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The Antiseptic

A Monthly Journal of Medicine & Surgery

For the use of Registered Medical Practitioners, Hospitals and Laboratories only

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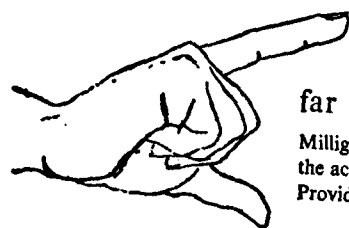


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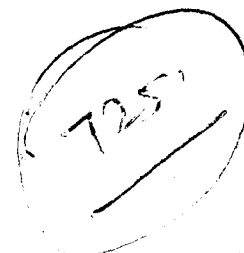
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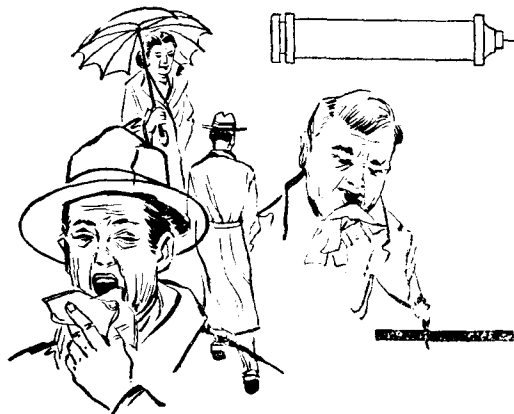
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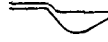
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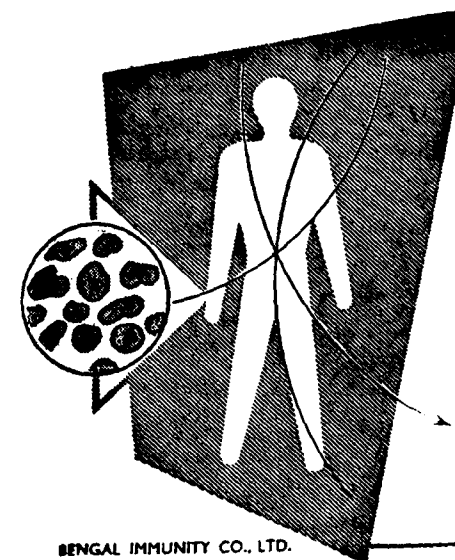
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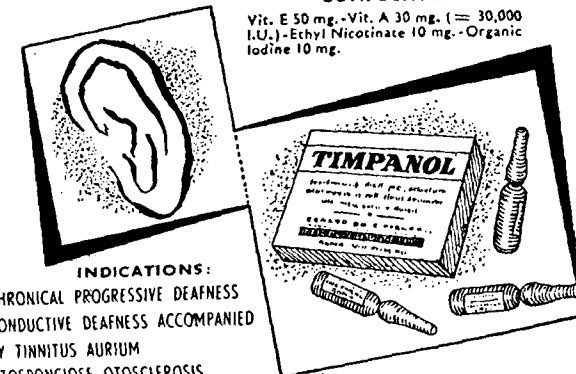
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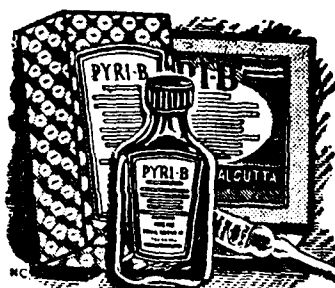
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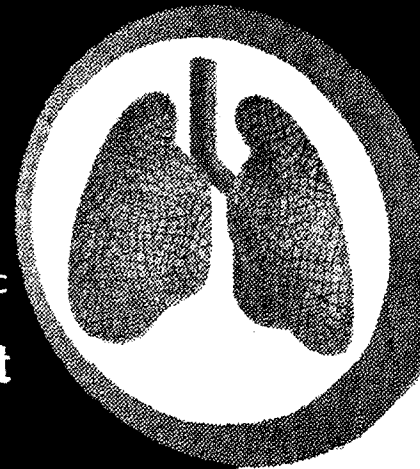


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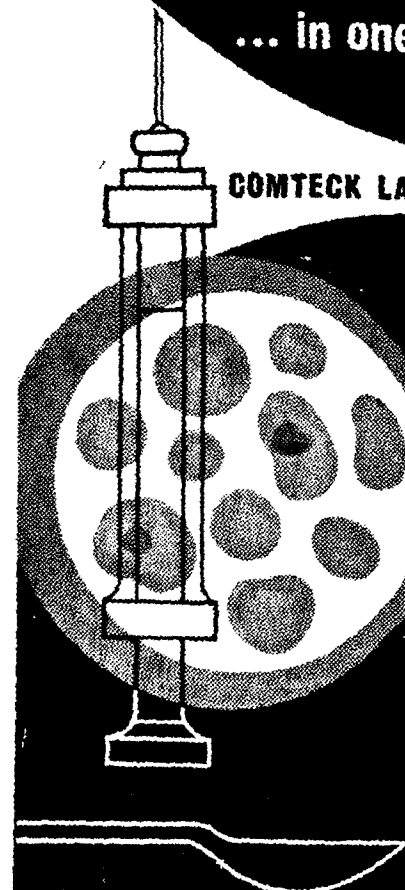
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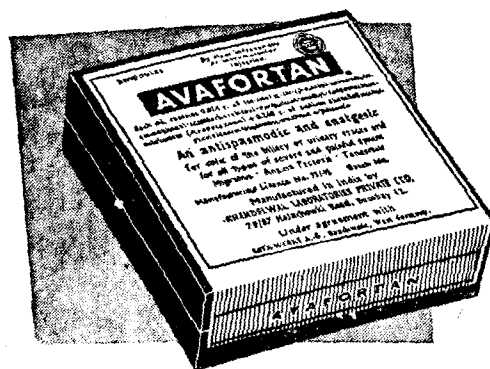
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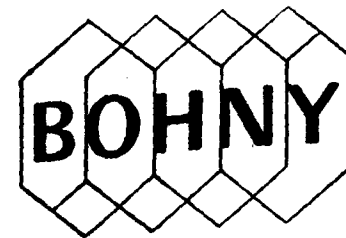
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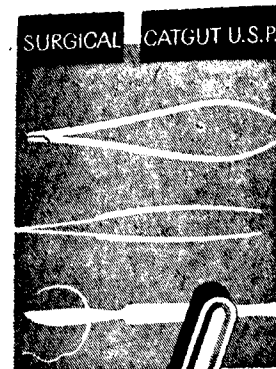


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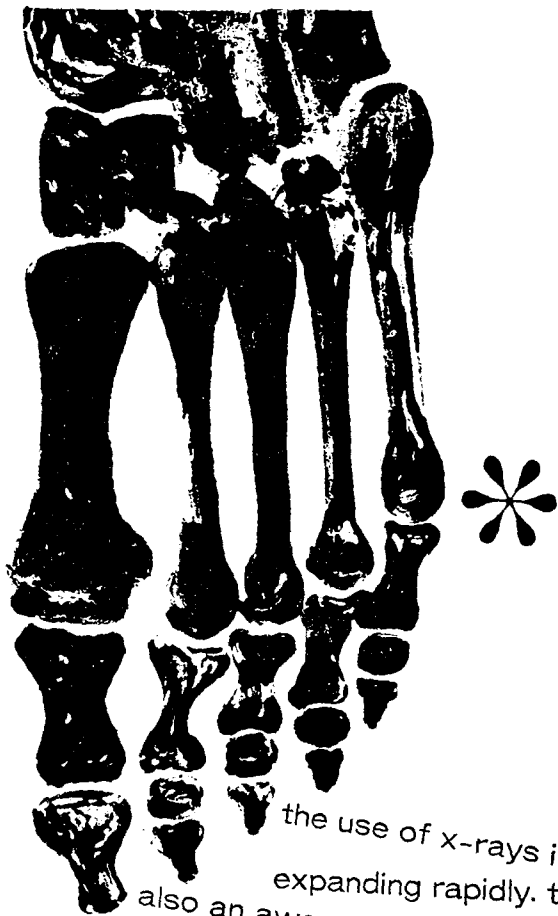
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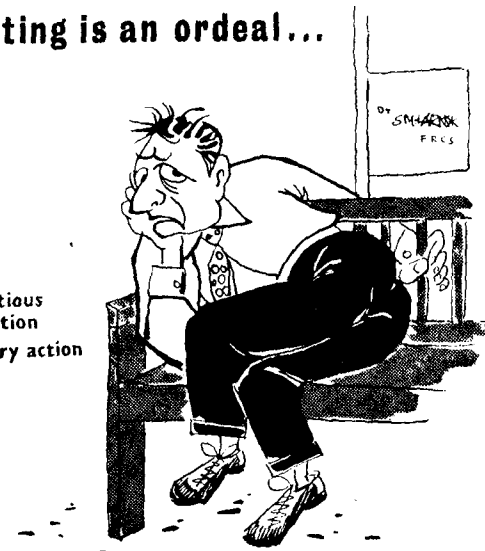
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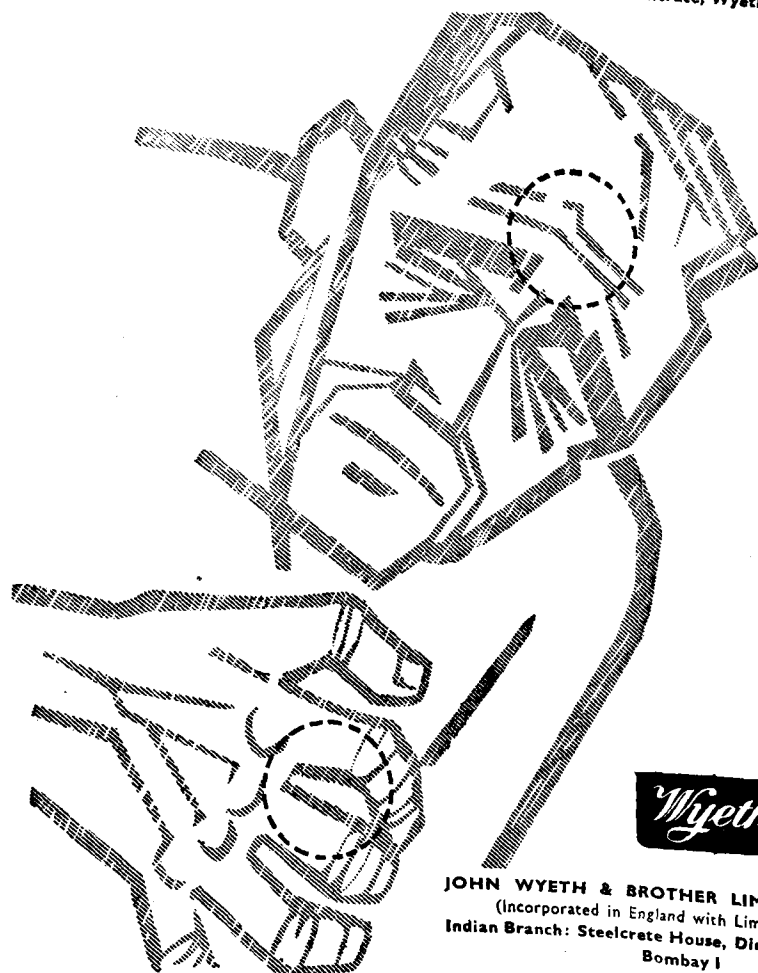
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1. Russek, H.I.: Am. J. Cardiol. 3:547 (April) 1959.

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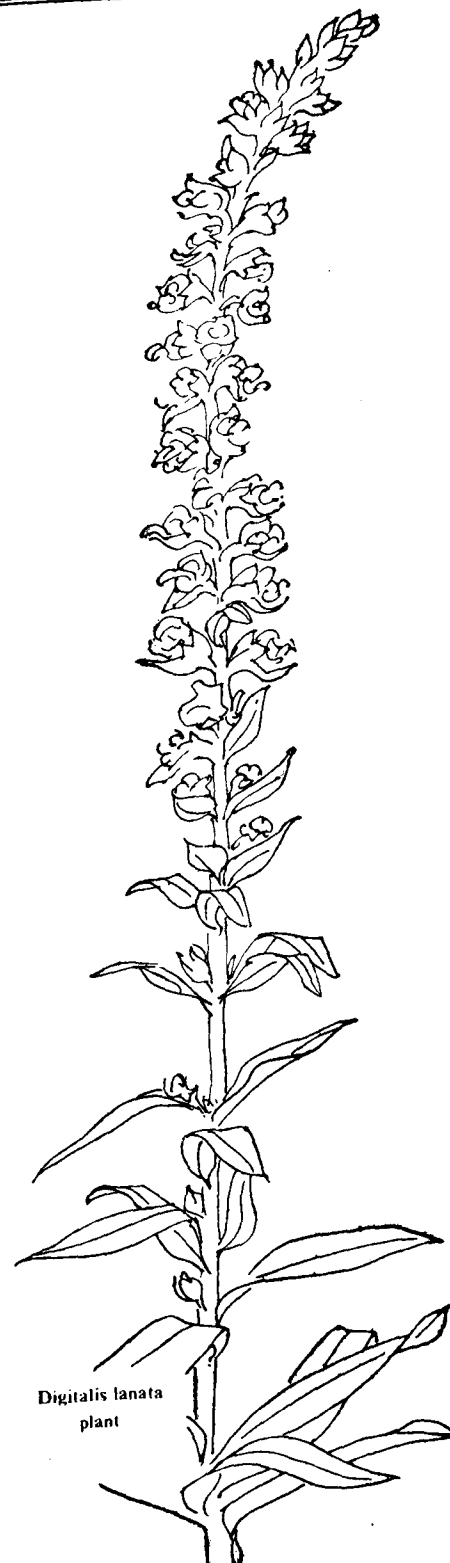
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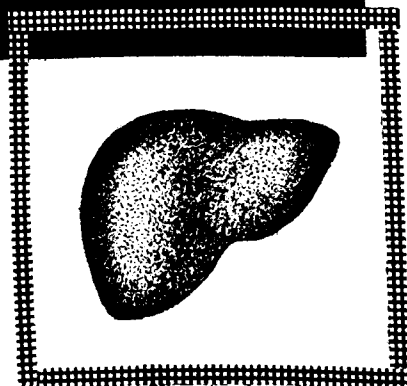
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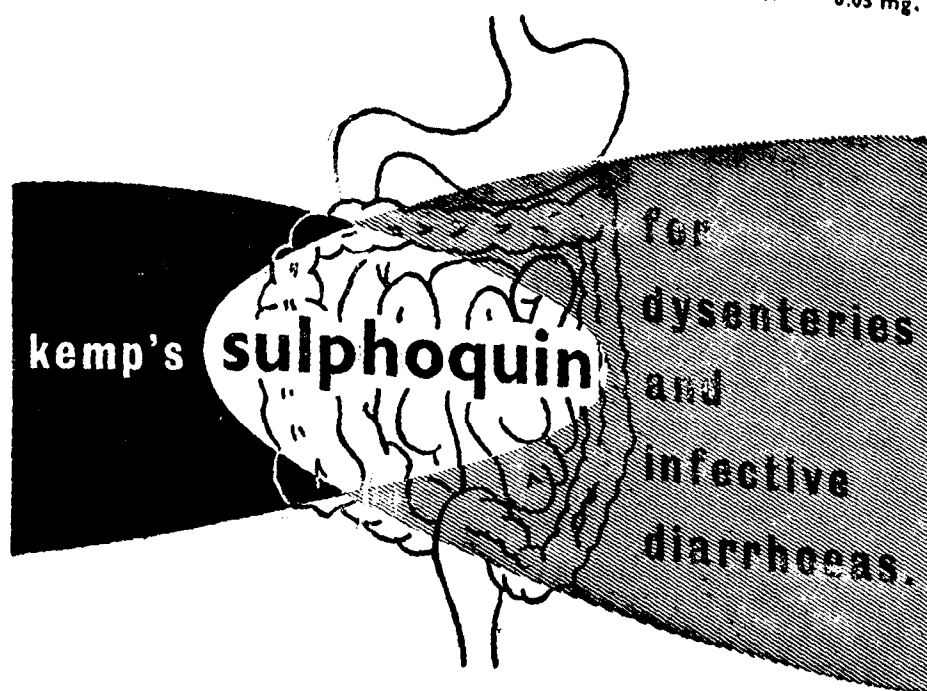
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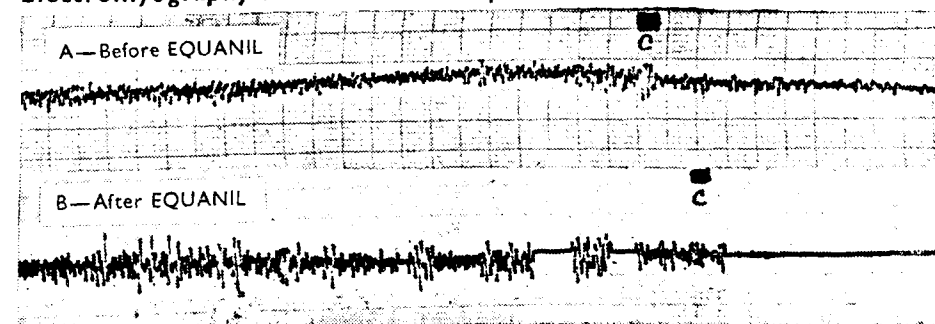
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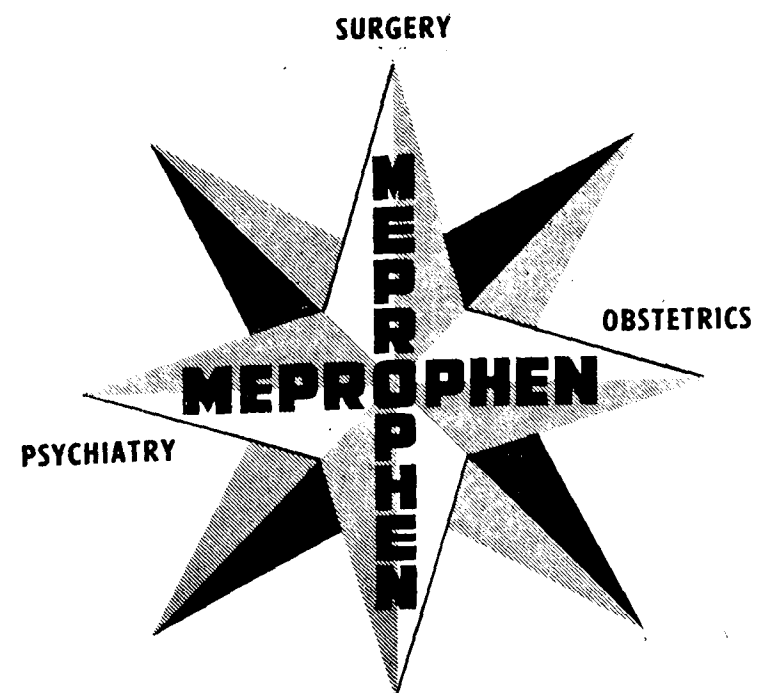
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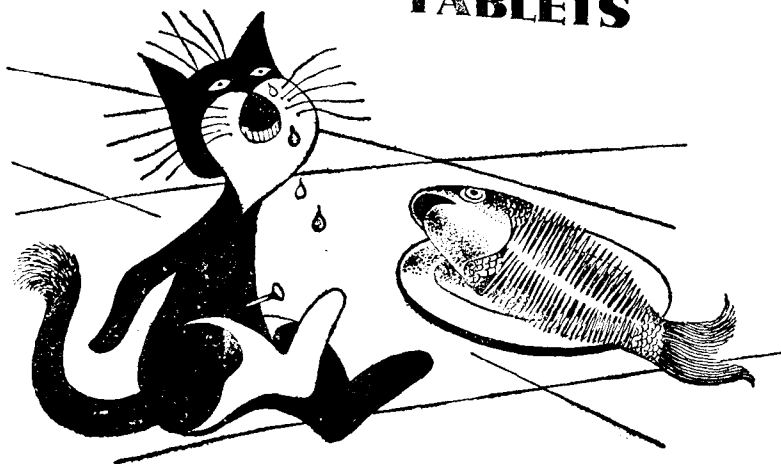
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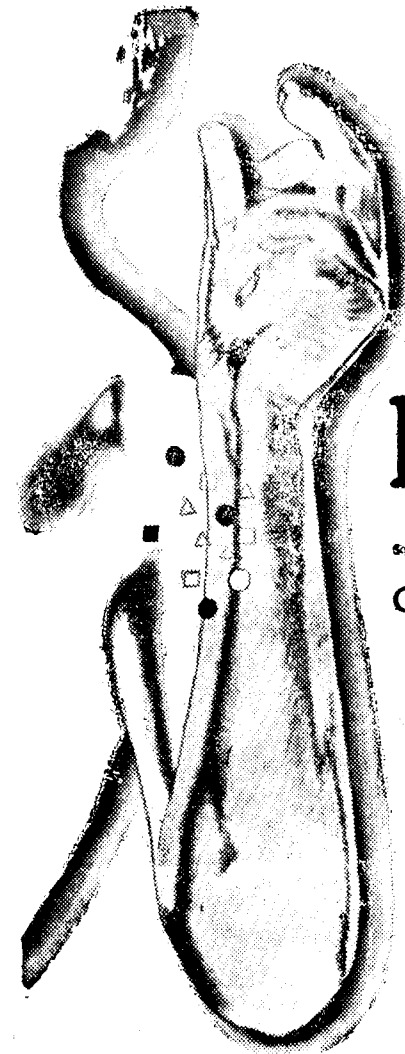
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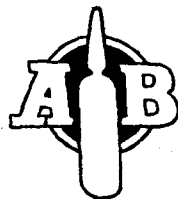
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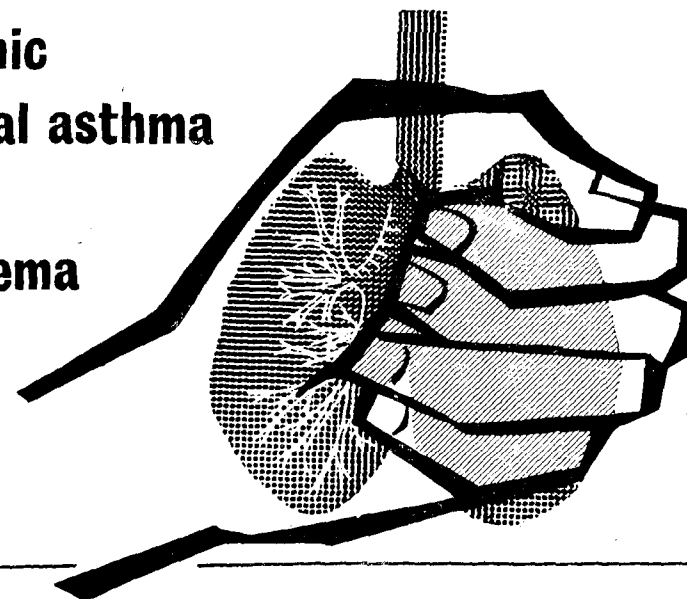


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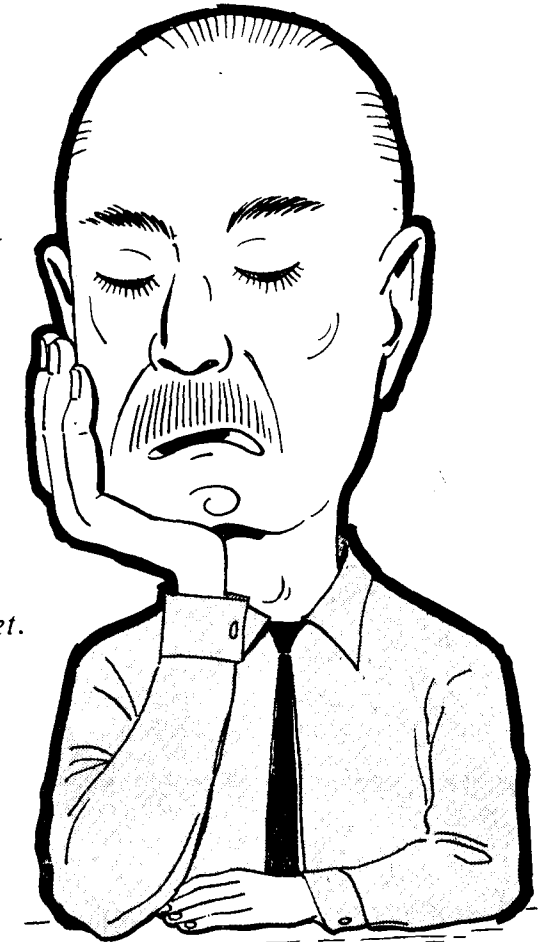
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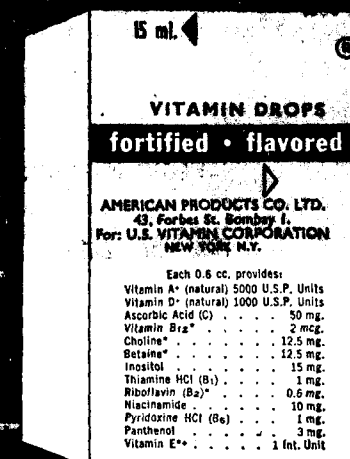
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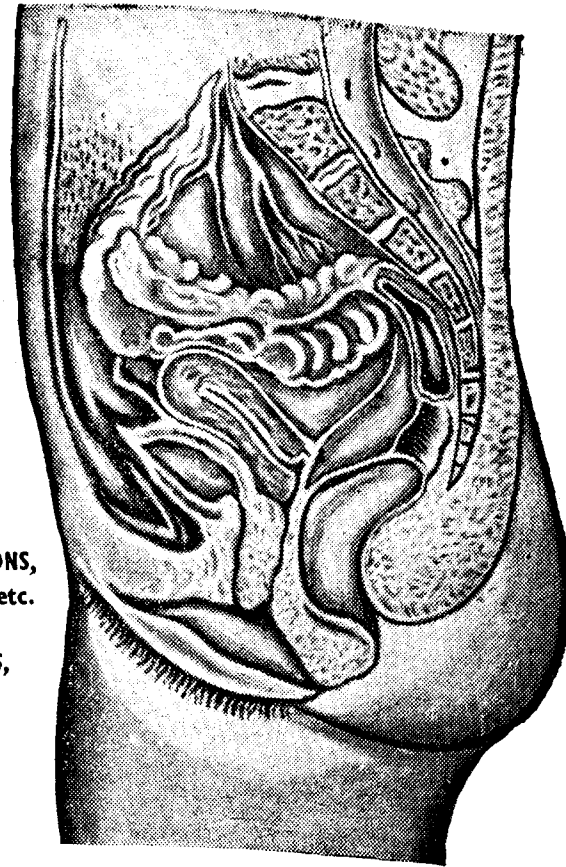
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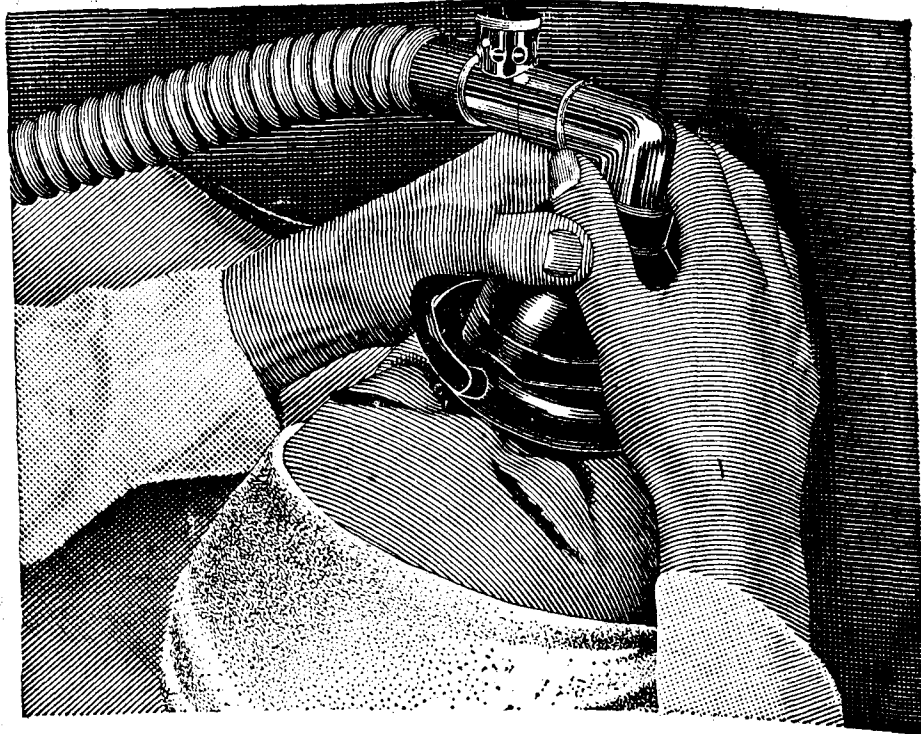
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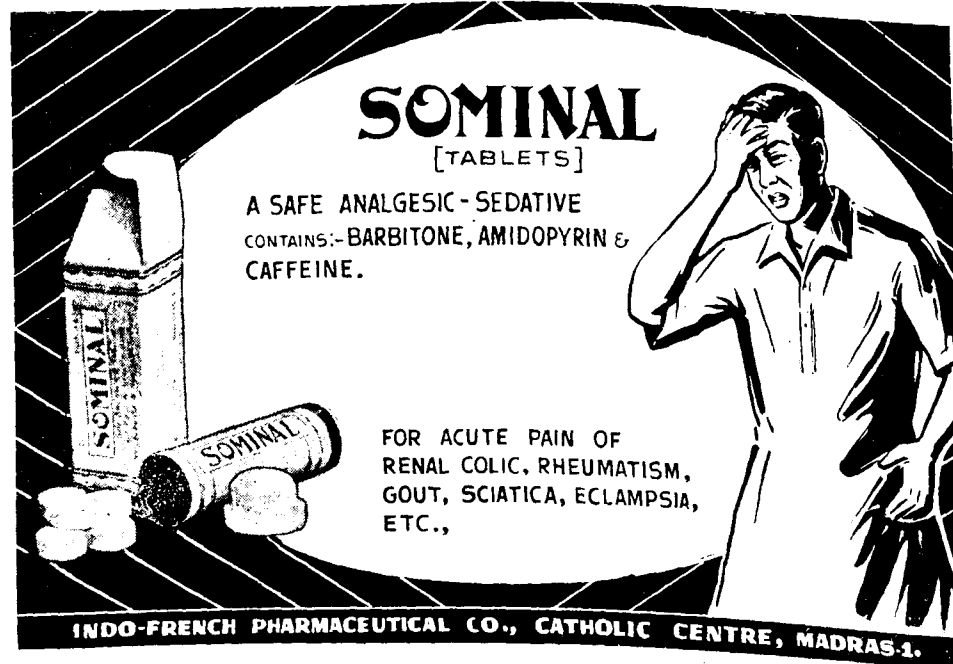
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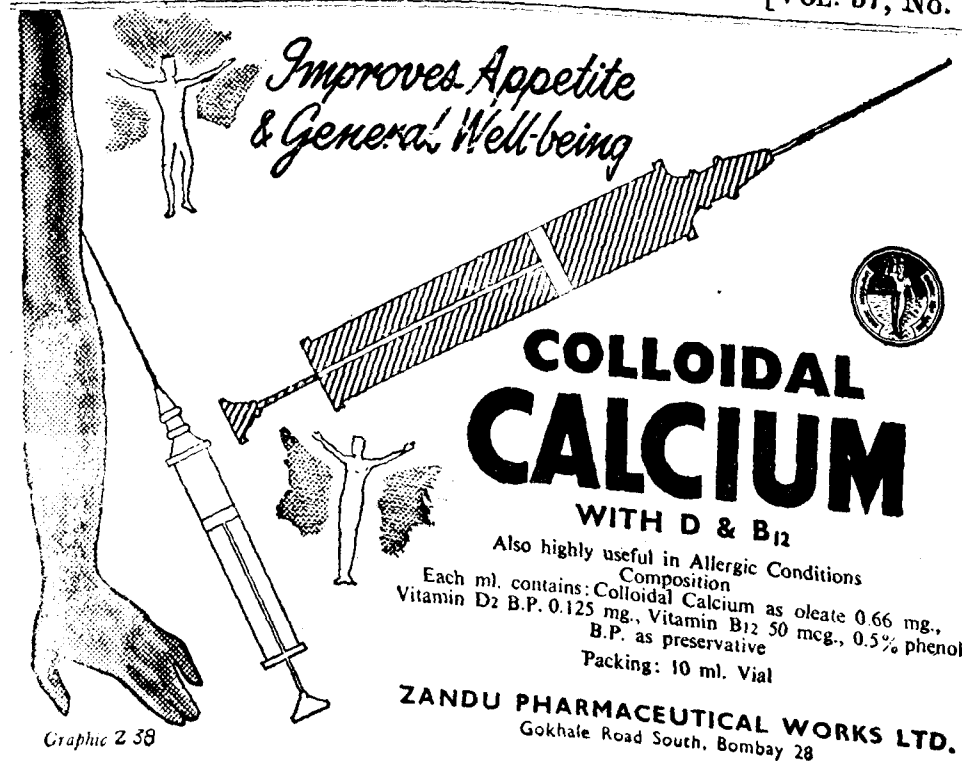
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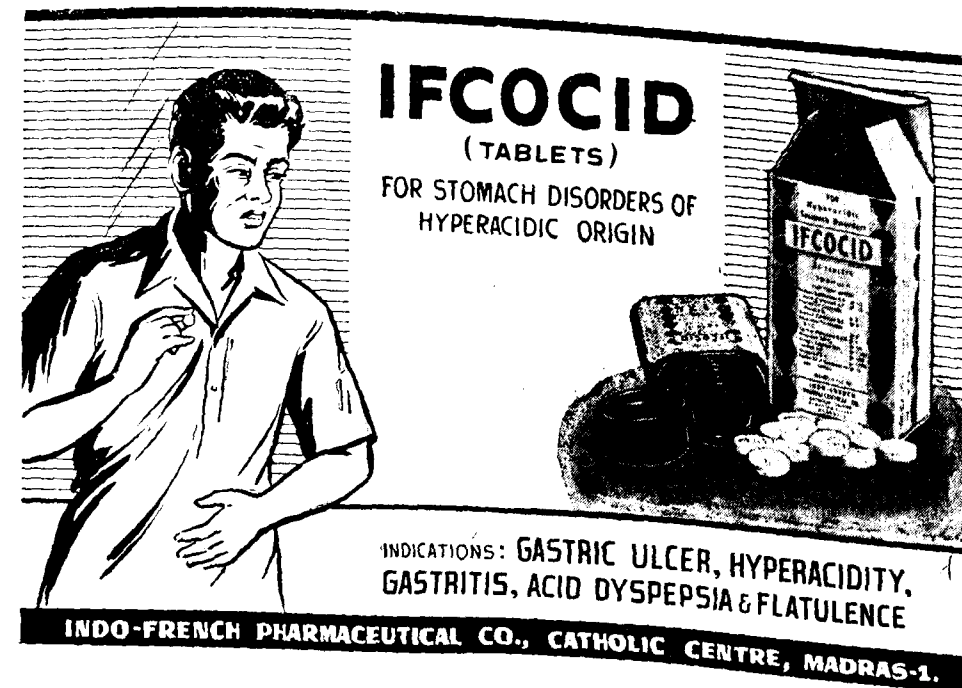
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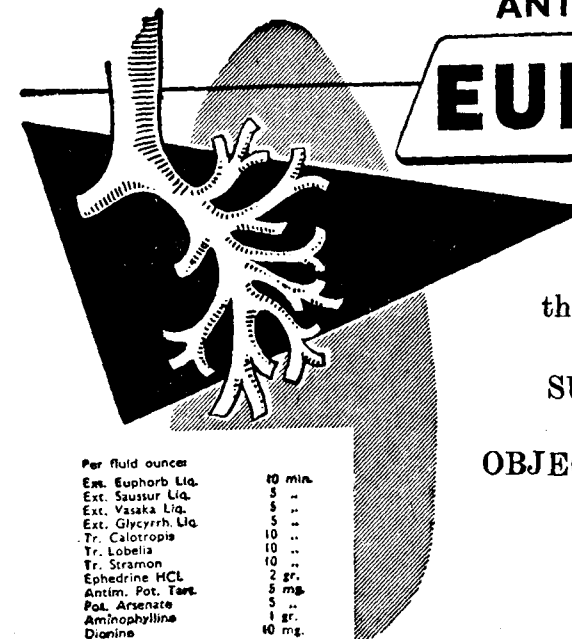
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No. 8

Original Articles

AVULSION URETHRA*

CAROL E. JAMESON,

Hill Top, Kodaikanal

MANY excellent articles have been written on the repair of difficult cases of vesico-vaginal or urethro-vaginal fistula, but I have not seen a description of the technique which I have used several times successfully in the case of an avulsed urethra. All gynaecologists are familiar with this type of case. The remaining urethral tube is apparently not attached in the mid-line of the pubis but to the side of the centre and is flabby with no demonstrable muscle. The hole in the bladder is separated from it by as much as an inch in some cases. One is fortunate if the bladder-hole has a slight puckered appearance showing that some of the sphincter muscles are attached to the bladder, but in some cases this appearance is lacking and the top edge of the bladder hole is firmly attached to the pubic bone, so there can be no flap splitting on that side.

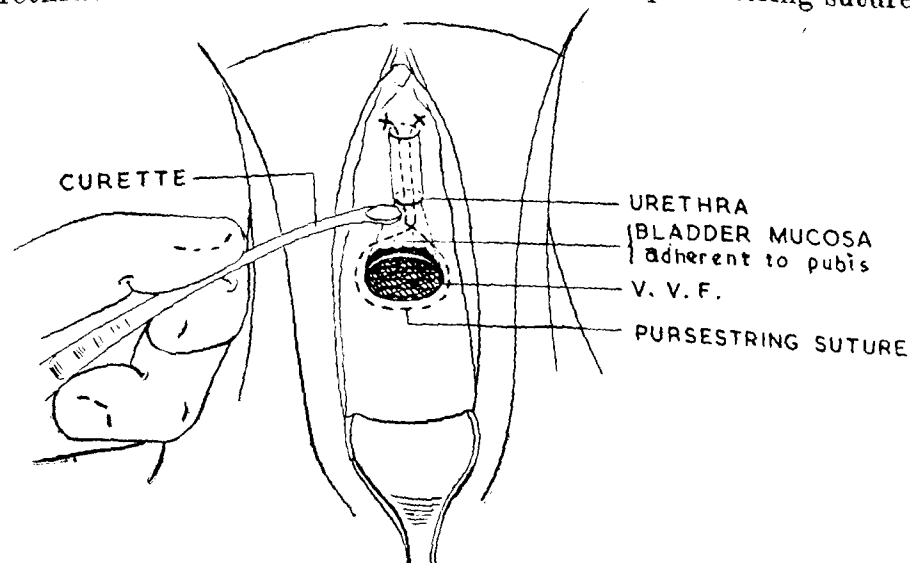
The inadequacy of the sphincter has made many of these cases incontinent inspite of successful repair of the hole.

In my first case, the torn-off bladder showed a slight draw-string puckering. In the second, there appeared to be no circular muscles in either the flabby short remnant of the urethra nor in the separated bladder hole. In both, the urethra had been avulsed and occupied a position to the side of the symphysis.

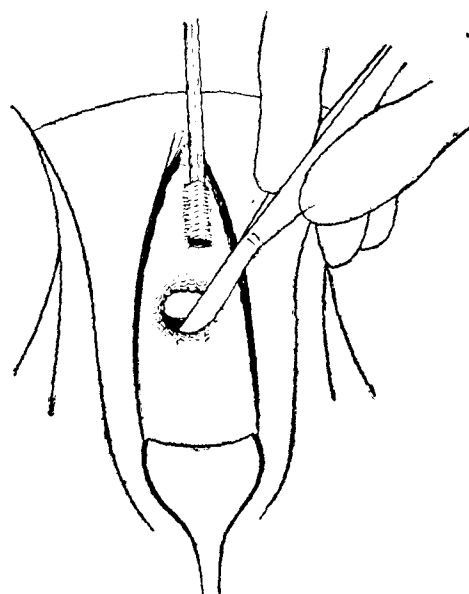
The technique of the operative procedure.—The bladder side was dissected into two flaps as far as possible. On the side of the pubis, (i.e., with the patient lying prone, it is the

*Specially contributed to the ANTISEPTIC.

lower side of the bladder-hole) a strip of bladder mucosa was cut or curetted off the bone where it was closely adherent to the periosteum. A sharp curette removed most of the lining urethral mucosa from the flabby urethra. A purse-string-suture



of 000 chromic cat-gut was placed in the edge of the bladder-hole submucosa and the far ends brought out through the urethra, in effect, advancing the bladder to the external meatus. Both this stitch and a series of interrupted nylon sutures around the



circumference of the meatus, stitched the bladder to the external meatus. A very small calibre retention catheter was placed in the bladder and at first there was a little leakage around this. The catheter was removed early on the 8th day in order not to stretch the urethra. At this time the bed was constantly wet from leakage from the relaxed sphincter. The patient was sent daily for Faradic current stimulation to the urethra and was also taught to do exercises with the intention of contracting the muscle around the introitus as well as the urethra. Gradually she became more continent and the bladder was able to retain more than 12 ounces. On discharge, the urethra was completely satisfactory.

We were gratified because we had felt the case might terminate in transplantation of ureters into the bowel. In this case a small recto-vaginal fistula was also repaired.

The convalescence was unfortunately complicated by a severe dysentery during which the patient was unconscious for several days, but this calamity did not interfere with the successful outcome.

The case in which some purse-string muscle appeared and was seen in the opening of the bladder-hole, was completely satisfactory from the time of removal of the stitches and retention catheter. In this method there is no subsequent stone-formation, as there are no buried sutures. Sutures were brought to the surface at the external meatus.

The external meatus was drawn back, towards the bladder slightly as scar tissue retraction occurred, but this did not interfere with the result. Subsequent pregnancy should be terminated by a caesarean—not because of a soft tissue obstruction but because of the contracted pelvis which caused the original injury.

Dr. Bhat urologist, of this hospital does not always resort to implantation of ureters in unsatisfactory urethral cases, but sometimes makes a new urethra from a tube of bladder, working both suprapubically and perineally.

For cervico-vaginal fistulae I have a small device which I have not seen described anywhere in the literature. After the bladder has been dissected from both the cervix and the vaginal mucosa, it is difficult to bring the hole into view, as it is usually on the upper side of the bladder. Introducing a closed Kocher through the meatus and directing it to the back edge of the hole by the finger in the vagina, it is caught by the tip of the Kocher. It can usually be swung up so that the tip is brought into view. It is then easy by sight to invert the edges of the hole by the Lembert suture with 000 chromic catgut. The external vaginal layer of nylon sutures is introduced then, as in every other case of vesico-vaginal repair.

VITAMIN K TREATMENT IN NEONATES

Synthetic vitamin K given by Stroder and co-workers of Wurzburg (*Deutsche med. Wchnschr.*, 84: 1553, 1959) in doses of 10 mg. intramuscularly or 30 mg. by mouth proved effective and produced no side-effects when given to a large number of full-term and premature newborn infants. Vitamin K₁ however was found to be even more effective, 1 mg. intramuscularly being a fully effective dose. It achieved complete and rapid reversal of all clotting deficiencies caused by a lack of vitamin K in the premature infants.—(*J.A.M.A.*, 14-11-'59).

CURRENT CONCEPTS IN THE MANAGEMENT OF ANGINA PECTORIS*

THE physician and the public at large are becoming increasingly conscious of coronary artery disease in its various forms. Recent studies in our own country (Vakil, 1954; Samani, 1956; Malhotra and Pathania, 1958) have emphasized the high incidence of ischaemic heart disease amongst our people.

P. L. WAHI, M.D. (Pb.),
AND
PUSHPA WAHI, M.B., B.S. (Pb.),
Medical College and
Rajindra Hospital, Patiala

Though the original masterly description of angina pectoris by Heberden, published about two centuries ago, remains unsurpassed in its depth of clinical observation, the pathophysiological basis of this symptom-complex was unanimously accepted only when Keefer and Resnick (1920) suggested that angina is the painful manifestation of ischaemia and hypoxia of the myocardial cells. This basic concept of cardiac pain is important to understand because it applies to all grades of angina from minor angina of effort to major anginal syndrome due to myocardial infarction. This ischaemia of the heart is brought about by relative coronary insufficiency—due either to atherosclerosis and resultant narrowing of coronary vessels producing inadequate supply of blood, or to the increased needs of the myocardium as in thyrotoxicosis or to poor oxygen-carrying capacity of the blood, such as in severe anaemia. However, the commonest cause of angina pectoris is coronary atherosclerosis. The management of angina pectoris will be considered in this article from the above point of view; the other uncommon causes, like aortic-valve disease, syphilitic coronary osteal-stenosis, thyrotoxicosis and anaemia will not be discussed.

Management of angina pectoris secondary to ischaemic heart disease.—This may be discussed under two heads: viz.:—(1) Treatment of the acute anginal attack; and (2) prophylactic treatment.

The treatment of the acute anginal attack is well understood, specific and satisfactory while the prophylaxis of ischaemic heart disease is still in the realm of theory and caught in a maze of numerous physical and chemical methods and so manifestly not satisfactory. In medicine when a large number of therapeutic measures are offered for a single clinical entity, it is considered to be an undoubted sign of the physician's inadequacy to deal with it effectively. (Chevalier and Simon, 1958).

1. TREATMENT OF THE ANGINAL ATTACK:—Glyceryl trinitrate, first introduced by Murrell in 1879, is the drug of choice because it is cheap, easy to take, fairly rapid in action and

AUG. '60]

ANGINA PECTORIS—P. L. W. & P. W.

607

constitutes the complete treatment of a single attack. It is usually administered in the form of a tablet to be dissolved under the tongue. Though a dose of 1/100 gr. is usually recommended, we prefer to begin with 1/200 gr. tablet. It is often quite sufficient and is devoid of the unpleasant side-effects of a higher dosage which at times, may so frighten the patient that it becomes difficult to persuade him to take further doses of the drug. It is important to instruct the patient to take the tablet at the earliest feeling of the attack without waiting for the full development of the pain. If one tablet fails to control the attack, another may be taken after a few minutes. However, if the pain continues in spite of 3 or 4 tablets, the patient must take to complete bed-rest and send for the physician.

We often recommend nitroglycerine prophylactically with beneficial results when a patient has to take some unavoidable exercise but we strongly believe that the patient should usually limit this exercise well within his limits of tolerance. He should avoid giving room for the frequent production of pain and the use of nitroglycerine. Some physicians and many patients have a false belief that the frequent use of nitroglycerine may produce drug-resistance. In our experience, such a situation is very infrequent. Patients who have recently shown failure to respond promptly to nitroglycerine may be going in for coronary thrombosis. In such patients, it is our routine to recommend 2 to 4 weeks of complete bed-rest and then a gradual resumption of activity.

Though nitrites are very effective in the control of the anginal syndrome the exact mode of their action is not yet known. The generally accepted view is that they cause coronary vasodilation and thereby increase the blood-flow to the heart-muscle without increasing the work of the heart.

Amyl nitrate, introduced a century ago which is quicker in action has never been a rival to glycerine trinitrate. It is expensive, inconvenient to carry and when administered produces an unpleasant smell and a frightening noise.

2. PROPHYLACTIC TREATMENT:—May be further subdivided:—(a) Treatment of the causative disease—atherosclerosis; (b) increase of blood-flow to the myocardium, (i) medical (ii) surgical; (c) reduction of metabolic needs; and (d) inhibition of conduction of painful stimuli from the heart.

(a) Treatment of the causative disease:—The treatment of atherosclerosis is enveloped in a maze of theories and hypotheses that have been advanced to explain the pathogenesis of atheroma. These have varied from reduction in dietary intake, (calories and fats and cholesterol-containing foods), the use of oestrogens, nicotinic acid, sitosterol and chelating agents without any real success or symptomatic improvement (Wahi, 1958). As a rule

* Specially contributed to the ANTISEPTIC.

we advise a general reduction in diet for obese patients and also suggest the cutting down of fat and cholesterol-containing foods.

(b) *Increase of blood-flow to the myocardium*:—Attempts to increase the blood-flow to the heart muscle, have been both medical and surgical.

(i) Medical treatment consists in the use of drugs which are believed to be coronary vasodilators. Long-acting nitrates like Peritrate (Penta-erythritol tetranitrate) and Metamine (triethanolamine trinitrate) are commonly used. Peritrate is available in 10 mg. tablets and 1 or 2 tablets are given three or four times a day. The only contraindication which is common to all nitrates, is glaucoma. Some have reported good results with Peritrate (Dailheu-Geoffroy, 1950; Russek, 1955) while others (Friedberg, 1956; Kalmanson *et al*, 1955) hold contrary views. Metamine is given in doses of 2 mg. three to four times a day. The reports regarding its effectiveness are less favourable than those of Peritrate (Friend *et al*, 1954).

The xanthines form another group of coronary dilators in frequent use. The commonest is aminophylline, while many proprietary preparations with the addition of phenobarbitone and/or papaverine are also available in the market. Aminophylline is given orally in doses of 0.1 to 0.2 g. three or four times a day. Choline theophyllinate in doses of 0.2 to 1.0 g. four times a day has been tried by Aravanis (1955) with favourable results.

Out of a large group of drugs varying from alcohol, Vitamin E, reserpine, khellin, papaverine and testosterone the only one which has yielded some favourable results, is papaverine. The use of sedatives like phenobarbitone and equanil is of some value in reducing the associated sense of anxiety while testosterone in some cases acts as a mood-elevator.

(ii) Surgical methods to increase coronary blood flow vary from implantation of certain vascular structures like intercostal muscles, omentum, left lung, jejunum; grafting of left internal mammary artery into the myocardium; ligation of both internal mammary arteries; ligation of coronary sinus and pericoronary neuronectomy; various forms of cardiopericardiopexy with talc, bonemeal, or asbestos according to the detailed procedure of Beck I and II operations. Hellerstein (1957) who reviewed these surgical procedures states that myocardial revascularization surgery is still in an experimental stage and is advisable only in cases of intractable angina. These procedures have a high mortality-rate and the end-results are far from predictable.

(c) *Reduction of metabolic needs*:—Metabolic needs of the heart can be reduced by the production of myxoedema by partial thyroidectomy, with thioureacompounds like methyl-thiouracil and recently with radioactive iodine (I^{131}). Favourable results

(75%) have been reported in patients treated with radio-active iodine (Blumgart, 1957). However in spite of the impressive results obtained in certain patients, several workers. (Friedberg, 1956; Chevalier and Simon, 1959) are sceptical about the procedure being consistently effective. A dulled intellect and physical activity, diminished sexual potency and libido, altered physiognomy, and doubtful benefit to the arterial degeneration are not pleasant features to see in a patient even though his angina may have been controlled.

(d) *Inhibition of conduction of painful stimuli from the heart*:—It is generally believed that cardiac pain is due to anoxia or to some unidentified compound resulting from anoxia which stimulate the sympathetic fibres arising from the myocardium. Though this fact had been realized fairly early, successful surgical resection of the sympathetic ganglia or dorsal roots in the upper dorsal region was reported only in 1948, by White and Bland.

There are now five different methods for inhibiting the painful stimuli from the heart; (a) paravertebral injection of alcohol in the thoracic sympathetic ganglia (DI-D4); (b) resection of sympathetic ganglia (DI-D4); (c) bilateral posterior rhizotomy for the upper four or five dorsal roots; (d) unilateral stellate ganglionectomy and (e) resection of pre-aortic plexus.

These surgical procedures were initially objected to, on the ground that the abolition of the painful stimuli may remove the warning signal to the anginal patient. However this is not true as a sensation of dull ache on exertion persisting after these operations serves as a warning. The real objections to these measures are: (i) they fail to correct the pathophysiological basis of ischaemic pain; (ii) certain radical procedures have a high rate of mortality and post-operative complications like intercostal neuralgia, and (iii) that the results are not consistent and lasting. In view of the above drawbacks these measures should be reserved for certain selected cases of intractable angina.

Though we have discussed different available methods for the treatment of angina pectoris in some detail, a working routine approach to an average case of angina is presented below. Most of the cases of angina pectoris know their level of exercise-tolerance and do not require heroic treatments like surgery, induced myxoedema or long-term anticoagulant therapy. Certain basic rules based on simple common sense rather than on any complicated theoretical knowledge of medicine are sufficient. The diet should be of low caloric value; heavy, rich foods must be avoided. The patients should be advised to lose weight. It is preferable to substitute vegetable

oils for animal fats. It is however wrong to produce "Cholesterol level-neurosis" in patients with angina pectoris.

In heavy smokers it is preferable to reduce the use of tobacco without causing emotional disturbances as a result of total cessation of smoking. Coffee and tea may be allowed in moderation and an occasional alcoholic drink may do no harm.

In an average case of angina, daily walks at a slow pace are advisable and many patients need not forego a full-time job. Entertainments and social activities may exert a positive beneficial influence if they do not cause too much of mental excitement and physical strain. Journeys for business or pleasure are permissible but air travel should be reduced and should be made only in pressurized cabins. If possible, vacations and holidays should be frequent and long. Sexual intercourse is allowed if the patient is warned that it should not be too long and too frequent. A tablet of nitroglycerine prior to the sexual act may be used prophylactically and may remove the fear of anginal pain.

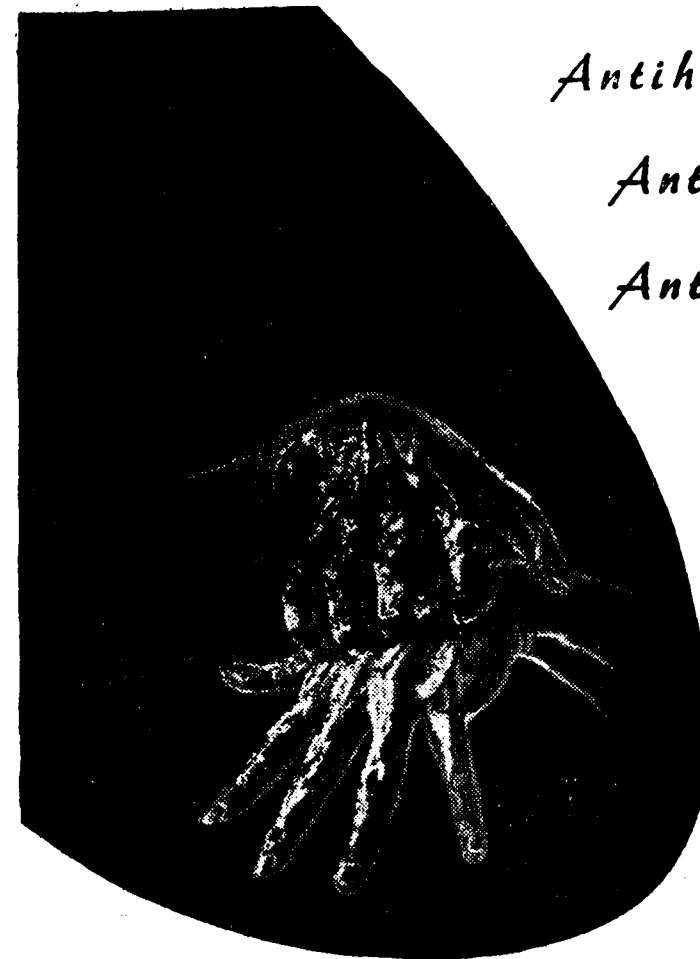
Drug-therapy should be restricted to an intelligent and adequate use of nitroglycerine. A long-acting nitrate has often to be prescribed more for the satisfaction of the patient than for real coronary vasodilatory effect. In such situations, the patient may be advised to use peritrate or aminophylline with or without the combination of a sedative or tranquillizer.

It is equally important to impress on the patient that in most cases, angina pectoris is only a warning and some modifications and readjustment in the mode of living and in general activities will ensure a normal routine and a good span of life.

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The essence of courage is not that your heart should not quake, but that nobody else shall know that it does.—(E. F. Benson, *The West Virginia Medical Journal*).



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PRIMARY TUBERCULOSIS IN CHILDREN*

THE treatment and control of tuberculosis is a major problem today. The adult tuberculosis patient spreads the disease to his wife and children in close contact with him, living in unhealthy and unhygienic surroundings, and subject to droplet infection, malnutrition and poor economical conditions.

H. R. KAMDAR, M.B., B.S.,
Sarvajani Jain Dispensary,
Matunga, Bombay

The incidence of primary tuberculosis in children is rapidly increasing and early diagnosis and proper treatment can alone save many of these young patients. Waaksman (1945) gave us streptomycin, a new weapon in our fight against tuberculosis. This was followed by para-amino salicylic acid (PAS) and isonicotinic acid hydrazide (INH) and other drugs. In prophylaxis B.C.G. vaccination has proved very valuable in preventing primary tuberculosis. Early diagnosis, mass radiography, adequate modern treatment, detection of contacts, B.C.G. vaccination and propaganda through education films are essential.

The primary infection in childhood is due to first inoculation with tubercle bacilli. If the dose is very large, it will overcome the defence of the child and may cause death. If the dose is small the child may show no symptoms, only the skin sensitivity tests becoming positive. A medium dose may produce acute pneumonic phthisis. The child will manifest symptoms like temperature cough, night sweats, loss of weight, positive Mantoux test and radiological evidence of primary focus, with prominent hilar shadows. Primary tuberculosis spreads rapidly through the blood stream and miliary tuberculosis pleurisy, meningitis, segmental collapse of lung, bronchiectasis, renal, bone and joint tuberculosis and abdominal tuberculosis may occur. The incidence is higher in children of tuberculosis families. Milk which is not pasteurised may give rise to abdominal tuberculosis caused by the bovine type of organism. Infected cows, infected milk and infected dairy workers spread this disease.

Heredity as a factor has not been proved. Measles, whooping cough and influenza exacerbate preexisting pulmonary tuberculosis. Juvenile diabetics are also prone to this disease. Congenital pulmonary stenosis and Fallot's tetralogy, where there is low pulmonary arterial pressure and low oxygen tension are all favourable factors. The portals of entry for the tubercle bacilli are the placenta, the respiratory and alimentary tracts and the skin.

Pathology.—Lymph node involvement is almost a constant accompaniment of the initial parenchyma infection in children. Lymphatic tissue is first invaded by the tubercle bacillus. Next

*Specially contributed to the ANTISEPTIC.

[611]

comes the lung. The powers of resistance in children is very low. The hilar glands enlarge and may cause segmental collapse of the lung especially of the right middle lobe due to its anatomical structure. The enlarged regional lymphatic glands help in detecting the site of primary infection. The cervical nodes suggest tonsil, tracheo-bronchial nodes the lungs and the mesenteric lymph nodes, the intestine as the sites of primary infection. This primary focus, connecting lymphatic vessels and regional lymph glands form the "Primary Complex."

Polymorphonuclear cells engulf the tubercle bacilli and transport them to the lymphatic tissue, which forms the first line of defence. If the number of bacilli is small they are destroyed and arrested. If numerous, the primary lesion is formed and then spreads to the regional lymph glands which get enlarged. This lesion occurs usually in the tonsils or the intestine. The course of the tubercle bacilli is centripetal and they are usually sent to the lungs, where they remain in the lymphatic tissue.

The primary complex known as Ghon's focus appears with local lesions and enlarged lymph nodes. If the dose is high hypersensitivity occurs and there is caseation. If recovery follows, calcification starts. Lymphatic nodes enlarge and are often matted together and tend to adhere to the surrounding structures. Enlarged lymphatic nodes exert pressure on the trachea, bronchi or blood vessels and often rupture into them. There may be erosion of the bronchi and intra-bronchial lesion occurs. Ghon's focus is usually single and occurs in any part of the lung just beneath the pleura. It is $\frac{1}{2}$ cm. to 1 cm. in diameter and always associated with enlarged lymph nodes. There is no definite capsule. The tissue surrounding this tends to be pneumonic and the overlying pleura is thickened.

The incubation period is from four to six weeks. This is shown by a positive Mantoux test and by radiological evidence. Primary pleurisy with effusion is very rare and usually occurs after six months of the primary complex formation.

Characteristic lesions in infants and small children differ in certain respects from those of the older children and of the adults, though there is some overlapping between the responses in the two age-groups. The age-difference lesions are generally as under:—

(1) The pulmonary lesion in children occurs in any part of the lung and is localized usually in the periphery. The site is more likely to be in the lower part of the lung than in the upper while in the adults, there is a predilection for the localization of the lesion in the upper part of the lungs, (Assman's Focus) either in the apical or the infra-clavicular area.

(2) Regional lymphatic glands are involved more often in children than in adults.

(3) There is a tendency to heal for both parenchymal and nodal lesions in children by calcification, whereas in adults it heals by fibrosis.

(4) Hæmatogenous dissemination is more likely to occur in infants. Miliary tuberculosis and tuberculous meningitis frequently occur in the first few years of life.

Consolidated lesions accompanying primary infections are: atelectasis and tuberculous pneumonia or a combination of both. Bronchi may be occluded by external pressure from a caseous lymph node; there may be erosion into a bronchus leading to an intra-bronchous lesion. When destruction is partial there may be greater hindrance to the exit of the respired air than to its entrance, so there is obstructive emphysema distal to the lesion. When the obstruction is complete, atelectasis occurs.

Hæmatogenous dissemination of the tubercle bacilli from a tuberculous focus results in widespread formation of tubercles in the lungs, liver, spleen and kidneys. Tuberculous meningitis according to Rich and McCordock is due to a breakdown of a tuberculoma situated near the meninges.

CLINICAL FORMS:—Tuberculosis may involve any organ or tissue in the body. Tuberculosis may be intra-thoracic or extra-thoracic. Intra-thoracic type is most frequent and accounts for 90% of the disease in children.

Intra-thoracic tuberculosis.—The various clinical forms of this type of tuberculosis are: (1) Hypersensitivity to tuberculin tests without clinical demonstrable disease; (2) calcified pulmonary focus or calcified lesion in tracheo-bronchial lymph nodes with a positive tuberculin test; (3) non-calcified pulmonary focus; (4) extensive pulmonary infiltration; (5) tuberculosis of tracheo-bronchial lymph nodes and (6) intra-lumen and extra-lumen bronchial lesions: (a) localized ulcer, (b) extra lumen bronchial compression, (c) emphysema, (d) atelectasis, and (e) tuberculous pneumonitis; (7) caseous bronchopneumonitis; (8) hæmatogenous tuberculosis, single or multiple pulmonary infiltration, miliary tuberculosis; (9) apical and infra-clavicular lesion and (10) pleurisy.

SYMPTOMS:—Primary complex is symptomless in the majority of cases. There may be a slight rise of temperature for a week. Pyrexia, cough, a positive Mantoux test and radiological evidence of primary complex constitute the diagnosis. Many children get malaise, temperature, cough, perspiration, wheezing, erythema nodosum, and phlyctenular conjunctivitis; there is loss of weight and retarded growth. Most children make an uneventful recovery. Radiologically the primary infection shadow

gradually diminishes. Although the tubercle bacilli *can* remain alive in such calcified foci for years into adult life, we find that 80% of calcified lesions become sterile within five years. In some children recovery is not complete and complication starts. The younger the children, the greater is the danger to life, due to pressure on the lymphatic nodes and death results from collapse of the lung or from respiratory distress. The right middle lobe is usually involved. Bronchiectasis and collapse of the lung may occur or there may be emphysema.

The first six months are the dangerous ones as complications may occur *e.g.*, collapse of the lung, pleurisy with effusion, miliary tuberculosis and tuberculous meningitis, usually occur during this period in young children and infants, and in older children pleurisy with effusion, erythema nodosum, phlyctenular conjunctivitis, bone, joint and intestinal tuberculosis. Pleurisy with effusion is not uncommon and may be the first manifestation of primary infection. It is rare under five years of age and most be acute or chronic. In the acute form there is high fever, picture is characteristic. There are choroid tubercles in the eyes. The tuberculin test usually is positive though, it may be negative in fulminating cases. Tubercle bacilli can be isolated from gastric and bronchoscopic lavages and from the spinal fluid. In chronic cases the lungs may be clear, the symptoms being confined to the particular system involved. Tuberculous meningitis usually occurs during the first three years of life and from three months after the primary focus, probably due to rupture of a tuberculoma below the meninges or by miliary spread. The patient complains of headache and vomiting and there may be squint, drowsiness and stiff neck. Lumbar puncture should be done to clinch the diagnosis. There is a fall of chloride and sugar and tubercle bacilli are occasionally detected in the spinal fluid. There is cobweb formation in the fluid. Mantoux test is positive and X-ray of the chest usually shows 'primary complex.' Tuberculous diseases of bones, joints and kidneys occur, owing to hæmatogenous spread. They may be tuberculous dactylitis. In cases with intestinal lesions, there may be diarrhoea and vomiting.

Diagnosis of pulmonary tuberculosis.—Diagnosis is established by the demonstration of tubercle bacilli in the sputum, in bronchoscopically aspirated material and in gastric contents. In the absence of these, diagnosis is made from the history, contacts, physical examination, reaction to tuberculin tests and X-ray examination of the chest. Early diagnosis will result in successful treatment.

Whether the tuberculous lesion is active, quiet or healed, should also be ascertained. All elderly people and adult mem-

bers of the family of the tuberculosis patient should be thoroughly checked as often as necessary.

Physical findings in the lungs vary with the nature and extent of the lesions. There may be impaired percussion note between the two scapulæ and paravertebral dullness (Reviere sign). A murmur audible over the upper part of the sternum when the head is thrown back (Eustace Smith's sign) can be heard whether there is enlargement of lymph nodes, or not; d'Espine's sign which is whispered pectoriloquy heard between seventh cervical or first dorsal vertebra is rarely met with. X-ray findings of primary tuberculosis show Ghon's focus, enlarged lymphatic nodes (hilar or mediastinal) or collapse of the lobe.

Tuberculin test.—A positive tuberculin test shows that the person is infected with tubercle bacilli and is allergic to its protein. The test is quite reliable when properly done. The extent of the reaction also shows the activity of the lesion. Sometimes this test fails because the reaction appears several weeks after the entrance of the tubercle bacilli into the body, also during advanced or terminal stages allergy may disappear. It is temporarily inhibited during acute febrile diseases.

Old tuberculin (O.T.) and purified protein derivative (P.P.D.) are used. For diagnostic purposes, five international units (5TU) of PPD is recommended. This dose of PPD has a potency equal to .0001 mg. of PPD-S. When OT is used it is recommended that the doses equal the 5TU dose of the international OT standard. The recommended dose is 0.1 cc. of a 1:2000 dilution (.05 m.). Various techniques are now in use such as the scarification or cutaneous test of Pirquet, the intracutaneous test of Mantoux, the patch test of Vollmer and Heaf's test by shot-gun. The intracutaneous tuberculin test (Mantoux) with OT or PPD is very reliable. An induration 5 mm. in diameter is regarded as positive. In very severe reactions to the intracutaneous test there may be sloughing, and necrosis, this can be avoided by ice-compress and oral administration of corticosteroids. Erythrocyte sedimentation rate should be done in all cases and periodic checks help in prognosis. In infants and small children ESR should be done by the micro-sedimentation method. Temperature and weight gain records should be maintained.

PROGNOSIS.—Most children recover from pulmonary tuberculosis by early diagnosis and adequate antimicrobial treatment. Death does not usually occur except in tuberculous meningitis or in cases which are not diagnosed till very late, or which are not treated. Antimicrobial treatment has resulted in a striking decrease of hæmatogenous spread. Extensive clinical trials have been carried out with isoniazid as a prophylactic measure.

PREVENTION.—The best methods of prevention are:—avoidance of contact, prevention of malnutrition, getting fresh air and sufficient essential food-factors and vitamins. Tuberculosis contacts should be searched for, by frequent examination of adults. Mass radiography is very helpful and economical especially in crowded localities. Reservoirs of infection should be traced.

BCG vaccination produces artificial immunity. Intradermal injections are more effective than subcutaneous ones and less likely to produce indolent ulcers. The usual intradermal dose is 0.1 to 0.15 mg. of the freshly prepared vaccine.

TREATMENT.—There has been remarkable progress in the methods of treatment during the past fifteen years. The drugs found to be very useful are streptomycin, aminosalicylic acid, isoniazid and the corticosteroids; others are kanamycin, promizole, promin, neomycin, viomycin, cycloserine, pyrazinamide, thiosemicarbozones and alfa-ethyl-thioisonicotinamides. ('1314'). Streptomycin is given by the intramuscular route and should be used along with isoniazid or PAS in order to avoid a rapid emergence of resistant organisms. Long term administration of streptomycin may cause damage to the labyrinth and to the eighth nerve leading to deafness. Para-amino-salicylic acid (PAS) is tuberculostatic but not quite as effective as streptomycin or isoniazid. It is not free from toxic reaction. Isoniazid is the most potent and cheapest of the available drugs. It may be used orally as well as parenterally and is well tolerated. Some patients may develop convulsive disorders and so pyridoxine should be used along with it. Corticosteroid therapy is beneficial when used along with the antimicrobial drugs. Prednisone and prednisolone, triamcinolone and dexamethasone are also being used with success. Rapid improvement occurs within a week.

Bed-rest is essential till there is definite improvement. The psychological attitude of the child is important and so he should be made cheerful and happy. The child may be permitted to go to school, except when severely ill. Fresh air, sunshine, good food and large doses of Vitamin A and D, (shark liver oil and calcium) are necessary and should be supplemented by B complex, B₁₂. Protein and Vitamin C (200 mg. daily) should be given. Surgical procedures are rarely required in treating infants and children.

I give below a useful line of treatment for tuberculous children:—(vide Table I, p. 617).

A systematic check-up radiological examination and ESR should be done in all cases, for two to five years.

Failure of treatment and relapses are due to resistance-formation, inadequate treatment and stoppage of therapy due to sensitivity reactions.

TABLE I
Showing the Dosage of the Different Drugs

Type of disease	Drug	Total daily dose per kg. of body-weight	Duration of treatment
1. Positive tuberculin reaction in a child under 3 or 4 years.	Isoniazid	10 to 20 mg.	One year
2. Asymptomatic pulmonary tuberculosis.	Isoniazid	10 to 20 mg.	One year
3. Pulmonary lesions like apical or intraclavicular lesions. Pleurisy and miliary tuberculosis.	Isoniazid and Streptomycin	10 to 20 mg. 20 to 40 mg.	12 to 18 months
	or		Daily for 1 to 2 months then 2 to 3 times weekly for 3 to 6 months.
	PAS	300 to 500 mg.	12 to 18 months

Extra thoracic tuberculosis.—The different form of extra thoracic tuberculosis require the same types of treatment. They are summarized below:—

(1) Tuberculosis of tonsils and cervical lymph nodes; (2) intra-abdominal tuberculosis, enteritis, mesenteric lymphadenopathy, peritonitis, hepatitis and fistula-in-ano; (3) tuberculosis of the central nervous system: tuberculoma and tuberculous meningitis; (4) tuberculosis of the skin; (5) tuberculosis of bones and joints; (6) tuberculous pericarditis; (7) tuberculosis of the urogenital tract: kidneys, bladder, female genital organs and male genital organs; (8) tuberculosis of the eye, phlyctenular conjunctivitis, and chorioretinitis; and (9) tuberculosis of the middle ear.

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He is great who feeds the minds of others. He is great who inspires others to think for themselves. He is great who pulls you out of your mental ruts, lifts you out of the mire of the commonplace, whom you alternately love and hate, but whom you cannot forget.—(Elbert Hubbard, W. Virg. Med. Jour., Feb. 1960).

CIRCULATION IN LOWER LIMBS BEFORE AND AFTER RECONSTRUCTION OF OBSTRUCTED MAIN ARTERY

The treatment of localized obstructions in the main limb arteries by surgical reconstructions has now become standard practice, and provided the reconstructed artery remains patent these patients regain full use of the affected limb.

In a series of 12 patients with severe intermittent claudication due to a localized obstruction in a main artery of the lower limb, Snell, Eastcott and Hamilton of the St. Mary's Hospital, London, studied the studies are few, and are important for a fuller understanding of the circulation in health and disease.

In the 12 patients with a localized obstruction of the iliac, femoral, or popliteal artery, the arterial circulation was investigated by plethysmography before and after reconstructive operations. The obstruction was relieved by an arterial homograft in 9, by an autogenous vein graft in 1, and by thromboendarterectomy in 2.

After operation intermittent claudication was greatly relieved or abolished.

Blood-flow through the calf was measured at rest, and during reactive hyperæmia, in 8 patients and in a control group of 12 healthy men. In the affected limb, resting calf flow was sometimes equal to, or even greater than, that in the contralateral limb, but the calf reactive hyperæmia curve had an abnormal form, and was lower than in the other limb. The normal calf reactive hyperæmia was greater than that in the patients' symptomless limbs. In the early postoperative period, the affected limb had the larger resting flow, and its reactive hyperæmia curve became higher and assumed a normal shape.

The percentage "repayment" by reactive hyperæmia of a calf blood-flow "debt" incurred by 5 minutes' circulatory arrest averaged 134 in the normal group, 103 in the patients' symptomless limb, and 74 in the affected limb. These findings suggest that reactive hyperæmia is not a dent causes with the integrity of the arteries as a limiting factor.

Foot blood-flow was measured serially in 7 patients. Preoperatively it was usually, but not invariably, reduced on the affected side. After operation the foot-flow in the operated limb increased in all patients, in 5 of them exceeding the flow in the other foot for several days. Evidence is adduced that this postoperative vasodilatation is due to partial release of sympathetic tone induced by interruption of the periarterial plexus of nerves.—(*The Lancet*, 30-1-1960).

DEPRESSION DEFINED

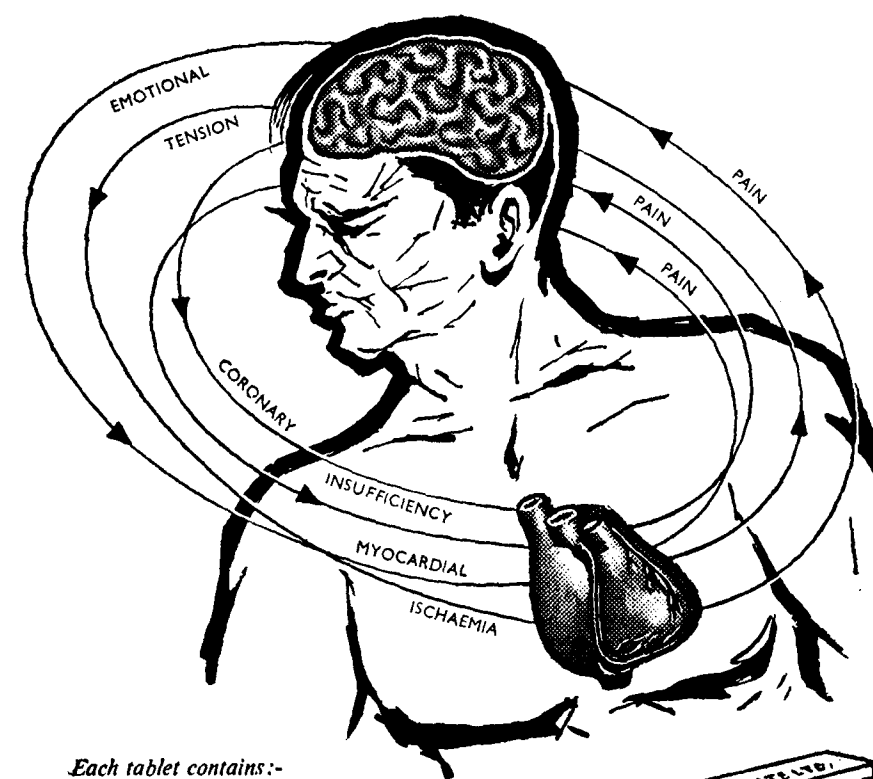
By definition, a depression, is a constellation of complaints or symptoms having as the dominant theme a discouraged, pessimistic outlook on life. Depression may occur in many different psychiatric conditions, or in conjunction with various physical diseases and is, therefore, not diagnostic of any particular syndrome. The importance of recognizing and dealing with depression cannot be overemphasized because each depressed patient is a potential suicide.—(Charles E. Goshen, M.D., in *New York State Journal of Medicine*, via *The West Virginia Medical Jour.*).

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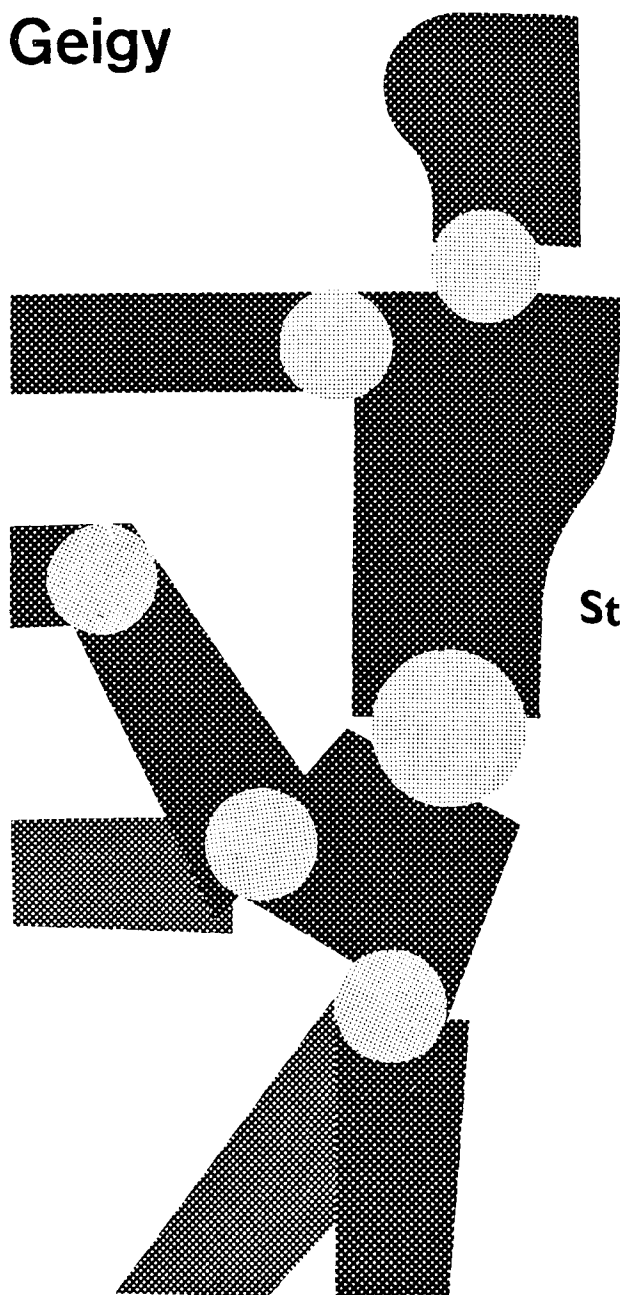


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A STUDY OF PEPTIC ULCER ACCORDING TO THE UNANI SYSTEM OF MEDICINE*

GASTRO-DUODENAL ulcers are
ubiquitous in nature and
offer a number of unsolved
ætiological problems more than

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any other disease affecting the human system. An attempt has been made in this paper to present the salient features of the research conducted according to the Unani System of Medicine from which important clues may be utilized for dealing with major unsolved problems in peptic ulceration. Although the term 'Peptic ulcer' covers both gastric and duodenal ulcers, these are really not two separate diseases though anatomically occurring at two different sites; ætiologically they are intimately related.

In South India, peptic ulcer occurs mostly amongst the poor agricultural labouring classes of all castes and creeds but is rare in the upper classes of society. In Madras, the incidence of duodenal ulcer greatly exceeds that of gastric ulcer, the ratio being 5:1. Further, duodenal ulcer in South India tends to stenose and not to bleed or perforate. It seems difficult to correlate ulcer with the use of spices but there may well be some other dietary factor which has not been incriminated up till now.

Another point of interest is the tendency for peptic ulcer to run in families. It is a fact that the prevalence of ulcer is greater among the relatives of ulcer-subjects. Duodenal ulcer tends to occur among their siblings and parents in a great majority of cases; it is not however advisable to generalize on the role of hereditary factors. Gastro-duodenal ulcers are very common in tropical countries and occur in persons all over the State without being restricted to particular areas. It has been observed to occur largely among highly-strung individuals.

People in the western Kerala State and those in the Central regions of India are said to be highly-strung and emotional which makes them more susceptible to gastro-intestinal disorders especially gastro-duodenal ulcers. Tapioca root is the staple article of food in the West Coast of India where duodenal ulcers are so prevalent. The presence of appreciable amounts of hydrocyanic acid in this root may probably be the cause of the ulcers and it also acts as an anti-healing factor. Many people in South India are given to smoking and chewing tobacco; the labourers in particular, freely use tea or coffee or *sukku* (decoction of dried ginger and sugarcandy) when they have a voracious appetite.

* Specially contributed to the ANTISEPTIC.

The majority of patients admitted and treated in the Unani Research Ward, for duodenal ulcer, were between 20 and 30 years of age. Occupationally, 10% were employed as cooks, 8% as ironers in laundries, 10% as automobile drivers, 50% as agricultural labourers and 8% as clerks. The majority of peptic ulcer patients were from the labourer-class (mostly coolies). Persons employed near furnaces, ovens, boilers, irons, etc., were found to suffer more from peptic ulcer.

This disease is a manifestation of psychic disturbance, and constitutional factors play an important role in its causation. People of a hypersthenic constitution are credited with physiological hyper-activity of their gastro-intestinal tracts. These individuals are vagotonic and hyper-secretion of the gastric juice associated with hypermotility of the stomach, induces mucosal tears which become the seat of erosion and ulcer-formation. An ulcer once formed in this area seldom heals completely, being subject to continual irritation. Even though a remission is induced by medicines, diet, bed-rest, etc., even slight indiscretion in diet or an emotional upset brings on the symptoms again and the ulcer becomes reactivated with recurrence of pains.

Psychiatric approach may be the most rational form of therapy in this condition, as the inherent basic factors must receive paramount attention. Drugs have a temporary alleviating effect on the pathologic changes resulting from psychic disturbances. The most suitable drugs are the tranquillizers given over long periods. The hypothalamic activity will then be permanently inactivated by prolonged therapy. The vagolytics have only a transient effect and that only during episodes of activity. In planning a suitable long-term therapy the hypothalamus must be insulated properly and its activity controlled.

It is just possible that changes of a molecular and biochemical nature occur in this region of the brain in some people because diseases of the hypothalamus are found to produce peptic ulceration. It also seems likely, that hyper-secretion of acid is one of the constitutional factors related to duodenal ulcers. This may be due either to a greater amount of acid produced from the same mass of secretory cells as in a normal person subjected to the same stimulus or to a greater mass of secretory cells which are responding to nervous hormonal stimuli with the same intensity as in a normal stomach. Hunt and Kay (1954), Cox (1952) have observed that the duodenal ulcer patient with hypersecretion has a greater secretory cell-mass than the normal individual.

In approximately half the patients with gastric ulcer and a third with duodenal ulcer, persistence of symptoms and the

failure of the ulcer to heal in spite of the usual medical treatment, necessitate surgical treatment which usually helps, except in a few cases where stomal ulcers have occurred, which are to be attributed to the technique of the operation. A simple line of medical treatment which will ensure a permanent cure may yet be found, obviating the necessity for surgical interference.

In the context of the above expectation, the centrally sponsored Unani Research Ward attached to the Government College and Hospital of Integrated Medicine, Madras, started research on peptic ulcer with Unani drugs and medicines.

Ten beds were secured with the aid of the State and Union Governments for this Unani Research Ward, in which only male patients were admitted there being no provision for admitting female cases. Between July 1958 and March 1960, 120 cases of peptic ulcer have been treated. Unani medicines which have been credited from ancient times to be very effective, are being used. An attempt is made to ascertain the combination of circumstances that bring about peptic ulceration.

The following medicines were selected for clinical trials:—

- | | | |
|--|----|--|
| (1) <i>Mufarrh-e-Ahamed</i> | | |
| Thabasheer (Bamboo Mana) | 2 | oz. |
| Sandal-e-Sufed (Sandalwood-white) | 2 | " |
| Amila-e-Khushk (Gooseberry-dry) | 2 | " |
| Gul-e-Surkh (Rose petals-dry) | 4 | " |
| Kishneez-e-Khushk (Coriander-dry) | 4 | " |
| Khand-e-Sufed (White sugar) | 3½ | lbs. |
| (2) <i>Roghan-e-Zaithoon</i> (Olive oil) | | |
| (3) Aab-e-kasni Sabz Muravakh (Fresh juice of Cinchorium intybus-Wild chicory) | { | These were used as the 'Badækha' or vehicle. |
| (4) Aab-e-karam kala Sabz (Fresh juice of Bassica Oleracca Cabbage) | | |
| (5) Sheer-e-Narjeel (Fresh cocoanut milk) | | |

The above were tried-remedies used by Unani physicians for centuries. In the light of our present experience, these drugs appear to exert a beneficial effect on the central regulatory mechanism of gastric function besides having a simultaneous local antacid action; the results have been very encouraging.

Unani concept.—In order to enable practitioners of the Modern System of Medicine to appreciate the Unani theory, the meaning of the words frequently occurring in this paper e.g., those signifying the four 'humours,' namely 'Khoon', 'Balgham', 'Safra,' and 'Souda,' will be explained.

Khoon, *Balgham*, *Safra* and *Souda* constitute the bed-rock the Unani system. The humoral theory of *Khoon*, *Balgham*, *Safra* and *Souda* was in fact a great discovery, which contributed to a great extent to the methodology of proper diagnosis

and treatment of diseases. 'Safra' does not essentially mean 'Bile' but signifies the functions of thermogenesis or heat-production and metabolism comprehending in its scope the process of digestion, coloring of the blood and formation of various secretions and excretions which are either the means or the end-products of tissue combustion; and the word 'Balgham' does not mean 'phlegm' but primarily implies the functions of thermotaxis or heat regulation and secondarily the formation of the various preservative fluids like, mucus, synovia, etc., though the crude products of 'Safra' and 'Balgham' have also been given these names. The humoral theory of the Unani system affords a rational explanation of certain otherwise inexplicable factors in the causation and amelioration of diseases and their symptoms. These humours occur in two forms:—(1) An invisible or essential forms which mainly guides the physiological processes severally pertaining to them and (2) a crude or visible form, the products (as secretions or excretions) of the processes induced by the essential form.

The relation between the two forms is so very intimate that the derangement of the essential form of one principle at once gives rise to increased or morbid secretions and excretions of that 'Khilth' (humour). The failure to recognize the difference, between these two forms of the 'Akhlath' and a gross ignorance of the subject as a whole has given rise to the erroneous idea of substituting 'Safra' as 'bile' and 'Balgham' as 'phlegm'.

Humours (*Akhlath*) may be defined as moist and fluid substances which are manufactured in the liver from the food ingested and are capable of carrying nourishment to the body. They become vitiated or abnormal when they are neither prepared in the liver nor are capable of carrying nourishment to the body. The 'Khoon' or 'blood' which leaves the liver contains all the four 'Khilths' or humours. A major quantity of chyle is converted into 'Khoon' (blood) and next comes the 'Balgham' (phlegm) and in still lesser quantity into 'Safra' (bile) and into a very small quantity 'Souda' (black bile). Therefore, according to a very Unani System of Medicine the chyle is converted into four humours 'Khoon', 'Balgham', 'Safra' and 'Souda'.

Shaik Boo Ali Seena (Avicenna) (980—1036 A.D.) a Persian savant of the Unani Thibb, enunciated that "A state cannot exist without a cause." In this way he gives Unani Thibb the same scientific approach which characterizes the modern system of medicine. In fact by reiterating that:—"Complete knowledge of a thing is only possible if we elucidate its causes and antecedents" (*vide—Kuliyate-e-Qanoon, Part I, para 6*), he goes on to reinforce the Unani Thibb with the spirit of enquiry particularly Research so imperative for the growth and development of any science.

In the production of peptic ulcer primarily 'Varm-ul-Meda' (gastritis) occurs, which may be caused by the vitiation of any of the four 'Akhlath' or humours but Shaik Boo Ali Seena (Avicenna) has stated that peptic ulcer is usually caused by a vitiated 'Safra' (abnormal bile). He has described five varieties of abnormal or vitiated 'Safra':—(i) 'Safra-e-Muhiya', when 'Safra' becomes abnormal with an admixture of thick 'Balgham'; (ii) 'Mirrah-Safra' when 'Safra' becomes abnormal with an admixture of thin 'Balgham'; (iii) 'Safra-e-Muhatharikhha', when 'Safra' becomes abnormal with an admixture of burnt up 'souda'; (iv) 'Safra-e-Kurrasi', when 'Safra' becomes abnormal by itself being burnt up and (v) 'Safra-e-Zanjari', when 'Safra' becomes abnormal by being excessively burnt up. By 'Safra' being 'burnt up' is meant, that it has become highly vitiated due to putrefaction.

He has particularly emphasized that it is the 'Safra-e-Zanjari' which is highly acrid and acts as a corrosive poison when it comes into contact with the previously inflamed gastric mucosa denuded of the protective mucous coating, that causes peptic ulceration.

Avicenna has also mentioned in the Unani Literature that psychic factors play a prominent role in the causation of peptic ulcer as is evident from the following passage:—

"In addition to the emotional states.....there are other factors which also influence the body (e.g.), mental factors which may be responsible for physical or pathological changes"—(*vide Kuliat R-e-Qanoon, 2; para 301*).

Md. Bin Zakriah Razi (Razes) and Thabbri (850 A.D.) have also mentioned that when 'Souda' (black bile) is vitiated, it gives rise to cancer of the stomach and not peptic ulcer.

It is well known that after the stomach is emptied of its contents, the gall-bladder contracts and squeezes out the 'safra' or bile which regurgitates into the stomach. In case, this 'safra' is vitiated, it is logical that this may cause erosion and peptic ulceration. Now one can easily appreciate the Unani 'ex-hypothesi.' The type of bile which is secreted by individuals differ with their temperaments and mental make-ups and this view has been stressed and given importance in the understanding of peptic ulceration. The quantity and quality of bile vary from time to time and also with the mood of the individual. The ancient Unani physicians stated, that peptic ulcers were common in individuals with an emotional temperament, which more or less agrees with the modern concept of the disease. This explanation has been clothed with a bit of imagination indicating an alteration in the quality of bile which, according to modern concepts, can be translated by the bio-chemists into various categories associated with changes in viscosity, pH value and other constituent factors. Such changes may have a deleterious effect on the normal mucosa used to bile of the usual quality. Therefore,

continuous contact of this vitiated bile with the gastric mucosa may result in chronic peptic ulcers. Thus the ancients have sought to explain the pathogenesis of the ulcers from the point of view of psychic influences and still further to conjecture the origin from the bio-chemical aspect. Even at the present time, our understanding of the origin has not progressed and the treatment of ulcers has not greatly altered. The remedies used by the Unani physicians, though somewhat crude are more efficacious and also cheaper; and they are intended to control the disease by tackling the factors which are identical with those familiar to the modern physician.

Material and methods.—The patients in this study were selected carefully from among those attending the out-patient department with a typical clinical history of gastric pain of two to three years' duration, which was either relieved or increased by taking food. Most of them had had treatment elsewhere for the condition with temporary relief. Cases with pyloric stenosis or any other gastro-intestinal complications were excluded because the Unani drugs will have no effect on such complications. A routine de-worming, was done when necessary before starting treatment. Routine tests, like F.T.M. examination, barium-meal series and detection of occult blood in the stools were carried out. As far as possible only cases of peptic ulcer definitely proved as such by roentgenography, F.T.M. test, and a regular periodicity of pain were selected for study. But in a very few cases even though barium meal tests in series showed no evidence of ulcer, they were included as the clinical history was very typical. Patients having other concurrent diseases were rejected.

Therapy.—As a routine, 1 tola (3 ii) of 'Mufarraḥ-e-Aḥamedī' was given three times a day along with 3 vi of *Sheer-e-Narjeel*. In the evening, the patients were given 3 iii of *Aab-e-Kasni Sabz Muravakh mixed with 3 iii of Aab-e-Karam Kala Sabz*. At bedtime an ounce of *Roghan-e-Zaithoon* was given. The above regimen was strictly followed until the patient was relieved of the gastric pain. No drug reaction or any untoward side-effect was observed in any of the patients treated in this way.

Diet.—The patients were allowed the following foods:—Cow's milk 2 pints; biscuits 4 ounces; butter 1 ounce; oranges two; rice *conjee* 2 pints; barley water 2 pints; raw egg one; butter-milk 1 pint and soft bread ½ lb. usually in the second week.

The patients were strictly forbidden to smoke and were instructed to rest in bed. After six weeks of treatment, they resumed normal diet, eaten after thorough mastication. Coarse green vegetables, pips and skins of fruits, highly seasoned food

and stimulants like coffee, tea, meat extract etc., were forbidden. Only a bland diet was allowed.

DURATION OF TREATMENT:—In the majority of cases, the patients were completely relieved of the gastric pain after an average of 4 to 6 weeks of the Unani treatment in the wards. The tenderness in the epigastrium disappeared. They had no nausea, vomiting or sour eructations; ptyalism disappeared and the high acid curve present in patients suffering from duodenal ulcer returned to normal after treatment. Clinically, there was no evidence of activity of the ulcer. The patients suffering from gastric ulcer had put on an average of 5 to 6 lbs. in weight. The bowels had become regular without laxatives. The stools showed no occult blood. In a few cases a barium meal series repeated before discharge showed that the ulcer was in the process of healing.

Assessment of improvement.—The criteria for assessing improvement were:—(1) freedom from gastric pain; (2) F.T.M. (normal) where it previously showed a high acid curve; (3) regression of other symptoms like absence of vomiting, nausea, sour eructations, 'ptyalism' and tenderness in the epigastrium; (4) absence of occult blood in the stools; (5) gain in weight and (6) roentgenological evidence of the healing of the ulcer in very typical cases.

Follow-up of patients.—Among the 120 patients treated and discharged from the Unani ward, seventythree could be followed-up for 20 months. Five of these cases were re-admitted with recrudescence of symptoms of gastric pain and vomiting and their condition became more severe. But, after re-admission, they had partial relief. Three out of these patients were advised to resort to surgical treatment as the medicines used in this trial failed to give them complete relief. Among the remaining patients, who turned up for check-up there were no complaints of gastric pain, vomiting, nausea, sour eructations and tenderness in the epigastrium. The improvement in weight was maintained throughout.

Controls.—'Controls' were not run alongside on another series of cases for comparison owing to a paucity of typical peptic ulcer patients attending our hospital and also to lack of beds. Therefore, a modified form of 'Controls' as suggested by Dr. R. H. Gorril, M.D. (London) in the *J.I.M.P.*, 6: 5, August, 1959, was used in the exigencies of the situation. Peptic ulcer patients were given an inert 'placebo' for a period of ten days after admission to note whether bed-rest and diet alone altered the symptomatology. When there was no mitigation or amelioration of the symptoms during this period the fact was recorded and the medicines selected for clinical trial, were administered.

TABLE I

Showing details of 120 cases of peptic ulcer treated together with results of treatment

No. of cases	Age	Sex	Occupation	Duration of illness	Cases sugg. of peptic ulcer by		District or distribution	Gastric ulcer	Duodenal ulcer	Complete relief	Partial relief	No relief
					F.T.M. & radiologically	Clinical history only						
1	23	M	Cooly	4 years	+	-	Madras City	-	+	+	-	-
2	37	M	Labourer	6 "	+	-	"	-	+	+	-	-
3	27	M	Cooly	1 year	+	-	"	-	+	+	-	-
4	20	M	Farmer	2 years	+	-	"	-	+	-	+	-
5	25	M	Cooly	2 "	+	-	"	+	-	+	-	-
6	25	M	Farmer	3 "	+	-	"	+	-	+	-	-
7	55	M	Cook	4 "	+	-	"	-	+	-	+	-
8	80	M	Labourer	2 "	+	-	"	-	+	+	-	-
9	27	M	Cooly	3 "	+	-	"	-	+	-	-	+
10	42	M	Clerk	1½ "	+	-	"	-	+	+	-	-
11	24	M	Cooly	2 "	-	+	"	-	+	-	+	-
12	27	M	Farmer	6 Months	+	-	Guntur (A. P.)	-	+	+	-	-
13	22	M	Agriculturist	6 "	+	-	Madras City	-	+	+	-	-
14	25	M	Cooly	1 year	-	+	"	+	-	+	-	-
15	35	M	Cook	1 "	-	+	"	+	-	+	-	-
16	22	M	Cook	1 "	-	+	"	+	-	-	+	-
17	32	M	Cooly	2 years	+	-	"	+	-	-	-	+
18	28	M	Farmer	6 Months	+	-	"	-	+	-	+	-
19	21	M	Attender	6 "	+	-	"	-	+	+	-	-
20	26	M	Cooly	6 "	-	+	"	+	-	+	-	-
21	31	M	Farmer	2 years	-	+	"	-	+	+	-	-
22	30	M	Peon	2 "	+	-	"	-	+	+	-	-
23	32	M	Farmer	1 year	+	-	"	-	+	-	+	-
24	32	M	Cooly	2 years	-	+	"	-	+	+	-	-
25	37	M	Dhobi	2 "	-	+	"	+	-	+	-	-
26	30	M	Cooly	2 "	+	-	"	-	+	-	+	-
27	20	M	Farmer	6 Months	+	-	"	+	-	+	-	-
28	45	M	Farmer	2½ years	+	-	"	-	+	-	+	-
29	24	M	Cook	2 "	+	-	"	-	+	-	+	-

TABLE I—(Contd.)

Showing details of 120 cases of peptic ulcer treated together with results of treatment

No. of cases	Age	Sex	Occupation	Duration of illness	Cases sugg. of peptic ulcer by		District or distribution	Gastric ulcer	Duodenal ulcer	Complete relief	Partial relief	No relief
					F.T.M. & radiologically	Clinical history only						
30	21	M	Farmer	6 Months	-	+	Avadi (Madras)	-	+	-	+	-
31	25	M	Cooly	1 year	+	-	Madras City	+	-	+	-	-
32	45	M	Cooly	2½ years	+	-	"	+	-	-	-	+
33	50	M	Labourer	2½ "	+	-	"	-	+	-	+	-
34	44	M	Farmer	3 "	-	+	S. Arcot	-	+	+	-	-
35	23	M	Driver	3 "	-	+	Tindivanam	-	+	+	-	-
36	50	M	Beedi worker	3 "	+	-	Madras City	-	+	-	+	-
37	40	M	Cook	5 "	+	-	S. Malabar	-	+	+	-	-
38	22	M	Farmer	6 Months	+	-	S. Madras	-	+	-	-	+
39	35	M	Farmer	2 years	+	-	Madras City	+	-	-	+	-
40	23	M	Cooly	1 year	+	-	S. Madras	-	+	-	+	-
41	21	M	Cooly	2 years	+	-	Madras City	-	+	+	-	-
42	30	M	Dhobie	4 "	+	-	"	-	+	+	-	-
43	42	M	Cooly	6 Months	+	-	"	-	+	+	-	-
44	28	M	Cook	1 year	-	+	Kerala	-	+	-	+	-
45	42	M	Farmer	6 Months	+	-	S. Arcot	-	+	+	-	-
46	50	M	Cooly	8 years	+	-	Madras City	-	+	-	-	+
47	23	M	Cooly	2 "	+	-	"	-	+	-	-	+
48	35	M	Cooly	1 year	+	-	"	+	-	+	-	-
49	20	M	Driver	1 "	+	-	"	-	+	+	-	-
50	39	M	Farmer	3 years	+	-	S. Madras	-	+	+	-	-
51	40	M	Cook	2 "	-	+	Malabar	-	+	-	+	-
52	45	M	Clerk	2 "	+	-	Madras City	-	+	-	-	+
53	29	M	Labourer	2 "	+	-	"	+	-	+	-	-
54	26	M	Conductor	4 "	+	-	Tindivanam	-	+	+	-	-
55	45	M	Priest	3 "	+	-	Madras City	-	+	+	-	-
56	18	M	Student	6 Months	-	+	"	-	+	+	-	-
57	24	M	Farmer	2 years	+	-	N. Arcot	-	+	-	+	-
58	30	M	Beedi worker	1½ "	-	+	Madras City	+	-	+	-	-
59	26	M	Weaver	3 "	+	-	"	-	+	-	-	+

TABLE I—(Contd.)

Showing details of 120 cases of peptic ulcer treated together with results of treatment

No. of cases	Age	Sex	Occupation	Duration of illness	Cases sugg. of peptic ulcer by		District or distribution	Gastric ulcer	Duodenal ulcer	Complete relief	Partial relief	No relief
					F.T.M. & radiologically	Clinical history only						
60	45	M	Shop keeper	4 years	+	—	Madras City	—	+	—	—	+
61	42	M	Beedi worker	6 Months	+	—	"	—	+	+	—	—
62	34	M	Farmer	3 years	+	—	S. Madras	+	—	—	+	—
63	35	M	Cooly	4 years	—	+	Madras City	—	+	—	+	—
64	35	M	Milkman	8 "	+	—	"	—	+	+	—	—
65	48	M	Driver	2 1/2 "	+	—	"	—	+	+	—	—
66	27	M	Cooly	6 Months	+	—	"	—	+	—	+	—
67	26	M	Cooly	2 years	—	+	"	—	+	+	—	—
68	46	M	Beedi worker	10 "	+	—	"	—	+	+	—	—
69	46	M	Clerk	15 "	+	—	"	—	+	—	+	—
70	35	M	Clerk	1 1/2 "	+	—	"	—	+	+	—	—
71	20	M	Barber	8 Months	+	—	"	+	—	—	—	+
72	40	M	Goldsmith	10 years	+	—	"	—	+	—	+	—
73	40	M	Cook	2 "	+	—	Malabar	—	+	+	—	—
74	21	M	Farmer	6 Months	+	—	S. Madras	—	+	+	—	—
75	21	M	Farmer	10 "	—	+	"	—	+	—	—	+
76	20	M	Ironer	10 years	+	—	Madras City	—	+	+	—	—
77	30	M	Cooly	6 years	+	—	"	—	+	+	—	—
78	25	M	Driver	4 "	+	—	S. Arcot	—	+	+	—	—
79	30	M	Cooly	1 year	—	+	Madras City	—	+	—	+	—
80	23	M	Cook	3 years	+	—	"	—	+	+	—	—
81	40	M	Driver	7 "	+	—	"	+	—	+	—	—
82	24	M	Shop keeper	4 "	+	—	"	—	+	—	+	—
83	20	M	Cooly	3 "	+	—	"	—	+	+	—	—
84	29	M	Beedi worker	2 "	+	—	"	—	+	+	—	—
85	47	M	Conductor	1 "	+	—	"	—	+	+	—	—
86	26	M	Cook	6 "	+	—	Malabar	—	+	—	+	—
87	30	M	Astrologer	4 "	+	—	"	—	+	+	—	—
88	28	M	Flower vender	1 year	+	—	Madras City	—	+	+	—	—
89	23	M	Farmer	1 1/2 "	+	—	S. Arcot	—	+	+	—	—

TABLE I—(Contd.)

Showing details of 120 cases of peptic ulcer treated together with results of treatment

No. of cases	Age	Sex	Occupation	Duration of illness	Cases sugg. of peptic ulcer by		District or Distribution	Gastric ulcer	Duodenal ulcer	Complete relief	Partial relief	No relief
					F.T.M. & radiologically	Clinical history only						
90	23	M	Driver	2 years	+	—	Madras City	—	+	—	+	—
91	44	M	Clerk	4 "	+	—	"	—	+	+	—	—
92	33	M	Cook	3 "	+	—	Kerala	—	+	+	—	—
93	25	M	Carpenter	1 1/2 "	+	—	Madras City	—	+	—	—	+
94	33	M	Farmer	6 "	+	—	S. Malabar	+	—	+	—	—
95	25	M	Cook	4 "	+	—	Madras City	+	—	—	—	+
96	27	M	Driver	2 "	+	—	"	—	+	+	—	—
97	26	M	Labourer	8 Months	+	—	"	—	+	—	+	—
98	40	M	Cook	10 years	—	+	S. Malabar	—	+	+	—	—
99	25	M	Cooly	6 Months	—	+	S. Arcot	—	+	—	+	—
100	40	M	Farmer	6 "	+	—	N. Arcot	—	+	+	—	—
101	35	M	Cooly	3 years	+	—	Madras City	—	+	+	—	—
102	31	M	Labourer	3 "	+	—	"	+	—	—	+	—
103	32	M	Conductor	1 1/2 "	+	—	"	—	+	—	—	+
104	40	M	Cooly	5 Months	—	+	"	—	+	—	+	—
105	27	M	Cooly	2 years	—	+	"	+	+	+	—	—
106	48	M	Labourer	6 Months	+	—	"	—	+	+	—	—
107	25	M	Farmer	3 years	+	—	S. Madras	—	+	+	—	—
108	40	M	Farmer	4 "	+	—	N. Arcot	—	+	+	—	—
109	40	M	Cooly	4 "	+	—	Madras City	—	+	—	+	—
110	43	M	Clerk	4 "	+	—	"	—	+	—	—	+
111	38	M	Driver	7 "	+	—	"	+	—	+	—	—
112	38	M	Farmer	10 "	+	—	Nellore A.P.	—	+	+	—	—
113	23	M	Cook	6 Months	—	+	Malabar	—	+	—	+	—
114	25	M	Cooly	2 years	+	—	S. Madras	—	+	—	—	+
115	40	M	Farmer	4 "	+	—	N. Arcot	—	+	+	—	—
116	40	M	Driver	10 "	+	—	Madras City	—	+	—	+	—
117	22	M	Cooly	2 "	+	—	"	—	+	+	—	—
118	30	M	Driver	4 "	+	—	"	—	+	+	—	—
119	23	M	Cooly	2 "	+	—	"	—	+	+	—	—
120	31	M	Cooly	1 1/2 "	+	—	"	—	+	—	+	—
				Total	96	24	Total	23	97	70	34	16

In other words *each patient served as his own control*. This was the only method practicable under the circumstances, when patients were not willing or inclined to stay for a long time in the hospital for treatment and study.

Summary.—(1) This study has revealed that in Madras, the incidence of duodenal ulcer exceeds that of gastric ulcer, the ratio being 5:1, agricultural labourers being most affected. (2) The age incidence was between 20 and 30 years. (3) Occupationally, persons employed near furnaces, ovens, boilers, laundries (ironers) were found to suffer from peptic ulcer. This correlation between peptic ulcer and occupation is worthy of further study. (4) The Unani Medicines used probably acted both centrally and locally. Gastritis always precedes the formation of ulcer. *Safra-e-Zanjari* (excessively burnt up and vitiated bile) usually caused peptic ulceration. (5) The quantity and quality of 'Safra' (bile) are related to the temperament of the individual and also vary from time to time in the same person. (6) One hundred and twenty cases of peptic ulcer were studied and 73 cases were followed-up for 20 months. A complete subsidence of symptoms was noted in nearly all cases. Four cases which failed to respond were treated by surgery.

Acknowledgement.—I am grateful to Dr. A. N. Subbaraman, M.S., Dean, Government College and Hospital of Integrated Medicine, Madras, for permitting me to publish this article utilizing factual data from the Unani Research Ward of the said Hospital. My thanks are due to Dr. (Miss) Zaibunisa Begum, L.I.M., Research Asst., Unani, who spared no pains in compiling the tabular statements and other relevant data used in the preparation of this article.

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DOGS CAN CATCH MUMPS AND CONVEY IT TOO!

When Johnny has the mumps, Fido better stay away. He may catch them, too. Two cases of mumps in dogs were reported in the September *Journal of Diseases of Children*, an American Medical Association publication. The transmission of mumps in animals other than man or monkeys has previously been considered to be rather improbable and little has been reported on its appearance in other animals.

The dogs, pets of two different families, were a six-month-old dachshund and a three-month-old Boston terrier. They developed mumps after being in contact with family members who had the disease. The dogs were allowed on the beds of the patients during their illness and convalescence. The dachshund died a few days after he became sick, but the terrier recovered within fourteen days.

Standard laboratory tests revealed the presence of the mumps virus in the saliva of both dogs which displayed the usual symptoms of mumps—swollen parotid glands and difficulty in swallowing.

The report was made by Frank Noice, Ph.D., F.M. Bolin, D.V.M., and D. F. Eveleth, Ph.D., D.V.M., of the Department of Veterinary Science, North Dakota Agricultural College, Fargo.—(via *New York State J. Med.*, 1-12-1959).

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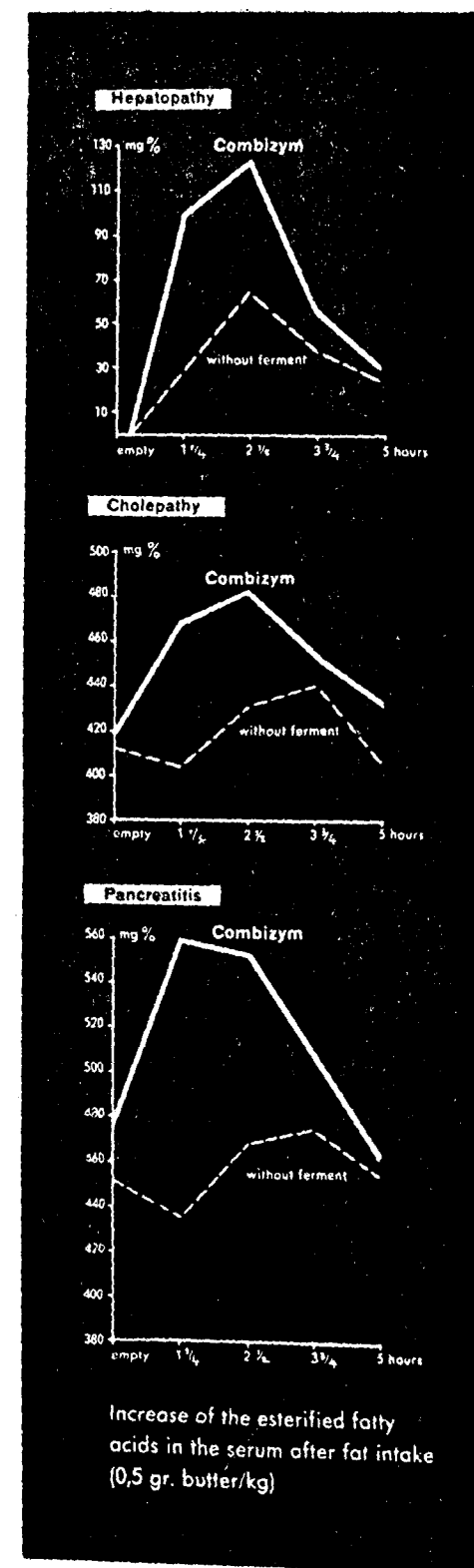
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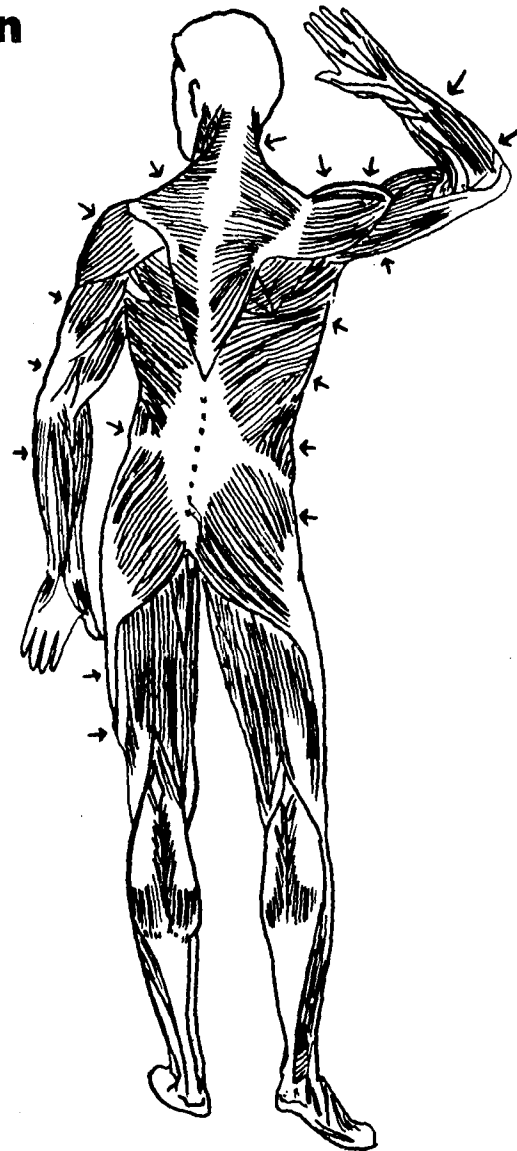
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CUTANEOUS TUBERCULOSIS WITH CASE ILLUSTRATIONS *

N. KRISHNAMURTHI, M.A.,

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

New Orleans, 12

THE physician is well aware of the enormous chemotherapeutic success in the treatment of pulmonary tuberculosis. The new therapeutic armamentarium against cutaneous tuberculosis promises 89% success and therefore, the cutaneous disease is doomed to disappear. There is more truth in this optimism as the standard of health is improving. I write this article in the hope that it might bring about a better understanding and proper management of the disease entity. Lupus vulgaris, the notorious chronic condition will disappear completely with no recurrence, least scarring and no deformity, if only it is diagnosed early and proper treatment instituted.

In India, overcrowding has increased (with the tremendous industrial development) giving more chances for the bare skin to come in contact with discharges from an infected person, like



FIG. 1. Large area on trunk affected by Lupus vulgaris probably by the bovine type of tubercle bacilli.

the sputum of pulmonary tuberculosis. Modern towns might increase "swimming pool granulomas" which are or may be due to Koch's bacillus (modified by chlorination) or to mycobacterium balnei.¹ When one gets to know that cattle, sheep and goats suffer from scrofuloderma it is easy to understand why cutaneous tuberculosis is common even among our farmers, who depend mostly on the above animals and actually live with them. The extensive tuberculous lesion on the lower half of the dorsum of the trunk (Fig. 1) might well be an infection from cattle.

As I travelled up to Delhi on my way to U.S.A., I had occasion to talk to the specialists in the Oosmania Hospital at Hyderabad, the Safdurjung Hospital and the Irwin Hospital at New Delhi. All of them were of the opinion that cutaneous tuberculosis is frequently seen. I believe with Dr. P. N. Behl,² that tuberculosis of the skin is prevalent in India.

*Formerly Skin specialist, K. R. Hospital, Mysore, India. Now on a Fellowship in New Orleans, U.S.A. under Dr. Vincent J. Derbes, Prof. of Dermatology (Medicine), Director of Division of Allergy and Dermatology, Tulane University School of Medicine, New Orleans, Louisiana.

Specially contributed to the ANTISEPTIC.

In America at New Orleans where one of the biggest hospitals of U.S.A. (Charity Hospital) is located, the specialists are of the opinion that they have not come across tuberculosis as commonly as sarcoidosis. Even among the few cases, the common type is tuberculid, whereas lupus vulgaris is the common type in India. Michaelson,³ (1958) in his discussion on rosacea-like tuberculid of Lewandowsky states that "American dermatologists have small experience with cutaneous tuberculosis, as it is very rare in America." Huriez and Pelice,⁴ (1958) in a review say that cutaneous tuberculosis is common in Lille, North of France, a large industrial centre with 2 out of 3 million people working in the industry. In the course of 16 years they have recorded 400 cases of cutaneous tuberculosis, lupus vulgaris accounting for 211. If this rate of 25 cases a year is considered common, I am sure every city hospital in India records more than this.

Cutaneous tuberculosis manifests in different types. (Russell,⁵ 1958). Classification as exogenous primary, exogenous or endogenous superinfection and reaction to sensitivity (tuberculides) is the best. Though Robert Koch described tubercle bacilli in 1882, Darier coined the word "tuberculide" in 1896 for the widespread symmetrical eruption occurring in a person suffering from tuberculosis. This word is usually applied to the lesions which are different morphologically from the original and which show no organisms. Walker⁶ (1957) in his long essay "microbic allergides" reviews in detail all the literature and says that even in lesions of the so-called ex or endogenous superinfection, it is very difficult to demonstrate the organism and it is also not always possible to demonstrate the original lesion and in cases presenting "tuberculides". The common and the most important diagnostic finding being the histopathological picture of lymphoepithelioid follicle, the author suggests that all may be called tuberculides. Of course the Americans have jettisoned the terminal "e" and it usually is referred as tuberculid. Michaelson³ (1958) quotes Bolgert and Levy and agrees that there is no fundamental difference between true tuberculoderm or dermic tuberculides as the bacilli are rare in both types, the histopathological picture being common and tuberculin sensitivity being positive in both.

Tuberculous chancre or exogenous primary infection usually results in a group of papules or a painless crusted patch on the exposed part amenable to injury.

Regional glands are enlarged and the previously negative Mantoux reaction becomes positive. BCG vaccination is an example of tuberculous chancre induced with an organism of very low virulence but capable of producing Mantoux conversion.

Lupus vulgaris (tuberculous luposa) and lupus verrucosus are the two important varieties of exogenous infection. Lupus vulgaris is the most common variety affecting mostly the face and neck. The groups of painless reddish yellow small nodules occur under the smooth and shiny epidermis. Older nodules retrogress leaving the scar and new nodules appear at the periphery. The "apple jelly test" consists of pressing a clean glass slide over the area—the surrounding skin is blanched on pressure but the nodules do not lose the reddish yellow colour and therefore they look like apple jelly nodules (similar to exposed cut apple). This diascopic examination is characteristic of lupus vulgaris. Another method is to press one of the suspected nodules gently with a blunt probe. If it easily penetrates *i.e.*, if the surface of the skin collapses and a small cavity opens, it is diagnostic. The nasal mucous membrane, hard palate and gums may be affected. The cartilage of the nasal septum is invaded giving rise to "parrot beak" nose. This is a very chronic condition. Irritant medicines might cause malignancy. Disfigurement like ectropion and deformity are other complications. Large areas of lupus vulgaris on the trunk (*Fig. 1*) are seen in the farmers usually. For purposes of differential diagnosis in a case of lupus vulgaris, syphilis, leprosy, leishmaniasis, sarcoidosis, halogen granuloma, lupoid sycosis and cutaneous reticulosis must be thought of. In the young, especially of face, juvenile melanoma which enlarges during childhood should be excluded.

CASE 1:—Patient, S., a girl of 10 years attended the ENT department for a deformity of the nose. The nose was buried and fixed in the thickened skin of the cheeks and the upper lip had retracted and got fixed to the jaw. Both the cheeks were thickened and discoloured. The patient could not eat or open the mouth well. This was of six years' duration. The patient had a fall six years ago and the inside of her upper lip was hurt. The case was shown in one of the monthly clinical meetings as a case of submucous fibrosis as the biopsy from the mucous membrane showed no evidence of malignancy. The whole area was reddish yellow and hard. The deformity simulated the parrot beak.

A repeat biopsy done from the skin on the cheek showed typical lymphoepithelioid follicles in the section. The case was treated with streptomycin, calciferol and INH. In addition the patient had steroids and superficial X-rays. The fibrosed area cleared up and the patient got smooth cheeks. The case is described mainly to show how the case went to ENT, the diagnostic difficulty and the therapeutic success.

CASE 2:—A boy of 15 was referred to me by a general practitioner. This patient had typical patches of lupus vulgaris on the foot and thigh (*vide Fig. 2*, on p. 634). This patient had

streptomycin with no benefit. I prescribed a combined treatment consisting of streptomycin, INH and Calciferol. The improvement was rapid though the patient had suffered for more than 8 to 10 years.



FIG. 2. Lupus vulgaris multiple areas.



FIG. 3. Lupus verrucosus.

Lupus verrucosus or tuberculosis verrucosa is another type of exogenous infection. This occurs commonly on the hands (postmortem wart), knees, elbows, buttocks and legs. The lesion looks like an infected wart. The histopathology is nonspecific. There may be subcutaneous swellings along the lymphatics due to lymphatic spread. In such cases sporotrichosis should be thought of. Fig. 3 above gives a picture of this type of tuberculosis on the foot and ankle in a patient. This is also common because most of our people walk barefooted.

Swimming pool granulomas occur on the bridge of the nose, elbows and knees due to abrasions during the game. Greenberg and Kupka,¹ (1957) discuss in detail the published work on this subject and think that these ulcers are due to mycobacterium balne coming from the genitalia of the male swimmers. Some have thought it to be due to the smegma bacillus. But some are of the opinion that they are due to tubercle bacilli modified by chlorination.

Tuberculosis cutis orificialis is the condition in which ulcers are seen in and around muco-cutaneous junctions especially around the anus. These may be due to exogenous infection but also to endogenous superinfection. They are usually about 5 mm. in diameter, circular or irregular in shape having undermined edges with grey nongranulating bases and called by some as tuberculous gumma. This is a common condition met with in

the surgical wards. It is good to search for tuberculosis in the abdomen especially of the intestines.

Serofuloderma (Tuberculosis colliquation) otherwise known as the King's Evil, is the typical example of endogenous superinfection. It is primarily due to the infection of bone or glands breaking on to skin—in the neck it starts from lymph glands, on the fingers from dactylitis. The skin is adherent to deeper structures, presents a bluish swelling which breaks and forms sinus or ulcer with erythematous areola discharging blood-stained caseous material. It may be of interest to recall that the great lexicographer Samuel Johnson was touched by Queen Anne to get a cure for his serofuloderma. It was a practice both in France and England to believe in the healing touch of the reigning sovereign and people used to flock on the appointed day to have the benevolent touch.

The third group of manifestations and the tuberculids. They are typically bilateral and the patients are hypersensitive to tuberculin. Histologically they are typical but all patients do not have a focus of active tuberculosis. Papulonecrotic tuberculids occur as painless shotty papules or nodules in crops on the limbs.

They then become necrotic with an yellow crust. The ulcer heals in about 10 weeks leaving an atrophic scar with a zone of pigmentation. Stevanovic,⁷ (1958) reports a case of papulonecrotic tuberculids on the glans penis and quotes 6 cases from Japan and 2 by Hellestrom. This possibility must be borne in mind for differential diagnosis in nonspecific ulcerations on the penis, as this condition has become more common nowadays. Lichen serofulosorum is characterized by papules occurring in patches or circles on the trunk of children. Usually there is evidence of surgical tuberculosis like caseating glands. This condition is rare. Erythema induration or Bazin's disease occurs as tender nodules on the calves of young adolescent girls and women. Then the nodules ulcerate causing indolent ulcers with undermined edges—tuberculous gumma. But they may subside without rupturing. They are symmetrical, red with an erythematous halo. Erythema nodosum occurs as symmetrical painful nodules on the front side of the legs in children. They do not ulcerate but subside in about 6 weeks leaving no remnant. This type of lesion is a syndrome occurring in other acute infections.

CASE 3:—A girl of 8 years came to the skin department with painful nodules on the front of both legs (*vide* Fig. 4, on p. 636). The tuberculin test showed hypersensitivity. The skiagram of the chest showed Ghon's lesion. Her general health was poor. This was a typical case of erythema nodosum. As these cases are

supposed to develop active pulmonary tuberculosis sooner or later the child was given antituberculosis treatment with streptomycin and INH and the improvement was remarkable. The patient increased her weight and nodules disappeared. She left the hospital with a smile.

Rosacea like tuberculid of Lewandowsky is a condition in which red or brownish yellow minute papules occur on the face especially on the cheeks, forehead and chin. Opinion amongst dermatologists is divided as to its origin.



FIG. 4. Erythema nodosum on front of legs with hypersensitive reaction to tuberculin.

Management of cutaneous tuberculosis.—Cautery, fulguration and U-V rays were the old methods of treatment which insured no treatment at all. Streptomycin was good but not very promising when given alone. Streptomycin with para-aminosalicylic acid was good for inflammatory conditions like lichen verrucosus. After the successful report of Charpy of Digon in World War II, Dowling and Thomas used them in England and reported in 1946 to 1948, their successful use of vitamin D₂ (Calciferol). The Tenth International Congress of Dermatology in 1952 recommended a formula for cutaneous tuberculosis, a combined treatment of vitamin D₂ and antibiotics referring to the sclerosing action of vitamin D₂. Better results were obtained but there were recurrences. With the introduction of isonicotinic acid hydrazide (INH) cures were reported in cases of 20 to 40 years' standing. But this mono-antibiosis failed in lupus vulgaris. Experiments in mice have shown that large doses of calciferol act like cortisone, causing hypertrophy of zona fasciculata of the suprarenal glands indicating hyperactivity thus showing nonspecific response in the pituitary supra-renal system. In fact calciferol brings about a rise of isoniazid concentration in the blood which is further increased, if cortisone is given as well. Huriez and Pelice, (1958), the treatment consists in (1) the use of antibiotics, a combination of streptomycin and INH for at least one year (Streptomycin 1 g. I.M. once in 5 days and INH 300 mg. a day). (2) Intensive prolonged I.M. "Sterogyl" 600,000 I.U. twice a week for 4 weeks, later once a week or orally 150,000 I.U. daily for 4 to 8 weeks, later reduced to 100,000 I.U. daily). (3) Intravenous PAS if necessary. (4) Steroids in addition to the above in resistant cases.

Summary.—Cutaneous tuberculosis is shown to be common in India. Different types are described briefly. Treatment with a combination of INH and streptomycin for at least one year is stressed. Calciferol and steroids are shown to be useful adjuncts. Three case reports are given showing the effect of the method of treatment advised.

Acknowledgements.—My thanks are due to Dr. H. V. Suryanarayana Rao, Surgeon, E.N.T. Department for permitting me to quote his case and to Dr. A. K. Gopalaraman, the Superintendent of the Krishna Rajendra Hospital, Mysore for permitting me to publish this article.

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FURAZOLIDINE: A CLINICAL TRIAL IN THE TREATMENT OF DIARRHOEA

There are many satisfactory and potent preparations available for the treatment of gastro-enteritis. It is not desirable, however, to treat every case which presents with antibiotics, effective though they are, because of the high cost of such treatment and the possible disadvantages of producing resistance in patients with relatively, minor complaints. Sulphonamides are effective, but the number of tablets to be taken is often considered a disadvantage by the patient and the possibility of allergic and toxic responses must always be considered. When a new preparation becomes available for clinical trial with the suggested advantages that side-effects are negligible and that the dosage does not involve more than four administrations in the twenty-four hours, such a drug deserves a clinical trial, particularly in general practice.

Furazolidone was available in two forms: as tablets and as a liquid preparation. Adult patients were given 100 mg. four times in the twenty-four hours; children of 5 years and older received 50 mg. four times in the twenty-four hours; and children under 5 years received the liquid form in four divided doses over twenty-four hours on a dosage level of 2.5 mg. per pound of body weight (5.5 mg. per kg.).

The series consisted of 56 patients. Whenever possible, a specimen of the stool was obtained for bacteriological examination before treatment was started. Most of the patients were treated at home and a certain number were ambulant and at work. Normal conditions were restored in almost all within five days.

Side-effects:—No side-effects attributable to taking furazolidone were noted. Some patients complained of nausea, vomiting and headache, but as all these symptoms cleared up rapidly within a day or so, they were most probably due to the gastroenteritis for which the patients presented for treatment. Several patients commented that the urine was coloured orange within a few hours of taking the first two tablets. This, of course, is due to the presence of furazolidone in the urine, which gives this characteristic colour and is of no consequence.

The clinical symptoms rapidly cleared in most patients within two days of treatment; several discontinued treatment as soon as they felt better. It is always difficult to assess the value of an antibacterial agent

in enteritis because, even without drug treatment, many patients are cured within four to five days. Nevertheless, it is our clinical impression that in a considerable number of the successful cases, furazolidone was responsible for terminating the attacks.

There is no doubt in our minds that furazolidone is a useful drug for the treatment of acute diarrhoea and deserves further trial.—(*The Practitioner*, March 1960).

NEW CLUE TO THE CAUSE OF LUPUS ERYTHEMATOSUS

The outlook for lupus erythematosus, a disease long considered to be very serious and nearly always fatal, is not so bleak after all, according to two Detroit physicians.

Reporting a study of 100 cases in the October 24, 1959, the *Journal of the American Medical Association*, Clarence E. Rupe, M.D., and Stewart N. Nickel, M.D., Henry Ford Hospital, said the disease is more benign than previously suspected. They also offered a clue to the possible cause of the disease.

Lupus erythematosus was once considered to be only a skin disease, because of its typical butterfly pattern of rash across the bridge of the nose. However, it is a systemic disease, affecting the joints and such organs as the liver and kidneys.

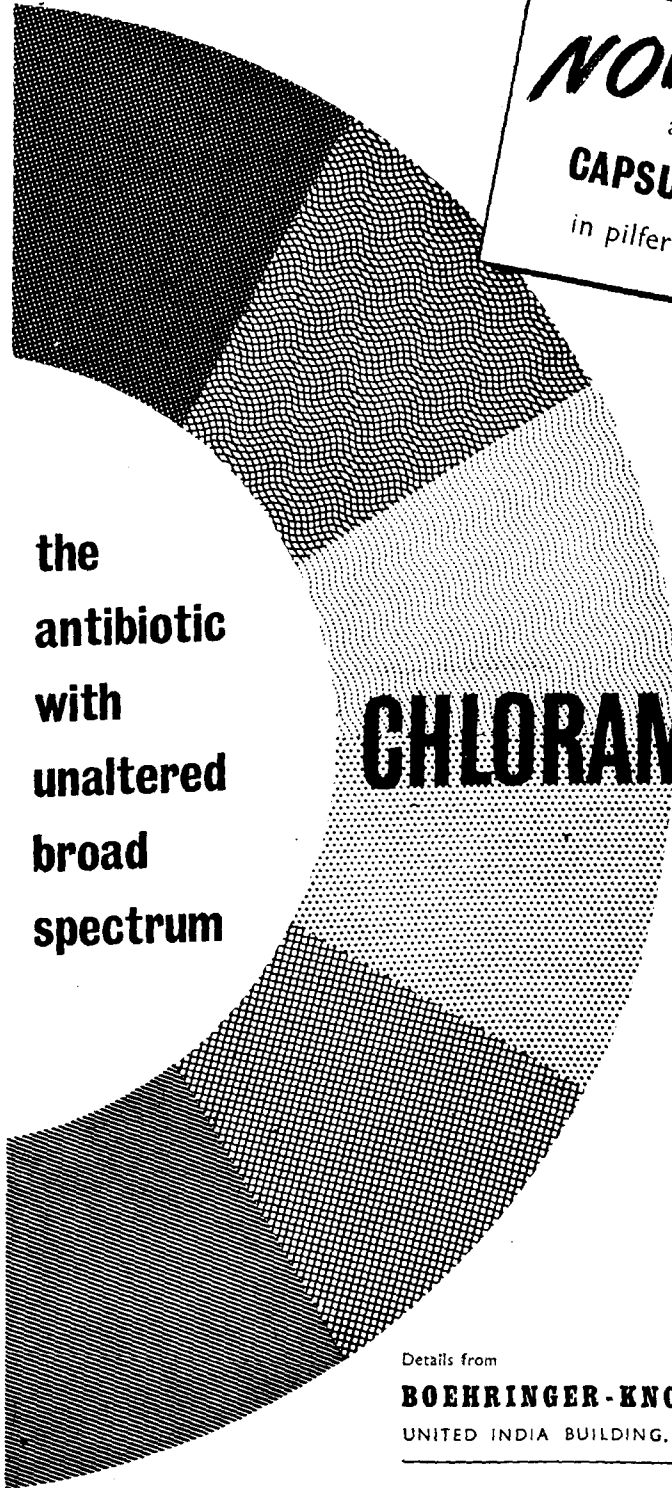
Treatment with artificial hormones, such as those used for arthritis, has a beneficial effect on the disease-process by slowing it down and by carrying the patient through crises which once would have been fatal.

The benign course of the disease was illustrated by the fact that only 2 per cent of the total group "proceeded to incapacity," the doctors said. In addition, more than half of the men remained in good health and at full capacity. Fifty of the patients survived the disease at least ten years after the onset, and 45 of these are still living. Duration of the disease ranged from ten months to thirty-six years.

The clue to a possible cause of the disease lies in the fact that many of the patients had streptococcal infections just prior to the onset of lupus erythematosus. Many had typical "strep-throat" infections, while others had other streptococcal infections, such as boils or ear infections. This suggests that hypersensitivity to the streptococcus may be an important factor in the disease. This association may eventually produce a means of prevention.—(*N. Y. St. J. Med.*, 15-1-1960).

A LAWYER'S ADVICE TO DOCTORS

1. Don't bite off more than you can chew.
2. Keep abreast of new medical developments.
3. Beware lest you are accused of experimentation.
4. Warn your patients where treatment might prove fatal and obtain their written consent for the treatment.
5. Keep neat files.
6. Avail of laboratory facilities to support your diagnosis or surgical procedures.
7. Be quick to consult when you are overwhelmed by the unsuspected developments of an illness.
8. Be kind to your patients and mind your words.
9. Do not criticize a colleague under any circumstance.
10. Flatly refuse patients when you have not the time or inclination to treat them. Dr. Jean-Marine Rousal, Medico-legal authority, 1959 Montreal Medical Society publication.—(*Br. Col. Med. Jour.*, Dec. 1959).



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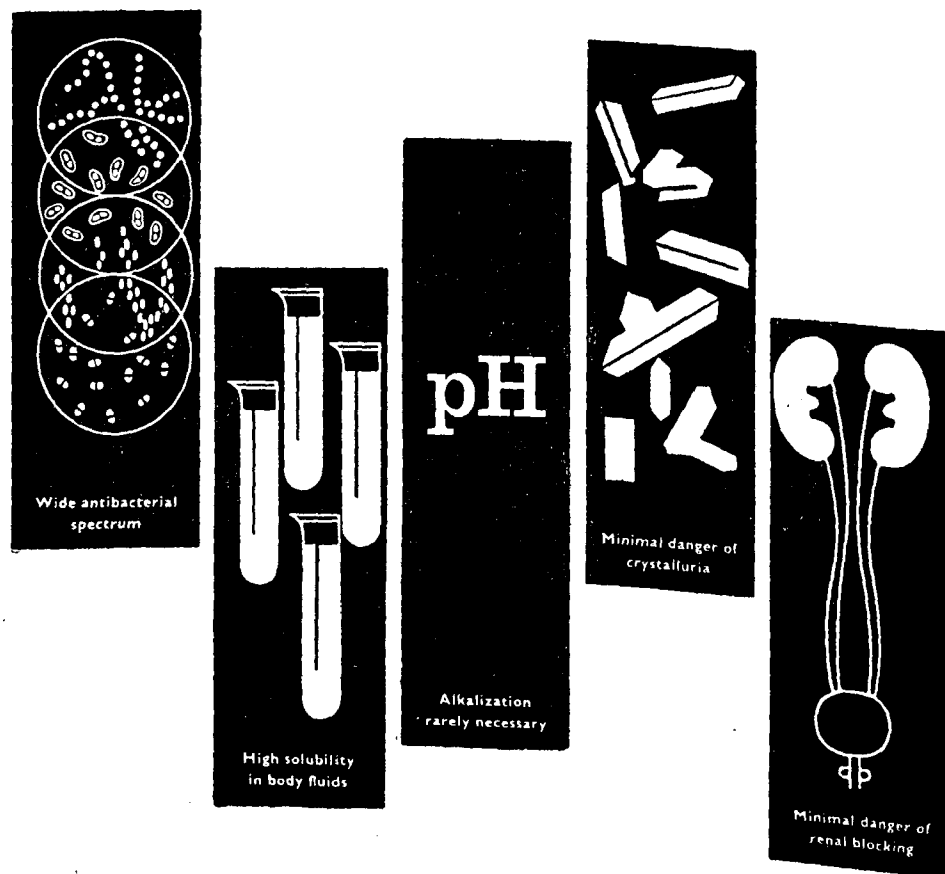
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GENERALIZED TETANUS IN PRATAPGARH*
(RAJASTHAN)

"MEDICINE is learnt from patients and not from books"—this idea often comes to mind when one deals with cases of tetanus in the traditional manner at Pratapgarh (Rajasthan) where the incidence of tetanus is fairly common. It is often noted that even high doses of A. T. Serum are not effective in curing even the early cases on the one hand, while on the other, cases of tetanus recover fully without A. T. S. at all. Therefore, one has to doubt the actual value of A.T.S. in the therapy of tetanus. In this article I will deal with the problem of tetanus in our hospital.

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Incidence of tetanus in Pratapgarh.—The fairly common practice amongst the people in these parts of branding 'Daam' with a red hot iron at the site of the affection in every ailment is partly responsible for the high incidence of tetanus. The incidence is greater in the rural than in the urban areas. The majority of cases occur among the tribal folk, e.g., Bhils, Minas, and Labanas. Next in order come the Jains, while it is rare among the educated, upper and middle classes of people.

Evidence of sepsis.—Evidence of sepsis is present in most cases. The common causes for tetanus infection are as follows:—(1) "Daam" 55%; (2) rat-bite; (3) guinea-worm abscesses; (4) post-partum-sepsis; (5) umbilical-cord infection in new-born babies; (Tetanus-neonatorum); (6) ear-discharge and (7) wounds.

Pathology of tetanus.—Clostridium tetani cannot enter the intact skin (or mucosa) but can readily do so after an injury. Cl. tetani is an anaerobe requiring necrotic areas for growth and development, such as are available in wounds. Cl. tetani produces a very powerful exotoxin which has two components:—Tetanospasmin and tetanolysin. Tetanospasmin is a neurotoxin which acts on the motor end-plates and is responsible for generalized spasticity and convulsions. Nervous tissue has greater affinity for tetanus toxin than A.T.S. So once tetanus toxin is fixed to nervous tissue, it cannot be neutralized by A.T.S. Tetanospasmin increases motor-neurone excitability. Even a mild stimulus, therefore, produces severe spasms. Tetanolysin is a potent hæmolytic agent. Symptoms of tetanus are caused by the tetanus toxin fixed in the nerve-tissue and the quantity circulating in the blood.

Incubation period.—Ranges from 2 to 15 days but may be much longer. In our experience cases have been observed with an incubation period of 10 hours to 13 days; cases with short

* Specially contributed to the ANTISEPTIC.

incubation periods are graver than those with longer incubation periods.

Signs and symptoms and their significance.—(1) *Lockjaw*:—Is the first and only symptom for which the patient often comes to hospital; it is more marked in the early severe cases. In the less severe ones the mouth can be opened partially so that fluid diet can be given. Severe spasms occur in the graver cases, at very frequent intervals of 3 to 5 minutes, but with adequate treatment they become less frequent, say 4 to 6 times a day.

(2) *Generalized spasticity*:—Generalized spasticity is spasmodic in nature, and the spasms are both tonic and clonic, with no rest in between the spasms. The spine is extended and flexors and extensors of the limbs along with the muscles of the pharynx, larynx and all the muscles of respiration contract involuntarily at the same time and this is repeated every few minutes, which is the cause of extreme exhaustion. Death however, seldom occurs as a result of the asphyxia due to tracheal obliteration caused by the contraction of glottis. Tracheotomy was not required in any of our cases. The prognosis is grave if the spasms continue and do not respond to treatment.

(3) *Sepsis*:—Evidence of sepsis is present in many cases. An unnoticed minor abrasion or a slight ear-discharge may be the cause. The septic focus should be ascertained and the sepsis effectively treated.

(4) *Fever*:—Tetanus toxin does not usually cause pyrexia, which may however be an intercurrent infection; cases of tetanus without fever have a better prognosis and when present must be treated suitably. This will minimize exhaustion.

(5) *Constipation*: is nearly always present as the patient is unable to take adequate solid or semisolid food or even fluids in some cases. The recumbent posture is also an adverse factor. Flatus is passed usually, but when *Daam* is on the abdominal wall which is the common site, the abdomen is distended and the note tympanic. Where there is constipation a soap water or glycerine enema is to be given on alternate days for the first few days.

(6) *Retention of urine*:—Retention of urine may occur mostly due to constipation. After the enema the patient usually passes urine and catheterization is rarely necessary.

(7) *Insomnia*:—The paroxysmal spasms interfere with sleep; and insomnia adds to the exhaustion. Therefore, sedation is necessary.

Treatment.—Rest, sedation, specific and symptomatic treatment, proper dieting and careful nursing are essential.

A. *REST*:—The patient is made to rest in bed in a darkened but well-ventilated room, with a minimum of attendants.

B. *SEDATION*:—To keep the patient free from spasms and to ensure adequate rest, various sedatives, narcotics, muscle-relaxants and even anaesthetics are to be used.

(1) *Mist. Chloral bromide*:—This time-honoured remedy is useful in mild cases of tetanus in all stages; also in the later stages of severe tetanus, because of its low toxicity: even when administered frequently (one ounce every four hours) no side effects are produced.

(2) *Avertin* used as a retention enema (Avertin 6 cc. + normal saline 200 cc.) in cases of tetanus of a mild or moderate degree, gives satisfactory results but in severe cases it does not avail.

(3) *Myanesin*:—In very severe cases 5 cc. doses intramuscularly, usually twice in 24 hours or at the most four times, on the first day are of great value, because the muscular relaxation increases the degree of sedation resulting from the administered sedative. It should however be used cautiously and adverse effects watched and countered. It is not safe to use it unless absolutely necessary and even then it may be given only twice on the first day only in 5 cc. doses intramuscularly.

(4) *Sodium gardinal*:—It is given intramuscularly twice or thrice a day in 3 gr. doses in order to keep the patient under sedation all the time. In our experience however, paraldehyde acts better and helps in early recovery, without any hang-over.

(5) *Largactil* is advocated by some; it is costly and does not appear to us to be very effective except when paraldehyde, is also used along with it.

(6) *Paraldehyde* has been found by us to be the most effective, least toxic and perhaps the best sedative for use in cases of tetanus, and we give it in 4 cc. doses, intramuscularly at intervals of 4 to 6 hours as the particular case demands.

C. *SPECIFIC TREATMENT WITH A.T. SERUM*:—All Western and a few Indian workers advocate large doses of A.T. serum; but in our hands, it has failed miserably. The former recommend, one lakh units (1950) of A.T.S. given by the intravenous route and one lakh units (1950) given intramuscularly at the earliest and 20,000 to 40,000 units intramuscularly for 3 to 4 days in severe adult cases. We have not dared to use such massive doses because most of the cases are already sensitive to foreign proteins due to various reasons and death from severe anaphylaxis may occur; therapeutically also such higher doses are not required. Tetanus toxin once fixed in the nervous tissue is not at all effected by A.T. serum no matter in what high dose it is given. A.T.S. thus given

neutralizes only the tetanus toxin which is not fixed in the nervous tissue but is circulating in the blood. When sepsis persists, toxin formation at this site is not effected by A.T.S. It has little or no effect when the disease is fully established and has run its course for 5 or 6 days. In an adult case, therefore I consider that a total of one lakh units of A.T.S. should be given in one dose at the earliest. A part of this may be given intravenously and part by the intramuscular route. I give 60,000 units by the former route and 40,000 units by the latter.

In cases of tetanus following an incubation period of between 3 and 5 days, A.T.S., given early has been beneficial provided it is given in the dosage suggested below :—

TABLE I
Showing the suggested optimum dose of A.T.S. according to age of the patient

Age of patient	Anti-tetanic-serum to be administered		
	Total dose (1950) units	Amount given intramuscularly (1950) units	Amount given intravenously (1950) units
(a) 10 days—2½ years	20,000	20,000	—
(b) 2½ years—5 years	30,000	30,000	—
(c) 6 years—10 years	40,000	40,000	—
(d) 11 years—13 years	50,000	20,000	30,000
(e) 14 years—19 years	70,000	30,000	40,000
(f) 20 years and above	1 lakh units	40,000	60,000

We give A. T. S. in above dosage irrespective of the type and severity of the tetanus infection. If the incubation period is more than five days and the case has come for the first time on the 9th or 10th day, A.T.S. is not given at all, but the cases are given simple, careful and efficient nursing and sedation is routinely resorted to. The cases do well on this regimen. When A.T. serum is used, it is wise not to use different makes and brands.

D. DIET :—This is very important. Liquid diet in the form of milk, fruit juice and glucose water is given to patients who can partially open their mouths; otherwise they are given through a Ryle's tube. In severe cases intravenous glucose is to be given without overloading; otherwise pulmonary oedema is to result. PERISTON "N" gives better results than *i.v.* glucose in tetanus cases.

E. CARE OF THE BOWELS AND BLADDER :—is also important. Catheterization of the bladder should be done if required and enemata given without hesitation, if the patient is constipated.

F. PREVENTION OF INTERCURRENT INFECTIONS :—Penicillin, sulphonamides and streptomycin have no effect on the tetanus toxin, but they inhibit the growth of the organism. In tetanus cases sepsis is usually present and pneumonia is the most common complication; therefore, streptopenicillin ($\frac{1}{2}$ g. formula) is given intramuscularly every day for five days to every case and later also if indicated.

G. NURSING :—Oral hygiene should be attended to; KMnO₄ gargles should be given at least twice daily to prevent parotitis. Local septic foci should be adequately treated. Tepid sponging on alternate days is good if there is no intercurrent pneumonia. Good and careful nursing is therefore, all important.

Complications.—A. PNEUMONIA :—Pneumonia is the most serious complication in tetanus, which starts on the 4th or 5th day in an established case. The lying-down posture, exposure to cold, liquid food wrongly entering the trachea and the administration of large doses of Myanesin are the common contributory factors. Cases of tetanus neonatorum and adult cases of severe tetanus with a short incubation period, when complicated by pneumonia end fatally. In order to counter this vicious circle, penicillin and sulphonamides are given for the first few days.

B. RESPIRATORY FAILURE :—Dyspnoea and cyanosis often occur and they are effectively countered by oxygen inhalation and respiratory stimulants, preferably lobeline intramuscularly. Respiratory failure in tetanus is mostly due to pneumonia and pulmonary oedema, which should be guarded against.

C. CARDIAC FAILURE :—Tetanus cases with pre-existing cardiac disorders, like mitral stenosis nearly always fail to recover. If the B.P. is low, suitable treatment with intravenous fluids and heart tonics may be given with benefit.

D. EXHAUSTION :—Exhaustion when of extreme degree, may be treated with Vitamin B complex, good diet and proper sedation.

E. SEPSIS :—The source of sepsis must be eliminated fully, otherwise tetanus toxin will gain mastery over the situation and cause death.

F. DEFICIENCY STATES :—The necessity for maintaining proper state of nutrition to overcome exhaustion has been already stressed.

G. BURNS :—Due to the common habit of *Daam* application, burns of various sizes and degrees are met with; these *Daams* are responsible for 55% cases of tetanus at Pratapgarh. These burn marks are usually two or three, often five or six and at times even twenty to twentyfive. The average size of each is 2" x 1½". They are found commonly on the abdominal and chest walls, but are often seen on other parts of the body. This should

also receive attention lest they add to the possibility of further infection.

Prognosis.—The prognosis as already indicated varies with the age, sex, incubation period, dosage of A.T.S. administered, complications, general previous health, maintenance of nutrition and careful nursing.

Summary.—(1) Tetanus is very common in Pratapgarh (Rajasthan). (2) The common causes have been discussed at length. (3) The value of A. T. serum has been discussed. (4) The drugs used by the author and found effective have been described at length with their dosages.

I am grateful to Dr. U. S. Rathore, Dr. (Miss) V. R. Modak, Dr. H. S. Rao and Sister T. Raje for their valuable assistance.

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SUBCUTANEOUS EMPHYSEMA

The significance and importance of subcutaneous emphysema in chest conditions is often misunderstood, particularly if it is of considerable magnitude. This entity, when seen, almost always follows either rib-fracture with lung puncture, rupture or perforation of the œsophagus or major bronchus, or perforation of the chest wall with creation of a "sucking" mechanism. A rib at the moment of fracture will more than likely tear the adherent parietal pleura. If the broken rib also punctures the lung, a pneumothorax of greater or lesser extent results. The pleural air then has egress to the subcutaneous planes because of the parietal pleura disruption. Chest motion tends to draw the air into this false passage. If the pneumothorax is slight and without tension, the subcutaneous emphysema will be minimal. If the pneumothorax is progressive and under tension, the subcutaneous emphysema may be awesome.

A rupture of the œsophagus, trachea, or major bronchus will permit the escape of swallowed or inhaled air into the mediastinum, and by way of the apex of the thorax into the subcutaneous tissues.

A perforating wound of the chest wall (either operative or traumatic) will at times allow chest motion to draw environmental air or intrapleural air into the subcutaneous planes.

In any of these situations, the subcutaneous emphysema itself represents no dangerous or life-threatening complication. The concept is to some extent prevalent that a large quantity of air beneath the skin endangers life. This concept is erroneous. On the contrary, the escape of air into the subcutaneous tissues may serve as a life-saving decompression of intolerable intrapleural pressure.

The decisive importance of subcutaneous emphysema is that it calls attention to the basic problem: the lung rupture, œsophageal rupture, or chest wall perforation. The precise identification of the source of air-leak is sometimes extremely difficult, but the detection and correction of this source constitute the sole therapeutic problem. Extensive subcutaneous emphysema, even if so great as to distort the patient beyond recognition, does not require measures directed toward the emphysema, but does dictate urgency in "damming" the leak at its point of origin.—(Condensed from Editorial in *J. Iowa State Med. Soc.*, Feb. 1960).

SECONDARY GLAUCOMA, ITS CAUSES AND TREATMENT*

SECONDARY glaucoma may be defined as a loosely knit and unrelated clinical group of symptoms, the only common denominator being some recog-

nised pathological lesion complicated by an increase in the intra-ocular pressure with attendant symptoms; the importance of a study of secondary glaucoma is obvious, since the facts discovered throw considerable light upon primary glaucoma, where the raised pressure is due to some not obvious cause at present unknown. In this paper I give an account of 105 cases of secondary glaucoma seen in the Department of Ophthalmology of the M.Y. Hospital, Indore, during the last two years; 70 were males and 35 were females.

Of the 105 cases, 16 were in the 30 to 40 years age-group; twentyfive were in the 41 to 50 years age group; 45 in the 51 to 60; 21 in the 61 to 70 and 7 cases in the over 70 years age-group.

Ninety seven of the 105 cases were due to cataract, of which 3 had dislocated lenses; 4 were due to iridocyclitis; two to iris bombe; one to adherent leucoma and one case was traumatic.

Operations done:—Basal iridectomy was performed in 99 cases; cyclodialysis on one; posterior sclerotomy on two and operation on conservative lines in 3 cases.

Tension in mm. of Hg.:—25 to 40 mm. Hg. Schiotz was recorded in 24 cases; 41 to 50 mm. Hg. in 38; 51 to 60 mm. Hg. in 12; 61 to 70 mm. Hg. in 20 and above 70 mm. Hg. in 11 cases.

Hyphema occurred as a complication in 10 cases.

Aetiology.—According to Redslob (1935), if the secondary glaucoma is not post-inflammatory or due to lenticular changes, it is mostly secondary to vascular disease. I wish to lay great emphasis on vascular basis being the essential factor, while embarrassment of the drainage channels, is an important adjuvant factor.

Congestion, stasis and œdema due to actual obstruction of the veins draining the uveal tract or due to dilatation and increased permeability of the capillaries induced by vasomotor reflexes (Axon reflexes) or liberation *in situ* of histamine-like substances lead to high capillary pressure and colloid-rich plasmoid aqueous. When the drainage channels are impeded and their safety valve mechanism impaired, secondary glaucoma readily develops.

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*Specially contributed to the ANTISEPTIC.

Causes and treatment.—1. GLAUCOMA SECONDARY TO INTRA-OCULAR INFLAMMATION may be inflammatory or post inflammatory.

(a) *Inflammatory glaucoma*:—(i) *Acute inflammation*:—Acute iridocyclitis; uveal capillaries are intensely dilated with increased permeability. Aqueous becomes colloid-rich and plasmod, the drainage channels get clogged with protein and cellular elements. The primary fault lies in the static vascular phenomenon of inflammation. Severe keratitis, interstitial keratitis, corneal ulcer, specially hypopyon ulcer, herpes, scleritis etc., also give rise to intraocular tension in a similar way.

(ii) *Chronic inflammations*:—The presence of a few K.P. differentiate it from primary acute glaucoma and fine vitreous opacities and inconspicuous K.P. from chronic primary glaucoma. Inflammation is subthreshold in degree e.g., tuberculosis, syphilis or septic foci.

TREATMENT:—Anti-inflammatory treatment should be persisted in very thoroughly. *Systemically*: salicylates, sulphanilamides, Diamox, Cortisone or ACTH are given. *Locally*: heat, atropine and hydro-cortisone and antibiotics should be pushed. A thorough search should be made for the cause if it is granulomatous or non-granulomatous and tackled suitably if detected. The more apparent the inflammatory evidence the less will be the indication for surgery except perhaps paracentesis, which may be repeated on subsequent days. Anterior-flap sclerotomy is least traumatizing but tends to get blocked with inflammatory products. Trephining offers the best hope specially in chronic cases but even this may eventually get occluded. Occasionally basal iridectomy may be of some use in combination with hydrocortisone subconjunctivally.

(b) *Post-inflammatory glaucoma*:—Obstruction to the circulation of intra-ocular fluid may occur (i) in the region of the pupil by annular posterior synechia seclusio or oclusio pupillæ or a total posterior synechia may bind the entire posterior surface of the iris to the lens; (ii) in the angle of the anterior chamber when there may be inflammatory swelling of the tissues at the root of the iris and anterior part of the ciliary body and bellying forward of the iris forming peripheral anterior synechia.

Post-inflammatory changes occur in the tissues of the angle. Spaces of Fontana are first clogged with fibrin and inflammatory cells and then by granulation tissue. Fibres of the pectinate ligament are converted into a solid mass. New hyaline membranes form lined by endothelium, and the endothelium of the walls of the canal of Schlemm proliferates. Tension rises due to an obstruction of the circulation, blockage of the channels of exit and abolition of the safety-valve mechanism.

TREATMENT:—Prophylaxis is by prevention of organized adhesions by mydriasis as soon as possible from the earliest stage of inflammation. In iris bombe in a quiet eye, transfixation of the iris by Terson's kerato-iridic paracentesis may be done by introducing the knife into the anterior chamber and incising the iris at its greatest point of elevation or Fuch's four point iridotomy may be done to restore communication between the posterior and the anterior chamber. Basal iridectomy with subconjunctival administration of cortisone was tried with success. Iridectomy ab externo, wherein under a conjunctival flap a scleral incision 1 mm. behind and parallel to the limbus is scratched in layers with a keratome to the root of the iris is good. If congestion is absent an iris-inclusion operation may be done. In chronic cases where iris is free and the blockage lies at the angle of the anterior chamber trephining may be attempted.

An adequate outflow facility suggests a peripheral iridectomy, but when there is obstruction to the outflow as evidenced by a persistently flat tonographic curve inspite of miotic therapy, suggests filtering operations e.g., iridencleisis. This holds good true whether obstruction to outflow is visible as in peripheral anterior synechia or related to primary or secondary trabecular damage.

2. GLAUCOMA SECONDARY TO TRAUMA.—(a) *Traumatic glaucoma*:—There is an upset in the local nervous control of the circulation, any disturbance of which is generalized over the entire uveal tract by axon reflexes. This produces an instability with dilatation of the capillaries, engorgement of the circulation, stasis and oedema. Variations in pressure after contusion are caused by local neuro-vascular reactions. There is a period of instability of tension. The rise of tension is accompanied by pain, immobility of the pupil, traumatic myopia, nausea and vomiting. In 80% of cases, the tension rises within the first week after the accident.

TREATMENT:—In simple hypertension, rest and protective bandaging will control the condition. In the more serious cases where the tension is high, eserine is better than atropine. Cortisone locally and Diamox systemically are very good. ACTH may be given parenterally. Adrenaline (1 in 1000) as drops or as subconjunctival injection and antibiotics are useful. Paracentesis may have to be done in some cases. Basal iridectomy may be considered in other cases when medical treatment and paracentesis fail. In grossly injured eyes they may have to be excised.

(b) *Post-traumatic glaucoma*:—This is partially due to obliteration of the filtration angle and disturbances of neuro-vascular reflexes caused by the irritation of the iris and ciliary body,

partly by mechanical traction and partly by inflammatory reaction.

TREATMENT:—Is entirely surgical. Tied up iris is freed, an extensive iridectomy or isolation of adherent part of the iris by an iridectomy on either side of it is carried out.

In post-operative glaucoma the rise of tension is determined by mechanical obstruction at the filtration angle and caused by traction on the iris and ciliary body by incarcerated tissues aided by inflammatory reaction.

TREATMENT:—Prophylaxis is by elimination of any factors predisposing to post-operative inflammation and avoidance of unnecessary operative trauma together with careful toilet of the wound. Prognosis depends upon the promptness of the relief of tension before structural anomalies become consolidated. In those cases which are mechanical rather than inflammatory specially those with aphakia, cyclodialysis should be done over a large quadrant including the site of previous operation so that any adherent pillars of iris or tags of capsule are separated from the scar by the spatula. Cases of epithelial ingrowth should be radiated with X-rays which relieves the tension by preferential destruction of the actively proliferating cells.

Traumatic glaucoma complicated by a retained foreign body:—Tension may rise insidiously, several months or years after injury. Rise in tension depends upon neuro-vascular reactions excited by the foreign body. The ideal treatment is to extract the foreign body and if it cannot be extracted a fistulizing operation like trephining may be tried.

3. **GLAUCOMA SECONDARY TO CHANGES IN THE LENS:**—(a) *Deformations in the lens:*—In microphakia or spherophakia the lens is small and spherical. There is obstruction to the flow of intraocular fluid through the pupillary aperture which gets blocked by the rounded bulging anterior surface which gets Miotics raise the tension while mydriatics lower it. (Inverse glaucoma). Treatment is by intracapsular extraction of the lens. (b) *Displacements of the lens:*—There is derangement and stasis of the circulation excited by neurovascular reflexes set up by mechanical irritation of the ciliary body and iris in posterior dislocation and obstruction of the filtration angle in anterior dislocation. Treatment is by removal of the lens at the earliest opportunity by intracapsular forceps, wire vectis or transfixing and withdrawing it with a diathermy needle. (c) *Intumescence of the lens* is due to rapidly developing intumescent cataract of the senile type of traumatic cataract after injury or discision. There is pressure forwards of the anterior portion of ciliary body and root of the iris. Spaces of Fontana may get clogged when

the capsule is ruptured and mechanical pressure on the ciliary body excites neurovascular reflexes. Treatment is by iridectomy followed by lens extraction in intumescent cataract and curette evacuation in traumatic cataract. (d) *In Morgagnian cataract:*—The loose nucleus within the capsule rests upon the ciliary body processes and causes a reflex vascular disturbance. Treatment is by lens extraction. (e) *Senile exfoliation of the lens capsule:*—(Glaucoma capsulare) clogging of the filtration angle with debris from the capsule leads to chronic glaucoma.

4. **GLAUCOMA SECONDARY TO VASCULAR ANOMALIES OF THE RETINA:**—(a) *In venous thrombosis:*—Hæmorrhagic glaucoma treatment is by enucleation or retro-bulbar alcohol injection. (b) *In cyanosis retinae.* (c) *In vascular retinopathies:*—Rise of tension is due to the effect of irritative products of degeneration causing inflammatory changes in the anterior segment and embarrassing filtration, and the aqueous becomes highly colloid and (d) *In papillitis* associated with the obstruction of retinal veins.

5. **GLAUCOMA SECONDARY TO INTRAOCULAR TUMOURS:**—The size and volume of the tumour are not so important as its site. The angle of anterior chamber is infiltrated or venous return from the eye is embarrassed. Treatment is by enucleation of the eyeball.

6. **GLAUCOMA SECONDARY TO DETACHMENT OF THE RETINA:**—It is primarily vascular in origin. Treatment is by enucleation.

7. **GLAUCOMA SECONDARY TO INTRAOCULAR HÆMORRHAGE:**—Expulsive hæmorrhage after an intraocular operation usually from one of the posterior ciliary arteries and subchoroidal in nature.

8. **GLAUCOMA SECONDARY TO ATROPHIC AND SCLEROTIC CONDITIONS:**—(a) *Essential atrophy of the iris* is due to traction and shrinkage of new-formed tissue at the angle of the anterior chamber. The root of the iris gets fused with the cornea and there is elimination of the dialysing surface of the iris. Treatment is by fistulizing operations.

9. **GLAUCOMA SECONDARY TO VENOUS OBSTRUCTION IN THE ORBIT:**—From tenonitis etc. there is passive congestion and embarrassment of venous return. The cause must be removed by treatment.

10. **GLAUCOMA SECONDARY TO EPIDEMIC DROPSY:**—It has a vascular basis without any evidence of retention of fluid at the drainage exits. Capillaries are dilated and become more permeable due to histamine-like substance. This raises the dialysing pressure equilibrium to a higher level and osmotic pressure of aqueous is raised, thus tending to raise the intraocular pressure, usually between 50 to 100 mm. Hg. Schiotz. Treatment is to eliminate rice from the diet. Trephining is the operation of choice.

11. GLAUCOMA SECONDARY TO CONGENITAL ANOMALIES:—*Buphthalmos*:—There is obstruction to the drainage mechanism of the intraocular fluids, raising the tension. The coats of the eyeball are plastic at this stage; therefore, the whole globe enlarges. There is an anomaly of the mesoderm at the corneoscleral junction; the trabeculae are not opened up and the canal of Schlemm and its venous radicles may be absent.

TREATMENT:—In early cases, without corneal opacities or tears in Descemet's membrane, use miotics. In established cases in which the raised tension has started to cause structural damage, fistulizing operations e.g., the trephining, Barraquer's goniotomy should be resorted to. In advanced cases where the eye is grossly deformed and functionless, the eye should be removed.

12. EXPERIMENTAL GLAUCOMA is caused by the production of a permanent condition of vascular stasis and congestion and by blockage of the circulation of the intra-ocular fluids.

Review of recent literature.—Kronfeld (1955) confirms the concept that glaucoma secondary to delayed restoration of the anterior chamber is due to decreased outflow. When miotics improve the tension, the outflow is increased. Flocks (1955) thinks that phakolytic glaucoma is due to the escape of lens-fluid from a hypermature cataract and should be prevented by the extracapsular exfoliation does not usually cause glaucoma but that in most cases the glaucoma is primary. Ingmann (1954) and Chingalia (1955) reported five cases of concussion or contusion glaucoma. Cohen (1954) discussed uveitis with glaucoma. De Ferrari (1954) and Sivasubramaniam (1955) reported on essential iris atrophy. Smith (1955) states that occlusion of the central vein may cause rubeosis iridis. The fault lies in an anatomic anomaly in the configuration of the angle of A. C. Reimer Wolter (1958, 1959) reported secondary glaucoma following occlusion of the central retinal artery. This occurs in eyes with extensive arteriosclerotic vascular changes, and in late stages may simulate secondary hæmorrhagic glaucoma following venous occlusion.

BRONCHOGENIC CARCINOMA

The diagnosis of bronchogenic cancer is usually not difficult if one will only consider its possibility and take steps either to confirm or to exclude the diagnosis. X-ray of the chest is the simplest way to make a diagnosis and, although such a diagnosis is only presumptive, it is of importance because of the ease with which it can be performed. If the neoplasm is large enough to cast a shadow, the tumour is visible. (Alton Ochsner, M.D., *Western Journal of Surgery, Obstetrics and Gynaecology*, 68: 14, 1960, via *Cur. Med. Dig.*, April 1960).

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THE PHYSIOLOGICAL SIGNIFICANCE OF HISTAMINE*

HISTAMINE was first synthesized by Windaus and Vogt (1907) as β -iminazolyl ethylamine. Interest was aroused in this substance on the demonstration of its powerful pharmacologic actions (Dale and Laidlaw, 1910) and the similarity of such actions with the symptoms of anaphylactic shock in various species. The demonstration of its presence in normal mammalian tissues (Barger and Dale, 1911; Abel and Kubota, 1919; Best, Dale, Dudley and Thorpe, 1927; Thorpe, 1928 and Dale and Dudley, 1930) enhanced the possibility of its being endowed with a physiological function. "It should be possible to give further information on this point," wrote Best and McHenry in 1931, but even today apart from a few isolated instances, the physiological functions of histamine remain a problem.

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Occurrence.—Histamine can be produced *in vitro* by members of the coliform group of bacteria from histidine (Ackermann, 1910); it occurs both in plant and mammalian tissues and was originally discovered in ergot extracts (Barger and Dale, 1910). It is also present in spinach, tomatoes and in the nettle. In animal tissues, it occurs in the lungs, liver, gastro-intestinal tract, skin and mucous membranes. The wide distribution of histamine in mammalian tissues has been summarized by Feldberg (1956).

Metabolism.—The three most probable sources of tissue histamine have been listed by Paton (1955) as follows:—(i) Histamine from the diet; (ii) histidine decarboxylated by the intestinal bacteria and (iii) synthesis in the tissues.

Wilson's experiments (1954) prove that it is possible for histamine to be absorbed from the alimentary tract as a vitamin, but the proportion of such absorbed histamine is bound to be low, in view of the wide-spread presence of the histamine-destroying enzyme (histaminase, *vide infra*) in the walls of the intestines.

Schayer (1952, 1956) using radio-active isotopes, produced convincing evidence of the synthesis of histamine in the tissues from the amino-acid histidine. The process involves the splitting of a CO_2 molecule from the amino-acid (decarboxylation) by the action of the enzyme 'Histidine-decarboxylase.' The enzyme has been demonstrated in the tissues and it is also possible that the same enzyme is responsible for formation of histamine in the intestine by bacterial action.

*Specially contributed to the ANTISEPTIC.

After intravenous injection, there is a rapid disappearance of histamine from the blood (Rose and Browne, 1938). The histamine content of the lungs and the kidneys is raised while the stomach, small intestine, appendix and spleen are only slightly affected. Within 20 to 30 minutes, there is a decrease in tissue-histamine as well. Rose and Browne (1938) did not find any rise in the urinary histamine after intravenous administration, but more recently Sanyal and West (1958-a) have found that after large doses, a very small amount of free histamine is excreted in the urine. Later in that year, similar results were obtained by Duner and Pernow (1958) who found a correlation between the histamine levels in the blood and in the urine.

The elimination of histamine from the body also occurs in three ways:—(1) Oxidative deamination by the enzyme 'Histaminase' which is present in the kidney, liver and intestinal tracts. A second enzyme having similar action (Histamine-metabolizing enzyme No. 2) has been postulated by Schayer (1953). In the first step of the reaction, histaminase oxidizes histamine to form imidazole-acetaldehyde and ammonia. The imidazole-acetaldehyde is further converted by xanthine oxidase or aldehyde dehydrogenase to imidazole acetic acid (Parrot and Reuse, 1954, Tabor, 1956); (2) acetylation occurs in both the liver and the alimentary canal and a part of the histamine is excreted as its acetyl derivative (4- β amino-ethyl-imidazole) and (3) a small amount is excreted unchanged in the urine.

Location.—One of the major advances in the story of histamine in recent years has been the demonstration of its presence in tissue mast cells. First described by Ehrlich in 1877, as well-chromatically with toluidine blue, they were later found by Jorpes and co-workers (Jorpes, ³⁸ 1946) to contain heparin.

The first suggestion that such granules also contain histamine came from Riley and West, and the basis of this suggestion from their several papers, singly or jointly has been summarized by Feldberg (1954) as follows: (a) The ox-pleura is packed with an enormous number of mast-cells and contains between 200-300 g./gm. of histamine; (b) the mast-cell population of many tissues is small in very young mammals but increases in the adult animal, and so does the histamine content of the tissues; (c) by painting the skin of the adult mouse with a carcinogenic hydrocarbon, the number of mast-cells in the skin increases along with its histamine content and (d) mast-cell-tumours yield high quantities of histamine.

Since this summary, further evidence has been produced by the use of chemical histamine-liberators, which rupture the mast cells and lower the histamine-content of the tissues (Parratt and

West, 1957). The recovery of tissue mast-cells occur *pari passu* with the recovery of the tissue-histamine-level.

However, all the histamine in the body is not contained in the mast-cells. It is possible that a part of the histamine in the skin and in the alimentary tract is found outside the mast-cells. In the dog, nearly all the blood-histamine is contained in the eosinophils, while in humans and in guinea-pigs, it is associated with both basophils and eosinophils (Code and Mitchell, 1957).

Histamine and heparin form a complex *in vitro*, which resembles the naturally occurring mast-cell granules, in the proportion of the two substances in the complex, in morphology and in staining reactions (Sanyal and West, 1956). Studies of this nature throw light on the mechanism of histamine-binding in the tissues.

The distribution of histamine in the tissue has been followed further than the cellular level and has been shown to be present in the intracellular particle of the cell, chiefly in the mitochondria rather than in the cytoplasm, nucleus or the cell membranes (Hagen, 1954; Mongar and Schild, 1954). Gaddum (1956) discussed whether histamine in the tissue is present in a free or conjugated form and concluded that most of the histamine in the tissues was free except that it was found in the mitochondria or other particles of the same size, and that acetyl histamine was found in the urine and must be present in small amount in the body, though it was likely to be of no importance. The evidence for other forms of conjugated histamine is not convincing.

Functions.—It is difficult to assign the exact role of histamine in tissue-physiology and Dale (1929) has summarized the most important aspects of the problem as—"Looking at all the evidence for the normal physiological functions of histamine in the various organs, I think we may conclude, that it is practically limited to its actions in the immediate neighbourhood of its liberation. The very width of its distribution, in practically every organ and tissue investigated, might by itself be held to imply for it a function thus normally localized, as distinguished from a true hormone-function through the blood-stream."

The demonstration of heparin, histamine, 5-Hydroxytryptamine (5-HT, Benditt, Wong, Arase and Roeper, 1955) and hyaluronic acid (Asboe-Hansen, 1950) in the mast-cells, has stimulated the theory that these cells are peripheral unicellular endocrine store-houses. The location of mast-cells alongside of small blood vessels would seem to support this view.

It has recently been found that during the earlier phases of aseptic inflammation, mast-cells degranulate and rupture. The histamine and heparin liberated from such cells may conceivably aid the passage of protein-rich fluid and leucocytes essential for

tissue defence. The later phases of such inflammation is characterized by proliferation of new mast-cells, rapid divisions and giant-cell formations, with simultaneous degranulation. It has been postulated that hyaluronic acid so formed and liberated may be involved in the repair-processes (Sanyal, 1959).

Evans, Miles and Niven (1948) found that the pathogenicity of the invading bacteria is enormously enhanced by inoculation in an ischaemic region. Parasitic infections raise blood and infected tissue histamine in both rats and guinea-pigs. Further depletion of skin-histamine increases the susceptibility of rats to infection with staphylococcus aureus, to which in the natural state, they are relatively immune (Mishra and Sanyal, 1959). It has also been noted that injections of histamine increase phagocytosis of BCG in rats (Kato and Gozsy, 1956); Mishra and Sanyal (*loc cit.*) have implied that the mechanism of the immunity conferred on rats by histamine in the tissues may be due to an indirect opsonin-like effect.

It is a remarkable fact that generally the highest concentration of histamine (and mast-cells) in the body occurs in surfaces, where the organism is in contact with the outside world. The demonstration that mast-cells and histamine participate in both aseptic and septic inflammations and aid in tissue-defence, has provided experimental evidence Paton's (1955) suggestion that the characteristic distribution of histamine is related to the defence of the organism against the outside world.

Apart from the above general functions of histamine, which are likely to be shared by the vascular connective tissue of many organs, histamine may have specific functions in the individual organs as well. These will be discussed next.

Histamine in the skin.—Though nearly all the histamine content of the skin reside in mast-cells, about 10% is of non-mast-cell origin. The classic investigations of Lewis (1927) and Dale (1929) have shown that release of histamine occurs in the skin as a result of noxious stimuli, and leads in the human to a 'triple response.' The histamine content of the skin is increased after surgical injury (Geiringer and Hardwick, 1953). Dekanski (1945, 1947) reported that there was a rise in the skin-histamine in one hour following superficial skin-burn. Ballani, Sinha and Sanyal (1959) were unable to confirm the earlier rise, though a rise in skin-histamine was shown to occur in 2 to 3 weeks' time. There was no accompanying rise in mast-cell population (Ballani, Jha and Sanyal, 1959, unpublished data). Though it cannot be positively asserted as present that such a rise after surgical injury or burn is of benefit to the organism, the proved function of histamine in tissue-defence, gives assurance to such an assumption.

The release of histamine in the skin leads to itching (Broadbent 1953; Feldberg, 1954). The exact function of the itch is difficult to ascertain; though it is usually postulated that scratching will release more histamine from damaged cells and produce vasodilatation in an attempt to remove the irritant substance. Histamine released from the human skin may further act as a mediator of cutaneous pain (Rosenthal and Minard, 1939).

Histamine in the lung and liver.—There is a considerable amount of histamine in the guinea-pig's lung and in the dog's liver, organs which are particularly affected in anaphylaxis in the two species respectively (Dragstedt, 1941). The fatal bronchospasm in the guinea-pig and hepatic-vein-spasm in the dog, seen in anaphylaxis can be reduplicated by injection of suitable doses of histamine. The release of histamine in anaphylaxis from these two organs in the two species has been repeatedly demonstrated by differing techniques (Bartosch, Feldberg and Nagel, 1932; Dragstedt and Gebauer-Fuelnegg, 1932; Daly, Peat and Schild, 1935; Schild 1939), and there is little doubt that the released histamine is responsible for the fatal outcome. (Sanyal and West, 1958-b). In recent years the demonstration of histamine-release on exhibition of antigen to the lung tissues from patients with asthma and the contraction of bronchial smooth muscles under similar circumstances (Schild, Hawkins, Mongar and Herxheimer, 1951) has brought closer, the parallelism of human asthma and the experimental anaphylaxis in the guinea-pig.

Though the pathological role of histamine in the lung and the liver is well established, the physiological significance is at present only a matter of conjecture and a discussion of the various theories that have been advanced from time to time, will be of no avail.

Histamine and nervous structures.—Histamine is present in some nerves; the content is higher in the post-ganglionic sympathetic nerves (Kwiatkowski, 1943; Euler, 1949) but the release of histamine from such nerves has not been clearly demonstrated. Part of the histamine is contained in the mast-cells present in the sheaths and may be responsible for the nutrition of the nerves themselves. However, the histamine contained in the mast-cells only accounts for a part of the nerve-histamine, as destruction of the mast-cells by compound 48/80, only releases a part of the histamine from the sciatic nerve of the cat (Feldberg and Greengard, 1956).

The central nervous system, except in the region of the posterior pituitary, contains little histamine.

Histamine and the gastro-intestinal tract.—Histamine is present in high amounts in the stomach and duodenum and less

in the oesophagus and rectum (see Mota, Ferri and Yoneda, 1956). Feldberg and Harris (1953) showed two histamine peaks in the body of the stomach, one in the region of the parietal cells and the other in the muscularis mucosæ, but only one in the pyloric region, ileum and the colon. The duodenum however, contained two peaks, one in the region of the villi and the other in the muscularis mucosæ. Smooth muscles are known to be sensitive to histamine in several species (notable exceptions being the rat and the mouse) and histamine-liberators produce motor effects on the guinea-pig's ileum (Feldberg and Smith, 1954). It is tempting to postulate that histamine may be one of the natural mediators of peristalsis, though there may be several objections to such a postulate (Feldberg, 1954).

The role of histamine as a mediator of acid gastric secretion has been reviewed by Code (1956) and the conclusion drawn that "stimulation of gastric secretion is a function of histamine."

Histamine is a powerful secretor of intestinal juices as well (Feldberg, 1954), and the possibility always remains that histamine may be related to defence function in this system as well.

It has been shown that after X-irradiation of the white rat, there is a depletion of the histamine content of the alimentary mucosa along with desquamation of the mucosal cells. Histologic recovery precedes restoration of the histamine content. Functional recovery occurs with the restoration of the histamine content of the mucosa and not along with the histologic recovery. On the basis of this evidence, it has been suggested that histamine is responsible for the proper functioning of the alimentary mucosa (Sanyal and West, 1959).

Histamine and anaphylaxis.—The participation of histamine in anaphylaxis in the guinea-pig and dog has been referred to previously. In the rabbit, there is a lowering of blood-histamine during anaphylaxis (Rose and Weil, 1939) which has been suggested to be due to trapping of histamine-containing leucocytes in the pulmonary field (Sanyal and West, 1958-b).

Antihistamine drugs ameliorate and modify the symptoms of anaphylactic shock in the dog and the guinea-pig (Halpern, 1942; Loew and Kaiser, 1942; Friedlander, Feinberg, 1946; Feinberg, Malkiel, Bernstein and Hargis, 1950), but not in the rabbit (Campbell, Baranofosky and Good, 1947).

It is well known that the white rat is highly resistant to the action of histamine (Voegtlin and Dyer, 1924) and to anaphylactic shock in the white rat has been facilitated by pre-treatment with hæmophilus-pertussis-vaccine (Sanyal and West, 1958-a) and it has been shown that fatal anaphylactic shock in this species is the direct effect of antigen-antibody reaction and

not causally related to the release of histamine (Sanyal and West, 1958b).

Katz and Cohen (1941) and Katz (1942) produced experimental evidence for release of histamine in human allergy.

Histamine and tropical eosinophilia.—Jha (1957) demonstrated that there was an increase in blood-histamine along with an increase in the sensitivity of tissues to histamine in patients of tropical eosinophilia. We have confirmed the same and found that the curative effect of diethyl-carbamazine in this condition is not related to anti-allergic or antihistaminic actions; the drug does not specifically reduce the eosinophil response. The curative action is due to its anti-helminthic action. It has been postulated that histamine hypersensitivity is the prime factor in this condition, histamine release being conditioned by a number of factors including helminthic infestations.

The data on histamine is far from complete. With the advent of antihistamine drugs, high hopes were raised about the elucidation of its physiological functions and therapeutic benefit in conditions where histamine is incriminated. The discovery of histamine-liberator compounds supplied further added hope. The expectations have only been partly fulfilled and the purpose of the present review is to collect knowledge obtained with the newer tools, and to correlate the same with the findings of the earlier investigators. Further experimentation will be necessary, before it may be possible to fulfil Best and Mc Henry's predictions (see *supra*) in the years to come.

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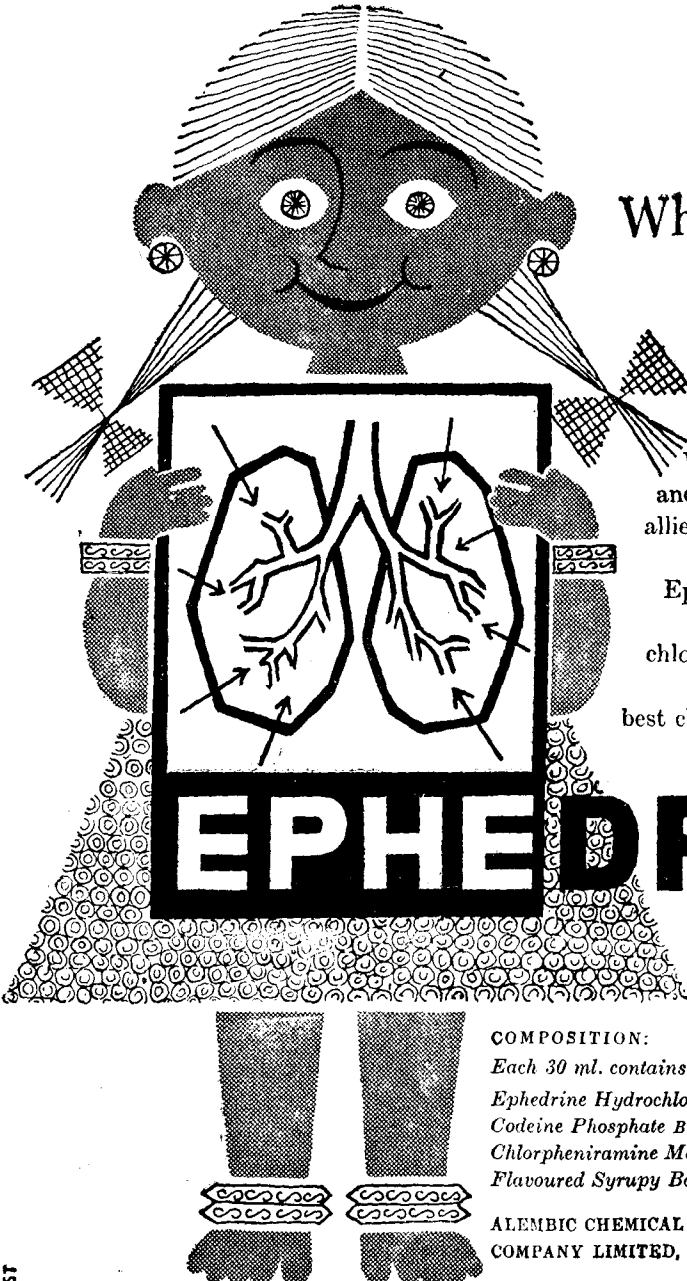
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CANCER NOT INHERITED

Cancer does not run in families, finds an eight-year study of 12,000 persons. The disease did not occur any more frequently among relatives of cancer patients than among relatives of cancer-free persons. The study was directed by Dr. Douglas P. Murphy, emeritus professor of Obstetrics and Gynaecology at the University of Pennsylvania.—(*Today's Health*, Oct. 1959).



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A CASE OF MYOCLONIC EPILEPSY*

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BRADSHAW defined myoclonus as "disturbance of neuronal activity characterized by very sudden involuntary jerks which are arrhythmic and asynergic, involving portions of muscles, whole muscle or muscle groups." The magnitude of movement differs very much, it may be as small as a twitch of a fasciculation or, as big as to throw the patient down on the bed. The contraction never involves groups of muscles which are normally synergically associated nor does it as a rule affect mutually antagonistic muscles. Often contractions occur symmetrically on both sides of body.

Myoclonus may occur with or without epilepsy. Friedreich described for the first time in 1881 para-myoclonus multiplex or myoclonus without epilepsy. It is essentially a benign condition and does not threaten life. It, rarely, runs a chronic course. More recently, this condition has been described by Ramsay Hunt (1903) and Morris (1947). The pathological basis is not known.

Another condition with which the present case is concerned is myoclonus *with* epilepsy. This was described by Gowers, for the first time, in 1881. It is the common experience of so many epileptic patients to have occasional myoclonic jerks. The incidence reported varies from 25% to 70%. These jerks occur in between epileptic fits and become intensified just before an epileptic fit. On the other hand, the patient of myoclonus simplex may experience epileptic fits occasionally. The third element of this association of epilepsy with myoclonus is dementia described for the first time by Unverricht in 1891 and later, in greater detail by Lundborg in 1903. Myoclonus triad (*vide supra*) usually, commences in childhood and runs a progressive course. It is mostly familial and occurs in many siblings. It does not occur in more than one generation of sibship but other generations may have epilepsy, mental derangement etc. as in Mott's patients.

Myoclonic epilepsy may be divided into three well-defined phases (Russel Brain):—*First*, the patient develops epileptic attacks, especially, at night. After several years the characteristic myoclonus state appears. This is the *second* phase when the patient suffers from both epileptic and myoclonic fits. The myoclonic fits often increase in severity before a generalized epileptic attack but are not attended by loss of consciousness. After a gap of some years, during which both are associated, a progressive dementia develops and the patient passes into the *third* stage of the disease. In this stage epileptic fits tend to disappear, though myoclonus continues together with progression

*Specially contributed to the ANTISEPTIC.

of dementia, dysarthria and dysphagia; death ensues due to progressive emaciation. This is the classical course of myoclonic epilepsy but a patient may not have the typical course; epileptic fits may persist and myoclonic fits tend to disappear with the onset of dementia or mental changes. The mental changes may occur at the very commencement of the disease instead of several years later.

The localization of the causal lesion remains unsettled. Mott, Jacquin and Marchand have described degenerative changes in the cortical neuronal cells. Electroencephalographically also myoclonic discharges appear to have a cortical origin. According to Griaker (1938) these cortical myoclonic discharges transform into a generalized epileptic attack. According to Hodskin and Yakovlev (1930) a structural abnormality of dentate nucleus and the involvement of cerebellofugal pathways are essential for the production of myoclonus. Signs of cerebellar deficiency are often present in cases of myoclonus. It is possible that the involvement of dentate nucleus is due to cerebellar involvement associated with myoclonus rather than the cause of myoclonus (Bradshaw). Myoclonus is also commonly associated with hereditary ataxia. Another important experimental observation worth keeping in mind is that camphor or any other analeptic drug in combination with flicker stimulation can produce both myoclonus and epilepsy in experimental animals. Muskin (1926) demonstrated that with increasing doses of camphor, it is possible to produce myoclonus following tactile stimulation, then spontaneous myoclonus of increasing severity and finally convulsions.

It is difficult to say whether apparent dementia is due to structural disease or to recurrent interference with consciousness. Cases of persistent myoclonus are often associated with physical signs which afford evidence to structural changes in the central nervous system, implicating the cerebellum, pyramidal tracts, extrapyramidal tracts and the cerebral cortex (dementia).

CASE REPORT:—N.K., Hindu, male, aged 16, son of a com-pounder in the hospital under training (a Sindhi refugee) was admitted on 16-6-1959 to the neuropsychiatry ward of S. N. Medical College Hospital, Agra. He complained on admission of (1) attacks of fits with increasing frequency, (2) loss of memory and mental deterioration and (3) increasing weakness, all of 5 months' duration.

History of present illness.—In December 1958, one day in the evening after returning from market the patient fell down. His eyes rolled, the jaw and hands were clenched and the face became pale. After half a minute the eye lids started twitching and then involuntary convulsive movements spread all over the body. This lasted for about 5 minutes. The patient remained

unconscious for another 10 minutes. The private practitioner who was consulted, gave $\frac{1}{2}$ gr. Luminal and the patient went to sleep. Next day he was allowed to go to school. Again on the next evening the patient developed a similar fit. Five days later, he fell down in his class room, but got-up in about 15 seconds. Those present in the room noticed that he suddenly flung his arms in a jerky way with a slight movement of his head and eyes before he fell on the ground, but got up on his feet in a few seconds. These movements gradually increased in frequency. The major fits, as the father called them, were also noticed during the night. At times the patient also injured himself and involuntarily passed urine. Gradually in $1\frac{1}{2}$ months' time, the so-called major attacks diminished in frequency and finally disappeared. But minor attacks, as the father called them, increased in frequency, so as to incapacitate the boy, to a great extent. The patient himself noticed some gradual changes in his personality and mental make-up. His teachers also noticed in him lack of concentration and memory and an euphoric state. The minor fits which were only 2 to 3 per day at the start gradually increased in 3 months and occurred every 5 minutes. No precipitating factors were noticed. Writing was first interrupted, when infrequent minor fits occurred, but later it became impossible to write at all. His mental make-up deteriorated further. He could not count from 1 to 20 or add 2 plus 4. He also used to smile unnecessarily at every question. His education became impossible; so his studies were discontinued.

Gradually, it became difficult to walk and talk properly due to the increased frequency of the minor fits. He became bed-ridden after a month, and was in a constant state of euphoria but his habits were not dirty. He called for assistance every-time he had to go to the bathroom.

He consulted the out-patient neuro-psychiatry and paediatric departments and was diagnosed as a case of petit-mal; due to the momentary nature of the fits, he was advised to take Tridione but it was not available locally. Hence, he was put on Mysolin $\frac{1}{2}$ tab. b.d. and Sodium gardenal gr. $\frac{1}{4}$ t.d.s. He followed this treatment for a month but as he did not improve he was admitted to the neuro-psychiatry ward of the hospital.

Past history:—Nothing abnormal was noted except minor ailments like, for example, diarrhoea and sore throat on two or three occasions.

Family history:—His maternal uncle has been insane for the last 3 years; otherwise there was no history of epilepsy, mental derangement, mental deficiency and alcoholism on both the maternal and paternal sides. Other members of sibship were normal and no history of consanguinity was elicited.

Personal history:—He was a full-term normally delivered child. No neurological traits were noticed during infancy and childhood, in the form of thumb-sucking, nail-biting, temper-tantrums and bed-wetting etc. He was an average student in school and when he developed the present malady was reading in the eighth standard.

Investigations.—General examination:—He was a fair-complexioned young boy of average build. His cardiovascular, respiratory and alimentary systems showed nothing abnormal.

Examination of the central nervous system:—His mental state was grossly disturbed. He was found constantly in a state of euphoria. To every question he only smiled. Orientation to time, place and person was intact. No delusions, hallucinations and illusions were present. His memory for past and recent events was poor. Intelligence was very low. He could not do simple additions like 2 plus 4. His habits were not dirty. He required to be fed. Sleep was normal. His attention can not be held for long. Fits seriously interfered with his walking and talking. His cranial nerves were intact.

Regarding motor functions the tone, power-coordination and nutrition were all normal; these appeared defective during fits and at other times he did not cooperate for testing power. Sensations both superficial and deep were intact. Sphincteric function-cremasteric reflexes were elicitable. Reflexes at times showed no response and were sluggish at times. Cerebellar and extra-pyramidal functions appeared to be intact.

The fits involved all the four limbs simultaneously. The movements were maximum at the hip and shoulder girdles. They consisted of sudden contraction of adductor and flexor and internal rotators of the hip and shoulder girdles. Pronators of the forearm also contracted. The head used to be thrown backward with a slight rolling of the eye balls upward and laterally in one direction. Palpebral fissures were widened and there was slight opening of the mouth. All these occurred simultaneously in typical shock-like manner. These myoclonic jerks lasted only for a few seconds, but interfered with every action of the patient like walking, talking etc. These were absent while sleeping.

In frequency there was no diurnal variation. No precipitating or provoking factors were noticed. Engaging the patient in conversation or asking the patient to clench both his arms did not prevent the occurrence of jerks. The patient was unable to describe the jerks. He could not prevent them occurring even if he tried; but he admitted that he was quite conscious during the jerks.

The frequency of the jerks was from every 2 to 5 minutes, and the duration of each fit was about a second.

INVESTIGATIONS:—The urine was full of triple phosphate crystals, but otherwise normal; the stool was normal. R.B.C. count was 4.02 mill cm.mm.; Hb. was 82%; W.B.C. 7600/c.mm.; 62% polys; 34% lymphos; and 5% eosinophils.

The V.D.R.L. test of both blood and C.S.F. was negative. The C.S.F. was clear, colourless, slightly under tension and contained 12 lymphocytes. The chemical examination of C.S.F. showed *nil* abnormal; and a smear was sterile.

The blood calcium was 9.2 mg.%; serum protein 6.8 g.%; cholesterol 155 mg.%; E.S.R. 26 mm. corrected.

An X-ray of the skull in both A.P. and lateral views was normal. Pneumoencephalography showed good filling. The third and lateral ventricles were normal in size, shape and position. The septum pellucidum and the third ventricle lay in the midline.

The fundi examined by Dr. Y. P. Singh, M.S., D.O. were found to be normal.

PROGRESS:—The patient remained in the hospital up to 30-6-1959 i.e., for nearly 1½ months. He was given Mist. bromide 3 i. t.d.s.; Pulv. luminal gr. ½ t.d.s.; a total of ten injections of 10 cc. of Calcium gluconate 10% I.V. daily was given; Largactil tablets 2 b.d. The patient's condition remained somewhat stationary so far as the frequency of fits was concerned. After a month his mental condition appeared to have further deteriorated. Despite our best efforts we could not get the drug Phenurone (Phenyl-acetyl-urea) which has been found effective in controlling myoclonus to a great extent.

Discussion.—The case under report is typical of Myoclonic epilepsy and conforms to the text-book description except in the following respects:—(1) Progression of disease occurred in months instead of years; (2) no signs of cerebellar deficiency were noticed contrary to the findings in most cases reported in the literature. It is typical in the sense that the disease started in childhood and the onset of epilepsy, myoclonus and dementia were progressive in the typical three phases. Insanity was present in one of his maternal uncles, otherwise no familial history of epilepsy etc. either on the maternal or paternal sides. No neurotic stigmata were present in the years prior to the onset of disease.

The momentary nature of myoclonic fits and also the falling down led to an erroneous diagnosis of *Petit-mal*. Careful history-taking showed that there was no loss of consciousness, which is an essential feature of *petit-mal*.

The investigations carried out did not throw light on the underlying pathology, and the treatment given did no good to

the patient. Phenurone (Phenyl-acetyl-urea) has been reported to be very effective by Bradshaw, in controlling the frequency, severity and extent of myoclonic fits though it did not check the progress of dementia and the ultimate outcome. We could not obtain this drug inspite of our best attempts to get it for use on this patient.

Summary.—A case of myoclonic epilepsy is reported and the relevant literature has been reviewed.

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CONGENITAL NYSTAGMUS

There is no treatment which will cure the abnormal ocular movements in congenital nystagmus but much can be done to sharpen the retinal image by the accurate correction of associated refractive errors and this will tend to improve macular fixation. As a rule these children eventually attain visual acuity somewhere between 6/36 and 6/18 but are often surprisingly little handicapped by the poor definition. Many pass through normal school and even perform well at games, despite this degree of congenital defect and, unless absolutely essential, special educational methods should not be employed. Much, however, depends on whether there are any associated cerebral abnormalities.

In general it may be said that sufferers from congenital nystagmus are capable of leading perfectly normal lives provided they choose an occupation where the highest standards of sight are not essential. Their visual disability is more likely to improve than deteriorate.

Accurate assessment of the refractive errors of constantly moving nystagmoid eyes requires the skill of an experienced ophthalmic surgeon, and in some cases general anaesthesia may be necessary.—(Harold Ridley, M.D., F.R.C.S., *Practitioner*, May 1960).

VITAMIN E

Nitowsky and Gordon have summarized evidence that establishes a role for tocopherol (vitamin E) in human nutrition.

Tocopherol is a fat-soluble vitamin. Many patients with steatorrhœa have been found to have low plasma-tocopherol levels, increased hæmolysis of erythrocytes in dilute hydrogen peroxide, and increased urinary and plasma-creatinine. These particular abnormalities were reversed in patients with cystic fibrosis of the pancreas, by the administration of tocopherol.

Newborn infants, both full-term and premature, are born with low plasma-tocopherol concentrations. They also have increased hæmolysis of erythrocytes.

Finally, post-mortem examinations of patients with cystic fibrosis of the pancreas and congenital biliary atresia reveal focal lesions in the skeletal muscles and ceroid pigment in the gastrointestinal smooth muscle. These lesions are characteristic of tocopherol deficiency in animals.—(*J. Paediatrics*, 55: 315, 1959 via *G.P.*, January 1960).

REPORT OF AN INTERESTING CASE OF ACUTE INTESTINAL OBSTRUCTION DUE TO MECKEL'S DIVERTICULUM

CASE REPORT:—A Hindu lad aged 8 years was brought to the hospital on 14th May 1960 at 7 P.M. with the history of pain in the abdomen since three days. The pain was said to have first started in the right side of the lower abdomen with occasional vomiting. The boy was taken to the local doctor who would appear to have treated him for acute appendicitis with injections of antibiotics. As the condition of the boy did not improve and as the pain and vomiting increased, he was referred to this hospital.

On admission:—The boy was very cachectic; tongue, coated and dry; the pulse was 110 per minute; the temperature was 98.8°F and the respiration was 24 per minute.

The abdomen was distended, with a ladder-like appearance of the intestine; on auscultation a few gurgling sounds were heard; no result was obtained with an enema.

The W.B.C. count was 11,600 and nothing abnormal was found in his urine.

A diagnosis of acute intestinal obstruction was made and a laparotomy was decided upon. The abdomen was opened with a para-median incision under gas and oxygen anaesthesia. Immediately on opening the abdomen, a thin serous fluid escaped from the peritoneal cavity. The small intestines were found distended. The right iliac fossa was explored and a hard mass was pulled out from the above region. Loops of small intestine were found to be adherent with plastic adhesions in the said mass. On further exploration, a small greenish gangrenous band was found, as a loop round a portion of the small intestine. The band was released, and traced further; it was found to be a gangrenous Meckel's diverticulum. The same was ligatured, excised and inverted at its opening into the small intestine. The obstructed bowel was viable and so was returned to the peritoneal cavity. The abdomen was closed in layers. The patient made an uneventful recovery under the usual post-operative management and was discharged on the 12th day.

Discussion.—Apart from the usual cause of intestinal obstruction, it is very rare to find intestinal obstruction due to complications of Meckel's diverticulum. It is impossible to diagnose the presence of Meckel's diverticulum until complications arise. The

S. SREENIVASAN,

District Surgeon,

H. SADANANDA BALLAL,

Assistant Surgeon, Gr. I.

AND

SHEIK MAHAMOOD PASHA,

Resident Medical Officer, Shimoga

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THE ANTISEPTIC

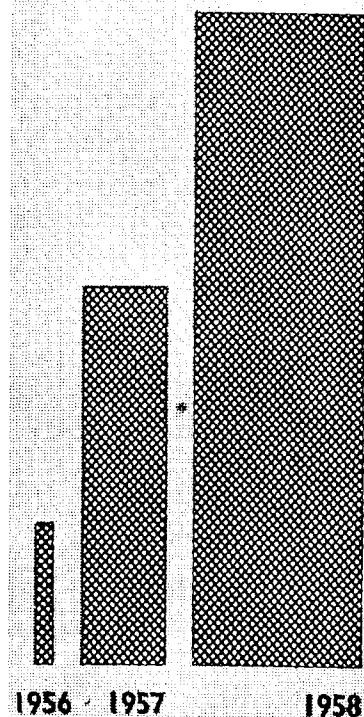
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THE ANTISEPTIC

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Facts and Figures



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Editorials

THE NATION'S NUTRITIONAL NEEDS

It is imperative that people in India should be made to realize that malnutrition which has been responsible for so much of disease and suffering is not necessarily always due to the lack of adequate food but to the lack of some of the important health-giving food factors in the daily intake. Milled rice is consumed in large quantities with very little pulses, vegetables or fruit and little or no milk on most of the days of the year, by the vast majority of people in many parts of India. Such food cannot protect the system from general ill-health and deficiency diseases.

Shri D. P. KARMARKAR, the Union Health Minister, inaugurated on the 17th of June 1960 at Delhi, the first meeting of the National Nutrition Advisory Committee which has been formed to tender advice on the nutritional policies to be followed in the country in pursuance of the recommendations to this effect by the United Nations Food and Agricultural Organization.

The twenty-one member committee of which the Union Health Minister is the Chairman and Dr. PUNJABRAO DESHMUKH, the Union Agriculture Minister, Pro-Chairman, has on it representatives of research laboratories, the other Union Ministries and specialists on nutrition.

The Union Agriculture Minister told the inaugural meeting that malnutrition was not only a "fundamental defect" in the health of the people, but was "prevalent in our agriculture, forestry and animal husbandry. There should be some people charged with the duty of utilizing whatever articles of food there are in the country to the best possible advantage," side by side with earnest efforts to increase food-production.

to provide protected water to the people in the villages. They are apparently awaiting the report of the Committee recently appointed by the Government of India in this regard, which is expected to be available in a few weeks. The State Government will then be taking up this question and formulate the protected water-supply-schemes on a State-wide basis.

The Madras State Director of Medical Services in his welcome address said that it was the aim of his department, with which the State Health Ministry wholly concurred, to make available in all hospitals whatever expert treatment the modern advances in the medical sciences could offer.

The comprehensiveness and expanse of the scope of the activities thus envisaged are very ambitious and certainly laudable; we only wish that in the implementation of the proposed integration, the State Government receives the unswerving and hearty co-operation and support of the profession and the public.

We are glad to learn from the Director of Medical Services that a T.B. Sanatorium will soon be established with 100 beds at Pennathur, about six miles away from Vellore.

Sri Dr. U. KRISHNA RAU, the Speaker of the Madras Legislative Assembly, who presided over this function expressed his view that money spent on public health and medical services was money well spent. He wanted the people to realize that Government alone could not possibly bear the entire burden of providing medical facilities. There was a great need for public philanthropy in this field. We heartily endorse his appeal to the members of the public to come forward with generous contributions for providing more facilities in hospitals.

Laying the foundation stone for the Nurses' Quarters within the hospital premises on the same day, Dr. KRISHNA RAU very properly stressed the fact that if modern treatment should be given to patients, the Government should provide more funds in the budget towards equipment and medicines for the medical department and that the nurses who played a vital part in the management and speedy recovery of patients should be provided with all amenities in order to keep them fit and in good cheer. He appealed to the nurses to be kind to the patients entrusted to their care and attend to their needs with sympathy, care and consideration which alone will enable them to respond quickly to the treatment given by the physicians and surgeons. He cited in Vellore which should serve as a magnificent example of humanitarian service willingly and nobly rendered to suffering humanity.

MEDICAL RELIEF AND THE ROLE OF THE NON-ALLOPATHIC SYSTEMS THEREIN

It is common knowledge that there is a great paucity of qualified medical men to meet the needs of the growing population of our country. The Central and State Governments have been trying their very best to establish more colleges of modern medicine for training doctors and to upgrade many institutions for post-graduate studies. They have not at the same time been slow to encourage the other non-allopathic systems of medicine, that have been in traditional use, particularly in the non-urban areas of our vast country.

Consequent on the unwillingness of the practitioners of modern medicine to go and settle in the rural areas and afford relief to the suffering, the question of offering better terms and conditions of service was considered by the Governments and in spite of certain definitely advantageous terms that were offered, the response has not been as good as expected.

The States' Governments, to cite Madras as an example, sponsored the starting of an L.I.M. course to teach Ayurveda on scientific lines, and actually started schools and colleges with hospitals attached thereto for imparting systematized instruction in the science and art of the practice of Ayurveda because, the majority of the village *vaidyas* were practising medicine and minor surgery by the rule of thumb and the traditional father-to-son-handed procedures and drugs. The response to the L.I.M. course was good to start with, but with the passage of years, allopathy which was initially only a subsidiary but essential part of the curriculum gradually dominated the course of studies to the subordination of Ayurveda. Also the practitioners readily took to allopathic drugs and injections which are simpler and safer to handle in their practice. Ultimately the G.C.I.M. course came into vogue, only to be eventually abolished after a brief existence in the doubtful role of an integrated system.

The abolition of the G.C.I.M. course in Madras was indeed, a bold but necessary step and we had occasion to refer to this in our last issue of the ANTISEPTIC, where we also mentioned that the proper course for the Central and States Governments would be to organize without undue delay systematic, well-conceived, clear-cut and properly organized courses of studies for each of the more popular among the other systems of medicine.

Declaring open the Third Annual Regional Homœopathic Conference at Pollachi on May 28, 1960, Sri M. A. MANICKAVELU, Minister for Health, said that while allopathy was making rapid progress in the fields of medicine and surgery, ancient systems like Ayurveda, Siddha and Unani were not only *not* advancing but distinctly deteriorating. He said that the indigenous systems of medicine, if well practised would be efficacious in

tackling diseases. To meet the needs of the growing population in villages, doctors dealing in indigenous and comparatively cheap systems of medicine were certainly welcome. Referring to Homœopathy, he made it clear that it should be developed on its own principles as a *separate* system and that any attempt at tinkering with them or at integration would spoil it. This is precisely what we also wish to re-stress. Ayurvedic practitioners (L.I.Ms. and G.C.I.Ms.) of today were not practising pure Ayurveda and it was more allopathy than Ayurveda that was being practised. Homœopaths were also having recourse to the parenteral injection therapy of the allopathic system. Sri MANICKAVELU pointed out, "that undesirable methods which are really business propositions, cannot help the progress of Homœopathy, which had not progressed in countries where it was adopted as a mere appendage to allopathy, and had thrived only when it was developed as a *separate system on scientific lines*. The treatment of diseases cannot be learned by postal tuition and Homœopathy in India has largely been of this type.

Addressing a gathering on the 26th June 1960 at the Bowring Institute, Bangalore during the convocation of the Hahnemann College of Homœopathy, Sri MANGALDAS PAKWASA, the acting Governor of Mysore, stressed the need for the Union Government to prescribe a minimum standard of curriculum for the proper study of Homœopathy and hoped that the Union and the State Governments "would do everything possible for its spread along right lines." To this end it would be necessary to organize and establish colleges like the one in Bombay for the proper scientific teaching of Homœopathy and for regulating its practice.

As regards Ayurveda, we learn that the Madras Government now proposes to constitute a Committee to evolve a suitable course of study in the indigenous systems of medicine namely Siddha, Ayurveda and Unani. With the abolition of the G.C.I.M. course, the Government have been considering how best to arrange for the study of indigenous systems of medicine on an "independent and separate basis." In organizing this course, it is understood, the Government would take into consideration the course of study obtaining in other States. Discussions on the subject by the Panel on Ayurveda of the Planning Commission, which met at Delhi last month will also certainly be useful. We wish in this connection to re-stress what we already said *viz.*, that each system should be developed separately without any integration with any of the other systems. Integration of any of these indigenous systems with allopathy should definitely be reserved, if considered at all desirable, for postgraduate study. In the syllabus for Ayurveda, Unani, Siddha or Homœopathy instruction in practical anatomy and modern principles of physiology

should be included, but perhaps not to the same extent as for the M.B., B.S. course.

The programme of Ayurvedic development duly phased over the five years of the Third Plan period which was drawn up by the All-India Ayurvedic Congress at Delhi held on 6th June 1960 to cost Rs. 125 crores, envisages the establishment of a Central Ayurvedic Council of India and Ayurvedic Councils in each State of the Union for the regulation, supervision and administration of all practice and propagation of Ayurveda. The executive functions of these councils would be carried out by a Central Directorate-General of Ayurveda under the Government of India and Directorates in all States.

Intensified scientific research in Ayurveda should be undertaken by the Central Council of Ayurvedic Research and the research councils in every State. The Ayurvedic education and training programme contemplates the setting-up of an All-India Ayurvedic University with about 120 schools and colleges all over the country affiliated to it. The concensus of opinion in all well-informed quarters relating to the development of Ayurvedic medical education is rightly opposed to integration with allopathy and is in favour of (1) the starting of a uniform pure Ayurvedic degree course lasting for 5 years, (2) the enactment of a central "Indigenous Medical Practitioners' Act" and (3) the constitution of a Central Ayurvedic Medical Council which should co-ordinate legislations of the various States to bring about uniformity in the application and practice of the indigenous systems of medicine.

Sri BISHNURAM MEDHI, Governor of Madras, who laid the foundation stone for the analytical laboratory-cum-administrative block of the Indian Medical Practitioners' Co-operative Pharmacy in Adyar on the 13th July 1960, congratulated the pharmacy on their successful attempts to ensure standardization and quality control. He called on the practitioners of indigenous medicine "to avoid unhealthy trade practices." He was particularly interested in the development of the indigenous system of medicine as it was cheaper and did not involve great risks. "The programme of the Andhra Government to grow medicinal herbs in villages is a very laudable one as it would benefit the rural population and help in the control of diseases."

These well-considered and rational proposals were, we learn, placed before the meeting of the Panel on Ayurveda of the Planning Commission which met at Delhi on the 19th and 20th July last. All that we would like to see achieved early is the provision of proper and adequate medical relief, to all the people and particularly to the rural areas, which have been badly in need of the same for quite a long time.

The Late Dr. U. B. NARAYANA RAO

WE regret to announce the death at Bombay on 14th June 1960 of Dr. U. B. NARAYANARAO, Managing Editor of our esteemed contemporary *The Medical Digest*. He was born on 23rd November, 1895 at Udyavar, S. Kanara. After finishing his early education in his home town, he took his L.C.P.S. Diploma in Hyderabad (Sind). He served the Bombay Government for a very short period, then resigned and set up private practice at Girgaum in Bombay. By sheer dint of hard work and pleasing manners he soon became a successful doctor. In 1933 he started the monthly medical magazine, *The Medical Digest*. He voiced the grievances of the Licentiates through its pages; and his enthusiasm and vigour were appreciated so greatly by his colleagues, that when the All India Licentiates' Conference was held in Bombay in 1933 he was elected General Secretary. In 1935 he started *The Indian Journal of Venereal Diseases and Dermatology*. He was elected to the Bombay Medical Council in 1938, which position he held till 1955, when he was nominated by the Bombay Government for a further period of 5 years. In 1945 the Government of India nominated him as a member of the Bhole Committee. In the same year he was elected Vice-President of the Indian Medical Association at the Centre; and in the following year he became President of the Bombay State Branch of the Indian Medical Association. In 1950 the Government of India elected him as a member of the Health Panel of the Planning Commission. In 1947 he formed along with other friends the All India Association of Dermatologists and Venereologists. He was elected General Secretary in 1952 and Managing Editor of *The Journal of the Dermatology and Venereology*. He was elected as a delegate to the Indian section of the 10th International Congress of Dermatology held in London and also Secretary to the Indian section of the same Congress held in 1957. In 1958 he was nominated to the Indian Medical Council, which term was again extended for a further period of 5 years. He was also the author of two very useful publications:—*Materia Medica of Pharmaceutical Combinations and Specialities* and *Indigenous Medicinal Specialities*.

The late NARAYANARAO's life was one of selfless service to the people and to his brother medical men. We offer our heartfelt condolences to the members of the bereaved family.



GLEANINGS FROM THE MEDICAL PRESS

MEDICINE & THERAPEUTICS

Treatment of acute amœbic dysentery.—

A. R. D. Adams, M.D., F.R.C.P., of Liverpool School of Tropical Medicine, writing in *B.M.J.*, dated 26-3-1960 says:—The acute clinical attack will always be effectively and rapidly stopped by the intramuscular, or subcutaneous, injection of emetine hydrochloride (sold in phials). The dose is 1 gr. (65 mg.) daily until the attack stops; injections over three to five days usually suffice for this; rarely are more needed. There is no point in continuing the emetine injections after arrest of the clinical attack. Emetine given in this way, however long continued, will rarely eradicate the primary intestinal protozoal infection. Its effect is clinical, not radical (parasitic); cure; therefore relapse of the disease is probable in the absence of additional treatment to ensure radical cure.

Though emetine is a toxic drug its potential dangers have been much exaggerated. Emetine injections should never be extended beyond a 12-day period. Patients being treated with emetine injections should *always* be confined to bed as a precaution against a possible effect of the drug on the heart. Early evidence of toxicity is a continuing rise in the pulse rate; E. C. G. changes take place; a peripheral neuritis, branny desquamation of the skin, and other signs of toxicity may develop later—but all these are temporary and rarely develop if the accepted therapeutic dosage is not exceeded. In practice the drug can be given as indicated without concern.

Claims are made for many proprietary drugs now on the market for this purpose. They are given orally, and their action is specifically on the parasites. But in addition to this, oral treatment with certain of the antibiotic drugs (*e.g.*, the tetracyclines, erythromycin, spiramycin, and others), themselves not amœbicidal,

may be followed by disappearance of the parasitic infection. These antibiotics are believed to alter the associated intestinal bacterial flora essential to the survival of the amœbae in the large intestine. There are some antibiotics which are directly amœbicidal (*e.g.*, fumagillin) *in vitro*, but therapeutically they have proved disappointing, and in the case of fumagillin undesirably toxic. Paromomycin ("humatin") is the most recent of the antibiotics claimed to be amœbicidal, and it is stated to be free from toxic side-effects in the advocated dosage.

The most consistently effective of the directly amœbicidal drugs is emetine bismuth iodide (E.B.I.); this was brought successfully into use during the first world war. Its activity so far has not been equalled by that of any other drug yet available, and it is the basis of the treatments advocated by most British physicians. The dose is 1 gr. (65 mg.) given orally thrice daily, and it alone may be given daily over 10 days; together with other drugs over two or three weeks. E.B.I. if taken in an unprotected form will be vomited; it is therefore given in enteric-coated tablets which liberate their contents after three or four hours' digestion. Some nausea even then will be experienced; this is cerebral and due to absorption of the drug; with habituation the side-effects lessen. With E. B. I. as the basis of drug treatment, radical cure of an intestinal amœbic infection can be expected in over 90% of patients.

Chiniofon, a water-soluble (4%) iodoxyhydroxyquinoline, can with benefit be given as a retention enema on days alternating with E. B. I. treatment, and after an enema clearance of the bowel. Its action is both directly amœbicidal and antibacterial; it is not absorbed to a material extent and is non-irritant; it promotes cleansing and healing of gross lesions in the large bowel.

The blood-brain barrier.—(Annotation, *B.M.J.*, 23-4-1960).

There are three groups of drugs whose penetration to the brain has been extensively studied—antibiotics, antisyphilitic drugs, and various cerebral narcotics. Penicillin will penetrate into the cerebrospinal fluid (C.S.F.) and therefore possibly into the brain in two to four hours. With normal meninges the concentration reached is not higher than one-tenth of that in the blood, though this may be therapeutically adequate. A similar finding has been shown in patients with neurosyphilis in whom repeated large doses of penicillin were needed to raise the penicillin level in the C.S.F. appreciably, even though a bromide test indicated some increased blood-brain permeability. However, it has been shown in rabbits that the entry of penicillin into the brain is greater than into the C.S.F. The results with administration of streptomycin are similar; clinical improvement may well be indicated by a greater barrier resistance. Most other antibiotics behave likewise, but chloramphenicol differs in that it gains easier access to the C.S.F. and to the brain than do the others. It has been known for some time that pentavalent arsenic penetrates the brain more readily than trivalent arsenic. The amounts of mercury, as well as arsenic, in the brain even in fatal cases of metallic poisoning are not very much greater than in other organs such as the kidney.

A different situation exists in the case of narcotic drugs, most of which are lipid-soluble, a fact which may account for the difference. Ethyl alcohol—the action of which on the ability to drive is causing some controversy—was shown so long ago as 1936 to enter the brain to about the same degree of concentration as in the blood within 15 minutes. Similarly, ether, chloroform, and barbiturates very soon enter the brain, and drugs such as isoniazid and emetine have been shown to penetrate the brains of animals fairly rapidly.

Subacute bacterial endocarditis.—(*B.M.J.*, 23-4-1960).

Before any antibiotics are given, blood-cultures should be taken from every patient who might have subacute bacterial endocarditis, otherwise the correct treatment may be dangerously delayed. In many cases of S.B.E. a delay of a few days is permissible, but when treatment is required urgently the question arises of how many blood-cultures should be taken to ensure the recovery of the organism. Once enough cultures are incubating, treatment, may be safely begun. Our experience suggests that, except in those cases whose cultures are always negative, a positive culture can be obtained on nearly every occasion. All the 164 blood-cultures taken without contamination from 65 bacteriologically proved untreated cases of S.B.E. were positive. Thus it appears that three cultures, if necessary taken on the same day, should normally be sufficient, even though one be contaminated. The constancy of the bacteraemia suggests that it is not essential to wait for the temperature to rise above normal before taking blood from a patient who is temporarily afebrile. But if antibiotics have already been given there can be no certainty how soon the organism will be isolated.

Sixty-seven attacks of subacute bacterial endocarditis confirmed by positive blood-culture are recorded. The bacteraemia was constant. The only sterile cultures were obtained from two patients who had previously had penicillin administered. Two further cultures were spoiled by contaminants. Provided no antibiotic has been given three blood-cultures should suffice to isolate the infecting organism, and treatment can be begun before the results of the culture have been reported.

Only five possible examples of S.B.E. with persistently negative blood-cultures were found. One died before any penicillin was given. There were no organisms in the vegetations found at necropsy. The four others were treated with a full course of penicillin and recovered: in two the

diagnosis was doubtful and in two signs of embolism were unconvincing.

It is thought that S.B.E. with persistently negative blood-culture is less common than has been supposed.

Progoitrin.—(Editorial Annotation, *B.M.J.*, 26-3-1960).

The antithyroid activity of the thiourea derivative 1-5-vinyl-2-thioxazolidone, a substance more euphony termed "goitrin" by M. A. Greer, has been recognized since it was originally isolated in 1949 from *Brassica* seeds and roots (swedes). Its role as a possible factor in the aetiology of non-toxic goitre has been considered to be minimal, as it is normally present only as an inactive precursor, "progoitrin." This was known to be converted to goitrin under the influence of an enzyme, which is destroyed by cooking. It has been thought, therefore, that swede and turnip roots, and cabbage, kale, and rape, from which goitrin has more recently been isolated, would be goitrogenic only if eaten raw. Working with pure progoitrin, which he had previously been successful in isolating, Greer has now shown that progoitrin has a demonstrable anti-thyroid effect when given orally to euthyroid or thyrotoxic individuals, and when given parenterally or orally to rats. *In vitro* studies with thyroid slices showed that goitrin, but not progoitrin, could completely block organic binding of iodine, so it would appear that hydrolysis of progoitrin to goitrin can occur in the body in the absence of the exogenously derived enzyme. In most people, therefore, eating cooked vegetables containing progoitrin should be just as likely to produce a goitre as eating them raw.

It is, moreover, probable that goitrin is excreted in the milk of cows fed on kale, so that an increasing number of dietetic influences may be concerned with the genesis of non-toxic goitre, the precise aetiology of which remains obscure. Certainly a number of factors other than deficiency of iodine and genetically determined in-born metabolic abnormalities remain to be investigated. The possibility of the

persistence of antithyroid activity in cooked vegetables lends further point to the dietetic studies that have been and are being conducted in various areas. A second point of interest is that progoitrin may hold some promise as an effective antithyroid compound in the treatment of thyrotoxicosis, though the role of such drugs is perhaps less important now than when they were first introduced. Progoitrin gives a prolonged therapeutic effect from a single dose, and daily dosage with 1 g. had an effect comparable to that of 300 mg. propylthiouracil in a thyrotoxic patient. No side-effects were seen after oral progoitrin, and this work could well be a stimulus to the production and application of a therapeutically useful drug.

Diuretic mechanisms.—(*Am. J. Med.*, 26: 853, 1959, via G.P., January, 1960).

The effects of mercurial diuretics and chlorothiazide are compared by Heinemann and associates. Chlorothiazide acts at both the proximal and distal tubule with the result that a marked increase in solute-excretion results. In contrast, mercurial diuretics are thought to act by inhibiting solute-absorption only in the proximal tubule, but permitting selective solute-absorption in the distal tubule with the preponderant effect being an increased water excretion. There are conditions of reduced free water formation, such as heart failure with diminished glomerular filtration, where mercurial diuretics would not be effective.

The authors suggest that occasional combined use of chlorothiazide and mercurial may be more effective when given in combination than when used alone. Proximal inhibition of tubular absorption by mercurial diuretics would be enhanced by the combined effect of chlorothiazide, and the potassium loss with chlorothiazide might be reduced by prior mercurial use when indicated.

Penicillin sensitivity.—(*Guthrie Clin. Bull.*, 28: 120, 1959).

Severe anaphylactic shock due to injected penicillin is becoming increas-

ingly common. Reports of these frequently *fatal allergic reactions* are appearing in the literature at an *alarming rate of increase* and there is reason to believe that there are many more cases that are not published or reported as such.

It has been shown that penicillin has been the leading drug in frequency of sensitization and far exceeds the sera in its production of anaphylactic reactions. Extremely small amounts of penicillin have been known to produce a fatal or near-fatal reaction in highly sensitive persons. Anaphylactic shock has been reported in cases from penicillin lozenges, boiled syringes in which penicillin previously had been used and from the small quantity in the Salk vaccine. *A few of the types of reactions caused by penicillin are listed below:—*

*Anaphylactic shock (usually occurs within 20 minutes):—*Tachycardia; increased respiratory rate; decreased blood pressure; vascular collapse; cyanosis; coma; and death.

*Occasionally:—*Abdominal pain; vomiting; colonic spasm.

*Serum sickness (usually delayed reaction):—*Cutaneous or subcutaneous manifestations; fever; swelling and/or redness of joints; urticaria; oedema; and pruritus.

*Other manifestations (usually from topical application):—*Contact dermatitis; conjunctivitis; exanthematic eruptions; and mucosal lesions.

Many forms of treatment have been used to alleviate penicillin reactions, but they have not proved to be entirely satisfactory. Among the most common treatment used are the antihistamines, ephedrine, epinephrine, intravenous procaine, ACTH and cortisone. The antihistamines, ephedrine and epinephrine have given temporary relief of symptoms. Cortisone and ACTH have proved effective but recurrence frequently follows withdrawal of the drug. Recently, good results have been reported with the use of intramuscular injections of 800,000 units of Neutrapen (SchenLabs Pharmaceuticals, Inc.), an enzyme which reduces all demonstrable penicillin blood levels

to zero for prolonged periods of time, thus rendering the penicillin nonallergenic. Relief of pruritus has followed promptly after one injection in almost every case. The symptoms subsided in some patients within a few hours, while in others it took from 24 to 48 hours after the injection of Neutrapen. It has been shown to be effective in a few cases where steroids and antihistamines have failed to give the desired relief. Adrenalin, however, is still the drug of choice in the treatment of anaphylactic shock.

Chemotherapy in chronic bronchitis.— (B.M.J., January 30, 1960).

The influence of daily penicillin and tetracycline on exacerbations and their cost form the subject of a report to the research committee of the British Tuberculosis Association by their chronic bronchitis subcommittee. Between June, 1955, and June, 1956, bronchitis caused the loss of 22 million working days among men in England and Wales, representing about a quarter of all male sickness incapacity. Previous work has suggested that antibiotic treatment is of value in this condition; much of this work has been reviewed by May (1958), who considered the tetracycline group of compounds to be the most satisfactory.

The present trial at 16 chest clinics in England was undertaken first because previous trials had been based on small numbers and confirmatory evidence seemed desirable; secondly, the high cost of the tetracycline compounds suggested that the value of penicillin should be tested as a possible alternative, since Douglas *et al.*, (1957) reported favourably on this drug in infective exacerbations of chronic bronchitis with purulent sputum. Finally, a special study seemed to be required, relating the cost of treatment to the money lost by incapacity.

The principle of daily prophylactic treatment was adopted. Sixteen physicians cooperated in a double-blind controlled trial, contributing 252 patients who were allotted at random

to three groups receiving: (1) tetracycline, 250 mg. *b.d.* in capsules; (2) penicillin V (as potassium salt), 312 mg. *b.d.* in capsules—equivalent to 1 million units daily; (3) inert starch capsules *b.d.*

Of the 252 patients enrolled in the trial, 26 were excluded from statistical analysis, 14 because they were unemployed throughout and could provide no information on days lost from work, and 12 because no adequate records were available on their progress.

The main factors taken into account in choosing the doses of the antibiotics used in this trial were the nature of the pathogenic organisms likely to be important and the cost of the drugs. The most important pathogenic bacteria in chronic bronchitis are known to be *Haemophilus influenzae* and the pneumococcus.

In this controlled trial carried out to estimate the usefulness of penicillin and tetracycline as long-term prophylactics in chronic bronchitis. Information was specially collected to determine the monetary losses from the disease in relation to the cost of treatment.

It was found that 312 mg. of penicillin V twice daily or 250 mg. of tetracycline twice daily approximately halved the days lost from work as compared with a control group receiving an inert treatment. Tetracycline did not differ significantly in its effect from penicillin, but the cost of treatment was much greater.

OBSTETRICS & GYNÆCOLOGY

Mid-stream urine from women.— (B.M.J., 23-4-1960).

It is unnecessary and potentially dangerous to request catheter specimens of urine from female patients. I reported in 1932 that it was possible to obtain clear specimens of urine during menstruation without using a catheter, and shortly afterwards developed the "two pot" technique which is used in my wards.

After an ordinary wash with soap and water the patient squats with her thighs widely separated, either on the floor or over the lavatory pan with the seat raised. She starts to pass water into the vessel underneath her, but when the stream is good she projects it away from her body and collects it in a sterile vessel (preferably with a handle). The three important points are (a) that the thighs should be widely separated, (b) that there should be a good stream of urine which can be projected, and (c) that it should be collected at a distance from the body. I do not allow a catheter to be passed unless the patient cannot get out of bed. The nursing staff, once they get used to it, find that this technique saves time.

Glucose tolerance in uterine bleeding.— (B.M.J., 23-4-1960).

This is a preliminary report. With the aid of careful controls the association of impaired glucose tolerance and cancer of the endometrium has been confirmed. The most striking result of the investigation, however, is the even higher incidence (84%) of impaired glucose tolerance in patients with benign glandular hyperplasia. In spite of the relatively small number of cases, both these figures are found, on analysis, to be most significant statistically. The abnormality of carbohydrate metabolism was so frequent in cases with a hyperplastic endometrium and so relatively unusual where the endometrium is normal or atrophic that further studies are being carried out in a larger series.

Studies in glucose tolerance have been extended to embrace all cases with abnormal uterine bleeding at the time of the climacteric, both benign and malignant. Similar investigations are proceeding in other age-groups. The results have been correlated with the histological appearances of the endometrium.

Conflicting reports have appeared in recent years with regard to the incidence of abnormal glucose tolerance in patients with carcinoma of

the body of the uterus. Such cases were therefore investigated by glucose-tolerance tests and compared with control subjects of the same age-group (it is known that age has an important bearing on glucose tolerance). 52% of patients with cancer of the endometrium showed impaired glucose tolerance, compared with 22% in the control group. These figures, on analysis, are most significant statistically.

Patients with proved benign glandular hyperplasia were similarly investigated and compared with controls (both normal subjects and patients with uterine bleeding due to other causes). The incidence of abnormal glucose tolerance (84%) in cases of benign glandular hyperplasia was found to be striking and much higher than in the two control groups and higher than in cases of cancer of the endometrium. These figures are very significant statistically.

Intravenous iron in pregnancy.—(*Practitioner*, May, 1960).

Especially in countries, such as the United States, where blood for transfusion is difficult and expensive to come by, intravenous iron is 'the method of choice of iron replacement' in pregnant patients with iron-deficiency anaemia who are refractory to oral therapy, according to W. W. Bare and A. A. Sullivan (*American Journal of Obstetrics and Gynaecology*, February 1960, 79: 279). This conclusion is based upon their findings in an investigation of 104 pregnant patients with hypochromic anaemia who, in spite of prolonged oral iron therapy, had still a haemoglobin of less than 10 g. per 100 cc. at the 30th week. Alternate patients received blood transfusions (50 patients), and intravenous saccharated iron in divided doses (54 patients). Injections of iron were given thrice weekly, 100 mg. being administered at the first injection, and 200 mg. in subsequent injections. The volume of blood given was 500 cc. per transfusion. The results showed that those patients with less than 8 g. of haemoglobin per 100 cc. of blood responded

almost twice as well to intravenous iron as they did to blood. When the haemoglobin was over 8 g. per 100 cc., the response to both forms of treatment was the same. Side-effects occurred in three of those receiving blood: a generalized urticaria in two, and precordial pain and syncope in one. In the case of those receiving intravenous iron, side-effects occurred on sixteen occasions: pain at the site of injection or along the vein (4), nausea (1), flushing (1), syncope (5), dyspnoea (2), numbness of the forearms (1), generalized urticaria (1), acute back pain (1). As the number of injections of iron given was 279, the incidence of side-effects is 5.7% (almost exactly the same as with blood transfusions), but it is noted that in three patients 'the symptoms were of alarming enough severity to warrant discontinuance of further treatment.' In spite of this, the authors conclude that intravenous saccharated iron is 'the method of choice in the average prenatal patient with iron-deficiency anaemia.'

Caesarean section.—(*Practitioner*, May, 1960).

In competent hands and with skilled anaesthesia 'the risk to the infant from the operation of caesarean section is minimal', according to Kate Campbell (*Medical Journal of Australia*, i: 198, Feb. 6, 1960), who has analysed the results in 1,159 caesarean sections performed in two hospitals in Melbourne between 1953 and 1957. The clearest picture of the risk of the operation *per se* is obtained from those cases in which it has been performed because of disturbances of the mechanism of labour: e.g., contracted pelvis, disproportion, abnormal presentation, disordered uterine action. This is because in these cases the mothers, by and large, are in normal health and there are no other obstetric difficulties present to complicate the result of the operation. In the present series, among the 850 infants delivered by caesarean section for this reason, there were seven deaths, giving an over-all mortality rate 0.83%. Three of the deaths were due to congenital

malformation, and one infant died of staphylococcal pneumonia at the age of 2 weeks. If these are excluded, this leaves three deaths among 846 live-born infants, all due to atelectasis: a mortality-rate due to the operation of 0.35%. Placenta praevia was the indication for caesarean section in 108 cases, and there were nine deaths: a mortality rate of 8.3%. Only three of these occurred in the 79 full-term infants; the remaining six occurred among the 29 premature infants. There were no deaths in the 36 cases of prolapsed cord occurring during labour, but six in the 28 cases in which prolapse occurred before the onset of labour. There were seven deaths in the 52 cases in which toxæmia and hypertension were the indication for performing caesarean section. Only one of these occurred among the 24 full-term infants, and this was an infant with a congenital defect and atelectasis. Of the six deaths among the 28 premature infants, three were due to atelectasis. The overall mortality for the whole series of 1,159 cases was 32 (2.85%): 11 among the 1,028 full-term infants (1.07%), and 22 among the 131 premature infants (16.8%).

Effect of menstruation on school-girls' weekly work.—(*Br. Med. Jour.*, January 30, 1960).

In this study by Dr. Katharina Dalton of the University College Hospital, London, an analysis of data supplied by a girls' school is collated to show the effect of menstruation on general school-work, and, secondly, personal observations at another school suggesting its possible correlation with the behaviour of the school-girl.

The data were collected from a public boarding-school for girls in south-east England during the autumn term. It is the custom at this school for each subject of the girls' work to be marked from 10 to 0 and these marks to be averaged each week, giving a weekly mark. The form mistresses of 15 forms supplied details of the weekly marks of 352 girls, aged between 11 and 17 years inclusive, and the matron

supplied the dates of the girls' menstruations, which each girl entered in the usual book when collecting sanitary towels. The data were obtained without the knowledge of the teachers or girls.

The adverse effect of menstruation on the normal school work of 217 menstruating girls, aged 11 to 17 years, is evidenced by the finding that one in every four girls had a fall in weekly mark during the premenstruum followed by a rise after menstruation. It is appreciated that in times of stress the premenstrual symptoms are increased (Dalton, 1955). It would appear, therefore, that on occasions of important examinations the handicap imposed by menstruation will be proportionately increased. About one girl in six has an examination entry will be in her premenstruum and thus at her lowest intellectual ebb. While zealous campaigns assiduously for equality of the sexes, Nature refuse to grant equality even in the sex.

Vaginal discharge.—(*The Lancet*, 7-5-1960).

At the 64th general meeting of the Association of Clinical Pathologists held in Cardiff, on April 7-9, Dr. J.A. Boycott (Taunton) said that of 561 specimens of vaginal discharge from women between the ages of 15 and fifty, 418 contained little or no pus. The reaction, cytology, and flora of this non-purulent discharge made it probable that it was an exaggerated flow of the normal secretions of the vagina and cervix. 134 out of 143 purulent discharges contained trichomonas, with a mixed and inconstant bacterial flora. 9 purulent discharges appeared to be due to bacterial infection. *Candida* were found in 1 purulent and 64 non-purulent discharges. These yeasts might not be parasitic upon the vaginal epithelium but derive their nutrition from the secretions of the epithelium. In children below 15 and in women over 50 the picture was different. The discharge in 14 out of 16 children and 16 out of 18 older women seemed to be due to bacterial infection.

SURGERY

The electro-cautery in general practice.
—(Denis Craddock, M.B., D. OBST. R. G. O. G., via *Practitioner*, May 1960).

Conditions which can be suitably treated by the electro-cautery in a general practitioner's surgery are:—

Common warts, spider naevi, sub-ungual hæmatomas, and infected cervical erosions. Some gynaecologists believe, however, that the treatment of choice for infected cervical erosions is deep cautery under general anaesthesia.

Technique can rarely be learned adequately from books, and the best way to learn the technique of electro-cautery is to attend a skin clinic minor operations session and a gynaecological clinic. If this is impracticable, an adequate account of the necessary techniques, with good line drawings, is to be found in 'Office Procedures', by P. Williamson (W. B. Saunders Co.). Practice on inanimate objects is essential to master the technique, and if cervical erosions are treated the cervical canal must not be touched owing to the danger of subsequent stenosis.

A subungual hæmatoma can be evacuated easily by the electro-cautery. Even the sharpest instrument causes some pain due to pressure, but burning through the nail over the centre of the hæmatoma is completely painless, as many general practitioners have found when using the red-hot end of a straightened-out paper clip.

Osteoarthritis of the hip.—(Editorial, *B.M.J.*, 23rd April, 1960).

Primary osteoarthritis of the hip, or malum coxae senilis, is an affliction of later life causing pain, stiffness, and deformity of increasing degree which is apt to interfere with the humble activities of the elderly. In the younger person osteoarthritis can occur as a degenerative process secondary to congenital or acquired mechanical abnormality, causing a chronic disability which may try to the full the combined skills of the physician, physiotherapist, radio-

therapist, and orthopaedic surgeon in turn.

Owing to the difficulties and inadequacies of major operations on the hip-joint various minor surgical procedures such as cheilotomy, capsulectomy and neurectomy have been planned and well-tried. Another, myelotomy, is at present under trial. Charnley mentions the four basic major surgical procedures available—namely, arthrodesis, arthroplasty, osteotomy, and pseudarthrosis, and points out that as none is universally acceptable the selection of operation for each case must be made according to the aetiology and pathology of the disease; the age, physical ability, and occupation of the patient and the extent of the disease must be borne in mind. Many variations in methods of treatment are possible and Charnley rightly suggests that the decision to operate and the selection of the type of operation is a job for a surgeon experienced in surgery of the hip.

Arthroplasty is theoretically the ideal operation. In the design and execution of an arthroplastic operation for the hip three main difficulties arise; the stress of very considerable forces which fall on the structures of this area, the production of a mechanically sound joint, and the problem of joining inert material to living bone.

Arthrodesis is a classical operation, and there are many modifications of its original conception. Once achieved it gives a satisfactory and lasting result and is a good operation for those under 50 with unilateral disease.

Central dislocation has found favour in many clinics, especially if bony fusion is likely to be difficult to obtain. Intertrochanteric osteotomy is a less attractive procedure, but at present more than holds its own among the other methods. The rationale of such a technique is not clear and the explanation of its undoubted success in relieving pain elusive. This is a method well suited to labouring men, especially agricultural workers, and its definite though sometimes only moderate benefit seems to increase with the years. The severity of the

operation is only moderate, and by modern methods of internal fixation the patient can be ambulatory, without plaster, in two weeks. It is the most universally accepted operation for osteoarthritis at present and its results are moderately good.

Pseudarthrosis results in shortening and instability, but it is a good operation for polyarthritic patients with two stiff hips.

The present position is that the comparatively minor operations on the hip, although more acceptable, have not proved their worth. It is clear that arthroplasty for osteoarthritis is also not acceptable as a routine surgical procedure, although it is theoretically ideal and does in a few cases give excellent results. Arthrodesis, intertrochanteric oblique osteotomy, and pseudarthrosis often give good or satisfactory results provided that the decision to operate and the choice of operation are made with full knowledge and experience of all the factors concerned.

Merperidine (Winthrop) demerol as an anaesthetic agent.—(*Minnesota Medicine*, 43: 22, 1960, via *Cur. Med. Dig.*, April 1960).

At the Asbury Methodist Hospital in Minneapolis, Demerol has been routinely used as a primary anaesthetic agent on 9,000 patients.

A uniform method of induction was established for all adult patients: an initial dose of 100 mg. Demerol was administered intravenously followed by inhalation of a 2:1 mixture of nitrous oxide-oxygen. A combination of Pentothal and Flaxedil was added until induction was complete. Demerol was administered in increments of 20 mg. every 4 to 10 minutes to maintain the desired surgical plane of anaesthesia. Thereafter Pentothal, Seconal, or Flaxedil was added in small quantities when necessary. Intubation was performed when indicated. During or immediately following the closure, Demerol was discontinued and pure oxygen administered until the patient demonstrated an adequate respiratory pattern.

Children were treated similarly, with appropriate modifications in dosage as determined by age and weight.

The total dosage of Demerol varied considerably with the surgical procedure, the age, and the weight of the patient.

Table I shows the variation in dosage of Demerol in 5 typical surgical procedures.

TABLE I

Procedure	Average dose of Demerol (mg.)	Maximum dose of Demerol (mg.)
Appendectomy	200	460
Cholecystectomy	285	1000
Gastric resection	420	2230
Lobectomy	360	1100
Craniotomy	400	840

Anæsthesia was satisfactory and well maintained during all procedures, and complications during the post-operative period were found to be minimal. After discontinuation of Demerol, spontaneous respiration generally occurred within a short period of time and never exceeded 20 minutes. The longest period before a patient became totally reactive (responded to instruction) was 3 hours.

Respiratory and cardiovascular disturbances occurred infrequently and respiratory depression severe enough to warrant the use of Nalline was seen in only 4 patients. When hypotension did occur during surgery, it served as a guide to circulating blood volume and enabled corrective measures to be taken which reduced the incidence of postoperative shock. Vasopressor agents were required in only 5 patients whose conditions were complicated by coronary artery disease and who were thus felt to need vigorous treatment for even minimal signs of hypotension.

In open chest procedures, there was a surprising absence of cardiac irregularities and in other general surgical procedures not one pulse irregularity was noted. Two hundred patients were followed by cardioscopic examination which revealed no evidence of abnormality.

DISCUSSION:—The danger of respiratory depression has been the main contraindication to the use of Demerol in anaesthesia. There are numerous reports, however, which indicate that disturbances in respiration need not be a hazard.

Our findings tend to support these previous investigations and when mild respiratory depression did occur, it was used to advantage and facilitated controlled respiration. In only 4 patients was repression serious enough to require an antidote.

The 2nd important reported objection to the use of Demerol as an anaesthetic drug has been its effects in the cardiovascular system in inducing hypotension and cardiac arrhythmias. These effects were found to be negligible in our experience with intravenous Demerol.

It was our opinion that Demerol, used as the primary anaesthetic agent, had in good measure been responsible for the absence of even one instance of cardiac arrest, or death in the operating room or recovery section.

DERMATOLOGY

Systemic treatment of human dermatomycoses with Griseofulvin.—(*Guthrie Clin. Bull.*, 28: 172, 1959).

Flood and Strehler made a clinical study on the effectiveness of Griseofulvin, an oral antifungal agent.

Twenty-eight patients were treated exclusively with Griseofulvin tablets administered orally. Adults were given 1 to 2 g. daily in divided doses for variable periods of time dependent upon response. In children they gave 0.75 g. daily in divided doses. All patients had preliminary and follow-up blood-counts and urinalyses. In several in whom long therapy was expected, bone marrow studies were made. Organism identification was by culture and/or Potassium hydroxide (KOH) preparation.

Orally administered griseofulvin is an effective antifungal agent against the following organisms. *Tricho-*

phyton rubrum, *Microsporum audouinii*, *Trichophyton mentagrophytes*, *Microsporum lanosum*, *Trichophyton verrucosum*.

Optimum dosage and treatment duration remain to be determined.

Toxic reaction consisted of one mild case of nausea and vomiting which subsided on reducing the daily dose.

Chronic urticaria.—(*The Practitioner*, 184: May 1960).

So great an impact has the theory of allergy had on the lay and medical mind that thousands of patients and doctors spend thousands of hours in frustrating searches for edible causes for weals and swollen lips and eyelids, which so often occur at a regular hour each day that any responsible foodstuff must betoken a diet dull enough to make anyone itch, out of sheer boredom. Worry about the cause, the grisly thought of being poisoned by one's food so that more and more things are left uneaten, and the discomfort of the lesions are quite enough to keep the process going, especially when the doctor adds fuel to the fire by shaking his head over fish, fruit and anything the patient really likes. There is often associated dermatographism so that scratching causes more weals than ever and most cases of nervous origin have 'giant' lesions, the so-called angio-neurotic oedema, as well as ordinary urticaria.

Fortunately the antihistamine drugs practically always suppress these eruptions if given in adequate doses. By far the most general mistake in treatment is not giving enough or for long enough.

Vitiligo.—(*The Practitioner*, 184: May 1960).

By vitiligo is meant the acquired idiopathic depigmentary disease, which usually is progressive whereas *leucoderma* is a more general term signifying any form of depigmentation or hypopigmentation, as in albinism, syphilis and leprosy, and vitiligo itself.

There is an admirable recent review of vitiligo by Lerner (1959) based on 200 cases. Vitiligo is a common disease (the incidence is about 1 per cent in the United States), harmless but disfiguring, which first appears before the age of twenty in 50 per cent of cases. It is often inherited, probably as a dominant trait. Initial involvement usually is on exposed parts. The incidence of vitiligo is increased in hyperthyroidism, pernicious anaemia and Addison's disease and it may be linked in the same person with alopecia areata. Depigmented areas are often confined to the skin regions supplied by a nerve segment. The only consistent abnormal finding by Lerner was increased sweating in the affected areas compared with the normal-appearing skin. A stress reaction (emotional upset, accident, operation) preceding onset seemed significant. Some degree of repigmentation occurred at some time in 44 per cent of the group. The behaviour of hair in vitiligo is interesting and is not what one might expect. Some patients with only limited vitiligo may have a lot of grey scalp hair, yet many with total vitiligo have little greying of hair.

Lerner (1959) suggests that vitiligo results from increased output at peripheral nerve-endings in the skin of an agent like melatonin that lightens the colour of pigment cells and decreases new melanin-formation.

The treatment of vitiligo remains, unsatisfactory, for unfortunately psoralens have not proved reliable. Of the compounds tried, methoxsalen is the most effective. It can be painted on as a 1 per cent solution before exposure to graduated doses of sunlight or sunlamp, or about 20 mg. can be given orally every day two hours before exposure. When repigmentation occurs it is usually in the form of perifollicular ephelis-like lesions or a filling in of pigment from the periphery. Medication must be continued indefinitely to maintain repigmentation. The drawbacks have been summarized by London (1959): (a) severe toxic symptoms (nausea and vomiting, nervousness, blistering and dermatitis), (b) slowness of repigmentation, (c) the prolonged treatment that is necessary, and (d) the bizarre accentuation of the vitiligo because of surrounding hyperpigmentation.

REVIEWS OF BOOKS

Village Physician—Parts I and II: Two volumes, published by Hamdard (Waqf) Laboratories, Delhi; I Edition, 1960. Price Rs. 3.00 for each part.

Mahatma Gandhiji in his Foreword to Dr. Gupta's *Home and Village Doctor* published in 1940 said that "It was during my second imprisonment that I wrote and asked, medical friends to give me a book on the lines of that excellent book '*Moore's Family Medicine*.' I wanted something still better and more indigenous in the sense that a layman serving in the villages could handle it with ease." Dr. Gupta's book was essentially one modelled on the allopathic system, both as regards drugs and the treatment of diseases.

The book under review on the other hand, deals with general principles for all ages and for the relief of suffering in rural areas. Practical measures are outlined which will ensure health in all conditions, e.g., pre-natal, post-natal care, pregnancy, child birth etc., etc. A short description is also given in Part I of 166 simples and drugs generally available in rural areas which can be used for rural medical aid at home and at no great expense and without undue evil effects; 140 of these are herbs, 16 of mineral and 9 of animal origin. Illustrations of 75 herbs and their regional vernacular names are also given. Part II deals with treatment of various minor ailments and accidents with materials locally available in the villages. In this part are men-

tioned 203 diseases and their treatment; suitable recipes are given for some medicines and foods.

This is a maiden publication compiled with great care particularly for use in rural parts. And we have

no hesitation in recommending this publication for use in rural areas. Hindi and Urdu Editions are also available and it is intended to publish it in other regional languages as well with suitable modifications.

NEWS AND NOTES

Freeze-dried B. C. G. Vaccine

To be manufactured at the B. C. G. Laboratory, Guindy, Madras

The Government of India has decided that the manufacture of freeze-dried B.C.G. vaccine should be taken up on an experimental basis, at the B.C.G. Vaccine Laboratories here. The production of freeze-dried vaccine is expected to begin by the middle of this year.

The decision to manufacture freeze-dried vaccine has been taken because of difficulties experienced in handling liquid vaccine and maintaining its potency for a long period to enable it being taken to remote rural areas.

The plant installed at Madras was obtained from France and the staff trained by French experts.

Freeze-dried B.C.G. vaccine has been extensively and successfully used in Japan.

New Tuberculosis Sanatorium

Near Madras

The Sri Shivananda Convalescent Home at Kattupakkam, near Madras, may prove to be an ideal place for the cure of tuberculosis.

There are various facilities available at this centre. It has already a free dispensary with a resident midwife, and a good stock of medicines.

The Government of India has started giving the first instalment of the grant, and as soon as the rest of the grant is received, which will be in the course of this year, the scheme will start functioning.

Hand in hand with the convalescent home scheme there is a proposal to start a chummary. This scheme is intended for the benefit of women of the lower income group who are ordered perfect rest by their doctors.

Fair Price Shops to Sell Drugs In Villages of Orissa

The Orissa Government has decided to open fair price shops for retail sale of life-saving drugs in rural areas.

These shops which will be attached to village hospitals will supply costly medicines to patients at cost price.

This decision was taken by the Government following a general complaint that costly life-saving medicines were beyond the reach of the poor in rural areas.

In-patients in Orissa hospitals whose monthly income exceeds Rs. 99 will not, in future, be served free diet. They can however have their diet from hospital canteens on payment.

Indigenous Medicine Committee of Experts to Evolve Study Courses

The Madras Government will appoint an expert Committee to evolve courses of studies in indigenous systems of medicine.

The Government's intention, according to the Health Minister is to start the courses as early as possible, if possible during the current academic year itself. The syllabus for the B.I.M. Course (Bachelor of Indian Medicine) is already available for the Government, and it might form the basis of scrutiny by the committee. Suitable modifications in the light of advances made in scientific studies would be incorporated in the new courses.

The panel of the Planning Commission on the development of indigenous systems of medicine met last month and its suggestions will now be available for the committee.

Dental College at Bangalore

Separate Building Sanctioned

The Mysore Government has accorded sanction for the construction of a separate building for the Bangalore Dental College at a cost of Rs. 13,10,000, and also purchase of equipment at a cost of Rs. 5,90,500.

It has been decided to increase the teaching capacity of the college to admit 20 students this year instead of 10. Sanction has also been accorded to the creation of the post of Principal to the College and also appointment of other staff such as professors, readers, and lecturers, at a cost of Rs. 1,54,500 per year on the pattern prescribed by the Dental Council.

Indian Herb Earns World Popularity

Western medical men show increasing interest in the Ayurvedic system of treatment. Among the foreign doctors who sought membership in the Ayurved Council include Dr. F. X. Ohrenberger, a renowned Australian physician.

The prestige of Ayurveda has grown high in the world outside with the application of Punarnava an Indian herb which has been termed the "best remedy ever known for eye diseases."

President Eisenhower took this herb to America during his visit to this country.

Madurai Medical College

Pharmacy Course to be Started

The second annual meeting of the qualified compounders' association was held with Dr. M. N. Guruswami, Vice-Principal, Madurai Medical College, in the chair.

Dr. Guruswami referred to the growing importance of pharmacy, and said that from the coming year a two-year course in pharmacy would be started in the Medical College admitting about 100 students. He added that a national formula of medicine was being worked out.

Effect of Caffeine on Brain Cortex

One gets "peak stimulation" for the amount of coffee drunk in about

20 minutes and continues at this level for 2½ hours, and then the effect quickly ends.

This experimental evidence, believed to be the first of its kind on the effect of caffeine on the isolated cortex of the brain has been found out by Dr. A. K. Maiti, of Calcutta University, and his American associate, Dr. E. F. Domino, at the University of Michigan.

The average cup of coffee contains 100 milligrams of caffeine, and is quick-acting. Curiously however, an additional dose taken during the 2½-hour span will not raise the level of stimulation as much as the first dose." For example, he maintains, "if you have coffee at seven in the morning you will get little 'lift' from coffee until after 10 o'clock."

Memorial to Sri A. B. Shetty

(Former Health Minister of
Madras and Mysore)

At an influential meeting held at Mangalore sometime ago, Mr. K. T. Alva presiding it was decided to raise a suitable memorial to the late Mr. A. B. Shetty who was a very popular and successful Health Minister first in Madras and then in Mysore. The Memorial Committee was constituted with Mr. K. T. Alva as President, N. M. Adyanthayya, Vice-President, P. S. Thimmappa Shetty and K. R. Shetty, Joint Secretaries, and B. M. Hegde, Treasurer. The Committee decided to collect a Rs. 5-lakh Memorial Fund and to take up proposals for starting an Industrial Training Centre, erecting a marble statue at the Sri Ramakrishna Vidyarthi Bhavan, instituting Endowment lectures, starting of a Maternity and Child Health unit and a Home Science College as memorials to Mr. Shetty.

It accepted a suggestion made by the District Medical Officer for unveiling a portrait of the late Mr. Shetty at the District Headquarters Hospital.

Another Hospital for S. Madras in III Plan

The statement that the Madras Government proposes to build a General Hospital in South Madras d

the Third Plan will be welcomed. There is no necessity to describe the need for far more medical attention than is available nearly everywhere in the State. The Government's programme to build a "large number" of hospital buildings and to improve many existing ones does not come a day too soon. A General Hospital in South Madras is immediately necessary. The metropolis has grown enormously and it sprawls over wide areas which are all thickly populated. Three Government General Hospitals and two specially intended for Women and Children are hardly adequate for a population of eighteen lakhs and the large number of persons from the districts (where the facilities are even more inadequate) who flock there. It is well known that these hospitals are overcrowded, considerably reducing their effectiveness. A new hospital should certainly be built in South Madras, especially as the proposal for the construction of an infectious diseases hospital there appears to have been abandoned.

Foreign Scholarships Unutilized

It is indeed a sad commentary that as many as 42 fellowships for advanced study abroad in medicine and health have gone unutilized. These fellowships are offered by Governments of France, Yugoslavia, Russia, Sweden, West Germany, Foundations in Britain and the United States and the United Nations. It is no satisfaction that 93 medical experts availed of the fellowships offered. That we have missed so many is disturbing. The fact that India needs more medical experts cannot be gainsaid. No opportunity offered for advanced training should be missed. The excuses generally put forward like difficulties of selection, short notice given for the choice of candidates, and the non-availability of suitable persons have no validity. In matters like this failure to respond to the gesture from foreign countries place India in an unfavourable situation which should be avoided at all costs.

PREPARATIONS AND INVENTIONS

Ledermycin—Demethylchlortetracycline Lederle—A new, potent broad spectrum antibiotic—(Messrs Lederle Laboratories (India) Private Ltd., P.O.B. 1994, Bombay-1).

LEDERMYCIN Demethylchlortetracycline has been introduced by Lederle. In 1957, McCormick and his co-workers reported the isolation and identification of a new antibiotic agent, Demethylchlortetracycline. This antibiotic is produced by a mutant strain of *Streptomyces aureofaciens* and differs from Chlortetracycline by the absence of a methyl group in the sixth position of the basic Tetracycline structure. This structural difference endows it with unique chemical and pharmacological properties the most important of which, are: its resistance to heat, far

greater stability in acid and alkaline media, rapid absorption and slow renal excretion resulting in well-sustained blood levels.

The half-life of Demethylchlortetracycline in serum following an oral dose, was found to be 14% longer than that of Tetracycline. Demethylchlortetracycline maintains significant antibacterial activity for one or two days after discontinuation of dosage.

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VITAMYCETIN

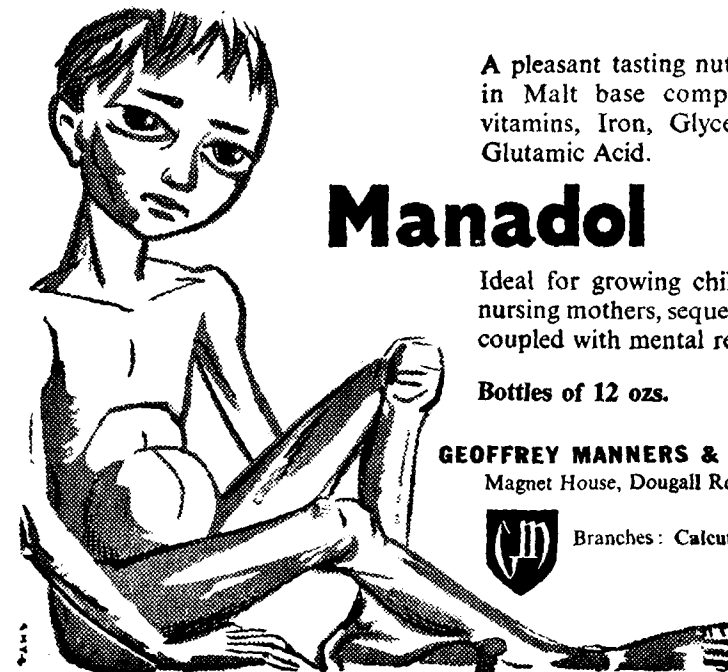
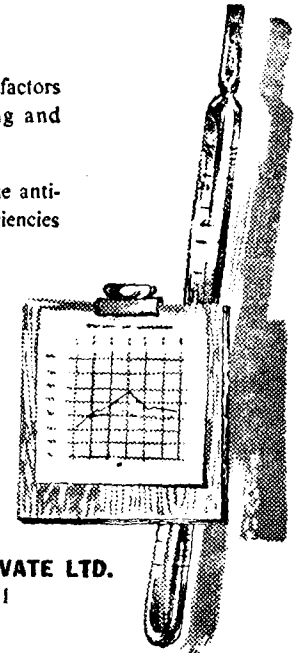
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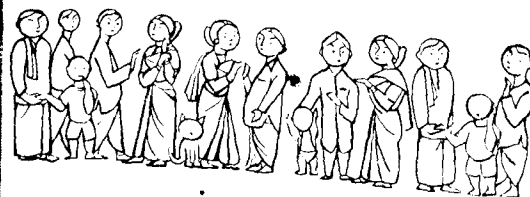
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CALCIUM HYPOPHOSPHITE R. P. C.	50 MG.
MANGANESE GLYCEROPHOSPHATE N. F.	10 MG.
COBALT CHLORIDE	2 MG.
COPPER SULPHATE B. P.	1 MG.
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SPIRITUS CHLOROFORMI B. P.	9 CC.
TINCT. AURANT B. P.	2 CC.

(ALCOHOL CONTENT 9%)
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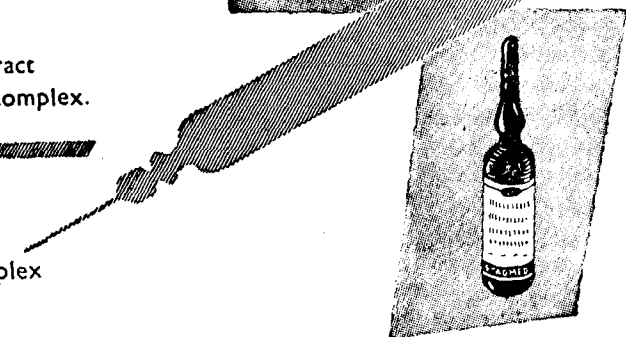
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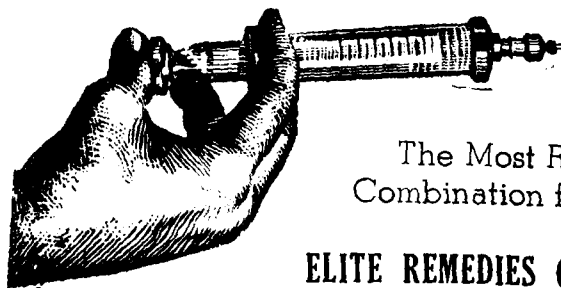


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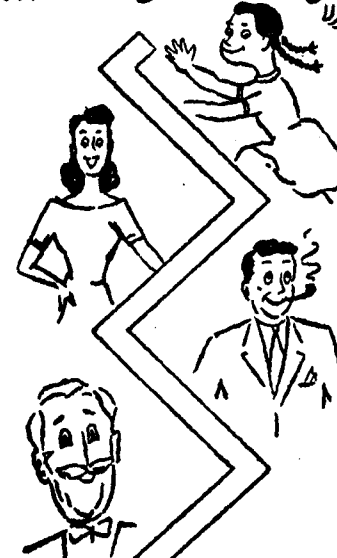
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I. Franklin et al., Jour. Am. Med. Assn. Nov. 14 1958, (1958).

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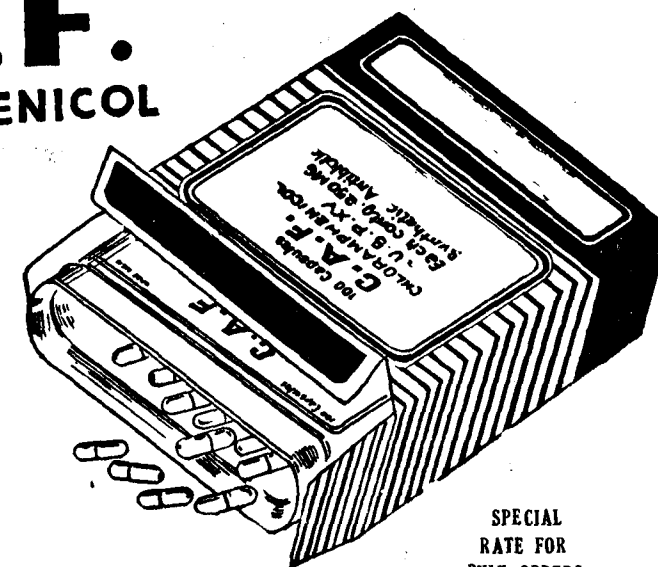
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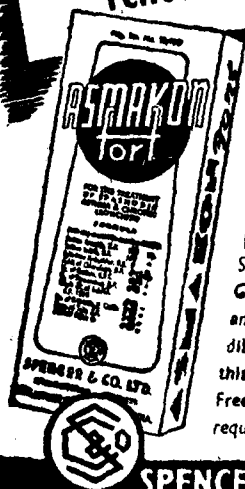
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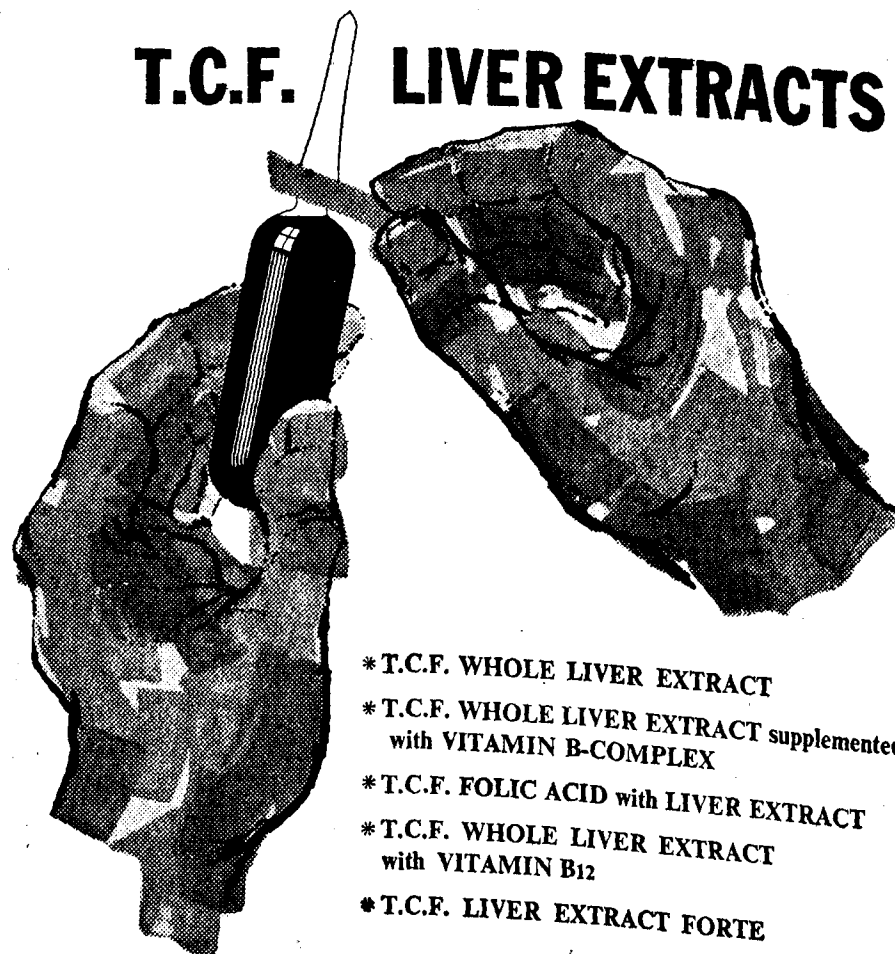
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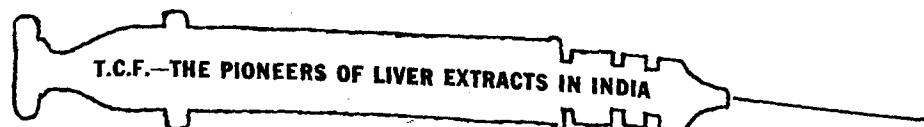
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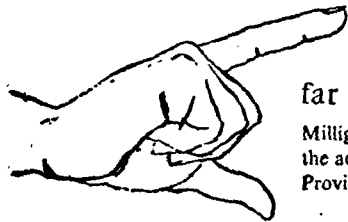
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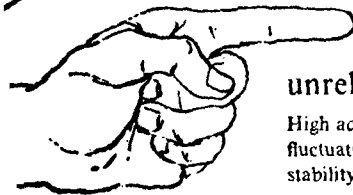
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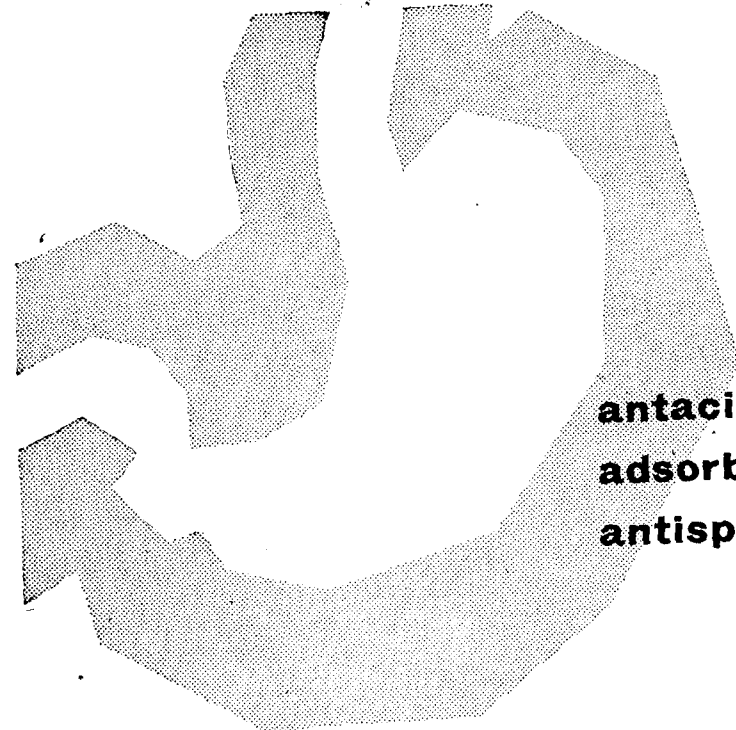
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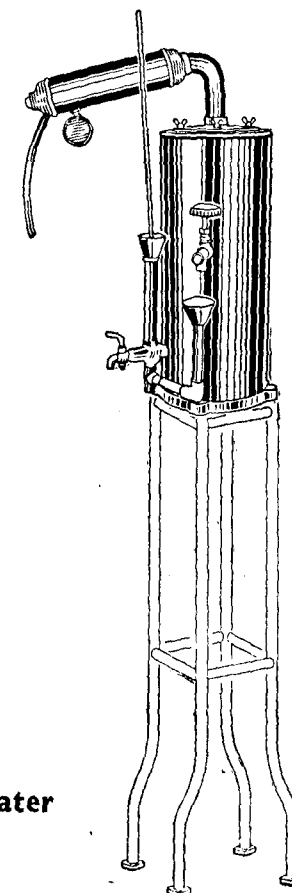
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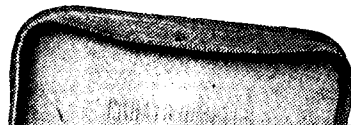
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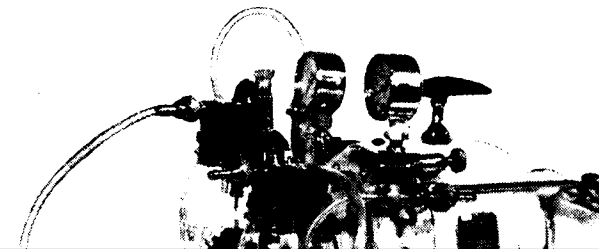
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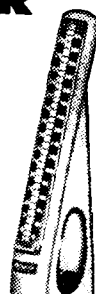
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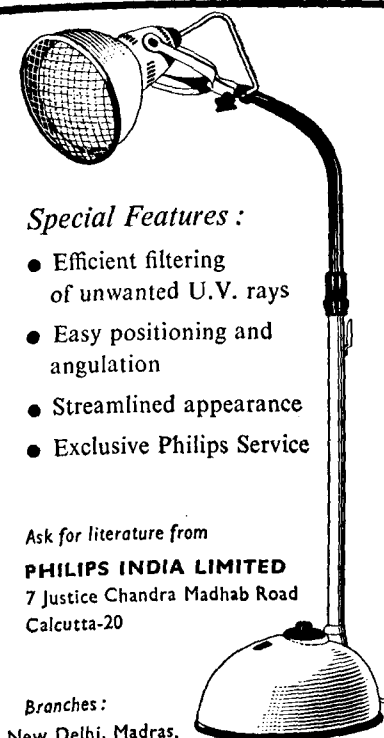
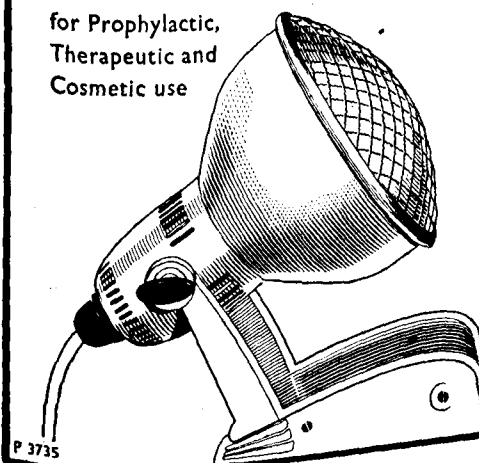
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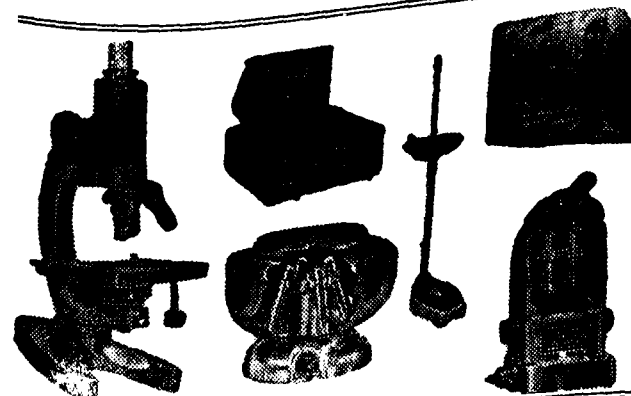
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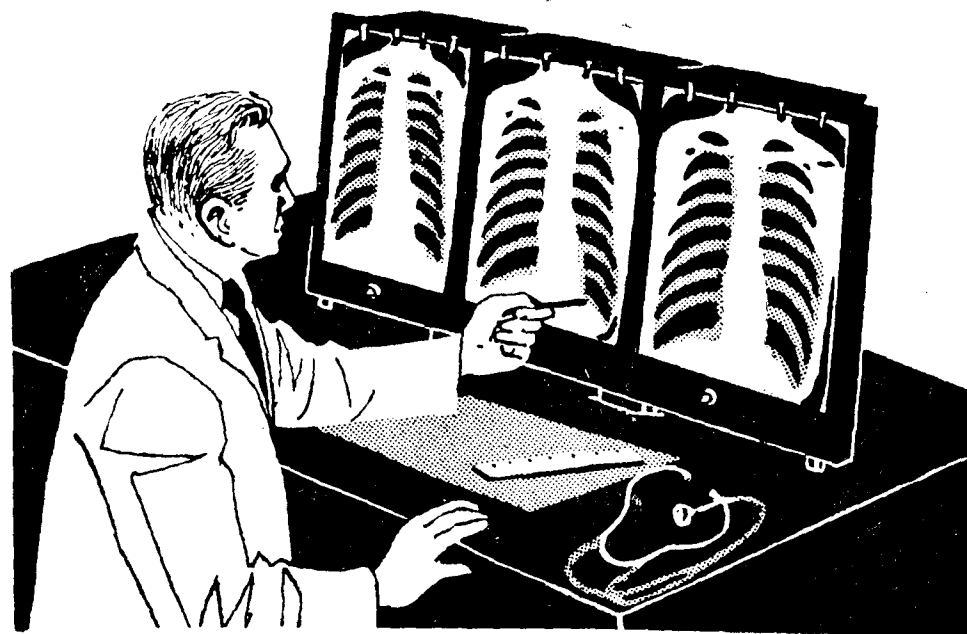
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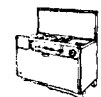
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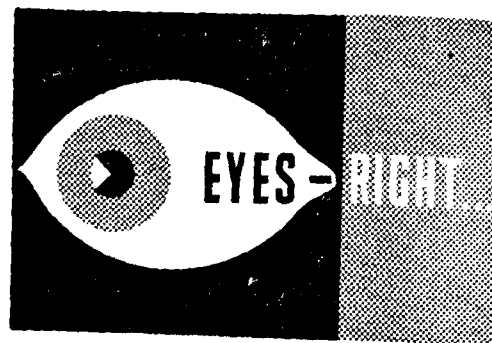
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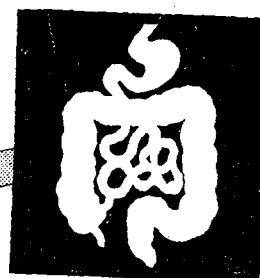
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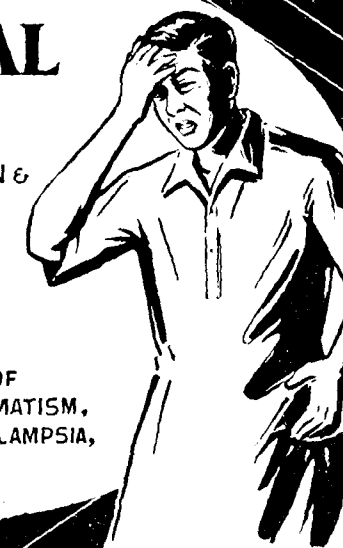
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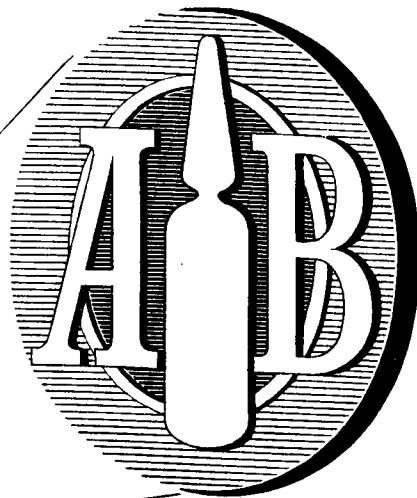
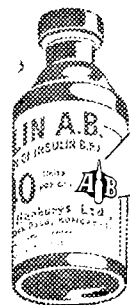


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A POLYVALENT SULPHONAMIDE WITH BROAD-SPECTRUM ANTIBACTERIAL ACTION

- * Powerful action against both aerobes and anaerobes.
- * High therapeutic efficacy in very low doses.
- * No danger of crystalluria.

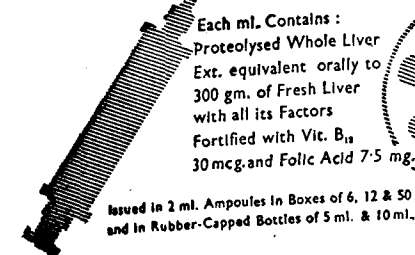
Tubes of 20 tablets of 0.5 g.
Bottles of 250 & 1000 tablets of 0.5 g.



Sole Importers in India:
CHOWGULE & CO., (Hind) PRIVATE LTD.
P.O. Box 1478, Bombay-1.

For Intensive Treatment Of Anaemia

PROLEX

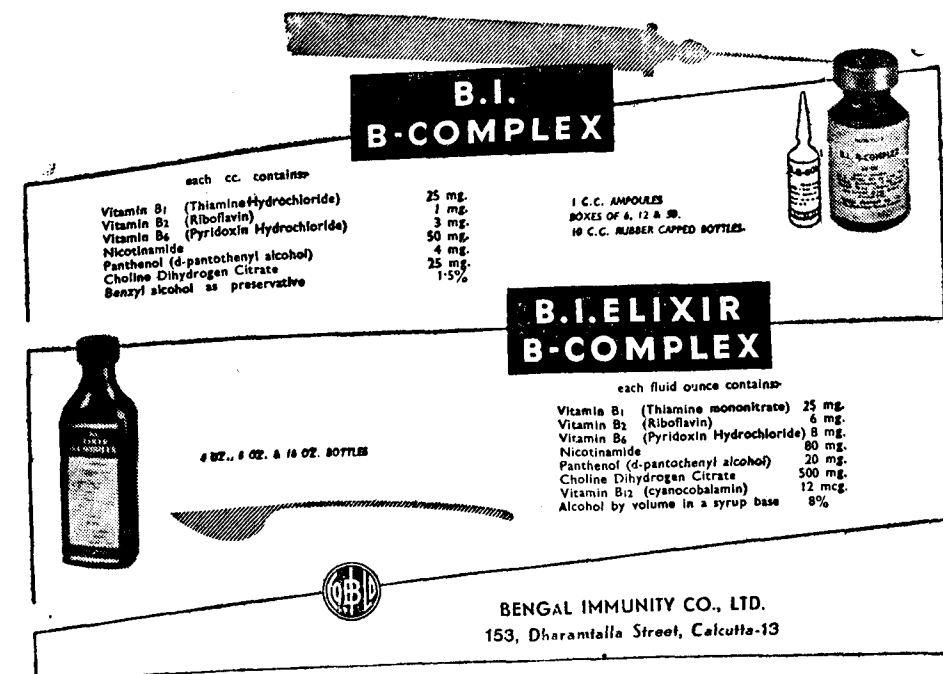


Each ml. Contains:
Proteolysed Whole Liver
Ext. equivalent orally to
300 gm. of Fresh Liver
with all its Factors
Fortified with Vit. B₁₂
30 mcg. and Folic Acid 7.5 mcg.

Issued in 2 ml. Ampoules in Boxes of 6, 12 & 50
and in Rubber-Capped Bottles of 5 ml. & 10 ml.

PROTEOLYSED WHOLE LIVER EXTRACT
FORTIFIED WITH VITAMIN B₁₂
AND FOLIC ACID.

BENGAL IMMUNITY CO., LTD.



B.I. B-COMPLEX

each cc. contains:

Vitamin B ₁ (Thiamine Hydrochloride)	25 mg.
Vitamin B ₂ (Riboflavin)	1 mg.
Vitamin B ₆ (Pyridoxin Hydrochloride)	3 mg.
Nicotinamide	50 mg.
Panthenol (d-pantothenyl alcohol)	4 mg.
Choline Dihydrogen Citrate	25 mg.
Benzyl alcohol as preservative	1.5%

1 C.C. AMPOULES
BOXES OF 6, 12 & 50.
10 C.C. RUBBER CAPPED BOTTLES.

B.I. ELIXIR B-COMPLEX

each fluid ounce contains:

Vitamin B ₁ (Thiamine mononitrate)	25 mg.
Vitamin B ₂ (Riboflavin)	5 mg.
Vitamin B ₆ (Pyridoxin Hydrochloride)	8 mg.
Nicotinamide	80 mg.
Panthenol (d-pantothenyl alcohol)	20 mg.
Choline Dihydrogen Citrate	500 mg.
Vitamin B ₁₂ (cyanocobalamin)	12 mcg.
Alcohol by volume in a syrup base	8%

4 FL. OZ., 8 FL. OZ., & 16 FL. OZ. BOTTLES

BENGAL IMMUNITY CO., LTD.
153, Dharamtalla Street, Calcutta-13

CHRONIC AMOEBIASIS

Results from hundreds of cases in the last two years provide conclusive evidence that ENTAMIDE is the most successful treatment for Chronic Amoebiasis available at the present time, with a cure-rate of 80%

ENTAMIDE

NON-TOXIC

CONVENIENT

SPECIFIC IN ACTION

INEXPENSIVE

4x0.5 G. tablets per day for 10 days usually effects a cure.
Entamide is available as 0.5 G. tablets in bottles of 20.

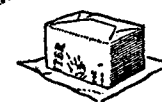
BOOTS PURE DRUG CO. (INDIA) PRIVATE LTD., 17, NICOL ROAD, BOMBAY-1.



CALCIUM THERAPY with VITAMINS

Each Tablet contains:

CALCIUM-LACTO-PHOS., 120 mg.



VITAMIN A 700 I.U.



VITAMIN C 10 mg.



VITAMIN D 500 I.U.

CALCIMA-ACD TABLETS

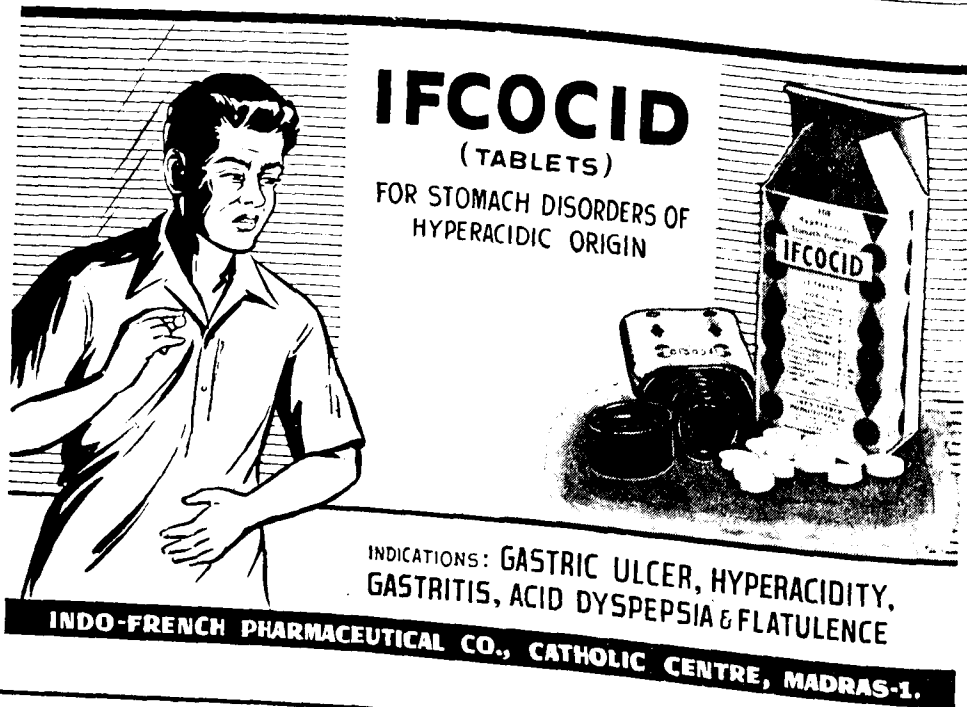
DOSAGE:
Adults: 4 to 8 tablets
per day Children: 1 to
4 tablets per day.

PACKING:
Tin containing
48 tablets.

DELICIOUS IN TASTE. CONTAIN EASILY ASSIMILABLE
ORGANIC CALCIUM SALT WITH ESSENTIAL
VITAMINS A, C & D.

PRODUCT OF *Cipla* BOMBAY-8.

LITERATURE AND SAMPLE ON REQUEST



IFCOCID
(TABLETS)
FOR STOMACH DISORDERS OF
HYPERACIDIC ORIGIN

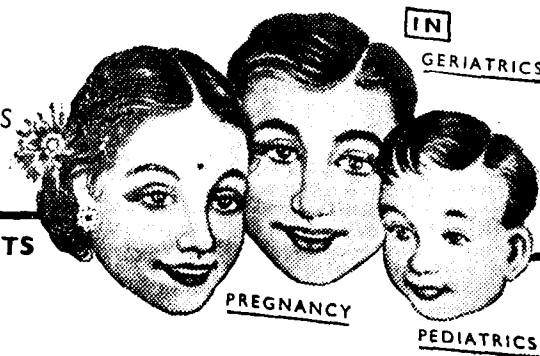
INDICATIONS: GASTRIC ULCER, HYPERACIDITY,
GASTRITIS, ACID DYSPEPSIA & FLATULENCE

INDO-FRENCH PHARMACEUTICAL CO., CATHOLIC CENTRE, MADRAS-1.

Nutrition for the family
WITH
—MYNBERRYS—
Compound
A POTENT REJUVENATING TONIC

HIGH BIOLOGICAL VALUE
PROTEINS,
HEMATINICS,
OVOLECITHIN,
GLYCEROPHOSPHATES

MYSORE NUTRIMENTS
BANGALORE 2



TESTPHERIN injectable

Indicated in:
SENILE DEAFNESS.
Atherosclerosis.
Rejuvenation.

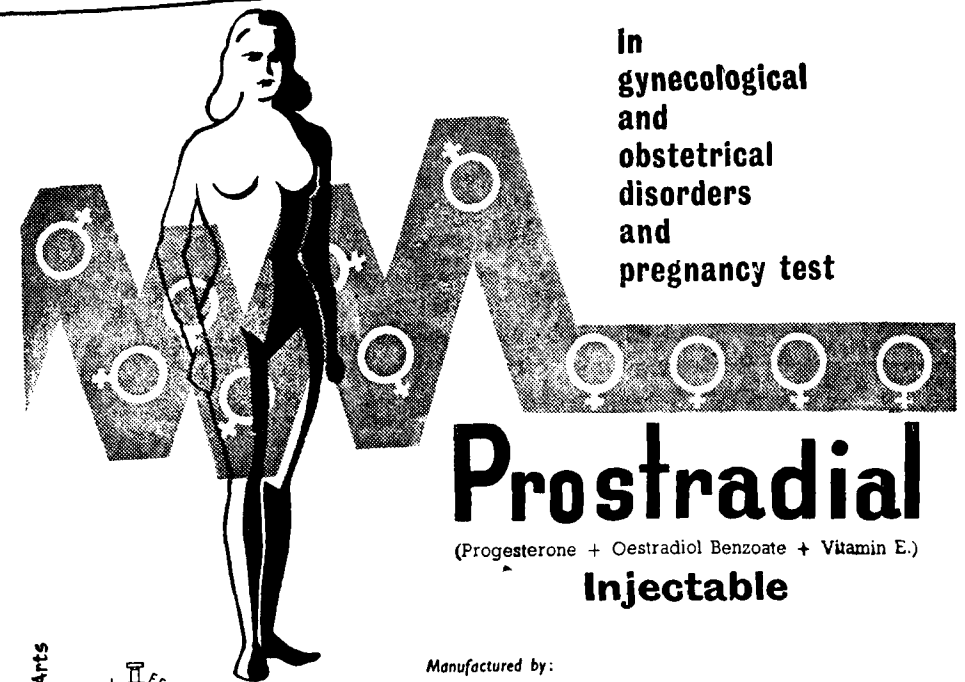
Each ml. contains:
Testosterone Propionate .. 25 mg.
Vitamin 'E' ... 10 mg.



Manufactured by
M/S UNIQUE PHARMACEUTICAL LABS., BOMBAY-1.
Sole Agents: M/S J. B. Mody & Co., G. P. O. Box No. 609-A, Bombay-1.



chitale arts



In
gynecological
and
obstetrical
disorders
and
pregnancy test

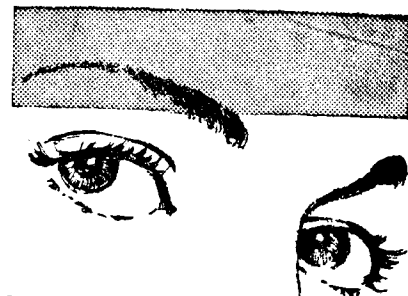
Prostradial

(Progesterone + Oestradiol Benzoate + Vitamin E.)
Injectable

Manufactured by:
UNIQUE PHARMACEUTICAL LABS, BOMBAY 1.
Sole Agents:
J. B. Mody & Company, G.P.O. Box No. 609-A, Bombay-1.

Chitale Arts



PREPARATIONS FOR THE **EYE****Cortola**

Hydrocortisone ... 1%
 Sod. Sulphacetamide ... 30%
 in 3 ml. dropper vials.

Cortola-m

Hydrocortisone ... 1%
 Sod. Sulphacetamide ... 10%
 in 3 ml. dropper vials.

**Locula**

SOLUTION & OINTMENT OF
 SODIUM SULPHACETAMIDE



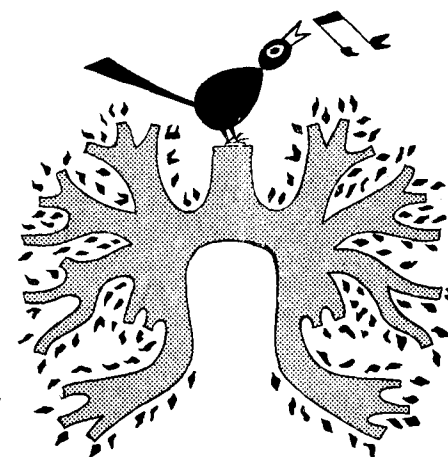
EAST INDIA PHARMACEUTICAL WORKS LTD. CALCUTTA-26



A COMPLETE FORMULA !

Cortasmyl

for the DAY TO DAY protection of the ASTHMATIC PATIENT



● SAFE ● EFFECTIVE ● SYNERGISTIC

COMPOSITION

Each tablet contains:

Prednisone	1.5 mg.
Theophylline	80 mg.
Ephedrine Hydrochloride	10 mg.
Phenobarbital	10 mg.

PRESENTATION

Vials of 20 tablets



LES LABORATOIRES ROUSSEL
 35, Boulevard des Invalides, PARIS 7^e.

Particulars and Supplies from :
FRANCO-INDIAN PHARMACEUTICALS PRIVATE LTD.,
 Bapnu Ghar, Hornby Vellard, BOMBAY-18.



better control for the majority of diabetics...

NPH Insulin, Lilly

Moderately long-acting

Carefully standardized

For Intermediate Effect: (affords best control for most patients) NPH Insulin, Lilly, U-40 and U-80

For Rapid Effect: Insulin, Lilly, U-40, and U-80. Insulin, Lilly, made from Zinc-Insulin Crystals, U-40 and U-80

For Prolonged Effect: Protamine Zinc Insulin, Lilly, 40 units and 80 units

.....in 10 cc. vials.

Lilly QUALITY - RESEARCH - INTEGRITY

ELI LILLY AND COMPANY OF INDIA, INC.

(Incorporated in the U.S.A., the liability of the members being limited)

P. O. Box 1971, BOMBAY 1.

Introducing.....

SALIPYRENE

TABLETS

For the quick and efficacious relief from Nasal stuffiness, bronchial congestion associated with common cold, sinusitis, hay-fever, vasomotor rhinitis and the after-effects of respiratory infections.

Phenylephrine hydrochloride U.S.P.	5 mg.
Methapyrilene Fumarate	... 25 mg.
Salicylamide	... 0.4 g.
Caffeine B.P.	... 25 mg.

Available in the packings of 20, 100, 500 & 1000 Tablets.

LYMISOL

LIQUID

Each 5 ml. contains:

L-Lysine Monohydrochloride	.. 0.3 g.
Pyridoxine hydrochloride U.S.P.	.. 5 mg.

in a flavoured non-syrupy base.

Indicated in:

Stunted growth, protein malnutrition, for undernourished children, anorexia, listlessness and geriatric convalescent patients etc.

PYRAMINE

INJECTION

(Antihistamine)

Available for parenteral therapy in various allergic manifestations:

Each ml. contains:

Methapyrilene Fumarate	... 50 mg.
Chlorocresol B.P.	... 0.1 %
Benzyl Alcohol B.P.	... 2 %

Available in the packings of: 6, 25, and 50 ampoules.

Also available in the forms of: Tablets & Liquid Oral.

Now available Prednisolone Tablets (5 mg.)

Detailed particulars on request from:

USAN LABORATORIES PRIVATE LTD.,

Amina Villa, 13, Dattatray Road, Santacruz West, BOMBAY-54.

OPIMYCETIN

SYRUPS, CAPSULES & COMPOUND CAPSULES

COMPOSITIONS:

OPIMYCETIN CAPSULES

Each capsule contains:
Chloramphenicol B.P. ... 0.25 G.

OPIMYCETIN COMPOUND CAPSULES

Each capsule contains:
Chloramphenicol B.P. ... 0.25 G.
Vitamin B₁ B.P. ... 7.5 mg.
Riboflavin B.P. ... 2 mg.
Vitamin B₆ B.P.C. ... 0.3 mg.
Niacinamide B.P. ... 15 mg.

OPIMYCETIN SYRUP

Each 30 ml. contains:
Synthetic chloramphenicol Palmitate
equivalent to 1.0 g. of Chloramphenicol B.P.
Glycerine B.P. ... 0.3 ml.
Flavoured Syrup base ... q.s.

INDICATIONS

Typhoid, Rickettsia infections, undulant fever, Rocky Mountain fever, infections of the urinary tract, atypical pneumonia psittacosis, venereal lymphogranuloma, pertussis.

PACKINGS:

OPIMYCETIN PLAIN & COMPOUND CAPSULES
in Bottles of 12 and 100 capsules.

OPIMYCETIN SYRUP
in Bottles of 50 ml. and 400 ml.



ORIENTAL PHARMACEUTICAL INDUSTRIES LTD.,
64-66, Tulsipipe Road, Mahim, BOMBAY-16.

ANTICIRRHOS

TABLETS

Dried Extract of Eclipta Alba

Indicated in:

CIRRHOSIS LIVER

- Ref: 'CIRRHOSIS OF THE LIVER' 'Antiseptic,' May, June, July, 1959.
2. 'CIRRHOSIS LIVER' The Madras Medical Journal, Sept. 1959.

Detailed literature and product available from:



PHARM-PRODUCTS LIMITED,
P. B. No. 37 :: Tanjore (Madras State)

Improves Appetite & General Well-being

COLLOIDAL CALCIUM

WITH D & B₁₂

Also highly useful in Allergic Conditions

Composition
Each ml. contains: Colloidal Calcium as oleate 0.66 mg.,
Vitamin D₂ B.P. 0.125 mg., Vitamin B₁₂ 50 mcg., 0.5% phenol
B.P. as preservative
Packing: 10 ml. Vial

ZANDU PHARMACEUTICAL WORKS LTD.,
Gokhale Road South, Bombay 28

Graphic Z 38

INTRODUCING!

Tivita

TABLETS

FIRST dual action hemostatic preparation containing latest hemostatic Carbazochrome with Vitamin C, K, and P at economical rate.

Adrolate

INJECTABLE

NEW, hemostatic preparation containing Carbazochrome in injectable form for intramuscular use for early effect, or where oral therapy is not possible.

LABORATORIES ORGASYN
260, Dr. Annie Besant Road, Bombay 18.

CALMS NERVES

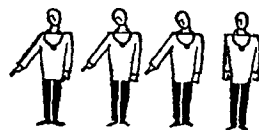
RELIEVES PAIN

'ANACIN' with its FOUR MEDICINES

FIGHTS DEPRESSION

REDUCES FEVER

'Anacin' is a non-toxic and clinically dependable analgesic and antipyretic combining Quinine, Phenacetin, Caffeine and Acetylsalicylic Acid to provide powerful synergistic action against pain, nervous tension, depression and feverishness. A single dose of 2 tablets will achieve a prolonged period of analgesia and impart a sense of well-being.



3 out of 4 doctors recommend the ingredients of 'ANACIN'

Composition:
Quinine $\frac{1}{2}$ gr. Phenacetin 3 gr.
Caffeine $\frac{1}{2}$ gr. Acetylsalicylic Acid 3 gr.

Made in India by:
GEOFFREY MANNERS & CO. PRIVATE LTD.
Magnet House, Dougall Road, Bombay 1.

For the Proprietors: WHITEHALL LABORATORIES, NEW YORK, N.Y., U.S.A.

Latest and ideal antacid

ALUCINOL

DOUBLE-ACTIONED.

ALUCINOL is the trademark for a combination in tablet form of Aluminium Hydroxide Gel and Aluminium Glycinate. This synergistic combination has been adopted for immediate and delayed action.

THE GREAT ADVANTAGE of ALUCINOL is that the tablets dissolve within seconds in a glass of water to make a milky solution with a peppermint taste, thus increasing 10,000 times the surface of absorption.

INDICATIONS

- Hyperacidity
- Gastro-intestinal ulcers
- Gastritis
- Hyperchlorhydric dyspepsia

PRESENTATION

Vial of 40 tablets containing each 300 mg. of Aluminium Glycinate, and 300 mg. of Aluminium Hydroxide gel.

DOSAGE

One tablet twice a day after meals in half a glass of water or as required.

Particulars from:

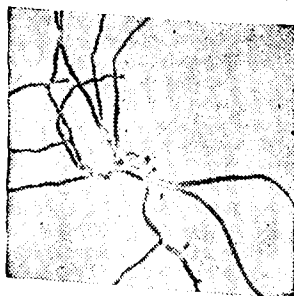
FRANCO INDIAN PHARMACEUTICALS PRIVATE LTD.
Bapnu Ghar, Hornby Vellard, Bombay 18

Oral treatment for fungal infection



Trichophyton Rubrum infection of the skin and nails and *Microsporum* infections of the scalp respond readily to treatment with 'Fulcin'

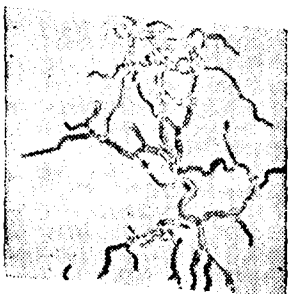
The effect of 'Fulcin' (griseofulvin) on the hyphae of a fungus growing in a nutrient.



Growth in nutrient with no griseofulvin present.



The effect on growth when 0.1 part per million griseofulvin is present.

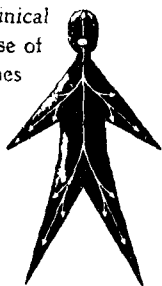


The effect on growth when 0.8 part per million griseofulvin is present.

'Fulcin' (griseofulvin) is an antibiotic which is distinguished by its powerful antifungal properties. It has proved highly effective when given by mouth as a systemic treatment for mycotic infections of the skin, hair and nails. Clinical experience indicates that a daily dose of 1 gramme (1 'Fulcin' tablet four times a day) is adequate for most cases.

Fulcin griseofulvin
TRADE MARK

The I.C.I. Systemic Fungicide



IMPERIAL CHEMICAL INDUSTRIES (INDIA) PRIVATE LIMITED
Calcutta Bombay Madras New Delhi

Sole Distributors in India for

IMPERIAL CHEMICAL INDUSTRIES LIMITED
Pharmaceuticals Division, Wilmslow, Cheshire, England



TICP-913



Ethobral*

Triple Barbiturate Tablets

Ethobral triple barbiturate — promotes nightlong sleep... with fast, clear-headed awakening.

Ethobral combines quinalbarbitone, butobarbitone and phenobarbitone in judicious balance. Contains just enough of each component to foster effective sleep... without burdening the patient on awakening. One tablet is usually adequate.

Each tablet contains: Quinalbarbitone .. 50 mg.
Butobarbitone .. 30 mg.
Phenobarbitone .. 50 mg.



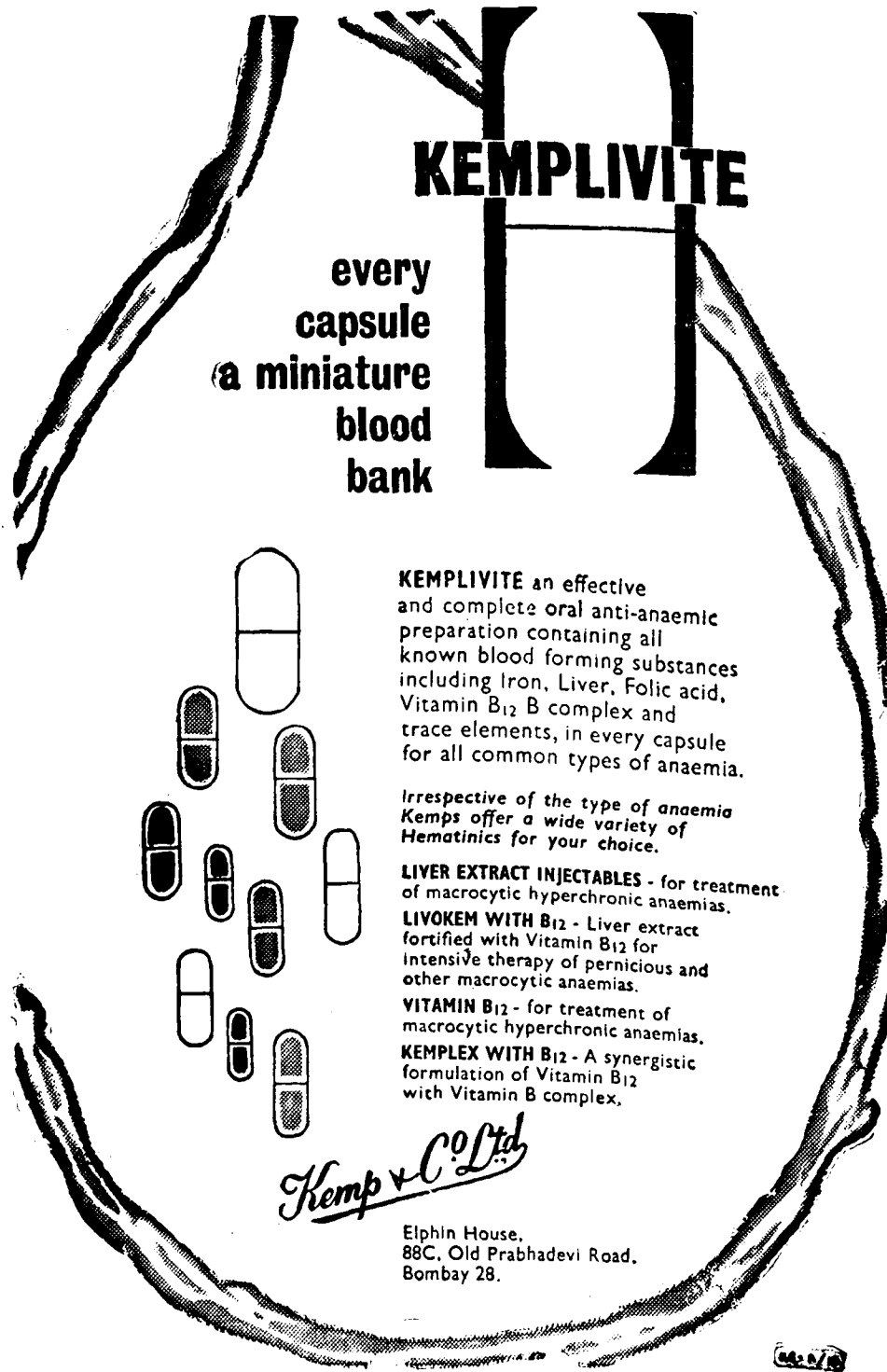
Supplied: Bottles of 20 and 250 tablets.

JOHN WYETH & BROTHER LIMITED, LONDON

(Incorporated in England with Limited Liability)

Indian Branch: Steelcrete House, Dinshaw Wacha Road, Bombay 1.

*Trade Mark



KEMPLIVITE

every capsule
a miniature
blood bank

KEMPLIVITE an effective and complete oral anti-anaemic preparation containing all known blood forming substances including Iron, Liver, Folic acid, Vitamin B₁₂ B complex and trace elements, in every capsule for all common types of anaemia.

Irrespective of the type of anaemia Kemps offer a wide variety of Hematinics for your choice.

LIVER EXTRACT INJECTABLES - for treatment of macrocytic hyperchronic anaemias.

LIVOKEM WITH B₁₂ - Liver extract fortified with Vitamin B₁₂ for intensive therapy of pernicious and other macrocytic anaemias.

VITAMIN B₁₂ - for treatment of macrocytic hyperchronic anaemias.

KEMPLEX WITH B₁₂ - A synergistic formulation of Vitamin B₁₂ with Vitamin B complex.

Kemp & Co. Ltd.

Elphin House,
88C, Old Prabhadevi Road,
Bombay 28.

condition	incidence of blood lipid abnormalities	suggested therapy
obesity	frequent ++	Methischol plus balanced low calorie diet.
diabetes	frequent +++	Methischol as adjunct to diet. Insulin as necessary.
atherosclerosis	frequent ++++	Methischol and high protein, low fat diet.
coronary disease	frequent ++++	Methischol as adjunct to high protein, low fat diet and specific therapy.
alcoholism	frequent ++	Methischol plus high protein diet.

methischol the complete lipotropic therapy

... because it provides vitamin B₁₂ and liver fractions in addition to choline, methionine and inositol.

... helps normalize liver function, increase phospholipid turnover, reduce fatty deposits, and stimulate regeneration of new liver cells...

... helps reduce elevated cholesterol levels and chylomicron ratios towards the normal, and aids in achieving normal fat metabolism.

METHISCHOL provides:

	each capsule:	each tablespoonful of syrup:
choline dihydrogen citrate	277 mg.	380 mg. of choline chloride
dl, methionine	112 mg.	333 mg.
inositol	83 mg.	250 mg.
vitamin B ₁₂	1 microgram	3 micrograms
and the natural B complex from	4 g. of liver	12 g. of liver

Suggested dose: 3 to 6 capsules or 1 to 2 tablespoonfuls of syrup daily, or as directed by the physician.

american products co. ltd.

43, forbes street, bombay 1.

for u.s. vitamin corporation, new york n. y.

For prompt relief
in
Spasmodic and Allied
disorders
of the Respiratory organs

ASMEX

The safest Antiasthmatic preparation, Asmex contains in appropriate dosage, Aminophylline, Ephedrine, Codeine, Caffeine, Sodium Iodide, Ammonium Chloride; Galenicals of Vasaka, Grindelia, Stramonium, Lobelia and Belladonna in a flavoured deep orange red.

Samples and literature available.

MANUFACTURED BY

ASSOCIATED DRUG CO. (Private) LTD.
P. B. No. 1 - - - Yercaud (S. India)

THYMOCIN

for

PYORRHOEA - TOOTHACHE - TOOTHDECAY
and other diseases of gums & mouth

OTHER



PRODUCTS

HYPOTONE (Syrup Hypophosphites Comp.)
HICOLIN (Cough Syrup)
VIBICINE (B-Complex with C)
TONOZIME (Vitamins with Glycerophosphates)

*

Manufactured by:

T. M. THAKORE & CO.,
43, Churchgate St., Fort, BOMBAY-1



New, synthetic

derivative containing:-

Ethylphenyl(1) dimethyl(2-3)

dimethylamino(4)

pyrazolone 0.4 Gr. per tablet.

Indicated in muscular,
rheumatic, post-operative
and other pains,
influenza and fever.

Available in cartons of
16 tablets and bottles of
100 tablets.



FRIPYRINE

Particulars from

FRANCO-INDIAN PHARMACEUTICALS PVT. LTD.,

BAPNU GHAR, HORNBY VELLARD, BOMBAY-18

Technical Advisers: LATEMA, 31 rue de Lisbonne, Paris



"Anticholinergic drugs alone are inadequate in the management of peptic ulcer... They should be administered only as adjuncts to conventional treatment with antacids, diet, sedation, and other therapeutic measures."¹

¹ I. Kirsner, J.B., et al.: M. Clin. North America, 41:499 (March) 1957.

In peptic ulcer: six aids to total management

SEBELLA is not only an effective antispasmodic and antisecretory agent, but also an antacid, sedative, demulcent, and pepsin-inhibitor. Thus, one convenient preparation satisfies six requirements of total peptic-ulcer therapy.

SEBELLA*

TABLETS

Aluminium Hydroxide with Belladonna
and Phenobarbitone

Supplied: Bottles of 50 and 250



JOHN WYETH & BROTHER LIMITED, LONDON

(Incorporated in England with Limited Liability)

Indian Branch: Steelcrete House, Dinshaw Wacha Road, Bombay I.

*Trade Mark

for treatment of

GOUT
RHEUMATIC ARTHRITIS
NEURALGIA

MYALGIA
SCIATICA

C-Cinchovit

WANDER



COMPOSITION: Each tablet contains:
Phenylcinchoninic Acid .. 0.5 gm.
Vitamin C 0.01 gm.

Packings: Tubes of 20 Tablets & Bottles
of 100 Tablets

For Medical literature,
samples & supplies
please contact:

Sole Distributors:

KHATAU VALABHDAS & COMPANY

Indian Globe Chambers, Fort Street, BOMBAY I.
Telephone: 261655 Telegrams: "SCARLET"

A PRODUCT OF
DR. A. WANDER S. A., BERNE (SWITZERLAND)

KV 9 SEKA I

eliminate
rheumatic
and
arthritic
pain
with...

THILOPYRIN
(Phenylbutazone + Amidopyrine)
tablets

muscle spasm
stiff neck
lumbago
sciatica
fibrositis

manufactured under licence from:
DR. THILO & CO. K.G.
MAINZ, GERMANY.

Sole Agents in India:
Thilo Mody Prvt. Ltd.
G.P.O. Box No. 609-A, Bombay-1.

Chitale Arts

TIMPANOL

FOR THE TREATMENT OF DEAFNESS

COMPOSITION:
Vit. E 50 mg., Vit. A 30 mg. ($\approx$ 30,000 I.U.), Ethyl Nicotinate 10 mg., Organic Iodine 10 mg.

INDICATIONS:
• CHRONICAL PROGRESSIVE DEAFNESS
• CONDUCTIVE DEAFNESS ACCOMPANIED BY TINNITUS AURUM
• OTOSPONGIOSE-OTOSCLEROSIS
• HYPOACUSIA
• ATROPHIC RHINITIS
• ALTERATIONS OF THE TYMPANIC SENSIBILITY
No contra-Indications

PACKAGING:
BOXES OF 6 x 1 cc. AMPULS.
WARM BEFORE USING.

DOSAGE:
2-3 INTRAMUSCULAR INJECTIONS WEEKLY, DURING TWO MONTHS, IN THE NON CHRONICAL FORMS;
2-3 INTRAMUSCULAR INJECTIONS WEEKLY, DURING 4/5 MONTHS, IN THE CHRONICAL FORMS.

ISTITUTO FARMACOTERAPICO ITALIANO—ROME (ITALY)
FOR PARTICULARS KINDLY ADDRESS TO THE SOLE AGENTS:

J. B. MODY & CO.

G.P.O. BOX 609-A, BOMBAY-1

IN THE TREATMENT OF
DYSMENORRHOEA—
Congestive and Spasmodic

UTONE

uterine sedative and tonic

Indications:
Dysmenorrhoea spasmodic and congestive
Metrorrhagia
Chronic endometritis
Habitual abortion
Menopausal disorders

Composition:
Oudumbara fruit (Ficus glomerata), Ashwagandha (Withania Somnifera), Shatavari (Asparagus Racemosus), Ashoka (Saraca Indica), Anantmool (Hemidesmus Indicus), Kathemath (Amaranthus Spinous), Jesthamadha (Glycyrrhiza Glabra), Indrajawa (Holarrhena Antidysenterica), Parasika Yawani (Hyescyamus Niger).



AYURVEDEEYA ARKASHALA LTD., SATARA.

EPHOMAC
A DEPENDABLE ORAL ANTI-ASTHMATIC

FOR PROMPT RELIEF OF ASTHMA
(Bronchial & Cardiac)

ELIXIR
Contains: Ephedrine Hcl, Aminophylline, Sod. Iodide, Sod. Benzoas, Caffeine Citras, Sod. Arsenate, Belladonna, Lobelia, Adatoda, Glycyrrhiza, Senega, etc.

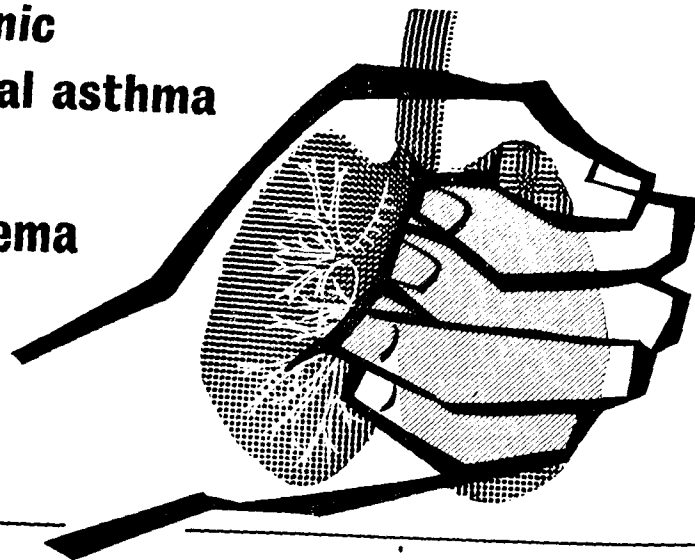
TABLETS
Contains: Ephedrine Hcl, Aminophylline, Caffeine Citras, Phenobarbitone, Sod. Arsenate, Belladonna & Calcium Gluconate.

DATA TEMPORE PROSUNT

MacMargaret's Pharma-Lab.
40, SANTHOME HIGH ROAD, MADRAS-28.

Telegrams: MACMARS
Telephone: 71886.

**In chronic
bronchial asthma
and
emphysema**



CHOLEDYL*



before CHOLEDYL



reduces the need for
aerosol therapy

after CHOLEDYL



reduces coughing



increases vital breathing
capacity



- provides a degree of effectiveness that cannot be obtained from aminophylline
- increases cardiac output
- stimulates the respiratory centre
- prevents bronchospasm without central nervous stimulation
- helps relieve the interstitial oedema
- is well tolerated
- maintains efficacy during prolonged administration

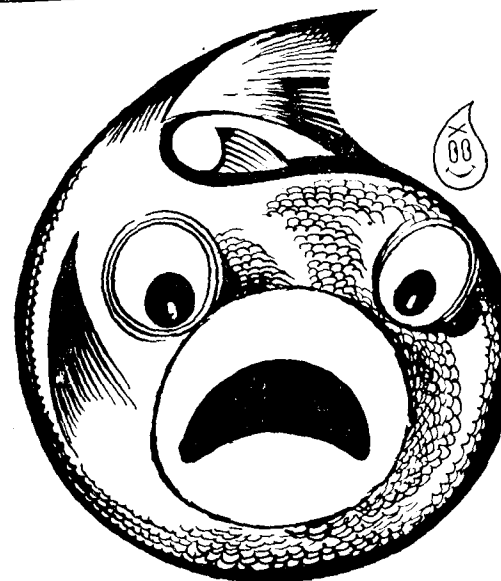
**LITERATURE
ON APPLICATION**

Cholearyl is available in tablets containing 100 mg. and 200 mg. choline theophyllinate B.P.C. and is supplied in bottles of 100 tablets.

Manufactured in India by: **ALLEN & HANBURY LTD. BOMBAY 1**

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N 58/100/H/IND



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—because an oil must be neither too *thick* when the engine starts from cold, nor too *thin* at higher operating temperatures. You get both these advantages from *Multigrade* Shell X-100 Motor Oil. It circulates freely in the engine, forms a fine protective coating, and fights acid action!

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20W/40

The right oil at any operating temperature

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Glucose Powder by name



DEXTROSOL

is Anhydrous
Dextrose,
conforming to
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and B.P. standards.
Its chemical
formula being
 $C_6H_{12}O_6$

GLUCOVITA

Every 100 parts
contain:
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Monohydrate... 99.4
(Purified glucose)
Calcium Gly-
cerophosphate 0.2
Calcium
Phosphate 0.4
Each ounce of Glu-
covita is fortified
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min-D (Calciferol)

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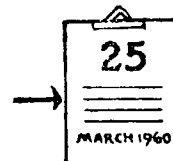
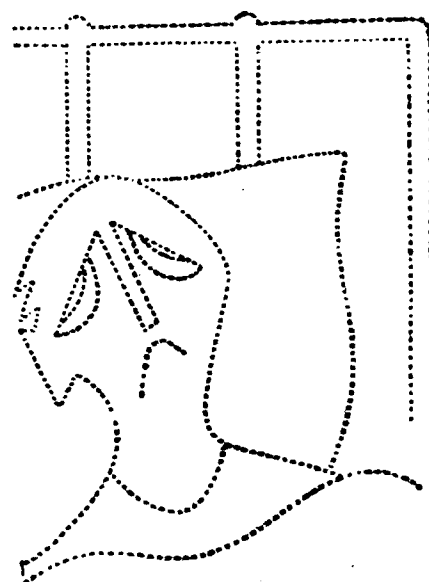
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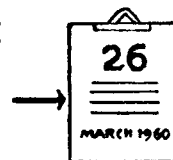


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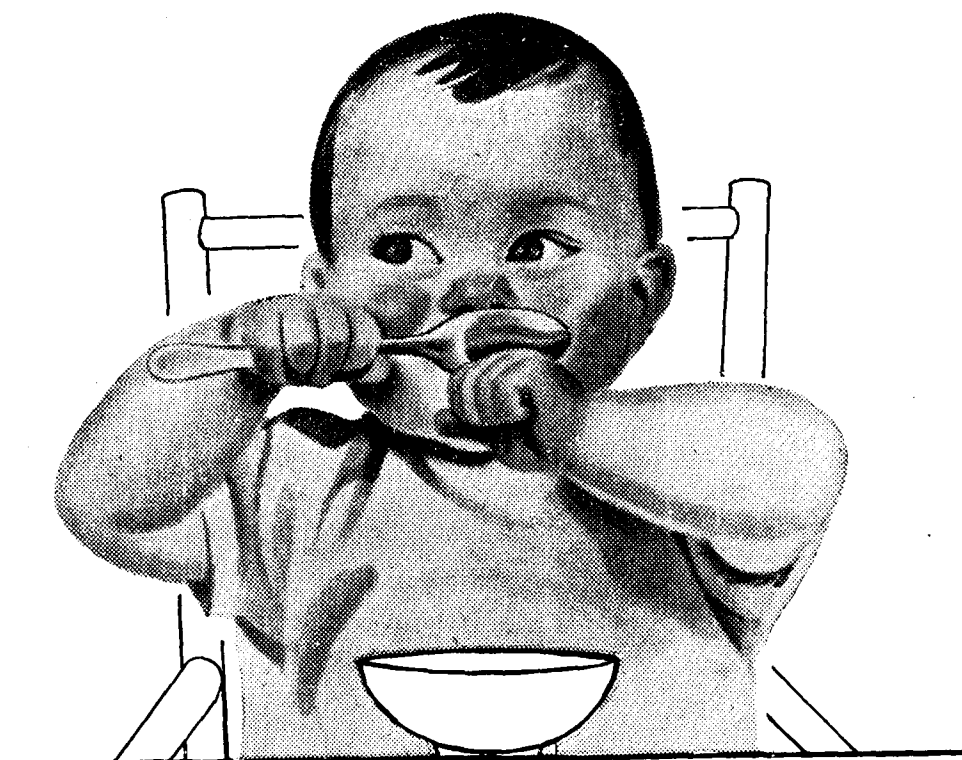
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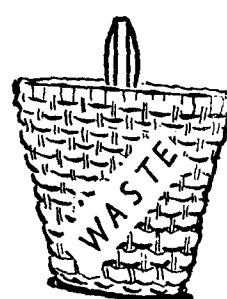


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THIS IS
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WHEN YOU PRESCRIBE
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(Refer: Tubercle. August 1957, page 238.)

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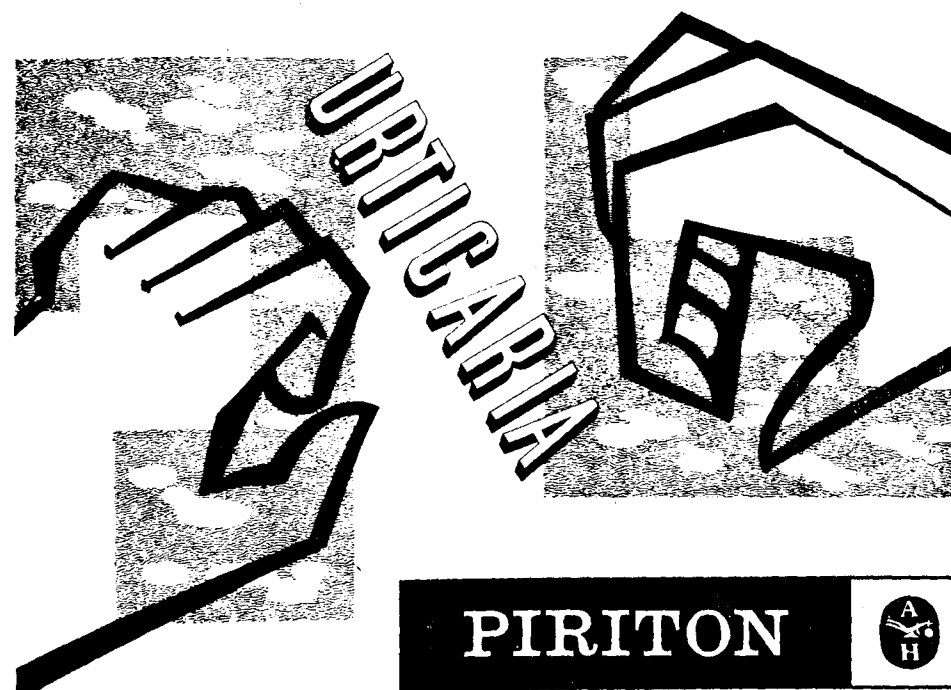
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- * gives rapid and lasting symptomatic relief
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Each Duolet contains 8 mg. Piriton A & H (chlorpheniramine maleate B.P.C.) 4 mg. in the outer shell for immediate action and 4 mg. in the specially coated inner-core, for delayed action. Bottles of 25 Duolets.

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Contains 10 mg. Piriton A & H (chlorpheniramine maleate B.P.C.) in 1 c.c. Boxes of 5 and 100 ampoules of 1 c.c.

LITERATURE ON APPLICATION

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Vitaminised tonic

of
great nutritional
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*For anaemias and
debility during
convalescence.*

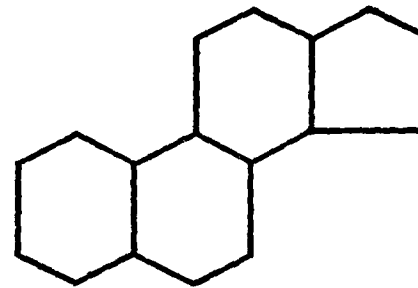
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*effective,
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*in all steroid-responsive cases,
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TABLETS *Scored tablets: 1 mg., bottles of 20.
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*outstanding in topical treatment
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*when topical steroid therapy
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FOR THE TREATMENT
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brand of chlorpropamide

provides greater protection and safety in diabetes on an economical once-a-day dose

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1. Diabinese has proved successful even when tolbutamide and carbutamide have failed.
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DIABINESE is supplied as 100 mg. and 2 mg. scored tablets in bottles of 30 and 1

OL. 57, No. 9]

THE ANTISEPTIC

[SEP. '60

A Novel Approach TO THE CHEMOTHERAPY of TUBERCULOSIS

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A New Nontoxic
Tuberculostatic
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[VOL. 57, No. 9]

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IN SUCH CASES

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NEO-SYROCOL

IS A DRUG OF CHOICE

NEO-SYROCOL Contains per 30 ml.

Ephedrine Hydrochloride	32 mg.	Ammonium Chloride	540 mg.
Codeine Phosphate	16 mg.	Chloroform	0.12 ml.
Mepyramine Maleate	20 mg.	Menthol	3 mg.
Liq. Ext. of Ipecac	0.06 ml.		

in Syrup base

Packings: 90 and 170 ml. Phials.

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With Isonicotinic acid Hydrazide and Vitamins and lately as

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Isoniazid salt of P.A.S. acid chemically combined.
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VOL. 57, No. 9]

THE ANTISEPTIC

[SEP. '60]

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Adhatoda Vasica (Vasak)	... 40 "
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Each capsule contains:

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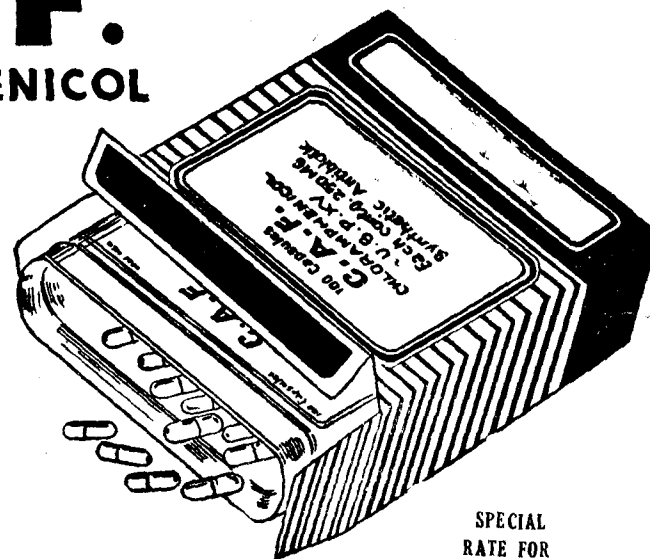
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PRICE		
12 Caps. Packet	3-50	
100 " "	22-50	
500 " "	110-00	
1000 " "	217-50	

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RATE FOR
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in infectious diseases
in articular affections

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prednisone

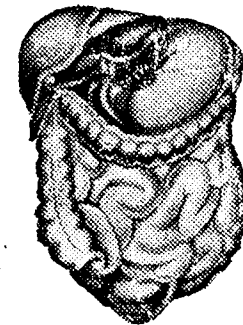
2.5 mg and 5 mg tablets

the well-tolerated steroid of high potency confirmed
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a palatable NEOMYCIN
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JIDIMYCIN

active against specific
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COMPOSITION

Neomycin Sulphate B.P.	0.30 gm.
Containing 0.21 Gm. Neomycin Base	
Succinyl Sulphathiazole B.P.	3.00 gm.
Phthalyl Sulphathiazole B.P.	1.50 gm.
Pectin N.F.	0.30 gm.
Kaolin B.P.	2.70 gm.
Sodi Benzoate B.P.	0.35 %
Syrup, Flavouring etc. upto	30 c.c.

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In sickness, whatever the cause
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—Ancolan gives prompt relief.This unique antihistaminic is also
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Ancolan is tasteless • Ancolan is very economical

ANCOLAN

meclozine hydrochloride B.P.C.



Tablets (scored) containing 25 mg. • Bottles of 25, 100 and 500

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(For burns, abrasions & Antiseptic dressings)

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(Efficacious in Eczema)

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(For mangoties, athlete's foot etc.)

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(STANDARDISED)

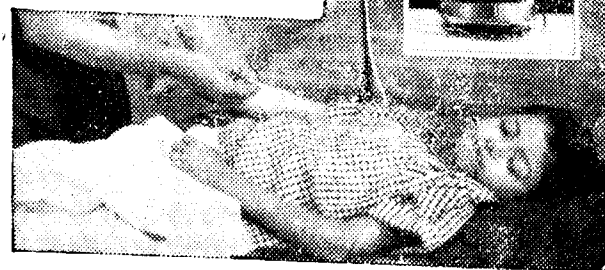
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Inquire for other Transfusion Products



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Gram : "PASLAB"

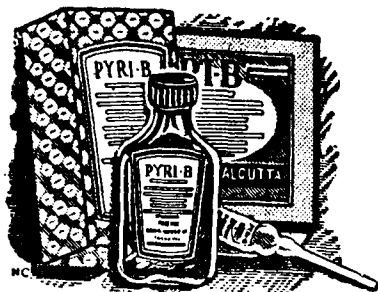
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(TO BE PRONOUNCED AS PYRIBE)

Phenix



Burning feet syndrome (Gopalan Syndrome), Nausea & Hyperemesis Gravidarum, Vomiting in Diarrhoea & Cholera, Vomiting in Enteric fever following administration of chloramphenicol, Premature Grey-Hair, Agranulocytosis and Leucopenia resulting from Chemotherapy, Pellagra and excessive irradiation or allied causes, Nervous diseases viz. Parkinson's disease, Multiple Neuritis, Peripheral Neuritis, Sciatica, Paraplegia etc., Progressive muscular atrophy & dystrophy, Adolescent Acne, and allied Dermatological Conditions, Tropical Pregnancy, Pernicious Anemia, Sprue, Macrocytic Anemia of conditions as nutritional neuropathies, Neuritis of chronic alcoholism, diabetes & liver diseases.

(Plain) Each tablet represents:

Pyridoxine Hydrochloride	—	50 mg.
Thiamine Hydrochloride	—	50 mg.
Calcium Pantothenate	—	10 mg.

Each c. c. represents:		
Pyridoxine Hydrochloride	—	50 mg.
Thiamine Hydrochloride	—	50 mg.
Calcium Pantothenate	—	50 mg.
Chlorobutol	—	0.5 p.c.

(Forte) Each c. c. represents:		
Vitamin B1	—	100 mg.
Vitamin B6	—	100 mg.
Vitamin B12	—	100 mcg.
Sodium Pantothenate	—	50 mg.
Chlorocresol	—	0.1 %

Packings: (Plain)
Box of 10 & 50 amp. of 1 c. c.
Bottles of 10, 20, 40 and 100 tablets.

Packings (Forte)
Box of 6, 10 and 50 amp. of 1 c. c.

Product of: PHENIX DRUG-HOUSE PRIVATE LTD. 10, BONFIELD LANE, CALCUTTA-1

Sole Agents: M/s. Fairfield Syndicate (Agency) Private Limited., Calcutta-1

In the treatment of TUBERCULOSIS

Rudanti Preparations

CAPYNA

(Rudanti Comp. Tablets)

- ✓ Brings about speedy, subjective, clinical, radiological & bacteriological improvement.
- ✓ Reduces toxæmia, fever, cough.
- ✓ Rapid gain in weight.
- ✓ Completely non-toxic.

May be used In conjunction with other anti-tubercular therapy

also **CAPYNA Plain** For maintenance therapy

THE HIMALAYA DRUG CO., 251, Dr. D. Naoroji Road, BOMBAY I (India)

Makers of the World's Pioneer *Rauvolfia* Hypotensive **SERPINA**

The World's. Pioneer
Rauvolfia Hypotensive
and Cerebral Sedative.

SERPINA

INTRODUCED 1934

- Standardised 4 mg. Total Alkaloids of *Rauvolfia serpentina* (Benth) per tablet.
- A safe and effective hypotensive of precise therapeutic value.
- Mild sedative and tranquillising effect; useful in anxiety neurosis and mental conditions.
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- Marked symptomatic improvement.
- Clinically tested on millions of cases.

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VITAMINS WITH FLAVOUR OF ORANGE
AND TASTE OF HONEY



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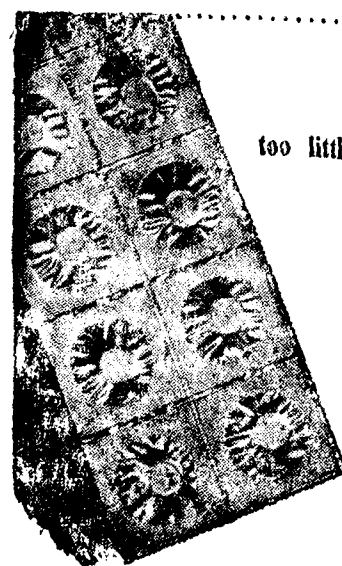
Each teaspoonful (5 c.c.)
contains :

Vitamin A	...	5000 I.U.
Vitamin D	...	500 I.U.
Vitamin C	...	75 mg.
Vitamin B ₁	...	3 mg.
Vitamin B ₂	...	3 mg.
Vitamin B ₆	...	1.5 mg.
Nicotinamide	...	30 mg.
Methionine	...	5 mg.

Supplied in 60 c.c.
and 120 c.c. bottles

THE CALCUTTA CHEMICAL
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HINDPUBS



"It is better to prescribe *too much* than
too little... *too soon* than *too late*" Spies, J. D.; in Handbook
of Nutrition, Am. Med. Assn.

One C. B. TINA tablet B. D. supplies :

Ascorbic Acid (C)	500 mg.
Thiamine Mononitrate (B ₁)	30 mg.
Riboflavin (B ₂)	30 mg.
Pyridoxine Hydrochloride (B ₆)	20 mg.
Nicotinamide	100 mg.

INDICATIONS: Convalescence, intestinal tuberculosis,
ulcerative colitis, infectious diseases, hæmorrhages,
pre- and post-operative states, burns, schizophrenia etc.

DOSAGE: 1 tablet twice daily.

SUPPLY: In strip of 20 and bottle of 100 tablets.



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CALCUTTA-29

c.b.tina

(C & B Complex Vitamins, Therapeutic)

[60]

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Vol. 57

SEPTEMBER, 1960

No. 9

Original Articles

RUPTURE OF THE UTERUS *

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Rupture of the uterus is probably the gravest obstetric complication. Its incidence is about one in 590, in the Government Hospital for Women and Children, Madras. During the past 3 years, we had 63 cases of rupture of the uterus and in almost two-thirds of them the accident had occurred outside the hospital. Most of them were in multiparous women. Rupture is very rare in primigravida, as such patients would react with inertia in the presence of an obstruction, unlike the multis. Only 2 cases of primigravida had fundal rupture in late pregnancy in this series.

Aetiology.—It is customary to classify the causes of rupture of the uterus into spontaneous, post-cæsarean and traumatic groups. In our hospital, 75 per cent of ruptures were in the spontaneous group and 20 per cent in post-cæsarean and only 5 per cent followed trauma. About half the cases in the first group resulted from obstructed labour, contracted pelvis, malpresentation etc. Occasionally spontaneous rupture may occur early in the second stage without any obvious cause. Of late, we have been having an increasing number of cæsarean scar-ruptures as the number of cases in the other groups are diminishing. Extraction of the foetus through an incompletely dilated cervix, a badly done forceps or an ill-timed internal podalic version usually ends in traumatic uterine rupture.

* Specially contributed to the ANTISEPTIC

Pathology.—During pregnancy, the body of the uterus gets involved in rupture and during labour its lower segment. In obstructed delivery, the lower segment gets dangerously stretched out and yields most often anteriorly. In more than half the cases of spontaneous rupture occurring in labour, the anterior segment was found torn. The lateral wall of the uterus was involved in about 20 per cent and colporrhoeis in 7 out of 63 cases. In 2, the tear had extended into the bladder. Rupture of the uterus may be complete or incomplete, the former type being thrice as common as the latter in our series.

SIGNS, SYMPTOMS AND DIAGNOSIS:—The typical clinical picture of rupture was noticed in 50 per cent of cases—multi-gravida, late in labour, sudden cessation of powerful uterine contractions, some lower abdominal pain and vaginal bleeding. There is a variable degree of shock and later on infection. On examination, she may be pale, restless with a rapid pulse and a low blood-pressure. The uterine contour is lost; no pains, a tender abdomen, easily felt foetal parts and absence of foetal heart sounds are the usual findings. The urine may be blood-stained on catheterization and vaginal examination may show evidence of late labour. In most of these cases, diagnosis is easy and the stage of threatened rupture must have preceded the actual rupture of the uterus. It is in atypical cases, that diagnosis becomes difficult. Most of these belong to the post-cæsarean group or incomplete variety of rupture. There is no obvious shock but a tender abdomen, a rising pulse rate and variation in foetal heart sounds, slight vaginal bleeding mistaken “for excessive show” and hæmatoma may be seen. At times, one may find a gradually increasing tender swelling in the suprapubic region or iliac fossa due to a hæmatoma. The uterus may still be acting though it might have ruptured, till the baby is born or the rupture gets completed and the foetus escapes into the peritoneal cavity. Spontaneous incomplete rupture in labour may simulate accidental hæmorrhage but this latter condition is rarely seen for the first time in the late first stage or early second stage of labour.

Rupture of the caesarean scar.—About 20 per cent of ruptures in our series belonged to this group. Rupture of the scar may occur during pregnancy or labour. It is the classical caesarean scar that yields during pregnancy though more often this accident may happen during labour. The classical scar has ruptured in 20% of such cases in our hospital but the risk of lower segment scar-rupture in a subsequent delivery is only about 2 per cent. Because of this risk, some clinicians believe in the dictum, “once a caesarean always a caesarean.” But most of the specialists make a careful survey of the data available and see whether a vaginal delivery can be allowed. It may be permit-

ted if: (a) the previous caesarean is of the lower segment type; (b) the indication has been a non-recurrent one; (c) the patient has had vaginal deliveries preceding the last caesarean and (d) there is no associated malpresentation or other complications. The risk of trial vaginal delivery in such cases is definitely less than the morbidity and mortality of repeat caesarean sections. Rupture of the classical scar is mostly complete and sudden and is accompanied by shock and other typical features of rupture of the uterus. The foetal mortality in these cases is very high. It is only occasionally that the dehiscence of the classical scar may occur ‘silently.’ On the other-hand, rupture of the lower segment is mostly incomplete and diagnosis is only suspected and confirmed on laparotomy. The foetal survival in such cases therefore, is high. Traumatic rupture should be thought of, whenever the patient gets into shock after operative delivery and could be easily diagnosed early by routine exploration of the uterus soon after delivery, when the patient is still under anæsthesia.

PROGNOSIS:—The foetal mortality is 80 per cent in our series. It has been only 40 per cent in the post-cæsarean group. The maternal mortality used to be very high till ten years ago. Now with the availability of blood transfusion, broad-spectrum antibiotics and improved prenatal and intranatal care, the mortality has been reduced. It is 17.4 per cent in this series of 63 cases and if we could exclude 5 cases admitted moribund and not operated upon, the corrected mortality will be 10.3 per cent. The mortality has been only in the traumatic and spontaneous groups and none in the post-cæsarean group; again it has been higher when the rupture was of the incomplete type involving lateral wall (6 cases), due to delay in diagnosis.

TREATMENT:—Proper antenatal care, early detection of cephalopelvic disproportion, malpresentations etc. and careful management during labour without allowing any patient to get into delayed second stage are essential measures in prevention of spontaneous rupture. When they are brought late in labour in a state of threatened rupture, the uterus should be emptied without any delay preferably, by forceps with or without craniotomy. In modern obstetrics, there is no place for internal podalic version late in labour. Where diagnosis is suspected as one of rupture of the uterus, it is best to start blood transfusion and do a laparotomy. In obvious cases, treat the shock and then open the abdomen. The foetus and placenta are removed from the peritoneal cavity and the uterus inspected for its rent. Hysterectomy, mostly subtotal, is the operation of choice and was done in 46 out of 57 cases subjected to surgery. In nine which were all caesarean scar-ruptures, the tear was sutured and the patients were sterilized. In 2 cases, only the repair was done and the patient was given a chance to conceive again.

This last method entails some risk and is adopted in occasional cases of post-cæsarean rupture where the patient is anxious to have a live child and is willing to be under observation throughout her next pregnancy when a cæsarean should be done near term. Post-operatively, treatment should be continued to combat shock and sepsis.

Most ruptures are avoidable. Few of those which cannot be prevented could be detected by careful observation of the patients during labour.

ANENCEPHALY AND OTHER CONGENITAL ABNORMALITIES

M. J. Pleydell, M.C., M.D., D.P.H., County Medical Officer of Health, Oxfordshire, revealed certain very interesting facts which are summarized below:—The epidemiological study in Northamptonshire provides evidence that anencephalic births are related to the density of the population. The incidence of anencephaly in urban districts is double the incidence in rural districts; the incidence in the industrial belt is three times the incidence in the rest of the county.

A definite feature of anencephalic births is that they occur in groups in time and space. It is suggested that the association between anencephaly and social class, season of the year, density of population, and causation. A description is given of a group of births of different congenital abnormalities in one street in Corby New Town. The results of a small prospective inquiry in Northamptonshire suggest that there may be an association between Asian influenza in pregnancy and congenital abnormalities. Stress is laid on the importance of further epidemiological inquiries in regard to congenital abnormalities; attention is drawn to the possibility of prevention of those cases associated with infections.—(*Br. Med. Jour.*, Jan. 30, 1960).

ANÆMIA IN PREGNANCY

At the 64th general meeting of the Association of Clinical Pathologists held in Cardiff, on April 7-9, Dr. C. Giles (Stoke-on-Trent) reported a controlled trial of prophylactic folic acid during the last trimester of pregnancy. 758 women who received oral folic acid and iron showed significantly higher hæmoglobin levels at term than 721 women treated with iron alone. Megaloblastic anæmia developed in 20 cases of the control group but in none of the patients treated with folic acid. This trial supported the concept that folic-acid depletion tended to occur in late pregnancy, even in the absence of megaloblasts in the marrow. Analysis of 156 cases of megaloblastic pregnancy anæmia, diagnosed over a period of three years, suggested that an inadequate diet and intestinal malabsorption were important factors predisposing to megaloblastic anæmia. Abnormally high faecal fat-excretion was found in 12 out of 41 cases investigated, but in none of 17 normal pregnant women. When megaloblastic anæmias of pregnancy were classified according to the types and relative numbers of megaloblasts in the marrow, an abnormal blood-group distribution, with a significant increase of group A, was found in cases with the more advanced degrees of megaloblastosis. These findings suggested that folic-acid deficiency tended to occur in a large number of women in late pregnancy, but only in a certain group, with an inherited predisposition, would folic-acid depletion result in florid megaloblastic anæmia.—(*The Lancet*, 7-5-1960).

PHYTEBIN '272' IN THE TREATMENT OF TUBERCULOSIS*

THIS drug was used in the treatment of Tuberculosis in the Clinic as well as in the Sanatorium, and was found to be useful: (1) where the patients were not able to tolerate streptomycin; (2) in cases where there were toxic effects due to P.A.S. and I.N.H. tablets; (3) in chronic cases where the patients treated before, had relapsed, and became resistant to the usual chemo-therapy and (4) in cases of toxæmia due to abscess of the lung.

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The advantages during treatment with this drug are:—*firstly*, the doctor can use it safely without fear of any toxic effects, *secondly* it can be used for long periods without producing any neuro-toxic effects and *thirdly* unlike P.A.S. where the patient has to take 16 tablets a day, the patient need take only 6 to 8 tablets a day.

Reports of nine cases treated with this drug in the sanatorium are given below:—

CASE 1.—A woman aged about 30 years with bilateral-pulmonary tuberculosis with cavities did not tolerate streptomycin, which produced a burning sensation all over the body and a feeling of choking. Isonex gave her stomach pain and loose motions. Temperature ranged from 102°F to 103°F, and she was put on Diarazine and Deltacortil with pneumo-peritoneum. The temperature was not controlled, so she was started on I.V. P.A.S. dips. After five I.V.P.A.S. dips and Deltacortil, the temperature came down. She was given eleven I.V.P.A.S. dips with Deltacortil and pneumo-peritoneum. In spite of this, the temperature again rose. Then Phytebin,* three tablets a day were given and when there was no reaction for three days, the dose was increased to six tablets. The temperature was controlled and she had no toxic effects. Altogether she was given 162 tablets. On discharge she was advised to continue Phytebin and pneumo-peritoneum. She is having the treatment from 3rd December 1959 without any toxic effects.

CASE 2.—A well-built adult male, aged 40, with bilateral pulmonary tuberculosis had also pain in the abdomen. He did not tolerate streptomycin, which caused abdominal pain, burning and loss of appetite. P.A.S. with Isonex and I.V. P.A.S. dips

* Phytebin 272 containing P-oxy-m-methoxy benzaldehyde-isonicotinyl hydrazone, is available in the form of tablets, manufactured and supplied by M/s. Phytosynth Laboratories, Cochin.

were tried with pneumo-peritoneum. Though the pain was relieved he was not better, the weight increased from 130 to 146 lbs. He was then put on Phytebin, and now the patient's weight has gone up to 176. The lungs have cleared up and he has been advised to take Phytebin regularly and to join duty. He has taken 500 tablets so far and is still taking it without any toxic effects.

CASE 3.—A woman, aged about 30 years, admitted with bilateral pulmonary tuberculosis with cavities and hæmoptysis on December 14th 1958, was treated and discharged on 10th May '59.

TABLE I—Showing the details and results of treatment

S. No.	Sex	Age	Temperature	Weight	Weight after treatment	Other symptoms	Tolerance to drugs
			on admission				
1	F.	30	98 to 103	79	97	Pl. TB. bilateral with cavities. S.R. 80-110 A.F.B.	Not tolerating Streptomycin, P.A.S. or Isonex
2	M.	40	98 to 102	132	176	Pl. TB. and also intestinal pain in the abdomen. S.R. 45-80	Not tolerating Streptomycin
3	F.	30	98 to 100	104	111	Pl. TB. bilateral with cavities. S.R. 45-78 A.F.B.	Normal
4	M.	30	98 to 98	98	107	Relapse. Bilateral Pl. TB. A.F.B. not present. S.R. 6	Normal
5	M.	35	98 to 98	92	108	Very weak Pl. TB. bilateral with cavities. S.R. 110	Normal
6	M.	40	98 to 98	122	140	Abscess lung left-lower lobe. S.R. 60. A.F.B. not seen. P.C. T.C. 1000 D.C.P. 78%. L. 22%	Normal
7	M.	35	98 to 101	75	—	P.T.B. Bilateral. Left lung completely gone. Right half affected.	Addict to morphia taking 3 g. a day in addition to narcotic
8	F.	40	98 to 100	64	74	P.T.B. Bilateral F.A.B. S.R. 58 to 106	Normal
9	F.	19	98 to 100	81	89	Bilateral P.T.B. A.F.B. not seen. S.R. 38-60.	Normal

1959. During the treatment she had 25 I.V.P.A.S. dips, P.A.S. 700 mg., I.N.H. 417, mg., and 50 tablets of Deltacortil (5 mg.). She was readmitted with relapse on 28th September 1959 with a rise in temperature and persistent cough. She was immediately put on Phytebin starting with 1 to 3 tablets a day for six days, then 8 tablets a day. The temperature was controlled and the lungs cleared well. All the cavities except a small one closed. Any rise in temperature, was controlled by Phytebin. Up to the 25th March 1960 she had taken 1008 tablets and is still taking it without any toxic effects.

with Phytebin of 9 cases in the Sanatorium

Previous treatment if any	Before Phytebin	After Phytebin	Total No. of tablets	Remarks
100 grms. Streptomycin 500 mg. Intt.	Diazine, Deltacortil pneumo-peritoneum. I.V. P.A.S. dips	Temperature was controlled; no toxic effect; lungs cleared; weight increased.	162	A.F.B. Not seen. Under treatment from Dec. 1959 till now.
Nil	PAS., Isonex	Temperature controlled; no toxic effects; abdominal pain disappeared.	500	A.F.B. not seen still taking Phytebin without toxic effects.
—	Streptomycin 53 grms. PAS 700 mg. INH 417, I.V. PAS dips 25. Deltacortil 35 tabs.	Temperature responded at once. Cough controlled.	1008	A.F.B. not seen. Still under treatment.
Streptomycin 36 grms. Ambis-tine 14 vials. PAS 175. INH 400 mg.	Cough persistent	No cough	444	A.F.B. not seen. Still taking Phytebin.
Treated with Streptomycin, PAS, INH, KP-P Phrenic crushing	Weakness, persistent cough	No cough; gained in weight.	324	A.F.B. not seen. Still taking Phytebin.
—	Persistent cough, foul, thick, pus-like sputum	No cough, sputum normal. X-ray revealed reduced area of abscess.	440	A.F.B. not seen. Sent for surgical treatment
Had Streptomycin, PAS, INH, Viomycin	Very weak, very irregular temperature, wheezing in the lungs.	Tolerated in spite of weakness. Wheezing better, temperature controlled.	124	Discharged in the middle of treatment.
Streptomycin 40 grms. INH 400 mg.	Streptomycin 81 grms. INH 429, PAS 812, I.V. PAS 15, Deltacortil 105 tablets.	Temperature and cough controlled.	432	A.F.B. present. Still under Phytebin.
Had Streptomycin, PAS & INH	Persistent temperature.	Temperature controlled and keeping normal.	40	A.F.B. not seen. Still under Phytebin.

CASE 4:—A man aged about 30 years with bilateral pulmonary tuberculosis with cavities was admitted with relapse. He had previously taken 36 g. of streptomycin and 14 vials of Ambistin. I.N.H. 400 mg. and P.A.S. 175 mg. He had a relapse and he was put on Phytebin 3 tablets a day for six days, then 6 tablets a day for 28 days and then he was given 8 tablets a day with Isonex 6 tablets a day. After he had taken about 444 tablets of Phytebin and Isonex 324 with pneumo-peritoneum, he had no temperature, nor cough and is recovering.

CASE 5:—A man, aged, about 35, was admitted for bilateral pulmonary tuberculosis with cavities which opened up as a result of a relapse. Six months back he had a full course of streptomycin, P.A.S. and I.N.H. with pneumo-peritoneum and phrenic crushing. He was put on Phytebin, 4 tablets first and increased after 4 days to 8 tablets a day. The temperature was controlled and his cough is better. The lungs started clearing with a shrinkage of the cavities. He has taken a total of 324 tablets of Phytebin and is continuing it without any toxic effects.

CASE 6:—A man, aged 40 years, suffering from abscess of the lower lobe of the left lung was admitted with temperature on the 1st of March. Phytebin, 8 tablets a day was given in addition to strepto-penicillin. The temperature and cough were controlled, the thick pus-like sputum became thin and clear. He then took 440 tablets in all. X-ray picture revealed that the extent of the affected lung had been reduced. He was then sent for surgical treatment.

CASE 7:—A man, aged 32 years, had pulmonary tuberculosis of about 15 years' duration with the left lung completely gone and more than half of the right lung affected. He was addicted to morphia and other narcotic drugs with the result that he had become very weak. He was admitted in that condition and Phytebin was tried on him, 4 tablets a day for five days and then increased to eight. He took it for 25 days without any toxic effects. He had to be discharged because he insisted on having morphia.

CASE 8:—A woman, aged 40 years, was admitted with bilateral pulmonary tuberculosis with multiple cavities. She had before admission 40 g. of streptomycin, I.N.H. 400 mg. She had a further course after admission of 81 g. of streptomycin I.N.H. 429 mg., P.A.S. 812 mg., Deltacortil 110 tablets and pneumo-peritoneum. The temperature, though not high, was rising irregularly with persistent cough. She was given Phytebin; the temperature remains normal without fluctuation. Cough subsided and sputum is less. She has so far taken 432 tablets and is still taking it.

CASE 9:—A girl, aged 19 years, suffering from bilateral pulmonary tuberculosis had persistent temperature in spite of treatment. A.F.B. was not found in sputum. S.R. 38 to 60. She had a course of 46 g. streptomycin, P.A.S. 500 mg., and Isonex 300 mg. She was put on Phytebin and the temperature came down immediately and is keeping normal. She is still having Phytebin.

Conclusion.—This drug may be safely tried without any toxic effects even in very weak people with pulmonary tuberculosis. It has been found useful particularly in cases where streptomycin, P.A.S. or Isonex is not tolerated by the patients, and also when toxæmia has to be countered. It appears to be a safe drug for prolonged use in treatment. All the nine cases reported in this paper are still under treatment with Phytebin without any neurotoxic effects.

MIGRAINE

Migraine may be viewed narrowly as an episodic headache with features suggesting a vascular origin, or as a syndrome with more widespread bodily disturbances. What initiates either the vascular change in cranial arteries or the visceral dysfunction? Careful clinical studies can still be useful here; and Selby and Lance in *J. Neurosurg. Psychiat.*, 23: 1960, have reviewed five hundred cases confirming many previous observations, some of which are well known.

In almost a quarter of their cases, the symptoms started before the age of 10 years. In 15% there was a family history of epilepsy, and in 38% one of allergy. 67% regarded emotional upsets as a clear precipitating factor; 18% had clouding or complete loss of consciousness during attacks. Such disturbances of consciousness, which usually are not apparently epileptic, may occur only for a limited time—perhaps during adolescence or at the menopause. In treatment the value of ergotamine tartrate was confirmed. Histamine as an intravenous infusion (not administered for slow graded "desensitization") also proved valuable, though Selby and Lance wonder whether this acted primarily on soma or on psyche.

In considering the migraine syndrome we may be misled by too exclusive attention to the headache. Gastrointestinal disturbances and peripheral vasomotor symptoms occur; and abnormalities of fluid balance are not uncommon. These may be secondary to disturbances of neural control; but possibly the imbalance, the electrolyte changes which accompany it, or some associated endocrine abnormality plays a primary part in the attack.—(*The Lancet*, April 30, 1960).

DILATATION AND CURETTAGE

Dr. B.P. Bhattharya of the George-town Hospital, British Guiana writes: "Quite a fair number of dilatations and curettages are performed in every gynæcological unit, some of which could be argued to be not only unnecessary but injurious. I can recall at least two young women with rupture of the internal os uteri following dilatation and curettage with tearing the main uterine vessels, with severe, persistent, and intractable hæmorrhage necessitating hysterectomy in the end. In British Guiana, "D and C" to the average working-class women of low literacy is known as "cleaning out," the necessity of which is felt by them from time to time. Naturally the incidence of pelvic inflammatory diseases is fantastically high."—(*B.M.J.*, 26-3-1960).

A NEW TREATMENT FOR VAGINITIS

The incidence of abnormal vaginal discharge caused by vaginitis is increasing. The treatment of vaginal discharge is far from satisfactory. Particularly does this apply to trichomoniasis.

Further, *trichomonas vaginalis* can be transmitted by coitus. The frequency of trichomoniasis in prostatitis has long been known and is often associated with venereal diseases. This wide distribution of foci of infection probably explains the reason for the unsatisfactory results with existing preparations. For candidiasis it would appear that nystatin is generally accepted and has solved the problem effectively.

In an endeavour to find a better local treatment for trichomoniasis, interest in a new hexahydropyridine compound was stimulated by work carried out by Feldman (1957). In this trial 68 patients were treated and 60 were trichomonad-free after three weeks' treatment. On this evidence the preparation was thought worthy of further investigation. The active principles of this substance is one of a series of hexahydropyridine compounds and is marketed as 'Sterisil vaginal gel' (hexetidine, 0.1 per cent). The makers claim that the gel is non-toxic, stable, odourless and non-staining.

Scope of investigation:—In all, 71 patients were included in this assessment: 32 suffered from trichomoniasis; 13 suffered from candidiasis; 25 suffered from non-specific infections, showing grade III vaginal flora in the discharge; and 1 suffered from *haemophilus vaginalis* infection.

All showed clinical evidence of vaginitis and had symptoms of vaginal discharge, pruritus vulvæ and/or dyspareunia. A practical demonstration of the technique of applying vaginal medication was given either in the ward or in the out-patient department. Patients were advised against marital relationship until cessation of treatment. It was impressed upon them that they must continue the medication for eighteen to twenty-one days—through a menstrual period, if necessary.

Smears were taken in each case before treatment, to confirm the clinical diagnosis, and the assessment of results was based on subjective and objective improvement and on vaginal smears taken at the end of treatment and again one month later.

Of the 71 patients, there were satisfactory results in 48 (67.6 per cent), improvement in 13, failure in six, reactions in three, and in one case the patient was unable to apply the medication herself.

Although the trial was carried out on only 71 patients, the results were distinctly encouraging, particularly so in the treatment of non-specific infections. It would appear that 'Sterisil vaginal gel' provides a step forward in the treatment of vaginitis.—(*The Practitioner*, 184: May 1960).

A DIAGNOSTIC SIGN IN PEMPHIGUS

A spreading of blisters can be artificially induced by slight to moderate external finger pressure in pemphigus vulgaris (acutus), pemphigus foliaceus, pemphigus vegetans and bullous pemphigoid (pemphigus vulgaris chronicus). The sign is characteristic, although possibly not absolutely specific, of the pemphigus group of diseases.

It reflects a reduction of loss of intercellular bridges between epidermal cells or a dermal-epidermal lysis. In the new area of the expanded blister, the microscopic picture of a spontaneous fresh blister is reproduced.

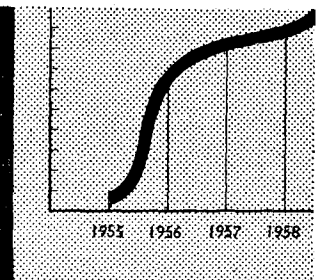
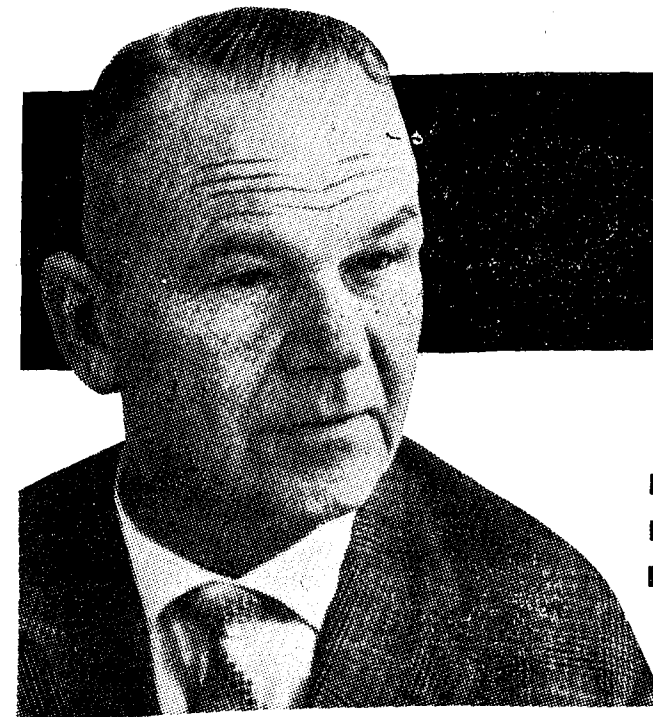
The blister spread sign is of diagnostic value to the clinician as well as to the histopathologist.—(*Jour. Investigative Dermatology*, 34: 5, 1960, via *Current Medical Digest*, April 1960).

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SEX CHROMATIN—ITS IMPORTANCE IN CLINICAL MEDICINE AND RESEARCH*

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SEX determination is a fascinating problem, which has stimulated extensive medical writing. It is necessary to realize that the very definition of 'sex' is difficult. The Oxford Dictionary defines the 'male' as the one who begets and the 'female' as the one who bears children. This obviously has a limited application, for amongst other things, a distinction between the sexes in childhood would be impossible. The simple social separation of human beings into two definite categories, male and female, is based mainly on the external sex organs and secondary sex characters. But sometimes genitalia are not properly developed and moreover secondary sex characters are influenced by hormones. The malformation of the genitalia is a source of considerable social embarrassment to the unfortunate individual. It is believed that no less than 1 in 1,000 persons is affected by intersex. The suggestion, that the sex of an individual should be decided by the gonads present, is also incomplete and difficulty arises with individuals apparently of male or female phenotype, that is, as regards body configuration, external genitals and psychological outlook, but who nevertheless have gonads of the opposite sex.

Since the demonstration of XY male and XX female chromosome structure, it seems agreed that sex is genetically determined and therefore scientifically, the sex of an individual should be based upon the genotype. This information can be obtained by studying the chromosomes of spermatocytes, but testicular tissue is necessary. Besides, the technique is very difficult and results are hard to interpret. The tissue-culture method, which has been recently developed is more practical, but requires facilities of a tissue culture laboratory and considerable experience in chromosome study.

Barr and his associates first demonstrated sexual differences in the morphology of intermitotic nuclei in the nerve cells of the female cat, characterized by a conspicuous mass of chromatin, which from its intimate relationship to the nucleolar membrane, was termed "nucleolar satellite" and later known as "sex chromatin." Barr's findings have been amply confirmed by a considerable number of workers and a volume of literature is now accumulating. Further studies have shown that sex chromatin can be demonstrated not only in various tissues of the cat, but also in the normal cells of other species, including man (epidermal cells, nerve cells, mucosa, adrenal cortex, cartilage etc.). There

*Specially contributed to the ANTISEPTIC.

is a good deal of species variations (See Table 1, below). In rodents and the rabbit, the nucleus contains several chromatin

TABLE I
Giving information on species variations
from various sources

Species	Sexable
Cat Man Rhesus monkey	All tissues with suitable nuclei sexable.
Dog Mink Marten Ferret Raccoon Skunk Goat Deer	Nerve cells sexable. No data on other tissues.
Rat Mouse Hamster Ground hog Rabbit	Nerve cells not sexable. No data on other tissues (but probably not sexable also).
Cattle	Nerve cells sexable. Other tissues not sexable.
Pigeon	Nerve cells not sexable.

or other stains like Giemsa and Papanicolaou. The characteristic material of the sex chromatin is Feulgen positive,

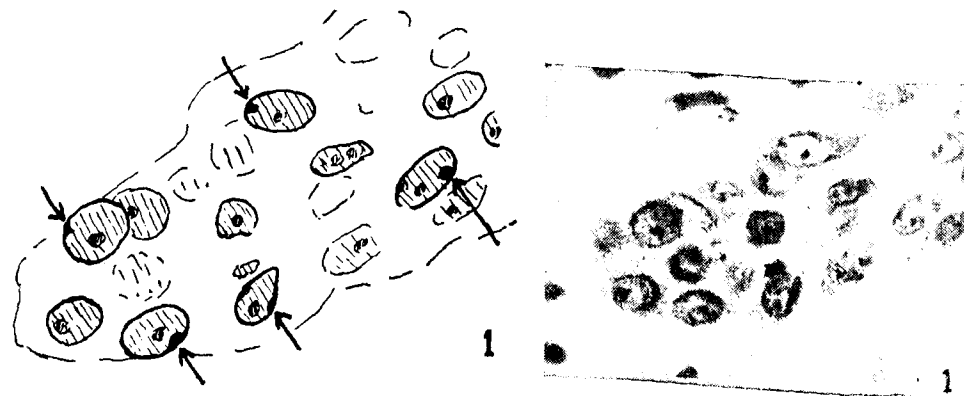


FIG. 1.
Typical sex chromatin nodule in the scraping from oral mucosa of an adult woman. H. and E. stain x 1,200.

indicating the presence of deoxyribonucleic acid (DNA) and is probably a chromosomal derivative. It is present in about 75%

masses in both sexes obscuring the sex chromatin. It is particularly unfortunate that all these common experimental animals should be inaccessible to this method. The cells of the pathological proliferations (inflammation, hyperplasia, metaplasia) retain the sex of the host. Placental tissues of course, share the sex of the foetus, rather than the host.

The sex chromatin is a sharply defined triangular, planoconvex body, usually lying against the nuclear membrane and is about 1μ in diameter. Its size, shape and position usually distinguish it readily from other particulate chromatin material, as well as the nucleolus (See Fig. 1, below). It stains deeply with basic dyes (such as hæmatoxylin, cresyl violet)

of female cells. In the male, a similar or rather smaller chromatin nodule may be found under 10% of the nuclei. The sex chromatin is identifiable at a stage of embryological life, before the differentiation of the gonads has occurred. It is a stable component of the nucleus, whose morphology is totally uninfluenced by age, endogenous or exogenous hormonal effect and cannot be altered by orchietomy or oophorectomy. This point is of considerable practical importance, since the morphology of the nucleus has been proposed as a test of chromosomal sex in hermaphroditism in man. It is thought that this distinctive chromatin mass results from the fusion of heterochromatic portions of two X chromosomes, that is, regions of the chromosomes which remain compact in the resting nucleus. The relatively small size of the Y chromosomes of the male nuclei is probably responsible in part for the failure of the XY combination to produce a chromatin body of comparable size. Thus the sex chromatin is a reliable indicator of chromosomal sex, regardless of the direction of sex differentiation.

Methods.—Various techniques for diagnosing chromosomal sex are now available. The technique adopted will depend upon the preference of the particular worker. All the methods are reliable, but each requires technically good material and some experience in the interpretation of the slides.

I. Histological.—*Skin biopsy*.—This method was developed first and is probably still the best. This however necessitates an operation. It is not used frequently now, because simpler methods are available, which cause no discomfort to the patient.

The site of biopsy is immaterial. Thick skin, preferably with many sebaceous glands, from the extensor surface is favourable. Gingival biopsy may be counted upon simply as a convenient variant of skin biopsy with good results. Prompt fixation is essential and ordinary formol-saline is often adequate. Paraffin sections are cut at $5-7\mu$ and any good nuclear stain will do. A good hæmatoxylin and eosin is often perfectly adequate. Most brilliant results are obtained with Feulgen reaction or Periodic-Acid-Schiff reaction (PAS).

II. Cytological.—(1) *Mucosal scraping method*.—This method has the advantage over the skin biopsy of simplicity. This test is easy to perform, causing no discomfort to the patient, can be repeated as often as necessary and is relatively easy to interpret. It is as reliable as the skin biopsy.

Scrapings are obtained from the inside of the cheek with a wooden tongue depressor, or a metal spatula. A good deal of pressure is needed to get a reasonable number of cells. The material is smeared on a clean glass slide, which is then immersed immediately into a solution of 95% alcohol and ether (equal

parts); it remains in the fixative for 30 minutes or more and is then stained with Cresyl violet, Feulgen stain or Giemsa's. All are used and satisfying. The cells are examined under oil-immersion for the presence or absence of sex chromatin. Within an hour or less from the time the smear is taken a diagnosis of chromosomal sex can be made. This is specially desirable in cases of doubtful sex, which present at the operating table or at the outpatient clinic. 200 or more nuclei should be counted. If 40 to 60% of cells contain sex-chromatin, the cells are described as chromatin-positive. If no sex chromatin is found after examination of at least 100 cells, the cells are chromatin negative. Organisms in the smear can be numerous enough to cause difficulty and a thorough mouth-wash before making the smear may help. Smears of the vaginal or cervical mucosa may be used, when the case comes first to the gynaecologist. But cervical smears are often unsatisfactory due to the presence of numerous bacteria and a large quantity of mucus.

(2) *Polymorph method*:—The technique of hæmatological sex-differentiation was worked out by Davidson and Smith (1954), who first reported on sex-specific differences in the nuclei of polymorphonuclear (segmented) neutrophils in man. Neutrophils of female blood possess a fairly distinct lobule, called "nuclear appendage" or "drumstick satellite," whereas neutrophils of males do not have such a characteristic lobule. The lobule is a drumstick-like mass, with a solid spherical head of about 1.5μ in diameter, attached to the rest of the nucleus by a filamentous neck (See Fig. 2, below). The characteristic drumsticks are a feature of the mature neutrophil, and are rarely found

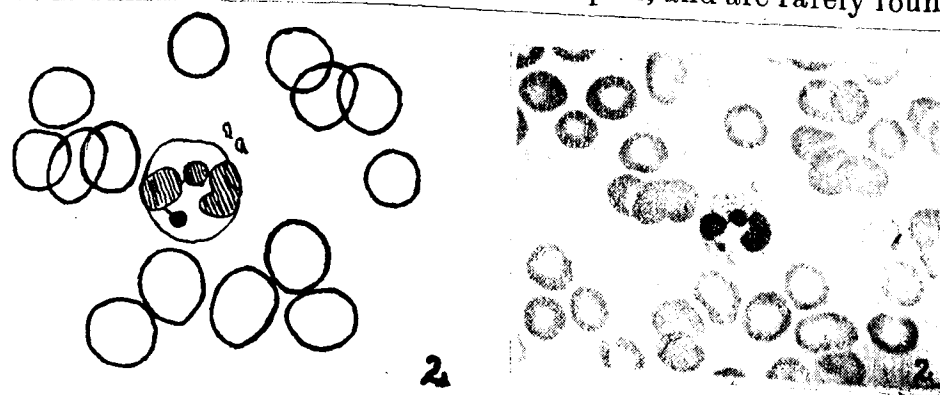


FIG. 2. Typical drumstick nuclear appendage in neutrophil granulocyte from a female blood smear. Giemsa stain $\times 1,200$.

in the unsegmented forms. They are therefore, scarce where there is a shift to the left. Age has no influence and drumsticks have been demonstrated from birth to 84 years. In addition to the neutrophils, the eosinophils are relatively easy to sex.

Similar morphological sex difference is also present in leucocytes in rabbits,—a species, in which the nuclear sexing of Barr is inapplicable.

It is assumed that this "drumstick like body" is analogous to Barr's sex chromatin, which has become pinched off in a drumstick form and thus analogous to the XX chromosome complex. The finding of discrepancy between the nuclear sex and polymorph sex, together with the cytological demonstration in the leucocytes of typical sex chromatin masses, distinct from this nuclear satellite, indicates that the leucocyte morphology cannot be accepted as a valid criterion for the diagnosis of genetic sex and that the satellite body of the polymorph should be regarded as a 'sex characteristic' rather than as the expression of the 'XX chromosome complex.'

This method is simple, rapid, requires no surgical manipulation and special equipment or technical assistance for processing and staining histologic sections are unnecessary.

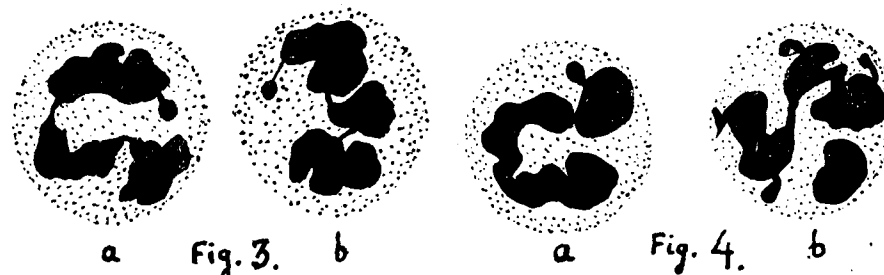


FIG. 3. Drumstick or hanging drop form of nuclear appendage in neutrophil granulocyte (a and b);—highly characteristic of female sex.

FIG. 4. Sessile nodule (a) and tag (b) form of nuclear appendage. These nodules are attached to the nucleus with a broad base;—quite diagnostic of female sex.

The blood films must be of good quality to avoid errors and should contain sufficient neutrophils. The examination can be facilitated by taking venous blood and making coverslip films from the leucocyte cream. They may be stained with Giemsa or Leishman. About 500 mature leucocytes should be counted. In the female, more than 6 and in the male less than 6 such drumstick bodies are found.

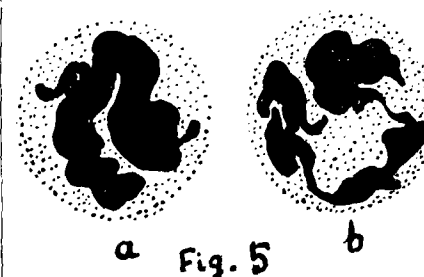


FIG. 5. Intermediate form (a) and rod, hook and thread form (b) of nuclear appendages. Several such appendages may be found in one cell. This type is seen in both sexes and more common in the male.

The difficulty is entirely in the distinction of the characteristic drumstick from other projections from the nucleus, which occur

in both males and females, the most important are:—(See *Figs. 3, 4, 5*, p. 703).

(a) Small clubs, which are less than $1\ \mu$ in diameter.

(b) "Rackets" which have a clear central area.

(c) Nuclear segments, which may be small enough to be mistaken for drumsticks but which being parts of a chain, have 2 filamentous stalks. Bad preparations and gross neutrophil 'shifts to the left' make sexing impossible, but apart from this there has been no difficulty in any disease or disorder, including leukæmia.

In reporting the results, it is preferable to call the finding of typical sex chromatin or drumstick body as in normal female, "chromatin positive" and the lack of these "chromatin negative." They should not be referred to as "female" cells, because the smears may have been taken from a phenotypic male patient, who would be unduly disturbed if he should have such a reference to his cells.

The various methods of sexing individuals from the nuclear structure must be regarded as complementary and the particular one chosen, should depend upon the experience of the investigator. We have found the oral mucosa method much easier and satisfactory. Probably it is wise to use 2 separate methods in the investigation of any difficult case. The epithelial cell method (nuclear sex) by any method described and the leucocyte method (polymorph sex) have been compared and in almost all cases have been shown to agree. But during the past 2 years many workers have reported discrepant results in the diagnosis of genetic sex by these 2 methods. Under these circumstances, particularly when discrepancy occurs, more reliance should be placed on the nuclear sexing method of Barr.

Practical applications.—1. *Congenital errors of sex-development*:—Nuclear sexing has proved to be of considerable practical value in the investigation of disorders of human sexual development and differential diagnosis of intersexes. The simplicity of the tests had led to its widespread use in clinical medicine.

Basically sex depends on the arrangement of the chromosomes. The combination of genes at the time of fertilization produces a cell which possesses all the potentialities essential to the development of a complete individual. Sex is the production of sex-determination, sex-differentiation and sex-development. Even at the time of fertilization, the genetic sex is determined. If this is XY, testes and masculine genitalia, develop, if XX, ovaries and female genitalia and this can be distinguished by the presence of sex chromatin in the nuclei. Variations may occur in any or all three of these phases and depend on environmental, genetic and endocrine factors and it is possible

to find examples of all gradations of sex from a typical male to a typical female. If these act soon after the gonad has formed, they can interfere with the development of the gonads with the result that (a) both ovarian and testicular tissues develop, (b) there is testicular tissue where there should be ovary or *vice versa*, (c) gonadal tissue is absent. Whatever modification may occur during development, the chromosomal pattern is retained and may be accepted as the indicator of the real sex. Usually we do not know the cause of the abnormality and it is no longer active. Sometimes we know the cause and the problem is how it may be corrected to allow the patient to assume the proper sex.

The Klebs classification of hermaphroditism, which is based primarily on the nature of the gonads, is used for the clinical diagnosis. True hermaphrodites have both ovarian and testicular tissues, but the anatomy of the genitalia and secondary sex characters may vary from one patient to another. In female pseudo-hermaphrodites, the gonads are ovaries and in male pseudo-hermaphrodites, the gonads are testes. The great majority of female pseudo-hermaphrodites result from hyperplasia of the foetal adrenal cortex. Postnatal assumption of androgenic hyperactivity by the female adrenals, whether from hyperplasia or tumour, produces what is clearly virilization of a normally developed female. They are thus examples of congenital adeno-genital syndromes and not hermaphrodites at all. The male pseudo-hermaphrodites form a heterogeneous group anatomically, varying from subjects with defects as hypospadias and cleft scrotum as the sole abnormality.

There are thus three major categories of intersex, which can be recognized:—(a) Female pseudo-hermaphrodites, with congenital adrenal hyperplasia (adrenogenital syndrome); (b) male pseudo-hermaphrodites, and (c) others, including true hermaphrodites, female pseudo-hermaphrodites and gonadal agencies.

The practical value of nuclear sexing lies in the differential diagnosis between the two most common types of hermaphroditism;—the congenital adrenogenital syndrome and the male pseudo-hermaphroditism, when such clinical tests as the output of 17-ketosteroids and skeletal age are equivocal. Considerable difficulties may exist in differentiating between a hypertrophied clitoris with rugose labia majora and a hypospadiac penis with bifid empty scrotum. The chromosomal tests should eliminate the need of an exploratory laparotomy and obviate the removal of gonadal tissue for a histological confirmation to establish the nature of the gonads. In all these cases of female pseudo-hermaphrodites with congenital adrenal hyperplasia, the gonads are ovaries and the nuclei are chromatin positive. Prior to the introduction of the various clinical tests and cortisone therapy,

many of these patients were raised as boys and underwent progressive masculinization. It is now more important than ever to recognize the adrenogenital patients early, since they are benefited by cortisone. Diagnosis at the earliest possible stage is therefore vital and in this nuclear sexing can play a decisive role. Following reconstructive surgery of the external genitalia and hormone therapy, these patients can function as females.

Male and female pseudo-hermaphrodites and true hermaphrodites, all present much the same problem. Although in these cases there is no known specific treatment, nuclear sexing has its place; *firstly*, to enable us to exclude the adrenal cases, and *secondly*, it may enable one to decide which sex the patient is to assume. With all the information available, the decision regarding the correct sex-group into which to put an intersex, is then made with care and consideration.

If the abnormality is discovered in subjects more than 3 years old, the nuclear sex is perhaps the last consideration, which should influence one in this decision. In these individuals, the social sex and psychological pattern are likely to be too well established by the external genitalia and upbringing, to be disturbed. More emphasis should be placed on the sex in which the subject has been raised than on the anatomy of the genitalia, or results of chromosomal sex tests or hormonal status. The aim of treatment is to enable the patient to live happily in the designated sex. Surgical or hormonal therapy necessary to maintain the individual in the sex of upbringing, causes less upset than an attempt at alteration. But in the newborn, the case is different. Having made the decision as to the true genetic sex, the question of remoulding of the external genitalia to aid the patient in fitting into the chosen sex may be considered. This decision is almost a matter of surgical convenience. When the external genitalia are such that either sex could be assumed, the genetic sex provides a useful casting role. Even then one should not be unduly influenced by the results of the chromosomal tests. In all instances the anatomy of the chromosomal and the ability to reconstruct the functional organs are more important. If the external genitalia cannot be surgically reconstructed to conform to the chromosomal sex, then the infant should be raised as the opposite sex and measures should be taken to insure hormonal and anatomical congruity with the assigned sex.

Gonadal agenesis:—This disorder, though it might be included as one of the intersexes, has until recently been regarded as wholly a distinct condition. Chromosomal sex study on these patients have contributed greatly to the understanding of the embryogenesis of these conditions. Turner's Syndrome (Ovarian agenesis)

is characterized by female bodily habitus, sexual infantilism, dwarfism, atropic gonads, webbed neck, cubitus valgus, occasionally in some cases coarctation of the aorta and is associated with raised follicle-stimulating hormone (FSH). It is now explained as examples of primary ovarian failure in the presence of a normal pituitary gland. The majority of these cases are chromatin-negative and are thus chromosomal males. Apparently functional testes are necessary to counteract this inherent tendency of the foetus to feminize. It must also be noted that the finding of chromatin positive nuclei does not exclude the diagnosis of gonadal dysgenesis, for about 20% of these patients are chromosomal females.

Nuclear sexing is perhaps more useful in helping to separate the more basic "genetico-sexual" upsets from those of a purely psychological nature, such as transvestism and thereby ensuring that the sufferer is offered the appropriate form of treatment. Chromosomal sex tests of transvestites and homosexuals have confirmed the opinion held by most investigators that chromosomal sex in these subjects corresponds to the apparent anatomical sex. In transvestism, we are up against the physical and psychological problem of intersex. At present the transvestites are not entitled to be made the sex they wish and both ethically and legally the problem is difficult.

TABLE
Showing the results of Sex-chromatin test in intersexes

Clinical condition	Results of nuclear sexing	Diagnosis
Female pseudo-hermaphrodites with congenital adrenogenital syndrome	Chromatin positive	Female
Male pseudo-hermaphrodite	Chromatin negative	Male
Turner's syndrome	Chromatin negative	Male
Klinefelter's syndrome	Chromatin positive	Female

Nuclear sex in tumours.—The technique of nuclear sexing has been applied to the study of human tumours. It has been found that sex chromatin is recognizable in tumour cells in much the same way as in the normal tissues of the host and tumours in general, both benign and malignant, retain the sex characteristics of the host (Moore, 1955, Moore and Barr, 1955). The nuclear irregularities of the malignant cells, due to differentiation, often make it difficult to recognize the sex chromatin with certainty. In malignant tumours the sex chromatin is relatively lower than in benign tumours. There appears to be an inverse relation between the grade of malignancy and the

incidence of sex chromatin. There is no obvious relation between the size of the sex chromatin and the grade of malignancy.

Weinman *et al* (1955) alone report anomalous findings. In a number of surgical specimens of resected rodent ulcers from males, they found areas of epidermis lying over, or near the tumour, in which sex chromatin could be recognized in a substantial percentage of cells. In the tumour themselves, they appear to have found sex chromatin in upto 50% of cells in some areas. But they suggested that this sex chromatin-like particle in the nuclei of epidermal structures of male patients does not represent a sex reversal, but is due to an alteration in the chromatin, associated with the development of basal cell carcinomas. But subsequent workers (Ashley, 1958) did not support this observation and found that in every case the "sex" of the tumour, of the skin and of the whole patient, were identical and no peculiarity in the basal cells, or in the tumours were seen.

The finding of typical female nuclei in an arrhenoblastoma of the ovary discounts the histogenetic hypothesis advanced by Schillar that these tumours are generally derived from a cell, which has lost an X chromosome during a mitotic division, thus acquiring the potentiality of producing tissue along male structural lines.

The principal exception is the teratomata, which is always of female sex (chromatin-positive) if the host is female (ovarian teratoma), but may be male (chromatin-negative) or female (chromatin positive), if the host is male (testicular, mediastinal and pineal teratomas). This discrepancy, that is presence of female type of nuclei in teratoma in the male, reopens the problems of the histogenesis of this type of tumour. The fact that no chromatin negative tumours have been found in the female, seems to exclude the theory of their representing an "included twin." Assuming that the chromatin positive (female) cells are in fact normal XX pattern, there may be 2 reasonably plausible hypothesis in explanation of this anomaly. These depend on the fact that the female, who has only one type of sex chromosome (XX), produces only one type of teratoma, the male, who is heterozygous, with both the X and Y chromosomes available, has the potentiality of giving rise to both female (XX) and male (XY) cells.

(a) *Self fertilization hypothesis*:—The tumour arises by self-fertilization (conjugation) of 2 haploid germ cells. In the female the 2 haploid cells could only give rise to an XX zygote. In the male, combination of X with X, X with Y or Y with Y might occur. This hypothesis has the great advantage that the fertilization might be regarded as itself a stimulus to growth.

(b) *Parthenogenesis of haploid cells*:—The tumour arises by parthenogenesis of haploid germ cells, followed by endo-

mitosis to restore the diploid chromosome numbers. An XY cell divides to form a haploid pair X and Y; this is followed by chromosomal reduplication to give diploid cells, which would be either a female XX, or male XY.

Other unconfirmed reports mention a relatively high incidence of sex chromatin-like masses in some prostatic tumours. Cancer of the female breast, unlike other cancers in women, may show sex chromatin counts different from those of normal females and 2/3 are found to be chromatin-positive (female) and 1/3 chromatin-negative (male). It would appear that tumours with high sex chromatin counts are clinically oestrogen-dependent, while those with low sex chromatin counts are not. This may explain the occasional failure of treatment of these tumours with the opposite sex hormones, while treatment with hormones of the same sex as the patient, brings improvement in these tumours (Hienz and Ehlers, 1957). The high count tumours (oestrogen-dependent) are more likely to metastasize than low count tumours (Kimel, 1957).

Fertility.—By studying the nuclear morphology of the somatic cells, the fertility of an individual can also be assessed. No fertile individual has been found with sex reversal, so that by proper interpretation of these tests, it is possible to give an accurate prognosis regarding the reproductive potentiality of that individual. If a male shows the female chromatin pattern, or a female the male chromatin pattern, the reproductive potential of such individuals is very poor. Similarly this method is also useful in the study of primary amenorrhœa.

Fœtal sex-prediction.—For thousands of years people have had a desire to know the sex of an expected child and many attempts have been made for antenatal sex-determination by different approaches, but have failed to receive sufficient confirmation for general acceptance. The more scientific methods have been based on the fœtal heart rates, X-ray for fœtal scrotal shadow, the excretion of 17-ketosteroids in the urine, the changes in the saliva, or cytology of the vagina of the mother. None of them has stood the test of time.

A reliable prenatal diagnosis can be made from the study of the sex-chromatin in the nuclei of the exfoliated cells of the fœtus in the amniotic fluid sediment (See Fig. 6, p. 710). The diagnosis of sex is based on the determination of the percentage of cells: in the male, it is less than 5%, while in the female it is 30 to 50% of the nuclei counted.

Most workers have relied chiefly on the amniotic fluid obtained just prior to delivery. Aspiration of a small volume of amniotic fluid from a pregnant uterus can also be performed by abdominal or vaginal puncture of the membranes through the uterine wall. A diagnosis can be made from the third month and possibly earlier. Even a diagnosis has been made

on the cells in the fluid of an 8 weeks' old aborted embryo. The only possible source of error would be in the rare case of an intersex, whose appearance does not correspond to that of the expected sex-chromatin.

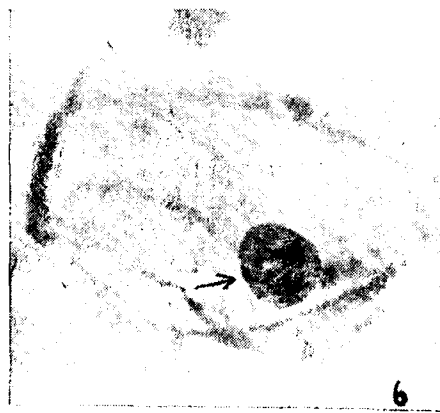


Fig. 6. A nucleus of a cell from amniotic fluid. Arrow points to the sex chromatin body along the nuclear membrane, suggesting female sex of the foetus. H. and E.X. 1500.

The possible sources of origin of these cells in the amniotic fluid include the skin, gastrointestinal, respiratory and genito-urinary tracts of the foetus, umbilical cord and amnion. Only 15% are found to be diagnosable cells. Three types of desquamated cells can be identified *viz.*, basal, precornified and cornified. The basal and precornified cells are the most suitable for sex-diagnosis and are derived principally from oral and vaginal mucosa. The cornified cells probably come from the skin surface and are unsexable. Care should be taken to avoid admixture of maternal cells.

For this test to have any practical value however, it is necessary for the liquor amnii to be obtained with perfect safety sometime before term. But up to now, no method of doing this other than by paracentesis uteri seems possible. Although this has been carried out often for therapeutic and experimental reasons without accidents, mere curiosity does not justify the procedure for widespread general use, because of the danger of inducing premature labour, or causing foetal injury. Thus its practical value is limited in the human at present. It is a subject, which may excite some popular interest and may have applications beyond the mere satisfaction of parental curiosity. However, it has clinical value in dealing with certain rare sex-linked and blood-group linked, hereditary disease. In such cases it is important to know the correct sex of the foetus in order to determine its chances of manifesting the disease, at a stage, when pregnancy can safely be interrupted.

It is also possible to determine accurately the sex of the child by the presence or absence of "sex-chromatin" in the nuclei of the cells of the supporting mesenchymal tissue in the placental villi. It has also been proved possible to sex chorionic villi recovered from abortions at all periods of pregnancy, using the mesenchymal cells in the villi. This study may contribute to the difficult problem of determining the sex-ratio in human abortions.

Medico-legal applications.—Studies on the persistence of sex chromatin in unfixed tissues show that the sex of small fragments of mutilated tissue, of material adhering to instruments or weapons, and of human hairs, can be determined with considerable accuracy. Sex chromatin is found to persist in tissues, *e.g.* cartilage, bone, tooth, skin, hair-root, some 2 to 3 months after death, depending on the environment in which the tissue has decomposed. The longest period is found in cartilage cells. It is possible to identify sex-chromatin with certainty in the body or tissues, which have been kept buried, or immersed in water, up to 4 weeks, from the nucleus in cartilage cells.

Determination of sex from blood adhering to the scalpel blades used for cutting tissues by examination of polymorphs, or from the epithelial cells which have been transferred to the blade from the skin, is possible even after the blade is kept in room air for a number of weeks. Sexing can also be done from the epithelial cells attached to the roots of hair removed from the scalp, which adhered to instruments or weapons. These might be usefully employed in medico-legal cases to aid, for example, in the identification of body mutilated beyond recognition, provided the post-mortem changes are not too advanced.

Another application of this method may be in the study of interactions and intermingling of tissues of 2 individuals. The survival of homograft in man, when the graft is made from one sex to another, might be studied in this way. The survival of transferred leucocytes is another possibility. This has already been found useful in assessing the survivability of bone-marrow homograft. Further, the second Barr's observation that the sex chromatin nodule enlarges during neurone degeneration, may provide information regarding nuclear activity and metabolism and particularly the formation of ribonucleic acid and proteins. Thus Barr's careful investigations are proving to be of great fundamental importance.

Summary.—The various methods of determining nuclear sex are discussed. They appear to be complementary and the method employed should depend upon the circumstances, preference and experience of the observer.

The bearing of the nuclear sexing upon the problem of intersex, its application to medico-legal cases, to the study of genesis of teratomatous tumours and in various other important clinical conditions so far recognised, are discussed.

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GENETIC STUDIES IN GASTRO-ENTEROLOGY: (DUODENAL ULCER)

A symposium on the genetic approach to the study of gastro-intestinal disease was held by the Gastro-enterology Research Group on March 31 in New Orleans under the chairmanship of Dr. Victor A. McKusick (Baltimore).

Dr. D. A. P. Evans (Liverpool) said that research on duodenal ulcer illustrated the way in which a genetic approach could contribute to the study of a common condition which seemed to be due to the interaction of hereditary and environmental influences.

Peptic ulcers had been shown to be twice as frequent among the living siblings of ulcer patients as in the general population. The relatives of duodenal-ulcer patients tended to have duodenal ulcers, whereas the relatives of gastric-ulcer patients tended to have gastric ulcers.

Specific genetic characters contributing to the inherited diathesis had recently been found. Series of duodenal-ulcer patients had more persons of blood-group O and more who were salivary ABH non-secretors, than did the control series. These associations may be either casual or due to "stratification" within the population. The latter explanation seemed unlikely because the group-O association had been found in many different countries where the basic blood-group distributions were different. An experimental approach—namely, to find whether the associations held within sibships—had given as yet rather inconclusive results because insufficient sibships had been collected. The results did not suggest that the associations were absent within sibships.

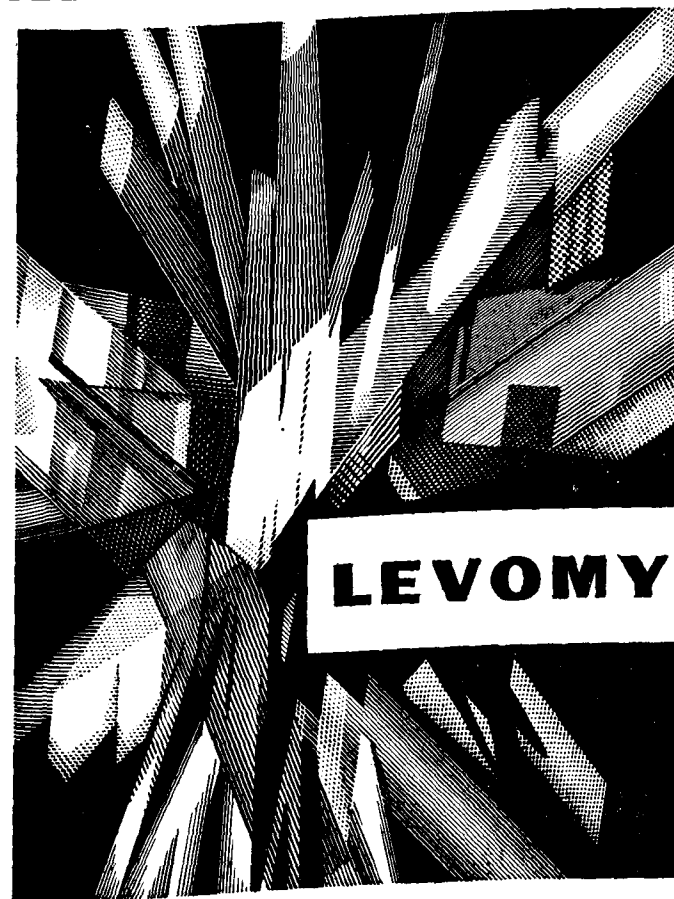
As these genetic characters may be casual, certain physiological information was reviewed. It was possible that healthy group-O persons tend to produce more hydrochloric acid in the stomach than persons of group A. It was found that stomal ulcer was even more closely associated with group O than duodenal ulcer. Available evidence suggested that quantitative factors in blood-group substance concentrations in body liquids were not responsible for the different susceptibilities of different phenotypes to duodenal ulcer.

From the biological point of view duodenal ulcer represented the selective effect of environment on a presumably balanced polymorphic system of eight phenotypes. By viewing ulcer in this way and studying the environmental influences acting on phenotypes of different susceptibilities, with and without ulcer, a clue may be obtained to the factors in the environment which cause duodenal ulcer.—(*The Lancet*, April 30, 1960).

HÆMOGLOBINURIA

True hæmoglobinuria is defined as the excretion by the kidney of extra-corporeal Hb after it has filtered through the glomerular membrane. It does not include any hæmaturic condition where the red cells have become hæmolyzed. The experimental production of hæmoglobinuria will occur only at plasma Hb levels above a critical level. Original theories wrongly postulated that tubular reabsorption in the kidney was responsible for the renal threshold observed.

Modern investigations show that as soon as free Hb appears in the plasma it is bound to an α_2 globulin, haptoglobin. When its maximal binding capacity is exceeded (128 ± 25 mg%), the remaining unbound Hb may filter through the glomerulus and be excreted. Proteinbound Hb does not filter through the glomerulus. Histochemical evidence for reabsorption of Hb by the proximal convoluted tubules exists, but such reabsorption is physiologically unimportant.—(*Mc. Gill Med. Jour.*, Feb. 1960).



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PERSISTENT LEFT SUPERIOR VENA CAVA*

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DURING routine dissections in the Department of Anatomy, M.G.M. Medical College, Indore, the following interesting anomalies of the left superior vena cava, and right vertebral artery were noted.

Introduction.—Persistence of the left superior vena cava is a congenital anomaly of considerable interest, but *per se*, exerts no apparent adverse effects on cardiac function. It may occur as an isolated lesion but more often it is associated with many congenital cardiac anomalies. Hitherto, it could only be discovered at autopsy or cadaver dissection, but angiocardiology and cardiac catheterization have made its recognition during life possible. The present case is worth recording because of its rarity and also because of its association with an anomalous origin of the right vertebral artery, especially when there is no correlation between the development of the two structures.

Left superior vena cava.—In the early developmental stages, the proximal or cephalic part of the embryo is drained by two veins which are symmetrically present on both sides. These veins are called right and left anterior cardinal veins.

The anterior cardinal veins are the primordia of the veins of the head, neck and thorax, the cranial extremities of which give rise to the sinuses of the duramater of the brain and the more proximal portions of the jugular trunks. The anterior cardinals drain the head and the cranial segments of the head, as long as the heart remains in its original position in relation to the pharynx. With the recession of the heart to its final position in the thorax, the anterior cardinals now, the internal jugulars elongate and gradually join the lateral cervical and subclavian veins, which previously emptied into the posterior cardinals.

The anterior cardinals join the posterior cardinals near the heart and the left and right ducts of cuvier are formed. These ducts of cuvier open into the sinus venosus. Somewhere about the 8th week of intra-uterine life, the right and left are joined together by an oblique communication, which becomes the left innominate vein.

Following this development of left innominate vein the anterior cardinal vein atrophies. It normally persists as the first left intercostal vein. The left duct of cuvier persists as the oblique vein of the left atrium which enters the sinus venosus. The right duct of cuvier becomes the superior vena cava.

*Specially contributed to the ANTISEPTIC

If the left innominate vein fails to develop, the left anterior cardinal vein persists and continues to drain the left bronchocephalic veins. In this case it becomes the left superior vena cava. As the left duct of cuvier discharges, its blood into the left half of the sinus venosus, which finally becomes the coronary sinus, a persistent left superior vena cava drains into this structure.

In the case under discussion the left innominate vein did not develop at all and the left superior vena cava was of good calibre.

Incidence.—The precise incidence is not known. It is uncertain whether the condition is more frequently found in association with other congenital cardio-vascular anomalies, whereas the early early post-mortem reports rarely mention associated malformations, most of the recent cases have been inadvertently found in patients being investigated for congenital heart diseases; *Papez* (1938), 1: 317-5; and *Sanders* (1946) 1: 350.

Classification I.—This anomaly may be classified according to whether associated congenital cardiac anomalies are present or not.

In the present case there *was* anomalous origin of the right vertebral artery which instead of arising from the subclavian artery arose from the arch of aorta.

This anomaly may be classified as follows (*After McManus*):—

A. Persistent left superior vena cava with right superior vena cava (Bilateral Superior Vena Cava).

(1) Persistent left superior vena cava connected to coronary sinus and either with a cross anastomosis, (left innominate vein), or without it; and (2) persistent superior vena cava draining the pulmonary vein.

B. Persistent superior vena cava without the right superior vena cava.

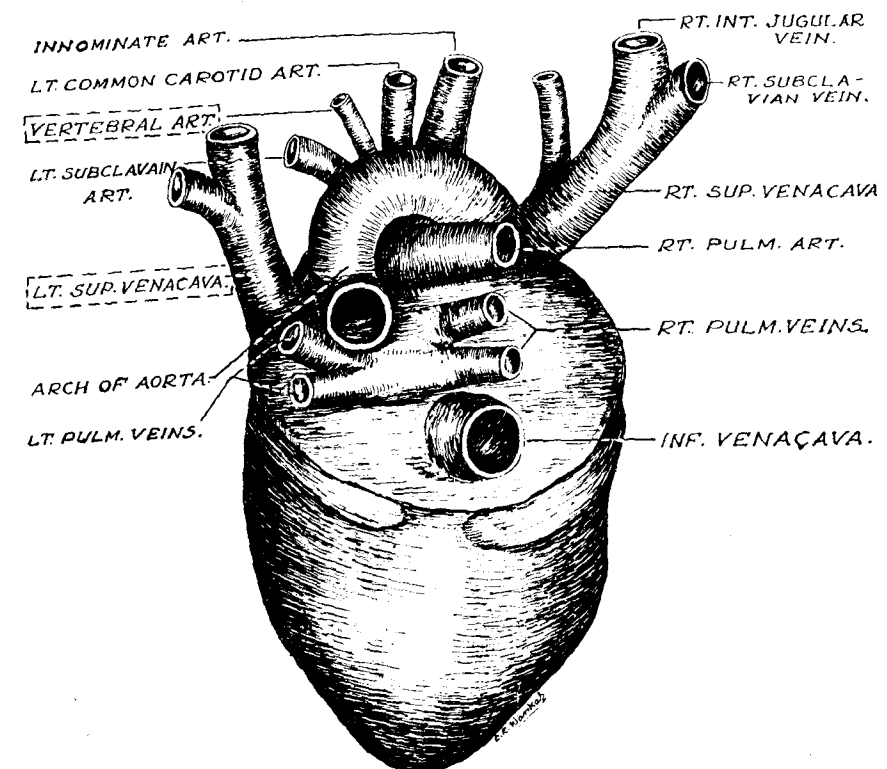
Classification II.—(1) Bilateral superior vena cava without other congenital cardiac anomalies; (2) bilateral superior vena cava with associated congenital cardiac anomalies and (3) absence of the right superior vena cava.

Several variations of the bilateral superior vena cava may be met with. The commonest variety will consist of a separate bilateral system with no other inter-communication. Another variation may consist of a rudimentary inter-communicating innominate vein.

In the third type, only a rudimentary left superior vena cava and most of the blood from the left side passes to the right superior vena cava, *via* a large innominate vein. There may be a double azygos vein along with double superior vena cava.

Besides the common type described previously, there is another possible type where the superior vena cava lies on the left side in association with the mirror-image dextrocardia and complete situs inversus. This is comparatively straightforward, or would be, if it was not so common for the heart to be transposed without the abdominal viscera or *vice versa*.

HEART-ANOMALIES OF BIG VESSELS



[POSTERO-INFERIOR VIEW]

— ANOMALIES LABELLED —

Comparative anatomy.—The principal blood drainage from the outer tube of the invertebrates is carried by important longitudinal vessels situated dorsally above the gut and mesenteries. In lower vertebrates these veins are the cardinal veins, while in the higher forms major modifications of these vessels produce the vena cava.

In the embryo of every vertebrate, paired veins appear at an early stage in the tissues above the coelomic cavity, one on either side of the midline. These are the primitive cardinal

veins. The posterior cardinals run along the trunk on either side of the dorsal aorta to a point in the body wall, dorsal to the heart.

Paired anterior cardinals begin as head veins on either side of the developing brain case and run back dorsally along the neck-region to meet their posterior mates. From this junction on either side a major vessel descends to enter the sinus venosus of the heart; that is the common cardinal (or duct of cuvier). This characteristic embryonic cardinal system is retained in almost diagrammatic form in the adults of *Elasmobranchs*.

In all classes of the vertebrates except the mammals the main stem of each anterior cardinal (or anterior vena cava) is the lateral head vein. This characteristically arises in the space behind the orbit, where it may be present as an expanded sinus, and receives vessels from various areas of the anterior part of the head. Travelling posteriorly along the side of the brain case and continuing backward, enter the common cardinals.

In lung fishes and tetrapods, the common cardinals are incorporated in the trunk of the anterior cardinals, including in their course, therefore the opening of the subclavian vein from the pectoral limbs. With the modification, the anterior cardinals come to resemble the vessels termed anterior vena cava in mammals and are frequently called by this name.

In mammals, there is an important change in the cranial circulation. A system of inter-communicating venous sinuses is set up within the expanded brain cavity. The lateral head veins appear and the blood from the deep vessels of the front part of the head enter the brain case to leave posteriorly, on either side, after collection of the venous blood from the brain as the internal jugular veins. As these travel posteriorly they are joined by vessels, the external jugulars, which gather blood from the more superficial parts of the head to form common jugular, joining the subclavian vein; the further course of these vessels to the heart is a trunk termed the anterior-vena cava. Such veins are easily recognizable as the old anterior cardinals and common cardinals except that intra-cranial channels supplant the lateral head veins which originally formed the most anterior part of the cardinal stems.

In many mammals including man, the terminal part of the system is further modified. In the embryo, a cross connection develops between 2 trunks, a short distance anterior to the heart, and the left common cardinal disappears. All the blood from the left cardinal then flows over to enter the heart through the right cardinal, so that in the adult only a single anterior (or superior) vena cava is present. The superior vena cava is normally seen bilaterally in reptiles.

DIAGNOSIS is made by (1) angio-cardiography from the left side; (2) and by cardiac catheterization from the left side.

DISCUSSION.—PRACTICAL SIGNIFICANCE OF LEFT SUPERIOR VENA CAVA:—Unlike many congenital cardiac lesions that defy understanding, the persistence of a left superior vena cava is a relatively simple developmental defect. But the occurrence of this anomaly along with the anomalous origin of the right vertebral artery cannot be explained by a common factor. Fortunately its occurrence produces no complication.

If the vein drains into the right atrium by way of the coronary sinus, as it usually does, there is no additional strain whatever on the heart, and there is no abnormal mixing of venous and arterial blood. However, if there is an additional cardiac anomaly, a left superior vena cava may occasionally obstruct the approach at the time of surgery. So in such cases it is advisable to know beforehand about the presence of the left superior vena cava and also if the right superior vena cava is also present or not, and whether both the superior vena cavae are connected to each other or not. If such a connection is present, then the left superior vena cava can easily be sacrificed.

(1) In some cases the left superior vena cava may open into the left atrium. This is quite an important abnormality, because it is a form of right to left shunt causing the mixing of pure and impure blood in the left atrium.

(2) The left superior vena cava is also important in catheterization of the heart.

SUMMARY.—A case presenting left superior vena cava with anomalous origin of the right vertebral artery is described. Its aetiology and significance are briefly dealt with and its practical significance discussed.

BIBLIOGRAPHY:

1. Campbell, A., Bing, R. J. (1950)—Brit. Heart J., 12: 65.
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CORTICOSTEROIDS IN DERMATOLOGY

Indications for systemic therapy:—There are three main groups of patients who may be considered suitable for systemic steroid therapy:—

(1) Those whose life, is, or may be, in danger: acute systemic lupus erythematosus, erythrodermia, pemphigus and pemphigoid, acute drug reactions of severe degree, the Stevens-Johnson type of erythema multiforme, and anaphylactoid purpura.

(2) Those with severe acute dermatoses expected to be of short duration: acute lichen planus, contact dermatitis, and drug reactions.

(3) Those with benign chronic disabling disorders: widespread eczema and exfoliative dermatitis, severe alopecia areata, psoriasis, cutaneous reticuloses, and sarcoidosis.

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The aphorism that 'skin diseases do not endanger life, but ruin it' is more often true of chronic eczema than anything else. If the decision is taken to use systemic steroids, it will mean moderately high initial dosage for a few weeks, and maintenance therapy over many months or several years, with steadily mounting risks of serious sequelae (Cronin and Wells, 1958; Nordin, 1960) the longer the treatment continues. Such a decision should only be made after a period of inpatient observation, and should only be carried out under the supervision of a specialist-hospital-department. None the less it is considered a justifiable risk in certain patients (Sneddon, 1960; Lamont, 1960). Even after such disasters, as a perforated peptic ulcer or pulmonary tuberculosis have been surmounted, both patient and physician may be extremely gratified by the results. Insufficient time, however, has yet elapsed for us to see the long-term effects of such therapy.

The optimal time to initiate steroid therapy varies with different diseases. In pemphigus it is wise to procrastinate as long as possible. The same is true of systemic lupus erythematosus, unless there is the slightest indication of renal involvement. With widespread eczema it is possible that early use of the drugs and suppression of the pathological state may make it easier for the skin to return to normal keratinization spontaneously.

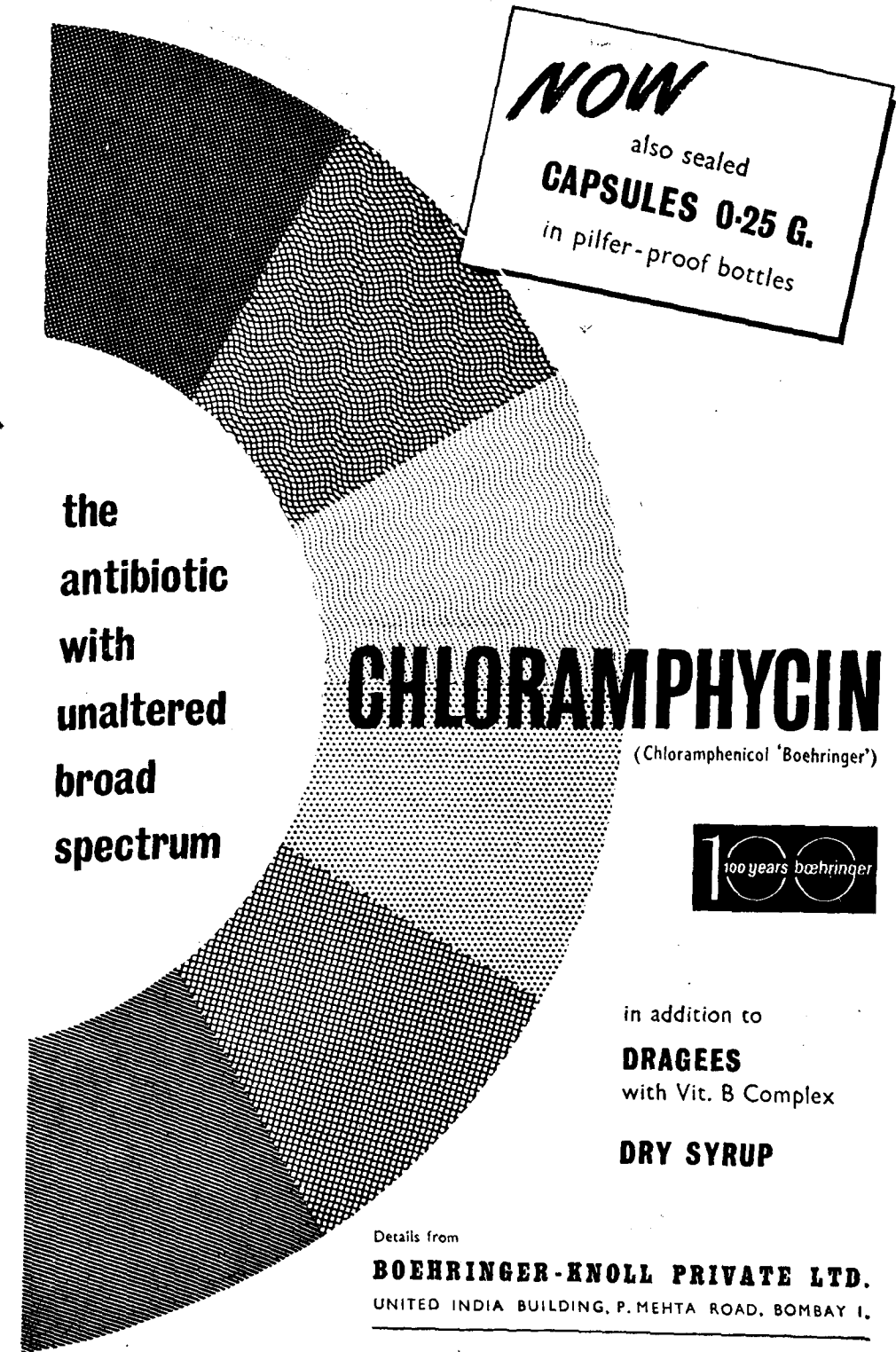
A word must be said about psoriasis. TRIAMCINOLONE is the only reliably effective steroid for this condition and the majority of patients will respond to it; but the chances of relapse are high, and occasionally the last state of the patient's eruption is worse than the first. Real indications for its use are infrequent (Shelley, *et al*, 1958).

Last but not least, every patient receiving systemic steroids should be in possession of a 'steroid card', of the type issued by the Empire Rheumatism Council (Faraday House, 8-10 Charing Cross Road, London, W.C. 2), stating the drug and its present dosage. He should be instructed to show this card to any doctor he consults for any reason, and especially if an operative procedure is contemplated.—(*The Practitioner*, 184: May 1960).

TWO-SIDED TETRALOGY

Improved diagnostic acumen in congenital heart disease has resulted in better knowledge of the variabilities in types of congenital cardiac lesions. As Keats and Martt point out, the misnamed tetralogy of Fallot has only two features, pulmonic stenosis and ventricular septal defect, which are essential in the diagnosis. The right ventricular hypertrophy is a secondary phenomenon and the dextroposition of the aorta is of functional origin and not anatomic, relating to the defect in the membranous septum. Keats and Martt report four cases in whom a "balanced shunt" occurred, implying that the ventricular septal defect was functionally closed to shunting of significant amounts of blood due to a balance established with the obstruction of the pulmonary valve. Their cases were proved by cardiac catheterization, and the author suggests that this condition must also be considered in the differential diagnosis of acyanotic congenital heart disease.—(*Am. J. Roent. Rad. Therap.*, 82: 417, 1959, via G.P., January 1960).

It may be that the race is not always to the swift, nor the battle to the strong—but that's the way to bet.—(Damon Runyon, *W. Virg. Med. Jour.*).



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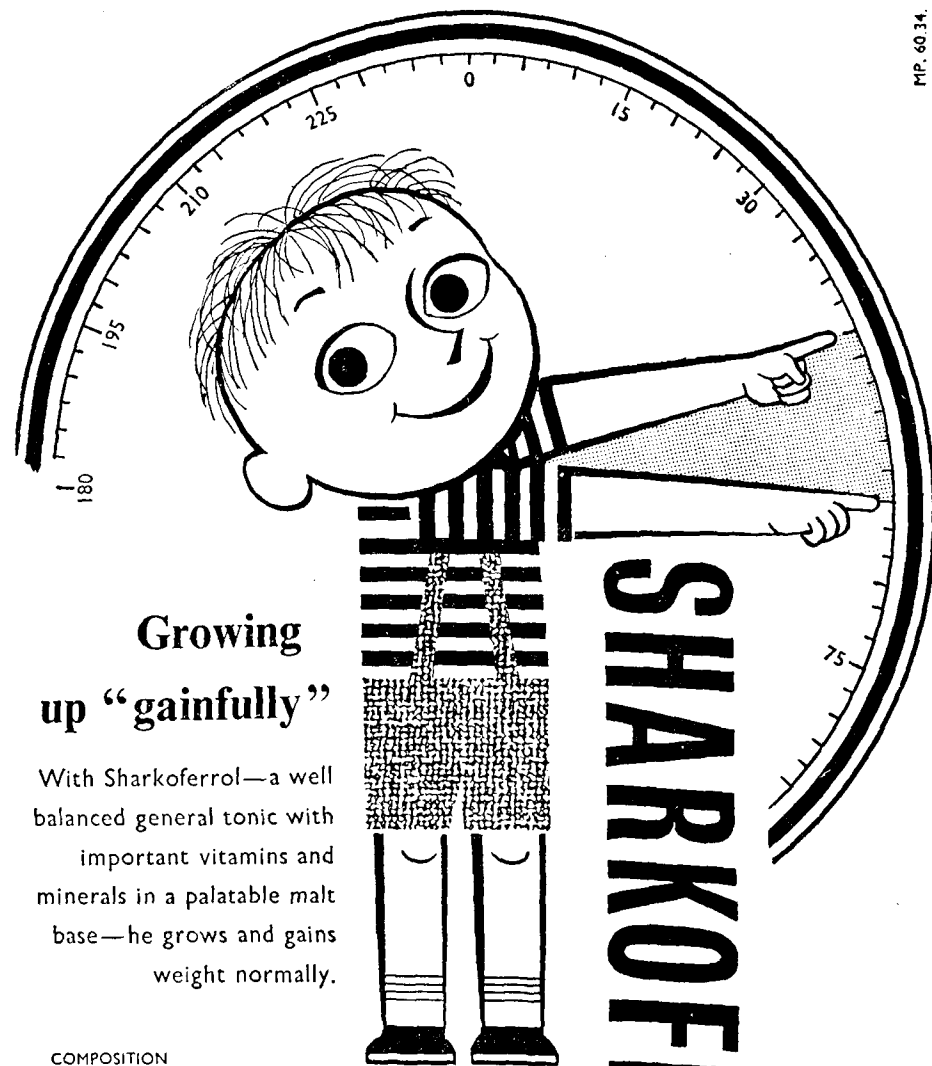
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ENVIRONMENT, STRESS AND ADRENO-CORTICAL RESPONSE*

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“THE environmental factors which influence the endocrine organs may be “physical” in the sense of an alteration in hours of daylight, or “social” in the sense of stimulation deriving from the group of which an animal is part. Some changes appear to be mediated through the sensory modality of touch—for example, the stimulation arising from coitus (or pseudo-coitus) which, in the rabbit or ferret, results in ovulation; stimulation of the reproductive tract which in the rat leads to pseudopregnancy; the pressure-pattern of the eggs which determines the number of eggs that are laid by a bird in a single clutch; and the nipple-stimulation on which the maintenance of milk-secretion at least partly depends. Others are mediated through the visual and auditory modalities, and comprehend such reactions as the increased secretion of adrenaline following a frightening noise; the induction of breeding activity in an anoestrous ferret as a result of exposure to illumination during the hours of darkness; and the egg-laying of an isolated pigeon which is shown its image in a mirror. The chain of events in reactions of this kind is presumably (a) stimulation of one or more sets of receptors; (b) the transmission of afferent impulses to the thalamus, hypothalamus and cortex; (c) the initiation or modification of hypothalamic activity by thalamus and cerebral cortex; (d) excitation of adenohypophysis; and finally (e) differential activation of peripheral endocrine organs.” [Zuckerman (1952)]. Thus Zuckerman stated the importance of environmental factors in influencing the endocrine organs. Hooded ferret and mare did not respond to additional light (Bissonnette, 1936; Burkhardt, 1947). Thomson (1951) designed some experiments to find out whether the optic nerve fibres or the retinal blood vessels or the ciliary nerves and vessels are responsible for the light-induced oestrus. Ferrets with lesions of the optic nerves or those with lesions of the retinal blood supply did not come into oestrus in response to added illumination. With both these procedures there was degeneration of the ganglion cell layer of the retina. Thus retina is the important site for the transference of the light stimuli to the pituitary in ferrets and the initial mechanism is a nervous one.

In birds, there are receptors other than the retina which receive and transmit light stimuli to the pituitary (Benoit and Assenmacher, 1953-a, 1953-b). Exposure of 15 hours of light per day for three weeks to immature drake will lead to good testicular

*Specially contributed to the ANTISEPTIC.

[719]

development. Section of the optic nerves or enucleation of the eyeballs will not prevent the stimulation of the testes totally. The pituitary should be present for this response. They have postulated the presence of the photoreceptors in the orbital region of the duck. Direct illumination of the hypophysial region or of the hypothalamus (in the region of the supraoptic nuclei) or of the rhinencephalon will produce testicular growth. The response after illumination of the optokinetic area was negative. The translucent nature of the skull allowed a good amount of light to enter into the deeper areas of the brain. Deeper structures of the brain are sensitive to the whole of the visible light spectrum.

Oksche, Laws and Farner (1958) found that the nerve loops in the median eminence of the white crowned sparrow (*Zonotrichia leucophrys gambelli*) are filled with neurosecretory material when exposed to 8 hours of illumination daily. No testicular growth was observed in these animals. When the photoperiod was increased to 20 hours daily for 5, 10, or 20 days there was rapid testicular growth which was unseasonal. The median eminence in these animals had only scanty neurosecretory material.

Clark, McKeown and Zuckerman (1939) found that neither the integrity of the visual cortex nor the mid-brain is essential for the light impulses from the retina and it was suggested that the response depended on impulses passing either to the ventral nucleus of the lateral geniculate body or the subthalamus by way of accessory optic tracts.

Frey (1947) found the evidence for the existence of an optico-hypothalamic tract and an optic hypothalamic center in the guinea-pig. In crustaceans, light stimulus reaches the brain through the compound eye and the hormone is released into the circulation and this leads to contraction or expansion of the pigments in various types of chromatophores.

Askin and Vidarskaja (1956) thought that the diencephalon plays its part in the mechanism regulating the influence of light on the function of the adrenal cortex.

Wolfson (1959) states that in birds, "the hypothalamus is the primary target organ of the external factor, the daily durations of light and darkness, and that the interaction between the external factor and the hypothalamus results in the occurrence of spring migration and breeding periods at the proper time of the year."

Optical stimuli set up an impulse over an optico-hypothalamic-hypophysial pathway which causes secretion of water balance factors from the neurohypophysis of frogs and albino rats (Boyd *et al*, 1940, 1943). They mentioned the pathways of

reflexes originating in the eyes. The primary centres are:—(a) lateral geniculate bodies and (b) superior colliculi.

The impulses travel to the lateral geniculate body and from there to the supraoptic nuclei *via* the dorsal supraoptic commissure. From the superior colliculi, impulses may pass along the tectospinal tract, the medial longitudinal fasciculus and the tectocerebellar tracts. The tectospinal tract makes various connections possible, for example from the red nucleus to the tuberal nuclei of the hypothalamus. Through the medial longitudinal fasciculus, many other pathways are possible.

Knoche (1956) proved that there is a tract of non-medullated fibres connecting the retina with the hypothalamus. Some of the fibres end in the vegetative nuclei of the diencephalon and some pass through the connecting stalk and end in the posterior lobe of the hypophysis.

Jefferson (1940) described the subcortical connections of the optic tracts of the ferret. It appeared that the ferret did not possess a "dorsal hypothalamic root" or either of the accessory optic tracts. The central nucleus of the lateral geniculate body did not receive any optic connections. . . . Possibly the optic fibres ended in the pretectal region although these terminations were not demonstrable in the ferret material available. There may be no special pathway mediating the gonadal response of the ferret to retinal stimulation. It may be an indirect response to the changes in total bodily activity of the animal, which are primarily induced by such stimulation.

Brown-Grant *et al* (1954) found thyroid inhibition after varying the conditions of environmental lighting.

The postnatal development of the neurone with regard to its mass was proved by Brattgard (1952) investigating the ganglion cells of the retina. The presence of normal light-path near the cell mass results in volume unit in the early (postnatal) period to 100%.

TABLE I

Showing the total dry weight of carnoy fixed retinal ganglion cells in different ages.
Weight in 10⁻³ mg. / μ^3

11 day old rabbit	10 week old rabbit	8 month old rabbit
0.42 $\pm$ 0.016	0.78 $\pm$ 0.013	0.98 $\pm$ 0.038

After Brattgard and Hyden, 1954.

The influence of adequate stimulus on the development of the retinal ganglion cells from birth to growing stages is shown in Table II, overleaf (p. 722).

TABLE II

Showing weight in 10^{-9} mg. / μ^3 .

Rabbit in usual day light for 11 days	Rabbit in usual day light for 10 weeks	Rabbit born in darkness and in darkness for 10 weeks	Rabbit born in darkness and kept in darkness for 10 weeks and then for 3 weeks in daylight
0.42 ± 0.016	0.78 ± 0.013	0.16 ± 0.012	0.58 ± 0.021

It will be seen that light is an important stimulus for the growth of the retinal ganglion cells.

Scharrer (1959) stated "There is a growing body of information which indicates that in invertebrates and vertebrates alike, the brain serves as the centre of integration of nervous, chemical, physical, and other stimuli resulting from environmental changes as well as from the internal milieu of the organism. The common final path by which these stimuli reach the endocrine system appears to be the neurosecretory cell which is capable of receiving nervous impulses and transforming them into endocrine activity. That the hypothalamus plays an important part in this process is no longer merely assumed, but has been generally accepted as a fact."

Neurosecretory activity in rats kept under conditions of continuous light or darkness has been studied by Fiske and Greep (1959). Fortier (1950) found the release of an increased amount of ACTH when rats were subjected to sudden intense light or sound.

In the present investigation light has been taken as one of the environmental factors and its influence on the brain of the *Palaemon carcinus* and on the hypothalamo-pituitary-adrenal axis in toads, guineapigs and dogs has been studied. The effect of sound as stimulus has also been studied. Photographic studies have been made in order to find out whether deeper penetration of light occurs in invertebrates and vertebrates. The effect of fracture and burn has also been studied in different experimental preparations.

Material and methods.—In the *Palaemon carcinus* the eye-stalks were removed and these served as controls; after exposure to strong light, the brain and the ganglia were examined by fixation in Bouin's fluid and staining after Gomori's chromalum-haematoxylin-phloxine method.

In the experiments with toads (*Bufo-melanostictus*) the plan was as follows:—(a) 5 toads with exposure to constant illumination from 100 w. bulbs; (b) 5 toads kept in darkness; and (c) 5 toads kept under normal laboratory conditions.

The experimental period lasted for two weeks, at the end of which the toads were sacrificed by decapitation and heparinized blood was taken for 17-Hydroxycorticosteroid estimation after the method of Silber and Porter (1954). The brain and the pituitary were fixed in Bouin's fluid and the sections were stained by Gomori's CAHP staining method. The adrenals were fixed in formalin and frozen sections were stained with Sudan III and some sections of adrenals and pituitary were stained with haematoxylin and eosin. Estimation of 17-Hydroxycorticosteroids was done on the peripheral blood, one hour after fracture of the right femur and scald to the right hind limb. Adrenal venous effluents as mentioned above was done in noted. Similar procedures as mentioned above was done in hypophysectomized, pituitary stalk sectioned toads and toads with lesions of the median eminence.

The experiments with guinea-pigs were planned as described for toads. Male guinea-pigs of 400 to 450 g. in weight were used. Five guinea-pigs were kept in constant illumination after sectioning the optic nerves. Intense sound was also used as a stimulus.

Male dogs of 10-15 kg. in weight were used in these experiments. Ether or pentobarbital sodium was used as the anaesthetic agent. The right adrenal vein was cannulated for collection of the adrenal venous effluent in the conscious animal.

Exposure to strong illumination, intense sound stimuli, fracture of the right femur and burn injury to the right hind limb were used as stimuli in normal, hypophysectomized, pituitary-stalk-sectioned and hypothalamectomized dogs and dogs with lesion of the median eminence. Light stimulus was also tested in dogs with lesion of the optic nerves. Fracture and burn trauma were also studied in spinal transected (C7) dogs and in dogs after removal of the brain leaving only pituitary, pons, medulla, cerebellum and mid-brain intact (isolated pituitary experiment).

The hypothalamus and the pituitary with the pituitary stalk where present were fixed in Bouin's fluid and sections stained after Gomori's CAHP staining method. The adrenals were fixed in formalin and sections were stained with Sudan III and haematoxylin and eosin.

Photographic studies were made by placing the papers at the base of the brain of the *Palaemon carcinus*, *Bufo-melanostictus*, Bektu fish (*Lates calcalifer*), guinea-pigs and rabbits and then exposing to different light. This was done with a view to knowing whether encephalic penetration of light occurred or not.

Bufo-melanostictus.—Five toads were used in each group; the average values are given in Table III below:—

TABLE III
Showing the average values for *Bufo-melanostictus*

	Usual laboratory condition	Constant illumination	Kept in dark	Fracture	Scald
	17-OHCS	Gamma	per	100 cc.	Plasma
Control	3.3	15.5	1.2	17.2	25.3
Hypophysectomized	Nil	Nil	Nil	Nil	Nil
Pituitary stalk sectioned	1.8	2.3	2.2	12.1	18.3
Median eminence lesion	1.2	2.2	2.3	3.4	5.4

Guinea-pigs.—Five animals were used in each group; and the average values are tabulated below:—

TABLE IV
Showing the average values for Guinea-pigs

	Usual laboratory condition	Constant illumination	Kept in dark	Sound stimuli	Fracture	Burn	ACTH 5 I.U. injected I.U.
	Plasma	17-OHCS	Gamma	per	100	cc.	
Control	26.3	49.2	12.5	52.3	54.3	92.5	105
Hypophysectomized	7	8.1	6.9	7.6	7.3	9.4	26
Pituitary stalk sectioned	15	17.3	14.7	16.2	26.8	68.5	92.3
Ventral hypothalamus and median eminence lesion	9	11.3	8.7	10.6	15.3	28	21
Lesion of optic nerves	20.4	2.5	21.3	...	...	...	112
High spinal transection	22.5	...	...	...	41.3	71.2	92

Dogs.—Four animals were used in each group and average values given in Table V on p. 725.

TABLE V
Showing the average values for dogs

	Usual laboratory condition	Exposure to strong light 2 hrs.	Sound stimulus 15 mts.	Fracture 1 hr. after	Burn 15 mts. after	ACTH 5 U/Kg.
17-OHCS output gamma per minute—adrenal venous blood.						
Control	4.2	8.4	8.1	15.3	25.1	20.2
Hypophysectomized 48 hrs. after Total 50%	0 1.5	0 1.2	0 0.5	0 8.3	0 15.7	4.3 10.8
Pituitary stalk sectioned	2.1	2.3	1.8	9.4	18.3	12.7
Anterior median eminence lesion (within 24 hrs.)	1.2	1.8	1.7	6.6	10.4	10.3
Ventral hypothalamectomy with median eminence lesion (within 24 hrs.)	1.4	1.6	1.3	7.2	13.2	11.2
Lesions of optic nerves	3.2	4.4	...	...	...	...

Dogs.—Four animals were used in each group and the average values are given below:—

TABLE VI
Showing the average values for dogs —(Contd.)

	Usual laboratory condition	Fracture 1 hr. after	Burn 15 minutes after	ACTH 5 U/Kg.
Adrenal venous 17-OHCS output—Gamma/minute.				
Spinal transected (C7)	2.9	10.7	18	20.3
Removal of brain leaving only (pituitary, pons, cerebellum, medulla. (Isolated pituitary experiment))	3 hours after operation 7.6	23.1	35.6	36.3

Results.—BIOCHEMICAL:—*Bufo-melanostictus*:—The 17-OHCS in the peripheral blood of toads in nonstressed condition is 3.3 gamma per 100 cc. plasma. With constant illumination it rises to 15.5 gamma per 100 cc. but when the toads are kept in the dark, it is 1.2. Blind toads exposed to constant illumination:

showed a small rise in 17-OHCS content. Fracture and scald caused a rise in 17-OHCS and the maximum rise was with scald. In one of the control experiments, during the collection of blood after decapitation, the cut head with the parotid glands and the secretions accidentally fell into the collecting pot. The head was removed immediately and on analysis the plasma 17-OHCS content was found to be very high (about 5 times the normal value). Possibly the parotid secretion added to the positive Porter-Silber reaction. In the hypophysectomized toads 17-OHCS could not be found in the blood under any of the experimental conditions. Pituitary stalk section could inhibit the adrenocortical response due to constant illumination but it could not do so after fracture and scald and the response was lesser in magnitude in comparison to that found in normal toads after stress. Lesions of the median eminence could block the response to constant illumination and there was a very small rise after fracture and scald. In toads subjected to the removal of the anterior pituitary from its normal situation and autografted on other parts of the brain, 17-OHCS in the peripheral blood could not be measured. Measurable amounts of 17-OHCS were found in toads with regrafting of the anterior lobe to the median eminence. 17-OHCS in the adrenal venous blood was about 10 times higher than that found in peripheral blood. Seasonal variations in blood 17-OHCS content have been noted in *Bufo-melanostictus*.

Guinea-pigs.—17-OHCS content of the peripheral blood of guinea-pigs under usual laboratory conditions is 26.3 gamma per 100 cc. plasma. 17-OHCS is high in animals kept in constant illumination and it is low when kept in darkness. Intense sound leads to good adrenocortical response as evidenced by a rise in 17-OHCS content. Fracture and burn (right hind limb burned by naked flame or right femur fractured) lead to increased adrenocortical response. With ACTH the 17-hydroxycorticosteroids were 105 gamma per 100 cc. plasma. After hypophysectomy, constant illumination did not lead to any appreciable rise in 17-OHCS content and a similar feature was noted after different types of stressing procedures. Hypophysectomized animals showed a low 17-OHCS content in the blood (7 gamma per 100 cc. plasma). ACTH in such animals lead to a rise in 17-OHCS content but it never approximated to the value noted in normal animals treated with ACTH. In pituitary stalk-sectioned animals the 17-OHCS content in the peripheral blood was low in comparison to normal animals. Constant illumination and intense sound stimuli do not lead to increased adrenocortical response. Fracture and burn lead to increased adrenocortical response. Fracture magnitude is less than the response noted in control animals subjected to stress. ACTH led to increased adrenocortical response in pituitary-stalk-sectioned animals. Animals having

lesions of the optic nerves when exposed to constant illumination showed very small rise in 17-OHCS content. Spinal transected animals exposed to the stress of fracture and burn showed increased adrenocortical response but the magnitude of response was less than that found in control animals subjected to similar stress. ACTH response was good in such animals. Guinea-pigs having lesions of the ventral hypothalamus and median eminence behaved differently. These were acute experiments. The 17-OHCS content in the peripheral blood in such animals kept in usual laboratory condition is very low (9 gamma per 100 cc. plasma). Constant illumination or intense sound is not a good stimulus for increased adrenocortical response in such animals. With fracture and burn there is very small rise in 17-OHCS content compared to the response noted in control animals. ACTH leads to very small rise in 17-OHCS content. Diurnal variations in plasma 17-OHCS content was noted in guinea-pigs but such variation was not found in animals with lesion of the anterior median eminence.

Dogs.—17-Hydroxycorticosteroids were measured in the adrenal venous blood and the values presented as output in gamma per minute. Control dogs in the basal non-stressed condition of the body had the adrenal venous output of 17-OHCS as 4.2 gamma per minute. There were slight diurnal variations but during the daytime animals might show high values all of a sudden. Such sequence was lost in animals either with lesions of the anterior median eminence or with ventral hypothalamectomy and anterior median eminence lesion. The 17-OHCS output was high with exposure to strong light or sound stimulus. After lesion of the optic nerves, exposure to strong light showed no rise in 17-OHCS output. Fracture and burn led to a quick rise in 17-OHCS output. With ACTH the 17-OHCS output is 20.2 gamma per minute. Totally hypophysectomized dogs (48 hours) showed almost zero values in 17-OHCS output. With 50% hypophysectomy the values were low but increased response to the stress of fracture and burn and response to ACTH was noted. Pituitary stalk-sectioned animals did not show increased adrenocortical response after exposure to strong light or sound stimulus but such animals showed increased adrenocortical response after the stress of fracture and burn but the magnitude of response was less in comparison to that found in the control animals subjected to similar stress. With ACTH, there was increased adrenocortical response. The 17-OHCS output in animals with lesions of the anterior median eminence was 1.2 gamma per minute. Exposure to strong light or sound stimulus did not lead to increased adrenocortical response. With fracture, burn and ACTH there was increased response but the magnitude was lower than that found in control animals subjected to similar procedures. Ventral

hypothalamectomy with median eminence lesion showed similar feature. Spinal transected dogs showed increased 17-OHCS output



FIG. 1. Median eminence and the pituitary stalk of the Bufo-melanostictus-kept in constant illumination. Shows depletion of neurosecretory material. Gomori's CAHP stain.

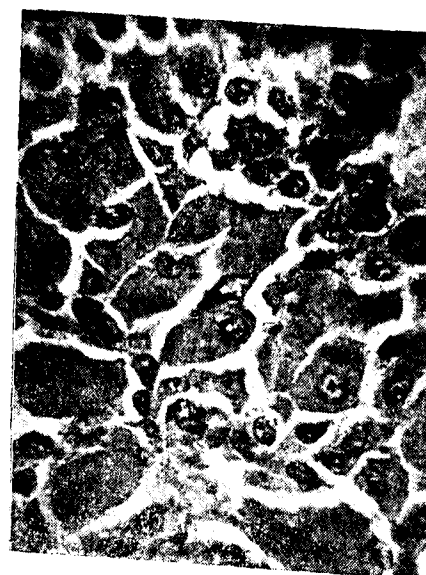


FIG. 2. Anterior pituitary of the Bufo-melanostictus showing increased number of Basophilic cells—after exposure to constant illumination.



FIG. 3. Adrenal of the Bufo-melanostictus showing vacuolation of the cells after exposure to constant illumination. (H and E Stain).

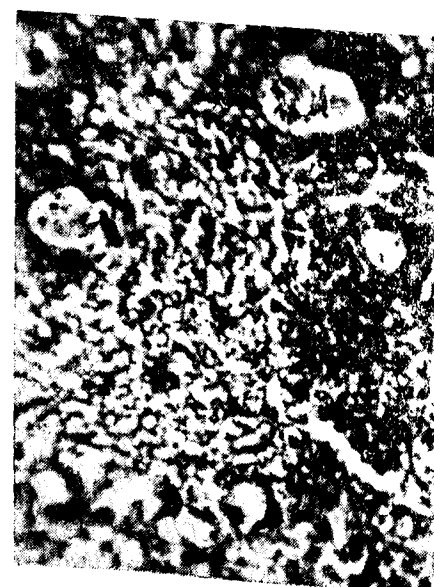


FIG. 4. Neurohypophysis of the Bufo-melanostictus showing perivascular aggregation of the neurosecretory material after exposure to the stress of constant illumination. (Gomori's CAHP stain).

after fracture, burn and ACTH. In the isolated pituitary experiments, the basal level of 17-OHCS output was high and such

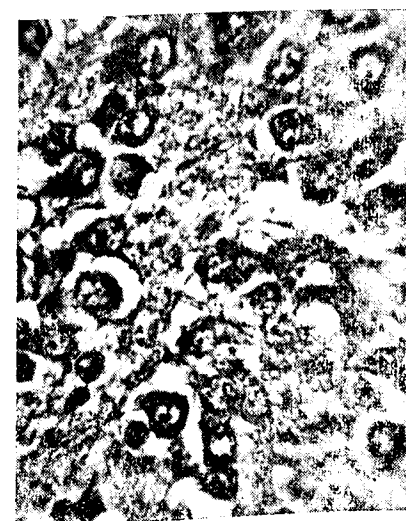


FIG. 5. Preoptic nucleus of the Bufo-melanostictus showing depletion of neurosecretory material and vacuolation after exposure to constant illumination. (Gomori's CAHP stain).

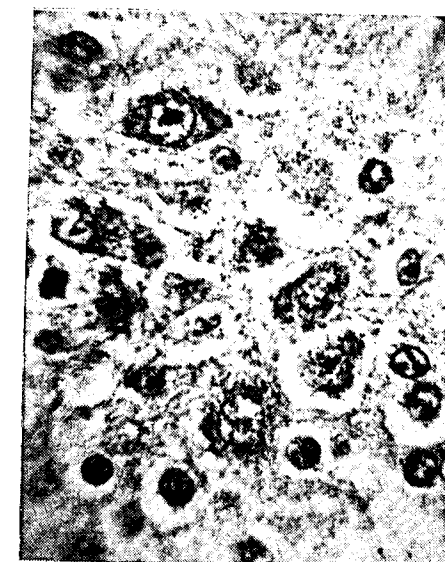


FIG. 6. Preoptic nucleus of the Bufo-melanostictus showing depletion of neurosecretory material and vacuolation after scald. (Gomori's CAHP stain).

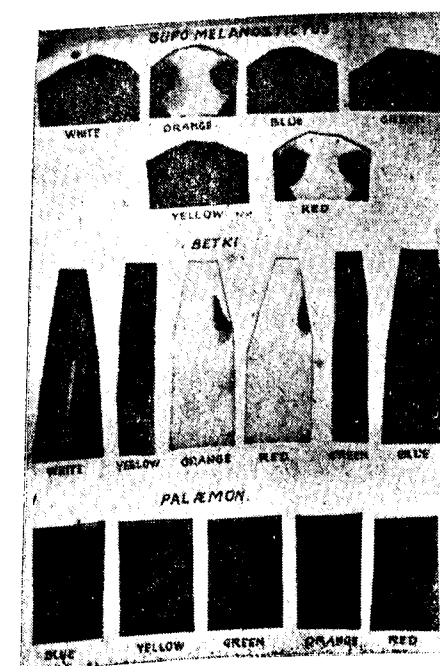


FIG. 7. Photographic studies after exposure to different light.

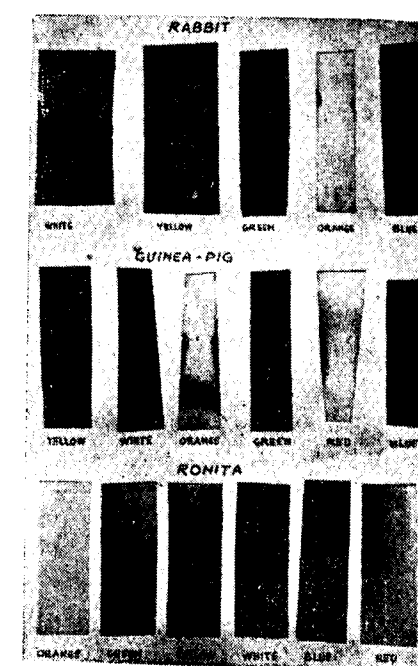


FIG. 8. Photographic studies after exposure to different light.

animals behaved differently to the stress of fracture, burn or after ACTH injection with an increase in 17-OHCS output and the figures were highest in the dog series.

B. HISTOLOGICAL:—*Palaemon carcinus*:—*Palaemon carcinus* exposed to strong light showed hyperactivity in the brain cells and in the ganglia. When the eye-stalks were removed, exposure to strong light showed a depletion of neurosecretory material and vacuolation in the brain cells and the ganglia. This showed that light penetrated the deeper structures and activated the nervous system.

TABLE VII

Showing changes in neurosecretory material and adrenal lipid store in
Bufo-melanostictus under different conditions

Experimental condition	Pre-optic nucleus	Preoptico-hypophyseal tract near median eminence	Neuro-hypophysis	Adrenal lipid store
Neurosecretory material				
Usual laboratory condition	M to P	M	M to P	Good lipid store
Kept in darkness	P	M	M	"
Constant illumination	S	S	M	"
Blind toads	M to P	M	M to P	Good lipid store
Blind toads and constant light	M	M	M	Slight D
Fracture	S	S	S	D
Scald	S	S	S	D
<i>Hypophysectomized (H)</i>	M	P	—	Moderate lipid store
H and constant illumination	M	P	—	"
H and kept in dark	M	P	—	"
H and fracture	M	P	—	"
H and scald	M	P	—	"
<i>Experimental conditions</i>				
Pituitary stalk section (s.s.)	M to P	P	—	"
S.S. and constant illumination	M	P	—	"
S.S. and kept in dark	M	P	—	"
S.S. and fracture	S	S	—	"
S.S. and scald	S	S	—	D
<i>Median eminence lesion</i>				
M.E.L.	M to P	P	—	Moderate lipid store
M.E.L. and const. illumination	M	—	—	"
M.E.L. and kept in dark	M to P	—	—	"
M.E.L. and fracture	M	—	—	"
M.E.L. and scald	M	—	—	"

P = Plenty, M = Moderate, S = Scanty, D = Depletion.

Hypophysio-portal circulation, hypothalamus, pituitary and adrenal of the *Bufo-melanostictus* and changes in the hypothalamus, pituitary and adrenal after fracture and other stresses were studied by Roy (1957).

TABLE VIII

Showing the results in Guinea-pigs under various experimental conditions

Experimental conditions	Supra-optic nucleus	Supraoptico-hypophyseal tract near median eminence	Neuro-hypophysis	Adrenal lipid store
Neurosecretory material				
Usual laboratory condition	M to P	M	M to P	Good
Kept in dark	P	M	M	"
Constant illumination	S	S	M	"
Lesion of optic nerves and light	S	S	M to P	Moderate
Intense sound	S	S	S	D
ACTH	M	M	M	D
Fracture	S	S	S	D
Burn	S	S	S	D
<i>Hypophysectomized (H)</i>	M	P	...	Moderate
H and kept in dark	M	P	...	"
H and constant illumination	M	P	...	"
H and intense sound	M	P	...	"
H and fracture	M	P	...	"
H and burn	M	P	...	"
H and ACTH	M	M	...	D
<i>Pituitary stalk sectioned (S.S.)</i>	M to P	P	...	Moderate
S.S. and kept in dark	M	P	...	"
S.S. and constant illumination	M	P	...	"
S.S. and intense sound	M	P	...	"
S.S. and fracture	S	S	...	D
S.S. and burn	S	S	...	D
S.S. and ACTH	M to P	P	...	D
<i>Median eminence lesion (MEL)</i>	M to P	P	...	Moderate lipid store
MEL and kept in dark	M to P	...	...	"
MEL and constant illumination	M	...	...	"
MEL and intense sound	M	...	...	"
MEL and fracture	M	...	...	"
MEL and burn	M	...	...	"
MEL and ACTH	M	...	...	"
<i>High spinal transection (S.T.)</i>	M to P	M	M to P	Good
S.T. and fracture	S	S	S	D
S.T. and burn	S	S	S	D
S.T. and ACTH	M	S	M	D

The anterior pituitary showed congestion and increased number of basophils after stress, light and sound stimuli. There were vacuolation in the basophil cells and evidences of increased cellular activity. Increased mitosis was seen in the pituicytes during stress and constant illumination, neurosecretory material in the pituicytes was scanty after application of stress, constant illumination or intense sound stimuli. In the dorsolateral hypothalamic area of guinea-pigs there were neurosecretory cellular formations having a different tinctorial property. The neurosecretory material was acidophilic and was depleted during stress. The same cycle of neurosecretory function continued in these cells as noted in the supraoptic nuclei. A detailed study of neuro-secretion and changes in the pituitary and adrenal was

made by Roy (1959-b) in guinea-pigs and dogs under different experimental and surgical conditions. When newborn guinea-pigs were kept in constant light there was growth of neurosecretory cells with elevated 17-OHCS content in the peripheral blood. When such animals were kept in darkness, the neurosecretory cells did not mature properly and there was a diminished load of neurosecretory material in them. The 17-OHCS content of the peripheral blood was low. This shows the influence of light in the maturation of the hypothalamic nuclei and also on the pituitary-adrenal axis.

Dogs.—The neurosecretory phenomenon is identical to that observed in guinea-pigs under different experimental conditions. Hypophysectomized dogs had atrophic adrenal glands. ACTH had adrenal glands where there was some atrophy and which responded to stimuli and ACTH. Dogs with pituitary stalk-ectomy had adrenals which responded to fracture and burn and with ventral hypothalamectomy or anterior median eminence lesion can be divided into two groups as regards adrenal responsiveness *i.e.* response in acute experiments and response in chronic ones. In acute experiments there was some responsiveness of the adrenal cortex to stress and ACTH, whereas in chronic experiments the responsiveness was lost. Strong light or sound stimuli were ineffective in eliciting increased adrenal cortical response. In these lesioned animals the adrenal gland was normal and not atrophic and there was some basal secretion of 17-OHCS, while in hypophysectomized animals the adrenal gland was atrophic and 17-OHCS was at zero level. Though the basal level of 17-OHCS was low in the lesioned animals, it was not at the zero level as was in hypophysectomized animals. This brings us to a question of either a basal secretion or ACTH in the lesioned animals or of two ACTH. One maintains the growth of the adrenal cortex and the other is activated during demanding situations through hypothalamus and median eminence.

C. Photographic studies.—From the studies, encephalic penetration of light in the *Palaemon carcinus*, *Bufo melanostictus*, *Lates calcalifer*, guinea-pigs and rabbits were noted. Light passed through openings, foramina, gaps, suture lines etc. The more transparent the structures, the more light passed as noted in *Palaemon carcinus*. This raised the question of direct effect of light on the hypothalamus; and specially the maturation of the hypothalamus partially by the effect of light and environment cannot be neglected. Environment had a tonic influence on the maturation of the hypothalamus not only regarding the pituitary-gonad axis but also the pituitary-adrenal axis. There was a difference in the steroid level in between new-born babies

reared in light condition and in unhealthy environment (dark). Babies reared in light condition showed high 17-OHCS levels as compared to the other group. Light stimulus reached the hypothalamus not only through the eyes but also direct encephalic penetration occurred through the foramina, ununited sutures and fontanelles. Fontanelles are important avenues in newborn babies through which direct encephalic penetration of light occurred to stimulate and mature the hypothalamus.

Discussion.—The median eminence is important for the seasonal variation in toads, diurnal variation in guinea-pigs, and diurnal variation in dogs with regard to 17-hydroxycorticosteroids secretion as after the lesion of the median eminence such variations are not found. Hokfelt and Luft (1959) found that in patients with suprasellar tumours distorting the hypothalamus, the normal diurnal variations in 17-OHCS in plasma, as well as the response of aldosterone excretion to salt restriction, may be absent.

Pellegrini *et al* (1958) have shown the importance of photostimulation in man as cofactor of regulation of various vegetative functions. "It appears likely that this effect takes place by means of diencephalic stimulations, especially on account of the different aspects which it shows in normal subjects and in subjects in whom the existence of a lesion or of a dysfunction of the diencephalon is either proved or probable." Mosinger (1958) reviewed the previous observation regarding the connexion of the optic nerves with the hypothalamus. Optico-hypothalamic connections and the importance of the hypothalamus with regard to the pituitary-gonad-axis and other functions have been reviewed previously.

In the *Bufo melanostictus* constant illumination gave rise to an increase in 17-OHCS content while darkness led to a fall. Fracture and scald were good stressing procedures and gave rise to increased 17-OHCS level. After hypophysectomy the responses were lost. Pituitary stalk section abolished the response to constant illumination but after fracture and scald was response, noted. Median eminence lesion block the response to constant illumination and fracture but after scald there was some increased response. This might be due to the liberation of some chemicals at the site of scald and their action on the adrenohypophysis. Audiogenic stimuli led to increase in the weight of the adrenal cortex (D'Amour and Shaklee, 1955) and there was an increase in the corticosteroid content (Duncan, 1957) though there was no change in the cholesterol content in a single test (Duncan, 1957; Anthony and Babcock, 1958). Fortier (1951) found eosinopenia after sound stimulus. Biro *et al* (1959) found that "the sound stimulus evoked in part the usual change in the pituitary-adrenocortical system (characteristic to systemic stress) but in part

inhibited: (1) the well known eosinopenic effect and (2) the decrease which should be brought about in any test apart from the effect of the sound stimulus by the conditions accompanying activity and seizures." Sackler *et al* (1959) reported that intense sound stimulation led to weight gain reduction and serious changes in endocrine weight and histological structure of the laboratory rat. Adrenal hyperplasia and significant changes in pituitary cell type were noted. In the present investigation auditory stimuli led to increase in plasma 17-OHCS content in the peripheral blood in guinea-pigs and adrenal venous 17-OHCS-output in dogs. Hypophysectomy, pituitary stalk-section, lesion of the anterior median eminence and ventral hypothalamectomy blocked the response. de Groot and Harris (1950) performed remote control stimulation of the hypothalamus and pituitary gland in the conscious, unrestrained rabbits and from stimulation of the following areas positive response (in the form of 3rd hour maximum lymphopenia) was noted:—*Posterior region of the tuber cinereum, mammillary body and neurohypophysis*. This procedure stimulated the fibres of passage from the reticular formation to the hypothalamus and thus the increased response was noted.

Exposure to strong light showed a similar feature as was observed with sound stimuli in different experimental preparations. Fracture and burn led to increased adrenocortical response in guinea pigs and dogs. Hypophysectomy blocked the response. With partial hypophysectomy (50%) in dogs increased response was noted after fracture, burn and ACTH. This showed the presence of adrenal responsiveness in such dogs. In acute experiments with ventral hypothalamectomy and lesion of the median eminence increased adrenocortical response was noted after fracture, burn and ACTH in guinea-pigs and dogs. In chronic experiments the responses were meagre. After pituitary-stalk-section, fracture and burn led to increased adrenocortical response in guinea-pigs and dogs. In hypophysectomized guinea-pigs some increased adrenocortical response was noted but the response was of lesser magnitude in comparison to that noted in normal animals. In hypophysectomized dogs response after ACTH injection was of a very low order. After pituitary-stalk-section good response was noted after ACTH injection both in guinea-pigs and dogs. Hokfelt *et al* (1959) found that "hypophysectomy in man resulted in the disappearance of non-conjugated cortisol and cortisone, as well as of the corresponding tetrahydro-derivatives. In agreement with this, a rapid and marked decrease in total 17-ketogenic steroids was recorded. Section of the pituitary stalk was found to produce an increase in the urinary output of these metabolites. As regards, 17-ketosteroids, changes parallel to those for 17-ketogenic steroids were observed. For aldosterone, an increase in the urinary excretion was found in all three cases." After optic nerve lesions there was very small increase in

adrenocortical response in guinea-pigs after light stimulus, may be by a direct effect of light on the hypothalamus.

Roy (1959a) showed that stress response in the form of activation of the pituitary-adrenal-axis can be achieved after fractures and other forms of stress even in the absence of intact spinal cord. Roy (1959-b) found that there was a rise in adrenal venous 17-hydroxycorticosteroids output after fracture and burn injury applied to the denervated extremity. Fracture in a neurectomized limb with compression bandage applied did not show increase in 17-OHCS output. In midbrain-sectioned-dogs, the increase in 17-OHCS output after fracture and burn was not much and this suggested a control of the adenohypophysis by the mid brain mediated through the hypothalamus. Roy (1959-b) also showed that fracture and burn trauma in pituitary stalk sectioned dogs gave rise to increase adrenal venous 17-OHCS output. Roy (1959c) observed the effects of different types of fractures, operations on bones and burn on the pituitary-adrenal axis of frontal leucotomized animals. Maximum adrenocortical activity was noted. This was due to the fact that after frontal leucotomy, the hypothalamus was released of the inhibitory influences from the frontal cortex and as such, it worked in a more increased way, leading to increased ACTH secretion from the anterior pituitary, which acts on the adrenal cortex. The same view was already expressed by Lissak (1956) and Endoczi and Lissak (1953) using different types of stressors. In spinal transected guinea-pigs and dogs increased adrenocortical response after fracture and burn was noted in the present investigation but the magnitude of response was less than that observed in control animals—subjected to similar stress. Anderson and coworkers (1957) found an increase in urinary steroid excretion after laparotomy in dogs with transected spinal cord. Gordon (1950) found that severe burn of the denervated leg produced adrenal ascorbic acid depletion. Very severe scald to the leg caused some eosinopenia in spinal transected dog (C7) (Hume, 1952). Hume (1958) mentions that three days after cord section at C7, abdominal laparotomy still gave rise to the release of ACTH, although the response was slower to start than in the intact animal. This was due to the release of some substance in the injured tissues and its transport to the brain by the blood-stream. "It would appear that both nervous impulses and the supposed humoral factor act through excitation of nervous pathways which ultimately lead to release in the anterior median eminence, of an anterior pituitary stimulating substance." Hume and Egdahl (1959) observed no increase in adrenocortical secretion in response to a severe burn of the denervated leg but increased response after burn-injury to the denervated limb was seen (See *Table I*, p. 721) in some of the experiments. *e.g.*, Exp. No. 3 where the control value is 1.5 and 30' after, the value was 7.2. Exp. No. 5 shows 0.8 as control value

and 2.7 at 90' response after ACTH or burn above site of section has not been presented. The dog in Exp. No. 8 had high control value *e.g.* 7.4 and the response after ACTH was only 11.8. Egdahl (1959) studied pituitary-adrenal response following trauma to the isolated leg of dogs. It is concluded that following severe burns or operative trauma, the adrenocortical stimulation *exclusively* depended on the peripheral nervous impulses and also there was no evidence for the production in the wounded area of a substance which stimulated the pituitary adrenal-axis. By isolated-leg is meant that the leg is attached to the body only by one artery, one vein and one nerve. In such experiments immobilization of the operated extremity was achieved by application of a plaster cast around the operated area and extended from the knee to the groin and passed around the body of the animal. External immobilization with plaster cannot completely immobilize the extremity and more so when the animal is kept moving all the time. There is every possibility of kinking of the vessels with accentuation of the oedema and least absorption. The only form of perfect immobilization would have been by internal fixation of the transected femur with intra-medullary pin or plates and screws. "When, in addition, the thigh is transected, leaving the femur, femoral artery, nerve and vein, the leg swells for about one or two weeks"—(Markowitz *et al*, 1959—*Experimental surgery*). The oedema retards absorption and more commonly there is thrombosis. Experimental work in our laboratory showed importance of both nerves and vessels in carrying the stress message to the brain. In Egdahl's (1959) experiments performed 14 to 21 days after isolated leg preparation (nerve transected at original procedure), no response was obtained after the isolated, denervated leg was burned in the standard fashion. Similar experiments in our laboratory showed increased 17-OHCS output after burn injury. This was because of nerve regeneration and vascular regeneration as no step was taken either by Egdahl or myself to prevent the regenerations and regenerations are more quick in fracture hæmatoma (in our case hæmatoma formed at the site of bone sections).

The question arises: whether the burned or injured area produced chemicals which have got some influence on the pituitary-adrenal-axis. This was dealt with by Zoy (1959-b), who showed that the burned or injured area produced some chemical and thus the venous blood collected from such extremities increased 17-OHCS output in the test dogs when injected into the carotid artery. Subcutaneous pockets were made in guinea-pigs. After burn to the superficial skin, fluids accumulated in the subjacent pockets. When this fluid was injected into normal guinea-pigs, there was increase in 17-OHCS content in the blood. One of the most important constituents of

the fluid is histamine (Roy, 1959d). Moreover Moon in 1942 stated, "In previous discussions the results of many workers were cited indicating that the prolonged stimulation of peripheral nerves will not cause manifestations of shock; also that complete anaesthesia prevented sensory impulses, originating in the periphery from reaching the brain, and that shock was *not* prevented by severing all nerve paths between the traumatized limbs and the brain. It has been shown that roentgen irradiation of the abdomen caused the complete syndrome of shock. This type of injury is entirely painless, hence it would not cause noxious nerve impulses. These observations weigh against the theory that nociceptive nerve impulses, are important factors in the dynamics of shock." Markowitz *et al* (1959) mention regarding the shock in burn that "Although it is reasonable to accept these experiments at their face value, since the shock is easily cured by transfusion of plasma, it was difficult to explain why the severely shocked animal, in spite of transfusion, so often died. Again, a toxin was postulated." Cannon (1923) postulated that there was absorption of some sort of undefined toxic material from large soft tissue wounds into the circulation and this gave rise to the occurrence of profound shock. Underhill *et al* (1930) stated that methylene blue and phenolsulphonthalein were absorbed slowly from the injured tissues. Cameron *et al* (1943) found that there was significant systemic absorption of tannic acid after application on the burned area and occasionally it was to a toxic level. Wise *et al* (1958) measured the rate of absorption of (I^{131}) and iodinated (I^{131}) human serum albumin from large soft tissue wounds in the hind legs of Texas Angora goats. They found that both of these substances were detectable in the blood, one hour after application to the wound.

In the isolated-pituitary experiments, the only parts left in the calvarium were the pituitary, cerebellum, pons, midbrain and medulla. These animals had very high 17-OHCS output and after ACTH and the stress of fracture and burn, 17-OHCS output was higher. The results indicate that as the inhibitory influences from higher centres are removed, the pituitary can activate in a more pronounced way. A similar opinion has been expressed by Hume and Egdahl (1959). The pituitary has got no nervous connection with the brain, but only systemic vascular connection and its control is by:-(a) neuro-secretion of the pons, medulla, cerebellum and midbrain circulating through the systemic circulation; (b) histamine released at the injured site and acting on the isolated pituitary.

The pituitary gland is very labile in such conditions and any chemical alteration or pH change in the blood will lead to increased ACTH discharge. Sayre's hypothesis may also be considered in such contexts.

The discussions about the adrenal changes and photographic studies have been already mentioned as also changes in the neurosecretion. Neurosecretory material has a stimulating action on the anterior pituitary ACTH discharge during environmental stimuli and stress. Increased activity in the pituicytes was noted during stress. Leveque and Small (1959) state that the pituicyte is implicated in either the release mechanism or the separation of the hormone from a carrier substance. A similar opinion was derived from the observations in the present investigations. Separation of the hormone from the carrier substance is possible in the median eminence by chemical processes and the hormone enters into the hypophysiportal vessels to be migrated into the adenohypophysis where it stimulates ACTH secretion. Stutinsky (1958) found large Herring's bodies in hypophysectomized or post-hypophysectomized animals and a great number of cells acquired a basophilous character.

Conclusions.—Environmental stimuli in the form of light and sound exert a tonic influence on the hypothalamus regarding the hypothalamo-pituitary-mus for the activity of the same axis. Light stimuli not only influence the hypothalamus through the optic nerves but also a direct encephalic penetration of light occurs in order to mature and stimulate the hypothalamus in some species. For the proper activation of the light and sound stimuli, the hypothalamus, the median eminence, the hypophysiportal vessels and the hypophysis must remain intact.

The neurosecretory system, the pituitary and the adrenal gland were studied after light and sound stimuli and also after fracture and burn in different experimental preparations.

The importance of the spinal pathways, frontal lobe of the brain, other areas of the brain, the hypothalamus, the median eminence, the hypophysiportal vessels in different stress situations with respect to the pituitary-adrenocortical activity has been mentioned.

Acknowledgement.—I am very much indebted to the Principal and Director, the Professor of Surgery and the Professor of Pathology, of the R. G. Kar Medical College and Hospitals for kindly giving me facilities for carrying out this work.

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ACNE, ESTROGENS, AND SPERMATOZOA

Twenty normal men were given 2.5 mg per day of Premarin (Ayerst Laboratories) over a 3-month period of time, and their sperm counts were regularly checked throughout this interval. Placebos were then given for a 70-day period, and there was no significant decrease or increase in sperm counts after the administration of this therapy.

There was a definite decrease in oiliness and a decrease in the number of acne lesions in the cases presented.

All other facets of the sperm counts, other than the total number were executed on these patients and found not to be significantly altered by the study drug.

It would seem that this preparation is perfectly safe over a 3-month interval of time regarding an alteration in spermatogenesis.—(A.M.A. Archives Dermatology, 81: 53, 1960, via Current Medical Digest, April 1960).

PSYCHOPHARMACOLOGY

Eight years have passed since the initial reports concerning the effectiveness of certain tranquillizing drugs were presented to the medical profession. During this period tens of millions of patients have been given a multitude of different types of psychopharmacologic agents. Literally thousands of papers have been written on the subject, many of them contradicting each other. The medical profession and public alike have been exposed to the full might of high-powered advertising campaigns boasting of a dazzling array of *miraculous agents*. Some of these agents, by their failure to live up to these glowing prophecies, have testified to the fact that their therapeutic powers rest primarily upon the "hard sell" of the copywriter who in turn has drawn liberally on the premature publications of certain medical writers.

These individual failings, however, should not becloud the fact that there is incontrovertible proof that *some* of the newer psychopharmacologic preparations, tranquilizers and anti-depressants alike, when used discriminately in *properly selected cases*, are invaluable additions to the psychiatrist's therapeutic armamentarium.

There are several opposing camps, each with its own vested scotamatized interests, who out of ignorance and the fear born of ignorance are doing medicine, especially psychiatry and its allied science, a great disservice.

Biochemistry has given the psychiatrist new tools which can be of benefit in *certain selected situations*. These selected situations occur, in the vast majority of instances, in the management of patients with psychoses. Our profession must have sufficient flexibility and imagination to receive new ideas and techniques and to apply them in the best interests of our patients. Psychopharmacologic preparations are no threat to the psychotherapist. Indeed, a number of patients who formerly were too ill to be amenable to psychoanalytically-oriented psychotherapy or psychoanalysis on an ambulatory basis, can now be made available for such therapy, if the drugs are properly used. Unfortunately this is a field which few analytically trained psychotherapists have designed to enter, and as a result, relatively little is known about the biodynamics of this combined technique.

Drug therapy, like all organic therapies in psychiatry, should be considered as an ancillary aid, a hand-maiden to psychotherapy. Psychotherapy remains the primary technique in psychiatry and other treatments, including drug therapy, should not be used unless withholding them would be to the detriment of the patient. We must be wary lest we use the drug as a crutch to compensate for our feelings of inadequacy, an easy way out so to speak. However, medically trained psychotherapists, who have failed to gain clinical experience with the newer drugs, are just as negligent of their obligations to their patients as those rigid, narrowly conceived organicists, who are not capable of offering psychotherapeutic guidance.

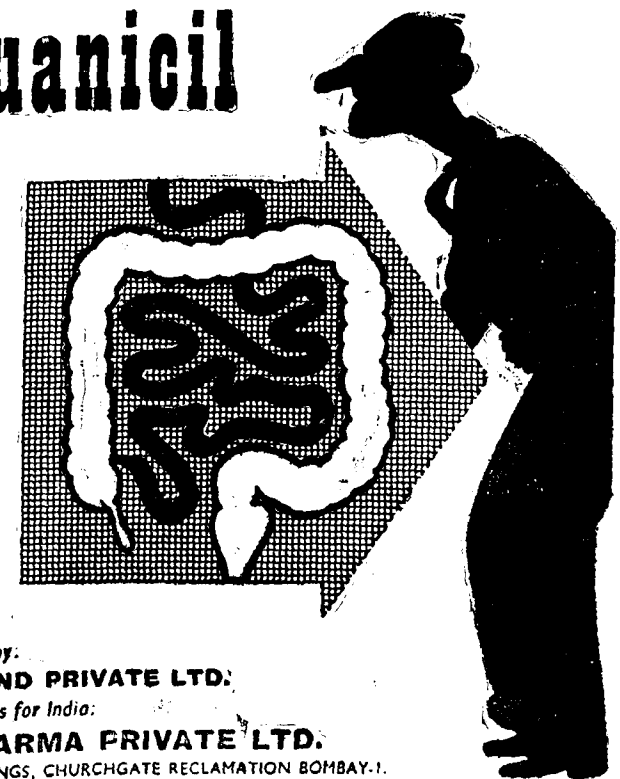
It is important for realistic progress in psychotherapy that men and women with medical backgrounds who are in psychiatric training, should be able to properly utilize biochemical agents *if and when* they are indicated. Too many young psychiatrists complete their training too firmly steeped in the unscientific, emotionally conceived prejudices of some of their teachers.—(Editorial, *Am. J. Psychotherapy*, April 1960).

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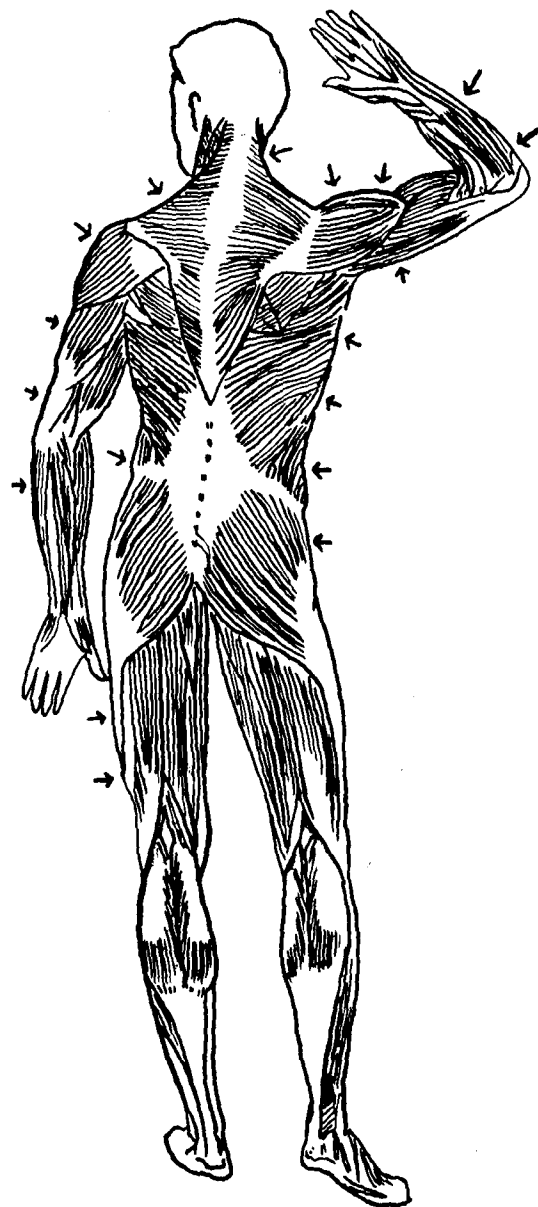
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A STUDY OF SPRUE SYNDROME ACCORDING TO THE UNANI SYSTEM OF MEDICINE*

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Introduction.—Sprue may be defined as a peculiar form of chronic disturbance of function of the whole or part of the mucous membrane of the alimentary canal. The exact cause of sprue remains undiscovered in spite of much investigation; and methods of prevention and treatment are therefore, purely empirical. This group of intestinal disorders is very common but clinical differentiation is a difficult problem and the pathogenesis even more difficult. All these entities are characterized by certain common intestinal symptoms of which loose bowels varying from frequent unformed stools to watery motions are characteristic. It is associated with diarrhoea, emaciation, abdominal distention, segmentation pattern of the small intestines on radiographic examination, absence of the normal post-absorptive systemic hyperlipæmia, a flattened oral glucose-tolerance curve, anæmia and certain vitamin deficiencies. The end-stage is indistinguishable from malnutrition syndrome. Further, œdema over the feet, anæmia, oral and skin lesions, are also prominent features. The cause for such disturbances is often left to conjecture.

Nutritional enteropathies often occur as a result of absorption-defects termed, the malabsorption syndrome. These defects occur primarily as a result of different diseases affecting biochemical reactions during the process of digestion and absorption and mucosal changes block the free entry of the products of digestion into the lacteals or the process of digestion itself may be so disturbed, that the food taken is unsuitable for absorption. The mechanism of phosphorylation is another process which may be depressed as a result of endocrine defects.

The sprue-syndrome has no definite ætiology and very little is known about the factors which are primarily responsible for malabsorption. The disease is characterized by remissions and exacerbations affecting people of irritable and peevish temperaments; it is often seen in the tropics. It may be due to disturbances in the autonomic nervous system and its control of intestinal functions. The intestinal motility becomes disturbed. The rapid passage of stools, segmentation of gut and alteration of the outline of mucosal folds are noted on barium-meal examination. Diarrhoeas due to vitamin and protein deficiencies occur as a result of altered digestion. Enzymatic reactions in the intestines are so disturbed that the food products are not in a fit state for absorption.

*Specially contributed to the ANTISEPTIC.

[741]

At a stage when these conditions are met with, it is impossible to differentiate the sprue syndrome from nutritional enteropathies. Unfortunately, no laboratory investigations will help to arrive at the correct diagnosis. Various tests mentioned as being altered in sprue syndrome are noted in other mal-absorption syndromes too. Besides, F.T.M. is not at all diagnostic as the hypochlorhydria is not peculiar or specific to this disease. Bone-marrow biopsy may show a megaloblastic reaction in nutritional diarrhoeas and many cases of sprue-syndrome will show a dimorphic reaction. Finally a stage is reached especially in the tropics where clinical or laboratory methods of differentiation become well-nigh impossible. These patients have to be treated in a blind and empirical manner by drugs which have been credited with the property of improving intestinal absorption, together with the factors which are deficient being given parenterally. The treatment is alike in all diseases of malabsorption.

The sprue-syndrome presents numerous unsolved aetiological problems. In addition to bringing together a knowledge of modern and indigenous medicine, an attempt has been made in this paper to present the salient features of research according to the Unani system of medicine from which important clues may be obtained. The centrally sponsored Unani Research Ward attached to the Government Hospital of Integrated Medicine took up the study of the sprue syndrome including nutritional diarrhoeas as one of the two diseases for conducting research with Unani drugs and medicines. The basic factor in the causation of the sprue syndrome and its effective treatment is being regulated by Unani medicines which have been credited from time immemorial with this therapeutic effect and considered as esoteric remedies. In addition, an attempt is being made to ascertain the aetiology of the sprue syndrome.

Modern concept of its aetiology and pathogenesis.—The phenomenon of sprue can best be explained in terms of a metabolic breakdown of the gastro-intestinal tract, characterized by defective absorption in the small intestines chiefly connected with defective secretion of Castle's intrinsic factor by the pyloric and Brunner's glands. It must be confessed, that the result of the most thorough and detailed investigations carried out by various research workers have rendered the problem still more difficult of clarification. Experience has shown, that contrary to previously held beliefs and theories, long residence in unhygienic surroundings is not an essential part of the aetiology and also, that the disease may occur in persons taking full nourishment and living in a relatively healthy climate.

There is evidence, that the mal-absorption of fats from the bowels is due to defective phosphorylation which is believed to

result from a breakdown of the enzyme systems concerned in the process; this in turn might be brought about by changes in the biosynthesis due to altered intestinal flora.

In a number of families two or more relatives may be affected by idiopathic steatorrhoea which would suggest that a genetic factor may be important in the aetiology of this syndrome. As a matter of fact, many cases of tropical sprue may primarily be due to errors of diet, whereas some underlying defects, possibly an enzyme deficiency may be an important factor in many cases of the sprue syndrome. Infection may also play a role in the pathogenesis of this condition.

In long-standing cases, when the disease has firmly taken root there is usually atrophy of the small intestines to the extent of its becoming almost transparent. The chief lesions are a thinning and atrophy of the mucous membrane of the absorptive and secretory epithelium with a consequent shrinkage of the villi. There is evidence to show that in sprue pancreatic digestion is normal, but that the products of digestion are not absorbed due to their being rushed through the small intestines. Defective absorption of fat may also be due to the same cause. The stools in cases of typical sprue are light in colour and excessive in bulk. The blood-picture of the fully developed tropical sprue case is that of a megalocytic anaemia. In addition, the variable degrees of anaemia coincide with the megaloblastic arrest in the marrow also.

The Unani concept of its aetiology and pathogenesis.—First one should understand the meaning of the four humours, namely, '*Khoon*', '*Balgham*', '*Safra*' and '*Souda*'.

Khoon, *Balgham*, *Safra* and *Souda* constitute the bed-rock on which Unani stands. The humoral theory of '*Khoon*', '*Balgham*', '*Safra*' and '*Souda*' contributes to a great extent to the methodology of proper diagnosis and treatment of disease. It may be stressed:—(1) that the word '*Safra*' does not essentially mean 'bile' but signifies the functions of thermogenesis or heat-production and metabolism including in its scope the process of digestion, the coloring of blood and formation of various secretions and excretions which are either the means or the end-products of tissue-combustion; (2) that the word '*Balgham*' is not intended to mean 'phlegm' but primarily to imply the functions of thermotaxis or heat-regulation and secondarily the formation of various preservative fluids, like mucus, synovia, etc. though the crude products of '*Safra*' and '*Balgham*' have been called by these names. The humoral theory of Unani offers a sensible explanation of certain otherwise inexplicable facts in the causation and amelioration of diseases and their symptoms. These humours occur in two forms:—(1) an invisible or essential one

which mainly guides the physiological processes pertaining to them severally and (2) a crude or visible form, the products (as secretions or excretions) of those processes induced by the essential forms mentioned in (1) above.

The relation between the two forms is very close so that the derangement of the essential form of one principle gives rise at once to increased or morbid secretions and excretions of that '*Khilth*' (humour). The failure to recognize the difference between these two forms of the '*Akhilath*' and a regrettable ignorance of the subject as a whole have given rise to the erroneous idea of substituting '*Safra*' as 'bile' and '*Balgham*' as 'phlegm.'

Humours (*Akhilath*) may be defined as moist and fluid substances which are manufactured in the liver from the food ingested and are capable of carrying nourishment to the body. They become vitiated or abnormal when they are neither prepared in the liver nor able to carry nourishment to the body. The '*Khoon*' or 'blood' which leaves the liver contains all the four '*Khilths*' or 'humours.' A major quantity of chyle is converted into '*Khoon*' (blood) and next to it comes the '*Balgham*' (phlegm) and in still lesser quantity into '*Safra*' (bile) and into a very small quantity into '*Souda*' (black bile). Therefore, according to the Unani system of medicine, the chyle is converted into the four humours, viz., '*Khoon*', '*Balgham*', '*Safra*' and '*Souda*.'

Shaikh Boo Ali Seena (Avicenna, 980-1036 A.D.), a Persian Savant of the Unani Thibb, postulated "A state cannot exist without a cause."

In this way he gave the Unani Thibb the same scientific approach which characterizes the modern system. In fact by reiterating that:—"a complete knowledge of a thing is only possible if we elucidate its causes and antecedents" (*Kulliathe Khanoon*, Part i, para 6), he reinforces the Unani Thibb with the spirit of enquiry so imperative for research and growth of any science.

According to the Unani system of medicine, '*Zarb-vo-khilfa*' has been described only as different varieties of diarrhoea. Cases of diarrhoea due to deficiency, the nutritional diarrhoeas—have been included in the sprue syndrome which is also a deficiency disease. According to the Unani system, the sprue syndrome is only one of the thirteen varieties of diarrhoeas mentioned in the original Text-books on Unani medicine under the heading of '*Zarb-vo-khilfa*'. The term '*Zarb-vo-khilfa*' itself refers to a particular type of diarrhoea where the digestive functions are impaired and one of its important symptoms is cyclical diarrhoea in which the bulky stools are also explosive in character. The thirteen different varieties have been clinically classified with regard to their ætiology, pathogenesis and symptomatology.

One of these thirteen clinical varieties represents the sprue syndrome including the nutritional diarrhoeas.

In the Unani system of medicine '*Zarb*' or 'Sprue' is a disease wherein there is a total absence of the digestive processes in the stomach and intestines. In other words, '*zarb*' implies a gross derangement of digestive functions.

By '*Khilfa*' is meant stools which exhibit peculiarity in consistency, colour, bulk, smell, etc.

Discussion.—Although, 'Sprue' or '*Zarb*' was recognized as a distinct disease and given a variety of names by the early physicians like '*Jalinoos*' (Galen), '*Razi*' (Razes) and other Arabic physicians, the first more or less accurate description of it is undoubtedly that given by Avicenna. It was known to the Unani Physicians as 'White flux' or white chronic diarrhoea. The writings of '*Jalinoos*', '*Razi*', *Aristho* (Aristotle) and *Avicenna*, convey the impression that sprue is definitely a sequela of some form of dysentery. Avicenna's book contains a summary of the then available knowledge wherein he illustrated with his usual clearness the various lesions of 'Sprue' or '*Zarb*', namely the mouth lesions, the dyspeptic distention of the abdomen, and the characteristic diarrhoea and anæmia. In spite of the tremendous advances made in the modern system of medicine, the precise nature of the ætiological factors in the disease has not been discovered. Amidst the welter of conflicting views on the causal factors of sprue or '*zarb*', is to be mentioned the Unani view, in terms of a metabolic breakdown (deterioration of '*Khuvath-e-Masika*' and '*Khuvath-e-hazima*') of the gastro-intestinal tract characterized by a defective absorption in the small intestines ('*Khuvath-e-Jaziba*') connected in some way with the defective secretion of Castle's intrinsic factor (*Thabayee Ruthoo-baths*).

According to the Unani concept, there is no one single factor in the pathogenesis of this syndrome; a multiplicity of physiological disturbances additively produce this disease; and all these disturbances are inter-related and form a vicious cycle, the derangement of one completely upsetting the functions of the intestines. What initiates it, is a matter of conjecture and for speculation. The ancient Unani physicians attributed the disturbance to defective secretions which precipitated other changes, like defective retention and defective absorption. The mucosal changes result only from disturbed nutrition to the mucous membrane which follows defective absorption. As a result of mucosal atrophy, other biochemical changes, such as defective phosphorylation occur. In course of time as a result of the continuous loss of minerals from the gut due to the chronic diarrhoea, the endocrine system also suffers. The adrenal glands atrophy and their secretions get reduced interfering with the

metabolism of various cells. The patient then presents a picture of emaciation and asthenia. An irreversible condition of hypo-adrenalæmia follows, which is probably what makes the disease refractory to the usual therapy. It is thus evident that the sprue syndrome is primarily a disease of the intestines, though in advanced cases the disturbances and the clinical features may be many and varied. The hypothesis of the Unani theory, will now be easily appreciated.

SIGNS AND SYMPTOMS:—In a typical case, the patient complains of three main symptoms, *namely*, soreness of the mouth, dyspeptic distention of the abdomen and looseness of the bowels. The diarrhoea associated with sprue may be chronic or acute. The former is characterized by one or more daily discharges of copious, pale, greyish, pasty, fermenting, acid, mawkish and foul-smelling stools. In the latter case, the diarrhoea mitigates the dyspeptic distention of the abdomen of the patient. The bulk of the stools may be attributed to fatty acids and to an excess of tiny gas-bubbles. Mouth lesions, in the form of stomatitis, glossitis and aphthous ulcers are common. The fiery red appearance of the tongue is a mirror of the gastro-intestinal tract. The dyspepsia of sprue is very troublesome because the accompanying borborygmus are very annoying. The anæmia in cases of sprue is of the megalocytic, hyperchromic, pernicious type. Tetany is common in longstanding cases. Cramps in the hands and legs may be present in a few cases.

Material and methods.—Patients were selected from the out-patients presenting a typical clinical history of glossitis, diarrhoea, fatty stools, emaciation, anæmia, œdema and pigmentation. Only cases having diarrhoea for more than three months were selected for study and many of them had undergone different lines of treatment elsewhere before admission to the Unani Research ward. A thorough and routine examination was done to exclude infestation with intestinal worms and protozoal infection like *Entamoeba histolytica*. These cases were also investigated by routine hæmatological and other tests, like total R.B.C., W.B.C. and differential counts, Hb percentage, M.C.V., M.C.H., M.C.H.C., sputum examination for A.F.B., Blood for E.S.R., X-ray of the chest to eliminate P.T., Glucose Tolerance Test fractional test meal to determine the functional capacity of the stomach. Tuberculous affections of the intestine were also eliminated by utilizing other evidence of tuberculosis in the lungs, pleura and lymph nodes. Other causes of chronic diarrhoeas like ulcerative colitis, diarrhoea due to the presence of organic diseases in the intestines *e.g.*, carcinoma were eliminated by rectal examination. As a routine, sigmoidoscopic examination was done to exclude amœbic dysentery. Greater

importance was however, given to the clinical picture than to the results of the laboratory tests.

Therapy.—The following medicines were selected for clinical trial:—

1. *Safoof-e-mangoosthan*. Formula:—

Posth-e-Mangoosthan (<i>Garcinia mangostana</i> (Linn))	...	3	i
Posth-e-Bailphal (<i>Aegle marmelos</i> : Bael fruit)	...	3	i
Posth-e-Anar (<i>Punica granatum</i> : Pomegranate)	...	3	i
Jaiphah (<i>Myristica fragrans</i> : Nutmeg)	...	3	ss
(Given for controlling diarrhoea)			

2. *Javarish-e-Sangdan-e-Murgh Deegar*. Formula:—

Sangdan-e-Murgh (Fowl's stomach-dry)	...	3	iii
Thabasheer (Bamboo mana)	...	3	iii
Pudina khushkh (Mint)	...	3	i ss
Posth-e-Bairooni Pistha (Outer covering of Pistachio)	...	3	i ss
Posth-e-Thuranj (<i>Citrus Medica</i> -peel)	...	3	i ss
Posth-e-Haleel-e-zard (<i>Myrobalan</i>)	...	3	i ss
Gul-e-Surkh (Rose-petals)	...	3	ii
Bahman-e-Sufed (<i>Salvia hæmotodes</i> —white sage)	...	3	ii
Bahman-e-Surkh (<i>Salvia hæmotodes</i> —red sage)	...	3	ii
Sandal-e-Surkh (<i>Pterocarpus santalmus</i> —Rosewood shavings—red)	...	3	ii
Sandal-e-Sufed (<i>Pterocarpus santalmus</i> —Rosewood shavings—white)	...	3	ii
Suather Farsi	...	3	ii
Kishneez (Corriander)	...	3	ii
Habb-ul-Aas (<i>Myrtus communis</i>)	...	3	ii
Ilaichi-e-khurd (<i>Cardamom</i>)	...	3	ii
Medath-ul-Ghanam (Goat's stomach-dry)	...	7	v
Asal (Honey)	...	7	lbs.
(Given for improving the digestion and absorptive power of the intestines)			

3. *Kusht-e-Foulad* (Iron oxide).

4. *Ma-ul-Kabid Thaza* (Raw liver juice) with Tomato juice.
(Items 3 and 4 given for Anæmia)

5. *Javarish-e-Amila-Lulavi*. Formula:—

Sheer-e-Amila Sabz (Fresh gooseberry juice)	...	1 lb.	3 iv
Thabasheer (Bamboo mana)	...	3	i
Samakh (<i>Panicum Italicum</i>)	...	3	i
Zarishkh (Barberry)	...	3	i
Gule-Gauzuban (<i>Anosmia bracteatum</i>)	...	3	ii ss
Gul-e-Surkh (Rose-petals)	...	3	i
Badranjaboya (<i>Nepeta Ruderalis</i>)	...	3	i
Posth-e-Bairooni Pistha (Pistachio-outer covering)	...	3	i
Kishneez (Corriander)	...	3	i
Tukhm-e-Khurfa (Seeds of <i>portulaca oleracea</i>)	...	3	ii
Marvareed (Pearls)	...	3	ii
Amber (<i>Ambra grasea</i> : Ambergris)	...	3	i ss
Varkh-e-Nukhra (Silver leaves)	...	3	i ss
Varkh-e-Thila (Gold leaves)	...	3	i ss
Murabb-e-Bihi (Apple)	...	3	xv
Sugar	...	9	lbs.
(Given as a general tonic and for the correction of vitiated Humours)			

TABLE I

Results of treatment
Zarb-vo-Khilfa (Sprue syndrome including Nutritional diarrheas)

Sl. No.	Age	Sex	Occupation	Duration of illness	Complaints	Anæmia	Oedema	Stools	Complete relief	Partial relief	No relief
1	37	M	Agriculturist	2 years	Diarrhoea, burning in the mouth and tongue	Severe	+	Watery, foul smelling, pale	+	—	—
2	20	M	Driver	1½ „	Diarrhoea, burning in the mouth, tongue and emaciation	Mild	+	Watery, foul smelling, clay-coloured	+	—	—
3	38	M	Cooly	2 „	Diarrhoea, burning in the mouth, tongue and pain in the stomach	Mild	+	Do	+	—	—
4	31	M	Agriculturist	6 months	Diarrhoea, burning in the mouth and tongue	Severe	—	Semi-solid, frothy and foul smelling	+	—	—
5	28	M	Cooly	1 year	Diarrhoea, burning in the mouth and tongue. Pigmentation of the skin	Macrocytic-hyperchromic anæmia	—	Watery, white-coloured, foul smelling	+	—	—
6	31	M	Peon	1 „	Diarrhoea, burning in the mouth, tongue and pigmentation of the skin	Do	—	Semi-solid, bulky, foul smelling, clay-coloured	+	—	—
7	43	M	Agriculturist	1 „	Diarrhoea, burning in the mouth and tongue	Do	+	Watery, white-coloured, foul smelling	+	—	—
8	20	M	Khalasi	1 „	Diarrhoea, burning in the mouth, tongue and stomach	Normochromic anæmia	—	Semi-solid, frothy, foul smelling and clay-coloured	+	—	—
9	40	M	Betel-nut shop-keeper	2 „	Diarrhoea, burning in the mouth and tongue	Hyperchromic anæmia	+	Watery, pale-coloured and foul smelling	—	+	—
10	30	M	Driver	1 „	Diarrhoea, burning in the mouth and tongue	Macrocytic-hyperchromic anæmia	+	Watery, clay-coloured and foul smelling	—	+	+
11	30	M	Goldsmith	2 „	Diarrhoea, burning in the mouth, tongue and stomach	Nutritional diarrhoea	—	Do	—	+	—
12	49	M	Businessman	2 „	Diarrhoea, burning in the mouth and tongue	Macrocytic-hyperchromic anæmia	+	Watery, bulky, frothy and foul smelling	+	—	—
13	49	M	Cooly	1 „	Diarrhoea, burning in the mouth and tongue—pigmentation of the skin	Do	+	Watery, clay-coloured and foul smelling	+	—	—
14	36	M	Cooly	1 „	Do	Normocytic hyperchromic anæmia	+	Do	+	—	—

TABLE I—(contd.)

Results of treatment
Zarb-vo-Khilfa (Sprue syndrome including Nutritional diarrheas)

Sl. No.	Age	Sex	Occupation	Duration of illness	Complaints	Anæmia	Oedema	Stools	Complete relief	Partial relief	No relief
15	45	M	Cooly	6 months	Diarrhoea, burning in the mouth and tongue—pigmentation of the skin	Macrocytic hyperchromic anæmia	+	Semi-solid, clay-coloured and foul smelling	+	—	—
16	25	M	Attender	1 year	Diarrhoea, burning in the mouth and tongue	Do	—	Semi-solid, white-coloured and foul smelling	+	—	—
17	60	M	Agriculturist	1 year	Diarrhoea, burning in the mouth and stomach	Macrocytic-hyperchromic	—	Semi-solid, clay-coloured and foul smelling	+	—	—
18	17	M	Student	6 months	Diarrhoea, burning in mouth and tongue	Macrocytic-hyperchromic anæmia	—	Watery, pale-coloured and foul smelling	+	—	—
19	58	M	Cook	1 year	Diarrhoea, stomatitis, glossitis	Do	+	Semi-solid, bulky and foul smelling	—	—	+
20	47	M	Petty shop-keeper	6 months	Diarrhoea, burning in the mouth and stomach and barbo-rygmi	Normocytic	—	Semi-solid, bulky, white-coloured and foul smelling	+	—	—

The above medicines have been used from time immemorial by Unani Physicians, who had described their action, but vaguely. In the light of our present experience, these drugs, do improve the absorptive functions of the small intestines and may possibly also have an astringent action on the gut by cutting down intestinal motility *via* the autonomic nervous system. Though these drugs and medicines were used empirically, the results of treatment were very promising.

Diet.—

1. Arrowroot <i>conjee</i>	2 pints	5. Albumin water	2 pints
2. Sago <i>conjee</i>	2 „	6. Barley water	2 „
3. Buttermilk	2 „	7. Rice <i>conjee</i>	2 „
4. Whey	2 „		

Four ounces of rice and two of curds were allowed to be taken only after the fourth week when the diarrhoea had stopped.

Duration of treatment.—Patients were strictly confined to bed during the acute phase of the illness. Tobacco was strictly prohibited. After the fourth week, the patients were put on normal diet (mixed diet) but were advised not to take highly spiced food. Until the diarrhoea was controlled, the patients were given 'Safoof-e-mangoosthan' 3 ss, three times a day along with water and 'Jawarish-e-sangdane-murgh Deegar' 3 ss was

given at bed time along with water. After the diarrhoea had been controlled, the patients were given 'Kusht-e-foulad' gr. v mixed with 'Jawarish-e-sangdane-murgh Deegar' 3 ss. three times a day. *Maul-kabid Thaza* 3 iv mixed with 2 ounces of tomato juice in the evening and 'Jawarish-e-Amila-Lulavi' 3 ss. at bed time with water. This regimen was continued until the patients were discharged from the wards. For maintenance therapy 'Jawarish-e-sangdane-Murgh Deegar' 3 ss. was prescribed to be taken twice a day. No drug or any other untoward reaction was observed in any of the patients. Allopathic medicines were not given to any of the patients.

Improvement was judged by:—(1) Control of diarrhoea; (2) disappearance of oedema; (3) gain in weight; (4) formation of well-formed stools without frothing or smell; (5) improvement in blood-picture; (6) disappearance of pigmentation, glossitis, stomatitis and neurological lesions; (7) increase of appetite and (8) the disappearance of the ascites which occurred in some cases.

In the patients treated and discharged from the ward up to 30-6-1960, definite improvement as judged by the above points was noticed in nearly all the patients.

Follow-up of cases.—Separate follow-up forms were issued to the patients discharged from the Unani Research ward for a periodical check-up, at intervals of 3 months. So far, 12 follow-up forms were issued and 10 have attended for the check-up. There was relapse in only one. The improvement in weight was maintained throughout. During the periodical check-up, they were advised to take a high caloric, high-protein and nutritious diet.

Progress and chronological disappearance of the symptoms.—The first symptom to disappear following the use of the Unani remedies selected for trial, was the frequency and the watery consistency of the motions. The stools became more solid and dry and its bulk got much reduced. The colour changed to brownish and there was considerably less irritation around the anus. Only a few weeks after the diarrhoea had stopped, the oedema progressively improved. At this period, marked improvement also occurred in the anæmic condition as judged by the colour of the tongue and conjunctivæ. Blood examination was made once a fortnight and a rise in the R.B.C. count was recorded. Later on the pallor improved and the usual brownish colour reappeared. Along with the improvement in blood-picture, improvement occurred also in the general health and mental state of the patients who, prior to treatment were peevish, lethargic, asthenic and felt frustrated. The last symptoms to regress were the buccal and neurological lesions which often persisted for long periods. These however, regressed

on continuing the treatment for some few weeks more. The neurological lesions above proved somewhat refractory. The patients developed a voracious appetite and craved for more food at short intervals.

Summary and conclusions.—1. From the results of this study, the sprue syndrome is a common condition in Madras.

2. The age incidence ranged from 30 to 60 years in the series studied.

3. The Unani medicines were found to act by improving the absorptive functions of the small intestines and probably also exercise an astringent effect on the gut by cutting down intestinal motility through the medium of the autonomic nervous system.

4. Ancient Unani Physicians attributed the disturbance to defective secretions which precipitated the other changes, like defective absorption.

5. Twenty cases with the sprue syndrome were studied and 12 were followed-up for 20 months; a complete subsidence of symptoms was noted in all but one of these twelve.

Acknowledgement.—I am grateful to Dr. A. N. Subbaraman, M.S., Dean, Govt. College and Hospital of Integrated Medicine, Madras for the advice and encouragement given to me. The records of the Unani Research Ward of the Hospital have been used. My thanks are due to Dr. (Miss) Zaibunisa Begum, L.I.M., Research Assistant, Unani, who spared no pains in compiling the tabular statements and other relevant data in connection with this article.

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ŒSOPHAGEAL VARICES

Patients with oral hypertension and œsophageal varices resulting in repeated hæmatemesis present a most challenging therapeutic problem. More than 50% of such patients having intra- or extrahepatic portal vein block will succumb to hæmorrhage if untreated. There is usually subsequent hæmorrhage in those that survive. For many years, surgeons have developed and applied various operative procedures designed to prevent varix bleeding. A review of the literature discloses that there is no single or combination of operative procedures which has been tried extensively and proved to cure all such patients.

At present, the non-emergency treatment of patients with portal hypertension and recurrent bleeding from œsophageal varices is, and should be, a portocaval shunt. Where this operation fails or cannot be done, Habib believes that a partial œsophagogastratomy, of the lower one-third of the œsophagus and the upper 5 cm. of stomach, should be done. He has performed this operation in 21 patients. Seventeen of these patients had extrahepatic block and four had cirrhosis. There were four deaths, and among the 17 survivors, two had further hæmorrhage. Nineteen of the 21 patients had reconstruction with an interposed isolated segment of jejunum, seven with an isolated vascular pedicle where the segment of jejunum was supplied through a single artery and vein to the arcuate, and 12 without interruption of the arcuate vessels distally. In the other two patients an œsophagogastratomy and a Roux-Y œsophagojejunostomy

were done respectively when it was not technically possible to interpose the jejunal segment.

This operative procedure is difficult and the mortality is high. However, in all of these patients simpler operative procedures had been tried as well as extensive medical therapy without satisfactory results. In view of more than 50% of the patients being improved by this operation, it seems wise to continue it in selected patients.—(*Surgery*, 46: 212, 1960. via *G.P.*, January 1960).

DRUGS, AIRMEN AND MOTORISTS

Attention is drawn by E. Evrard (*Bruxelles-Medical*, February 14, 1950, 40: 215) to the dangers attached to the administration of certain drugs to air pilots while they are on flying duty. These dangers are well recognized by Air Force medical personnel and the medical advisers of civilian air lines, but they are not so well appreciated by other members of the medical profession. There is therefore, a danger of a civilian doctor prescribing these drugs to an air pilot and not ordering him to refrain from flying duty for a period. To warn civilian doctors of the dangers involved Evrard gives details of some of the drugs which should not be prescribed in this way. Pilots are banned from flying duty while they are receiving antihistamines—and for at least twenty-four hours after their administration has been stopped. The use of antihistamines as air-sickness remedies is completely contraindicated in the case of pilots. Caution must be exercised in the prescribing of nasal decongestants of the naphazoline type because of the risk of the active ingredient being absorbed and causing mydriasis or nervous incoordination. Equal care is required in the prescribing of drugs of the atropine-hyoscine group which are now being used to an increasing extent in the treatment of peptic ulcer; here again, the risk is the effect that may be produced on vision. In the case of antibiotics, there is little risk attached to the use of penicillin, chloramphenicol and oxytetracycline, but care must be exercised in the case of streptomycin because of the possible effects on the vestibular apparatus. There is also some evidence that in certain individuals chlortetracycline may affect orientation. Because of the sense of fatigue they sometimes induce, flying is also forbidden while a pilot is taking sulphonamides and for at least twenty-four hours afterwards. Flying is also forbidden while a pilot is taking any central nervous system stimulant, such as amphetamine or caffeine, any sedative, tranquillizer or ganglioplegic drug. A practitioner who prescribes any of these drugs to an air pilot must take immediate steps to ensure that the air company concerned is informed of the fact. If these restrictions are applicable to pilots, comparable caution should be exercised in the case of motorists.—(*Practitioner*, May 1960).

CIGARETTES AGAIN!

In an analysis of the cause of death of 200,000 National Service Life Insurance policy-holders, Dorn indicates a markedly increased risk in cigarette smokers to the development of lung cancer.

As can be seen in the chart, the risk appears localized to cigarette smokers and particularly to those who smoke upwards of one pack daily.

The lung cancer risk is out of proportion to the mild increase in other diseases in smokers. This finding supports the previous surveys in the United States and Great Britain which implicate cigarettes as one cause of the mounting (35,000 cases per year) public health problem of lung cancer.—(*Public Health Reports*, 74: 581, 1959, via *G.P.*, January 1960).

CORTICOSTEROIDS IN DERMATOLOGY*

THE steroids much used in dermatology are:—(1) ACTH; (2) cortisone; (3) hydrocortisone; (4) prednisone and prednisolone; (5) triamcinolone and (6) dexamethasone.

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I. Systemic treatment.—Before commencing systemic steroid-therapy on a patient it is advisable to exclude pulmonary tuberculosis, examine his blood-pressure and test his urine for sugar and albumin. It is imperative to obtain his history and investigate for peptic ulceration. When these have been excluded it is better to commence with the effective dosage, as the lack of response is mostly due to insufficient dosage. It is equally necessary to reduce the dosage gradually.

Before instituting steroid-therapy it is necessary to arrive at the correct diagnosis. The following is the equivalent dosage: 300 mg. of Cortisone = 60 mg. of Prednisolone = 48 mg. of Triamcinolone = 6 mg. of Dexamethasone.

Skin disease in which the corticosteroids systemically are useful are:—

(1) *Bullous dermatosis*:—Pemphigus vulgaris and other related disorders occupy a prominent place since they are disabling. They are the group of skin disorders which need the largest dosage. As much as 100 mg. of Prednisolone may be required initially, the dosage being reduced gradually by 5 mg. weekly till 15 mg. per day is reached.

(2) *Stevens-Johnson syndrome*:—The initial dosage is 40 mg. daily of Prednisolone, to be gradually reduced. The total duration of treatment lasts for about four weeks.

(3) *Eczema*:—Dermatitis group:—(i) Exfoliative dermatitis affects mainly persons of middle-age. In some cases, it is the extension of some pre-existing skin disease due to over-treatment or drug-intoxication. These cases do not require the large dosage needed for pemphigus. The usual routine is to start with 45 mg. a day, and tail off; (ii) acute generalized eczema requires similar dosage; (iii) atopic eczema disseminated neurodermatitis of Engman and Besnier's prurigo respond to an initial dose of 30 mg. daily and a later maintenance dosage of 15 mg. daily; (iv) dermatitis medicamentosa i.e., drug eruptions subside in the course of a few days and hence require shorter courses of Prednisolone.

(4) *Lupus erythematosus*:—The symptoms of disseminated lupus erythematosus can be suppressed by corticosteroids. A combination of Prednisone and Prednisolone has been found to

*Specially contributed to the ANTISEPTIC.

act better in cases of allergic dermatosis than either of them used singly.

(5) *Alopecia areata* :—Prolonged administration of corticosteroids has been found to promote the growth of hair.

(6) *Psoriasis* :—In our experience, the corticosteroids have been useful only in Psoriasis arthropathica, while Triamcinolone is beneficial in other varieties of psoriasis. The following peculiar side-effects should be remembered during Triamcinolone-therapy: (i) postprandial flush and (ii) local muscular (global) atrophy.

II. Local therapy of corticosteroids in dermatology.—Hydrocortisone has been tried topically in various dermatological conditions, similarly also prednisolone. These two drugs are used also in combination with various antibiotics. Hydrocortisone in 1% solution has been found to be effective, though some use 2.5% or even 5% strengths.

Is the drug useful in all types of dermatitis? During the acute phases a combination of hydrocortisone with neomycin or a combination of Prednisolone with Chloramphenicol is beneficial. These corticosteroids are also useful as antipruritic agents. A combination of hydrocortisone and derobin is efficacious in cases of fungal diseases of the skin.

Hydrocortisone and prednisolone are both effective in neurodermatitis as well as in infantile eczema and seborrhœic eczema. These drugs are used as a lotion in pemphigus.

The ointment is effective in cases of Lichen planus, alopecia, psoriasis and discoid lupus erythematosus.

TREATMENT OF THREADWORMS

Piperazine remains the established therapy for threadworms, having superseded most other forms of treatment. It is commonly presented as tablets of piperazine adipate (300 mg.), tablets of piperazine phosphate (500 mg.), and syrup of piperazine citrate (500 mg. per 4 ml.). The type of salt does not alter the effectiveness of the drug. The dose is 500 mg. daily for a child of two years or less, 1 g. daily for a child of six years or less, and 2 g. a day thereafter. This can be given in divided doses twice daily for one week followed by one week's rest, and then a further week's treatment. Toxic effects are negligible. Some preparations cause mild gastric irritation, with vomiting and diarrhœa, but this has never been serious.

Failure to eradicate the worms is almost always due to reinfection. Immunity to threadworms does not develop but individual susceptibility varies. Autoinfection must be combated by precautions such as hand washing after going to the lavatory, anal hygiene and the wearing of pyjamas or pants at night. Perineal irritation may be eased by application of an ammoniated mercury ointment. Perhaps of greatest importance is the risk of reinfection from another member of the family. In this most contagious condition infestation of more than one member of a household is so common, and the drug of choice so safe and cheap, that it is wise to treat everybody in the house.—(*The Practitioner*, March 1960).

Cases and Comments

UNUSUAL CARDIAC CATASTROPHE

(Report of a Case)

PATIENT, MRS. S., a twenty year old married woman from a middle class family was admitted to our hospital for acute dyspnoea of three days' duration. Breathlessness was definitely mild to start with but became very severe on the third day when she was admitted to Shri G.H. Hospital, Mansa.

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She was perspiring profusely due to exhaustion. Her temperature was 98.5°F., pulse 140 per minute with increased volume and tension. Respiration was hurried, 40 per minute. Her neck-veins were not pulsating; liver and spleen were not palpable. She had a slight œdema over her lower extremities.

Respiratory system.—Respiration was hurried and auscultation revealed moist rales all over the chest, particularly at the bases.

Cardiovascular system.—There was marked tachycardia. Heart-rate was 140 m. The second aortic was accentuated. There was no thrill and no murmur either at the mitral or at the base of the heart. Her B-P. was 180/95 m.m. Hg. C.N.S. was normal.

Urinary system.—She had a good urinary flow, and had absolutely no complaints. Routine urine examination disclosed the presence of sugar (+++). Microscopically there was nil abnormal.

Screening of her chest on the fourth day showed normal heart borders and the lung fields were clear.

A history of rheumatic arthritis of one year's duration was elicited. For this ailment, she had been given three injections of Phenylbutazone 5 cc. each at intervals of three days in the previous week. She was also getting ordinary Sodium salicylate mixture, for 15 days prior to her admission.

TREATMENT :—At the time of admission and on the first day she was given :—(1) Injection aminophylline 10 cc. i.v. slowly and repeated after six hours on the first day; (2) Oxygen *stat* and given interruptedly; (3) Digoxin tablet 0.5 mg. *stat* and continued tab. 1 *t.i.d.*; (4) Dimox tablet 1 *o.d.*; (5) Raudixin (Squibb) tablet 100 mg. *stat* and continued 1 tab. *t.i.d.*; (6) Sedonal tablet 1 *t.i.d.*; (7) Injection Insulin crystalline (Unichem) 40 units *stat* to be repeated after examination of urine for sugar.

Over the back-rest she passed a sleepless night.

SECOND DAY OF TREATMENT:—Her pulse went down to 90/m., respiration 22/m. and œdema of legs was much less, due to good diuresis; B.P. was 122/80 mm./Hg. and the rales in the chest had disappeared. Urine was completely free from sugar. She was given 1 tablet of Dimox; Digoxin tablet 1 *b.i.d.*; Sedonal tablet 1 *b.i.d.* and Raudixin tablet 1 *o.d.*

THIRD DAY OF TREATMENT:—There was no dyspnoea at all. She was still advised complete rest in bed. Her pulse was 85/m., respiration 18/m., B.P. 120/70 mm. Hg. and urine was free of sugar. One tablet each of Diamox, Digoxin and Sedonal was given. One tablet each of Digoxin and Sedonal daily was continued for four days more at the end of which she was discharged at her own request. Then she was attending as an out-patient and was getting injection Beplex forte 2 cc., twice a week with a mixture of Sodi salicylas orally. About a fortnight later, an ECG of her heart was taken and found to be within normal limits. The cardiologist opened specifically that she had no rheumatic carditis.

Discussion.—The patient in this case was a twenty year old young married woman with a history of rheumatic arthritis of one year's duration. For this, she was given Sodi salicylas mixture for 15 days and then she was given Phenylbutazone with Vitamin C 5 cc. deep intragluteally every third day of 3 injections. Two days after the last injection she became acutely dyspnoic, her B.P. became high 180/95 mm. Hg. and her urine contained sugar +++.

Was this cardiac catastrophe, short-lived as it was and which we could manage to tide over with the proper drugs, due to Phenylbutazone? If not, what else could have been the ætiological factor in this young woman?

This patient has since been enjoying perfectly good health, for the last three months. She was once given Prednisolone tablets 5 mg. *t.i.d.* when she complained of joint-pains after this grave incident. She had complete relief. This time, Phenylbutazone was not injected.

Acknowledgement.—I am very thankful to Dr. M. B. Hanse, M.B., B.S. and Dr. S.V. Mohile, M.B., B.S. for the joint consultation and guidance at the time of her admission to the Hospital. I am also thankful to Dr. R. N. Manchandia, District Health Officer of Mehsana, for his kind permission to publish this report.

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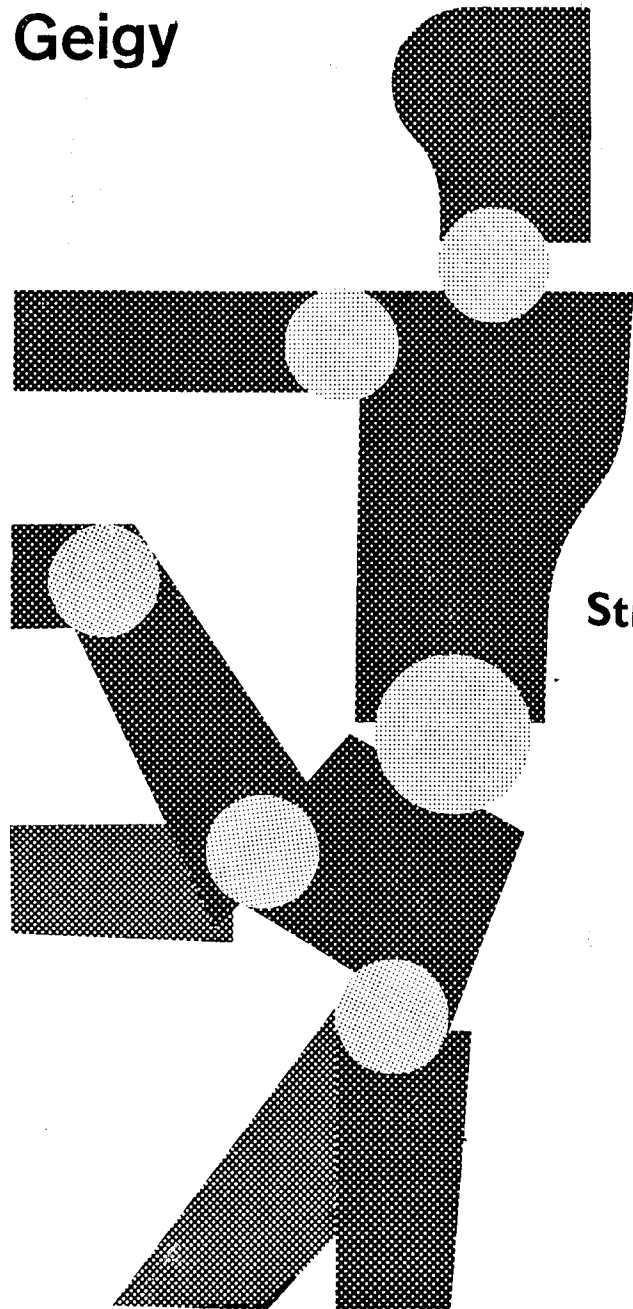
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Editorials

PROGRESS OF MEDICAL EDUCATION IN INDIA

A New Medical College at Tirupathi

WE will shortly be entering into the first lap of India's Third Five Year Plan for all-round development. Greater attention was devoted during the first two plans to industrial and agricultural progress, as they were obviously the more pressing needs of the country and its rapidly increasing population.

It is an universal maxim that in every country and particularly in a Welfare State, the means of full medical attention and public health safeguards should be made available to every man, woman and child in the land. If this is conceded, the magnitude of the problem in our country where the vast majority of the people, owing largely to ignorance and poverty, expose themselves to several preventable and other diseases becomes obvious.

Progress in medical education which is necessarily one of the first steps in the provision of medical attention has not lagged behind since Independence. Prior to 1947 there were only about 30 medical colleges in India. We may feel somewhat proud of having twice that number now. Yet even this will not suffice to produce the number of qualified medical men required to meet the country's needs. On a modest estimate at least forty (40) more new medical colleges will require to be established within the next ten years.

The grants made by the Centre for medical education are however, given only in respect of the college and not of the teaching hospital which is a most vital and necessary adjunct to provide satisfactory medical education and training for doctors.

The States' liabilities, both in capital expenditure and in recurring costs have proved to be a powerful deterrent to the expansion of medical education to the desired extent and standards.

Even under such limitations the progress achieved by the Governments of the Andhra Pradesh and Madras in this direction must be considered unique. Most other States have only 3 or 4 medical colleges, except West Bengal.

The new medical college opened formally at Tirupathi on the 25th July 1960 by Sri N. SANJEEVA REDDY, the Congress President, is the eighth in that State and the second to be started under the auspices of the Sri Venkateswara University; but there can be no suggestion that these will suffice for this very large State, which comprises now the Circars, Andhra, Rayalseema, and Telangana, the last of which is still largely without this much-needed facility. We are sure the Andhra State Government will next direct its attention to this area.

The medical college started three years ago at Kurnool under the ægis of the Sri Venkateswara University is reported to be functioning very well indeed, thanks to the generous financial support of the T. T. Devasthanams for the college and to the munificence of a Bombay philanthropist for founding a teaching hospital to be attached to the college. We learn that apart from the initial donations and grant of land, the annual commitment of the T. T. Devasthanams is only Rs. 3 lakhs, as against an estimated expenditure of Rs. 21 lakhs. This problem is expected to be partly solved by the philanthropy of the Bombay Ruia family of magnates who, it is learnt, have promised further help for the expansion of the bed-strength of the hospital to 300 as the college develops in the near future. It should be possible in our opinion to tap similar sources of munificence and philanthropy for the purpose, in all the States of India.

A master plan of buildings for the college departments, hospitals, and staff quarters has been drawn up. The college buildings are estimated to cost Rs. 57 lakhs. The Ruia Hospital will, we gather, be ultimately developed into a 500-bed hospital and the existing hospital will be converted into a maternity hospital with 100 beds. There is already an Infectious Disease Hospital at Tirupathi. With these facilities, the Government has ordered the opening of the Medical College at Tirupathi with 50 students from July 1960.

The proximity of the university campus to the medical college and hospital, furnishes an ideal atmosphere for medical education, training and research. The shortage of personnel is however, still acute, in spite of the fact that the number of medical colleges has doubled in the last 12 years and many of them have

been expanded to take in more students. Thus for instance, the Madras State has been able to increase the annual admission of students for the M.B., B.S. degree course this year to 550 from 420.

The problem created by the dearth of qualified teaching staff for medical colleges and doctors for the growing number of hospitals in India has attracted the attention of the Technical Cooperation Mission; "we are now exploring the possibility of intensifying its activities to meet this shortage," stated Dr. JOHN PATTERSON of Vanderbilt University School of Medicine, who is the medical education consultant for the T.C.M. and who recently came on a visit to Hyderabad to discuss the possibility of exchange of professors, between Osmania University Medical College and Vanderbilt University School of Medicine.

Through such an exchange of fellowships and visiting professors, it would be possible to secure the collaboration of experts from other countries, and build up a high standard of Medical Education and Research in India, comparable to that of any advanced western country. The number and quality of the teaching staff in colleges and hospitals could also be greatly improved.

BELGIAN LEPROSY CENTRE

(Madras State Government assumes control on behalf of the Centre)

THE five-year-old Belgian Leprosy Centre in Polambakkam, 62 miles south of Madras, claimed to be the largest single leprosy unit in the world, was officially handed over to the Government of India at an impressive ceremony held there on 19th July 1960. Sri M.A. MANICKAVELU, Madras Health Minister, who took over the Centre on behalf of the Union Government, said "the Madras Government, which would be running the unit in conjunction with the Centre, would run it in such a way that there would be no cause for any complaint."

The centre with 30 beds is located in an eight-acre plot in Polambakkam, a village eight miles from Madurantakam station on the Southern Railway line. It has an air-conditioned operation theatre, X-ray and other modern equipment to treat chronic cases, besides a band of well-disciplined enthusiastic workers.

The Belgian Leprosy Foundation has thus added another notable chapter to its fine record of work in the control of this dread disease by the completion of its self-appointed mission at Polambakkam. The Foundation had already done splendid work in the Belgian Congo in this field. The Director of the Centre, Dr. F. HEMERIJCKZ, is a pioneer with twenty-five years

of dedicated service in the cause before he came to India. Founded five years ago, the Polambakkam Centre with its fifty clinics is reported to have reduced the infectivity of the disease in the area and slowed down its spread. That is a significant achievement if we take note that not only is Madras State one of the areas of high incidence of leprosy but Madurantakam, near which the Centre has functioned, is reckoned to be the worst affected area in the world in this respect. Leprosy is perhaps the most disabling and demoralizing disease besetting mankind.

According to an estimate made in 1953, there are about 15,00,000 lepers in India. Madras, Kerala and Andhra Pradesh are among the areas of high incidence, and in Madras itself the three districts of Chingleput and the Arcots are the most affected. It is in these regions that facilities for treatment, (such as they are and it is admitted they are far from adequate) are concentrated. Last year the State Health Minister opened a building for physiotherapy and surgical work at the study and treatment centre (which is to be distinguished from the "subsidiary" centre that is also part of the leprosy control scheme initiated by the Government of India in the First Plan period) at Tirukoilur of the South Arcot District.

It is admitted that the number of clinics and leprosaria for the treatment of this disease is very inadequate in our country, while the risks of its spreading through migration of affected persons from villages to congested towns are significantly and constantly increasing.

The situation, however, is not too depressing. The hopeful trends are that the Government have already formulated a phased programme of control of the disease, *to wit*, the Wallajah Scheme and some progress is being made. The discovery of sulphone drugs with specific action, promising a cure in the early stages of infection, and the reduction of infectivity even in advanced cases, lend strength to this programme.

Speaking about the Polambakkam Centre itself, Dr. HEMERIJCKZ said:—"hitherto the centre was maintained entirely by the Belgium Leprosy Foundation, spending about Rs. 15,00,000. About 25,000 leprosy patients were in direct contact with the centre. Of them, about 18,000 were treated and several hundreds discharged. The infectivity of the disease and its spread had been reduced by the sustained efforts of 50 open clinics attached to the centre. About 4,00,000 people in the Chingleput, Kancheepuram, Wandiwash and Tindivanam taluks who had direct lineage with the patients were examined and re-examined in order to determine any effect on them. In fact, the centre had become an extensive and intensive leprosy

control and treatment centre in India." He, however, regretted that they were not able to start any rehabilitation centre so far.

Dr. R. G. COCHRANE, the stalwart General who was fighting the battle against this scourge in this part of the country for some years, and who is one of the leading authorities on this subject said recently, "Looking back more than thirty years, I have seen advances in the treatment, management and prevention of leprosy as great as in any other disease." Modern concepts hold that the victims need not be segregated. Domiciliary treatment is now accepted. It has been shown that only a small percentage of cases is infective, and that the others need not be isolated, though they require systematized and effective treatment. Striking progress has been made with the sulphones, which are fortunately cheap. The importance of this therapy was stressed at the International Congress on Leprology, which was held in Tokyo two years ago. But as one of our distinguished contemporaries recently stated "there are some peculiar problems for India. Another international conference held in Tokyo suggested that programmes of leprosy control be implemented by trained lay workers. While this may be feasible to some extent, specialist doctors are necessary."

Unfortunately, very few Indians are willing to emulate the example of Dr. HEMERIJCKZ who, as Sri MANICKAVELU said, lived in a hut for five years in his devotion to the cause of the suffering. In fact, the entire Belgian centre has been a labour of love, and a great responsibility attaches to the Madras Government in having undertaken to run it on behalf of the Union Government.

Dr. HEMERIJCKZ and others, who spoke at the function, indicated the lines of future progress. Much remains before the disease can be eradicated from the country, but the example set by those in charge of the Polambakkam centre proves that the task *can* be accomplished.

We would like to stress, as our State Health Minister did on this momentous occasion, that our medical men should come forward in large numbers and help the country by emulating the noble example set by the Belgian doctors. This Centre with its thirty beds, up-to-date equipment and accumulated experience of five years of intensive work, which has just been handed over to the Madras Government, should provide the nucleus for further expansion and considerable extension of the service to other affected areas. It has also demonstrated the scope for fruitful collaboration among nations in the fight against mankind's common enemies like disease and hunger.

THE TUBERCULOSIS PROBLEM

(21st Annual Meeting of the Madras T.B. Association)

PRESIDING over the 21st Annual General Meeting of the Madras Tuberculosis Association on the 1st of August 1960 at the Madras Medical College, Sri M.A. MANICKAVELU, Health Minister explained at some length the measures adopted by the State Government to combat malaria, smallpox, cholera, leprosy and tuberculosis; he pleaded for a greater awareness among the people and more sustained enthusiasm amongst doctors and social workers in their efforts to fight and prevent the spread of this dire disease and to maintain an organized drive to secure greater public support, through the sale of the T. B. Seals and other fund-raising activities.

The proceedings of this year's annual meeting were highlighted by Dr. S. T. ACHAR's plea for immunization of new-born babies against tuberculosis with BCG Vaccine and by Sri Dr. U. KRISHNA RAU's brief but interesting survey of the problem in all its varied aspects.

Thus, Dr. ACHAR, Pædiatric Expert of Madras, was of the opinion—with which we are inclined to agree—that public health statistics in India do not reveal the true state of affairs regarding the deaths due to tuberculosis among children because tuberculosis in infants, unlike in adults, does not manifest as cough or bringing-out of sputum or blood. In our Indian hospitals, a good proportion of the beds in the children's medical ward is occupied by tuberculous meningitis cases and in the orthopaedic department, by cases of tuberculosis of the bone. Nearly half the number of tuberculous meningitis cases among children occur below the age of two and one-third below the age of one. Thus the infection seems to be occurring long before the child is sent to school.

Another intriguing fact is that in a good proportion of cases "contact history" cannot be elicited. That would mean the child does not pick up the germ at home. Dr. ACHAR's studies have revealed that nearly 75 per cent of the children below 14 years are already infected with T.B., the solution to which lay in taking preventive measures early in infancy.

Having discussed this with experts in the field, Dr. ACHAR strongly felt that one practical step they can take is "BCG Immunization" of the child at birth. This can be done on a large scale in maternity homes. He admitted that the reluctance of the parents to have their new-born submit to BCG vaccination was certainly an important factor to reckon with; this reluctance would be less when the child was born, than when the parents were asked to bring their children to the immunization centre, three or four years later. Resistance

from parents will be less if the immunization is oral and not through injections. But our BCG Laboratory is not yet in a position to supply enough BCG vaccine for oral immunization; further the dosage for children will have to be worked out before administering the oral vaccine, even when it became available in sufficient quantities.

In any case, this practical suggestion which may and probably will be somewhat difficult to put into effect, must be first tried very guardedly in a controlled area on a pilot scale, keeping a very careful watch over the procedure at every step till the baby is out of harm's way and has resisted possible reactions and side-effects. Even a single mishap will certainly bring the whole campaign into contempt and disrepute.

In his brief but comprehensive and interesting survey of the tuberculosis problem in India, Sri Dr. U. KRISHNA RAU, the Speaker of the Madras Legislative Assembly, referred to the magnitude of the problem, as the disease continues to be a grave menace to the men, women and children of the land, both in urban and rural areas according to the results of the recent survey by the Centre; its fairly large incidence and insidious spread in the rural parts also, would appear to have raised grave issues. The unsatisfactory state of rural sanitation, and the absence of facilities for suitable and adequate medical relief have been responsible for the spread of the disease, assisted largely no doubt by the malnutrition and poverty in the masses and a consequently lowered standard of living. Dr. KRISHNA RAU emphasized the need for early detection of cases of this disease which unlike typhoid or other infectious diseases lurks long in individuals before manifesting itself in its gruesome aspects and incapacitating the victims from winning their bread.

Early detection is now possible and is being carried out intensively by mass X-rays. Luckily, modern antibiotics have proved very useful in ameliorating the condition and even in effecting cures. Referring to the modern trends in prevention, he mentioned the many T.B. clinics all over the land which had been doing very good detective and preventive work and said that domiciliary treatment which was first tried and has been found useful, is now being extended on a large scale. Patients were now being visited and treated in their homes by medical specialists, nurses and social workers and these new trends have helped in effecting great economies in hospital and domiciliary management of the disease. With greater co-operation from the public and the general practitioner, the schemes will be a still greater success. Education of the general public on the modes of causation, and transmission of the disease and the preventive measures necessary for control, *e.g.*, BCG vaccination, is very essential. The co-operation of the general practitioner and the

family doctor, should be forthcoming at all levels and at all times. The trained social-welfare workers, who are now luckily available in fair number under the different rural development schemes initiated and implemented by the Centre and State Governments respectively, will be a great source of help in the educational propaganda designed for the public and also in the domiciliary care of the patients.

We are indeed very glad that Dr. KRISHNA RAU stressed the importance of rehabilitation. He very rightly pointed out that concentration on cure is not enough and that we should think of all possible ways and means by which the treated patient can be made to return to normal life and work; vocational training and sheltered employment will gradually lead the patient to this goal. Undesirable home conditions should be removed or improved to a tolerable extent, through the agency of the T.B. clinics. But even this would necessarily involve considerable expenditure of money, which is far from easy to find in these difficult days. The co-operation of business magnates and industrial institutions must be deemed a national obligation and they should willingly come forward to help the disabled patients with funds for rehabilitation and when they are sufficiently well rehabilitated to absorb them in suitable sheltered employments.

Dr. KRISHNA RAU's address thus rightly shifted the emphasis from the hitherto mainly clinical and curative approach to the public health and preventive aspects. So we have not only to detect cases in the community, but we must educate them on the need for healthy living, and also help them to take all measures to prevent the spread of active infection in their midst. It is no doubt a stupendous task, as we have repeatedly stated in these columns and should therefore, engage the serious attention of and concerted action from the doctor, nurse, social worker, industrialist and most important of all the philanthropic public.

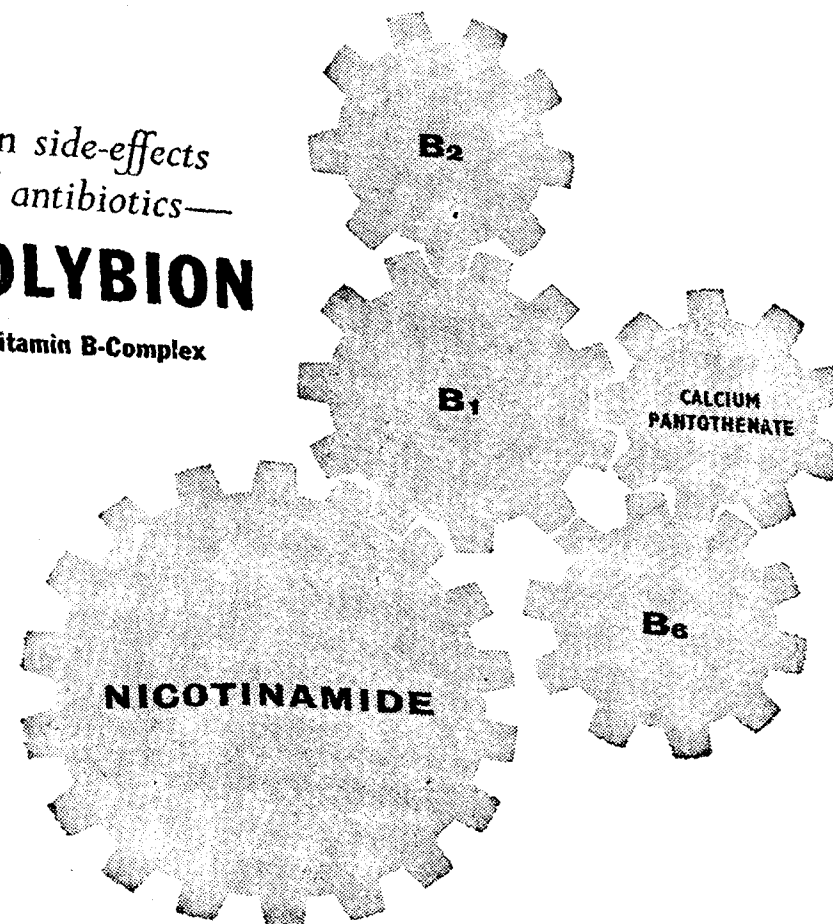
STATUS OF TRANQUILLIZING DRUGS

The tranquillizing drugs are very useful and, comparatively speaking, are safe. They are not miracle drugs, our newspapers and lay magazines not withstanding. They are therapeutic substances, and thus are welcome in our medical armamentarium. They are to be employed in symptomatic treatment; they are not curative of specific conditions in the sense that quinine can be used for the cure of malaria, or penicillin for pneumonia. They merely handle the disturbance in the neural communication system. They are useful in that they render the patient more available for approach by the physician, who may then be able to communicate with the patient and get to the underlying cause. In short, these drugs are tranquillizers, or facilitators, but they are never a substitute for a full doctor-patient relationship.—(*Ann. Int. Med.*, January 1960).

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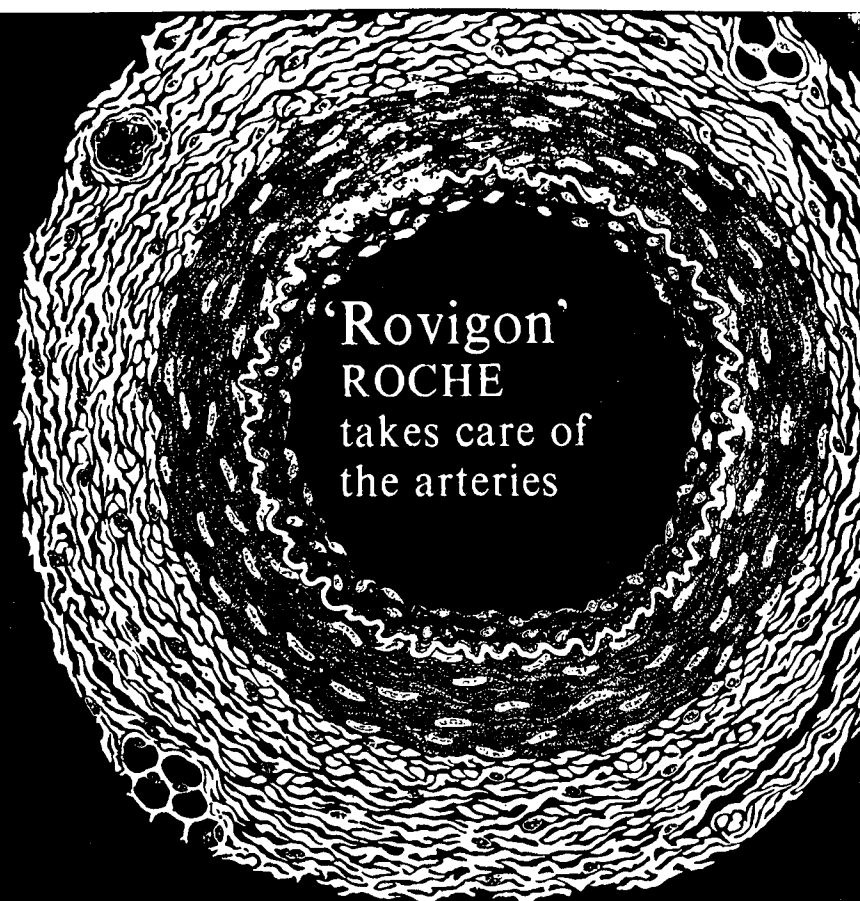
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GLEANINGS FROM THE MEDICAL PRESS

MEDICINE & THERAPEUTICS

Adams-Stokes syndrome associated with chronic heart block.—(*J.A.M.A.*, 12-3-1960).

Despite the availability of a variety of therapeutic agents, the treatment of Adams-Stokes syndrome associated with heart block is often unsatisfactory and the prognosis ominous. The sympathomimetic amines, isoproterenol hydrochloride and epinephrine, and external or internal electrical artificial cardiac pacemakers have been used most commonly and with variable degrees of success. Although their use has often been life saving, their effectiveness is commonly of temporary duration. The sympathomimetic drugs must be given intravenously and the dosage carefully and continuously adjusted. The use of a cardiac pacemaker requires complex equipment which is not always readily available and has other disadvantages. Among other agents which have been used, atropine is generally ineffective, and the value of sodium lactate has not been adequately confirmed. The use of the latter is associated with the danger of serious arrhythmias and congestive heart failure. Because of the poor prognosis for patients with Adams-Stokes syndrome and the shortcomings of commonly used therapy, it appears desirable to call attention to additional therapeutic agents, the corticosteroids.

Friedberg *et al.*, of N. Y. report on six patients in whom prednisone therapy either permanently or temporarily diminished or eliminated heart block and abolished the associated attacks of syncope. The attacks were eliminated within 24 hours after the beginning of corticosteroid therapy, whether or not the heart block was alleviated. The case histories illustrate the relief afforded by prednisone, the recurrence of heart block when dosages were reduced or interrupted, the occasional absence of symptoms in the presence of recurrent

heart block, and the occasional failure of the patient to respond further to dosages of prednisone that had previously been effective. The drug was given in doses of 60 mg. per day initially, and it was not always possible to reduce the dosage to 30 mg. without a return of the syndrome. Prednisone sometimes was effective after atropine and isoproterenol had failed, and no untoward results followed the simultaneous administration of all three drugs.

Prednisone therapy was effective in abolishing Adams-Stokes attacks in six patients. In five of these atrioventricular conduction was improved or restored to normal. The frequency and duration of the seizures prior to treatment and the speed with which they were controlled after treatment suggest that the prednisone therapy was responsible for the beneficial effects. The Adams-Stokes seizures were abolished in some patients even when heart block persisted, suggesting that prednisone arouses and stabilizes idioventricular pacemakers as well as improves atrioventricular condition. The use of adrenal glucocorticoids appears warranted in view of their immediate availability and simplicity of administration. Sympathomimetic drugs and an artificial pacemaker can be used simultaneously, if available, or added later if therapy with corticosteroids is ineffective.

Relation between mortality from cardiovascular disease and treated water supplies.—(*J.A.M.A.*, 23-4-1960).

The variations in states and 163 largest municipalities of the United States form the subject of a very important and interesting article by Henry A. Schroeder, M.D., of West Brattleboro, Vt.

In the United States variations from state to state in death rates from cardiovascular diseases have been unexplained on dietary, racial, or social bases. One variable environmental influence to which all persons

are exposed is potable water. *Statistical analyses of water hardness and death-rates from all causes*, cardiovascular diseases, coronary heart disease, and noncardiovascular diseases, showed *highly significant correlations for all but noncardiovascular causes*. Similar relationships were demonstrated for caucasoid men, aged 45 to 64 years, by state and, in the case of coronary disease, in the 163 largest cities. Of 21 constituents of finished municipal water in each city, highly significant correlations were found for magnesium, calcium, bicarbonate, sulphate, fluoride, dissolved solids, specific conductance, and pH. In all cases correlations were negative, i.e., *softer water was associated with higher death rates*. Some factor either present in hard water or missing or entering in soft water appears to affect death rates from degenerative cardiovascular disease.

Leukæmia and liver.—(*Medizinische*, 29-30, p. 1325, 1959, via *J.A.M.A.*, 23rd April, 1960).

H. E. Bock and co-workers state that the liver is involved in most patients with leukæmia. Differential diagnosis may be difficult in patients who have early hepatitis with severe lymphocytic or monocytic reactions. Jaundice at the beginning of leukæmia may be mistaken for hepatitis. The cause of icterus occurring in the course of leukæmia may be parenchymal damage, hæmolytic icterus, or toxic damage due to drugs; or obstructive jaundice and leukæmia may be superimposed on a serum hepatitis after frequent transfusions. Frequent blood transfusions over several years may also cause hæmosiderosis. In most patients the liver is enlarged and firm. Leukæmic infiltration is diffuse. It may disappear, especially with modern treatment, and periportal fibrosis may give rise to pseudocirrhosis.

The hepatic changes were investigated in a series of 236 patients with leukæmia. Infiltration of the portal fields predominated in the chronic lymphadenoses, while in the myelogenous forms leukæmic cells accumulated in the hepatic capillaries. Most

patients had marked fatty degeneration. Their alpha-2-globulins were increased, and in the acute cases the gamma fraction was also increased. Dysproteinæmia was frequent but not specific. Sulphobromophthalein retention was not related to the degree of leukæmic infiltration. The serum bilirubin level was increased in 51 patients because of obstructive jaundice, marked infiltration of the liver capillaries with cells, compression of the sinusoids, or hæmolytic syndromes associated with increase of indirect bilirubin and lowered osmotic resistance of the erythrocytes. In view of the fact that the drugs used to treat leukæmia are cell-poisons it is quite understandable that the liver cells are affected.

Aerosol treatment with neomycin and bacitracin.—(*Med. Klin.*, No. 42, p. 4, 1959, via *J.A.M.A.*, 23rd April 1960).

Fricke and co-workers stated that the advantage of aerosol treatment is in the local effect on the epithelium and the underlying tissues. This treatment is of particular value in patients in whom the drug cannot reach the site of infection in sufficient quantity via the blood stream either because it is degraded and excreted too quickly or because insufficient blood supply, a connective tissue barrier, or a wall of infiltration prevents it from reaching the desired site. As infections accompanying bronchial carcinoma put an additional strain on the patient and increase the operative risk, the authors gave antibiotics for two to four weeks prior to operation or cytostatic treatment. Oral or parenteral treatment requires large doses of antibiotics to achieve a therapeutic concentration in the carcinomatous tissue. They therefore used a combination of neomycin and bacitracin aerosols.

The advantages of these preparations are that: (1) due to their molecular weights, they are only slightly absorbed, if at all, and are effective only locally; (2) they have wide therapeutic spectrums; and (3) they do not increase resistance. The authors treated 63 patients after

determining the sensitivity of the responsible micro-organisms and made the following observations: the sedimentation rate declined by 10 to 20 mm., the leucocyte count returned to normal, vital capacity increased by about 400 cc., and the amount of sputum, putrid admixtures, and dyspnoea improved markedly. No intolerance to the drugs was noted.

Electrolyte-free liquid formula diet.—(*J.A.M.A.*, 23-4-1960).

Electrolyte depletion in critically ill patients can be corrected by intravenously given fluids, and harmful electrolyte accumulations may be reduced with use of the artificial kidney, peritoneal dialysis, or diuretics. If diets free of electrolytes could be given in less critical situations, or as adjunctive therapy in the more severe cases, much greater control could be assured.

The metabolic effects and possible clinical uses were studied by Dr. Victor Vertes of Cleveland, Ohio:—Twenty college students, 19 men and 1 woman, subsisted for three to five days on a liquid diet containing 300 gm. of carbohydrate, 100 gm. of vegetable fat, and no protein. The unique feature of the diet was its almost complete avoidance of electrolytes; the elements ingested daily amounted to 45 mg. of sodium, 32 mg. of potassium, 2.7 mg. of calcium, 64 mg. of chloride and 84 mg. of phosphorus. Daily 24-hour urine specimens were obtained from the students for two days of unrestricted diet and during the study period. Serum electrolyte and nonprotein nitrogen measurements were made during the pre-diet period and at the end of the diet period. The diet produced a prompt decrease in urinary electrolyte excretion. It was palatable and well tolerated. It promises to be useful in the diagnosis as well as in the treatment of various conditions in which electrolyte control is important.

Significance of minor infections.—(L. A. Weed, Ph.D., M.D., *Epidemiology of Staphylococcal Infections, Anaesthesia*

and *Analgesia*, January-February, 1960, via *J.A.M.A.*, 172: 17, 1960).

It is a gross error to minimize the epidemiologic importance of so-called minor infections, for example, a *stitch abscess*. The same strain may kill the next patient. Therefore, one must use all possible precautions to prevent transfer of the organisms to another patient. To identify the source of an infection, typing the strains with bacteriophage is the only accurate method available at present. However, typing of a strain has no clinical or prognostic value. Typing is only of epidemiologic value. Furthermore, only about 60 per cent of the strains are susceptible to the bacteriophages presently in use.....Reduction of the number of infections acquired within a hospital to a minimum requires the rigid application of aseptic technique by all persons having contact with patients. Each person must always act as if he were a carrier even though a transient one, because he may be.

Heredity and hypertension.—(*Rev. Med. Chile.*, 87: 699, 1959, via *J.A.M.A.*, 23rd April 1960).

Dr. R. Cruz-Coke compared the casual diastolic blood-pressure levels of 120 close relatives of 35 hypertensive patients with those 57 relatives of 17 normotensive patients. All subjects were divided into age groups, each of which comprised 10 years. The results showed a significant difference at all ages. This difference could be attributed only to the existence of hereditary factors. The 35 hypertensive patients were divided into two groups: those having primary and those having secondary hypertension. The patients with secondary hypertension had significantly higher levels than did those with primary hypertension. Comparing the diastolic pressure of the relatives of those with primary hypertension and that of the relatives of those with secondary hypertension, the author found no significant difference. This indicated that the hereditary factors come into operation with the same degree or intensity in the patients with primary

and the patients with secondary hypertension. That is to say, all types of hypertensive patients had the same tensional genetic background.

The author plotted the diastolic pressure level of the hypertensive patients against that of their relatives and found a direct correlation. This showed that the diastolic blood-pressure of the relatives of hypertensives increased in direct proportion to that of the hypertensive patients.

Sulphamethoxypyridazine.—(*Svenska Lakartidningen*, Dec. 4, 1959, via *J.A.M.A.*, 23rd April 1960).

Jernelius observed the action of sulphamethoxypyridazine in 25 patients with pneumonia and allied conditions. Since the drug is rapidly absorbed and slowly eliminated, a small dose once or twice a day suffices. On the first day 2 gm. were given and thereafter 1 gm. daily. Twice as much should be given to patients with severe infections such as meningitis. The concentration of the drug in the blood was measured in 11 patients and was between 5.0 and 9.5 mg. per 100 ml., 12 hours after every dose. The side-effects were insignificant and consisted of transient headache in two patients. A copious fluid intake was prescribed, and no sodium bicarbonate was needed. The treatment usually lasted 6 days (range of 3 to 14 days). The patients' ages ranged from 8 months to 78 years. Excellent results could be claimed in 64%. The drug acted in much the same way as other sulphanamides but had simplicity of administration and comparative freedom from side-effects in its favour. The results in 23 similar patients undergoing treatment with penicillin were satisfactory in 78%.

SURGERY

When should hernia in the infant be treated bilaterally?—*J.A.M.A.*, 171: 287, via *G.P.*, 21.4.60).

The authors attempt to clarify the question of performing bilateral herniorrhaphy in children under 2 years of age, who present only with

the signs and symptoms of unilateral hernia.

Starting in 1957 at the Children's Hospital of Pittsburgh, 100 bilateral herniorrhaphies were performed on patients under the age of 2 who were seen for unilateral complaints and in whom no evidence of hernia on the opposite side could be clinically determined. Criteria for contralateral hernia was a sac, 1 cm. or greater, below the internal ring without tension exerted on the spermatic cord.

A second group of 237 cases who had only a unilateral repair before the age of 2, were followed for varying periods upto 9 years, in an effort to ascertain whether a contralateral hernia had developed later in life.

In the operated group, 57 per cent of those patients presenting with right-sided hernia had an associated hernia on the left side. Of the patients operated upon for a clinically evident left hernia, 71% had an associated right hernia on exploration. In the follow-up groups, 74 patients (31%) developed second hernias. Of these 74 patients, 31 had had their first repair when they were under 6 months of age, 17 were between 6 and 12 months of age and 26 between 1 and 2 years of age. On the basis of these findings and on the fact that there was no increase in mortality or morbidity in doing a bilateral exploration as compared with a unilateral herniorrhaphy, Kiesewetter and Parenzan conclude that it is advisable to undertake bilateral herniorrhaphies on all children under 2 years of age.

ACTH-Producing pituitary tumours following adrenalectomy for Cushing's syndrome.—(*Annals of Internal Medicine*, March 1960).

Since describing in 1959 a single patient who, following bilateral adrenalectomy for Cushing's syndrome associated with adrenal hyperplasia, subsequently developed an ACTH-producing tumour of the pituitary gland, Nelson *et al* of Boston had the opportunity to study or to determine plasma-ACTH levels on a total of nine other similar patients. They

describe the clinical picture presented by these patients. In none of the patients described was there evidence of a tumour of the pituitary gland prior to bilateral adrenalectomy, but the possibility cannot be ruled out that a very small tumour was present and subsequently grew to a larger and more easily demonstrable size.

Ten patients, previously adrenalectomized for Cushing's syndrome, who have subsequently developed evidence of a disturbance of the pituitary gland have been studied. All of these patients were very deeply pigmented. In eight cases a tumour of the pituitary gland was demonstrable either by roentgenologic examination or by such evidence *plus* restricted visual fields. In two cases, markedly elevated levels of ACTH were found in association with deep pigmentation, but no tumour of the pituitary was demonstrable. In five of the 10 patients it has been possible to demonstrate a level of plasma-ACTH above that usually observed in Addisonian patients, or in other patients in whom a bilateral adrenalectomy has been carried out. All five patients who did not have elevated levels of plasma-ACTH, but who were deeply pigmented and who did have evidence of pituitary tumours following adrenalectomy for Cushing's syndrome, had received irradiation to the pituitary gland prior to the time that the first plasma was obtained for ACTH assay. The average time from adrenalectomy to the appearance of the pituitary tumour has been three years, with a range of from one to eight years, and, as noted above, pituitary histologic examination in two cases has been reported to show cells of a "chromophobe type."

Results of 1,000 consecutive basal ganglia operations for parkinsonism.—(*Annals of Internal Medicine*, 52: 3, March 1960).

Irving S. Cooper, M.D., of the New York University Post-Graduate School of Medicine, examined in considerable detail 5,000 patients with parkinsonism between 1952 and 1959. Of these, 1,000 were submitted

to surgery of the basal ganglia in the form of anterior choroidal artery occlusion, or chemopallidectomy or chemothalamectomy.

Of the cases subjected to chemopallidectomy or chemothalamectomy, 80% obtained relief of tremor, rigidity and deformity, and attendant symptoms such as bradykinesia and gait and postural abnormalities. The mortality rate for the first 1,000 consecutive operations was 2.4%. The incidence of hemiparesis or hemiplegia was slightly less than 3%. The tremor, rigidity and deformity of parkinsonism can be completely relieved by this type of surgery. Many five-year courses of these symptoms are now demonstrable in the personal series of cases reported in this paper.

The site of the lesion of choice for relief of parkinsonian tremor and rigidity is the region of the ventrolateral nucleus of the thalamus. Such a lesion includes the reticular nucleus of the thalamus, the zona incerta, and afferent fibres to the thalamus from the globus pallidus, cerebellum, red nucleus and vestibular nucleus, as well as the efferent fibers to the cerebral cortex.

The meticulous selection of candidates for surgery is as important as the meticulous performance of the operation. Patients in the seventh and eighth decades of life may be operated upon with the same possibility of benefit as may those in the younger group, as long as they are selected in accordance with the requisites described in this report. The incidence of good results achieved by surgery will be directly proportional to the judgement and insight exercised in the selection of surgical candidates.

Surgical treatment of parkinsonian tremor and rigidity is now indicated relatively early in the course of the disease. Male patients should be operated upon before it is necessary for them to give up gainful employment. Female patients should be operated upon before they become unable to carry out their activities of daily living independently.

Surgical therapy is now applicable to a large percentage of the parkinsonian population. Although medical therapy deserves a complete and definite trial in each case, surgical therapy has certain irrefutable advantages once the case has been demonstrated to be progressive, and threatens interference with the activities of daily living, and eventual incapacitation. Surgical therapy can provide rapid and often complete relief of tremor, rigidity and deformity, and the attendant motor symptoms of bradykinesia, poverty of movement, and other functions—often to a remarkable degree. Not only does surgical therapy abolish these symptoms or reverse the deformities present, but it has also now been demonstrated that such relief of hyperkinetic phenomena has endured following operation for as long as six years, which is the present time limit of this study. Five and six year cures of tremor, rigidity and motor abnormalities without any evidence of recurrence are well documented. In many instances there has been amelioration of the secondary parkinsonian symptoms, such as masked facies, excessive sweating and oculogyric crisis. However, it is to be emphasized that surgery is indicated only when the primary symptoms of tremor and rigidity are paramount. Surgical therapy offers the only means not only of reversing the motor symptoms which are present, but also of halting the progression of the disease in the extremities which are alleviated of these symptoms.

EYE, EAR, NOSE & THROAT

The treatment of strabismus in small children.—(*Ophthalmologica*, 138: 175-182, Sep. 1959, via *Am. J. of Ophthalmology*).

This is a plea for the earliest possible treatment of concomitant squint, particularly of the non-alternating convergent type. In such cases the distinction between centric and eccentric fixation of the squinting eye is very important and can usually be

made in children two years of age or older. Occlusion of the non-squinting eye may be tried for short periods and may result in a change from eccentric to centric fixation of the originally squinting eye. If this change does not take place or if the child is over two years of age at the inception of treatment, the author recommends occlusion of the squinting eye as the primary therapeutic move. This is certain to prevent the firm establishment of eccentric fixation and may, actually, change it to a centric one. The results in ten cases of this type are reported in some detail. Once central fixation by the originally squinting eye has been achieved this eye should be made the leading eye by careful occlusion of the opposite eye, keeping in mind the possibility of an amblyopia developing in that eye as the result of prolonged occlusion. Alternating occlusion and systematic instruction in conscious, wilful alternation are the safest methods to maintain centric fixation and good acuity in each eye. Eccentric fixation in children over five years of age requires systematic treatment by the after-image method of Cueppers or the dazzling method of Bangerter. Even alternators, until they are operated on, may benefit from alternating occlusion because there is a good chance of some degree of normal binocular vision having been present prior to the development of the squint. Once the diagnosis of alternation with good acuity in each eye is established and any existing accommodative factor has been corrected, surgery is indicated and should be performed early because of the better chances of attaining binocular sensory co-operation. The very much rarer divergent strabismus occurs in small children in two forms, as a divergence excess or a convergence insufficiency. Prevention of unilateral amblyopia is just as important as in convergent strabismus.

Pulseless disease, or Takayasu's disease: Case report.—(*Brit. M. J.*, 2: 439-442, Dec. 26, 1959, London, via *J.A.M.A.*, 23-4-1960).

A typical case of pulseless disease in a 27-year-old woman, the first such case reported from India, is described. Nearly a year and a half previously the patient had suffered from intermittent headaches on one side, and later after the headaches subsided had experienced frequent fainting attacks. On examination, she presented typical fundus changes, absent pulsation in the upper limbs, cataracts, attacks of syncope, and raised blood-pressure in the lower limbs, with tendency to rise of ocular tension, probably due to new vessels and pigment deposits in the angle of the anterior chamber. The patient passed on to complete blindness, although the cataracts were removed successfully.

Retinal hæmorrhages in anæmia.—(*Brit. M. J.*, 1002: Nov. 14, 1959, via *G.P.*, April 1960).

Cosnett and Macleod studied the retina in 74 cases of severe anæmia and correlated the findings in relation to the type and severity of the anæmia. Among their 23 patients with megaloblastic anæmia only one had no retinal changes. By contrast, in a group of 53 cases with normoblastic anæmias, only four showed retinal changes. Contrary to previous opinion, the authors' work indicates that retinal changes in severe anæmias are not solely dependent on deficient oxygenation or low hæmoglobin levels. Among the factors which may contribute to these retinal changes is thrombocytopænia. In two-thirds of their cases megaloblastic anæmia, the platelets were decreased. However, retinal hæmorrhages appeared in some patients with megaloblastic anæmia even through their platelet count was adequate.

Current treatment of sinusitis.—(*K. M. Simonton, Journal-Lancet*, 79: 535-537, Dec. 1959, Minneapolis, via *J.A.M.A.*, 26-3-1960).

Simonton, of the Mayo Clinic, points out misconceptions on the part of patients about sinusitis and discusses anatomic and physiological aspects of the nasal sinuses. Sinusitis is divided into the acute, subacute,

and chronic forms. Acute sinusitis is a self-limiting disease, usually accompanied by acute infection in the nasal mucosa. Symptoms are malaise, nasal obstruction, serous to purulent discharge, and pain and tenderness in the region of the affected sinuses. Subacute infection results when resolution of acute inflammation is delayed by factors that impede drainage from the sinuses, such as septal spur or cystic turbinate, or pathological changes, such as œdema, inflammatory swelling, or polyps. The symptoms are purulent or mucoid drainage; obstruction, which may be relieved by discharge of secretions; cough; pharyngitis; and sense of pressure in the face. Pain is unusual. Chronic infection supervenes as a result of irreversible changes which permanently impair the drainage of the sinus. This may follow a single severe infection or repeated episodes of acute infection. Common changes are metaplasia of the epithelium with loss of cilia, subepithelial fibrosis, and vascular changes. The end-result is fibrosis, which may be manifested as either atrophy or thickening of the tissues. Symptoms are persistent drainage and repeated respiratory infections. Pain occurs only with changes of pressure within the sinus.

The treatment of acute sinusitis starts with rest and supportive measures. Adequate warmth and humidity aid in putting the nasal mucosa at rest. Sulphonamides are inactivated by pus and are of limited value in sinusitis. Most organisms causing acute infections of the upper part of the respiratory tract are sensitive to penicillin and the broad-spectrum antibiotics, so that treatment can be started with any of these drugs, pending results of culture. The dosage should be adequate to reach organisms situated in purulent exudate in the sinus, and should be at least double the dosage used for infection in tissues. Use of the drug should be continued until cultures are negative, or until well after all symptoms have abated. Local therapy with vasoconstricting drugs aids drainage, but use of these drugs should be limited

to 5 to 7 days to avoid drug-induced oedema of the mucosa. Local heat aids in relief of pain and congestion, and small doses of roentgen rays are effective for relief of severe pain arising from acute sinusitis. Surgical treatment is contraindicated in acute infection except for trephination of the frontal sinuses in fulminating infection. In subacute infection antibiotic drugs are best administered under bacteriological control. Lavage is the most effective treatment. The maxillary sinus is most subject to subacute infection. Evacuation of the reservoir of pus in this sinus usually allows resolution of infection in the frontal and ethmoidal sinuses.

In many cases of chronic sinusitis surgical treatment must establish new drainage pathways or eliminate factors

obstructing drainage. The maxillary and sphenoidal sinuses present large areas of common wall with the nasal chamber. Removal of this wall provides a large opening for drainage, which seldom closes postoperatively. The walls of the ethmoid cells may be removed to create a cavity with free communication with the nose. In the frontal sinus the surgically created drainage path-way is long and narrow and must be lined with epithelium to prevent closure, preferably with nasal mucosa. Sinusitis is frequently found in association with chronic bronchiectasis, bronchitis, and asthma. Elimination of a focus in the sinuses may control, but seldom cures, infection in the lungs. The results of treatment of infection of the sinuses are gratifying.

NEWS AND NOTES

Reorganization of Medical Studies in Madras

The question of reorganization of medical education and medical relief in the State is engaging the attention of the Government.

A four-man Expert Committee with Dr. A. Lakshmanaswami Mudaliar, Vice-Chancellor, Madras University, as Chairman, has been constituted by the State Government to go into the matter in all its aspects. The other members of the committee are: Dr. V. R. Thayumanaswamy, Director of Medical Services, Dr. K. G. Krishnaswamy, Dean, Madras General Hospital, and Dr. Rathnavelu Subramaniam.

The lack of suitably qualified medical personnel is standing in the way of further expansion of medical facilities in the State. So the expert committee will examine the various proposals in regard to medical education and training programme included in the draft Third Five-Year Plan.

The Committee is also expected to consider the proposals for the expansion of the General Hospital in Madras and some other hospitals in the State and explore the possibilities of starting new hospitals.

Expert body to Advise about Govt. College of Indigenous Medicine

The Government has set up an Expert Committee to advise on the starting of a College of Indigenous Medicine in Madras State with a view to imparting instruction in Ayurveda, Siddha and Unani systems of medicine. The Committee will consist of Dr. P. M. Mehta, Chairman, Mr. S. Viswanatha Sarma, Principal, Venkataramana Dispensary and Ayurveda College, Mylapore, Dr. S. Govindaswami Mudaliar, Medical Officer, Corporation Siddha Dispensary, Madras and Dr. Syed Niamathulla, former Mayor, Madras, Members, and Dr. A. N. Subbaraman, Dean, Government Hospital and College of Integrated Medicine Madras, *Member-Secretary*.

The Committee is expected to submit its report within two months.

Contact Dermatitis

The Health Minister, Mr. Karmarkar, confirmed on 10-8-1960 recent reports that the use of nylon, lip-stick and plastic had resulted in the high incidence of 'contact dermatitis'—a skin disease. A number of persons suffering from 'contact dermatitis'

have been treated in the Irwin Hospital in Delhi.

The remedy for this complaint which was due to allergy consisted in discontinuing the use of suspected offending agents and allied substances.

Sanitary Fittings

The Government has issued instructions to heads of departments and local bodies to purchase their requirements of sanitary fittings from the Government Ceramic Training Centre at Vridhachalam which has a commercial section attached.

The centre at Vridhachalam, it is stated, has started production of sanitary articles like the Hindusthan type Water Closets of various dimensions and will produce sanitary fittings like urinals, lavatories. European type water closets, insulators required by the Electricity Board and articles such as laboratory or kitchen sinks on special orders.

Madras Nurses Act

The Madras Nurses and Midwives (Amendment) Bill, which seeks to bring within the scope of the parent Act of 1926 all health visitors and auxiliary nurse-midwives and to provide for their registration, was introduced by leave in the Madras Legislative Assembly by Mr. M. A. Manickavelu, Minister for Revenue and Health.

Among other objects, the amending Bill provides for the increase in the number of officers of the Public Health Department to be nominated by the Government to the Madras Nurses-Midwives Council from one to three of whom one should be a nurse. Opportunity has been taken to provide for the prohibition of unauthorized conferment of degrees, diplomas and licences and the like to enable the holders thereof to practise the profession of nurses and midwives.

Smoking Affects Night Vision

Smoking 20 or more cigarettes daily impairs night vision, according to the Royal Australian Air Force Directorate of Flying Safety.

In a warning headed "smoke gets in your eyes," the Directorate said

investigations proved smokers absorbed carbon monoxide in their bloodstream. This restricted their oxygen intake, and could reduce night vision by 20 per cent.

Medical Colleges in Rural Areas

The Health Panel of the Planning Commission concluded its meeting here on 18th after considering the recommendations of the 9 committees appointed by the panel. Dr. A. N. Khosla, Member Planning Commission, presided.

The panel felt that to overcome the dearth of doctors many more medical colleges than envisaged would have to be opened, and at least one of these colleges in each State should be opened in a rural setting.

The panel did not agree with the view that revival of the old Licentiate course might provide adequate medical relief to rural areas and detailing the causes that made doctors reluctant to settle down in rural areas, it urged that these causes be removed. In this connexion, it was suggested that the system of giving scholarships to students and binding them to serve the Government for 5 years should be revived.

Vasectomy

(Efforts to evolve reversible technique)

Sterilization operation in the male (vasectomy), for all practical purposes, is irreversible. However, an Indian birth-control specialist is developing a reversible technique, the Minister of Health, Mr. D. P. Karmarkar stated in written reply on 19-8-'60 in the Lok Sabha.

It was reported that out of 13 cases in which the Indian birth-control specialist, Dr. G. M. Phadake, tried the reversible technique, nine were successful (spermatozoa reappeared after operation) and the wives of seven patients became pregnant.

Regulation of Medical Practice

It is learnt that a draft model Bill seeking to regulate the practice of medicine and to prevent unqualified persons from engaging in the practice of any system of medicine has been sent by the Union Government to the States for adoption.

Aid From T.C.M. for Malaria Programme

The U.S. Technical Cooperation Mission has made a further grant of \$2.5 million (Rs. 1.2 crores) to India's malaria eradication programme. This brings the total U. S. aid to the programme to Rs. 39.9 crores.

British Advances in Heart Surgery for Babies

Surgeons at the Institute of Child Health attached to the Great Ormond Street Hospital for Sick Children in London have made important advances in heart surgery for babies and have developed a heart-lung machine which will be ready for use in a few months and which can be adapted for older children.

A two-day-old baby girl was found to have a hole in her diaphragm, which had resulted in her stomach being separated from her gullet. A blocked lung was blown up like a balloon. She was operated on and the stomach restored to its normal place, her diaphragm repaired, and the lung also reverted to normal.

Another baby girl collapsed at the age of 9 days with heart failure. An emergency operation was performed to remove the blockage of a large artery leading from the heart. The baby, who was born at the end of February, was well enough to go home at the end of May. Appeal for funds has been made for extending this great work.

New Anti-Virus Drug Being Tested

A new drug which may help to prevent influenza, polio, smallpox and measles is being tested at a British Government research centre in Wiltshire. The drug—called Interferon—prevents viruses from growing, and has already been tested successfully by doctors serving with the Medical Research Council. If the present tests are equally successful, it is expected that the drug will be produced commercially at the centre.

Interferon was discovered by Dr. Alic Isaacs when carrying out experiments some three years ago at the National Institute for Medical Research.

PREPARATIONS AND INVENTIONS

Midikel—(Parke-Davis, Bombay). Midikel-sulphamethoxypyridazine is a new "one-dose-a-day" sulphonamide which is reported to be rapidly absorbed and slowly excreted, and to be very effective in a wide range of upper respiratory, genito-urinary and other systemic infections due to sulphonamide-sensitive organisms.

For adults—an initial dose of 1 g. (in severe infections, 2 g.) followed by 0.5 g. daily; and *For children*— $\frac{1}{2}$ to $\frac{3}{4}$ tablet for each 20 lb. of body weight on the first day followed by half this dosage daily. It is available as—Tablets of 0.5 g., quarter-scored, in bottles of 6 and 50.

Chloromycetin succinate—(Parke-Davis, Bombay). It is the sodium salt of the monosuccinic ester of Chloromycetin containing the equivalent of 1 g. Chloromycetin, suitable for administration by the intramuscular, intravenous and subcutaneous routes.

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CORRIGENDUM

The publishers of the book titled "The Modern Treatment of Asthma," by L. Banzky M. D. (Berlin), L.M.S.S.A. (Lond.), Second edition, 175 pages. Price 21s. and reviewed in the July 1960 issue (Page 599) of the ANTISEPTIC are M/s. John Wright & Sons Ltd. Medical Publishers, The Stonebridge Press, Bath Road, Bristol-4.

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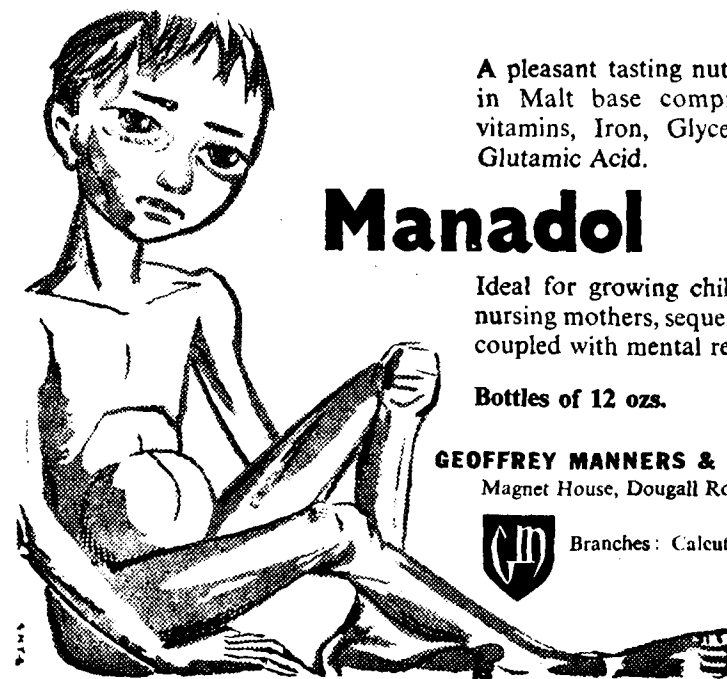
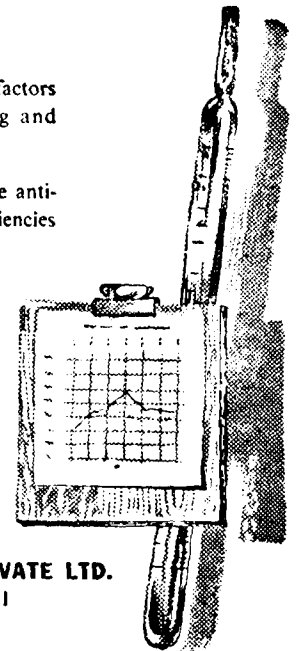
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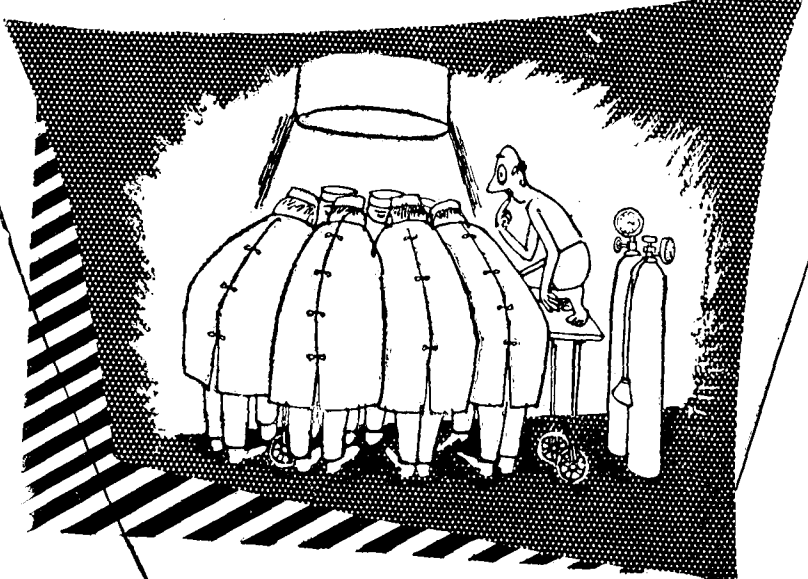
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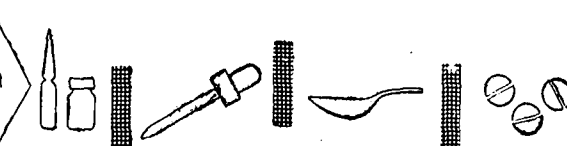
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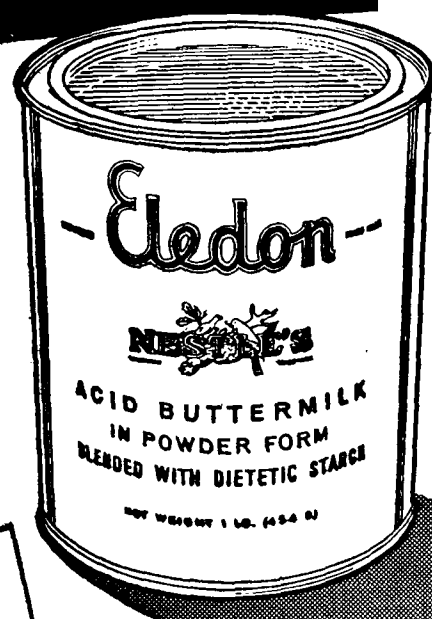
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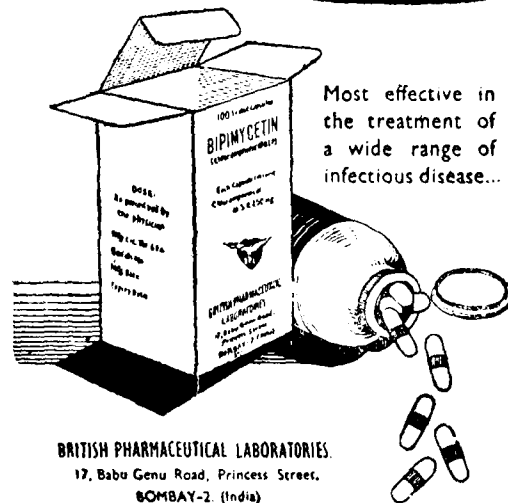
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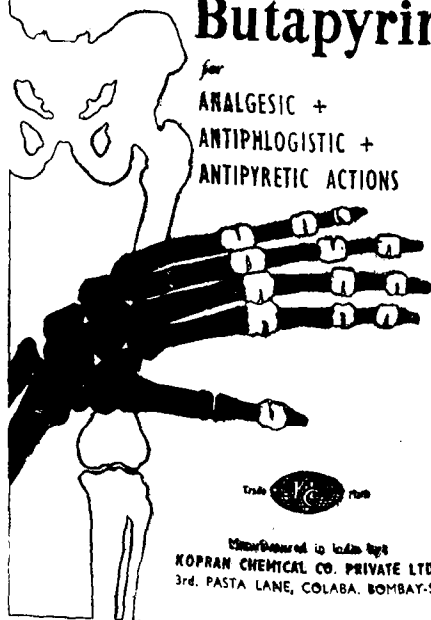
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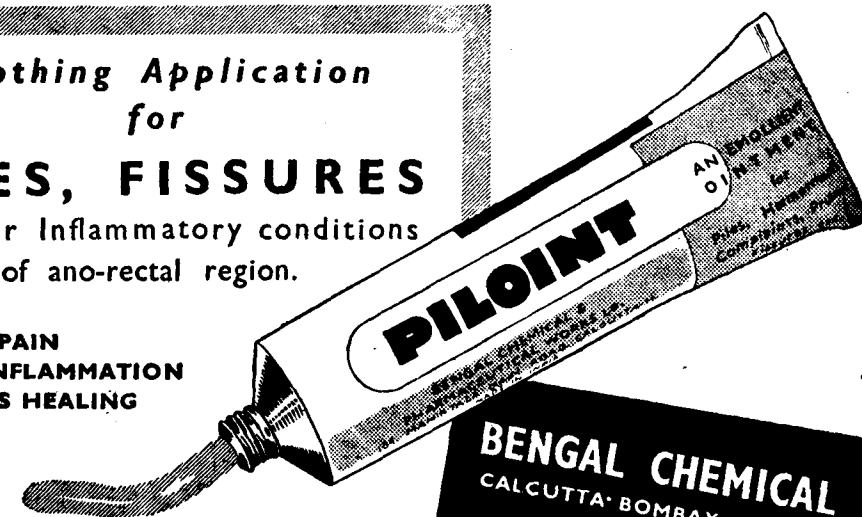
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