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DECEMBER, 1960

The Antiseptic

A Monthly Journal of Medicine & Surgery

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

Founded by the late Dr. U. RAMA RAU in 1904

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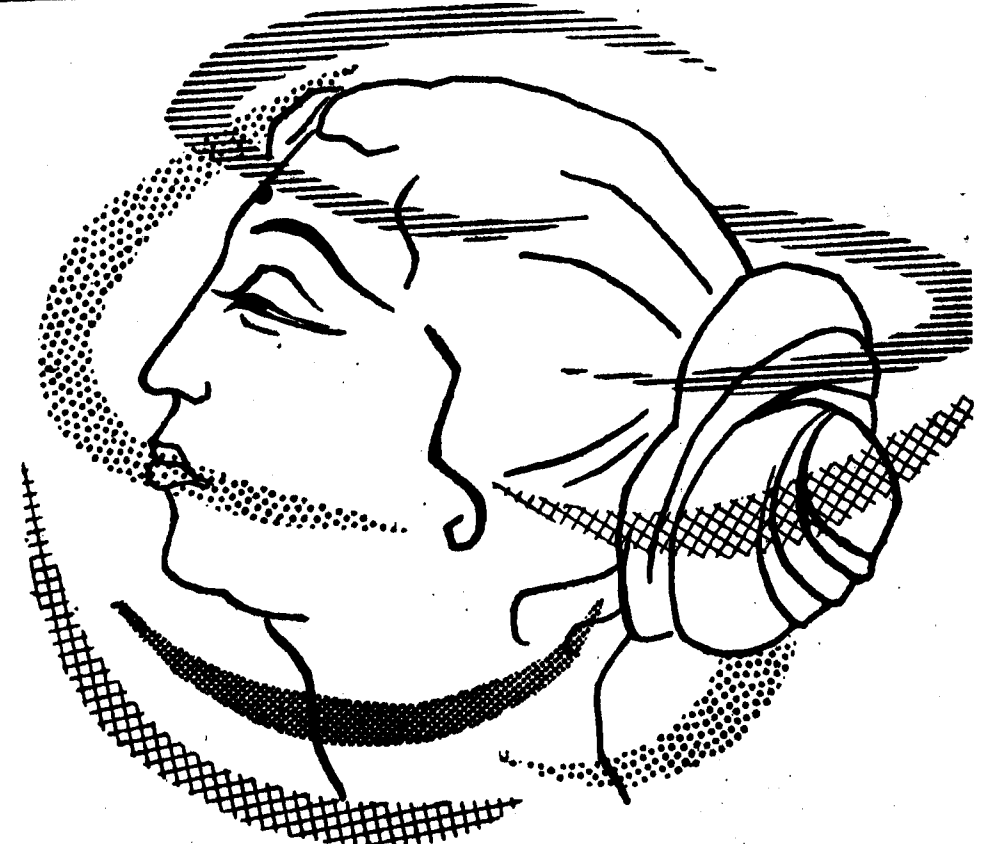
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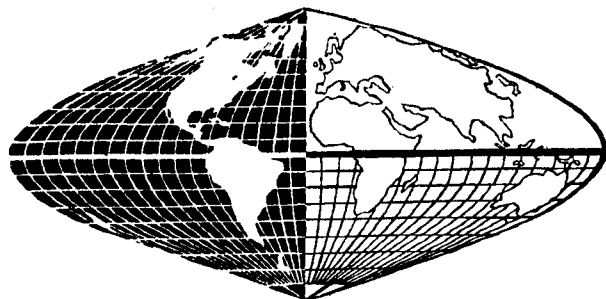
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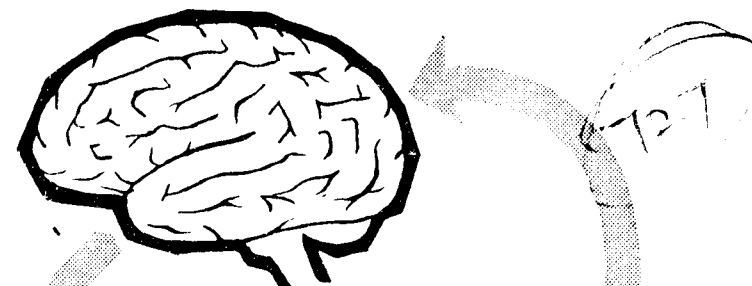
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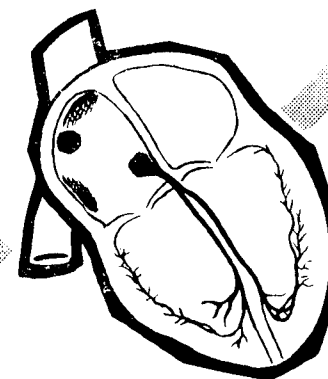


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British Heart Journal
1949, 11, 350.

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Prof. O. H. Arnold, M.D.

Ther. Gegenw., Germany
1952, 5, 167

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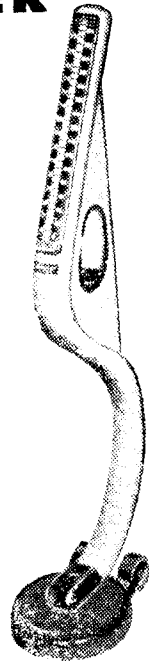
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[DEC. '60

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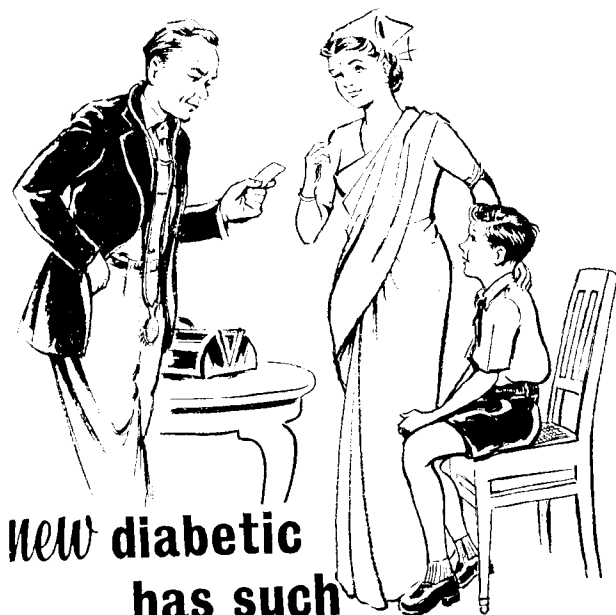
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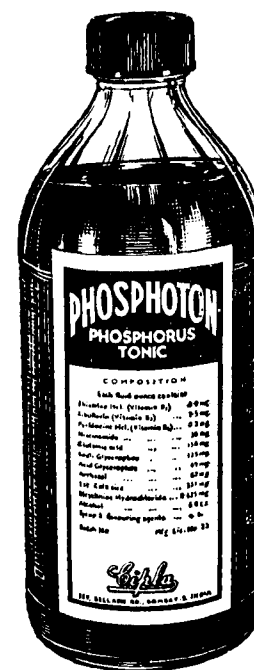
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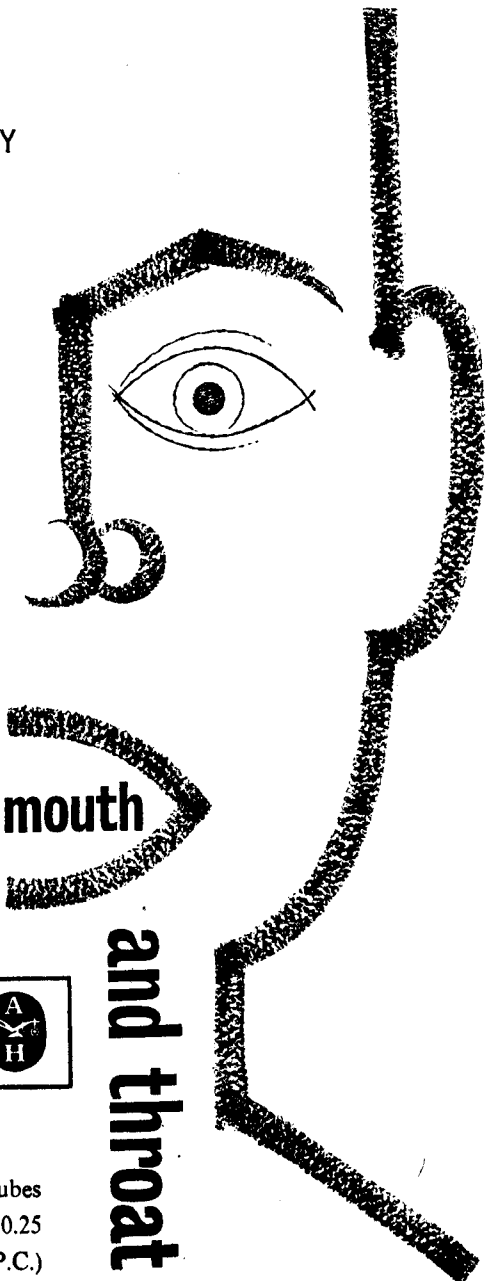


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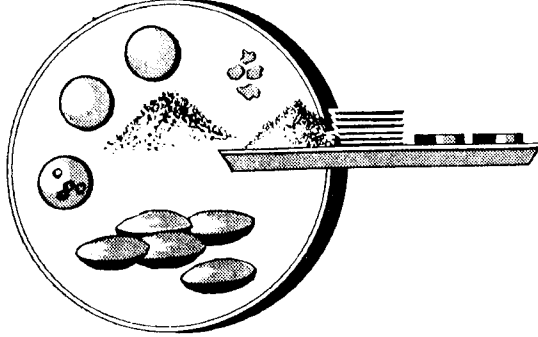


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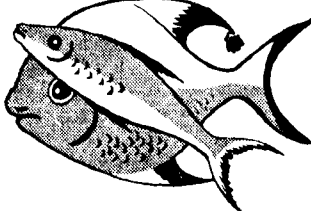
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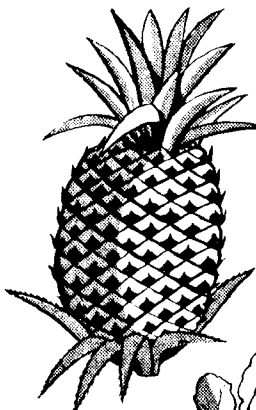
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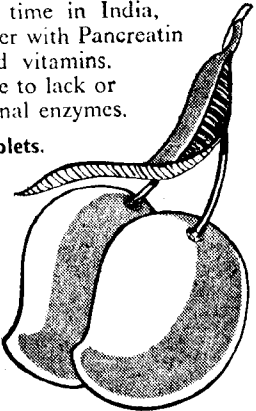


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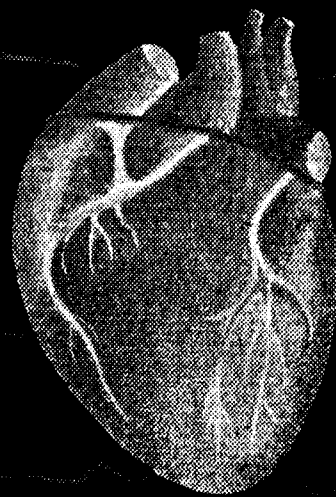
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Among those diabetics who responded to tolbutamide initially and became secondary failures DBI "gave a satisfactory response in 55%."⁴

"DBI is capable of restoring control in a considerable portion of patients in whom sulfonylurea compounds have failed, either primarily or secondarily."⁵

"All twelve secondary tolbutamide failures have done well on DBI."⁶

"34 out of 59 sulfonylurea primary failures were successfully treated with DBI."⁷

DBI (N-4-phenethylbiguanide) is available as white, scored tablets of 25 mg. each, bottles of 100.

1. Walker, R. G. *Ann. N.Y. Acad. Sci.* 154:205, 1969.
2. Gell, W. D., et al. *JAMA*, 204: 140-142, 1969.
3. Portman, M. *Pharmacol. Therapeut.*, Houston, Tex. 1969.
4. Sulimsky, S. L., et al. *JAMA*, 171:171-172, 1969.
5. Sulimsky, S. L., et al. *Am. J. Med.* 30:779, 1969.
6. Sulimsky, S. L., et al. *Pharmacol. Therapeut.*, Houston, Tex. 1969.
7. Hall, L. R. *Pharmacol. Therapeut.* 1:157, 1969.

DBI is a registered trademark of the laboratory of
U. S. Vitamin & Pharmaceutical Corporation

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40 Series of Bombay 1
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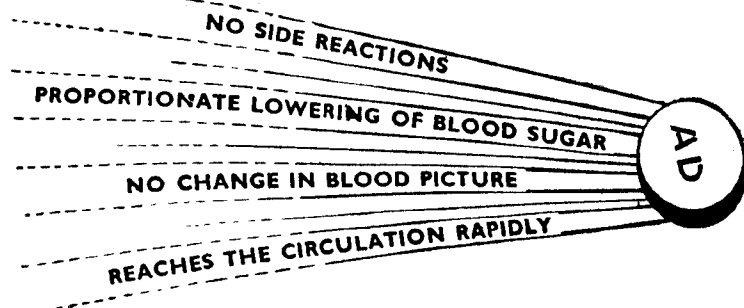
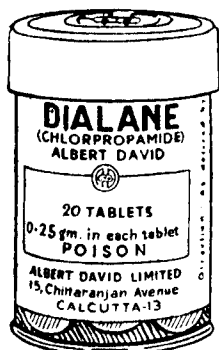
Steady Control OF DIABETES

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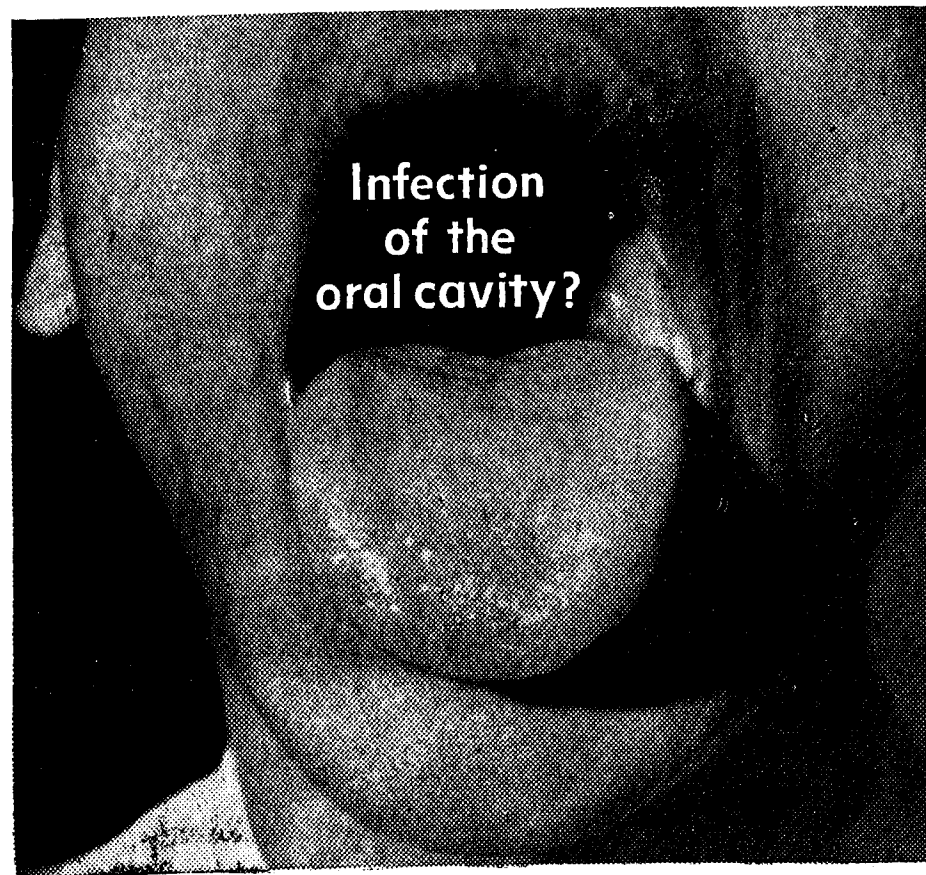
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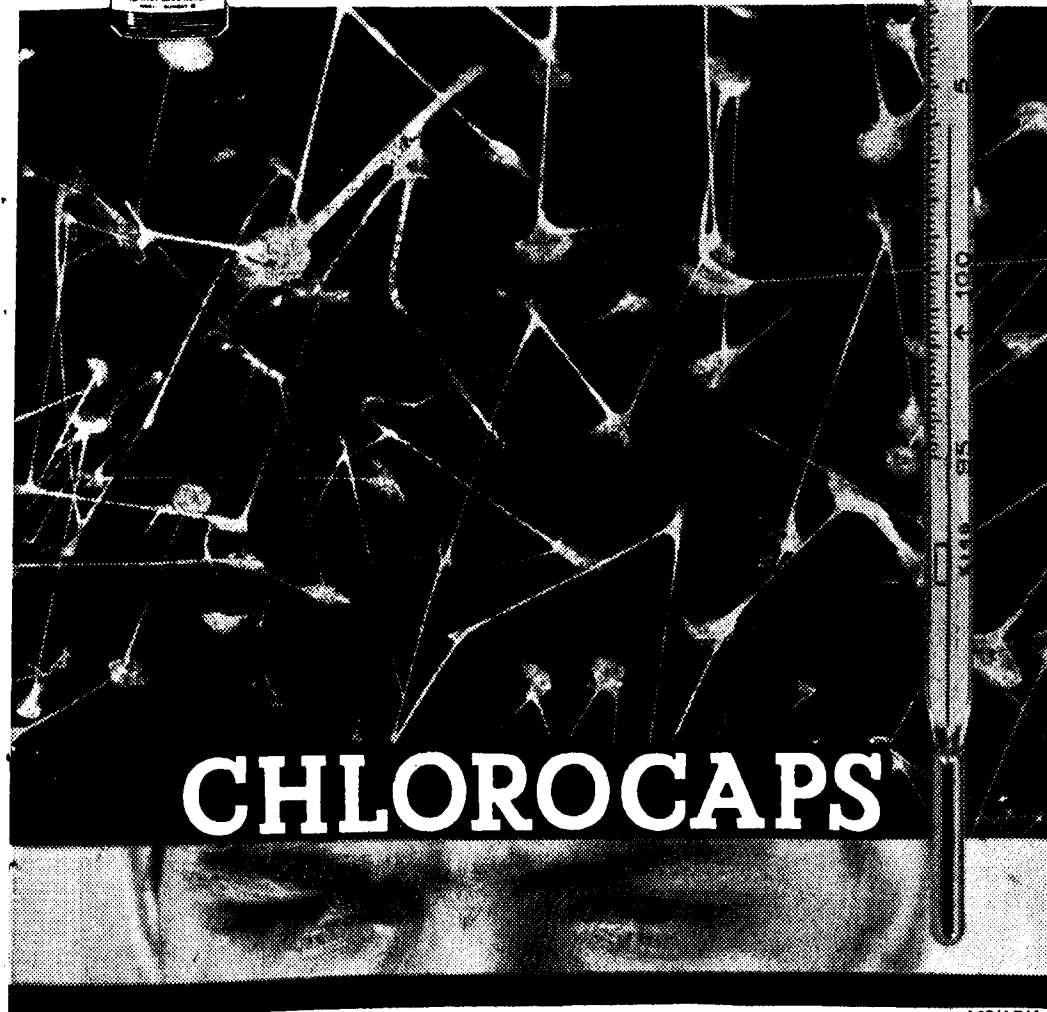
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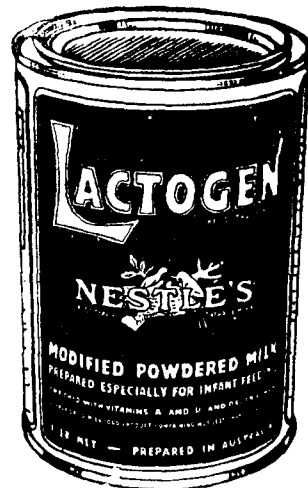
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- * produces high theophylline blood levels, when given ORALLY
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LITERATURE ON APPLICATION

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COMPRISING FIVE WELL
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Allobarbitone	0.03 gm.
Caffeine	0.1 gm.
Ephedrine Hydrochloride	0.015 gm.
Extract of ipecacuanha	0.02 gm.
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ACTS QUICKLY & DEPENDABLY
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IS well tolerated & causes
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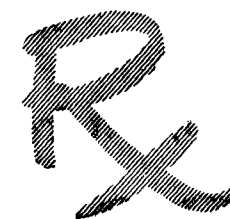
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We are sure that WATERBURY'S VITAMIN COMPOUND will benefit all those of your patients for whom you prescribe it.

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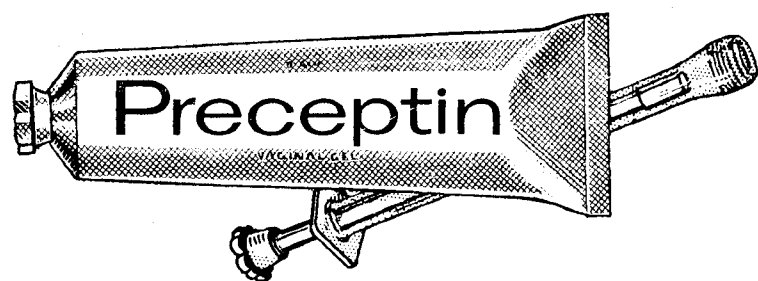
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VAGINAL GEL

Obviates the use of a mechanical barrier such as a diaphragm

Modern method of contraception perfected at the Research Laboratories of Ortho Pharmaceutical Corporation, New Jersey, U.S.A.

Successfully tested by extensive clinical trials... prescribed in several countries.

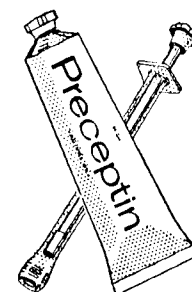


Preceptin Vaginal Gel offers the following incomparable features:

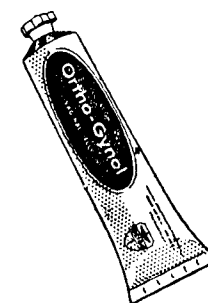
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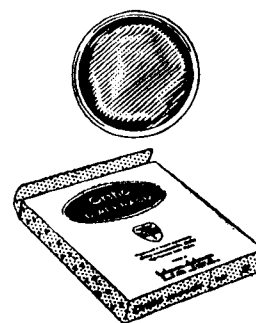
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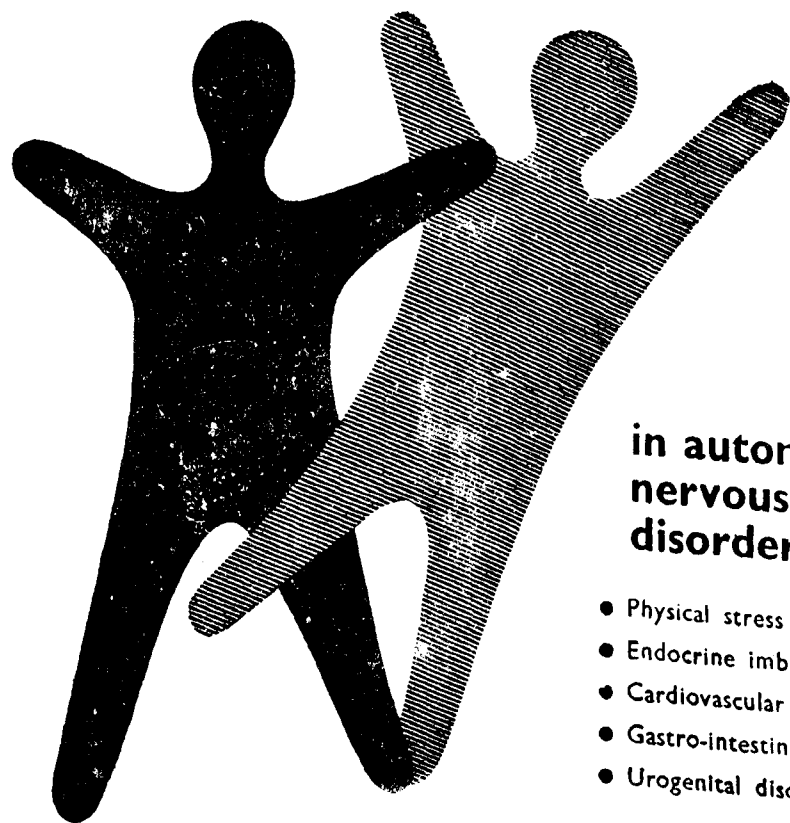
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- Physical stress and strain
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restores the balance

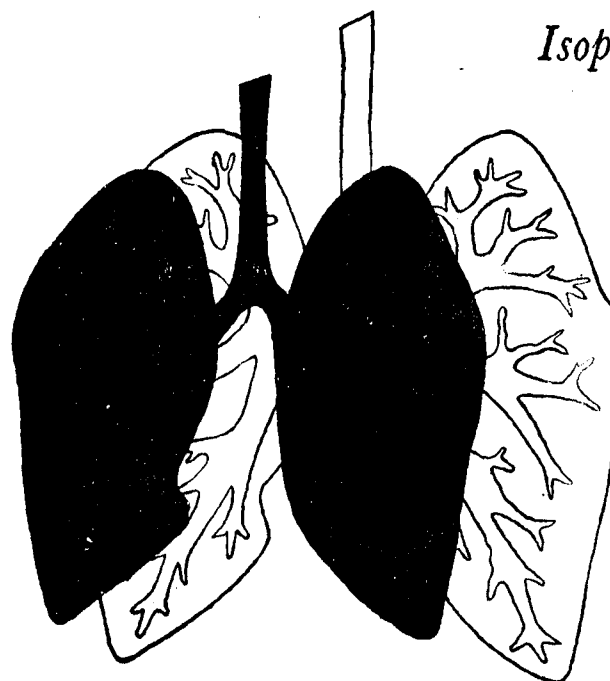
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One tablet three times a day

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BRAND

Isoprenaline Sulphate



ADVANTAGES

1. More potent and less toxic than either adrenaline or ephedrine.
2. Available in forms convenient for self-medication thus permitting treatment in the early stage of an attack when it is most effective.
3. Facilitates liquefaction and expectoration of bronchial secretions.
4. Rapid in action.
5. Does not induce tolerance in the patient.
6. Often produces not just temporary relief, but permanent cure.

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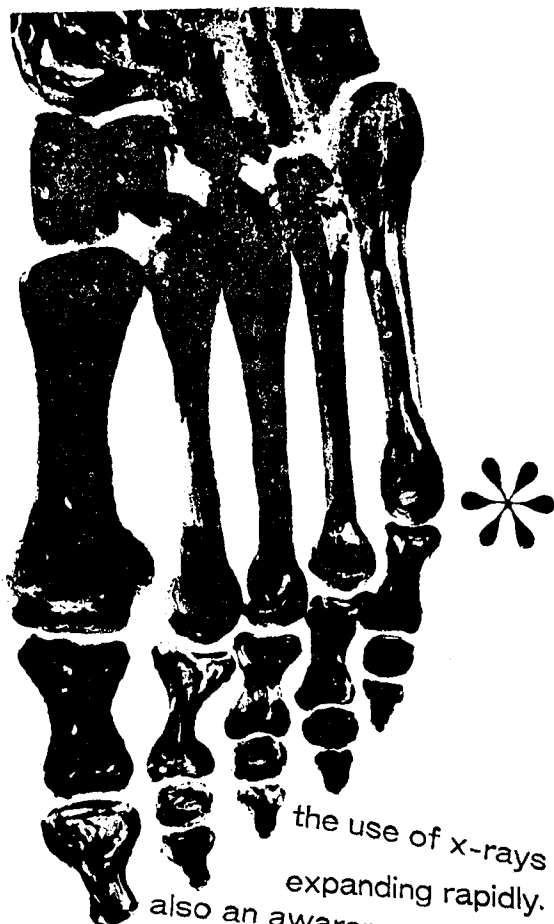
Tablets (Scored) of 20 mg: containers of 25 and 100
 Spray Solution No. 1: containers of 10 ml. (10 c.c.)
 Spray Solution No. 2: containers of 10 ml. (10 c.c.)

Literature and Prices on request.



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also an awareness among scientists
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TRISULFOSE*

Sulphadiazine, Sulphamerazine, Sulphadimidine
TABLETS

**SULPHADIAZINE
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First in urinary tract infections
(uncomplicated)

Triple sulphonamide compounds have
the greatest general usefulness in
uncomplicated urinary tract infections
because of...

1 "their wide
antibacterial spectrum..."

2 "...high, effective concentration in the
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3 "...and low incidence of serious
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Caused by:

E. coli

Shigella species

Peracolon bacillus

*β. haemolytic
streptococcus*

Salmonella (some)

Proteus (some)

Gonococcus

dosage: Children: 1-2 tablets initially; then, 1/2 - 1 tablet every six hours.
Adults: 6-8 tablets initially; then 2 tablets every six hours.

supplied: Bottles of 20 and 500 tablets.

† Mou, T.W.: GP. 12: 103, 1955.



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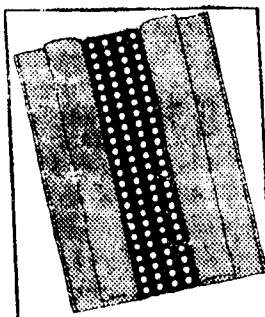
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the trusted treatment
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Johnson's

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Johnson's Belladonna Plaster B.P.C. is a safe, economical treatment for pains due to **THREATENING BOILS, ABSCESSSES, RHEUMATISM, LUMBAGO, STIFFNESS OF MUSCLES OR SWELLING OF NERVES.** Belladonna alkaloids help to relieve pain by partially blocking the sensory perception in the affected area. Valuable in everyday practice.



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In dysenteries and infective diarrhoeas, when laboratory facilities are not available or when time is vital, prescribe sulphoquin.

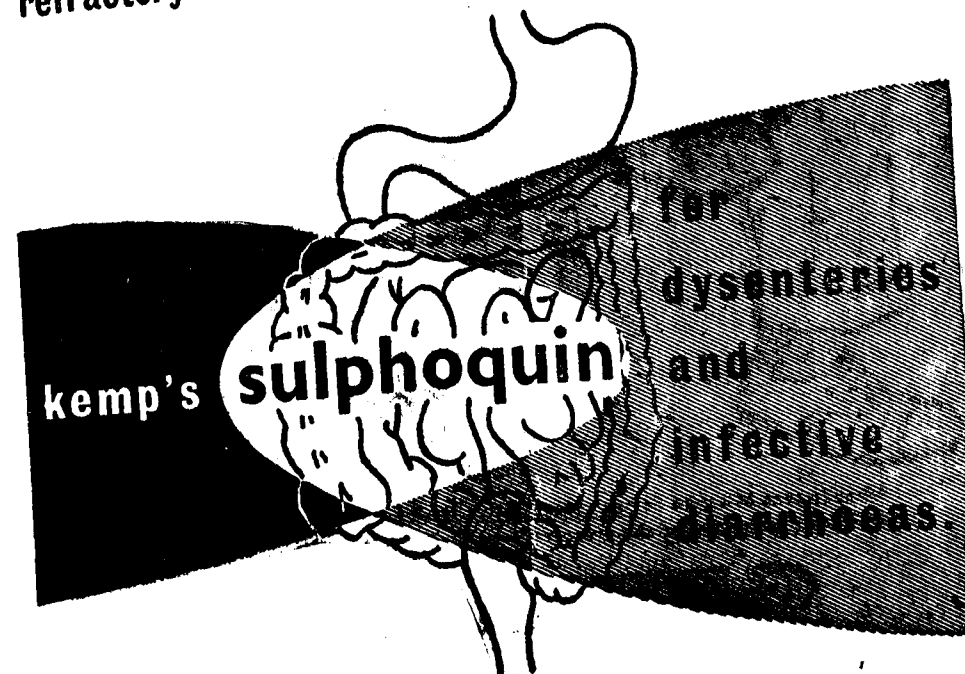
The ideal formula of sulphoquin provides antibacterial and anti-amoebic agents in a single tablet together with an antispasmodic.

well tolerated
potent and
effective
even in
refractory cases.

sulphoquin

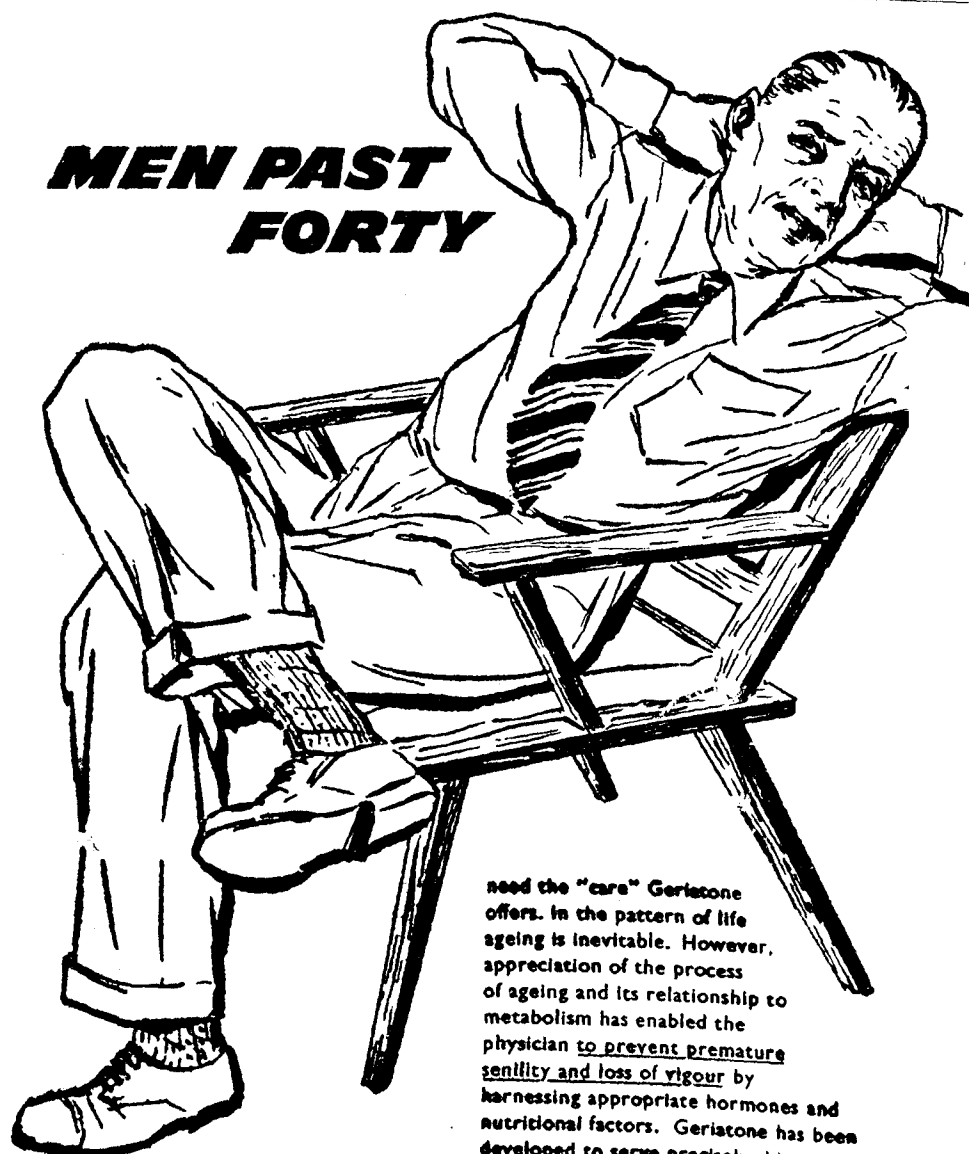
Each tablet contains:

Phthalyl Sulphacetamide N.F.	0.5 G.
Di-iodohydroxyquinoline B.P.	0.17 G.
Iodochlorhydroxyquin U.S.P.	80 mg.
Total alkaloids of Belladonna calculated as Hyoscyamine.	0.05 mg.



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need the "care" Geriatone offers. In the pattern of life ageing is inevitable. However, appreciation of the process of ageing and its relationship to metabolism has enabled the physician to prevent premature senility and loss of vigour by harnessing appropriate hormones and nutritional factors. Geriatone has been developed to serve precisely this purpose.

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NPH Insulin, Lilly

Moderately long-acting

Carefully standardized

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

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.....in 10 cc. vials.



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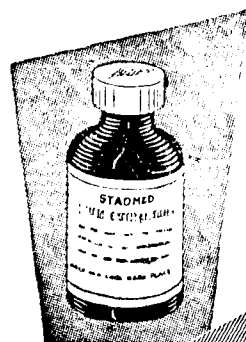
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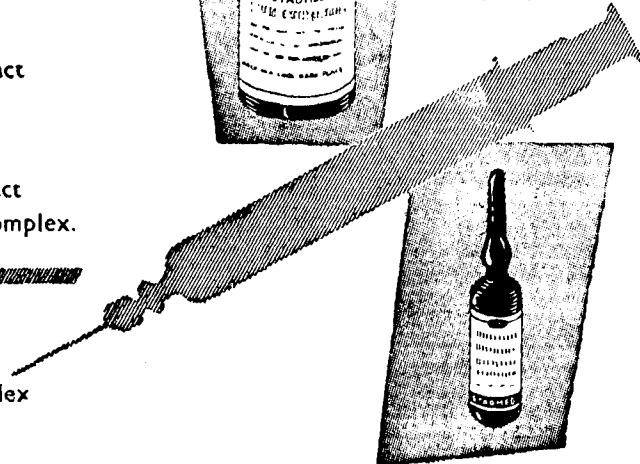
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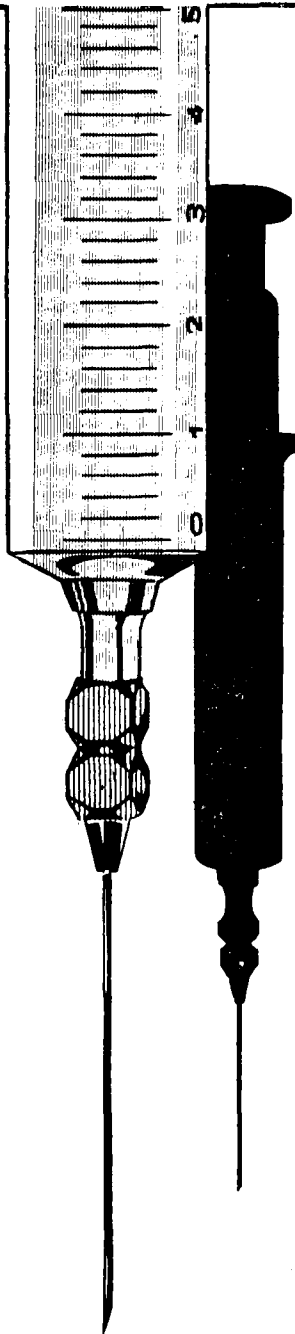


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- Combats deficiency Syndromes
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**MAXIMAL THERAPY
IN ALL FORMS
OF TUBERCULOSIS**

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dihydrostreptomycin tri-p-aminosalicylate

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To REDUCE
HYPERCHOLESTEROLAEMIA
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ARTERIOSCLEROSIS

Alisterol

ALISTEROL is an ideal preparation with a high percentage of unsaturated fatty acids, Vitamin B₆ and Vitamin E in emulsion form.

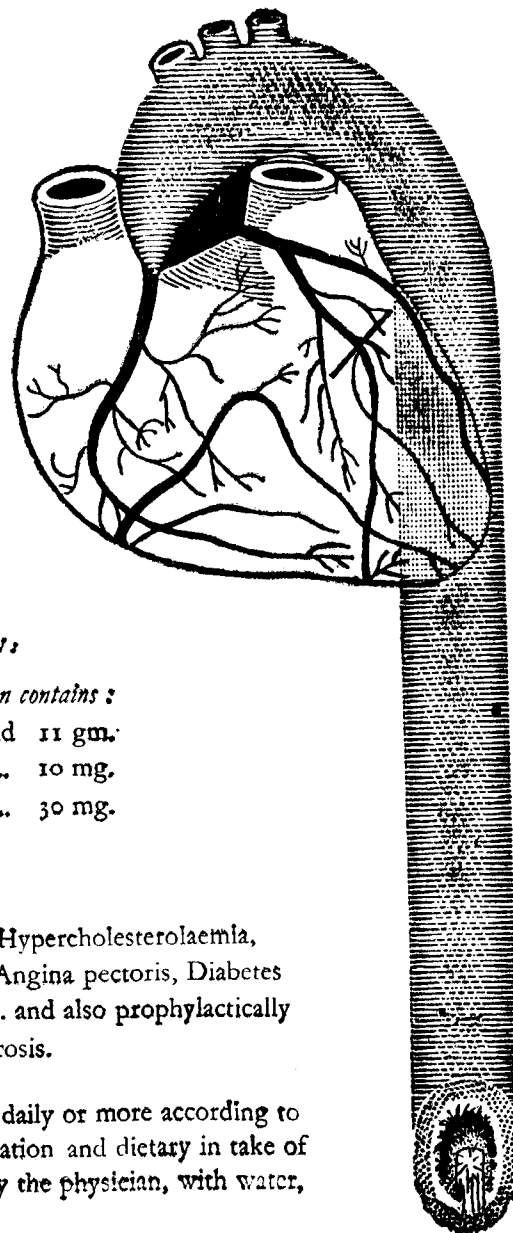
COMPOSITION:

Each 30 c.c. of emulsion contains :
Unsaturated fatty acid 11 gm.
Vitamin B₆ 10 mg.
Vitamin E 30 mg.

INDICATION:

ALISTEROL is indicated in all cases of Hypercholesterolaemia, Arteriosclerosis, Coronary insufficiency, Angina pectoris, Diabetes mellitus, Myxoedema, Liver disorders etc. and also prophylactically in elderly subjects to prevent Arteriosclerosis.

DOSAGE: One tablespoonful three times daily or more according to the blood cholesterol concentration and dietary in take of saturated fats or as directed by the physician, with water, fruit juice or milk



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It's Vitamin deficiency that gives you that low feeling. Vitamins are essential to life—they are vital factors in the maintenance of good health. MULTIVITE FORTE contains six vitamins. It is ideal for restoring the appetite and supplementing the normal intake of vitamins.

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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.

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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.

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(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.*

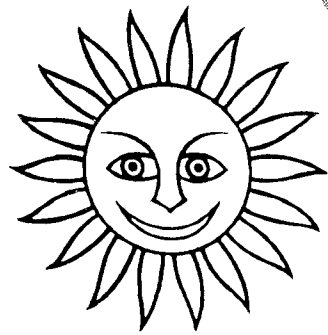
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Now available Prednisolone Tablets (5 mg.)

Detailed particulars on request from:

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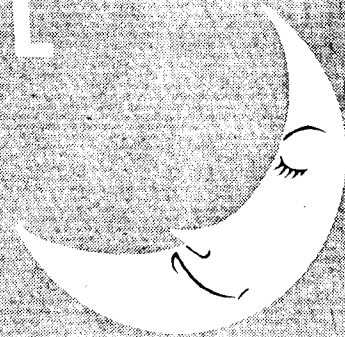
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your asthmatic patients
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**NOT TOO
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—because an oil must be neither
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starts from cold, nor too *thin*
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Motor Oil. It circulates freely
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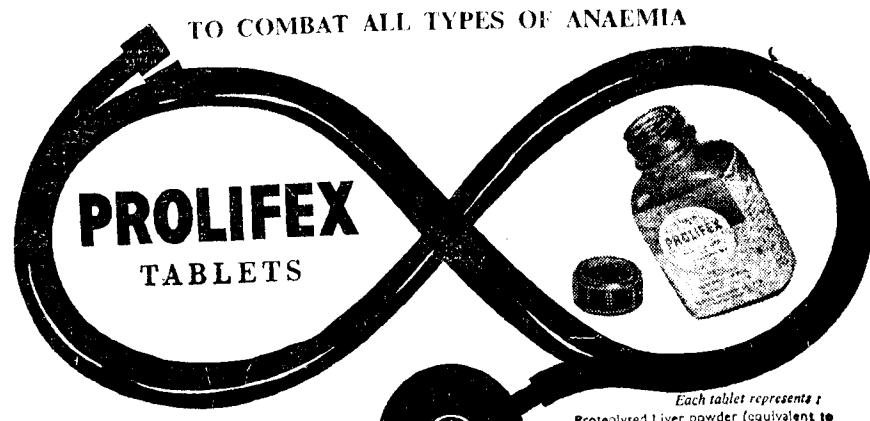
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20W/40

The right  *oil at any operating temperature*



TO COMBAT ALL TYPES OF ANAEMIA



PROLIFEX
TABLETS

Proteolysed Whole Liver
Fortified with Vit. B-Complex
Including Folic Acid & Vit. B₁₂,
Vit. C and Iron

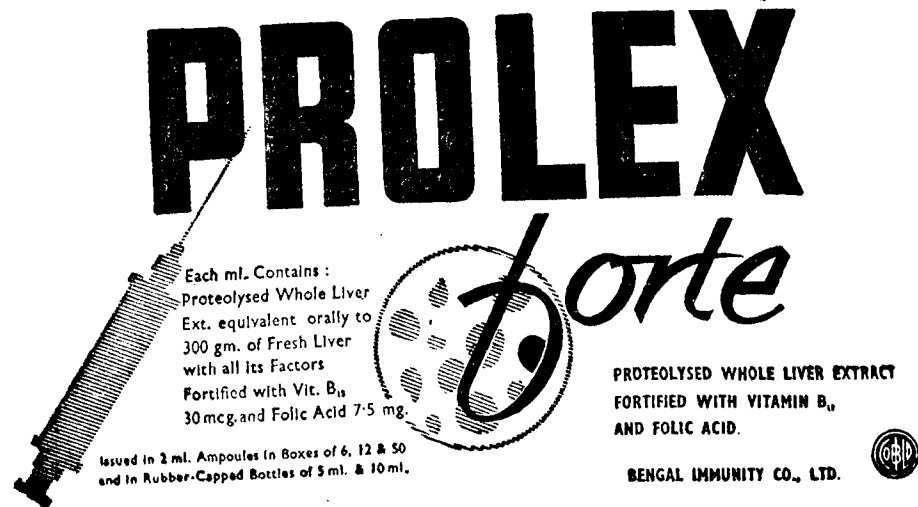
Each tablet represents:
Proteolysed Liver powder (equivalent to
2g. fresh liver)

Stomach powder	250 mg.
Vitamin B ₁	10 mg.
Vitamin B ₂	2.5 mg.
Niacinamide	1 mg.
Vitamin B ₆	10 mg.
Panthenol	0.5 mg.
Folic Acid	1 mg.
Vitamin B ₁₂	1 mg.
Vitamin C	2.5 mg.
Ferrous sulphate (exsiccated)	20 mg.
Cobalt nitrate	400 mg.

In Packs of
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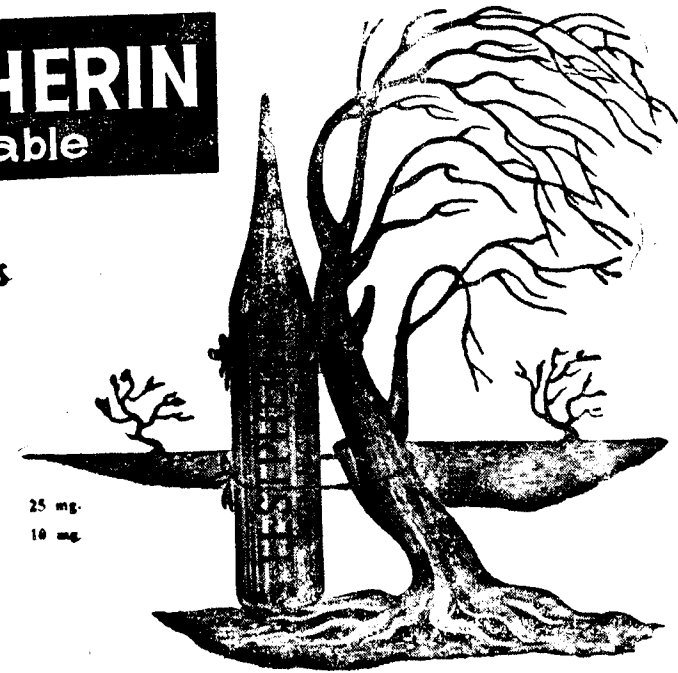
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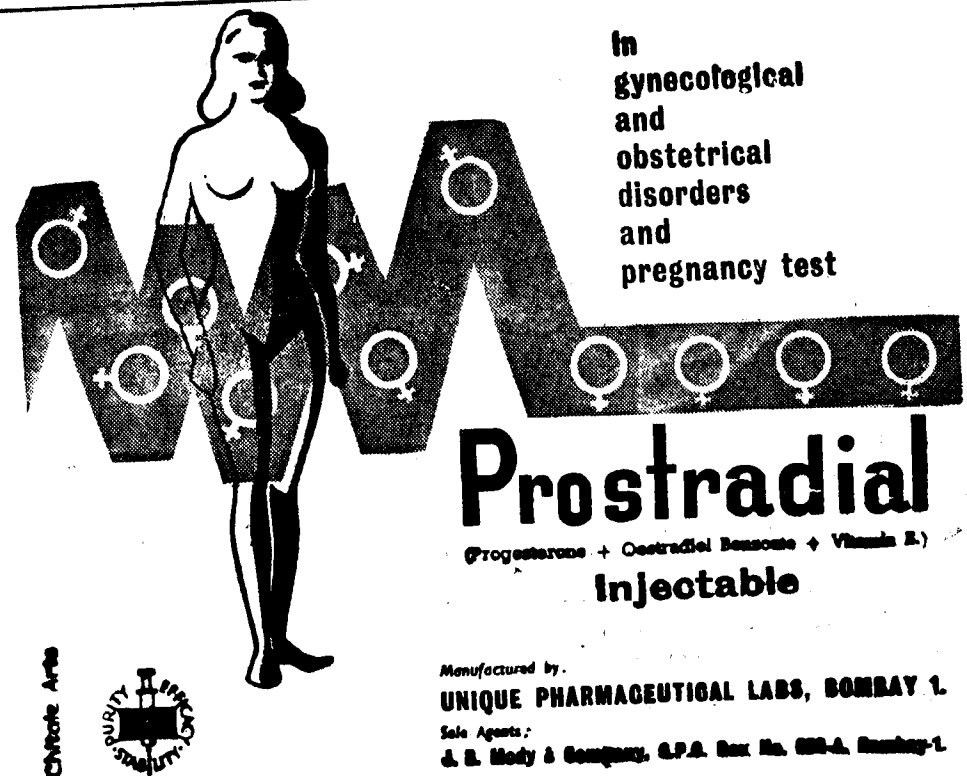


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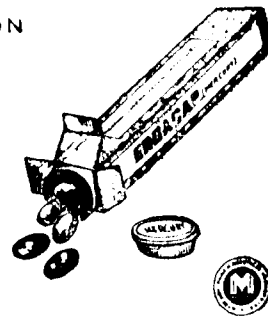
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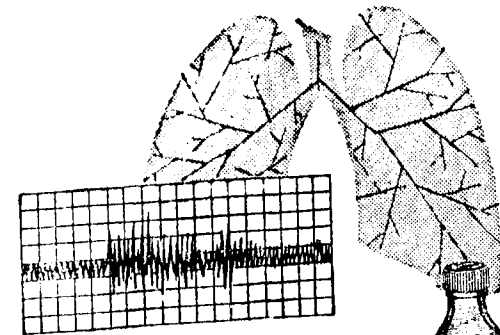
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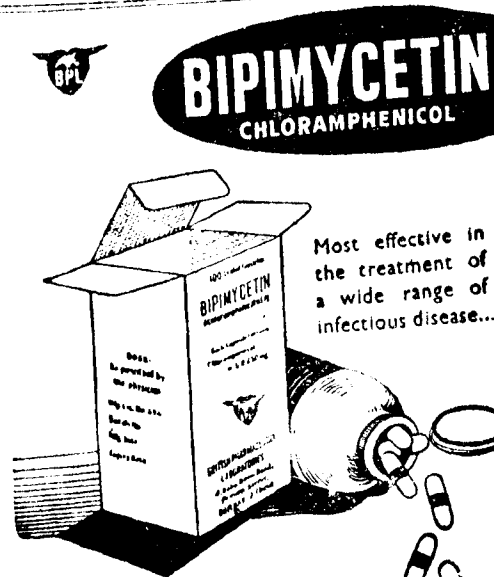
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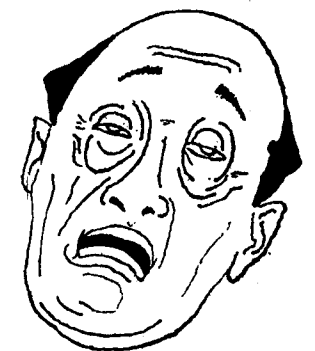
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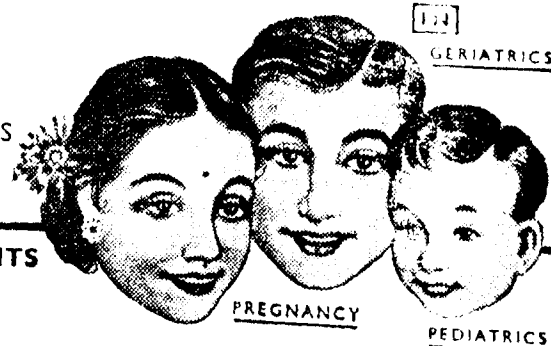
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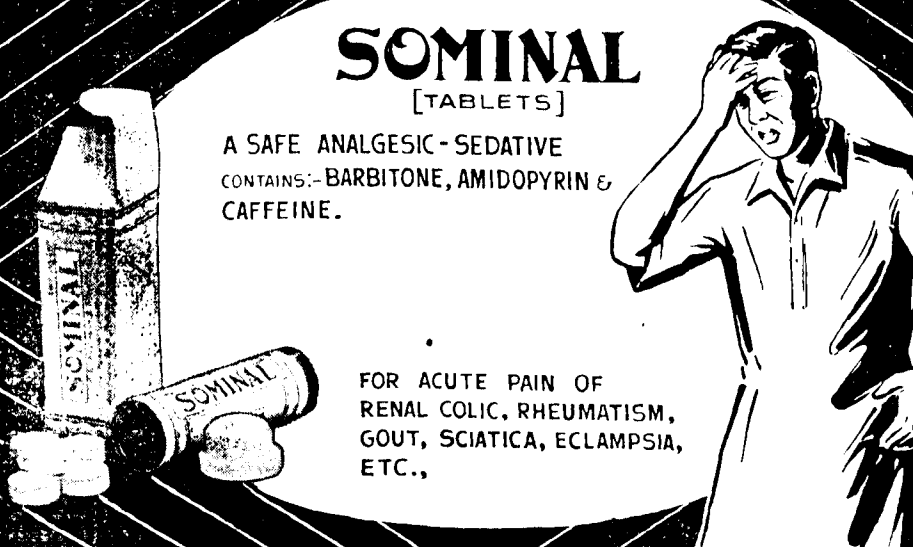
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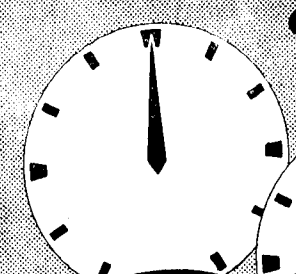
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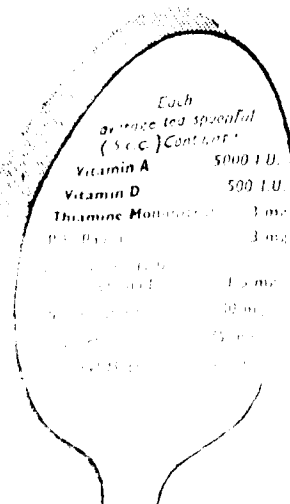
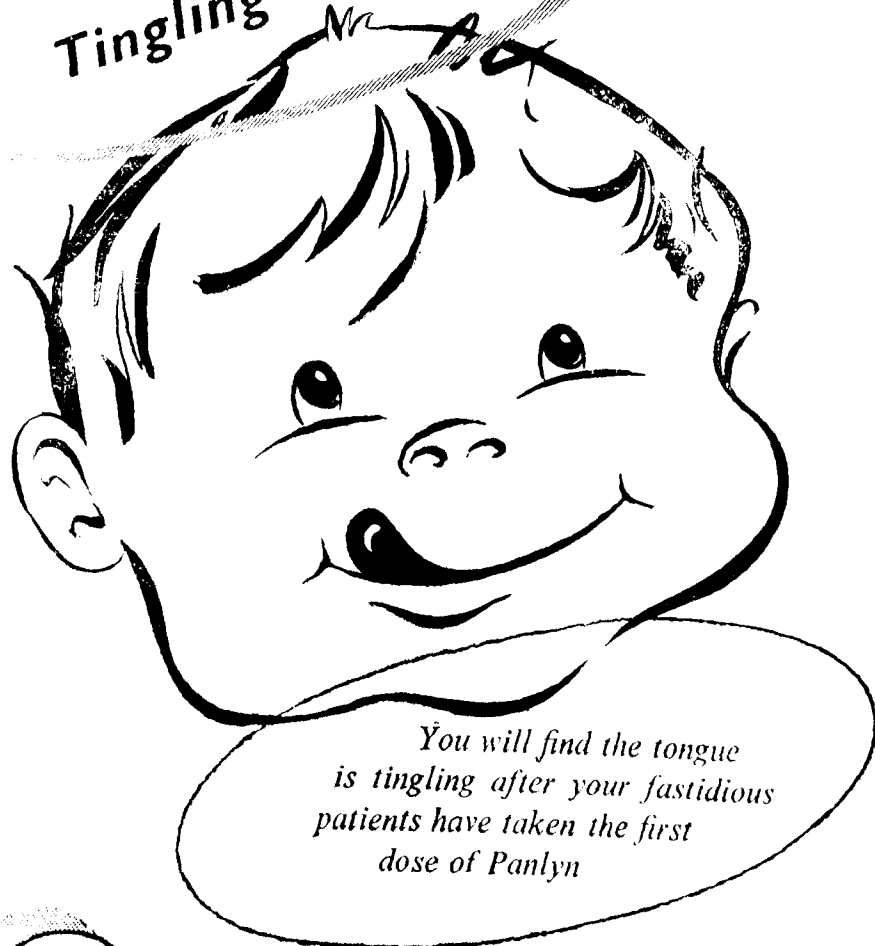
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Original Articles

HYPERTENSION—SELECTION OF CASES FOR DRUG THERAPY*

K. RAMACHANDRA, M.D.,

Physician, Government General Hospital, and Professor of
Therapeutics, Madras Medical College, Madras-3

THE treatment of high blood-pressure, at the present day is a physician's dilemma. No attention or care is devoted to the proper selection of cases for the drug management of hypertension. Very few physicians have judiciously used the vast variety of drugs in the care of these patients. There are at the disposal of the lay public several drugs, acting at various levels in the nervous system and vasculature, the selection of which is left to the ingenuity and shrewdness of the physician. It has been the experience of those who have been treating cases of hypertension, that very often, no appreciable change in the symptomatology and the blood-pressure readings have been noted, to the utter disgust of the physician. Even if the blood-pressure readings have been reduced, the amount of symptomatic relief is so little to the dismay of the patient. Some of them may be satisfied psychologically about the manometric gymnastics but this itself does not compensate for the persistence of symptoms or complications. The indiscriminate use of hypotensive agents in the induction of symptoms in asymptomatic cases or producing complications in balanced and asymptomatic cases of hypertension, has resulted in many deaths and has increased the morbidity rate in hypertensive populations. It has been noted in hospital practice that several cases of hypertension with or without complications admitted have been subjected

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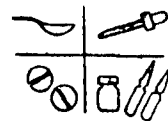


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to such vigorous hypotensive therapy that life is lost or complications intensified. No hypertensive ever improves within a period of a few days on hypotensive drugs and under those circumstances it is always advisable to go slow, to hesitate and use with discretion these drugs which are credited with enormous side-effects than with useful and long-lasting benefits. It is very easy to tilt the balance and break the last straw in a patient who is well-balanced as a result of a blood-pressure which was persistently high for a long period.

The other problem which faces the clinician is the selection of the most suitable hypotensive agent. There are several which are available but what is the best for the patient under treatment? No suitable answer is forthcoming and each one has his own vagaries. Probably the one which has been put on the market most recently has the largest reputation and so it goes on. It should therefore, be the aim of those who have been doing work on the therapy of hypertension to postulate a rough and ready hypothesis for the guidance of others in the profession. This hypothesis may not be accurate or flawless but will within reasonable limits, be a workable proposition. Therefore, the choice of the most suitable drug and the most suitable patient for drug therapy are the problems facing the physician and it would be a subject for life-long study, if hypotensive agents continue to flood the market in varying combinations and compositions. It should be the aim of the doctor not to be carried away by the name of the drugs but to study the site of action of these agents. Equally important is the study of the patient who has hypertension, regarding his complaints, duration of disease and the damage which it has done to the various vascular areas and the last and most-important is the temperament of the individual.

The ætiology of the disease presents very few problems as several procedures have come into day-to-day practice helping the physician to sort out the disease into the various groups. Those cases where a definite ætiology is discernible are very easy to manage and prognosis is linked with the ætiology and duration of the disease. Those cases belonging to the group of essential hypertension, benign or malignant pose a problem, and the management is a matter of trial and error. These patients have been subjects of hypertension, probably for several years prior to its detection, but leading normal lives, probably a little tensed-up and insecure emotionally. The disease at the present day has been listed in the psychosomatic group, and it need hardly be said that they are hypertensives by diathesis from the time of their birth. Heredity and environment are linked up with temperament, and diathesis is the sum total of the environment and heredity of the parents of the

hypertensive. Though hypertension is a late sequela in such people, the background is always there and triggers of various potency initiate and maintain the hypertension. So in its treatment, the ideal is prophylaxis, to change the environment of persons of such diathesis, which is a difficult problem or to maintain them on tranquillizers or intermittent sedation at times of stress. It is not this problem which confronts the physician but the selection of hypertensives suitable for drug therapy.

Very crudely the hypertensives can be classified into several categories:

1. <i>Asymptomatic cases with</i>	mild moderate severe	hyper- tension	
2. <i>Symptomatic cases with</i>	mild moderate severe	hyper- tension	II Malignant hyper- tension
3. <i>Cases with complications</i>	cerebrovascular cardiovascular renovascular		II Malignant
4. <i>Cases of labile hypertension</i>			

Asymptomatic cases are the most vulnerable group liable to develop symptoms with the slightest change in the blood-pressure. All of them may not react alike to hypotensive drugs. Variations in their response are the rule. Those with a mild degree of blood-pressure should be least tormented with drug therapy. Regulation of life habits, diet and body-weight should be aimed at and this basic principle underlies therapy of all hypertensives. Drugs should be avoided under these circumstances. Tranquillizers or ataractics and sedatives are helpful in regulating their tensed and disturbed mind and should be a drug common to all hypertensives whatever may be their group. These drugs have an important role to play in the modern world where hypertension is an essential requisite to keep aware of the environment.

In people where the pressure is moderate or severe these sedatives should be essentially given and rest advised—mental and physical. Where the blood-pressure is very high it should be gradually reduced to a tolerable level but not to normal. These are the patients where difficulties are experienced and side-effects consequent on a reduction of pressure have to be borne in mind. Very often it is a difficult problem to reduce the pressure in spite of using the most potent hypotensive agent acting at various levels on the central nervous system. The least harmful and the best are the alkaloids of serpina combined with other drugs acting on the blood vessels. Serpina has a sedative effect on the hypothalamus and to some extent on the

responsible during these episodes but also the biochemical changes in the blood which induces clotting. The increased coagulability of the blood which probably occurs periodically is dependent on dietetic and endocrine disturbances and during these periods there is a tendency for clotting to occur in almost all vascular areas. This should be borne in mind and the blood-pressure should not be disturbed as it does not alter the course of the disease. The individual must be given anticoagulant therapy as an emergency to reverse the changes in the blood. Non-thrombotic complications like cardiac asthma, angina pectoris, basilar insufficiency should also be managed symptomatically without interfering with the blood-pressure even if it is raised, as it is usually the case. The raised pressure usually falls when the complications have been managed properly. If the pressure is reduced, coronary circulation, and cerebral circulation suffer and intensify the disease. When the heart is accustomed to a certain intra-cardiac pressure, a sudden reduction always reduces the efficiency of this organ which cannot be measured by any physiological technique. The tonus and elasticity of the organ have not been, studied in detail as the size and shape of the organ have been, in pathological conditions. These properties are of prime importance in vascular diseases. Drug induced hypotension interferes with the proper mechanics of the heart at a time when the pressure is adjusting itself to a disturbed circulation. The disturbed blood-volume-regulating-mechanism and the imbalance of pressures in the two circulations must be attended to primarily in order to bring down the pressure.

In cases of labile hypertension, no drug therapy is necessary except to gear down the emotions, in times of stress. The individual himself is a good guide to his blood-pressure disturbance and can at those periods resort to sedatives or ataractics. Lability of the blood-pressure is a normal phenomenon which gets exaggerated due to autonomic disturbance or as a result of intermittent discharge of pressor amines into the circulation. In cases of Essential Hypertension, effective insulation of the hypothalamus from environmental influences and proper regulation of the serotonin mechanism are all that will be necessary. Understanding the self by the self is the essential requisite and the best regulator of the body-mechanism. Attitude to life always plays the important role in psychosomatic diseases and this aspect should be emphasized by the physician trained in social medicine.

Renal complications of hypertension are irreversible and hypotensives are also not specific and do little good. These cases are usually recognized late when the blood-pressure rises due to renal changes. They develop symptoms referable to the eye and

the central nervous system. Even if they are recognized in the asymptomatic stage, the progress of the disease can be little changed. Reduction of the pressure may in fact reduce the volume of blood perfusing the kidneys, producing renal symptoms. So when renal symptoms have set in, the ideal line of approach is regulation of diet and maintenance of blood-pressure at an optimum level, which depends on the individual. Albuminuria of nephrosclerosis never disappears inspite of all kinds of therapy. It is a vicious cycle, one tending to worsen the other. Once the damage sets in, the nephronic functions progressively deteriorate and regulation of the blood-pressure may precipitate acute emergencies. Cautious control is all that may be done.

Malignant hypertension is an entity which is little understood. This disease takes on an acute course and patients are normally seen at a stage when damage to the vascular areas has been extensive. The central nervous system and the kidneys are two areas where the brunt of the disease is noted. These cases cannot be cured but sometimes a remission can be induced by bringing down the pressure. The most potent and quickly acting drugs are administered in desperation. It is here that ganglioplegic drugs are indicated. Pentapyrrolidinium compounds, Mecylamine, Ecolid are said to bring down the pressure. Other drugs normally fail to lower the pressure. It should always be borne in mind that the blood-pressure should not be reduced to very low levels as imminent danger *viz.*, kidney failure etc. are liable to occur. The only true indication for this group of drugs is malignant hypertension.

It will now be clear that the difficulty lies in the choice of a most suitable patient for drug therapy. All cases should not be routinely experimented upon as bad sequelæ are liable to result. Each case, depending on the type, duration, complications etc., should be studied well before selecting the drug and the most suitable drug is often difficult to choose. Therefore, it becomes a trying task to manage cases of hypertension. Random choice of drugs should be deprecated and is more often the cause of symptoms. High blood-pressure though easily detected because of the manometer should not be indiscriminately altered but cautious therapy is necessary. This can only be understood if good statistics and follow-up are maintained. Treatment of hypertension is closely correlated with dietetic regulation and psychological management which are prime factors in hypertensive disease.

MENINGITIS AND ESCHERICHIA COLI

E. Coli is an uncommon cause of purulent meningitis, particularly in adults. The pathogenesis of this disease is extremely obscure and it is frequently a fatal disease.—(N. Y. St., J. Med., 15:7-1960).

ORAL HYPOGLYCAEMIC AGENTS IN THE TREATMENT OF DIABETES

Any agent used in treating diabetes must be capable of reversing both disturbed mechanisms. There are several criteria by which this can be tested. They include respiratory quotient studies in the human diabetic patient and in the experimentally-induced diabetic animal, glucose up-take by the rat hemidiaphragm, glycogen synthesis in liver and muscle, determination of blood glucose, arteriovenous difference, and the clearance of isotopically-labelled glucose from the circulation.

There does not appear to be any definitive evidence that the sulphonylurea compounds are capable of reversing the disturbance in carbohydrate metabolism which occurs in diabetes mellitus. In attempting to seek an understanding of the mechanism which accounts for the hypoglycaemia that follows the use of these drugs, it becomes evident that it results from enzyme poisons which block the normal release of glycogen from the liver when a demand for glucose is called for by the peripheral tissues. This process has the obvious effect of depleting the small quantity of glucose circulating in the blood which cannot be replenished by glycogen release. It is possible that the fate of some ingested glucose may be taken up by adipose tissue by way of the hexose monophosphate shunt.

Clinical experiences with 173 cases show that only the mildest adult diabetic patients appear to be controlled with tolbutamide. However, on analysis, it becomes clear that they are the patients in whom the capacity to utilize glucose is so mildly impaired that they could just as easily be desugarized by mild dietary restrictions. In actuality, the diabetes in these patients cannot be regarded as being controlled. These carbohydrate starvation at the peripheral cell level and actually create the same metabolic condition which severe dietary restrictions accomplished in the pre-insulin era.

The oral hypoglycaemic agents including the sulphonylurea compounds and phenformin hydrochloride fail to correct the defect in carbohydrate metabolism occurring in diabetes mellitus.

2. The evidence that the sulphonylureas stimulate the endogenous production of insulin from the beta cell is inconclusive.

3. The use of phenformin hydrochloride appears to indicate an effect on glycogen metabolism which is not in keeping with normal muscle function.

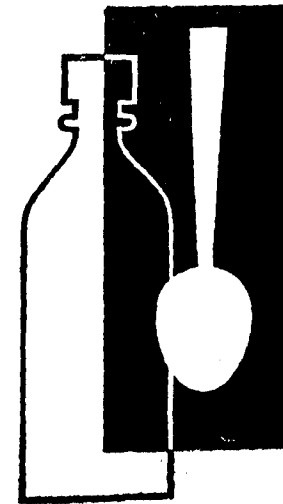
4. The use of presently known oral hypoglycaemic agents serves as a good tool in carbohydrate research. Their use in the treatment of the human diabetic patient, judging from the literature, seems to be premature and of dubious value.—(*J. Clin. Pract.*, May 1960).

SURGICAL KNOWLEDGE

In surgery most of our knowledge is based on what we learn from others. In youth we learn from our seniors and our teachers, in age we learn from our registrars and house surgeons, from our sisters, nurses and students, and from our patients. The knowledge we acquire for ourselves with so much labour is often clogged with the labour of acquiring it, and is apt to remain unused till some chance period of idleness has allowed it to slip into its proper place. The knowledge we acquire from others is already hand-picked and graded and represents the distillate of many hours of labour on their part.—(Sir Heneage Ogilvie, F.R.C.S., M.D. in "*A Surgeon Looks at Life*").

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COAGULATION*

SPEAKING on the "Coagulation of Blood" before the Royal Society in 1863, Lister observed:—

PRATUL GOSWAMI, M.B., B.S.,
D. Phil. (Med.),

Department of Biochemistry,
Glasgow University, Glasgow, Scotland

"The subject on which I have the honour to address you this evening is one which lies at the foundation both of physiology and pathology, and, on account of its great importance, has engaged the best energies of many very able men, among whom may be mentioned, for example, such distinguished Fellows of this Society as John Hunter, and Hewson; so that it might be well seen presumptuous in me to hope to communicate anything new regarding it, were it not that the constant progress of physiology and the allied sciences is ever opening up fresh paths for inquiry and ever affording fresh facilities for pursuing them. Indeed, my difficulty, on the present occasion, does not depend so much on the lack of materials as on the complicated relations of the subject, which make me almost despair of being able, in the short time that can be devoted to a lecture, to give in anything like an intelligible form, even an adequate selection of the facts at my disposal."

Nearly a century has passed since then, and a great deal of progress in laboratory investigations and in greater facilities for the study of the various physiological and pathological aspects have been achieved; also volumes of literature on blood-coagulation have accumulated, but still, the mechanism of blood-coagulation continues to be a controversial subject, though the importance of the problem has become more and more urgent following the modern trend among clinicians towards anti-coagulant therapy. The research workers and investigators on this particular problem put forward new hypotheses based on their own findings, and have often made the problem more complicated, because different investigators have used different nomenclatures for the same theme, or sometimes the same term e.g., "prothrombin" does not represent the same subject. Some authors have stated that "prothrombin" is *not* destroyed by heating, while others are emphatic that prothrombin is destroyed by heating. Both adduce supporting data, but the substance "prothrombin" of the 2 groups is not identical.

The original theory of blood-coagulation was comparatively simple and clear; but with the discovery of new factors, the original theory is not able to cover and explain all phenomena; and a new interpretation of the mechanism of blood-coagulation has thus been advanced by the discoverer of each new factor. It is not possible in this review to detail all relevant literature; but an attempt will be made to trace the evolution of the blood-coagulation theory leading to its modern concept. For the sake of clarity I propose to deal with the subject in two parts: Part I deals with the physiological aspect and Part II with some of the associated clinical conditions.

*Specially contributed to the ANTISEPTIC

PART I

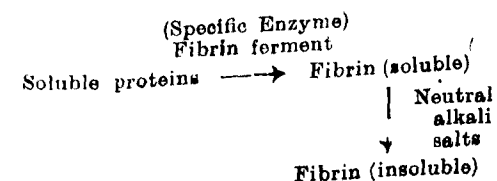
Blood-coagulation has been known from ancient times. The study of its mechanism may be traced through 4 different periods *viz.*:—(1) First or early period till 1856; (2) the 2nd period down to 1904 when Alexander Schmidt advanced the classical theory on the subject. The 3rd period ending in 1943 is the period of Quick. In the 4th, or last period the whole process of blood coagulation has become greatly complicated and from the classical two-phase theory, it has come to consist of 6 phases. This period has seen the preparation of the purified prothrombin, through the untiring efforts of Seegers and his co-workers.

In the first or early period, there were two schools of thought on the phenomenon of blood coagulation; one believed that the blood solidified due to environmental changes, and the other school thought that some chemical substance was also responsible for the coagulation. Hippocrates and Aristotle sought to explain the phenomenon of blood-coagulation on the basis of environmental changes like cooling, contact with air etc. and this view was supported in the seventeenth and eighteenth century by Schroedervan der Kolk, Bohn, Hoffmann, Ludwig etc. Their theory that blood solidified on cooling was disproved by Hewson in 1772 experimentally. He showed that blood can be subjected to freezing and then thawed before coagulation. In addition to the cooling process, other physical factors like the cessation of the natural flow were also held responsible, but this concept was disproved by John Hunter, who showed that blood can remain stagnant in a vessel before coagulation. He pointed out in illustration how menstrual blood remained liquid. That blood coagulation was due to a chemical process was supported by Galen who stated that "the formation of a coagulum is the road to decay." Harvey like Galen, thought that the coagulation of blood took place as a result of decomposition and decay following death and cannot occur in the living blood. Home, Prevost and Dumas tried to explain the mechanism of blood-coagulation morphologically rather than chemically and they thought the investing membrane of the nuclein was damaged in decomposing blood and so was incapable of preventing the agglutination of the nuclei. This theory was later disproved by Berzelius and Johnannes Mueller. Mueller by his classical experiment demonstrated the existence in solution of fibrin in the plasma; but he did not explain the mechanism of conversion into solid of the dissolved fibrin. Virchow, further modified the hypothesis of Mueller and stated that fibrin existed in the isomeric liquid or precursor state and termed it "Fibrinogen." Even before Virchow, Buchanan had done some experiments with hydrocele fluid and

showed that the hydrocele fluid *per se* remained liquid but began to coagulate when serum or clot was added to it. He thereupon postulated that two substances *viz.*:—(1) the liquid fibrin which was a stable substance and (2) a substance capable of converting the soluble fibrin into an insoluble one were necessary for coagulation; Buchanan was thus the real father of the modern theory relating to coagulation.

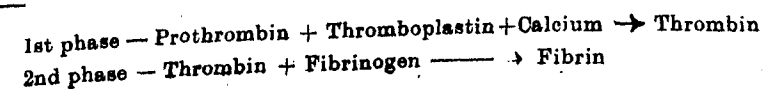
Bruecke, demonstrated that the vascular wall played a role in maintaining the blood in the liquid state; his observation rather than his interpretation of it is more important. Denis demonstrated the presence of fibrinogen by the salt-precipitation method, which is used even now for the fractionation of the serum and plasma proteins.

Following the work of Buchanan and Virchow, Alexander during the next period demonstrated the importance of blood cells in the mechanism of blood-coagulation. His name is famous for his original conception that the process of blood-coagulation is a process of fermentation, in other words, the blood-coagulation reaction is an enzymic reaction. On the basis of Buchanan's, Virchow's and his own observations, he propounded his theory on blood-coagulation, *viz.*, the reaction of blood-coagulation was due to a chemical combination of two substances, the end-product of which was the fibrin. Later on, he modified it to include a third substance called "Fibrin ferment" or "thrombin" which was needed to produce coagulation, and gave his arguments in support of the enzymic nature of the "Fibrin ferment" or "thrombin." The "fibrin ferment" was prepared by Schmidt by adding alcohol to serum,—a process later developed by Cohn for the fractionation of blood-proteins. Alexander's theory of blood-coagulation is briefly indicated graphically below:—

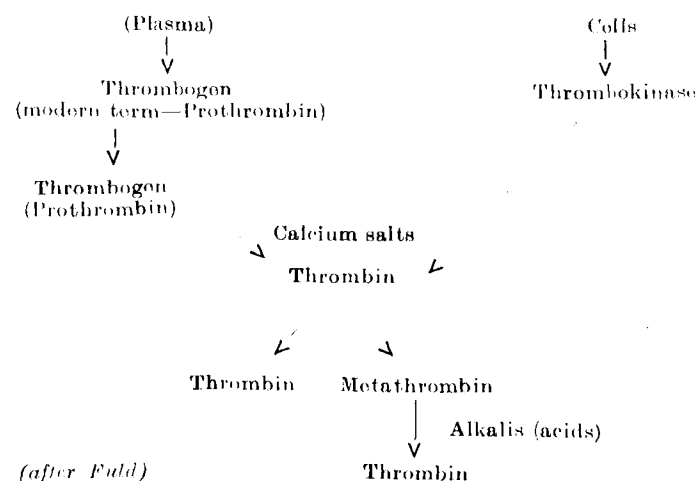


Hamarsten (1875) supported a part of Alexander Schmidt's theory and disagreed in regard to the role of the "Fibrinoplastic substance" (para-globulin). He showed that para-globulin was not

essential for coagulation. Schmidt and Hamarsten explained that the mechanism of blood-coagulation consisted of two phases:—in the first phase fibrinogen was formed which in the second phase became converted into the insoluble fibrin. Their well known classical theory of blood-coagulation is given below:—



Schmidt also stressed the essentially cellular nature of coagulation. "Thromboplastin" was originally known as "Zymoplastic agents"; Schmidt first used the term "thrombin" to a previously known substance "Fibrin ferment" and "prothrombin" to the inactive precursor of the same. Both these substances are in the nature of proteins. Hamarsten differed from Schmidt and believed that the calcium salts of plasma activates a precursor of thrombin, which is in the nature of a nucleoprotein and released from the formed elements into plasma after blood is shed, whereas, Schmidt believed in the existence of prothrombin in the circulating blood and prothrombin was then activated by "zymoplastic agents" which were released from the leucocytes without the aid of calcium salts. This difference of opinion as explained by Paul Morawitz was due to the different nature of prothrombin. Fuld, Spiro and Morawitz, therefore, modified the classical theory of blood-coagulation as "Fibrinogen, calcium salts probably also thrombogen exist in the plasma of circulating blood. Outside the vessels the formed elements, especially the platelets, are disrupted by contact with foreign surfaces, and therefore, yield thrombokinase into the plasma. Thrombokinase in conjunction with thrombogen and calcium salts forms thrombin" (Morawitz). So, the mechanism of blood coagulation is stated graphically thus:—

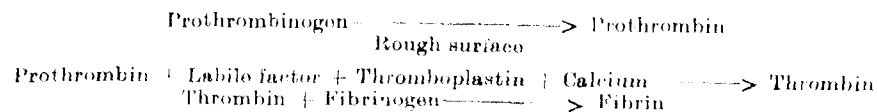


According to the classical theory, the pre-existing protein fibrinogen is converted to fibrin in the second phase, though the precise nature of the chemical reaction in this conversion is not known. There was a great deal of controversy regarding the process of conversion of the fibrinogen to fibrin and Hamarsten thought that it was a process of hydrolytic separation of the fibrinogen into fibrin; this view was later supported by Schmiederberg (1897) and Heubner (1903) but not accepted by all, the

theory of an intramolecular rearrangement fibrinogen found favour.

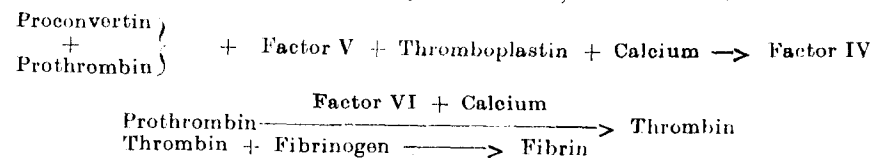
The classical theory of blood-coagulation was not accepted by all and Wooldridge (1893) suggested that the formation of fibrin was the product of a combination of two substances called Fibrinogen A and Fibrinogen B. Nolf supported his view that thrombin was the result and not the cause of fibrin formation. During comparatively recent years, factors like pro-serozyme, serozyme, cytozyme (Bordet 1920) disruption of protein complex by foreign surface (Pickering 1928) sought to explain the mechanism of fibrin-formation. Further, the classical theory of blood-coagulation was unable to explain the entire phenomenon; Howell hence modified the two-phase classical theory into 3 phases, and according to him, in the first phase the inhibitor of prothrombin is removed and then the prothrombin in the 2nd phase is capable of forming thrombin with the enzyme and calcium salts, but this modified theory did not receive support from other workers.

Arnold Quick studied extensively the mechanism of blood-coagulation from the biochemical aspect and the current concept owes much to him; a new era in blood-coagulation started with him in 1935. He also worked out the biochemical method for the estimation of prothrombin on the basis of the classical-theory. His method of estimation of prothrombin afforded great help in the discovery of Vitamin K and revealed defective coagulation time in different clinical conditions, like obstructive jaundice, and hæmorrhagic disease of the new-born. Quick later demonstrated that prothrombin was composed of two parts *i.e.*, a labile component (Component A) and a stable component (Component B.) This discovery explains the discrepancy in the estimation of prothrombin between his one-stage method and the two-stage method. The labile component of prothrombin is decomposed when blood is stored. The stable component B becomes less in animals poisoned with dicumarol, in the deficiency of Vitamin K, is destroyed by heating to 60°C and is removed completely from oxalated plasma by aluminium hydroxide and other absorbents but not from plasma in which calcium has not been removed and the prothrombin complex is allowed to remain intact. He believes that both the components, A and B are to a certain extent group-specific. He found that only a portion of prothrombin is in the active form in the plasma and the "prothrombinogen," the inactive part of prothrombin of plasma is activated when the plasma comes in contact with a rough surface like that of injured epithelium, glass surface etc. Quick's concept of clotting mechanism may therefore, be represented as shown overleaf (p. 974).



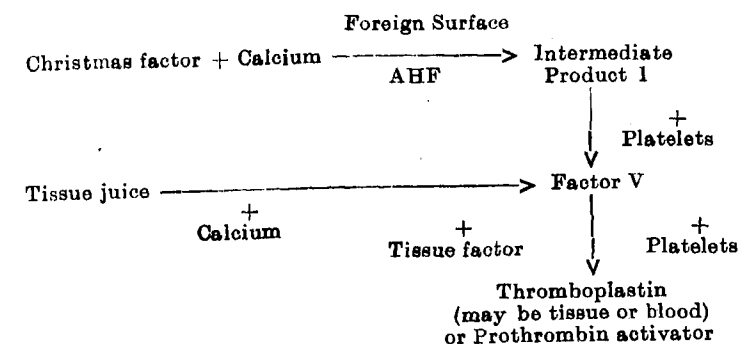
Quick's labile factor was afterwards termed "*Accelerator globulin*" by Ware and Seegers (1948), "*prothrombin accelerator*" by Fantle and Nancy (1948), "*Thrombogen*" by Nolf and Factor V by Owren in 1947. Astrup renamed the Factor V as "*Proaccelerin*" which was accepted by Owren. Owren demonstrated that the presence of the labile factor or Factor V or proaccelerin, thromboplastin, calcium and prothrombin all together formed an intermediate product called *Factor VI* or "*accelerin*" prior to the formation of thrombin. Prothrombin Factor VI and calcium then formed the thrombin. The maximal activity of Factor VI is dependent upon Factor V and Owren, therefore, suggested that "Factor V is integrated with Factor VI wholly or partly."

Howell's hypothesis of the presence of prothrombin was not accepted during his life time; Owren also believed in the presence of another substance in prothrombin preparation which he designated *Co-factor V* or *proconvertin*. Owren's theory of the blood-coagulation mechanism, therefore, stands as:—



Clinical and experimental data have shown that in addition to the above mentioned factors, some others are necessary for coagulation with thromboplastin and calcium and these factors have been called "*Prothrombin conversion factor*" by Owren Bollmen (1948), "*Serum prothrombin conversion accelerator*," (SPCA) Alexander *et al* (1949), and *Factor VII* by Koller, Loeliger and Duckert (1951). The origin of this factor is thought to be from "*proconvertin*," an inactive precursor in the plasma. Owren, therefore renamed the Factor VII or SPCA as "*convertin*." This factor is reduced in dicumarol therapy. Alexander (1952) summarized the physiological and biochemical properties of this factor; a few of them have been mentioned here. SPCA is relatively stable, is adsorbable by barium sulphate and BaCO_3 , is not precipitated from serum or plasma respectively at pH 5.0–5.2 or 5.7, accelerates the conversion of prothrombin to thrombin in the presence of thromboplastin; Ac-globulin, and calcium, accelerate the coagulation of normal blood, heparinized blood, hæmophilic blood, thrombocytopenic blood, and blood exposed to siliconized surfaces; is higher in canine than in human serum, and lower in bovine serum. He, however, suggested that proconvertin was identical with the SPCA precursor and convertin with the SPCA.

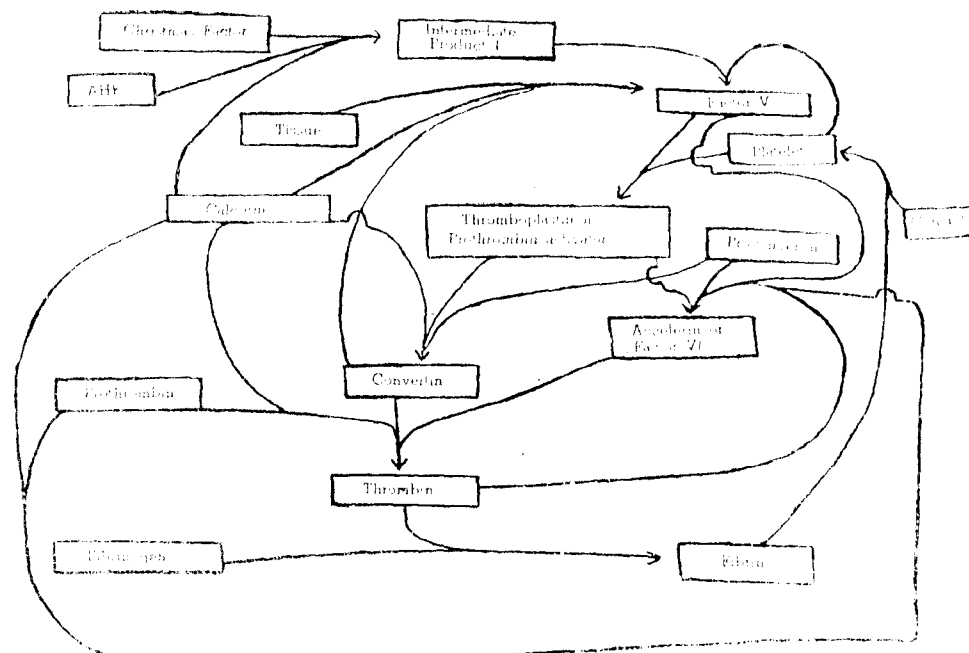
The discovery of Factor VII or proconvertin did not end all the controversy of blood-coagulation, specially when it has been found that in hæmophilia fibrinogen, calcium, prothrombin, tissue and platelet thromboplastin are all within the normal range but the clotting defect in this disease is a well-recognized problem. It has since been found in the subsequent period that an active material known to-day as the "*Antihæmophilic globulin*" (AHG) or "*Antihæmophilic Factor*" (AHF) is lacking in that particular disease and the importance of this factor in the coagulation of blood has been demonstrated independently by both Quick (1947) and Brinkhous (1947). Quick explained that AHF was the precursor of the thromboplastin and was activated by platelets but Brinkhous differed and held the view that AHG was thrombocytolysin in action. The blood thromboplastin differed from the tissue thromboplastin; the former did not require Factor V and Factor VII to activate the purified prothrombin, and a direct activator of prothrombin. The discovery of a new disease akin to hæmophilia raised another difficulty in explaining the defective clotting mechanism in that disease. Patients suffering from this new disease had normal AHG, and hence, could not be considered hæmophilic. In the new disease, the plasma is normal in all respects but in the serum of this patient something other than Factor VII was lacking and this deficient factor is the *Christmas Factor* and the clinical condition is known as Christmas disease after the name of the first patient examined and investigated in England by (Biggs *et al* in 1952). In America, the same factor is known as the "*Plasma thromboplastin component PTC*" (Aggeler *et al*-1952). Later, true hæmophilia was called hæmophilia A and Christmas disease, Hæmophilia B. The experiments of Biggs, Douglas and Macfarlane (1953) and their views modified by Bergsagel (1955, 1956) explained the role of AHG and Christmas factor in the coagulation of blood:—



Hougie *et al* (1957) reported a case, previously thought to be a case of Factor VII-deficiency but found that the prothrombin consumption and thromboplastin generation tests were both

faulty, and in Factor VII deficiency these two tests were normal. They named the deficient factor as *Stuart-clotting-factor*, after the surname of the patient. Stuart clotting factor deficiency is inherited as a highly penetrant, (*sic*) incompletely recessive autosomal trait.

The chemical reaction, in the conversion of fibrinogen to fibrin in association with thrombin is still to be found. It has already been pointed out that Schmidt believed that fibrinogen was converted to fibrin enzymatically by thrombin, and this



DIAGRAMMATIC REPRESENTATION OF THE COAGULATION THEORY

view was supported by Eagle (1935), Seegers *et al* (1945), Morrison (1947) by the fact that thrombin converts many times this weight of fibrinogen to fibrin; but on the other hand much of the thrombin added to fibrinogen disappears after the reaction. So, Lein (1948), Ferry (1948) and Steiner and Laki (1951) suggested that the change from fibrinogen to fibrin is due to the polymerization of the individual fibrinogen molecules. Laki and Mommaerts (1945) believed that the conversion of fibrinogen to fibrin occurred in two stages; in the first stage at a pH of 5.1 there is an alteration in the fibrinogen molecule and in the next stage the altered molecules of fibrinogen aggregate. The nature of the chemical reaction is thought to be an oxidation of SH groups present in the fibrinogen to form an S-S linkage by thrombin (Baumberger-1941). From the experimental data of Bailey, Bettelheim, Lorand and Middlebrook (1951), Troll and

Wahman (1954), Lorand (1954) Biggs and Macfarlane (1957) suggested that the conversion of fibrinogen by thrombin is most likely an enzymatic reaction involving 3 stages.

In the light of the knowledge gained from all these theories of blood-coagulation and the different factors, a diagrammatic representation of whole blood-coagulation is given in the *Diagram* on p. 976 *supra*).

The diagram is self-explanatory, and shows clearly the role of calcium salts in the mechanism of blood-coagulation.

Before concluding, the part played by diet and adrenalin needs some explanation. In recent years great importance has been given to a high-fat diet, as being the cause of atherosclerosis (*see below*).

A high fatty diet $\rightarrow$ accelerated coagulation $\rightarrow$ thrombosis

atherosclerosis

It is, however, a matter of controversy if a high fat-diet actually causes any acceleration of coagulation; some believe that a high fat-diet does *not* influence coagulation in any way, others are of opinion that a high fat-diet *does* accelerate coagulation. Nath and Saikia (1959) have noted in their experimental animals that prolonged feeding of a diet containing 20% of a highly saturated fat to rabbits tended to shorten the coagulation factors, and so they suggested that the rise of tissue ester cholesterol especially of the superficial intima layers may activate blood-platelets thus leading to an increased coagulability of blood and thrombosis. They also observed the counteraction of such shortening of the coagulation time by the administration of essential fatty acids, Vit. B₁₂ and hydrolysed GCA. Lewis (1960) on the other hand, did not observe any clot-accelerating activity due to fat ingestion on normal or hepatic blood. The role of protein in the diet in the coagulation of blood was observed by Mills and Necheles so long ago as 1928; they found an increased coagulability of the blood following protein ingestion.

The administration of adrenalin has been reported to shorten the clotting time of blood. Forwell and Ingram (1957) studied the effect of adrenalin infusion in humans and found that following adrenalin there was a significant fall in the clotting-time demonstrable in silicone-coated tubes but not in glass tubes. On further investigation they observed an increased activity of Factor V. Williams and Warren (1957) also found a good correlation between prothrombin consumption and corticoid level. Further investigations on the effect of adrenalin on blood-coagulation will in due course give further information in establishing a correlation between the two.

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VASCULAR NECK PAIN: A COMMON SYNDROME

A common and frequently misdiagnosed cause of neck pain is related to the overdistention, relaxation, and increased pulsation of the carotid artery, a syndrome closely related to the various forms of extracranial vascular headache. Patients with this type of vascular neck pain, which is a manifestation of autonomic nervous system dysfunction, may be treated mistakenly with courses of sulphonamide, penicillin, broad spectrum antibiotics, by removal of teeth and tonsils, or by treatment with X-rays or steroids for thyroiditis. Out of a series of 100 consecutive cases, the 50 patients who had previously sought medical care were all incorrectly diagnosed. Among the supposed disorders were tumour, tonsillitis, throat infection, aneurysm, thyroid disease, and mononucleosis.

The series showed that the syndrome is more common among women than among men (about 4 to 1); that it occurs at any age, but mostly in the fourth and fifth decades; and that usually there is a history, individual or familial, of vascular headache. The only abnormality revealed by physical examination is a tender, throbbing carotid artery. The preferred treatment is similar to that of the other painful vasodilating conditions of the head.—(*Cleveland Clinic Quart*, Jan. 1960, via *New York State J. Med.*, 1-9-1960).

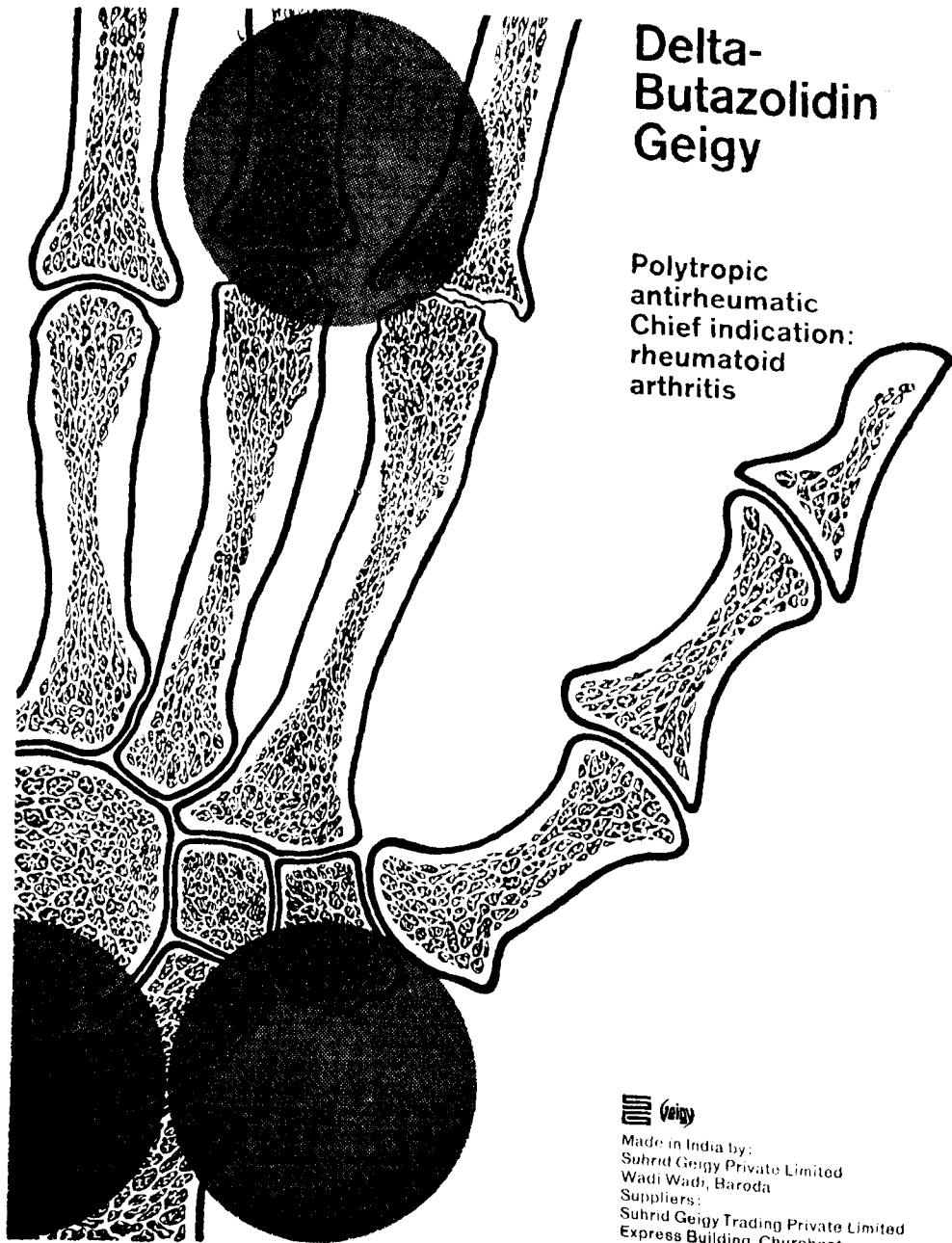
Specialists:—Today too many specialities are breaking down into sub-specialities and this carries a threat to American Medicine.—(*G.P.*, July 1960).

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thrombotic processes and
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PROTEIN MALNUTRITION—ITS AETIOLOGY,
SYMPTOMS, TREATMENT AND PREVENTION*

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Protein malnutrition (Kwashiorkor) is largely responsible for the very high mortality in children in the subtropics and tropics. Recent investigations on the subject have shown clearly that children in the pre-school age-group especially those 1 to 3 years old, are the most vulnerable. This is also the period when the growth is quite rapid and the needs for the different nutrients are also high. We give in this article a review in outline of the large amount of literature on this subject that has been published in the last few years.

Clinical picture in severe cases of kwashiorkor.—A clear description of the clinical and other aspects of kwashiorkor has been given in detail by numerous authors¹⁻⁴. Although a large number of workers have recently demonstrated that kwashiorkor occurs in most of the tropical regions (or indeed, anywhere, the dietary and other aetiological factors are suitable) little has been added to the already well-documented account of the clinical picture of fully developed cases.

A description of the clinical features of kwashiorkor as reported by a large number of workers¹⁻⁴ in this field is given below. The changes that take place in cases of kwashiorkor may be dealt in the following order:—

(1) Changes in general health and appearance; (2) changes in the skin, mucous membrane, hair and nails; (3) changes in the cardiovascular and haematopoietic systems; (4) changes in the bones and muscles; (5) changes in the digestive system and the liver; and (6) metabolic changes.

1. Changes in general health and appearance.—Kwashiorkor seems to be associated always with an arrest of growth; exceptions to this rule have not been noticed. The literature does not appear to include any record of cases where the weight was normal for the age. The loss in weight is often considerable, especially when allowance is made for the presence of oedema. There is also a retardation of growth in height although this is less marked than in the case of weight.

The psychological condition of the children in severe cases is characteristic: they are indifferent to their surroundings and remain immobile for hours with open eyes and expressionless features, suggesting a mask rather than a human face. This

*Specially contributed to the ANTISEPTIC.

immobility is often accompanied by a monotonous wailing with tears and the children refuse all food and whimper at the least touch. In less severe cases, the child while sitting in bed follows what is going on around it but always remains serious and sad. The appearance of a smile on the faces of these children is considered as a sign of improvement.

2. Changes in the skin, mucous membrane, hair and nails. —*Skin*:—Meneghello⁵ in describing the signs of the syndrome, classified skin changes into three groups; pigmentary changes, keratinization and vascular changes.

Pigmentary changes:—Hyperpigmentation is commonly observed and the skin alterations resemble those seen in pellagra. Hyperpigmentation takes the form of irregularly distributed dark grey patches which appear first on the dorsal surfaces of the hands and feet and later on the extensor surface of the arms and legs, on the abdomen, on the anterior and posterior thoracic regions and on the face; they form areas irregular in shape but generally well-defined. The hyperpigmented areas may assume a rosy colour, and are later replaced by a coffee coloration which deepens until the patches are nearly black.

When the patient's condition worsens, the areas of hyperpigmentation frequently ulcerate after peeling of the skin and when the tissues on which such ulcerations appear, are oedematous, they exude a clear serous fluid. As the condition of the patient improves the epidermis sloughs off leaving areas of smooth and unpigmented skin.

Keratinization:—Keratinization of the skin always occurs in cases of multiple deficiency and is associated with pigmentary changes. The skin of the patients is dry, thickened and wrinkled. Follicular keratosis and desquamation in dry particles or flakes occur with varying degrees of intensity.

Vascular changes:—Vascular changes are very common in cases of kwashiorkor, vasomotor disturbances occur fairly often and result in cyanosis and coldness of the feet.

Mucous membranes:—Like the skin, the mucous membranes frequently undergo changes. The conjunctivæ are often congested, thickened and rarely show whitish granular deposits somewhat resembling Bitot spots. The nasal mucosa is frequently atrophied. The lips are dry, chapped and sometimes show deep and bleeding cracks. The tongue may be pale or red, some times furred but more often smooth. The mucous lesions are probably the result of multiple and associated vitamin deficiencies.

Hair and nails:—Changes in the hair are also frequent and characteristic affecting both texture and colour. The hair turns reddish light brown, blonde or even almost white. This

dispigmentation of the hair can be uniform throughout the length of the hair or may affect certain sections or bands only, which are more or less discoloured and alternate with areas where pigmentation is normal. The nails some times show very marked disturbances of growth in severe forms of the syndrome.

3. Changes in the cardiovascular and hematopoietic systems.—*Cardiovascular changes*:—Cardiac changes in patients suffering from kwashiorkor consist of muffling of the heart noises, tachycardia and enlargement of the heart visible by X-ray. Arterial pressure is unchanged but circulation slows down leading to vasomotor changes particularly in the extremities.

Anaemia:—Anæmia is practically constant but is not always severe. The anæmia is of the normocytic or slightly macrocytic and slightly hypochromic type. The white corpuscles and the blood platelets do not show any special changes directly ascribable to the syndrome.

4. Changes in the bones and muscles.—The skeleton, although not showing any visible changes, is certainly affected in severe deficiency states and the retardation in development is indicative of the general change. Signs of true rickets are infrequent. Disturbances in ossification and growth of the bones which run parallel with those in hair pigmentation have been reported. Dental caries is frequent and marked.

The muscular system frequently shows atony or hypotony. Atrophy of the muscles is particularly marked in the buttocks. This lack of muscle tone, together with psychological troubles is responsible for the feeble motor activity.

5. Changes in the digestive system and the liver.—*Anorexia*:—The symptom is often seen in sick children on their admission to hospital, particularly in those under 3 years of age. Anorexia is sometimes hard to overcome and is a serious obstacle to the provision of an adequate diet, necessitating feeding by stomach tube or administration of nutrients by the parenteral route until the appetite returns.

Diarrhoea:—Almost all the children suffering from kwashiorkor have diarrhoea, which often aggravates the syndrome. Diarrhoea is sometimes found which cannot be ascribed to dietary or parasitic causes and which is in itself a sign of the syndrome. Diarrhoea is often due to alterations of hepatic and pancreatic functions which are by themselves a consequence of protein deficiency. Vomiting, which may also be due to faulty digestion, is sometimes observed but much less frequently than anorexia and diarrhoea.

Liver:—Enlargement of the liver is not always present nor is it very marked. The enlargement of the liver in cases of

kwashiorkor was never found to exceed three or four finger breadths below the costal region.

6. *Metabolic changes.*—Oedema is one of the most important features of the clinical picture in kwashiorkor. Oedema may appear more or less suddenly, following acute gastro-intestinal troubles or more frequently its onset is gradual. The oedema is marked and localized in the legs and feet with a more or less precise distribution. Sometimes it reaches the genital region and the abdomen. Oedema of the forearms and hands as well as the face is also found. Finally, a true state of anasarca with ascites and oedema of the trunk results. The closing of eyes as a result of severe oedema of the eye lids is by no means rare.

The co-existence of oedema and dehydration may be seen in some patients suffering from kwashiorkor. Oedema is marked in the extremities, while the trunk and sometimes also the face show less in turgor of the skin tissues and other signs of dehydration.

In cases of kwashiorkor, the plasma protein come down considerably. This results from a decrease in albumin, the globulin content remaining normal. This hypoproteinemia always results in oedema, though exceptions are not very rare.

Aetiology.—The cause for the incidence of kwashiorkor especially among children of 1 to 3 years of age is mainly dietetic. The body-demands for protein during the preschool years is especially high owing to the characteristic change in body-build, the extremities growing more rapidly than the trunk. If during this period, the diet is deficient in protein and is not able to meet the body-demands, protein malnutrition or kwashiorkor results, as revealed by the history of a large number of children suffering from the disease. The factors underlying protein malnutrition in underdeveloped countries are: (1) Inadequacy of food supply; (2) excessive population growth; (3) adverse economic factors and (4) social and cultural customs.

(1) *Food-supply.*—In many underdeveloped countries, existing food supplies available for consumption are not adequate to meet the nutritional requirements of the people. Estimates of calories and proteins available *per capita* indicate that in these countries average diets are insufficient in quantity and defective in quality. The *per capita* intake of animal protein comes to less than 10 grams, which reflects the low production of such foods as milk, meat, fish and eggs. Further, it can be assumed that when the *per capita* food supplies are inadequate in quantity and quality, the diets of sections of population which have special nutrition needs, especially preschool children, are particularly likely to fall short of requirements. Another fact of importance is that, in many parts of the world there are

periodic fluctuations in food supplies which may affect both calories available and the consumption of certain kinds of food. Seasonal shortage of foods of high nutritional value associated with greater reliance on starchy foods may precipitate deficiency states.

(2) *Population growth.*—In certain regions of the world, the rapid increase in population, largely resulting from public health policies, has created the problem of how to produce enough food to meet increasing requirements. In many regions, a solution has been sought by increasing the production of starchy tubers and root crops which give a high calorie yield per acre. The starchy foods satisfy hunger but, unless appropriately supplemented lead to protein malnutrition. If population growth leads to the greater production of starchy foods in order to maintain calorie levels and avoid under-nutrition, the result will be an increase in the prevalence of protein malnutrition.

(3) *Economic factors.*—The influence of economic factors on diet has often been discussed. The association of poor nutrition with low economic status, often closer in urban and semi-urban than in rural areas is fully recognized.

(4) *Social and cultural customs.*—Social and cultural customs exert, directly or indirectly a profound influence on the diet of most people. In some countries, fresh cow's milk and fish are regarded as unsuitable for young children. Beliefs and practices in relation to livestock may lead to failure to utilize sources of valuable foods which would improve the nutrition of the people. For example, in some African areas cattle are mainly a sign of wealth and little attention is given to them as producers of milk and meat.

(5) *Other factors.*—Although always mainly dietetic, several papers have recently stressed the importance of several aetiological conditioning factors, which can act as contributory or precipitating causes and also explain in part the fact that only a portion of children at risk develop severe disease. The importance of both acute and chronic infections, parasitic and bacterial have been emphasized by Chandler⁶ and by Platt⁷. The possibility of vegetable toxins playing a part in the aetiology has been suggested by Schoenthal⁸.

TREATMENT.—Until the nature of Kwashiorkor was properly understood, it was difficult to find a logical basis for suitable treatment. The treatment of the disease has undergone changes as the aetiology of the disease became clearer. Subrahmanyam *et al.*⁹ reviewed the literature on the role of processed protein foods in the treatment and prevention of kwashiorkor in children.

The treatment of kwashiorkor by Vitamin therapy attempted by earlier workers did not yield encouraging results.

Gillman and Gillman¹⁰ and Hanafy¹¹ reported that the hog's stomach was useful in the treatment of kwashiorkor. But Trowell and Muwazi¹² could not however, demonstrate the usefulness of hog's stomach in the treatment of kwashiorkor.

The use of protein hydrolysates, human serum-plasma and blood in the treatment of kwashiorkor was tried by a number of workers¹³⁻¹⁶. Protein hydrolysates in general yielded disappointing results. Pieraerts¹¹ made a systematic trial of various treatments and found that serum given subcutaneously gave the best results. Achar¹⁵ also used transfusion of blood and concentrated serum successfully when oral treatment was not possible. Janseen and Le Roux¹⁶ found that it was dangerous to give blood or serum intravenously because of the oedematous state of the subjects.

Treatment with skim-milk powder and proprietary casein foods:—The foods that have been most extensively used in the treatment of kwashiorkor are skimmed milk powder and calcium caseinate. Skimmed milk is usually preferred to full cream milk in the treatment of kwashiorkor as fat is not well tolerated. Janseen and Le Roux¹⁶ successfully used mixtures of peptonized milk and calcium caseinate in the treatment of kwashiorkor. Wills¹⁷ obtained remarkable success by using soured skimmed milk. Trowell and Dean¹⁸ used a mixture of skim-milk powder and calcium caseinate in the treatment of a large number of cases. Venkatachalam *et al*¹⁹ found skimmed milk to be very effective in the treatment of kwashiorkor in India. Each child was given daily 5 to 6 oz. of skim-milk powder reconstituted in six times the weight of water. The average duration of treatment was about four weeks. Subrahmanyam *et al*²⁰ treated successfully a few severe cases of Kwashiorkor by the oral administration of a casein-food fortified with calcium and B-vitamins and sweetened with sugar. The daily intake of protein from this source was 50 to 70 g. per subject. The recovery of the subjects was quite rapid.

Treatment with plant-protein diets:—It is being increasingly recognized that skim-milk powder though the cheapest so far for the treatment of kwashiorkor, cannot provide the basis for the large-scale solution of the problem in under-developed countries where skim-milk powder is not available in sufficient quantities, but has to be imported²¹. Much attention was therefore, paid by a large number of workers for the successful use of plant-proteins in the treatment of kwashiorkor.

Dean²² treated a number of cases of kwashiorkor by administering an emulsified mixture of well-cooked soya-beans and ripe bananas fortified with vitamins. A day's food consisted of cooked soya-bean paste (300g) mashed ripe banana (300-400g), sugar and vitamins. These investigations showed that soya-bean

proteins are effective in the treatment of moderately severe cases of kwashiorkor. Venkatachalam *et al*²³ recently reported that Bengal gram dhal cooked under pressure and mixed with ripe banana and jaggery could be used successfully for the treatment of kwashiorkor. The diet given daily to the children consisted of 250 g. of Bengal gram dhal, 100 g. of ripe banana and 79 g. of powdered jaggery. Subrahmanyam *et al*²⁴ have recently reported that a low-cost protein food based on a blend of 60 parts of low-fat groundnut flour, 20 parts of Bengal gram flour and 20 parts of skim-milk powder and fortified with calcium and vitamins was quite effective in the treatment of kwashiorkor. The children under treatment received daily, 6 oz. of the food in the form of porridge, sweetened with sugar. Behar *et al*²⁵ have successfully used vegetable protein mixtures containing sesame meal for the treatment of kwashiorkor. INCAP vegetable mixture 8 developed by the above workers consisted of a blend of low fat sesame meal (35 parts), cottonseed meal (9 parts), dried corn mosa (50 parts), torula yeast (3 parts) and kikuya leaf (3 parts). Investigations carried out by the above authors showed, that the above food was quite effective in the treatment of kwashiorkor. Scrimshaw *et al*²⁶ developed a vegetable mixture (INCAP mixture 9B) containing specially prepared cottonseed meal suitable for the treatment and prevention of protein malnutrition in children. The mixture contained corn (29 parts), Sorghum (29 parts), cottonseed meal (38 parts), dry torula yeast (3 parts), calcium carbonate (1 part) and vitamin A (10,000 I.U.). This food was found to be very effective in the treatment of kwashiorkor in children.

The use of isolated proteins from oilseed meals and other protein rich foods in the treatment of protein malnutrition is gaining importance in recent times. The isolation of the protein results in the elimination of the indigestible carbohydrate matter and fibre present in the natural foods and thereby results in an improvement of the protein digestibility²⁷. Further, the protein isolate is bland and is free from associated flavour present in the parent material, thus facilitating its incorporation in human dietary. By administering the isolated proteins, it will be possible to reduce considerably the great bulk of food administered by different workers in the treatment of kwashiorkor, using protein foods of vegetable origin. Workers, both at the Central Food Technological Research Institute, Mysore and Nutritional Research Laboratories, Hyderabad are at present actively engaged in the treatment of kwashiorkor using protein isolates of vegetable origin. Bhagavan *et al*²⁸ successfully treated eight subjects (children aged 2—4 years) suffering from protein malnutrition with blends of isolated groundnut and soya-bean proteins, casein and skim-milk powder. Each subject received 30 g. of protein daily from the blends sweetened with

cane sugar and glucose. The blends were readily digested by the children and the diarrhoea stopped in about 3-7 days. Oedema disappeared in about 7-12 days. A marked increase was observed in the serum protein content as a result of treatment.

Prevention.—The problem of prevention of protein malnutrition is engaging the attention of International organizations like FAO, WHO, UNICEF as well as national governments. The preventive measures, quite obvious from the aetiology of the syndrome may take four forms:—(a) Increased production of protein-rich foodstuffs; (b) education of the public in nutrition; (c) public health and hygiene measures and (d) supplementary-feeding programmes.

A. INCREASED PRODUCTION OF PROTEIN RICH FOODSTUFFS:—This is a long-term measure which does not yield immediate results. Production of foodstuffs, specially staple crops can be stepped up only by means of improved farming methods, government subsidies to agriculturists, cultivation of better quality of crops and improved storage facilities. The stress should be anyway laid more on the increased production of foods rich in protein, either of animal origin or the less costly vegetable origin. Among foods of animal origin rich in protein are, milk, eggs, meat and fish. Milk ranks first among them but the consumption of milk is very low in India and other under-developed countries due to both its low availability and high cost. Thus measures should be planned to increase the production of milk and to make it available at a lower cost. Increasing the production of milk means, the improvement of proper dairy systems and also the improvement of cattle stock to yield larger amounts of milk. Proper distribution of milk also is very important. Governments can aid or set up plants for drying skim milk in places where milk is plenty and it can be supplied to places of deficit. The supply of fish can be greatly increased by modernised equipment for catching, use of irrigation water for fish production and advocating fish pond culture as in China. Governments should give aid to facilitate proper preservation and processing methods and better transport facilities to supply fish to places of need. Fish flour which has been found quite acceptable by experiments in South Africa and Chile can be made use of, in other countries also. The only means of increasing the production of eggs is by better poultry-farming systems.

In spite of every effort, the production of protein-rich foods of animal origin in India and other technically under developed countries may not be adequate to meet the country's requirements. In many countries the possibilities of using protein rich foods of vegetable origin have been exploited. Among the most used are the oilseed meals and the pulse flours. Both the FAO and UNICEF have become increasingly interested in the greater

use of protein foods other than milk, locally available in the country in the supplementary feeding of children and other vulnerable groups of the population and are helping governments through their regular and technical assistance programmes in the production of inexpensive food supplements of vegetable origin.

B. EDUCATION OF THE PUBLIC IN NUTRITION:—This type of preventive measures call for the collaboration of nutritionists, medical staff, teachers, social workers, home economic specialists, public health nurses and extension workers. The aim of the programmes of this type should be to educate the public in general to bridge the gap between the knowledge of science and practice. In many places, the problem is one of practice rather than lack of resources. The aim is to teach the people better food habits, better utilization of available food resources and encourage the use of certain protein-rich foods seldom or never eaten. Education of this type can be started in maternity and child health centres, nutrition centres, etc. Voluntary organizations in villages where the people themselves can take part and clubs and home visits also play a great part in the education programmes. Training facilities for workers of this type should also be provided by governments where they obtain a full course of training in principles of nutrition and the effective methods to be used among various types of people in presenting scientific knowledge in a simple understandable form.

C. HEALTH AND HYGIENE MEASURES:—These measures are designed to fight the secondary causes which aggravate protein malnutrition. Diseases like intestinal parasitism, and malaria etc., are known to play an important role in precipitating protein malnutrition. Therefore hygiene measures will greatly help in prevention of protein malnutrition. Anthelmintic campaigns should be undertaken and with advantage can be organized along with supplementary feeding programmes. Well trained medical and nutrition staff can successfully spread health education through maternal and child-welfare centres.

D. SUPPLEMENTARY FEEDING PROGRAMMES:—Supplementary feeding programmes are the one immediate means of preventing protein malnutrition. Feeding programmes should be so planned that by selective distribution, the foods can reach the needy sectors of population. In view of the urgent need, supplementary feeding programmes should be mainly directed first towards mothers and children. Such programmes are being carried out in India in maternal and child-welfare centres. Along with the supplementary feeding, mothers should also be taught proper weaning practices and the use of appropriate foods in infant feeding. School lunch programmes play a great part in the supplementary feeding of school-going children.

UNICEF has supplied milk powder to many of the countries for the supplementary feeding of children, pregnant and lactating mothers. Where the supply of milk is inadequate international organizations like the FAO and UNICEF are helping governments in the production of inexpensive protein-rich food-supplements of vegetable origin²⁹.

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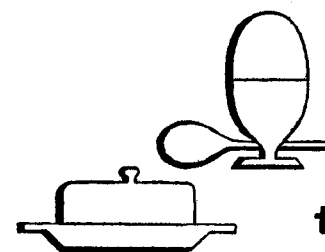
LIQUID NITROGEN AND TREATMENT OF SKIN LESIONS

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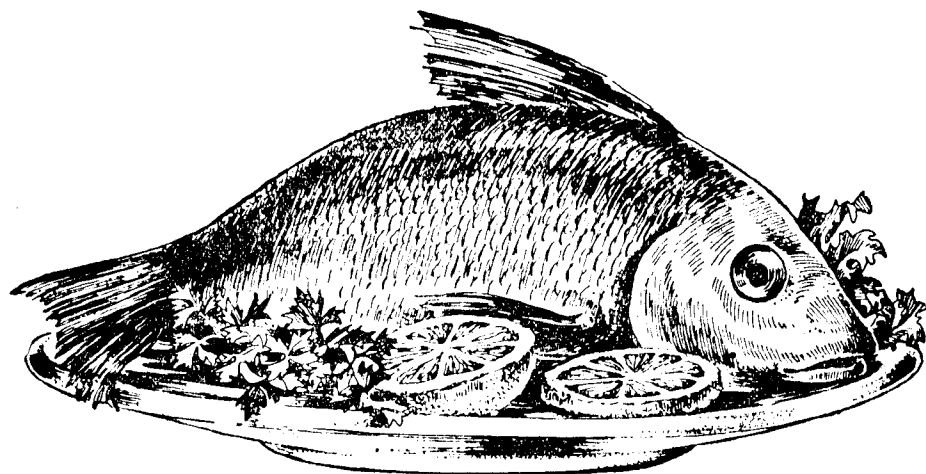
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A CLINICAL TRIAL OF CORTISONE—QUINOLINE OINTMENT IN DERMATOSES *

HALOGEN derivatives of Quinolines—Iodochloroxy-quinolines have been used in the treatment of chronic septic skin conditions. They are potent antiseptics and bacteriostatics and act locally.

Cortisone preparations are powerful anti-inflammatory agents acting locally, and are very widely used in many inflammatory skin conditions of varied aetiology. Many preparations were made locally using cortisone combined with antibiotics, antiseptic and keratolytics. Every one of these, has its uses as well as limitations.

Material and methods.—The preparation under study is a combination of 1.0 per cent of cortisone with 4% of Iodochloroxyquinoline in a vanishing cream base. Ninety cases of varied skin disorders nearly all of them out-patients were treated with this preparation. It was applied daily or on alternate days in the department itself. No other oral or parenteral medication was given to the patients. Cases which did not respond to this

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TABLE I

Showing the six groups for the 90 cases

Group No.	Condition	Number of cases in each
1.	Bacterial eczema	24
2.	Infantile eczema	27
3.	Bockhart's impetigo	19
4.	Sycosis barbæ	5
5.	Contact dermatitis	4
6.	Varicose „	11

therapy or which flared up with the treatment were given other suitable therapy. The cases were reviewed at least thrice every week. They were divided into 6 groups as shown in Table I alongside. Cases that were irregular or those that necessitated changes in therapy are shown in Table II below.

TABLE II

Showing details of the cases in each of the 6 groups

S. No.		Gr. I	Gr. II	Gr. III	Gr. IV	Gr. V	Gr. VI
1.	No. of cases treated	10	17	16	4	4	11
2.	Irregular or treatment stopped	5	10	3	1	Nil	Nil

The details of the investigation undertaken and the results of the cases treated are given in Table III on p. 990. The average attendance daily or on alternate days was 13 days for group I,

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12 for group II, 4 for group III, 17 for group IV, 14 for group V and 7 days for group VI. The results were classed as *Excellent*: *Good*: *Satisfactory*: and *Unsatisfactory*. Supplementary therapy given if any, is also indicated in a separate column. Cases that got worse are noted in the last column.

TABLE III
Showing details and results of the treatment

Group : Serial No. and Name	Period of attendance	Total days attended	Supplementary therapy	Results of treatment				Remarks
				Excellent	Good	Satisfactory	Unsatis- factory	
Group I								
1. D.M.	Daily	25	Nil	+	...	...	...	—
2. D.M.C.	„	3	Stopped	...	+	...	...	—
3. S.	„	12	Do.	...	...	+	...	Bad reaction
4. S.A.M.	„	5	Penicillin 3 days	...	...	+	...	—
5. Miss. A.	„	4	...	...	+	...	...	—
6. J.	„	28	Penicillin 3 days	...	...	+	...	—
7. C.	„	19	Do.	...	...	+	...	—
8. S.	„	6	...	...	...	...	+	—
9. M.	„	6	...	+	...	...	...	—
10. K.	„	32	...	+	...	...	...	—
11. S.	„	20	Penicillin 3 days	...	...	+	...	—
12. M.	„	13	..	...	...	+	...	—
13. I.	„	23	...	+	...	...	...	—
14. S.T.	„	12	...	...	...	+	...	—
15. N.	„	9	...	...	...	+	...	—
16. M.	„	9	...	...	...	+	...	—
17. S.	„	9	Penicillin	...	...	+	...	—
18. Y.	„	14	...	+	...	...	...	—
19. N.	„	1	...	+	...	...	...	—
Group II								
1. B. D.	„	30	Penicillin	...	...	...	+	—
2. B.A.	„	14	...	...	...	+	...	—
3. S.V.	„	8	...	+	...	...	...	—
4. I.B.	„	8	...	...	...	+	...	—

TABLE III—(Contd.)
Showing details and results of the treatment

Group: Serial No. and Name	Period of attendance	Total days attended	Supplementary therapy	Results of treatment				Remarks
				Excellent	Good	Satisfactory	Unsatis- factory	
Group II (Contd.)								
5. P.	Daily	25	...	...	+	...	...	—
6. A.	„	20	..	...	+	...	...	—
7. H. L.	„	9	...	...	+	...	...	—
8. N.S.	„	10	...	...	...	...	+	—
9. S.K.	„	25	..	+	...	...	...	—
10. S.	„	5	...	...	+	...	...	—
11. D.O.	„	5	...	...	+	...	...	—
12. M.	„	10	...	...	+	...	...	—
13. P.	„	5	...	...	+	...	...	—
14. S.	„	6	Penicillin	...	...	...	+	—
15. U.S.	„	10	...	...	...	+	...	—
16. K.	„	8	...	...	+	...	...	+
17. S.H.	„	5	...	...	+	...	...	—
Group III								
1. M.	„	12	...	...	...	...	+	—
2. V.	„	1	...	...	...	...	+	—
3. S.	„	1	..	...	...	+	...	—
4. S.	„	10	Penicillin	...	...	+	...	—
5. V.	„	8	...	..	...	+	...	—
6. N.	„	10	...	...	...	„	...	Very slow improvement
7. D.	„	1	...	...	...	...	+	Flared up
8. S.	„	8	U.V.R.T.	...	...	+	...	—
9. V.	„	1	...	..	...	...	+	—
10. L.	„	5	...	...	...	...	+	Flared up
11. A.	„	1	..	...	...	...	+	—
12. J.	„	1	...	...	...	..	+	—

TABLE III—(Contd.)

Showing details and results of the treatment

Group : Serial No. and Name	Period of attendance	Total days attended	Supplementary therapy	Results of treatment				Remarks
				Excellent	Good	Satisfactory	Unsatis- factory	
Group III (Contd.)								
13. B.	Daily	1	...	..	...	..	+	—
14. P.	"	1	...	..	+	...	..	—
15. Y.	"	1	Penicillin	...	...	+	..	—
16. R.	"	5	Do.	...	...	+	..	—
Group IV								
1. K.	"	39	...	...	+	...	..	—
2. P.	"	10	...	...	+	...	..	—
3. S.H.	"	17	...	...	+	...	..	—
4. S.S.	"	5	Penicillin	+	...	...	..	—
Group V								
1. S.	"	30	..	...	...	+	..	—
2. A.	"	10	...	...	...	+	..	—
3. B.	"	13	...	...	...	+	..	—
4. I.	"	5	...	+	...	...	..	—
Group VI								
1. D.	"	16	...	..	..	..	+	—
2. D.	"	12	...	+	...	...	..	—
3. S.N.	"	21	...	...	+	..	...	—
4. D.	"	3	...	...	+	...	...	—
5. P.K.	"	5	Penicillin	...	...	...	+	—
6. R.N.	"	2	...	...	+	...	..	—
7. M.	"	1	—	...	+	..	...	—
8. V.R.	"	5	...	...	...	..	+	—
9. G.N.	"	1	...	...	...	...	+	—
10. V.R.	"	5	Penicillin	...	+	...	..	—
11. A.	"	5	...	...	+	...	..	—

TABLE IV

Showing results of treatment of the 6 groups in percentages

No.	Groups	Percentage of satisfactory results	Percentage of unsatisfactory results
1.	Bact. eczema	90	10
2.	Inf. "	76	24
3.	B. impetigo	50	50
4.	Sycosis barbæ	100	Nil
5.	Contact dermatitis	100	Nil
6.	Varicose "	66.6	33.4

Discussion.—Though it is not spectacular to combine steroids with other antiseptic agents, they have been found useful. This preparation was found to be irksome in all dermatoses with frank infection owing to its drying effect. In fact, in many such cases the condition flared up.

In the absence of oozing or weeping infections this preparation was very useful. It proved satisfactory in contact dermatitis but not in chronic follicular infections. It was satisfactory in one half and unsatisfactory in the other half of the series.

In uncomplicated varicose dermatitis without oozing it was found to be beneficial. Nearly a third proved unsatisfactory.

In the presence of frank secondary infections and acute eczema, quinoline proved to be an impediment to the anti-inflammatory properties of cortisone, but in their absence it was helpful.

Summary.—A study relating to the use of topical cortisone-quinoline in ninety cases of different dermatoses is recorded. The preparation was found very useful in dry inflammatory skin conditions.

Acknowledgement.—We thank M/s. East India Pharmaceutical Works Ltd. for a liberal supply of "Corto-Quinol" and also the Dean of the Government Stanley Hospital, Madras for according permission to publish this report.

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THE CEREBROSPINAL FLUID

Three new methods of examining the cerebrospinal fluid have recently been reported in French journals. The first, reported by Professor Th. Alajouanine, and his colleagues, is a new flocculation reaction, using colloidal red, which is said to be technically quite simple. Its main value is in fluids which do not contain an appreciable excess of protein. In a series of such fluids the colloidal red reaction was found to be positive in recent cases of epilepsy, untreated cases of G.P.I., and cases of multiple sclerosis. Its main value is claimed to be in the diagnosis of epilepsy of recent onset in adults. So far it has not proved possible to correlate the

results with any particular globulin, but it is claimed that the reaction to colloidal red is quite different from that obtained with colloidal benzoin and Lange's reaction. The *second* new method, also reported by Professor Alajouanine and his colleagues, is a simple flocculation test, using dextrane sulphate, for the estimation of B-lipoproteins. This test is said to be much simpler to perform than electrophoretic methods and to require smaller amounts of cerebrospinal fluid. Having demonstrated that, by this test, B-lipoproteins were absent from the normal cerebrospinal fluid, Professor Alajouanine proceeded to carry out the test in various neurological diseases. The results showed that it was strongly positive in cases of prolonged meningitis, both tuberculous and pneumococcal, but particularly in the latter. It was also positive in cases of cerebral tumour and in cases of spinal compression. It was negative in cases of multiple sclerosis, the Guillain-Barre syndrome, G.P.I., and idiopathic epilepsy. The *third* test is one of the examination of the cerebrospinal fluid for malignant cells. Professor Boudin counsels considerable care in the preparing of the fluid. Excessive centrifuging, will tend to break up the cells. It is therefore, recommended that the rate of centrifuging should not exceed 1000 revolutions per minute, and the time should not exceed three minutes. The specimen is stained with the May-Grunwald-Giemsa stain. It is stressed that the presence of malignant cells in the C.S.F., merely indicates involvement of the leptomeninges. It gives no indication of the exact nature of the growth, or of whether it is primary or secondary. The commonest causes of malignant cells in the cerebrospinal fluid are meningeal carcinomatosis, and diffuse involvement of the meninges by secondaries from a primary lesion elsewhere in the body.—(*The Practitioner*, June, 1960).

POTASSIUM PERCHLORATE FOR THYROTOXICOSIS

Since November, 1958, thyrotoxicosis has been treated at the Aker Hospital with 0.4 to 1.6 Gm. of Potassium perchlorate daily. Dr. H. Klingenberg (*Tidsskr. norske lægefor.*, April 15, 1960) treated a series of 16 patients (14 women and 2 men) with this drug for an average of eight months. The effects of treatment were checked by blood cholesterol determinations, basal metabolism rates, the patient's own observations, and clinical findings including measurements of weight. Started in hospital, this treatment was continued after discharge and follow-up examinations were made monthly. All the patients reacted by a fall of the basal metabolic rate after the treatment had lasted for 1 to 10 weeks, and in 14 cases the patients became euthyroid after the treatment had lasted 4 to 22 weeks. The treatment of two patients had to be discontinued because of rashes. In one of these a generalized itching erythema developed after 600 mg. had been given daily for 20 days. The rash disappeared when the drug was discontinued and hydrocortisone was prescribed. Leucocyte counts of all 16 patients failed to reveal any sign of leucopenia.—(via J.A.M.A.).

DOCTOR AND PATIENT

Today people have a tremendous desire for medical information and too often their doctors cannot find time in their busy practice to supply this need. Often when a doctor does try to supply it he uses such long words that the patient does not understand him. Physicians would do well to cultivate a simple rather than a highly technical form of speech. It can make for a greater success in practice; patients will be very pleased and satisfied; they will cooperate better.—(Walter C. Alvarez, M.D., Chicago).

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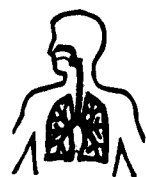
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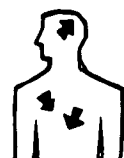
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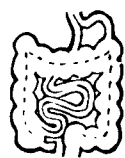
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d-l-METHIONINE IN THE TREATMENT OF CIRRHOSIS OF THE LIVER*

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d-l-Methionine is a lipotropic substance which functions in part to prevent hepatic injury, preceded by fatty infiltration. The mechanism by which it protects the liver against hepato-toxic substances may also be related to the protein-sparing effect of this amino-acid.

The present study was undertaken with a view to assessing the efficacy of this drug in the treatment of cirrhosis of the liver.

Review of literature.—Beams and Russakoff reported, that the exhibition of methionine and choline is of value in cirrhosis of the liver. But their reports are based on inadequate controls. Wade *et al* reported on a series of 228 cirrhotics and 311 controls, that the addition of choline with skimmed milk as a source of methionine failed to influence the rate of recovery. Sherlock reported that these substances are not indicated in the ordinary patient with hepato-cellular failure. Further, they are not properly utilized in the severely ill subject. This was demonstrated by Kinsell and others, who gave radioactive sulphur containing methionine to cirrhotics. Kirsher *et al* (1950) reported that there is no evidence of deficiency but rather of difficulty in the utilization of amino-acids in cirrhotics. Davidson *et al* (1950) found no valid clinical evidence to support the view that the addition of amino-acids to nutritious diets is better than the nutritious diet alone, in inducing a more complete and rapid recovery. Eckhardt *et al* (1948) reported that intravenous administration resulted in nausea, vomiting, venous thrombosis and anorexia, and oral administration produced mental disorientation, coma and foetor hepaticus (Sherlock).

Material and methods.—Fifty five cases of cirrhosis admitted to the wards of G.M. and Associated Hospital, Lucknow, provided the clinical material for the present study. Of these 55 cases, 37 were the trial cases for which, the other 18 served as control.

The diagnosis of liver disease in our series, was based on careful history-taking, thorough physical and systematic examination, routine laboratory investigations of the stool, urine and blood, various liver-function tests and liver biopsy wherever possible.

*Specially contributed to the ANTISEPTIC

[995]

Results as recorded are given under the

1. Change in appetite
2. Decrease in ascites
3. Change in liver function tests

Name	Case No.	APPETITE						ASCITES				LIVER FUNCTION TESTS AND							
		Days						Weeks				1st Week							
		1	10	15	20	25	30	1	2	3	4	V.B. mg.	S.B.	T.T.	C.C.F.	Alk	Total PO4	A:G. Prot.	
Control Group.		[1]						[2]				[3]							
M.	1	**	No change			x	x	3+	2+	-	-	-ve	.1mg	5u	2+	13u	6.9g	3.6:3.3	
S.	2	**	No change			-	x	3+	3+	3+	x	-ve	.5mg	6u	3+	12u	5.2g	2.1:3.1	
M.	3	**	No change			-	-	3+	3+	3+	x	-ve	2.4mg	5u	3+	8.5u	5.1g	2.6:2.5	
S.	4	**	No change			-	-	3+	3+	3+	x	-ve	.5mg	4u	3+	12u	7.7g	3.8:3.9	
S.L.	5	**	No change			-	-	3+	3+	3+	3+	-ve	.5mg	4u	3+	x	5.8g	2.9:2.9	
B.	6	**	**	†Slight	†	†	†	x	x-	x	x	-ve	.5mg	6u	3+	27u	5.1g	2.6:2.5	
G.D.	7	**	No change			x	x	3+	3+	x	x	-ve	.5mg	7u	2+	16u	5.0g	1.9:3.1	
M.P.	8	**	No change			x	x	3+	2+	3+	3+	-ve	.5mg	20u	3+	8u	5.1g	2.0:3.1	
P.	9	**	**	**	*	†	†	3+	2+	2+	x	-ve	2.5mg	5u	3+	9u	5.1g	1.9:3.2	
A.	10	**	**	†	x	x	x	1+	1+	x	x	x	.5mg	4u	-	33u	4.9mg	2.9:2.0	
M.	11	**	**	*	†	†	x	3+	2+	2+	2+	-ve	.5mg	6u	2+	17u	5.2g	2.0:3.2	
P.N.	12	**	No change			x	x	3+	2+	3+	x	-ve	2.8mg	6u	1+	11u	x	x	
A.B.	13	**	No change			x	x	3+	2+	3+	3+	x	.5mg	8u	3+	x	5.8g	1.8:4.0	
B.	14	**	*	†	†	†	x	3+	2+	2+	2+	-ve	4.0mg	10u	3+	18u	5.0g	1.6:3.4	
I.B.	15	**	No change			x	x	3+	2+	3+	3+	-ve	.6mg	14u	3+	12u	4.2g	1.8:2.4	
S.	16	**	**	*	†	†	x	3+	2+	3+	x	-ve	.5mg	4u	1+	x	5.5g	2.0:3.5	
B.S.	17	**	No change			x	x	3+	2+	3+	3+	-ve	3.6mg	18u	2+	16u	6.2g	2.0:4.2	
C.	18	**	No change			x	x	3+	2+	3+	x	x	1.6mg	12u	3+	10u	6.2g	3.5:2.7	
Trial Group.																			
H.C.	1	**	**	*	†	x	x	3+	2+	3+	1+	-ve	1.9mg	20u	2+	13u	7.5g	3.5:4.0	
S	2	**	No change	x		x	x	3+	3+	3+	3+	-ve	.5mg	18u	2+	13u	5.1g	2.1:3.0	
R.D.	3	**	No change	x		x	x	3+	2+	3+	3+	-ve	.5mg	12u	3+	x	6.2g	x	
S.K.	4	**	*	†	†	x	x	x	x	x	x	.5mg	x	-	x	5.8g	2.8:3.0		
S.	5	**	No change			x	x	3+	3+	2+	3+	-ve	.6mg	10u	3+	x	5.8g	2.3:3.5	
S.B.	6	**	**	*	†	†	x	3+	2+	3+	3+	-ve	.5mg	7u	2+	6u	6.9g	2.9:4.0	
N.	7	**	No change			x	x	3+	3+	x	x	-ve	.7mg	5u	2+	x	6.5g	2.5:4.0	
R.S.L.	8	**	No change			x	x	3+	2+	3+	3+	x	x	10u	2+	20u	5.1g	2.5:2.6	
S.	9	**	No change			x	x	3+	3+	x	x	-ve	2.3mg	20u	2+	x	4.7g	2.4:2.3	
P.D.	10	**	No change			x	x	3+	2+	3+	x	-ve	.5mg	5u	3+	x	5.5g	2.5:3.0	
R.D.	11	**	*	†	†	††	x	1+	-	-	x	-ve	.5mg	5u	2+	15u	6.0g	2.4:3.6	
R.D.	12	**	*	†	†	†	†	3+	2+	2+	2+	-ve	.5mg	18u	2+	18u	6.9g	3.0:3.9	
C.P.D.	13	**	*	†	x	x	x	3+	2+	x	x	-ve	.5mg	20u	3+	18u	5.8g	2.3:3.5	
C.B.S.	14	**	**	*	†	†	x	2+	2+	1+	x	-ve	1.1mg	12u	1+	-	6.2g	3.2:3.0	
H.S.	15	**	No change			x	x	3+	3+	x	x	-ve	1.3mg	36u	2+	8u	5.8g	2.0:3.8	
G.	16	**	**	†	†	†	†	3+	2+	2+	2+	-ve	.5mg	6u	1+	x	4.7g	2.4:2.3	

*=Decreased
†=Increased
V.B.=Van den Bergh

S.B.=Serum bilirubin
T.T.=Thymol turbidity
C.C.F.=Cephalin cholesterol flocculation test

following heads in the tabular statement:

4. Change in serum proteins
5. Histopathological changes in the liver

SERUM PROTEINS														LIVER BIOPSY			
2nd & 3rd Week								3rd & 4th Week						Before	After		
V.B.	S.B.	T.T.	C.C.F.	Alk	Total	A:G.	P.O4	V.B.	S.B.	T.T.	C.C.F.	Alk	Total	A:G.	P.O4	R	R
mg.								mg.									
[4]														[5]			
-ve	1mg	7u	2+	14u	6g	2.9:3.1	x	mg	x	x	x	g	x	x	x	x	x
-ve	.5mg	6u	2+	15u	5g	1.9:3.1	x	„	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	ve	3.6mg	6u	3+	10u	5.4g	2.1:3.3	x	x	x	x
-ve	.5mg	6u	2+	15u	7.1	3.4:3.7	x	„	x	x	x	x	x	x	DHF	x	x
x	x	x	x	x	x	x	-ve	.5mg	8u	2+	x	5.2g	2.0:3.2	x	EHF	x	x
x	x	x	x	x	x	x	-ve	.5mg	4u	2+	x	5.6g	2.8:2.8	x	x	x	x
-ve	.5mg	5u	2+	18u	5.1	1.7:3.4	„	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	-ve	.5mg	17u	3+	x	5.4g	2.1:3.3	x	x	x	x
ve	1.8mg	5u	3+	x	5.5	2.5:3.0	-ve	1mg	6u	2+	x	5.7g	3.0:2.7	x	EHF	x	x
x	.5mg	6u	1+	30u	5.0	2.8:2.2	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	-ve	.5mg	4u	2+	18u	5.4g	2.4:3.0	x	x	x	x
-ve	1.8mg	4u	3+	22u	5.5	2.5:3.0	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	2mg	10u	3+	x	4.9g	1.4:3.5	x	x	x	x
x	x	x	x	x	x	x	-ve	1.5mg	10u	2+	15u	5.2g	1.8:3.4	x	x	x	x
x	x	x	x	x	x	x	-ve	.5mg	20u	3+	14u	4.6g	2.0:2.6	x	x	x	x
-ve	.5mg	6u	2+	22u	5	2.0:3.0	x	x	x	x	x	x	x	x	DHF	x	x
x	x	x	x	x	x	x	-ve	.5mg	16u	2+	13u	6.2g	1.6:4.6	x	x	x	x
-ve	1.2mg	14u	3+	12u	6.0	3.0:3.0	x	x	x	x	x	x	x	x	x	x	x
ve	1.0mg	12u	2+	12u	7.8	4.0:3.8	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	-ve	.5mg	16u	3+	15u	5.6g	2.5:3.1	x	DHF	x	x
x	x	x	x	x	x	x	-ve	.5mg	14u	3+	13u	6.8g	3.0:3.8	x	x	x	x
x	x	x	x	x	x	x	-ve	.5mg	x	-	x	6.0g	3.0:3.0	x	DHF	x	x
x	x	x	x	x	x	x	-ve	.5mg	12u	2+	x	6.0g	2.0:4.0	x	x	x	x
x	x	x	x	x	x	x	-ve	.5mg	6u	2+	7u	6.2g	3.1:3.1	x	x	x	x
-ve	.5mg	4u	2+	x	7.0	3.0:4.0	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	-ve	x	12u	2+	22u	6.0g	2.8:3.2	x	x	x	x
ve	2.2mg	12u	3+	55u	5.8	4.4:1.4	x	x	x	x	x	x	x	x	x	x	x
x	.3mg	6u	3+	16u	5.0	2.0:3.0	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	3u	1+	13u	6.4g	3.4:3.0	x	FC	x	x
x	x	x	x	x	x	x	x	.5mg	6u	1+	12u	7.0g	3.0:4.0	x	x	x	x
x	.5mg	16u	2+	17u	6.2	3.0:3.2	x	x	x	x	x	x	x	x	DHF	DHF	DHF
x	x	x	x	x	x	x	-ve	.5mg	8u	1+	12u	6.3g	3.3:3.0	x	x	x	x
ve	10mg	38u	3+	12u	5.6	2.9:3.2	x	x	x	x	x	x	x	x	x	x	x
-ve	x	4u	1+	x	5.4	2.9:2.5	x	x	x	x	x	x	x	x	x	x	x

Alk.P.O.4=Serum alkaline phosphatase
A=Albumin
G=Globulin

DHF: Diffuse hepatic fibrosis
EHF: Early hepatic fibrosis
FC: Fatty change

Results as recorded are given under the

1. Change in appetite
2. Decrease in ascites
3. Change in liver-function-tests

Name	Case No.	APPETITE						ASCITES				LIVER FUNCTION TESTS AND							
		Days						Weeks				1st Week							
		1	10	15	20	25	30	1	2	3	4	V.B.	S.B.	T.T.	C.C.F.	Alk.	Total A.G.	PO4	Prot.
		Control Group.		{ 1 }					{ 2 }				{ 3 }						
R.B.	17	**	No change			x	x	3+	3+	x	x	x	.5mg	8u	2+	24u	5.2g	2.0:3.2	
A.A.	18	**	*	†	†	x	x	2+	1+	x	x	x	.5mg	6u	2+	16u	6.6g	3.1:3.5	
N.	19	**	*	†	x	x	x	2+	1+	x	x	-ve	.5mg	4u	2+	20u	5.9g	2.9:3.0	
R.B.	20	**	*	†	††	x	x	2+	1+	1+	x	-ve	.5mg	5u	2+	18u	5.8g	2.4:3.4	
A.G.	21	**	No change			x	x	3+	3+	x	x	x	.5mg	6u	2+	21u	6.0g	2.0:4.0	
B.D.	22	**	**	*	†	†	††	3+	2+	2+	1+	x	.5mg	5u	2+	14u	5.8g	2.0:3.8	
C.K.	23	**	*	†	†	x	x	2+	1+	x	x	x	.5mg	5u	2+	17u	6.0g	2.8:3.2	
J.	24	**	*	†	†	x	x	3+	2+	2+	x	x	.5mg	5u	1+	19u	7.0g	3.0:4.0	
R.	25	**	No change			x	x	3+	3+	x	x	x	.5mg	4u	2+	20u	5.1g	2.3:2.8	
R.L.	26	**	*	†	†	x	x	3+	2+	1+	x	x	.5mg	10u	3+	18u	6.0g	2.0:4.0	
R.D.	27	**	*	†	†	x	x	3+	2+	2+	x	x	.5mg	4u	2+	21u	4.9g	2.0:2.9	
B.B.	28	**	No change			x	x	3+	3+	3+	x	-ve	2.0mg	12u	2+	x	6.2g	3.0:3.2	
K.L.	29	**	*	†	†	x	x	3+	2+	x	x	-ve	.5mg	8u	2+	22u	5.5g	2.5:3.0	
C.K.	30	**	*	†	†	x	x	2+	1+	1+	x	-ve	.5mg	14u	2+	14u	5.8g	2.6:3.2	
K.	31	**	*	†	†	x	x	3+	2+	2+	2+	x	.5mg	18u	2+	18u	5.8g	2.8:3.0	
G.L.	32	**	No change			x	x	3+	3+	3+	x	x	1.0mg	25u	2+	25u	4.5g	2.1:2.4	
T.R.	33	**	No change			x	x	3+	3+	3+	x	-ve	.5mg	x	3+	x	5.1g	1.5:3.6	
S.K.	34	**	No change			x	x	3+	3+	3+	x	-ve	.7mg	40u	3+	40u	5.5g	2.0:3.5	
S.D.	35	**	*	†	†	x	x	3+	3+	1+	x	x	.5mg	20u	2+	20u	6.0g	2.5:3.5	
S.R.	36	**	No change			x	x	3+	3+	x	x	x	.5mg	35u	2+	35u	6.0g	2.0:4.0	
C.L.	37	**	No change			x	x	3+	3+	3+	x	x	.5mg	17u	2+	17u	4.1g	1.9:2.2	

To the trial group the drug Neo-Methidine was given as shown below:

(1) I.V.I. 1 amp. *o.d.*; or (2) I.M.I. 1 amp. *b.d.* or; (3) 2 tablets *t.d.s.* orally.

The results of the study are given in the tabular statement on pp. 996-998.

Appetite.—Any change in appetite was evaluated on the 10th, 15th, 20th, 25th and 30th days after admission in both the control and trial groups.

Out of 18 cases of cirrhosis of the liver in the control group, only 4 or 22% showed change in their appetites. Two of these showed considerable improvement, while in the other two it was only slight.

As compared with the control group, 20 (or 54%) in the trial group showed considerable improvement in their appetites, which showed a consistent pattern in that it occurred by the 10th day

following heads in the tabular statement:

4. Change in serum proteins
5. Histopathological changes in the liver

SERUM PROTEINS												LIVER BIOPSY		
2nd & 3rd Week						3rd & 4th Week						Before	After	
B.V.	S.B.	T.T.	C.C.F.	Alk	Total A.G.	V.B.	S.B.	T.T.	C.C.F.	Alk	Total A.G.			
mg					PO4 Prot.	mg					PO4 Prot.	R	R	
[4]						[5]								
x	.5mg	7u	3+	x	5.9 2.5:3.4	x	x	x	x	x	x	x	x	
x	.5mg	4u	1+	x	6.6 3.4:3.2	x	x	x	x	x	x	EHF	EHF	
x	.5mg	5u	1+	16u	6.4 3.0:3.4	x	x	x	x	x	x	DHF	x	
x	.5mg	6u	1+	14u	6.0 2.5:3.5	x	x	x	x	x	x	DHF	x	
x	.5mg	5u	3+	18u	5.7 1.7:4.0	x	x	x	x	x	x	x	x	
x	x	x	x	x	x	x	.5mg	3u	1+	12u	6.4G	3.0:3.4	x	x
x	.5mg	3u	1+	14u	6.4 3.0:3.4	x	x	x	x	x	x	x	x	
x	.5mg	3u	1+	16u	6.8 3.6:3.2	x	x	x	x	x	x	EHF	HF	
x	.5mg	6u	2+	16u	5.8 2.9:2.9	x	x	x	x	x	x	x	x	
x	.5mg	6u	1+	14u	6.9 3.8:3.1	x	x	x	x	x	x	x	x	
x	.5mg	3u	1+	14u	6.0 3.2:2.8	x	x	x	x	x	x	x	x	
ve	2.2mg	14u	3+	x	6.0 2.0:4.0	x	x	x	x	x	x	x	x	
-ve	.5mg	4u	2+	16u	6.8 3.0:3.8	x	x	x	x	x	x	x	x	
x	x	x	x	x	x	-ve	.5mg	2u	1+	14u	6.0G	3.0:3.0	EHF	x
x	x	x	x	x	x	x	x	3u	1+	10u	6.0G	3.1:2.9	x	x
x	1.2mg	4u	3+	20u	5.0 2.0:3.0	x	x	x	x	x	x	DHF	x	
x	.5mg	20u	3+	x	5.0 1.8:3.2	x	x	x	x	x	x	x	x	
x	.5mg	5u	2+	23u	5.1 2.0:3.1	x	x	x	x	x	x	x	x	
x	.5mg	3u	1+	18u	6.2 3.4:2.8	x	x	x	x	x	x	x	x	
x	.5mg	4u	3+	x	5.6 1.6:4.0	x	x	x	x	x	x	x	x	
x	.5mg	9u	2+	x	4.8 2.2:2.6	x	x	x	x	x	x	x	x	

in the majority of cases while in the control series this pattern was not manifest.

Ascites.—Three or 18% of the 17 cases in the control group showed some improvement in ascites as manifested by (i) a decrease in abdominal girth and (ii) decrease in the frequency of refilling, while 13 or 36% of the 36 cases in the trial group, showed improvement in ascites, *i.e.*, twice as many as in the control.

Liver-function test.—Our observations mainly rested on the C.C.F. test and the T.T. reaction before and after treatment.

Thymol-turbidity.—Up to 4 units were regarded as normal.

(1) **Control group.**—Four of the 18 cases had T.T. within the normal range before the start of the therapy and did not show any significant change after 2 to 4 weeks' observation. Nine cases had T.T. ranging from 5 to 8 units before the start of treatment; 3 of these cases showed a significant fall in T.T. after 2 to 4 weeks' observation. In the remaining 5 cases of this

group, the T.T. was over 8 units. In none of these cases, could a marked change in T.T. be observed after 2 to 4 weeks' observation.

(2) *Trial group*:—Seven of the 37 cases showed a T.T. within the normal range, before treatment. The T.T. reaction ranged from 4 to 8 units in 18 cases before treatment, and in nine of these cases the T.T. reaction came down to the normal range after treatment with d-l-methionine for 2 to 4 weeks. In 7 out of 12 cases in this series where T.T. was above 8 units before treatment, a decline in T.T. readings was noted after treatment for two to four weeks.

So, as compared with the control group, a marked fall in T.T. test after treatment was observed in twice the number of cases in the trial group.

C.C.F. test:—Positive results are graded as 1+, 2+, 3+ and 4+.

In the control group, 17 cases had a positive C.C.F. test. Only six or 35% of these showed a decline in the readings, after 2 to 4 weeks' observation; while in the trial series 36 cases were positive to the C.C.F. test, fifteen or 41% of these showed a decline in C.C.F. readings after 2 to 4 weeks' treatment with d-l-methionine.

The results of treatment with the drug were thus more or less the same in both groups.

Serum-proteins.—In the control series only 10 cases had a total serum-protein level below 5.5 g.% before treatment. In none of these cases was any significant increase observed after two to four weeks' observation; whereas six out of 10 cases in the trial series showed some increase in the total-proteins after treatment with the drug for two to four weeks.

The albumin-globulin ratio showed no variation or change in either group.

Histopathology.—It was studied in 4 cases of the control and 9 of the trial series before treatment and was repeated in two cases after treatment, in which some clinical response to the drug was noticed.

In two of the control cases, evidence of early hepatic fibrosis and in the other two, changes suggestive of diffuse hepatic fibrosis were seen.

In 4 cases of the trial group evidence of diffuse hepatic fibrosis, in another 4 cases changes suggestive of early hepatic fibrosis, and in a single case evidence suggestive of fatty change were seen.

Liver biopsy was repeated in two cases of early hepatic fibrosis in the trial series; some clinical improvement was obser-

ved with d-l-methionine but no alteration in the histopathological picture could be seen in both the cases.

Conclusion.—In cases of cirrhosis of the liver, the appetite improved in 34% of cases in the trial group with d-l-methionine therapy, as compared with only 22% in the control series. In the majority of cases in the trial group the improvement in appetite was noted from the 10th day after the commencement of the treatment.

(2) Improvement in ascites was noticed with d-l-methionine therapy in 36% of the trial series while only 18% showed such improvement in the control group.

(3) No consistent change was seen in the liver function tests, the serum protein content, or in the albumin : globulin ratio before and after therapy in both the groups.

(4) No change in the histopathology of the liver was observed in the cases that responded to treatment, in which liver biopsy was repeated.

(5) In the treatment with d-l-methionine (Neomethidine) the intramuscular injections of the drug caused considerable pain to the patients. No other side-effects were noted.

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TOLBUTAMIDE IN PARALYSIS AGITANS

Following an incidental observation that a marked diminution in the tremor of the hands and fingers occurred in a 57-year-old diabetic who had been receiving 1 g. of tolbutamide thrice daily, E. W. Gates and I. Hyman (*Journal of the American Medical Association*, March 26, 1960, 172: 1351) investigated the effect of tolbutamide in patients with paralysis agitans. In a series of 15 cases observed over a period of eighteen months, they report 'considerable reduction of tremor or rigidity, or both', in eleven. Several showed marked improvement in the mask-like facies with return of a more normal smile, and in several there was improvement of speech. The ages of the patients ranged from 56 to 83. In all cases the initial dosage of tolbutamide was 1 g. thrice daily before meals, and this was usually reduced subsequently to 1 g. twice daily. The patients were fed six times daily; three meals and three 'lunches', or each 'lunch' may be replaced by 6 ounces (170 ml.) of orange juice. Only one patient had a hypoglycæmic reaction, and he was undernourished and not taking his food well. It is admitted that the rationale of this effect of tolbutamide is unknown, but it does not appear to be related to hypoglycæmia. In one patient when tolbutamide was replaced by a placebo there was a prompt return of rigidity and tremor.—(via *Practitioner*).

THE HAMMAN-RICH SYNDROME*

BETTER known as 'Diffuse Interstitial Fibrosis' of the lungs, the syndrome was first described by Hamman and Rich in 1935. Since then there has been a steady flow of literature, from the west on this subject.

An increasing number of cases are now being recognized as victims to this disease hitherto considered rare. This condition has not received the attention it deserves in our country. A brief review of the available literature is therefore, now presented in order to bring it to the awareness of our clinicians. The term 'Chronic Diffuse Interstitial Fibrosis of the Lungs' sounds like a pathological entity, which would ordinarily cover a wide range of clinical conditions. This term is however, restricted to a syndrome of unknown aetiology recognizable by clinical, physiological and radiological features.

Scadding¹⁶ has recently published a series of cases of chronic diffuse interstitial fibrosis of the lungs which differ from the original description given by Hamman and Rich⁶ in 1944. The syndrome described by Hamman and Rich was both clinically and pathologically an acute process.

Aetiology.—The aetiology of this syndrome is still obscure; and so several theories have been put forward:—

1. *Chemical irritant*:—This possibility advanced by Hamman and Rich, (*loc cit*) did not gain subsequent support, and was ruled out of court, because of a negative history of exposure to such irritants and the absence of acute episodes at the onset of this chronic ailment.

2. *Chronic viral infection*:—This possibility was based on negative or inconstant bacteriological findings (Hamman and Rich)⁶. However, the presence of an initial acute stage and the occurrence of main pathological changes at the bronchiolar level unlike those found in chronic diffuse interstitial fibrosis are points against this possibility (Heppleston, 1951)⁷.

3. *Allergic*:—An allergic hypothesis was advanced for the first time by Peabody *et al*¹¹. This was based on the detection of eosinophils in the lung tissue. One of the postulates based on experimental studies is that of "tissue-allergy," as it has been possible to demonstrate the evolution of a series of changes, similar to those found in the final clinical stage of chronic diffuse interstitial fibrosis. This quite attractive phenomenon of tissue-allergy consequent upon immune mechanism gained

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further support from the experimental studies on allergic lobar pneumonia (Fried 1933)⁴ and Rich *et al* (1946)¹³.

A case of chronic diffuse interstitial fibrosis simulating polyarteritis nodosa has been reported by Kneeland *et al*⁹ (1946).

4. *Collagen disease*:—Pulmonary lesions closely allied to chronic diffuse interstitial fibrosis have been observed in certain collagen diseases e.g., polyarteritis nodosa, systemic lupus, scleroderma and dermatomyositis. It has been suggested that this is a localized form of collagen disease, (Rubin *et al*¹⁴ 1957). However, there are no other associated clinical and laboratory findings in cases of chronic diffuse interstitial fibrosis which are pathognomonic of collagen disease (Scadding, 1960)¹⁶.

5. *Rheumatoid theory*:—Instances of patients suffering from rheumatoid arthritis have been known to show pulmonary changes indistinguishable from chronic diffuse interstitial fibrosis. It has therefore, been postulated that the Hamman-Rich syndrome may be a localized form of rheumatoid disease Ellman³, Rubin *et al*¹⁴. However, all the cases of chronic diffuse interstitial pulmonary fibrosis are not associated with rheumatoid arthritis and a positive Rose-Waaler differential sheep-red-cell agglutination test (Scadding¹⁶).

6. *Hexamethonium lungs*:—Grant *et al*⁵ observed chronic diffuse interstitial fibrosis developing in hypertensive patients treated with the hexamethonium group of drugs. Such changes may however be due to organization of fibrin-rich pulmonary oedema rather than chronic diffuse interstitial fibrosis, to which it may bear a superficial resemblance.

7. *Obstruction to the pulmonary veins*:—Has also been suggested as a likely cause (Andrews¹ 1958). Rarely, this disease manifests a familial tendency (Peabody *et al*¹⁴).

Physiological picture.—Changes are mainly the result of a defect of diffusion between the alveolar air and the alveolar capillaries. This has been aptly described as alveolar capillary blockage or alveolar respiratory insufficiency (Baldwin, Cournand and Richards² 1949).

Histological changes.—Affected alveoli manifest proliferation of the lining cells and may contain some mononuclear exudate. Alveolar walls are thickened and are lined with chronic inflammatory cells, fibroblasts, fibrous tissue and show a reticular proliferation. In late stages, the lung presents a honeycomb appearance. The essential pathological change therefore, appears to be a fibrotic thickening of the alveolar septa throughout all the lobes of the lungs leading to a condition of alveolar capillary block.

Symptoms.—1. Slowly progressive exertional dyspnoea which may later produce serious respiratory disability.

*Specially contributed to the ANTISEPTIC.

2. Dry or productive cough, which may be troublesome. Expectoration is sometimes purulent, due to secondary infection.

3. Clubbing of the fingers, which may be of the drum-stick type, is often complained of by the patients. However, this may be an objective finding preceding years before breathlessness sets in.

4. *Cyanosis*:—Manifests on exertion in the initial stages and may invariably be present in moderately advanced cases.

Signs.—Physical examination reveals cyanosis, especially after exertion, marked clubbing and moderately severe dyspnoea. Characteristic findings in the chest are impairment of the note at the bases, diminished or bronchial breath sounds and showers of fine to medium indurated crepitations at the bases extending to varying levels. Characteristically, an aged or elderly individual having had no past illness, comes for progressive exertional dyspnoea, dry and troublesome cough and cyanosis on exertion. The presence of clubbing, basal rales, normal cardiac findings and the absence of toxæmia should arouse suspicion of chronic diffuse interstitial fibrosis.

Pulmonary functions.—There is reduction in the total lung capacity and arterial oxygen capacity. Arterial carbon-dioxide content is normal or low and carbon-monoxide uptake is reduced.

Radiological changes.—Characteristic radiological finding is:—a nodular or reticular pattern of the lung fields prominent at the bases. Such changes may not be symmetrical.

Course.—Chronic cases usually run a slowly downhill course. However, a small percentage may manifest a long remission in the progress of the disease.

Prognosis.—The severity of the disease and the rate of its progression tend to vary inversely with the age.

DIFFERENTIAL DIAGNOSIS:—Following are some of the important clinical conditions which are likely to be mistaken for chronic diffuse interstitial fibrosis:—

(a) *Pneumokoniosis*:—This can be distinguished by a positive occupational history and a rarity of associated clubbing except for asbestosis in which clubbing is marked.

(b) *Sarcoidosis*:—In sarcoidosis (i) radiological changes in the lungs precede and are out of proportion to the associated dyspnoea, whereas the reverse is the case in chronic diffuse interstitial fibrosis of the lungs. (ii) Clubbing is usually absent. (iii) Characteristic histopathological changes are present in the lymph nodes, skin or liver.

(c) *Scleroderma*:—This can be differentiated by the presence of associated changes in the skin and the œsophagus. Radiological changes however, predominantly involve the bases of the lungs.

(d) *Honey-combed lungs*:—Associated with wide-spread formation of small cysts in the terminal parts of the bronchopulmonary tree, such clinical entities may present difficulty in diagnosis. Such changes are found in (i) mesodermal dysplasia of which tuberous sclerosis, adenoma sebaceum, subungual fibromata are prominent features. We have come across such a case¹⁷; (ii) non-cholesterolæmic xanthomatosis; of which eosinophilic granuloma of the bone is an important clinical manifestation.

In the above mentioned clinical entities radiographic changes are out of proportion to the symptoms which progress extremely slowly. Clubbing is absent and spontaneous pneumothorax is a common complication. Though the clinico-radiological picture described above may enable the diagnosis to be made with reasonable certainty, lung biopsy may be required to establish the diagnosis beyond doubt.

TREATMENT:—A proper insight into and precise knowledge of the ætiology is essential for the specific therapy of an ailment. As a corollary therefore, the present-day treatment of chronic diffuse interstitial fibrosis of the lungs is essentially empirical.

Corticosteroid therapy has been advocated but its value is yet to be established. Once started the corticosteroid therapy must be maintained for the rest of the patient's life. This, in turn, involves the risks of long-term corticosteroid therapy. However, with the discovery of more potent and relatively safe corticosteroids like Prednisone, Prednisolone, Triamcinalone and Dexamethasone, long term therapy has come to be considered relatively safe. Even so, we have yet to find a corticosteroid without side-effects. Therefore, the hazards of long-term therapy have to be balanced with the improvement in the clinical picture which these drugs produce. All that they would appear to do, is to give a limited period of more tolerable life. It is indicated in patients with the more acute type of the disease occurring in the younger age-groups.

It may be concluded therefore, that corticosteroids may either produce a short-lived clinical remission or prolong the course of illness.

Summary.—An attempt is made to direct the attention of clinicians to the possible incidence of chronic diffuse interstitial fibrosis of the lungs. The literature available on the subject with particular reference to the ætiology, pathology, clinical pattern, radiological features and treatment has been briefly reviewed.

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AUTOHÆMOTHERAPY IN HERPES

'Autohæmotherapy should be used routinely in treating post-herpetic pain', according to B. L. Schiff (*Rhode Island Medical Journal*, February 1960, 13: 104). This opinion is based upon his experience with 11 cases. Eight of these were men and three were women, and their ages ranged from 45 to 79. The duration of the pain before autohæmotherapy ranged from thirty-one to sixty-seven days, and it was severe in seven and moderate in four. The trigeminal nerve was involved in two, the thoracic nerve in six, and the lumbar segment in three. The technique used was to withdraw 10 ml. of blood from an antecubital vein and inject it immediately into the gluteal muscles. Injections were given once every three days to start with, and then the interval between injections was gradually lengthened as the symptoms and signs improved. The number of injections given ranged from 14 to eight. There were no reactions. Disappearance of the pain was noted in eight patients; the remaining three failed to respond.—(via *Practitioner*).

TRYPSIN IN CRANIAL TRAUMA AND BRAIN SURGERY

Twenty patients with cranial trauma and 20 who had undergone different types of brain surgery were studied. Ten patients in each group were treated with trypsin; the others served as controls. The cerebrospinal fluid pressure, increased in both the traumatized patients and those who underwent neurosurgery, reached a highest point on the second post-traumatic or postoperative day; it decreased slowly in the "no-trypsin" patients, returning to practically normal values on the 15th day. In the trypsin-treated patients, the cerebrospinal fluid pressure fell from the first 2 days of therapy and reached normal values within the 4th and 6th days. All the neurological symptoms subsided simultaneously, with return of the vegetative functions to normal and an earlier recovery of consciousness. Trypsin develops an antiedematous effect, probably secondary to its anti-inflammatory properties, acting as a real local diuretic. Its use in cranial trauma and in neurosurgery is advantageous in the prevention and cure of one of the most dangerous complications—cerebral oedema.—(*Minerva Chirur. Turin*, via *J.A.M.A.*, July 1960).

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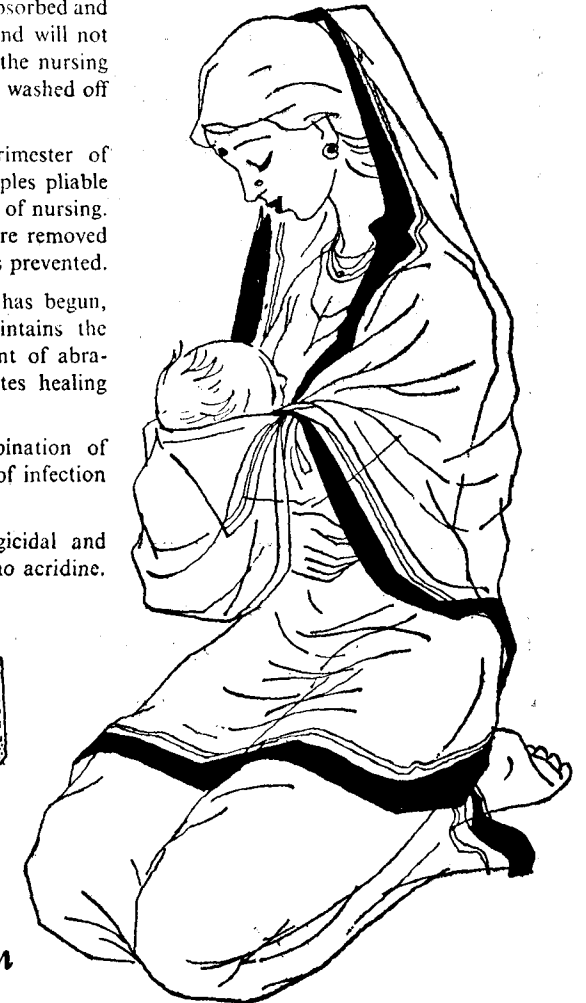
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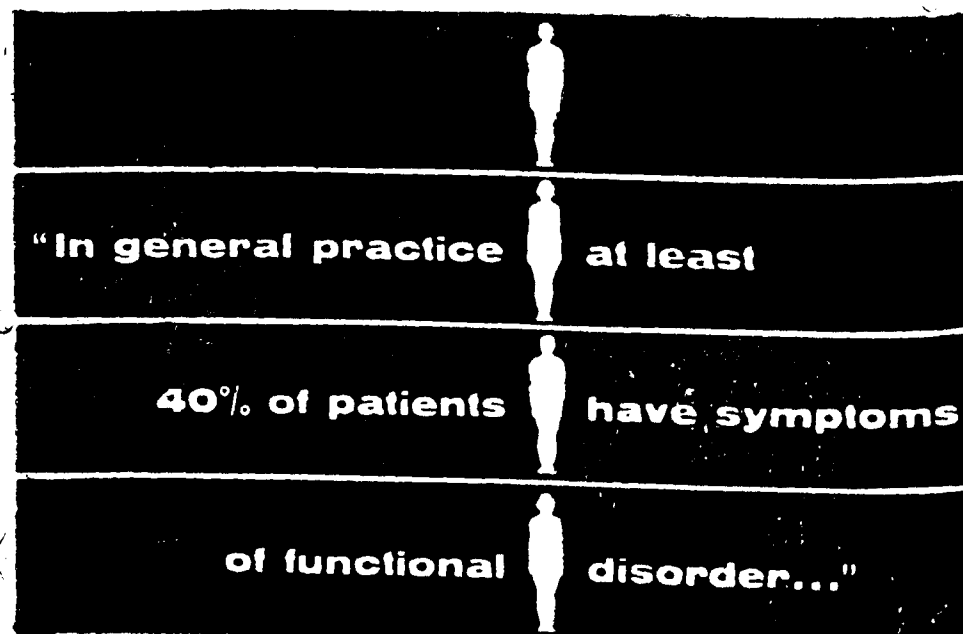
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HYSTERIA*

WHEN there are physical signs of loss of function without signs of organic disease, when symptoms fail to agree with the known factors of anatomy and physiology, we think of hysteria. It is now recognized as a disease common to both sexes, frequently met with in general practice; its symptomatology is often protean and bizarre. Its treatment needs sound common sense, and a good knowledge of psychology. Although the factors which determine its symptoms are not well understood, hysteria is an illness in its own right, like arthritis or appendicitis.

S. RAMANATHAN, L.I.M.,
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Aetiology.—(1) Heredity may play a part in many cases. Hysteria often occurs in families with a history of schizophrenia, alcoholism or other psychologic disorders. (2) Faulty education and upbringing with excessive parental petting which results in dependent and emotional attitudes in the child may be the more potent predisposing factors. (3) Certain persons have a hysterical personality characterized by immature response to the normal demands of adult life. Such persons are usually egotistic, easily swayed, affectionate but fickle in nature, hypersensitive, petulant and impulsive and often try to elicit sympathy. (4) Constitutional factors are important. No matter how stable or well integrated a man can be, given a situation of sufficient duration and intensity, he may develop symptoms similar to those of hysteria. (5) It is more common in adolescence and at the menopause. (6) It is believed to occur more commonly among females than among males. (7) Mental stress is the exciting factor, the symptoms show a desire to achieve some particular object, often not consciously appreciated by the patient.

Pathology.—What was considered to be due to witchcraft in olden days, is now believed to be hysteria; malingering is almost identical. Hysteria is a disease of the mind and its symptoms are wholly psychological in origin, though disseminated sclerosis and many other organic diseases of the brain may be accompanied by hysterical symptoms also. The mechanism underlying the causation of the disease is still a matter of dispute and various conflicting hypotheses have been advanced to account for it. The French physician Janet described it as a malady resulting from a weakening of the faculty of psychological synthesis, which allowed the various elements or ideas in consciousness to be dissociated into component parts, destroying the unity of the personality. Hysterical symptoms, according to Janet are expressions of dissociation. Ideas emotionally

* Specially contributed to the ANTISEPTIC.

{ 1007 }

charged and painful to the personality became split up and these express themselves symbolically in the hysterical symptoms. Dissociation is one of the best clues to the study of personality. Though this conception of splitting of consciousness into independent streams help to explain away many baffling symptoms met with in hysteria, like amnesia, paralysis etc. it is not able to say why such dissociation occurs. Sigmund Freud considered that errors in the normal development of sexual activities leading to fixation and regression to the infantile period of life, were responsible for causing hysteria in the adult. Hysterical symptoms also arise as a result of repressed sexual tendencies causing internal conflicts and the inhibition of the opposing conscience; it will continue to act as an irritant to the mind till an opportunity for expression presents itself and symbolic relief is obtained through hysterical symptoms.

Symptoms.—Hysteria will simulate almost any other illness. The symptoms can be like those of any conceivable affection of which the patient has any notion. The cruder his notion, the less will his symptoms resemble the simulated condition, but after repeated tests he may better his notion and his symptoms approximate to those of organic disease. All hysterical symptoms are attempts at adjustment however feeble; they are psychologically determined, and form an escape from conflict by a process of conversion at the psychic, sensory, visceral or motor level. It should not be forgotten that hysteria and organic disease may co-exist, in the same patient. Clinically the disease shows characteristic physical and mental symptoms.

Physical symptoms may be divided into motor (including fits), sensory and visceral. Motor symptoms are rigidity, palsies, variations of gait and tremors.

When rigidity is present it is proportional to the force used to overcome it, on attempted passive movement. Passive movement to overcome the rigidity causes the patient to be more upset than could be accounted for by any pain he may complain of. Flaccid hysterical palsies are commoner than rigidity. All kinds of bizarre hysterical gaits are met with, many of them fantastically elaborate, and from the look of them, exhausting. In these conditions there is no alteration, quantitative or qualitative, in the deep or cutaneous reflexes, although the plantar response may be absent at the toes. The muscles react normally to electric stimulation and there is no wasting, except perhaps from disuse.

In aphonia the patient whispers but can phonate normally on coughing. It sometimes follows a fright or may be a sequel to an attack of laryngitis. Stammering, usually of the exaggerated kind may also occur. Hysterical recurrent cough is sometimes met with.

Hysterical tremors vary in degree and rhythm and are increased by attention, often disappears when the patient's attention is turned away from it. Hysterical blepharospasm is not uncommon.

Hysterical fits commonly occur in patients with an obviously hysterical personality. They may be accompanied by outbursts of unrestrained laughing or crying. This must be differentiated from that of epilepsy; this is sometimes difficult, especially if the hysteric has previously seen epileptic attacks or the patient may be an epileptic himself, and also subject to hysterical fits. Hysterical fits do not occur at definite hours of the day, as do epileptic fits and never during sleep. They occur in the presence of relatives and friends; the patient does not hurt himself or bite his tongue nor is there incontinence. The eyes are screwed up and the hands are clenched and the movements are purposive. There are no reflex changes or extensor plantar responses following the fit and the end of the fit may be abrupt. Electro-encephalographic tracings may be of help in doubtful cases.

Sensory or perceptual symptoms include pain, sensory loss, blindness and deafness. Any cutaneous disturbance of sensation that the patient has a notion of can be presented *i.e.*, anaesthesia, either mono or bilateral, or of 'stocking and glove' distribution. The level of hysterical analgesia varies from time to time on successive examinations. The transition from analgesia to normal skin is abrupt, without any area of impaired sensibility or hyperaesthesia as in organic disease. With an anaesthetic hand the patient may identify objects and any test which the patient does not recognize as referring to this disability he will perform satisfactorily. Hysterical blindness may be of sudden onset and may be complete or incomplete. The pupils and optic discs are normal. Hysterical deafness can be recognized by the fact that the patient can be wakened from sleep if called by name, but after waking he cannot hear.

Hysterical pains may occur in any region of the body and are frequently complained of in the head, back, stomach and limbs. Headache and the pains in the back and limb are common and frequently the latter are considered by the patient to be due to lumbago, rheumatism or sciatica. In many cases an unconscious perpetuation of symptoms persists long after the attack of lumbago or sciatica has subsided. The diagnosis is extremely difficult and when symptoms are vague, localization diffuse and duration beyond that expected of organic disease, it is always wise to seek out, in a full history, the emotional difficulties of the patient, for it is in these difficulties, the clue to the precipitation of the symptoms will frequently be found.

A woman had complained of intense abdominal pains and attacks of vomiting for over two years. She had been repeatedly investigated with negative results. The history revealed that prior to her illness her husband, an agriculturist had gone out for work in the fields leaving her all day, with her sister-in-law, somewhat mentally defective but with vicious tendencies who had taken to beating her and of whom she was afraid. She had not disclosed her fear of remaining alone in the house and had repressed it. Her symptoms served the purpose of keeping her husband at home as a form of protection.

The visceral symptoms include globus hystericus, aerophagy, vomiting and anorexia nervosa. Hysterical globus is a sensation of a lump in the throat interfering with swallowing. Hysterical aerophagy may lead to enormous abdominal distention and may simulate pregnancy and ovarian cyst.

Emotional factors have been recognized from antiquity to have a powerful influence on the alimentary canal and vomiting is one of the common methods of expressing disgust and symbolically getting rid of an unwelcome difficulty. Hysterical vomiting is seldom accompanied by any profound loss of weight; there is no nausea and the expulsion of certain foods from the stomach will not prevent the retention immediately afterwards of other substances more palatable. It sometimes persists when an unwelcome pregnancy occurs in a neurotic woman who is afraid of child-birth. In diagnosing these conditions great care must be taken to exclude the presence of organic disease.

Anorexia nervosa occurs in adolescents and young adults of both sexes but generally it is more common in females than in males. The anorexia is in most cases at first the visceral expression of some emotional disturbance, in some cases an unhappy love affair. Sometimes the diet is voluntarily reduced on account of some fanciful ideas regarding the effect of food in stimulating sexual activity or with the object of countering the tendency (real or imaginary) to get fat. Whatever the origin of the condition, the restriction of food results in the gradual disappearance of appetite until the patient loses all desire for food. The patient shows a complete loss of interest in any food. The greatly reduced intake of food leads to constipation. The patient rapidly loses weight and in course of time becomes extremely emaciated, almost all the subcutaneous fat having disappeared. After anorexia has continued for some time its origin (which is rarely recognized by the patient) recedes into the background and the anorexia remains long after the psychological difficulties that gave rise to it have disappeared. If proper treatment is not instituted death may result from inanition and extreme atrophy without any organic visceral lesion. This condition

should not be confused with depressive anorexia or cachexia of endocrine origin.

The term "Effort syndrome" describes a clinical picture that may develop in various nervous conditions. The symptoms comprise giddiness, breathlessness, sweating, palpitation, tachycardia, pain and exhaustion and these may develop during or after exercise or hard work. They occur with varying degrees of depression or with anxiety but they may be superadded to a hysterical personality.

The mental symptoms are, amnesia, delirium states, somnambulism and self-mutilation. Loss of memory in hysterical amnesias are frequently for limited periods of time and follow a marked emotional disturbance. Likewise delirious states follow an emotional upset; the degree of confusion is variable. Somnambulism is wandering during sleep (sleep-walking), when purposeful and often complicated actions may be carried out and the patient is not aware of what had occurred when fully awake. It is not uncommon in children. Amnesia and somnambulism are evidences of dissociation. The dissociated portion of the personality functions independently and for the time-being controls the patient's activities. Self-mutilation sometimes occurs. Such patients will submit to repeated operations. Self-inflicted injuries and keeping sores and wounds open are not uncommon. Suicidal threats and attempts are not infrequent. Frequently the suicidal attempt is dramatic, done in such circumstances as to make it unlikely to be fatal; and if the patient is killed in the attempt it is more through accident than design.

Diagnosis.—The important criteria in the diagnosis of hysteria are both positive and negative *viz.*, the presence of emotional factors in the history sufficient to account for the symptoms, and the absence of organic disease. Careful physical examination and a knowledge of the type of symptoms to be expected in organic disease will help to rule out a disease of physical origin. It must be remembered that it is possible to have an organic disease with superadded psychogenic symptoms or to have a hysterical perpetuation of symptoms following an organic disease, long after the original cause had disappeared. Sometimes there is purposeful and conscious exaggeration of symptoms and it may be difficult to assess how much is due to malingering and how much to hysteria. The method of arriving at a diagnosis by suddenly taking the patient unawares and seeing if his symptoms persist, is to be deprecated; it would antagonize the patient. It is in the correct history that the real diagnostic points will be found. As it is the most important part of the examination, time should always be given to tell his story in his own way. It is often usual to exaggerate symptoms, but exaggeration is not

malingerer which is intentional simulation of symptoms with the express object of deceiving. Hysterical symptoms are unconsciously determined. It must not be thought that hysteria is the same thing as malingering. It is not. Hysteria is the triumph of the subconscious over the conscious while malingering is the triumph of the conscious over the conscious. If the symptoms diminish when little or no attention is paid to them, they are more likely to be hysterical. A point of interest is that when a sudden and dramatic cure is obtained by unorthodox or seemingly miraculous methods, the case is likely always to be one of hysteria.

Prognosis.—This depends mainly on the patient's personality, social status, duration, type, and severity of the symptoms. Much will depend on the practitioner's understanding of the nature of the illness and on the use of his skill in and re-assurance during treatment. Individual attacks and sudden gross symptoms arising as a result of fright or shock are easily cured, but the liability to recurrence is great. Symptoms which are the outcome of persisting emotional situation and are of gradual onset, are more intractable. Prognosis depends on how far the personality can be modified and the ætiological factors readjusted. However, this is an illness that sometimes confounds prediction, patients recovering when many adverse factors have been operative and the symptoms have been present for many years. The hysterical personality is more important than the hysterical illness, for whereas the latter may be improved or cured by treatment, the former generally remains unchanged, and may only await a fresh situation to evoke the latent symptoms. It is, however, no more to be assessed by rules than the general future of any human being's life and personality.

TREATMENT:—In practice, as soon as a diagnosis of hysteria is made or confirmed it is followed by a change in the attitude of the practitioner towards the patient, with an assumption that the patient is in some way to blame for his symptoms and that he is committing a fraud. This outlook is perhaps responsible for most of the failures in the treatment. The practitioner should have an unbiassed view in dealing with such cases. Treatment depends for its success not so much on the particular method employed as on the personality of and reassurance by the practitioner employing it. Too much treatment is worse than too little. Injudicious physical or psychological treatment often makes the symptoms worse. Recondite methods are to be eschewed by all except experts. Commonsense is as important as psychological understanding. The aim of the treatment should be the reconditioning of the patient so that he may accept realities from which he has been trying to escape and help the patient's return to ordinary conditions of life as soon as possible.

To this end, attention will have to be directed primarily to the patient's personality and only secondarily to the symptoms that are manifested. As in organic disease, so in hysteria many patients, will not be curable on account of chronicity. The chief obstacle to effective treatment is the mental indifference of the patient. Environmental factors must be considered and readjusted as far as possible. As one of the ætiological factors is a morbid desire for sympathy and notice, the patient should be removed to surroundings where even the most bizarre antics fail to produce any obvious impression on the attendants. Relatives should be strictly excluded.

Marriage should not be recommended as treatment for hysteria; this causes lamentable troubles, particularly to the person who marries the hysteric. Married hysterics should not have a child, as in many cases pregnancy makes the symptoms worse. Many of the symptoms of hysteria demand energetic intervention. Anorexia cannot be allowed to go on to inanition, nor paralysis to the stage of contracture. Along with suggestive measures appropriate physical treatment may be called for *e.g.*, supervision during feeding or even tube-feeding in anorexia nervosa or physiotherapy for paralysis etc.

Drugs to be recommended are only bromides and the slow-acting barbiturates like gardenal and chlorpromazine (Largactil) to calm an excitable patient and make him more amenable to reason. Suggestion therapy under light intravenous barbiturate amnesia is a method for the specialist. Hypnosis has many dramatic cures to its credit, but a certain proportion of these patients relapse, being neurotic and highly-strung. Continuous sleep treatment, has proved successful in cases of 'nervous breakdown.'

Persuasion is a more intellectual method of approach, to convince the patient that his symptoms are not organic but emotional in origin. Simple explanations can be given to show how emotional factors can cause bodily symptoms, like palpitation, sweating, trembling, fainting, nausea or vomiting. The practitioner must avoid any reference to infantile sexuality and confine himself to the patient's present difficulties; he should find out what are the factors on either side of the conflict, why the particular symptoms have appeared and what the patient is gaining by them. The idea of subconscious motive in the production of symptoms should be borne in mind, but care should be taken not to inform the patient about it until his confidence has been gained, or else the patient is almost certain to think he is being accused of malingering. We should not forget that even when organic disease is present, great improvement in the patient's outlook and capabilities can be brought about by judicious psychotherapy. In this respect we have something to

learn from the "quacks" who although they may not know what exactly is the matter with their patients, show no hesitation or doubt whatever, about their ability to cure them.

The final phase of any method of treatment should be re-educative, the patient being helped by his family doctor to disentangle from difficulties in his domestic and social affairs, encouraged to continue at his work, to develop a health conscience and to lead as full and external a life as possible.

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TETRACYCLINE PREPARATIONS

Sharp editorial comments continue to appear regarding the claims and counter claims that have been made for various tetracycline preparations. 15 tetracycline preparations were carefully studied (11 investigational and four commercial) in a controlled fashion using small groups of healthy adults, each serving as his own control. They showed that dicalcium phosphate which is used as an "inert" excipient or filler depresses the serum concentration of tetracyclinehydrochloride of tetracycline phosphate complex. The tetracycline acts as a chelating agent combining with calcium and magnesium ions to become less well absorbed from the gastrointestinal tract. They also showed that tetracycline phosphate complex, tetracycline in combination with glucosamine, tetracycline with citric acid, and tetracycline with disodium versenate (a powerful chelating agent) do not result in serum levels higher than those observed after the administration of tetracycline hydrochloride alone. These so-called "enhancing" agents do not elevate serum concentrations of tetracycline above those observed by the administration of tetracyclinehydrochloride alone. As so frequently proves to be the case, a drug in its simplest form is best.

Although the gelatin capsules in which most medications are presently prepared are rapidly dissolved in the stomach, there is the theoretic possibility that under some circumstances the capsule will serve as a barrier to rapid absorption in the gut. These authors showed that when the same preparation was administered but in "nonencapsulated form," the serum concentrations were somewhat higher. The nonencapsulated preparations of tetracycline are very bitter and are impractical. Nevertheless, the results imply that encapsulation is a slight barrier to the rapid absorption of tetracycline from the gastrointestinal tract.

Perhaps more significant than any errors of omission or commission on the part of clinical investigations of tetracycline preparations, has been the extent to which laboratory demonstrations of minor difference having no therapeutic significance have served as ammunition in an "extremely colourful and multipaged battle of blood levels." Thus the magnitude of observed differences between tetracycline preparations are largely of academic interest and have little, if any, significance in terms of tetracycline therapy.—(New Eng. J. Med., via G.P., March 1960).

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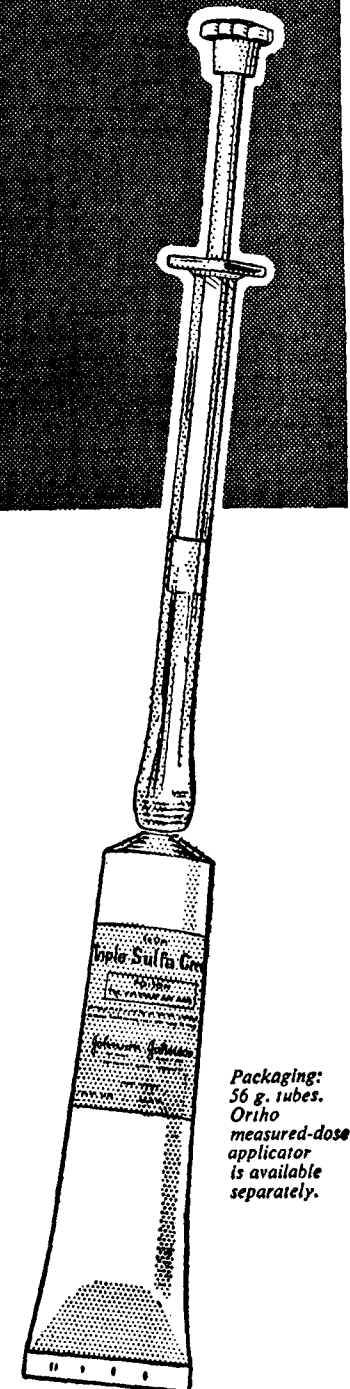
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ORAL PREMEDICATION IN CHILDREN (EXPERIENCE WITH TRIMEPRAZINE TARTARATE)*

THIS report deals with oral premedication, essentially to children undergoing tonsillectomy. We had occasion to administer this oral premedication to children below the age of 5 years, and so it was thought fit to include them in this general report. A study of the vast amount of literature on the subject of premedication, more particularly in paediatric surgery^{1,3,4} reveals that no particular method or methods except the administration of the belladonna-group of drugs, have received universal approval.

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I do not intend to add just one more method to the existing literature but will present a report on the attempt to solve some of the important problems connected with premedication for children in this part of India.

The problems we met with will now be stated.

(1) *The type of premedication for children used hitherto has been:—*(a) atropine injection, dose regulated according to age; (b) oral barbiturates viz., Nembutal or Seconal followed by atropine; (c) oral Oblivon followed by atropine and (d) others viz., rectal pentothal or paraldehyde.

(a) With atropine, the children always cry and are totally uncooperative although Cope² has reported satisfactory results in numerous cases.

(b) With oral barbiturates, the incidence of restlessness and the need for analgesics in the post-operative period were mounting and the recovery room staff was getting dissatisfied.

(c) With Oblivon, the children were probably never sedated.

(d) The rectal administration of drugs was never undertaken as a routine, obviously due to nursing handicap, and was restricted to children undergoing operations, other than tonsillectomy; hence it is not considered here.

(2) *The relation of premedication time and the time of operation:—*In a general hospital where paediatric surgery is undertaken along with other general surgical cases, including E.N.T. surgery, it is not always possible, even with the best of intentions, to keep to time-schedule. It is therefore, necessary that premedication should be of such a nature that will not wear off before the operation. A convenient time interval of 2 to 4 hours should be possible between actual premedication and the commencement of the operation.

* Vallergen Forte—M. & B.
Specially contributed to the ANTISEPTIC
[1015]

Further in the hot climate of N. India it is very difficult to manage an awakened child. He is starving since morning, and is also without water and will continue to be so, for 2 to 4 hours after the operation. The first thing he asks for on waking is water. Hence if the premedication is not effective, the child will be given quite a liberal drink of water or milk by sympathetic parents without the knowledge of the operation staff, resulting in vomiting during induction and concomitant hazards.

(3) *Post-operative hyperpyrexia during summer months*:—This is the most important problem in the tropics. Thus the menace due to this problem in Baghdad is of such great magnitude that elective operations are discouraged. The offending causes of this hyperpyrexia are: (i) temperature around the operation theatre and the post-operative ward; (ii) surgical trauma, causing disturbance of metabolism; (iii) thermolability of the young patient, (iv) premedication with belladonna drugs; (v) anaesthetic drug particularly ether and last but not least (vi) the incorrect management of anaesthesia viz., carbon dioxide retention; of these six, we are here concerned *only* with premedication. It was felt that an approach to ideal conditions in premedication would be achieved, atleast in children undergoing operation in the tropics if we could achieve the antisialogenic and parasympatholytic effects in one oral premedication and avoid giving a drug which by its nature thermogenic and sweat-inhibitory, subject to its not having other depressant effects e.g., depression of respiration etc.

The existing premedicaments like, parenteral opium derivatives and pethidine, oral barbiturate and chlorpromazine, were found wanting in this respect. When Trimeprazine tartarate in the shape of Vallerger Forte (MB) was made available, we gave it a trial⁶.

Fifty-two children were given this drug; five of them were from 6 months to 2 years of age, 15 aged 2 to 5 years and the other 32 were in the 5 to 12 age-group.

The doses administered were:—Two mg. per lb. of body weight was given orally 1½ hours before the operation, to all the children awaiting operation at the same time. On falling asleep, the children were all wheeled into the operation suite where they were kept in the Recovery Room or if that was overcrowded, in the corridor adjacent to the operation theatre on a trolley with an attendant to guard against accidental falls.

The results of premedication.—(a) 35 or 67.3% were classed as *Good* i.e. those who became drowsy or sleepy and no post-operative sedation was required and there was no undue prolongation of post-operative recovery; (b) Ten or 19% could be classed as *Fair* i.e. drowsy but awake during induction and post-

operative sedation was necessary and (c) 7 or 13.4% were classed as *Bad* i.e. awake throughout, as if no premedication had been given.

TABLE I Showing the type of anaesthetic given		
S. No.	Anaesthetic used	No. of cases
1.	Open ether followed by N ₂ O and O ₂ and ether	38
2.	Thiopentone and N ₂ O and O ₂ and pethidine	3
3.	Thiopentone and endotracheal N ₂ O and O ₂ pethidine	4
4.	Thiopentone and Relaxant and Endotracheal N ₂ O and O ₂ , with or without Pethidine	7
Total		52

TABLE II Showing the nature of the operations		
Serial No.	Operation performed	No. of cases
1.	Ventricular tapping	1
2.	Oesophageal dilatation	1
3.	Biopsy gland neck	2
4.	Suprapubic cystolithotomy	2
5.	Lobectomy	2
6.	Abdominal perineal pull through operation for imperforate anus	1
7.	Inguinal hernia	1
8.	Ethmoidectomy	1
9.	Mastoidectomy	2
10.	Tonsillectomy	37
11.	Others	2
Total		52

Conclusion.—It was found that:—(a) In a large majority of cases, this drug was very efficient when given at least 1½ hours before operation and the operation itself was done within 3 hours of administration; (b) the dose could be modified for children in the older age-group; it was restricted to the age-group between 6 months to 12 years as advised in the literature; (c) there was no case of post-operative restlessness requiring sedation and no case of hyperpyrexia was noted in this series; (d) we dared not omit the belladonna derivatives in any case but quite a number of them were intentionally or by accident did not receive atropine or hyoscine; no adverse effects were however noted; (e) this is a remarkably palatable preparation easy of administration and acceptable to all children and (f) the incidence of post-operative vomiting particularly after tonsillectomy was surprisingly lower than with other premedications.

Acknowledgement.—To M/s. May & Baker Ltd., who placed at our disposal a generous supply of Vallerger Forte, my grateful thanks; also to the Medical Superintendent, Safdarjang Hospital for according permission to publish this paper.

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PREANÆSTHETIC SEDATION FOR CHILDREN

1. Cornish, and Galbraith, of the Royal Children's Hospital (Orthopaedic Section, Victoria in an attempt to evolve a satisfactory scheme of preanæsthetic sedation for children, kept careful records of approximately 250 children.

2. These records set out the objective opinion of the anaesthetist and the ward sister regarding the child's mental and emotional condition before anaesthesia and after consciousness had been fully regained. The memory of the procedure was especially noted.

3. Two standardized preparations were used—a combined "Oblivon" hyosine preparation given by mouth for children aged less than 10 years, and a combined "Omnopon" scopolamine ampoule, given by a single hypodermic injection, for children aged 10 years and over and weighing not less than 32 kg. (74 lb.).

4. For particularly nervous or apprehensive children preliminary sedation was used on the day before operation, or in the morning if operation is planned for the afternoon, the preparation used being "Oblivon C," the long acting "Oblivon."

5. These procedures gave very satisfactory results and so they are now accepted as our standard routine. They have proved safe to use and easy to standardize, and easily understood by members of the nursing staff. They have proved superior to all other methods.—(*Med. Journal of Australia*: 25th June 1960).

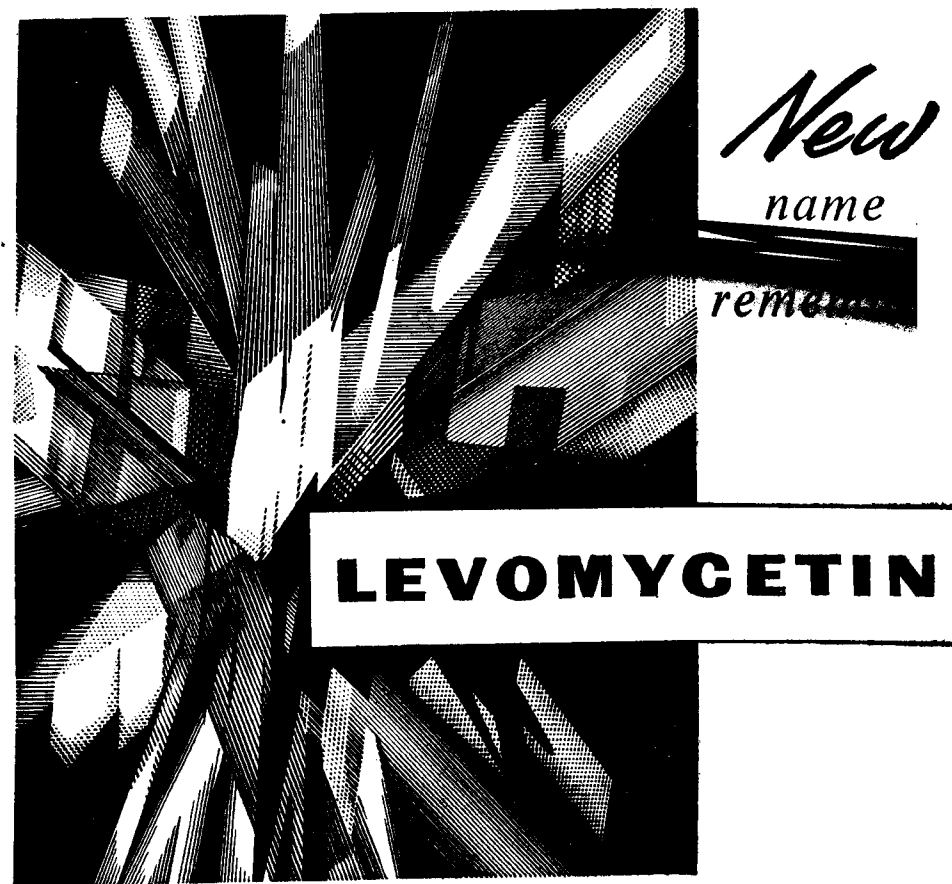
REMUNERATIVE HEART DISEASE (REWARD FOR ILLNESS)

Iatrogenic heart disease has become popular. There is grave doubt, however, that, in the emotionally mature patient, the casual remark of overt comments concerning laboratory procedures and the like would produce a cardiac neurosis. It seems rather that the development of a cardiac neurosis or an individual's fixation upon his heart occurs only in those people who are emotionally immature. The iatrogenic phase of their illness represents the trigger mechanism that establishes the disability. It is also possible by virtue of emotional immaturity, for a person with either a functional or organic lesion to refuse rehabilitation because the reward he receives from his illness is such that he cannot afford to be cured. It is suggested that this complication be entitled "remunerative heart disease." These patients are well known to all, but the problems they create have received little emphasis in cardiology. Once a patient receives a great reward either psychologically or financially from his illness, he is difficult to rehabilitate.—(John F. Briggs and James Bellomo: "Remunerative Heart Disease," *The Journal Lancet*, Feb. '59).

HYPOPITUITARISM AND REFRACTORY ANÆMIA

Anæmia refractory to the usual hæmatinics, due to hypopituitarism is usually normocytic and normochromic, with a normal leucocyte count and normoblastic bone marrow. A satisfactory response is obtained to cortisone and thyroid administration, supplemented in some cases by testosterone.

The daily dosage was 25 mg. of cortisone and 2 grains of thyroid extract. Intramuscular injections of 100 mg. of depot testosterone every 3 to 4 weeks helped to produce more rapid improvement.—(*M. J. Australia*, 25-6-1960).



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Cases and Comments

TWENTY CASES OF MUMPS TREATED WITH DIHYDROERGOTAMINE*

MUMPS is a disease which runs an uncertain course. This should be kept in mind while assessing the value of any drug in its treatment, more particularly when the outcome is usually favourable.

A. N. BHATT, M.B., B.S., D.T.M. & H.,

AND

R. V. AGRAWAL,

Department of Medicine, Medical
College and Hospital,
Nagpur

It is known that no treatment is able to alter or affect the course of mumps in any appreciable manner, though such claims are made now and then.

The routine treatment mainly aims at the relief of symptoms by local applications of counter-irritants combined with analgesics orally.

For the first time Jobanputra used D.H.E. (dihydroergotamine) in mumps on the premise that it was useful in herpes zoster, a virus disease and so its trial in mumps, another virus disease, was worth making. In other words its use was empirical. He treated 46 cases of mumps with one daily injection of 0.5 to 1.0 cc. of D.H.E. for 2 or 3 days. His results were very encouraging, as he reported relief of pain and fever within 8 to 12 hours and the disappearance of the parotid swellings in 3 or 4 days. Since then many others, except Mukherjee have reported favourably.

We studied the action of D.H.E. in 20 cases of mumps. It was injected intramuscularly in the dosage of $\frac{1}{2}$ to 1 cc. *t.d.s.* for 5 to 9 days. The high dosage over a long period was advisedly given to get a definite result out of the present trial. No toxic symptoms due to D.H.E. were noted. Occasional headaches were reported which may have been due to the disease. The blood-pressure was not affected.

The effect of D.H.E. on fever.—Out of the 20 cases treated with D.H.E., 8 were admitted with fever but one of them became febrile before the D.H.E. was given. The other 7 cases with fever received D.H.E. from the time of admission, the temperature came down to normal in 4 cases within 24 hours of admission, in one case the temperature came down to normal after 70 hours and in the other two, 40 hours after admission.

The above results do not differ significantly from those obtained in the previous year (1958) in respect of cases treated by the routine methods without D.H.E. Out of the 20 unselected cases 11 were admitted afebrile. In 6 cases the temperature

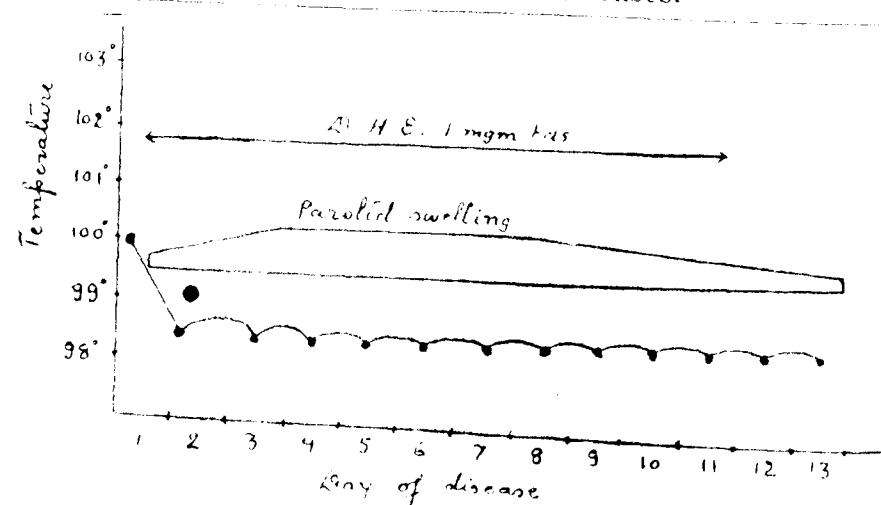
*Dihydroergotamine (Sandoz) 1cc.=1 mg.

[1019]

came down to normal within 48 hours of admission and only 3 cases had the fever on, beyond 48 hours. It is therefore obvious that D.H.E. has no rapid action on the fever of mumps.

The effect of D.H.E. on local pain.—Pain in the parotid swellings responded to D.H.E. in 60% of the cases within 48 hours of its commencement. In the rest of the cases discomfort due to obvious pain in the parotid region persisted. The favourable action was due probably to the decompression of the parotid gland in its capsule as a result of vasoconstriction.

The effect of D.H.E. on the parotid swellings.—We did not find any particularly quick effect of D.H.E. on the parotid swellings, which took from 5 to 15 days to subside, which was the same as observed in our 1958 series of cases.



The temperature chart shows that inspite of prolonging treatment with D.H.E. in one case the parotid swellings had not completely subsided when the patient was discharged on the 30th day after admission.

The effect of D.H.E. on complications.—Out of the 20 cases studied, 2 developed orchitis, an incidence of 10%. In one case orchitis developed when the patient already had had D.H.E. for 5 days and it was continued during the attack without any obvious benefit, while the other case admitted with orchitis did not yield conclusive results.

In one case there was a strong suspicion of pancreatitis due to upper abdominal pain with local tenderness, vomiting and fever. The attack lasted for about 5 days. In this case D.H.E. was stopped.

Conclusion.—Dihydroergotamine does not appear to influence the course of mumps in any way. Its beneficial action on the local pain in some cases is not enough to include it in the therapeutics of mumps.

We wish to record our grateful thanks to the Dean Dr. G.V. Barve, M.S., and Prof. J.N. Berry, M.D., M.R.C.P., of the Medical College and Hospital, Nagpur.

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PENICILLIN HYPERSENSITIVITY

Reactions to penicillin have increased in recent years, and today most severe hypersensitivity reactions and deaths are caused by this drug. The increase is not surprising in view of the enormous quantity of penicillin prescribed, particularly as penicillin can cause sensitisation and provoke reactions in almost any dosage and by any route of administration. Penicillin is best avoided entirely in treating a patient who has previously had even a mild reaction, although some physicians consider that if the indication for penicillin therapy is sufficiently strong—for example, in cases of syphilis or subacute bacterial endocarditis—it should be used with anti-histamines or steroids to control any sensitivity reaction. A report by Siegel clearly shows that a sensitized person, even if not given penicillin therapeutically, may still encounter it in other ways and develop serious reactions.

Cow's milk nowadays may contain penicillin because milk from cows with mastitis treated with the antibiotic is often included in bulked milk supplies. In the United States 6% of milk samples and in different parts of England and Wales from 5 to 47% of samples have been shown to contain penicillin; the range of penicillin concentrations in the samples was similar in the two countries. Siegel determined the oral dose of penicillin which would cause reactions in sensitized people by using their sera to produce passive sensitization in areas of skin of normal subjects who were then given penicillin by mouth; the direct experiment of feeding penicillin to those known to be sensitized carried too great risk of severe reactions. He found that there was enough penicillin in a glass of any of the penicillin-contaminated milks of the American survey to cause clinical reactions. This experimental evidence is supported by reports of severe dermatitis provoked by penicillin in milk and of anaphylactic shock from drinking a single glass of milk.

An anaphylactic reaction following an injection of testosterone in a woman known to be sensitive to penicillin led Siegel to investigate the possible contamination with penicillin of syringes previously used to inject the antibiotic: this patient was found to be very sensitive to penicillin and not at all to testosterone. All-glass syringes contaminated with penicillin were rinsed three times and boiled for fifteen minutes with the plungers in place. Penicillin was still detectable by skin tests after this procedure. When the barrel and plunger were separated before boiling, penicillin was not detected. Further, as the antigenic activity of penicillin, though reduced, was not destroyed after sixteen hours' boiling, the water in a sterilizer in which syringes are boiled may contaminate clean syringes with penicillin.

A third way in which a sensitized person may accidentally encounter penicillin is by inhaling it in the air, and Siegel mentions two nurses who were unable to work in hospital wards for this reason. (Gould in this

country has directly demonstrated the presence of penicillin particles in the air of a hospital).

Finally Siegel states that the amount of penicillin in Salk poliomyelitis vaccine is sufficient to cause reactions in highly sensitized people. This accords with several reports of reactions to Salk vaccine.

These hidden contacts with penicillin explain some otherwise obscure hypersensitivity reactions; and, by suggesting ways in which people who have never been treated with the antibiotic can yet be sensitized to it, they throw more light on those puzzling cases of anaphylaxis following a first injection of penicillin.

There remains the practical problem of how to detect penicillin hypersensitivity in patients requiring the drug. Undoubtedly a history of a previous reaction—however slight, is of most value. Direct skin tests have a place; but these have the disadvantages, on the one hand, that they may be negative in some sensitized people and, on the other, that the patient may be so sensitive that as little as 0.000003 unit of penicillin intradermally causes a constitutional reaction. Testing an area of a normal person's skin after passively sensitizing it with serum from the patient is safe but too cumbersome except for research purposes. Laboratory tests for the penicillin anti-body which agglutinates penicillin-treated red blood-cells is of no assistance, because the presence of this anti-body merely indicates previous contact with penicillin and not necessarily sensitization to it. A carefully taken history and an ampoule of adrenaline always within reach seem to provide a rational approach to this possible complication —(*Lancet*, 26.3.1960).

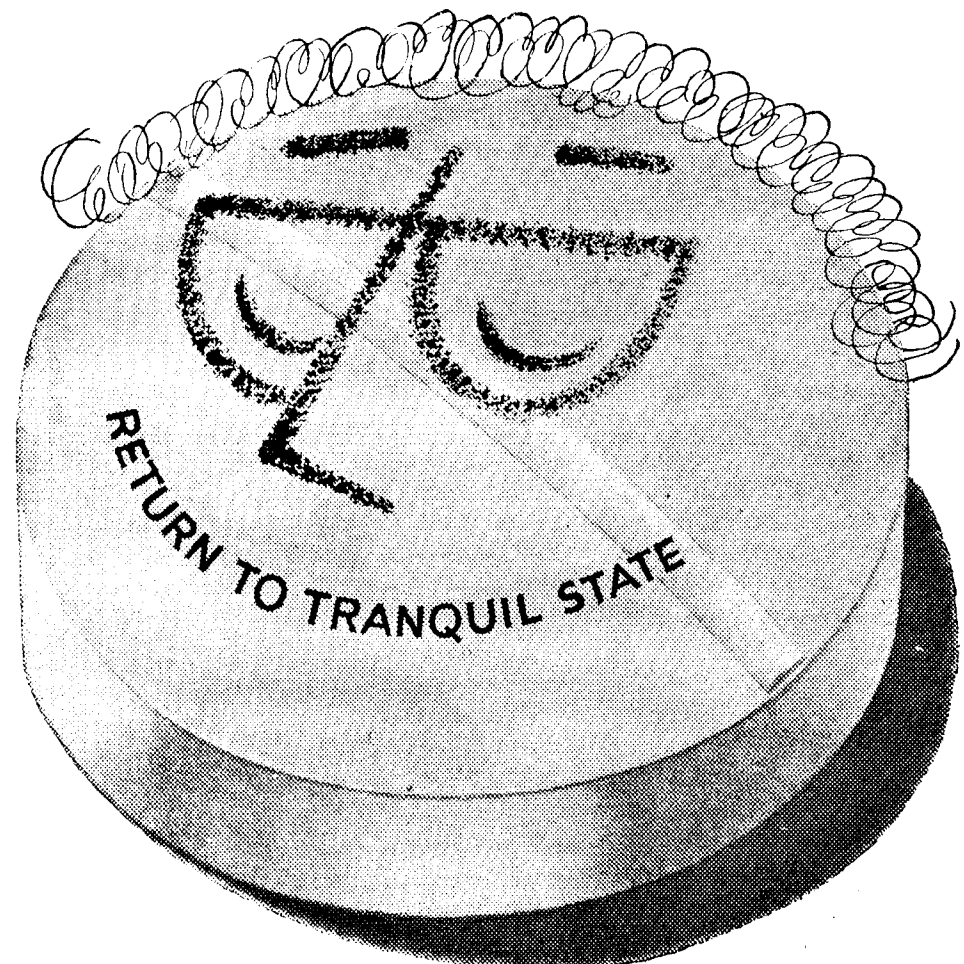
NORMAL SYSTOLIC MURMURS

The presence of functional murmurs in some adults has long been recognized. Of recent interest is the finding that these murmurs can actually be recorded from the precordium in virtually all normal subjects. Groom and associates made recordings in a sound-proof room with a cathode-ray oscilloscope from 71 normal adult subjects. All subjects showed readily discernible murmurs extending through one-fourth or more of systole, and reproducible on repeated tracings. The point of maximum intensity was most often between the second and fourth interspaces along the left sternal border. The majority were of a decrescendo configuration following the first heart sound but one-third had a diamond-type pattern. The intensity of these murmurs varied with position and exercise but not in any diagnostic manner. The authors conclude that these sounds reflect the physiologic flow of blood through the heart and great vessels. These murmurs are almost all clinically inaudible but they were clearly reproducible by sensitive physical equipment.—(*Ann. Int. Med.*, 52: 134, 1960, via *G.P.*, August 1960).

HYPOFIBRINOGENÆMIA

Low blood fibrinogen should be suspected in all instances of obstetric hæmorrhage, whether or not accompanied by conditions such as *abruptio placentæ*, eclampsia, trauma or transfusion incompatibility usually considered predisposing.

Three cases of post-partum hypofibrinogenæmia are presented. One was associated with detachment of the placenta, another with mild toxæmia and the third with transfusion reaction. In each case the diagnosis was made on clinical observations and on failure of freshly drawn venous blood to clot normally. Response to whole blood-transfusion and the administration of fibrinogen was satisfactory in all three cases.—(*U. S. Armed Forces M.J.*, 11: 318 via *G.P.*, August 1960).



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Editorials

IMPROVEMENT OF SLUMS

(Tenements for Slum Dwellers)

THE opening in October last, of 162 tenements put up by the Madras Corporation to house the slum-dwellers near Shenoy-nagar, led Sri R. VENKATRAMAN, the State Minister for Industries and Housing, to hope that Madras City will be free from slums in 20 years, if the Corporation would only maintain the same tempo of improvement. This hope is itself only a slight modification of an earlier statement envisaging the eradication of all slums in fifteen years at the rate of 20 per year. This should not mean that the Minister's optimism has grown a wee bit dimmer but that a number of adverse factors are operating against the more rapid clearance of slums, and creating hurdles in the way of both the schemes under this head:—namely the assignment of open developed plots for erecting huts on the outskirts of the City and the construction of tenements within the City, to be let out for a low rent. The slum dwellers who work for comparatively low wage in the city, e.g., domestic servants, cycle messengers, etc., are naturally unwilling to move far out from their places of work; further they are in most cases unable to pay the rent of Rs. 10 a month fixed for the tenements, though this sum of Rs. 10 is sufficiently low and has been made possible by a considerable State subsidy. This facet of this difficult problem may and will improve only if there is a considerable improvement in the earnings of this class of workers and their families and in their general standard of living. Such a progress has been observed in western countries but will take quite a long time to be achieved in our land.

Again in Madras City even workers earning Rs. 100 and

above per month are reluctant to move into the tenements from their highly insanitary and over-crowded mud huts.

We are credibly informed that propaganda by a class of political leaders hold out hopes that if the slums dwellers will only resist the pressure for sometime, a reduction will be made by Government in the rent to a figure lower than Rs. 10. The proverbial inactivity and prejudice of people living on a marginal standard of life is also a factor. The result is that a group of tenements like the one constructed on the foreshore near Santhome in Madras had to be handed over to the Government to house its own low-income group employees while the local slum-dwellers continue in their own ways.

The problem should become less intractable if the Corporation and the Government set about expediting the present schemes of clearing and construction on the one hand and enforcing a basic minimum of sanitation and hygiene in the slum areas and preventing the formation of new slums which sprout all over on both private and public lands.

The proposed legislation authorizing the removal of huts on Government, Corporation or C.I.T. land is a welcome step. Since slums are equally objectionable, if they mushroom on private land, the legislation should cover huts on this type of land also, if the ultimate *eradication* of slums is to be achieved. It has also been officially stated that it is the policy of the Government not to allow more industries to be located in the City, since that would only aggravate congestion and pressure on the already scarce civic amenities, as well as housing. The tremendous increase in the City's population is not mainly from the industrial activities but largely from the trade and other activities, generated by the Madras Port and the railway termini. We learn that the Madras Port is doubling its capacity and the prospects of checking the influx of the slum-creating population are therefore, not bright. The problem is thus a really complex one with many side-issues and will require a persistent many-pronged attack. The present schemes of countering the difficulties might help if implemented with greater expedition.

While inaugurating the slum-clearance scheme sponsored by the Planning Commission and undertaken by the Madras Branch of the Bharat Sevak Samaj at the Meenambal Sivaraj Nagar on the 20th October 1960, Sri R. VENKATRAMAN, the Industries Minister, made a fervent appeal to those accommodated in the slums already improved, to help in maintaining the developed areas in good condition. If they sub-let the huts allotted to them or put up unauthorized constructions, it would not only be harmful to them, but would also go against the very purpose for which the slum-clearance work had been undertaken by the Government.

Sri VENKATRAMAN explained the efforts being taken by the Government to better the living conditions of slum dwellers, and said it would not be possible for them to achieve their aim without the co-operation of the people living in slums of which there are about 330 in the Madras city alone.

Sri Dr. U. KRISHNA RAU, Speaker of the Madras Legislative Assembly, said that the noble and valuable work which the Bharat Sevak Samaj had undertaken was a very humane but difficult task and that success depended almost entirely on the co-operation given by the residents of the slum areas.

In this context it is relevant to point out that the lapsing by the Corporation and the C.I.T. of a sum of Rs 34.5 lakhs out of a budget provision of Rs 60 lakhs for this purpose on account of various difficulties, only shows that funds are not the sole limiting factor!

DEARTH OF DOCTORS

(Some Suggestions)

THE statement made on the 24th October 1960 on the floor of the Orissa Legislative Assembly by the State Health Minister Dr. MISRA that fifty-four hospitals were being run without doctors and 27 others with an inadequate number of them is not surprising, though no Government can be condoned for its failure to provide adequate medical relief to a large number of people who should be served by the 54 hospitals in a small State. Orissa's tale of doctorless hospitals is not unique for a similar state of affairs is said to prevail in Kerala and Madhya Pradesh also. The Madras State and Andhra Pradesh though not so badly off, are still wanting a sufficient member of qualified medical personnel to man many of their rural dispensaries.

Orissa's attempt to get doctors from the neighbouring West Bengal State, presumably on deputation, is sure to cause difficulties in that State which, we believe and rightly too, has no superfluity of them. In advertising for qualified doctors on an all-India basis offering "attractive" terms, Dr. MISRA is merely competing with other States which are in a similar predicament.

The real remedy for this lies in producing more doctors and to this end starting more medical colleges in every State. This is no doubt easier said than achieved. Medical education today has become enormously costly and the curricula of studies very exacting. Even if more doctors are available, they are loath to go and settle in rural areas. This has long been a vexed problem and numerous remedial solutions have been suggested and some have also been tried, but so far, no tangible results have been achieved. The Community and National Extension

Projects and the rural development programmes of the Central and States Governments have not been unmindful of this imperative need and are doing their best to improve environmental sanitation and medical relief in rural areas.

Recently Government announced improved scales of pay and special allowance to doctors willing to settle in rural areas, but we believe, substantial progress has not been made. It continues to be a complex subject and we are not sure that the doctors are wholly to blame. They are accused of a lack of public spirit and missionary zeal for social service, but certain hard facts have to be considered particularly in the context of two recent pronouncements from responsible quarters. Thus our Prime Minister while inaugurating a hospital at Raipur on the 30th October last said that it should be made compulsory for medical graduates to work in rural areas for two to three years before being allowed to start practice in urban areas in the country. The Health Minister of Kerala Sri A. V. K. VELAPPAN stated on the 29th October 1960 in the Legislative Assembly that "the Kerala Government has decided to enforce strictly the rule that every student passing out of the medical colleges in the State should serve the State *at least for three years*". These two statements emanating from top level statesmen, appear to us to be somewhat harsh and unrealistic too. After spending large amounts of hard earned and often borrowed money in obtaining his medical degree, the young graduate cannot be expected to immure himself for 3 long years in villages with, by no means an attractive pay, and without satisfactory living conditions such as he has been accustomed to.

Villages are being transformed, but not so quickly that there are available modern amenities in every one of them. In fact, in the present period of transformation under the impact of the industrialization of the country, they are not particularly convenient places to live in. Nor are the conditions of service any more satisfactory. No ambitious doctor will fancy service under such conditions. Nor would middle class parents of these young graduates be willing to send their sons to rural areas after having spent enormous sums of money, mostly borrowed in the fervent hope of soon being able to repay the same from their sons' earnings in the practice of their profession.

What then is the remedy? It seems to us that the solution lies in providing more colleges and training more medical students, also making it a condition precedent to being admitted to the medical course, that every student will serve in a rural area for one year immediately after his housemanship and that Government in their turn will give a stipendiary allowance of say Rs. 200 per month during that period. Though graduates who have so served for a year, cannot have a prior or any claim

to a permanent post under Government, their apprenticeship in village dispensaries will be taken into account in the selection of assistant surgeons. Except under the force of such an initial condition for admission into the medical course, we feel it would not be possible or at all fair to compel medical graduates to serve for two and three years in villages after graduation and housemanship.

The present position, therefore, is such that hospitals which have no doctors will unfortunately continue to exist in the country. This is certainly a most unsatisfactory state of affairs requiring early remedial measures. In this connection we remember a suggestion made in the local press by a responsible senior private practitioner sometime ago, to the effect that retired medical men of even 60 to 65 years of age who are still mentally alert and physically not too weak or debilitated, may be requisitioned for rural service on a modest *honorarium* of, say, Rs. 200 to 250 per mensem, the period of their service being determinable any time after 2 years or earlier if found physically or mentally unequal to the task. We consider this a useful suggestion worth being given a trial; for there must be hundreds of sub-assistant surgeons or even assistant surgeon who retired about 6 to 8 years ago who would consider such a proposition if it emanated from Government without any strings attached relating to their pensions; that is why we have advisedly called their emoluments as *honorarium* so that it will not affect their full pensions in any manner.

Yet another and perhaps a more practicable solution would be to select a batch of deserving candidates every year and give them scholarships. These can be made to enter into an agreement with the State to serve for a period of 5 years after passing, in any rural area they may be posted to, on the scale of pay and allowances admissible to assistant surgeons; they should then be transferred to urban areas, as by then the question of schooling for children, in many cases, would have come up.

HEALTH UNDER THE THIRD FIVE-YEAR PLAN

Inadequacy of Allocation

THE eighth meeting of the Central Council of Health which concluded its three-day sitting at Jaipur on the 30th October, 1960 under the chairmanship of Shri D. P. KARMARKAR, Union Health Minister, while generally endorsing the Third Plan proposals for Health, expressed disappointment at the "inadequacy" of the allocation made for them in view of the enormous demands of the country in this respect. The distribution of the allocation of Rs. 300 crores has not been an easy matter. According to him,

the health-programme in the Third Plan would in its essentials, have to be one of extension of water-supply and drainage facilities, control of communicable diseases, family planning and extension of rural services through primary health centres. The remaining items would be only in the nature of supporting programmes. It is therefore, incumbent on us to husband the resources in such a manner as to make full use of them and streamline their organizational structure to ensure quick and successful execution of the schemes. A sum of Rs. 80 crores has been provided for water-supply and sanitation schemes. It includes a token provision of Rs. 2 crores to complete the rural water-supply and sanitation schemes taken up for execution during the Second Plan period. The sum of Rs. 78 crores provided for urban water-supply and drainage schemes is no doubt very much short of the actual needs. The limited amount should however, be utilized to derive maximum benefit.

To raise additional finance for health programmes, the Council urged the States to continue their efforts to explore the possibilities of tapping various resources for health programmes. We agree with the Union Health Minister that regional water-supply boards should be constituted, with necessary statutory administrative and technical powers enabling them to raise loans in the open market for the specific purpose of implementing protected water-supply schemes planned by competent authority.

It is a well-known fact that very few towns in the country have properly designed and efficient systems of sewage disposal and with the increasing tempo of industrial expansion, the problem of sewage disposal is also becoming more and more difficult and urgent too. The State Governments, should on their own initiative give top-priority to drainage schemes in urban areas and implement their execution during the Third Plan period.

The Council expressed its appreciation of the work done by the State Governments in the control of leprosy, and urged them to give adequate grants to voluntary organizations prepared to participate in survey and domiciliary-treatment programmes in and around their areas. It is regrettable that the allocation of funds for leprosy control work in the Third Plan is inadequate. A high priority for the training programmes should still be attempted. After discussing many problems connected with the place of legislation in the control of leprosy the Council resolved to set up a Committee to re-examine the matter and report; this Committee includes the Health Ministers of Andhra, Madras, Maharashtra and West Bengal. We are glad to learn that the Union Health Ministry proposes to establish during the Third Plan, one leprosy control unit to cover a population of about one and a half lakhs. The new unit would be in charge of

a medical officer with ten para-medical personnel and other ancillary staff. The revised pattern has been aimed at achieving better results and greater coverage.

In according their approval to the following proposals, the Council must be considered to have done a piece of signal service to public health and so strengthen the hands of the authorities in legislating for the better organization and management of the institutions catering to the welfare and general health of the people.

The Council approved the proposal to amend the Indian Medical Degrees Act of 1916 to restrict the use of the titles of doctor, *hakim* and *vaid* to qualified practitioners and asked the Union Health Ministry to prepare draft legislation with this aim in view. It also approved the proposal for regulation and registration of public health laboratories and nursing homes and requested the Union Health Ministry to prepare a model Draft Bill for circulation.

It is indeed welcome news to learn that the Central Government has taken up smallpox-eradication on a nationwide scale as the programmes in the various States were neither uniform nor effective and so the States have thus been relieved of the anxiety of finding necessary funds, through cent per cent grants from the Centre.

The National Malaria Eradication Programme has now reached the most crucial phase and the need for pushing it through with the utmost speed has been recognized, particularly because there is definite evidence of the development of resistance in certain malaria-carrying mosquitoes in certain parts of the country.

We wish to stress the importance of the preventive aspect of disease to preserve the nation's health. In a country like India it is really the preventive aspect that should in a larger way, engage our attention in the years to come. It is much more economical to adopt preventive remedies so that people may not fall ill.

It should be realized that for popularizing the basic principles of personal and community hygiene, which are the vital factors in the promotion of human welfare, greater emphasis will constantly have to be laid on the rousing of mass enthusiasm and consciousness, by educating public opinion. We must infuse in the common man the desire for more hygienic living and spread among the people the knowledge for more balanced and nutritious food according to the income groups. The amendments proposed by the Council to the Food Adulteration Act seek to make punishment under the Act more severe, and to provide for the provincialization of the services of food-

inspectors now working under municipalities and local bodies, reduction of the number of witnesses from two to one when a sample is taken for analysis and the prescription of a maximum period for the disposal of prosecutions under the Act. The State Governments have been asked to issue the necessary directives to local authorities to enforce vigorously the rules framed under the Act.

The Council rightly thought that the time has come for the regulation and control of the manufacture, distribution and sale of all kinds of drugs, including Ayurvedic, Unani and Homœopathic. A beginning should be made immediately by the standardization of drugs through the preparation of a separate pharmacopœia. As no standards have so far been laid down that would be applicable to all the indigenous systems of therapeutics and drugs, we are not sure that this would be readily feasible. Their suggestion that the manufacture of these drugs and remedies should be made under hygienic conditions and the raw materials should be properly identified and tested before being used in making medicaments, is however, worth being considered for early implementation.

It was also quite proper that the Council thought it fit to suggest that in order to safeguard the health of the people, suitable control should be exercised over the quality of toilet preparations, including cosmetics. The Council has thus considered all aspects of public health protection and we heartily endorse all their suggestions and recommendations.

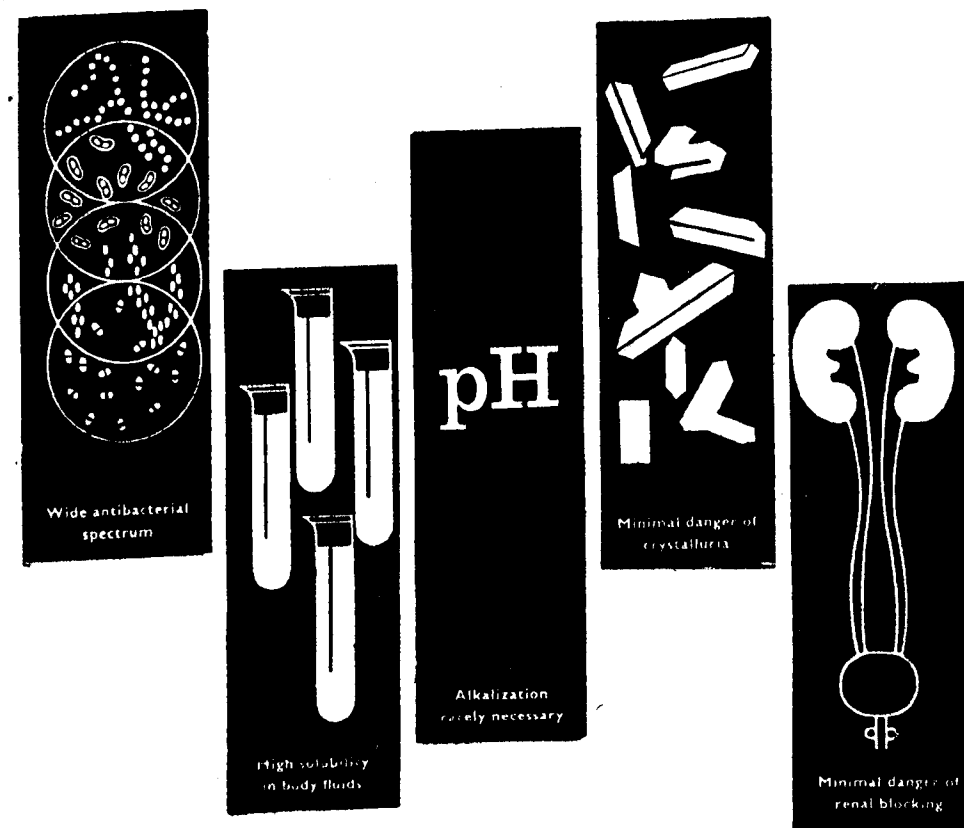
Only we would very strongly plead for a liberal revision of the present allocation, in the light of the Council's well-considered observations and modest recommendations for the promotion of national health.

DUMPING

The "Dumping Syndrome" has been encountered as an unpleasant result to gastric surgery. Le Quesne and coworkers set out to estimate plasma volume and to discover why some patients have dumping symptoms with a given decrease in plasma volume and others do not. They showed that the change in plasma volume was directly proportional to the rate at which the blood sugar increased in the first ten minutes after oral ingestion of a standard glucose meal. Patients with dumping symptoms were given insulin and the symptoms of dumping were diminished or abolished.

They conclude that increased blood glucose level was the cause rather than the effect of dumping. The rapid increase in carbohydrate accelerated the osmotic shift in fluid across the jejunal epithelium. They explain the wide variation in the frequency of occurrence of the syndrome on the basis of individual differences of postgastrectomy patients in the ability to metabolize glucose after the ingestion of a carbohydrate meal. —(*Brit. M. J.*, 1: 171, 1960, via *G. P.*, August 1960).

ADVANTAGES



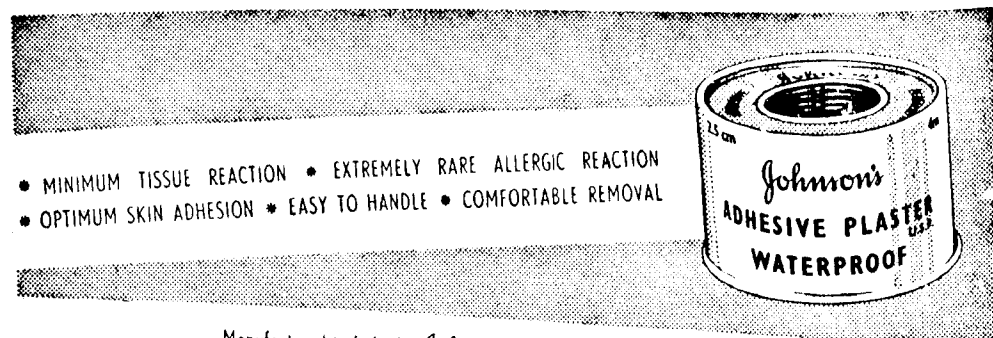
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Special Feature

NEWS-LETTER FROM THE UNITED STATES

PROGRESS, although slow, is constantly being made in determining the influence of heredity versus environment on development of disease. A further step forward in this area has been made by the use of an *electrocardiograph* to detect congenital heart ailments in unborn babies. According to S. D. Larks and L. Longo, reporting in the July 16 issue of *The Journal of the American Medical Association*, 173: 1217, 1960, improvements in electrocardiographs as well as in technique and in understanding of the problems has made it possible to take an extremely accurate electrocardiogram of a foetus as early as the 22nd week of pregnancy. There are many advantages to early detection of heart ailments. First of all, preparations for surgery of the newborn immediately after birth can be planned, possibly saving many lives. As far as research is concerned, this new technique may permit physicians to determine exactly when in the course of a pregnancy certain congenital abnormalities do occur, thus affording an answer to whether the abnormality is the result of heredity or of some infective condition contracted during pregnancy. A review of current therapeutic agents available for management of some of the common intestinal parasitic diseases was undertaken by B. H. Kean, who reports his findings in the July issue of *Postgraduate Medicine*, (28: 35, 1960). This study was conducted because of the number of recently discovered drugs available for eliminating or controlling these infections. The author estimates that about 40 million citizens of the United States are now harbouring parasites. This fact combined with increased international travel, plus the influx of about one million Puerto Ricans into the United States, and the emphasis here on global medicine will probably make physicians more alert to the possibility of parasitic infections when they made their diagnoses. One of the common intestinal parasites is *Enterobius vermicularis*, also called pinworm or threadworm. Reinfection makes this parasitic disease difficult to cure and often is responsible for its protracted course. A new therapeutic agent, *Pyriminium pamoate* (Vanquin) is available for treatment of enterobiasis in conjunction with the usual adjuvant measures. Dr. Kean states that a single dose of Vanquin will cure enterobiasis in over 90 per cent of patients. The recommended dose is 5 mg. of the anhydrous pyriminium base per kilogram of body weight; or 1 teaspoonful (5 cc.) of Vanquin suspension per 22 lbs. (10 kg.) of body weight; or one 100 mg. tablet per 40 lb. of body weight. Because overdosage is not dangerous, dosages may be rounded off toward the larger size. Toxic symptoms rarely occur.

Incidence of gout among women is more common than was formerly believed, according to a recent study of 74 patients with gouty arthritis observed during the past four years. The study was undertaken by R. E. Turner and co-workers writing in the September issue of *A.M.A. Archives of Internal Medicine*, (106: 400, 1960). In most studies of patients with gout, women made up less than 10 per cent of the total number of cases, but in this study, 19 of the 74 patients with gout were women. Most physicians have observed that when gout occurs in women, it usually happens after the menopause. In this study, 4 of the 19 women contracted gout before their menopause.

A faster than average hardening of the aorta is associated with increased incidence of heart attacks. This observation was based on an autopsy study of 285 men and was reported by S. L. Wilens and C.M. Blair in the August issue of the *A.M.A. Archives of Pathology*, (70: 149, 1960). In the average man (about one out of two) arteriosclerosis progresses to approximately the same extent throughout life. In some exceptional persons (about one in eight) the arteriosclerotic process is retarded, and in about the same number of persons, the process is accelerated. The authors found that the incidence of myocar-

dial infarction was $5\frac{1}{2}$ times as great in persons with aortic sclerosis that had progressed 15 or more years beyond the average for their age when compared with men whose aortic sclerosis was retarded 15 or more years behind the average for their age.

Some authorities have felt that twins are more likely to develop psychiatric illnesses requiring hospitalization than are non-twins. This had been attributed to a condition known as "confusion of ego identity" which was believed to occur more commonly in twins who look alike, are dressed alike, and are treated alike. However, a recent study by D. Rosenthal, based on studies in Sweden and Germany and published in the September issue of the *A.M.A. Archives of General Psychiatry* (3: 297, 1960), indicates that this theory is not necessarily true. The best evidence available points to the fact that neither schizophrenia nor psychiatric illnesses requiring hospitalization occur more frequently in twins. It is a logical conclusion, therefore, that "confusion of ego identity" does not have value as far as aetiology of schizophrenia is concerned. It is possible, however, that "confusion of ego identity" is a symptom rather than a cause of mental disorder.

THREATENED ABORTION AND PREMATURE LABOUR

An experimental treatment with 17 alpha-hydroxyprogesterone acetate (AP) and its methyl derivative 6 alpha-methyl-17-alpha-acetoxypregesterone (MAP) was administered in 54 cases of threatened abortion and 49 of threatened premature labour. Thirty-five patients with threat of abortion were treated with MAP and 19 with progesterone in oil. Of the 49 patients under threat of premature labour, 20 were treated with MAP and 29 with AP. The maximal daily dose for either drug was 200 mg., and the duration of the treatment varied from 2 to 14 days. The MAP therapy was successful in 31 of 35 patients with threat of abortion and in the 20 patients with threat of premature labour. The AP therapy was successful in 17 of the 19 patients with threat of abortion and in 27 of the 29 patients with threat of premature labour. These results indicate that the fundamental therapy in threat of interruption of pregnancy at any stage is progesterone and its derivatives with a higher progestational activity; among these, 6 alpha-methyl-17-alpha-acetoxypregesterone (Luteocrin) is at present the most adequate luteoid. Although both AP and MAP are useful in treating patients threatened with abortion, their main indication is for avoidance of premature labour because of the varied aetiological factors and the frequency of degenerative alteration in the ovum which occurs in spontaneous abortion.—(*Minerva gynaecologica, Turin*, 12: 307-346, March 31, 1960, via *J.A.M.A.*, 27-8-'60).

THE TREATMENT OF HYPERTHYROIDISM WITH PERCHLORATE

The inhibitory effect of perchlorate on the iodine uptake of the thyroid gland was confirmed by means of the author's "prolonged" radioiodine test (as described in *Munch. Med. Wschr.*, 96: 1479, 1954). Perchlorate was well-tolerated and harmless, even when given in excessive doses, because of the rapid reversibility of its action. The initial dose was 2,000 mg., followed by a maintenance dose of 200 to 400 mg. daily. In cases of fully developed thyrotoxicosis there was practically complete regression of all thyrotoxic signs, except exophthalmos, and of the goitre after a latency of 2 weeks. Enlargement of the thyroid gland as result of hypophyseal stimulation could be prevented with triiodothyronine, 25 to 100 μ . The drug was equally effective in the management of functional hyperthyroidism.—(*Dtsch. Med. Wschr.*, 84: 2199, via *German Med. Monthly*, August 1960).

GLEANINGS FROM THE MEDICAL PRESS

MEDICINE & THERAPEUTICS

Pernicious anaemia and diabetes mellitus.—(*Zeit. f. d. ges. Med.* via *J.A.M.A.*, 16-7-1960).

Of 1,059 patients with diabetes mellitus and 117 patients with pernicious anaemia seen by the author at the clinic of the Medical Academy, Erfurt, Germany, between 1951 and 1959, ten had diabetes mellitus and simultaneous pernicious anaemia. Of 7,129 patients with diabetes mellitus and 385 patients with pernicious anaemia who attended various centres, including the medical clinic in Erfurt, 21 had diabetes mellitus and simultaneous pernicious anaemia. Of the 117 patients with pernicious anaemia seen at the medical clinic in Erfurt, 10 (8.5%) had diabetes mellitus. This incidence of diabetes mellitus among patients with pernicious anaemia is much higher than the incidence of diabetes mellitus to be expected today, and the incidence has increased as compared with previous statistics. Of the 7,129 patients with diabetes mellitus, 16 (0.22%) had pernicious anaemia; this incidence of pernicious anaemia is not higher than might have been expected in the general population. Among the 117 patients with pernicious anaemia and diabetes mellitus, the onset of pernicious anaemia more frequently preceded that of diabetes mellitus. In nearly 50% of all the patients with both the diseases reported on, the onset of the pernicious anaemia preceded that of diabetes mellitus. This finding deserves particular consideration, since diabetes mellitus usually becomes manifest at an earlier age than pernicious anaemia. Impairment of the utilization of glucose due to vitamin B₁₂ deficiency, which has been demonstrated clinically and experimentally in cases of pernicious anaemia, justifies the assumption that in patients with pernicious anaemia and simultaneous diabetes mellitus there may be a pathogenic relationship between the two diseases.

Fungi in faeces and urine during antibiotic therapy.—(*Zeitschrift für Kinderheilkunde*, Berlin, 84: 1-124 (No. 1), 1960, via *J.A.M.A.*, 27-8-1960).

Twenty-two children, 14 months to 11 years of age, who were admitted to the Paediatric Clinic of the University in Bonn, Germany, were treated with antibiotics such as tetracycline, oxytetracycline, chloramphenicol, spiramycin or penicillin. Mycologic examinations were made of urine and faeces and of anal smears obtained from these patients for several days before the institution of antibiotic therapy and for several weeks in the course of therapy. Similar examinations were made of specimens obtained from 26 adults. More than 1,000 specimens were obtained from the 48 patients; those obtained before the institution of antibiotic therapy were negative in 85% of the patients; they became positive in the course of the therapy in 75%. This applied not only to patients who received broad-spectrum antibiotics by mouth, but also to those who were given medium spectrum antibiotics, and possibly also to those who received penicillin by mouth for longer periods. Considerable amounts of fungi were observed in the faeces of 2 patients who received tetracycline intravenously. The additional administration of Nystatin (Mycostatin) made the specimens negative in most of the patients. The presence of fungi in the faeces is to be considered as a preliminary stage of mycosis by which patients with diabetes mellitus, pregnant women, premature infants, and patients with malignant tumours, leukaemia, and cachexia particularly are threatened. In such patients prophylaxis of mycoses by oral administration of mycostatic drugs is indicated.

Digitalis in children.—(*J. Paediat.*, 56: 536, 1960, via *G.P.*, August 1960).

In a comprehensive review of the special problems of digitalis therapy in infants and children, Robinson

emphasizes the recognition of digitalis intoxication. When purified glycosides are used in infants and children, many of the early symptoms usually associated with toxicity, such as nausea, vomiting or diarrhoea, may be minimal, if present at all. Any variation in rhythm should warrant an electrocardiogram to rule out one of the arrhythmias caused by digitalis.

In children receiving digitalis, all types of arrhythmias may occur. In addition to the bigeminal rhythm or ventricular ectopic beats, paroxysmal atrial tachycardia with block, nodal tachycardia and A-V dissociation may occur. It could be catastrophic to administer more digitalis on the assumption that the tachycardia or a slow pulse is due to inadequate amounts. Congestive heart failure itself may result from over-digitalization. *Robinson warns that more digitalis should not be administered if there is any doubt.* He considers that the acetyl-strophanthidin test for over- or under-digitalization is too hazardous for use in the paediatric age-group.

Additional and often obscure signs and symptoms of digitalis toxicity in children include headache, vertigo, fatigue, depression, urticaria and eosinophilia.

Griseofulvin tested in arthritic ailment.—(*J. Louisiana St. Med. Soc.*, August, 1960).

Griseofulvin, an antibiotic proved effective against certain skin infections, is being used to treat an arthritic ailment.

The new development was reported by Drs. Abraham Cohen, Richard Daniels, and William Kanenson, all of Philadelphia, and Dr. Joel Goldman, Johnstown, Penn., in the June 4 *Journal of the American Medical Association*.

They said they had achieved good results in 12 patients suffering shoulder-hand syndrome, a disease that affects the nerves and circulation, and is characterized by pain, tenderness, and limitation of movement of the shoulder, hand and fingers.

"We are unable to give a scientific

explanation for our findings," the physicians said. "This is a preliminary report issued in the hope that others might use this method to either confirm or refute our findings."

The four physicians said they experimented with griseofulvin after noting that when it was used to treat fungus infections of the skin any inflammation associated with the infection disappeared along with the infection.

Proceeding on the theory that the antibiotic was an anti-inflammatory agent, they began administering it to patients with rheumatoid arthritis, including those with shoulder-hand syndrome.

Although those with shoulder-hand syndrome benefited, those with rheumatoid arthritis did not.

The physicians said this led them to believe that griseofulvin was not an anti-inflammatory agent.

Treatment for heat-stroke.—(*G. P.*, July, 1960).

This is the physician's responsibility and should not be delegated to the nursing staff by written orders. He is obliged to see that treatment is begun the moment the diagnosis is made, and he should be in attendance until the patient is out of danger.

Immersion in an ice bath until the rectal temperature, taken every five minutes, falls to 101 F. is the most consistently effective method of reducing the fever. When the proper temperature is attained, the patient is placed in bed and is observed constantly for the recurrence of fever or peripheral vascular collapse. If the temperature again rises, the ice bath is repeated. If shock occurs, as sometimes happens during rapid cooling intravenous fluids, plasma and vasopressors should be given.

Bacterial infections often complicate these illnesses and should be treated specifically. Prophylactic antibiotics are of doubtful value.

Steroids have been recommended. Experimentally, they have been shown to have an antipyretic effect in animals; however, clinical studies have shown steroids to be ineffectual.

Prognosis.—Various reports show an over-all mortality rate of 20 to 80%. Since 70% of these mortalities occur in the first 24 hours, the importance of rapid and vigorous therapy is obvious. Advanced age, chronic illness, infection, alcoholism and obesity are factors contributing to a poor prognosis.

Malignant asthma.—(*The Br. Jour. Clin. Practice*, July, 1960).

In the series "The Clinical Approach" which the *Br. J. Clin. Practice* regularly publishes, Dr. James Maxwell, M.D., F.R.C.P., has very important comments to make on *malignant asthma*, extracts from which are given below:—

According to tradition asthma carries a good prognosis. It is usual to quote the assertion of Oliver Wendell Holmes that asthma is 'the slight ailment that promotes longevity,' and many physicians are in the habit of giving a reassuring forecast to the asthmatic patient and to the relations. In the majority of cases this view is justifiable; most patients with asthma live long and useful lives.

In recent years our views on prognosis in asthma have undergone revision in papers published both in England and in the United States. Asthma which has persisted for a number of years is likely to give rise to progressive emphysema with congestive heart failure. Severe and prolonged spasm, such as occurs in status asthmaticus, is a recognized cause of death in a significant proportion of patients.

In addition, there is a rare type of asthma in which sudden death is liable to occur. In this group it appears that the mortality rate is high, although it is not possible to quote figures which would indicate any sort of percentage. The patient may die quite suddenly in an ordinary attack of average severity. There is no suggestion of status asthmaticus and there are no changes which would indicate the presence of congestive heart failure.

The fatal attack begins in the ordinary way and, in the few cases in which death has been observed by the doctor, there seems to be a sudden failure of respiration. It appears that the pneumotoxic centre goes out of action abruptly, there are a few deep inspiratory gasps as the expiratory centre fails, and breathing ceases within one or two minutes.

Sudden death of this sort comes as a severe shock to the relations, and it is embarrassing to the physician who has issued a reassuring prognosis.

In 1955 he published an account of a series of nine cases in which sudden death occurred in the course of an attack of asthma. The only clinical feature which was common to all of these cases was that there was a profound emotional factor in each. The other common findings, such as allergy, upper respiratory disorders and bronchopulmonary disease were inconstant.

Another significant feature was absence of response to any of the usual methods of treatment. The asthma is not severe but it is persistent. In addition it was noted that at least two-thirds of these patients died at home.

The average asthmatic learns to take the attack in his stride, and it is a notable feature of most asthmatic patients that they learn to live with their disability; they allow it to interfere with their normal life to a minimal extent. The attitude of the patients in this group differs in two material respects. In the first place, the reaction of the patient was invariably depressive, and most of them expressed the fear that they would not recover. There was a repeatedly expressed feeling of apprehension in the intervals between attacks, and the actual attack was accompanied by a state of panic. This attitude to the illness is perhaps the most significant single feature which indicates that sudden death may occur.

Death occurs so suddenly that it is hardly ever possible to take any

emergency measures. Indeed, the doctor is not usually present at the event. It is suggested, however, that if facilities should be available, the most suitable method of treatment would be the immediate injection of 5 to 7 ml. of nikethamide into a vein.

The doctor should be cautious in discussing the outlook with the relations in this particular type of case.

Renal function and oral anti-diabetic drugs.—(*German Medical Monthly*, August, 1960).

Investigations by Hummer *et al* showed that renal function, and glomerular filtration rate in particular is of great importance in determining the response to oral treatment with sulphonylurea derivatives. It may be that the compounds are broken down by enzymes in the course of tubular reabsorption and lose their pharmacological effect. If this is true, it would explain why the filtration rate is so important, while the clearance and blood concentration of carbutamide are much less significant. It is possible that during reabsorption the drug undergoes changes which destroy its biological effect, leaving its molecule sufficiently intact for it to be included in the estimation of total carbutamide.

Repeated examinations of renal functions over many months were conducted on 100 diabetics, 43 of whom required insulin, 19 diet only, and 38 either carbutamide or tolbutamide. Carbutamide and insulin administration led to a similar degree of improvement in renal functions. Patients with a glomerular filtration rate of below 100 ml./min. responded well to oral antidiabetic medication; this may explain the failure of oral medication in juvenile diabetics, because these have a high glomerular filtration-rate.

In another series, carbutamide clearances were measured in 19 diabetic and 11 non-diabetic subjects with various levels of glomerular filtration. Here again, the response to oral medication was most marked in these patients (whether diabetic or not)

who had the lowest glomerular filtration rate. The blood level of carbutamide showed poor correlation with response; carbutamide clearance was correlated with positive or negative response only in diabetics. There was a highly significant correlation between the urinary excretion of glucose and carbutamide. Re-absorption, degree of acetylation, and diuresis apparently had no relationship to the likelihood of response.

It is concluded that the degree of glomerular elimination is important in determining the response to carbutamide administration but is not the only factor.

Peanuts and hæmophilia.—(*Med. Jour. Australia*, Editorial, 3-5-60).

Since the discovery of insulin the number of disease conditions known to be caused by a specific metabolic defect has steadily grown, and the concept that failure of one particular step in a complex chain of biochemical reactions may lead to serious illness is now reasonably familiar. It is easy to recall conditions in which avoidance of specific substances will help to prevent the accumulation of harmful products which the faulty organism fails to metabolize (e.g., galactosæmia, phenylketonuria), while in other metabolic diseases the patient can be kept in good health if the missing factor is supplied (e.g., insulin in diabetes). It is not so easy to think of conditions in which the ingestion of some extraneous substance can remedy a metabolic fault, but there is no good reason why this should not happen if the extraneous substance chances to contain some fraction which could help to alleviate the metabolic defect.

These reflections are prompted by a curious observation, recently published, which if confirmed may have important results. A zoologist working at Louisiana State University, H. B. Boudreaux, a sufferer from antihæmophilic factor hæmophilia, had taken a natural interest in his condition. Evidently thinking along the lines indicated, he had tried

ingesting in large daily quantities various foods (blood-pudding, liver, raw milk, eggs) which might be supposed likely to overcome the hypothetical metabolic block by furnishing substances in the antihæmophilic factor pathway, but without any noticeable effect on his condition. He had been able to lead a reasonably active life with the help of periodic transfusions of fresh blood or lyophilized plasma to tide him over hæmophilic episodes. However, three years ago, he noted sudden diminution in symptoms in a knee with an active hæmatoma, after eating a large handful of roasted peanuts. No other therapy was tried on this occasion. Since then he has taken peanuts in all available forms at the beginning of any bleeding episode, and in each instance the clinical symptoms were relieved in one or two days. Only once was a transfusion of lyophilized plasma necessary, when the bleeding source was in the pharynx and he could not swallow.

An account of his experiences is given in a letter to *Nature* by Boudreaux and V. L. Frompton. They report that the treatment has been tried on three other hæmophiliacs, in each case with conspicuous success. Attempts to isolate the active factor have shown that it does not reside in the oil, and is removed from peanut flour by extraction with 90% alcohol. Ingestion of peanut flour has no effect on capillary clotting time or on the clotting time of venous blood, and for this reason the authors postulate that the peanut factor may act by enhancing thrombocytic action without affecting fibrin production, or by some effect on capillary integrity. Boudreaux and Frompton are continuing their investigations, but state that they have published their observations to date in the hope of inducing "interest in medical research to help determine the general occurrence of this phenomenon." Earlier in their letter they mention that claims for the effectiveness of other supplements, such as vitamin B₁₂, oestrogens, etc. have been advanced but have not been substantiated. An elementary

trial would indicate whether this claim holds any better promise.

Unexplained heart failure in the aged.—(via *M.J.A.*, 20-8-1960).

G. A. Rose and R. R. Wilson (*Brit. Heart J.*) discuss a retrospective study of 50 consecutive necropsies on patients who died at an age of 70 years or over with heart failure for which no adequate cause had been found during life. The findings have been compared with those of a group of 50 patients matched for age and sex in whom, prior to death, no heart disease had been suspected. Auricular fibrillation was common in both groups and did not appear to be related to coronary artery disease. It was associated with dilatation of the heart. Of 18 men and 32 women with unexplained heart failure, three men and 15 women had no valvular disease, right ventricular hypertrophy, significant pulmonary disease, significant hypertension or notable cardiac hypertrophy. It is postulated that they may represent an entity of "senile heart failure." Brown atrophy was found in 20% of heart failure subjects and in 36% of the control series.

SURGERY

Steroid arthropathy of the hip.—(*British Medical Journal*, 1: 1379-1444, May 7, 1960, via *J.A.M.A.*, 27-8-1960).

Four patients, 3 with rheumatoid arthritis and 1 with pemphigus vulgaris, received continuous steroid therapy (cortisone, hydrocortisone, prednisolone, and prednisone, respectively) for periods of 3 months to 2½ years. In each patient the destruction of the femoral head, with consequent disorganization of the hip-joint was observed. The outstanding feature of this condition was the relative absence of pain. The hip disorganization was revealed in each patient by roentgenographic examination, and in each case the pattern differed from the bone changes which occur as a result of rheumatoid arthritis of osteoarthritis. The pace of destruction in these 2 conditions soon slows down,

and the destruction seems to be limited by reactive new bone. It is suggested that the *corticosteroids have a damaging effect upon joints*. Careful observation of patients on a long-term or a high-dose steroid treatment is necessary in order to detect and treat early a painless hidden destruction which may occur in arthritic or even in previously normal hips. The danger of this possible complication must be weighed against the benefit which the patient is likely to derive from the use of either oral or intra-articular administration of corticosteroids.

Cordotomy.—(*Boston Med. Quart.*, 10: 80, 1959, via *G.P.*, March, 1960).

Jackson has analysed the records of patients undergoing cordotomy between 1938 and 1958. The records of 58 patients were examined. Eighty-three per cent underwent cordotomy because of pain associated with neoplasms. By far the most common was carcinoma of the cervix with pelvic extension. The non-neoplastic causes of pain included: postinfluenzal painful contractures of the lower extremities, neuritis of the cauda equina, post-traumatic myelopathy, tabes dorsalis, sciatic neuralgia of unknown aetiology and other miscellaneous situations. Recent surgical trends have suggested that cordotomies are best performed in the cervical region usually at the level of C₂ or C₃.

The relief of pain was excellent in 21 patients, good in 23, fair in eight and poor in six. The best results were obtained in patients suffering from neoplastic invasion of the lumbosacral plexus. The complications of surgery included transient paresis, occurrence or aggravation of sphincter difficulties and hypotension severe enough to require vasopressor agents.

Subtotal colectomy with caecorectal anastomosis for multiple adenomas of the colo-rectum.—(*Qly. Bull. N. U. M.S. Chicago*, Summer, 1960).

The ideal operation must have two qualifications. First, reduction of the length of the colon so that the remaining bowel can be proctoscoped periodi-

cally in order to detect and fulgurate or excise any new polyps that may develop. Secondly, there should be the least possible disturbance of the colon's physiology.

The operation of choice is a subtotal colectomy with anastomosis of the caecum to the rectum. This operation fulfils both qualifications.

Subtotal colectomy with anastomosis of the caecum to the rectum was carried out by Rosi and Cahill of the N.W. Units Medical School, Chicago, upon 15 patients with multiple polyposis of the colo-rectum. This operation gives patients who have multiple benign adenomas of the colo-rectum the greatest protection against recurrence of polyps and the least number of undesirable side-effects.

Preservation of the water absorptive areas of the ileum and caecum and ascending colon, and the function of the ileocaecal valve, reduce the incidence of frequent and loose stools.

The 25 cm. segment of colon and rectum that remains is adequate to fulfil the storage function of the large bowel so that these patients have only one or two formed stools daily.

The anastomosis of the caecum to the rectum is carried out by mobilization and counter-clockwise rotation of the caecal pouch which is a continuation of the early embryological rotation of the bowel. The ileocaecal artery remains free, the terminal ileum untwisted, and the caecum in direct continuity with the rectum.

External splintage as a cause of movement in fractures.—(*Lancet*, 26-3-1960).

The failure of external splintage to prevent displacement is not uncommon. In a series of 50 forearm fractures Evans (1951) recorded some loss of position in 9. On occasion there can occur a ten-degree angulation or a completed diameter shift in the shaft of a long bone, a considerable pronation or supination twist in a forearm, or a twenty-degree tilt in the lower fragment of a Colles fracture. It therefore, seems probable that small movements can occur inside conventional splints, at least in the early

stages of treatment, and that when they stop it is not by any virtue of the splint. The prevention of these movements has an important influence on union and on the final function of the limb.

It is not intended to imply that all fractures treated in long plasters are inevitably and continuously subjected to movement. First, almost all plasters at sometime become loose or soft, or break, or they are applied for only a short distance beyond the adjacent joint. When the external splintage fails to limit the movement of the joint above or the joint below, movement at the fracture site due to muscle action does not occur. Thus, paradoxically, plasters that are too short, too loose, or otherwise badly applied (by present criteria) may result in less imposed movement at the fracture site than those that are "correct." In addition, if the patient does not contract his muscles there will be no forces to be returned. Thus by avoiding exercises both voluntarily and reflexly, and by obeying the dictates of pain to let the limb lie completely still, the patient himself may succeed in avoiding movement at the fracture site. It is probably in these indirect ways that present treatment succeeds—when it does succeed—rather than by any direct splintage effect.

External splintage is effective only in so far as it prevents gross movement at a fracture site. It is very ineffective at preventing small movements. Whole-diameter shift, 20° of rotation, or 5–10° of angulation, can certainly occur inside a conventional plaster cast; and evidence suggests that such movements do occur.

External splintage *plus* muscle contraction tend to cause movement at a fracture site. Many of the rules of splintage (*e.g.*, having the plaster full-length and well-fitting, and extending it beyond the joint above and the joint below) increase the likelihood of this movement. Muscle "exercises" are the motive power of the movement.

First-aid treatment of minor burns.—(*B.M.J.*, 13-8-1960).

A domestic remedy for the first-aid

treatment of minor burns which consists in the *use of albumen*, or commonly known as the *white of eggs*, has been in use by housewives abroad. It is less known here, and hardly ever referred to during first-aid training or lecturing. The origin of this treatment is obscure and it may date from antiquity.

The treatment consists in *breaking an egg and placing its contents into a clean saucer*. The albumen is applied with the fingers to the burned or scalded part. It dries very quickly and forms a thin, elastic, and airtight covering. There is an immediate and lasting analgesic effect, which may be due to the total exclusion of air, without the use of any other external dressing materials. There is also a reduction of the oedema, which is probably due to the chemistry of the albumen. This biological dressing also prevents any further external contamination with pathogenic micro-organisms.

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and the destruction seems to be limited by reactive new bone. It is suggested that the *corticosteroids* have a *damaging effect upon joints*. Careful observation of patients on a long-term or a high-dose steroid treatment is necessary in order to detect and treat early a painless hidden destruction which may occur in arthritic or even in previously normal hips. The danger of this possible complication must be weighed against the benefit which the patient is likely to derive from the use of either oral or intra-articular administration of corticosteroids.

Cordotomy.—(*Boston Med. Quart.*, 10: 80, 1959, via *G.P.*, March, 1960).

Jackson has analysed the records of patients undergoing cordotomy between 1938 and 1958. The records of 58 patients were examined. Eighty-three per cent underwent cordotomy because of pain associated with neoplasms. By far the most common was carcinoma of the cervix with pelvic extension. The non-neoplastic causes of pain included: postinfluenzal painful contractures of the lower extremities, neuritis of the cauda equina, post-traumatic myelopathy, tabes dorsalis, sciatic neuralgia of unknown aetiology and other miscellaneous situations. Recent surgical trends have suggested that cordotomies are best performed in the cervical region usually at the level of C₂ or C₃.

The relief of pain was excellent in 21 patients, good in 23, fair in eight and poor in six. The best results were obtained in patients suffering from neoplastic invasion of the lumbosacral plexus. The complications of surgery included transient paresis, occurrence or aggravation of sphincter difficulties and hypotension severe enough to require vasopressor agents.

Subtotal colectomy with caecorectal anastomosis for multiple adenomas of the colo-rectum.—(*Qly. Bull. N. U. M.S. Chicago*, Summer, 1960).

The ideal operation must have two qualifications. First, reduction of the length of the colon so that the remaining bowel can be proctoscoped periodi-

cally in order to detect and fulgurate or excise any new polyps that may develop. Secondly, there should be the least possible disturbance of the colon's physiology.

The operation of choice is a subtotal colectomy with anastomosis of the caecum to the rectum. This operation fulfils both qualifications.

Subtotal colectomy with anastomosis of the caecum to the rectum was carried out by Rosi and Cahill of the N.W. Units Medical School, Chicago, upon 15 patients with multiple polyposis of the colo-rectum. This operation gives patients who have multiple benign adenomas of the colo-rectum the greatest protection against recurrence of polyps and the least number of undesirable side-effects.

Preservation of the water absorptive areas of the ileum and caecum and ascending colon, and the function of the ileocaecal valve, reduce the incidence of frequent and loose stools.

The 25 cm. segment of colon and rectum that remains is adequate to fulfil the storage function of the large bowel so that these patients have only one or two formed stools daily.

The anastomosis of the caecum to the rectum is carried out by mobilization and counter-clockwise rotation of the caecal pouch which is a continuation of the early embryological rotation of the bowel. The ileocaecal artery remains free, the terminal ileum untwisted, and the caecum in direct continuity with the rectum.

External splintage as a cause of movement in fractures.—(*Lancet*, 26-3-1960).

The failure of external splintage to prevent displacement is not uncommon. In a series of 50 forearm fractures Evans (1951) recorded some loss of position in 9. On occasion there can occur a ten-degree angulation or a completed diameter shift in the shaft of a long bone, a considerable pronation or supination twist in a forearm, or a twenty-degree tilt in the lower fragment of a Colles fracture. It therefore, seems probable that small movements can occur inside conventional splints, at least in the early

stages of treatment, and that when they stop it is not by any virtue of the splint. The prevention of these movements has an important influence on union and on the final function of the limb.

It is not intended to imply that all fractures treated in long plasters are inevitably and continuously subjected to movement. First, almost all plasters at sometime become loose or soft, or break, or they are applied for only a short distance beyond the adjacent joint. When the external splintage fails to limit the movement of the joint above or the joint below, movement at the fracture site due to muscle action does *not* occur. Thus, paradoxically, plasters that are too short, too loose, or otherwise badly applied (by present criteria) may result in less imposed movement at the fracture site than those that are "correct." In addition, if the patient does not contract his muscles there will be no forces to be returned. Thus by avoiding exercises both voluntarily and reflexly, and by obeying the dictates of pain to let the limb lie completely still, the patient himself may succeed in avoiding movement at the fracture site. It is probably in these indirect ways that present treatment succeeds—when it does succeed—rather than by any direct splintage effect.

External splintage is effective only in so far as it prevents gross movement at a fracture site. It is very ineffective at preventing small movements. Whole-diameter shift, 20° of rotation, or 5-10° of angulation, can certainly occur inside a conventional plaster cast; and evidence suggests that such movements do occur.

External splintage *plus* muscle contraction tend to cause movement at a fracture site. Many of the rules of splintage (*e.g.*, having the plaster full-length and well-fitting, and extending it beyond the joint above and the joint below) increase the likelihood of this movement. Muscle "exercises" are the motive power of the movement.

First-aid treatment of minor burns.—(*B.M.J.*, 13-8-1960).

A domestic remedy for the first-aid

treatment of minor burns which consists in the *use of albumen*, or commonly known as the *white of eggs*, has been in use by housewives abroad. It is less known here, and hardly ever referred to during first-aid training or lecturing. The origin of this treatment is obscure and it may date from antiquity.

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Dr. Willington suggested that the milk in which the burned or scalded hands or feet have been immersed can

be used afterwards. It is hardly conceivable that any housewife would be prepared to offer it as a food to anyone. Therefore it would have to be discarded, which would make the treatment not so inexpensive. Milk is more likely to be contaminated, in spite of all the precautions taken during the process of milking and bottling, whereas the egg-contents are totally excluded from any contact with the outside, therefore it is more likely to be sterile. Personal experience of this treatment in several cases confirms these points.

OBSTETRICS & GYNÆCOLOGY

Abnormal lactation.—(*J. Mt. Sinai Hosp.*, 27:5, 1960, via *G.P.*, August, 1960).

Somlyo and Waye have recently reviewed the subject of abnormal lactation. Their interest was aroused by a case of 17-year-old nulliparous coloured female being treated for hypertension secondary to glomerulonephritis, and asthma. This patient had received, among other medications, *Reserpine*. During this time she complained of tender enlargement of both breasts and intermittent milky discharge from the nipples. Observation in the hospital demonstrated a satisfactory correlation between the administration of reserpine and the lactation.

The literature records lactation following *Chlorpromazine* as well as *Reserpine*. It seems probable that both drugs act primarily on hypothalamic centres which influence pituitary secretion. In the author's case elevated urinary FSH levels were observed during reserpine-induced lactation. Similar findings have been reported in the chlorpromazine lactators. The article also lists a number of miscellaneous causes of abnormal lactation including herpes zoster of the chest, thoracotomy and schizophrenia. In modern practice, drug-produced lactation is prominent among the list of causes. Reserpine and chlorpromazine or related drugs are the most frequent offenders.

Chlorothiazide for pre-eclamptic toxæmia and essential hypertension in pregnancy.—(*Scot. Med. J.*, March 1960, via *Med. Jour. Australia*, 30-7-1960).

R.A. Tennent and D. W. Leslie report the results of treatment of 40 patients with pre-eclamptic toxæmia and 14 patients with essential hypertension in pregnancy by chlorothiazide. Patients near or beyond the thirty-eighth week of pregnancy were not included, as the authors favour induction in such cases. The cases of pre-eclamptic toxæmia were selected from 588 toxæmic patients admitted to hospital who had failed to respond to bed rest, sedation and dietetic treatment for 48 to 72 hours. The dosage of chlorothiazide was one gramme twice daily for four days, with a three-day rest period between courses. The drug was found to be singularly free of unpleasant side effects. Potassium deficiency occurred in only one case, and this was not evident clinically. Twelve of the cases of toxæmia were moderate and 28 were severe (blood pressure above 160/100 mm. of mercury). Results of treatment were assessed on water excretion as judged by weight loss, and on the effect on the course of the disease. Weight loss occurred in 38 patients, varying from 2 oz. to 11 lb. 4 oz. in one course. One of the two patients in whom the drug was ineffective developed eclampsia. (Oedema and headaches, when present, disappeared and the blood pressure tended to fall when weight loss occurred. The average decrease in blood pressure was 30 mm. of mercury systolic and 27 mm. diastolic. The effect on albuminuria was variable. The authors consider that an important object in the management of toxæmia of pregnancy is to postpone the need for delivery until the foetus is judged to have the maximum chance of survival. Chlorothiazide treatment allowed pregnancy to continue for a further two to four weeks in 13 cases, four to six weeks in two cases, and six to nine weeks in two cases. In these 17 cases two infants were stillborn and one died from oesophageal atresia. Apart from allowing the pregnancy

to continue chlorothiazide was not thought to exert any influence on placental function. Eight of the 40 patients with pre-eclamptic toxæmia were delivered by cesarean section—four for fulminating toxæmia, two for a small baby failing to grow and two for foetal distress in labour. Chlorothiazide was found to be valuable in the treatment of the 14 patients with essential hypertension, five of whom had simultaneous treatment with hypotensive drugs such as hexamethonine bromide and mecamlamine hydrochloride. No serious complications occurred with this drug. The authors suggest that a careful selection should be made before its use. Nine out of ten pre-eclamptic patients admitted to hospital require no treatment beyond rest, sedation and dietetic measures. Patients under chlorothiazide treatment should be kept under close observation for evidence of a reduced rate of growth of the foetus despite reduction of oedema and blood pressure. Chlorothiazide is the most effective agent the authors have used for controlling the maternal symptoms in pre-eclamptic toxæmia.

The clinical uses of some new progestational compounds.—(*Proceedings of the Royal Society of Medicine*, June, 1960).

In obstetrics and gynaecology the suggested indications for progesterone therapy include arrest of endometrial bleeding, conversion of the endometrium to a secretory phase in persistent proliferative states or in amenorrhœa, premenstrual tension, dysmenorrhœa, threatened or habitual abortion. To accomplish successful results in these conditions several possible modes of action can be postulated. *Firstly*, the compound may act directly upon the endometrium affecting the bleeding mechanism or the cytological structure, and these two aspects are not interdependent because bleeding may be associated with any histological state of the endometrium whether normal or abnormal, whether proliferative or secretory. *Secondly*, there may be a direct action upon

the pituitary with inhibition of gonadotrophic secretion. *Thirdly*, there may be a direct action upon the ovary, and *lastly*, there may be more remote systemic actions affecting the symptoms of such conditions as premenstrual tension in which the underlying aetiological factors have not yet been determined.

The new progestational compounds can certainly arrest endometrial bleeding by inducing a "medical curettage," but this method seems to have no particular advantage over that in which oestrogens alone are used.

In amenorrhœa progestational compounds may produce secretory changes in an oestrogen-primed endometrium, but this response is not constant and is presumably dependent upon the dosage and the sensitivity of the target organ. However, there seems no advantage in establishing cyclical secretory changes in such cases without evidence that ovarian function is influenced to the extent of inducing a return to normal ovulatory cycles. The conversion of a proliferative to a secretory endometrium in cystic glandular hyperplasia is of limited and temporary value because there is no conclusive evidence that cyclical therapy with progestational agents will lead to ovulatory menstrual cycles.

Dysmenorrhœa is associated with the same difficulties as premenstrual tension in assessing the results of treatment. The totally unphysiological procedure of suppressing ovulation by these or other drugs is hardly a justifiable means of dealing with this or any other gynaecological condition.

It will be difficult to establish that these compounds play any part in preventing abortion. Animal experiments do not support this contention and masculinizing effects upon the female foetus suggest that more harm than good may sometimes result from their early and long continued use.

These agents are having an effect upon the endometrium; they also suppress ovarian function if given

during the menstrual cycle. What is not clear is their mode of action. Broadly speaking these compounds may be divided into two groups—those with, and those without, oestrogenic activity. To date, most research work has been concerned with the former group and it is impossible to assess to what extent their effect is due to the oestrogenic element, particularly in regard to pituitary suppression. Before recommending wide clinical use of these preparations their precise mode of action should be determined. In further research and clinical trials unnecessary confusion which arises from using preparations known to have oestrogenic activity, either through added oestrogen or oestrogen conversion, should be avoided and, in the first instance, only compounds without an oestrogenic element but of proven progestational activity should be used.

Clean voided urine specimens for culture from female patients.—(*Quarterly Bulletin, N.U.M.S.*).

The present study was undertaken to see whether the "clean-voided" technique was reliable enough to be entrusted to nurses as a routine procedure and, if so, what were its limitations. A simple quantitative culture method which we believe is practicable for routine hospital use was employed to aid in the evaluation.

After drinking a sufficient quantity of fluids to insure a forceful stream, the patient was placed on a bedpan and prepared as for catheterization, using liquid soap, Zephiran and dry sterile sponges. The patient was instructed to void forcibly, and a mid-stream specimen was caught in a sterile bottle.

Thirty-six clean-voided urine specimens, followed by catheterized specimens, and 14 clean-voided specimens, alone, were obtained from female hospital patients who were weakly or strongly suspected of having a urinary tract infection. Twenty-seven clean voided urine specimens were obtained from male hospital patients on the same basis.

From the results obtained, it is concluded that one can be satisfied with a clean-voided specimen count from a male if it is less than 10,000 per ml. since subsequent catheterization yielded a specimen of less than 10,000 count in every case. Another study revealed that other evidences of actual urinary infection seldom were present if the count was below this figure. If the count of the clean-voided specimen is over 10,000, it is safer to repeat the specimen or follow it up with a catheterized specimen, before drawing conclusions regarding the presence or absence of infection.

RADIOLOGY

Chest X-rays and chest X-ray surveys.—(*Am. Rev. Resp. Dis.*, 80: 115, 1959, via *G.P.*, March 1960).

Several specific recommendations have been made by the Committee on Radiation Effects of the American Trudeau Society. Tuberculosis, lung-cancer, nontuberculous pulmonary infections, intrathoracic tumours and cardiovascular abnormalities are conditions whose lasting cure often depends on early diagnosis of the unsuspected lesion by chest X-ray techniques.

Among infants, children, young adults and prenatal patients, the tuberculin test should be used as a preliminary screening technique whenever possible, and the tuberculin reactors should have roentgenographic examination of the lungs for the detection of tuberculosis. The non-reactors among these groups should be rechecked periodically by means of the tuberculin test. In children, a single routine chest roentgenogram may be justified for the identification of unsuspected congenital or developmental defects and nontuberculous disease and for comparison with any films taken later in life. Only those X-ray units that meet modern requirements for radiation protection should be used.

Three types of equipment are in general use for chest roentgenographic

survey purposes. Other factors being equal, the amount of radiation necessary for a satisfactory chest film is least with a standard 14 x 17-inches film in a cassette with intensifying screens. Compared with the standard 14x17-inches X-ray unit, there is approximately three to five times more radiation using the mirror optics photofluoroscopic unit, and about ten to 20 times the radiation exposure when using the standard lens camera photofluorographic machine. When the number of survey films taken per day is small, it is better to use standard 14 x 17 inches films. When the number of films taken per day is large or the machine must be moved frequently, as in the case of a mobile unit, a properly equipped photofluorographic unit is the most practical apparatus and its use is indicated in those segments of the population in which the yield of new cases is significant. Whenever the purchase of a new photofluorographic unit is contemplated, the mirror optical system camera is to be preferred over the ordinary lens system.

Screening of groups by fluoroscopy should be strongly discouraged for several reasons: The results are not accurate for diagnostic purposes; there is no permanent film record of the examination, and the radiation exposure involved both for the subject and the examiner is excessive. However, special fluoroscopic examination may be indicated for special diagnostic purposes and for the determination of the dynamics of the chest.

Management of Hodgkin's disease.—(*Am. J. Roentgen. and Rad. Therap.*, 82: 651, 1959, via *G.P.*, March 1960).

Cook and his associates analysed the effects of the combined use of nitrogen mustard and roentgen therapy in both long-term results and the production of palliation and remissions in 212 patients with Hodgkin's disease. Patients in whom nitrogen mustard was used were those with involvement of more than one lymph node and with other evidences of generalized disease. There was a 37.2

per cent survival in patients treated with roentgen therapy alone, and a 39.2 per cent survival in those treated by the combined method. The fact that an almost equal absolute five-year survival was observed in each group is interpreted as indicating an advantage of the combined method, since this was used only in cases of generalized involvement. The increased three-year survival rates, the longer average monthly survivals of deceased patients and the lower first-year mortality rate are additional observations in support of the more beneficial value of the combined method as compared to roentgen therapy alone.

Of further interest is a group of 32 cases in which combined roentgen therapy and nitrogen mustard were used when reactivation or generalization of the disease occurred after previous roentgen therapy. Further significant remission was produced in this group. This fact is additional proof of a more favourable prognosis with combined therapy.

The use of contrast media in the acute abdomen.—(*Proc. Royal Soc. Med.*, June, 1960).

The ward barium meal is used routinely in the investigation of hæmatemesis and melæna at the Leeds General Infirmary (Cantwell, 1960, *Clin. Radiol.*, 11: 60) and a review of 200 cases shows that it is possible to make a correct diagnosis in 80% by this method. Two films are exposed in the ward without use of screening facilities and with minimal disturbance of the patient, and by using 5 oz. of barium suspension followed by a mouthful of barium paste, the œsophagus, stomach and duodenum are demonstrated.

A variety of lesions have been shown successfully but the diagnosis of carcinoma of the stomach was unsatisfactory and the diagnosis of an acute peptic ulcer could only be made by exclusion of other conditions.

Intravenous pyelography is used as a regular, immediate procedure in patients with renal colic and the results will be reported fully

elsewhere. Intravenous pyelography gives significant findings in 95% of patients with calculous renal colic. 25% of stones causing colic are non-opaque and the "acute intravenous pyelogram," is the only method by which their presence can be demonstrated radiologically.

The examination is carried out without prior preparation at any time of the day, and the inconvenience to the department of this emergency work (100 cases a year) is more than repaid by the saving of subsequent negative "cold" intravenous pyelograms. The method, which has proved of great value in the clinical management of the patient with this condition, has indicated that complete suppression of function of the affected kidney seldom occurs, but films over a period of several hours may be required to show that the kidney is slowly excreting, and to demonstrate the site of obstruction.

OPHTHALMOLOGY

Recent experiences with light coagulation.—(*J.A.M.A.*, 27-8-1960).

Weisinger *et al.* report on their experiences with light coagulation over the past 2 years. They have found retinal tears, with or without early retinal detachment, to be the most important and favourable indication. Thirty-four out of 36 cases treated were cured. Small hæmangiomas of the retina also showed excellent response; all of 5 eyes with this condition responded favourably to treatment. Large angiomas involving more than one fourth of the retina are less favourable; of 2 cases, one showed equivocal improvement, the other developed serious complications. Prophylactic treatment of peripheral retinal degeneration is a controversial issue, but if one favours such, light coagulation offers the least traumatic approach. The external applicator, using a convergent beam of light, can be employed successfully in the treatment of xanthelasmas. In the formation of pupils, however, only moderate

success was obtained by the authors. Preliminary data on exposure times for the production of retinal burns were presented. These indicate the expected dependence of fundus pigmentation.

Complications from present day contact lenses.—(*J.A.M.A.*, 27-8-1960).

This study reports *acute complications that have occurred from misuse and over use of corneal contact lenses*. It is based on the treatment of 14 patients and a review of the literature. Complications encountered were superficial punctate keratitis, confluent superficial erosion, full thickness epithelial abrasion, micro-organismal infection of an abrasion with hypopyon, corneal oedema, perforation of an ulcer, and endophthalmitis. Complications resulted from building wearing time too rapidly, wearing lenses too long or irregularly or while asleep, and fitting with improper lenses. Pathogenesis was due to the lens touching the corneal apex, strangulation of the cornea, foreign material lodging under the lens, micro-organisms infecting an abrasion, and inserting or removing lenses roughly. Complications could have been prevented through close association of patient and technician with an ophthalmologist who would serve as captain of the team and be responsible for supervising, fitting and following the patient.

Diabetic retinopathy.—(*A.M.A. Arch. Ophth.*, 62: 859, via *G.P.*, August 1960).

Ranke has examined the possible relationships of diabetic retinopathy and the pituitary gland. He reviews the pituitary factors which possess a diabetogenic action including adrenal corticotrophic hormone and hydrocortisone and its derivatives. The evidence that these substances can produce diabetic retinopathy in humans is not convincing. However, in dogs the administration of cortisone and anterior pituitary extract have produced Kimmelstiel-Wilson nodular lesions in the kidneys, as well

as diabetes. This is of interest since the Kimmelstiel-Wilson nodules in the kidney closely resemble the retinal microaneurysms characteristic of diabetes.

In the present study, 66 patients having pituitary tumours including 30 with coexisting diabetes mellitus, were examined for diabetic retinopathy. By comparing this group with another group of diabetic patients without pituitary tumour, the incidence of diabetic retinopathy was found to be strikingly reduced in those cases where diabetes and pituitary tumour coexisted. It seemed unlikely, therefore, that the pituitary directly contributes to the development of diabetic retinopathy. It should be noted that the majority of the pituitary tumours studied were eosinophilic adenomas although chromophobic and basophilic adenomas were also included.

The results of hypophysectomy and adrenalectomy in diabetes mellitus have been quite variable and lend support to the author's contention that the removal or ablation of the pituitary gland to ameliorate diabetes mellitus or its retinopathy does not rest upon firm grounds.

DERMATOLOGY

Psoriasis and arthritis.—(*A.M.A. Arch. Derm.*, April, 1960, via *M.J.A.*, 9-9-1960).

W. Reed and S. W. Becker discuss the nature of the arthritis associated with psoriasis and report the results of a clinical and laboratory study conducted on 40 patients with combined psoriasis and arthritis. Although this arthritis may resemble rheumatoid arthritis when the larger joints are involved, psoriasis arthritis is a distinct clinical entity, particularly when the terminal interphalangeal joints are involved. The predominance of cases in men, the absence of rheumatoid nodules, the asymmetrical joint involvement and the massive bone destruction distinguish it from classical rheumatoid arthritis.

There appeared to be a close association between the severity of the arthritis and that of the cutaneous manifestation in this series, and there was a high incidence of pustular psoriasis and psoriatic erythroderma. Treatment of this arthritis is for the most part ineffectual. Corticosteroids relieve the symptoms of the arthritis, but seem to have little effect on the psoriasis. Antimalarial drugs used for the arthritis may cause exfoliation and the authors strongly condemn their use in psoriatic arthritis. Laboratory studies revealed important differences between rheumatoid and psoriatic arthritis. The latex fixation test and other agglutination tests failed to demonstrate the rheumatoid factor in patients with psoriatic arthritis.

PÆDIATRICS

Acute pyogenic infections of the spine in children.—(*M. J. Austr.*, 10-9-1960).

A. E. Pritchard and W. A. L. Thompson (*J. Bone Jt. Surg.*, February, 1960) state that the early diagnosis of acute pyogenic osteomyelitis of the spine is often difficult and review the cases of six children with this condition. In the early stages of the disease localizing physical signs may be absent and radiographs may show no obvious abnormality. The onset is acute with high temperature and toxæmia. Backache is complained of but is poorly localized; depending on the level of the lesion, the pain may radiate into the chest or abdomen or occasionally into one of the limbs. The spinal muscles are in spasm and there may be a scoliosis. There may be a flexion contracture of the hip joint due to irritation of the psoas. There is tenderness in the erector spinæ muscles and pain on percussion of the vertebræ involved and those adjacent to them. If there is an abscess the pus usually spreads anteriorly and laterally. If the infection is in the thoraco-lumbar region the lateral spread of pus may suggest a subphrenic or perinephric abscess, whereas a lower thoracic focus may produce a pleural effusion. Radiographic

examination may show elevation of one or both sides of the diaphragm and perhaps an abscess shadow suggestive of subphrenic pus. The spine is radiologically normal at first, but after about three weeks, or earlier in very young children, areas of destruction appear on the contiguous margins of the involved vertebrae, together with patchy osteoporosis of their bodies. The crescentic vertebral erosions appear rather behind the mid-

line of the bodies. Later, the intervertebral space narrows, and finally, in the healing phase, there is dense sclerosis of the adjacent margins of the vertebrae. The site of the vertebral erosions corresponds to the position of the nucleus pulposus in the intervertebral disc. Their position raises the question of whether the inflammatory changes start in the nucleus and spread thence, causing necrosis of the vertebrae by pressure.

PREPARATIONS AND INVENTIONS

Dispeptal—Manufactured by Boehringer-Knoll Private Ltd., United India Building, P. Mehta Road, Bombay-1.

It is stated to contain standardized and stabilized pancreatic and vegetable enzymes with bile constituents. The special process employed in the manufacture of DISPEPTAL Dragees is claimed to ensure full protection against fall-off in efficacy and achieve a high-potency enzymatic action in the stomach and intestines, and the addition of bile constituents to bring about an enhanced fat emulsification and absorption of fat-soluble vitamins.

DISPEPTAL therefore, is an enzyme preparation well-suited for the treatment of all types of digestive disorders (whether flatulent or putrefactive) and enzymatic dysfunction associated with indigestion.

The dosage is 1 to 2 dragees with meals; they are available in bottles of 30 and 100 dragees.

New, Oral Anti-polio Vaccine—The United States Public Health Service has just announced the selection of the Sabin-type oral polio-vaccine as the type approved for use in the United States. This polio-vaccine is now being produced by Pfizer Ltd., England, among other manufacturers. Production of the live virus vaccine has been under way for several months at a new Pfizer plant in Kent, England.

The oral polio vaccine developed by Dr. Sabin has been studied for several years in various countries and is reported to have been taken by 80 million people throughout the world.

Oral Mephentine Sulphate—Manufactured by John Wyeth & Brother Limited, Bombay-1.

ORAL MEPHENTINE SULPHATE is an effective pressor substance having also the property of producing mild central nervous system stimulation, useful in the management of mild psychogenic depressive states, each tablet containing 10 mg. Mephentine sulphate; and each (5 cc.) teaspoonful of the elixir containing 12.5 mg. of the substance.

It is said to be indicated in depressive states like chronic fatigue associated with disease states, menopause, premenstrual tension, pregnancy, old age and persistent pain; also in the control of relative hypotension occurring during the course of many disease syndromes. The effective dosage varies in the different conditions from 10 to 25 mg. once or twice daily.

Available as tablets in bottles of 20 or as elixir in bottles of 50 cc.

Trisulfose (Wyeth). Tablets (Triple Sulphonamide)—Manufactured by John Wyeth & Brother Limited, Bombay-1.

TRISULFOSE combines three safe sulphonamides, and is claimed to pro-

duce high, prolonged blood-levels with better tissue distribution; also to be more soluble in acid urine than single sulphonamides, and to have greater safety and less possibility of renal damage and crystalluria; the risk of sensitization is also minimized. Each tablet is stated to contain: Sulphadiazine (B.P.) 0.167 g., Sulphamerazine (B.P.) 0.167 g., and Sulphadimidine (B.P.) 0.167 g.

It is indicated in pneumonia, meningitis, upper respiratory tract infections, bacillary dysentery, cystitis, pyelitis, pyelonephritis, gonorrhoea and other infections caused by sul-

phonamide-susceptible organisms; also used for prophylaxis of secondary infections in obstetrics, whooping cough, gas-gangrene, measles and tonsillectomies.

The dose for adults is 6 to 8 tablets initially, followed by 2 tablets every six hours; and for children 2 tablets initially, followed by $\frac{1}{2}$ to 1 tablet every six hours, to be continued until temperature has been normal for at least 72 hours, observing usual precautions.

Available in bottles of 20 and 500 tablets.

REVIEWS OF BOOKS

Demonstrations of Physical Signs in Clinical Surgery—By HAMILTON BAILEY, F.R.C.S., 1960, 13th edition, John Wright & Sons, Ltd., Bristol. Price 75 sh.

There is a strong tendency among medical men today to rely more and more on laboratories and X-rays and less and less on their clinical diagnostic knowledge. This is to be strongly deprecated. "The proper exercise of the five senses is often far more valuable in diagnosis than a handful of laboratory reports and radiographs" (LeNorrlin). Hamilton Bailey's physical signs in clinical surgery brings home the fact that most of the diseases can be diagnosed at the bedside of the patient by careful clinical history, signs and symptoms.

The book under review is the thirteenth edition (one hundred and seventy-seventh thousand), the book having grown in popularity and size from year to year since the first edition was published in 1927. The popularity of the book is evident not only from the number of editions issued, but also from the number of

languages into which it has been translated: English, German, Turkish, Spanish, Bulgarian and Yugoslav. As science advances the size of the book also increases; the present volume contains 928 pages of matter with a greater number of figures, 1084; of a large number in colour of these are realistic and very impressive.

The book is divided into 39 chapters the first six which are dealing with general considerations and the rest with different parts of the body beginning with the face and jaw. Glancing through the acknowledgements, one gets the impression that the author has taken immense trouble and labour in collecting the matter and figures from surgeons and surgical literature the world over. The printing and the get up of the book are as usual, of a very high order.

The book is useful not only to the student who enters the surgical wards for the first time but also to the most experienced surgeon as a ready reference. In conclusion there is all praise for the book and it is one which every medical practitioner must own. U.S.R.

CORRESPONDENCE

A Simple Home Remedy for
Nasal Catarrh

To the Editor, THE ANTISEPTIC, Madras
Dear Sir,

The following note may be published for the benefit of your readers:

Take a sterilized deep blue bottle, and pour two ounces of distilled water into it. Add about twenty grains of clean table salt to it, tightly stopped it and expose it to strong sunlight for a week or more. Then instil these drops into the affected nostril three or four times a day. Do

not spit out the water that goes into the throat. This has been found useful in simple eye affections as drops for use.

The plain distilled water exposed to strong sunlight, sometimes called 'blue water' is said to be an anodyne and antiseptic. The longer the water is exposed to sunlight the more effective it is. It acts better when this saline water is warmed by sunlight and then applied.

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J. J. JOSEPH.

NEWS AND NOTES

Red Cross Work in Madras

Sri Dr. A. Lakshmanaswami Mudaliar, President of the Madras State Branch of the Indian Red Cross Society, told the annual general meeting of the organization at the Rajaji Hall on November 7th 1960 that it should take note of the needs of the handicapped and the less fortunate children and women. Red Cross work "knows no limits, no time or place and no person." The impression that Red Cross was meant for the army and the battlefield was entirely erroneous, as it was doing a considerable amount of useful work during times of fires, flood and famine.

Commending the lines on which the organization was carrying on its activities, Dr. Mudaliar said the lack of funds was retarding rapid progress. He appealed to members to make contributions to the organization.

We heartily endorse this appeal.

The Secretary's annual report and the accounts for 1959, were adopted.

The nomination of the following office-bearers for 1960 was also announced:—Sri Dr. U. Krishna Rau, M.L.A., Vice-President and Chairman; Mr. S. Anantharamakrishnan, Vice-President; Mr. C. Amritaganesan, Secretary; Mrs. V. Hanumantha Rao and Mr. T. P. Santhanakrishna Naidu, Joint Secretaries; and Major G. V. Pai, Treasurer.

Rashtrapathi Rajendra Prasad, the President of the Indian Red Cross Society appreciated the efforts of Mr. C. A. Dhairyam in organizing the Red Cross Centenary Exhibition in Madras in 1959 in a special communication. The exhibition had resulted in providing the Red Cross organization a sum of nearly Rs. 3 lakhs for carrying on its humanitarian activities.

Madras Medical Council

The Madras Medical Register—1960

The Madras Medical Register for 1960 is under preparation. Registered medical practitioners under the Madras Medical Registration Act, 1914 are requested to intimate if any changes in their registered addresses to make necessary corrections in the Register. They are also requested to intimate the full names, register numbers and addresses of any practitioners appearing in the Register for 1959 who, to their personal knowledge are dead.

111, Mount Road, } REGISTRAR,
Madras-6. } Madras Medical Council.
2-11-60.

The Eighth Madras State Ophthalmic
Conference, Vellore, 1960

The Eighth Madras State Ophthalmic Conference will be held on the 16th and 17th December 1960, at Vellore. Bharat Ratna Dr. Sir C. V. Raman will inaugurate the Conference.

Dr. Y. K. C. Pandit of Bombay, Secretary General of the XIX International Congress of Ophthalmology, New Delhi (1962) will preside over the Conference.

Dr. M. S. Mehkri, President, All India Ophthalmological Society will initiate the Scientific Session.

T. M. KUMARASWAMI,
Convener.

Multipurpose Food Factory
At Coimbatore

The first factory in the country for large-scale production of multipurpose food was commissioned on 3-11-1960.

The factory, sponsored by the Central Food Technological Research Institute, Mysore, has a capacity to produce three tons of food in eight hours. But the daily output for the present would be only half a ton. The factory would go into full production next month.

The Mysore Institute, after extensive research, evolved the multipurpose food. The process of manufacturing this nutritious multipurpose food in the factory consisted of mixing specially prepared low fat groundnut flour and Bengal-gram in the proportion of 3:1. For the present the factory would produce two types of food—spiced and non-spiced.

The major part of the production now would be taken by the Government of Madras for the midday meal programme for school children. The balance left over would be sent to hospitals and orphanages; the factory would be handed over to the private sector after six months' trial run.

Transplantation of Kidney

London surgeons have successfully transplanted a kidney from a father to his son.

The father Mr. Edward Kinsella, of London, volunteered to undergo the operation to save his 16-year-old son, Patrick. Both are reported to be progressing satisfactorily.

Employees' Insurance Act Extended

The benefit provisions of the Employees' State Insurance Act, 1948, have been extended to Cannanore, Tellicherry and Baliaapatam in Kerala State.

The scheme is already in force in 9 centres in the State and by its introduction in the above three areas, about 6,500 more factory workers will be benefited.

Medical care in these areas will be provided by the State Government under the Service System as well as under the Panel System. Three wholtime dispensaries, one each at Cannanore, Tellicherry and Baliaapatam, have been set up.

Additionally, one panel doctor has been appointed for the insured persons who live sparsely, distributed over a wide-area, far away from the dispensaries at Cannanore and Baliaapatam. Provisions has also been made for one mobile dispensary to cater to the needs of insured persons residing in the far-flung areas of Tellicherry.

Rural Medical Service in Madras

Sri M. A. Manickavelu, Health Minister advised medical students to visit centres like the Polambakkam Leprosy Centre near Madurantakam to know how foreigners were doing good work despite some inconveniences in the rural areas.

Presiding over Madras Medical College Day celebrations on 24-10-'60, the Minister said some Indian doctors were not willing to work in villages, though of late young medical men were becoming service-minded and desirous of working in the rural areas. He welcomed the change in their attitude.

He advised medical graduates to maintain the high standard for which the members of the profession in Madras were known outside. Though the pay scales for them had recently been improved to some extent still they might feel they were not what they wanted them to be. But the Government had to proceed step by

step, and even the recent enhancement would entail an expenditure of about Rs. 7 crores per annum.

He was glad that the college which had a high tradition dating back to 125 years, maintained it both in sports and studies and that the students were taking interest in social service in nearby villages.

Manufacture of Drugs Corporation to be set up

In Poona on 4-11-'60 Sri Lal Bahadur Shastri, Union Minister for Commerce and Industry, said that a drugs corporation would soon be established to co-ordinate and give guidance to technicians and labour in connection with the drugs projects coming up in the country. Four projects in Rishikesh (U.P.), Guindy (Madras), Hyderabad and Kerala, besides the Pimpri penicillin factory were being set up in the public sector.

Mr. Shastri declared open the new hostel building of the penicillin factory constructed at a cost of about Rs. 2 lakhs for housing 40 trainees at a time. He made it clear that the proposed Drugs Corporation would assure autonomy to the managing directors to run these projects and there would be no interference in their day-to-day administration. On the other hand, the corporation would facilitate their work by proper co-ordination of the activities of these big projects.

The projects under the public sector are developing fast in the country. The penicillin factory in Pimpri was making good progress and the expenditure on development plans were being met out of its own resources. He said that there should be no unhealthy rivalry between the public and the private sectors, as both were essential for the country's progress. At times sponsors of private sectors criticised public sector enterprises as inefficient and costly. The charge was not justified because the workers in the public sector had to be properly trained. Social, and welfare activities had to be undertaken, and housing too had to be provided.

A large plant for the manufacture of Streptomycin and Dihydrostreptomycin at an estimated cost of Rs. 2 crores would be completed by 1961. A plant would also be set up for the manufacture of 50 tons of vitamin "C" per year at a cost of Rs. 60 lakhs within the next two years. All these new plants would be erected out of the financial resources of the company.

Anti-Malaria Campaign Fresh U.S. Grant to India

The United States Government has given a further grant of 10,377,000 dollars (Rs. 4.9 crores) to India's malaria eradication programme, bringing the total U.S. aid to the programme to Rs. 44.8 crores.

Under an agreement signed between the Governments of India and of the United States, the grant will be utilized for the purchase abroad of approximately 16,730 tons of DDT powder, pick-up trucks with spare parts, and drugs used in the treatment of malaria.

Since 1953, the United States has met most of the foreign exchange needs of the campaign against malaria in addition to dollar grants.

Indian Medicine Panel's Recommendations

The Panel on Ayurveda in the Planning Commission has recommended the setting up of a statutory Central Council of Indian Medicine to control and regulate the education in and practice of Indian systems of medicine.

The Panel has also made other suggestions like the raising of the status and privileges of the practitioners of these systems to the same level as that of doctors of modern medicine, the opening of research centres for post-graduate research in these systems and the preparation of text-books for study of Ayurveda. The Panel has recommended the writing of a standard pharmacopœia of Indian medicine, the creating of regional herb gardens, and the setting up of drug farms.

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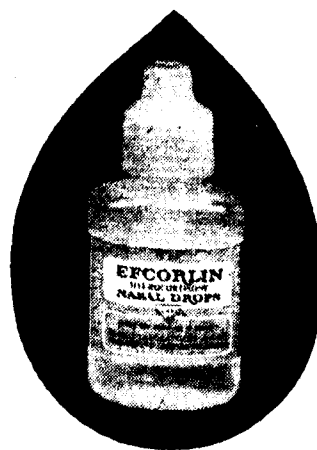
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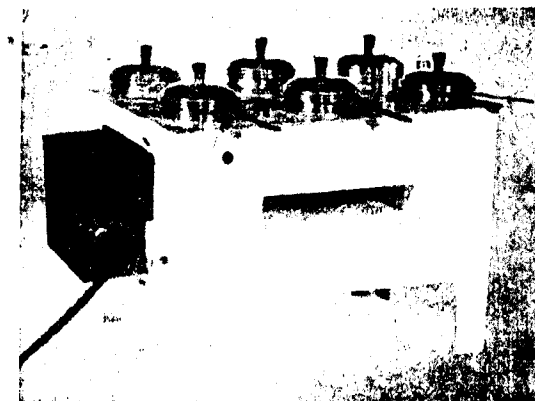
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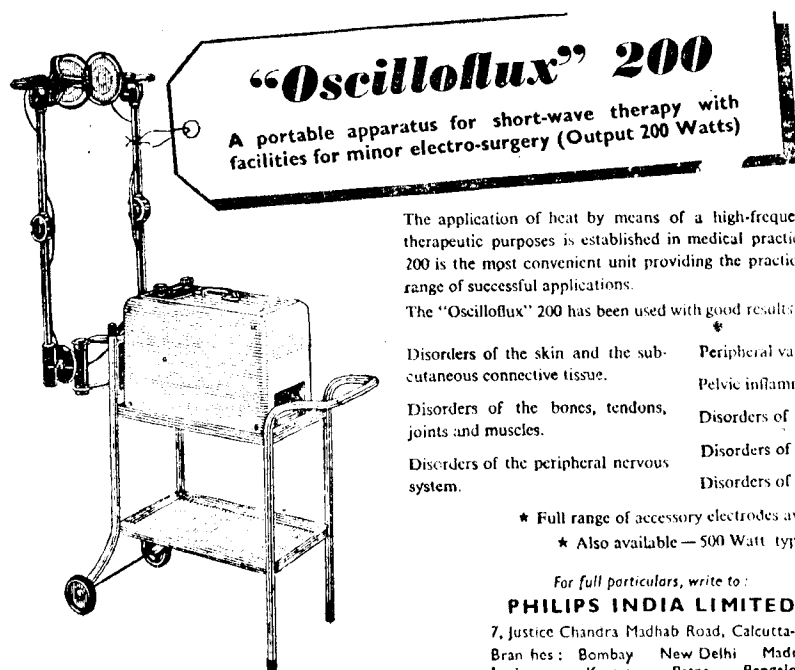
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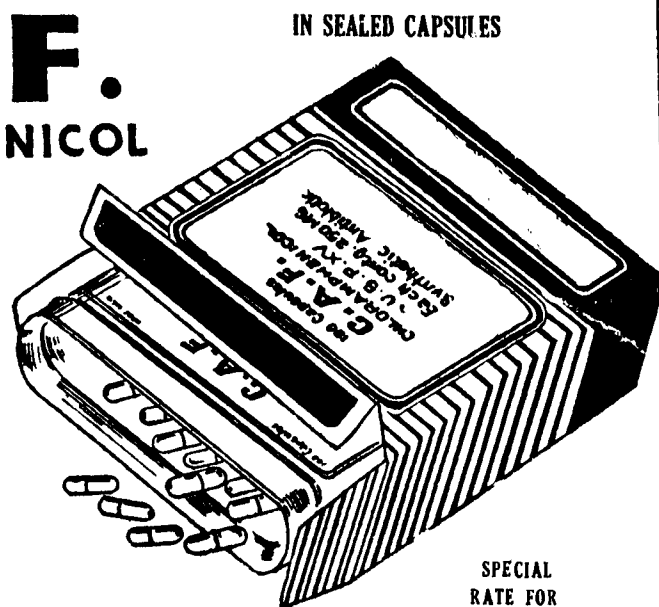
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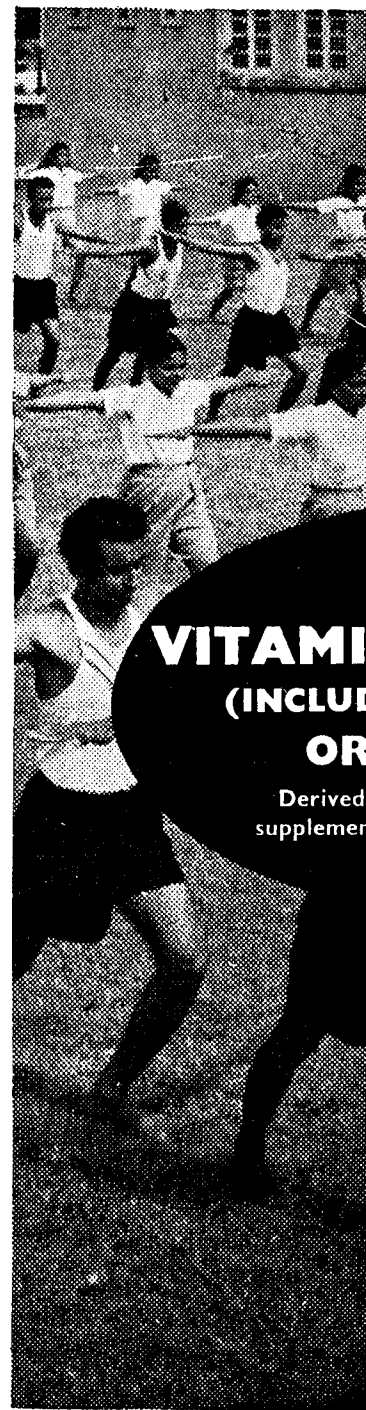
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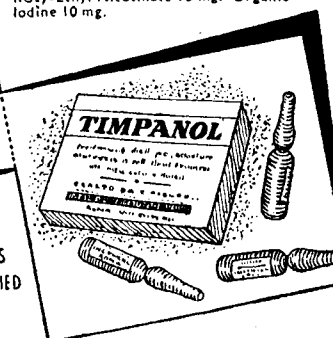
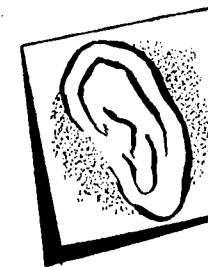
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do do 200 do 10 ml.	...	1-40
do do 500 do 5 ml.	...	1-65
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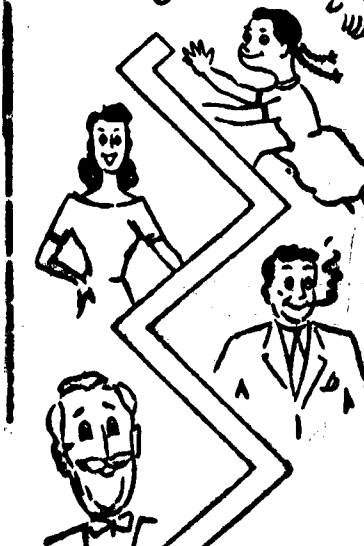
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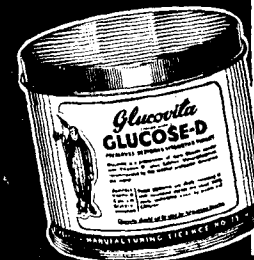
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Phosphate...0.4
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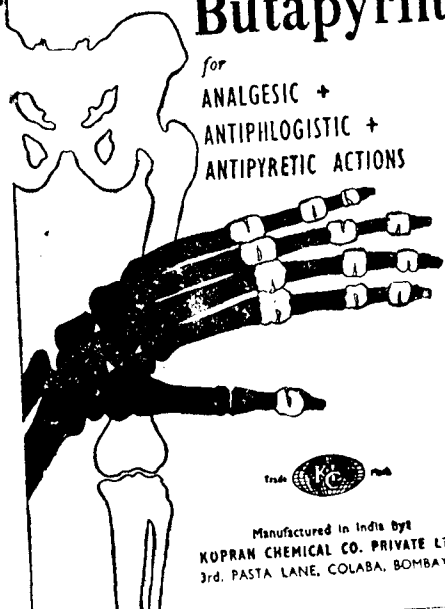
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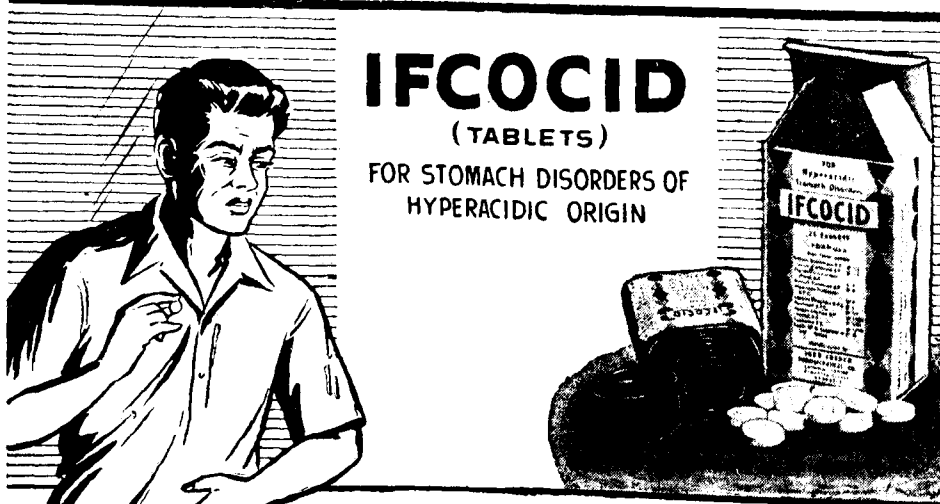
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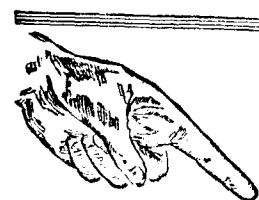
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Ambistryn	0 62.	Duplobycin	0 62	Ger 3 50 Jap 3 75			
Costrecin			0 60	Stethoscope BD Type Ind 7 75			
Myacin 1 gm	0 62.	2 gm	1 13	" " Ger 13 75			
Penicillin Skin Oint.			3 75	" Pouch			1 00
" Eye Oint.			2 75	" Tubing Rubber yrd.			0 87
Crystapen tab.	Gl 2 lac	2 06		" Plastic			1 12
Penicillin Lozenges BDH	100T	2 37		Auroscope			11 50
Eastopen 1 lac	0 56	5 lac	1 06	Adopter for Syringe			0 20
Eastomycin Infant	0 71	Adult	2 10	Blanko Plast 3" 5 yds			3 50
Benapen Fortified			1 25	F.L. Durapac per doz			2 00
" 10cc Bulb			3 90	F.L. Gold Doller			2 50
Chloramphenicol	100C 18-50 12C	2 50		Blood Pressure Instrument Erka			72 00
" Syrup			5 00	" Jap Dial Type			42 00
Enteromycin 12C			6 45	Catheter Rubber 0 25 Sup 0 60			
Aureomycin 8 Caps			16 50	Dispensing Scale with Wt.			
Achromycin 8 Caps			16 50	Brass 3 62			
Chloromycin PD	12 caps	10 50		" Weights Dr. & Gr. 0 75			
Sulphanilamide	1000T	6 25		Eye Bath Glass 0 25, Droppers			0 35
Sulphaguanidine	1000T	8 25		per doz.			
Sulphadiazine	1000T	26 50		Forceps Artery 5" 1 87			
Sulphathiazole	1000T	14 00		" Dressings 0 62			
Sulphadiazine	1000T	17 00		Foreign Body Remover			2 00
Triple Sulpha	1000T	17 00		Glycerine Sy. Plastic 1oz 1 25 2oz 2 00			
APC 1000T		5 50		Mackintosh per yd.			3 00
Aspirin 1000T		3 87		Measure Glass 1 oz 2 dr. 0 40			
Soda Mint 1000T		1 40		2 oz 0 65			
Cibazol 500T & 760 M&B		21 25		" 4oz 0 75 8oz 1 00 16oz 1 50			
M & B 693 100T		6 40		Ryles Tube			1 75
M & B PRODUCTS:—				Rubber Sheets per yd			5 25
Sulphaguanidine 500T	11 25	100 4 80		Insuline Syringe 1cc			2 87
Sulphadiazine 500T	26 50	100 5 30		Scissors St. 1 25 Curved 5"			1 50
Sulphanilamide 500T		6 40		Snakebite Lancet			1 75
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Emetine 1gr 10A	9 0	1gr 5 00		Temperature Chart 100 Sheets			2 25
Aspirin 1000T		5 75		Test Tubes 1 00p or doz Holder			1 25
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Distilled Water 50A	5cc	1 62		Vit. C 50A 500mg.x5cc 7/-			
" 10cc		2 12		Cal. c vit. C 50A 500mgx10cc			19/5
Normal Saline 50A	5cc	1 87		Multivitamine Drops 15cc 1/12, Forte			
" 10cc		2 25		Coll. cal. c Vit D 30cc 1/60 [1/50			
Calcium Gl. 50A 10%	5cc	3 50		Fountain pen Battery Comp 4/75			

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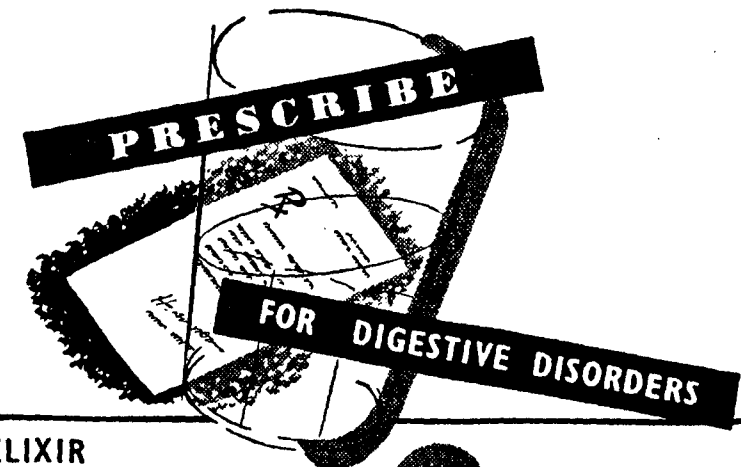
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