infusion, irrigation, and aspiration of aural, antral, pleural and other cavities and in time will replace expensive instruments and appliances now in common use.

New Preparations

Hexobarbitone.—Hexobarbitone (N-methyl-cyclohexenyl-methylbarbituric acid) is now issued by Burroughs Wellcome & Co., as 'Tabloid' Hexobarbitone and as the Sodium salt, Soluble Hexobarbitone, the latter for producing anaesthesia of short duration for which it is injected intravenously. Soluble Hexobarbitone is of particular value in minor surgery, in simple tooth extractions and to intensify gas-and-oxygen anaesthesia. It may also be used for the induction of general anaesthesia in operations of not more than 20 to 30 minutes duration, and, by rectal administration, to produce hypnosis and in the treatment of acute and chronic alcoholism. Soluble Hexobarbitone (B.W. & Co.) is issued in phials of 0.5-gm. and 1-gm., each strength in boxes of 5 and 25 phials. Each phial is accompanied by a 'Hypoloid' ampoule containing sufficient sterile distilled water to prepare a 10 per cent. solution of 'Hypoloid' Soluble Hexobarbitone.

'Tabloid' Hexobarbitone, gr. 4, is given orally to produce light hypnosis. It is issued in bottles of 25, 100 and 500.

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Obituary

The death in Bombay of Mr. H. Walker, Managing Director, Messrs. May & Baker (India) Limited, Calcutta, came as a great shock to his many friends and business associates.

A member of the Pharmaceutical Society of Great Britain, the late Mr. Walker worked in West Africa and in Burma prior to joining Messrs. May & Baker (India) Limited, in 1933. He was subsequently appointed Manag-

ing Director and will always be remembered for his ability and rigid sense of fairness as well as for his consideration and kindness.

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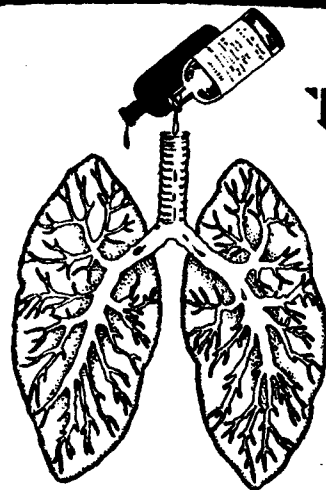
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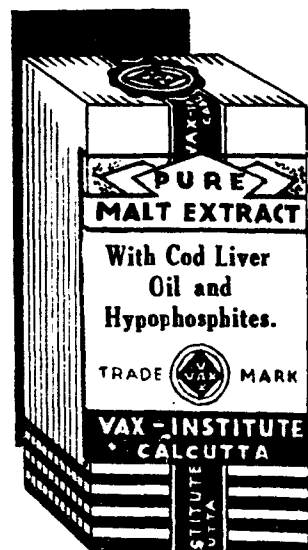
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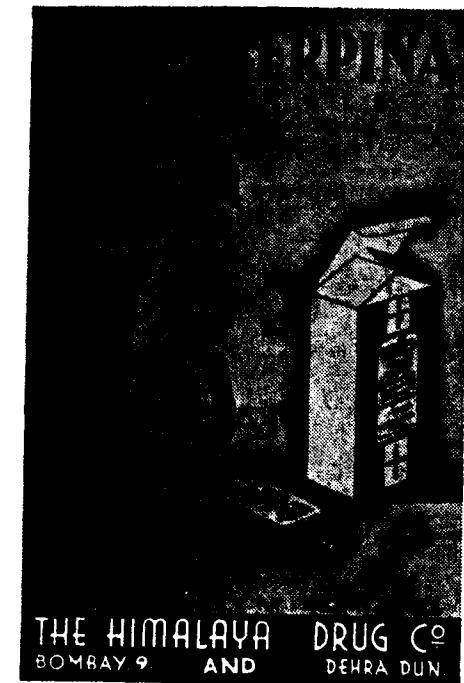
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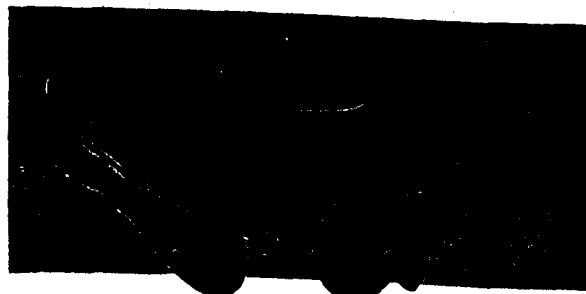
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