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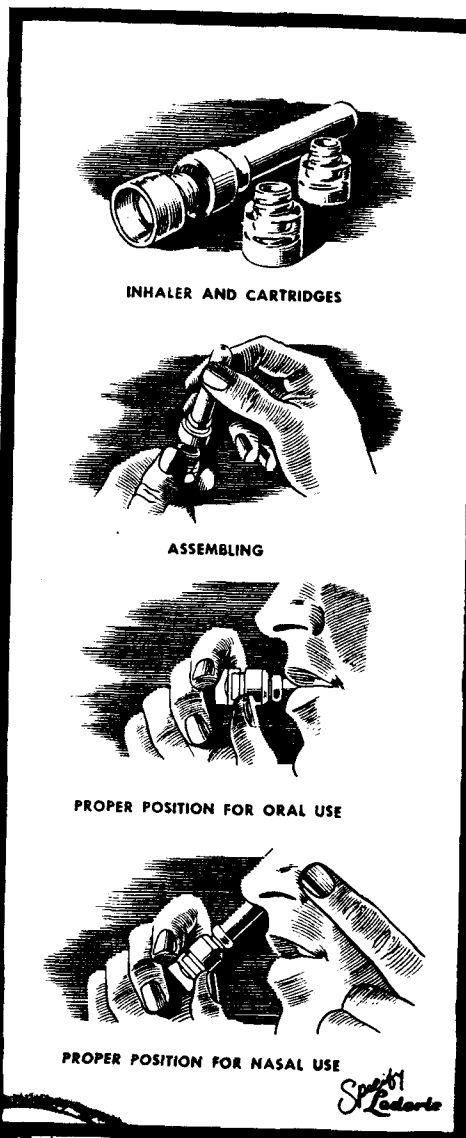
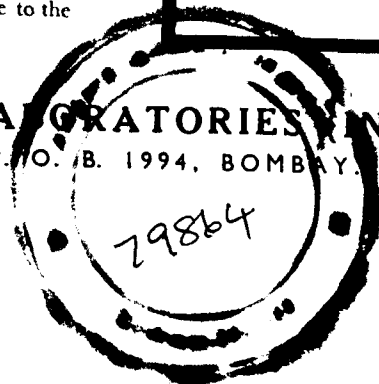
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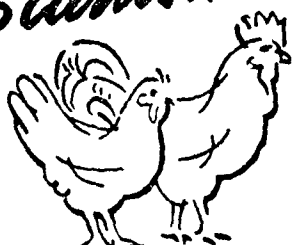
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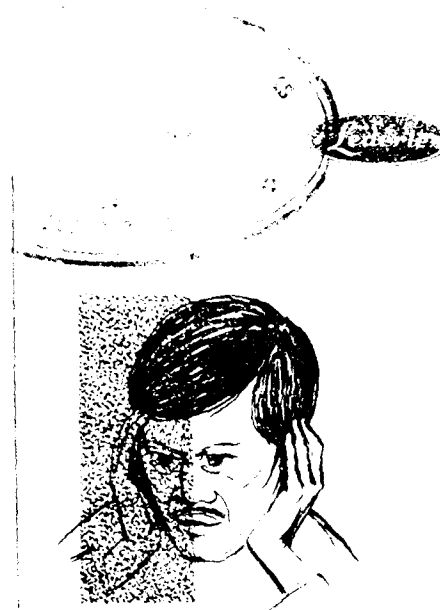


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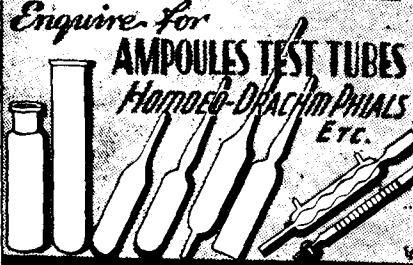
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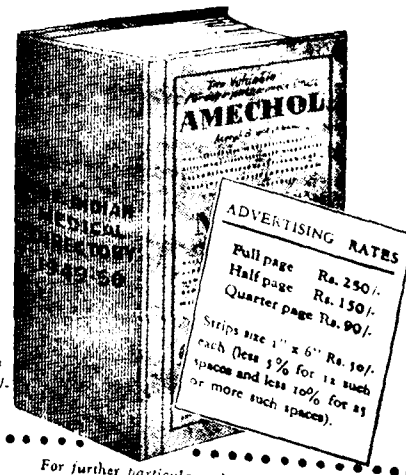
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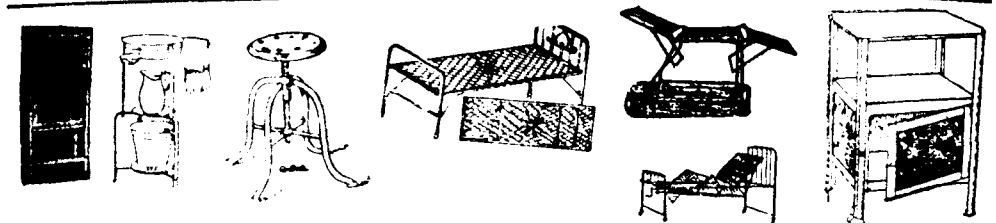
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1 gm. in 3 cc. 5-4-2; 25-19-8,
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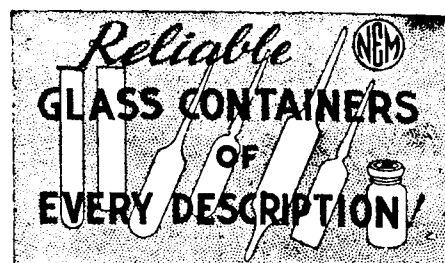
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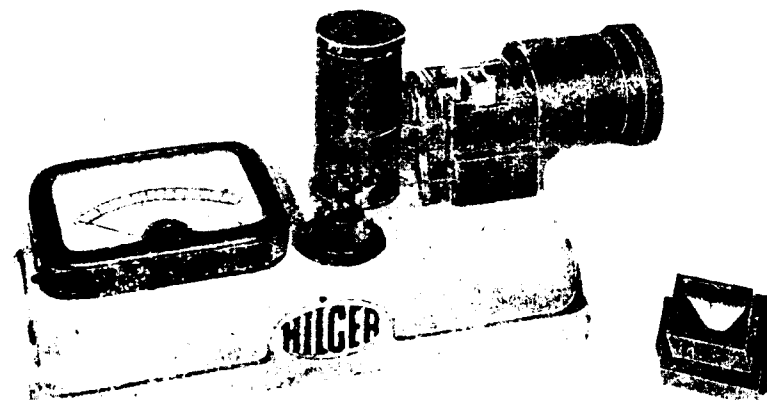
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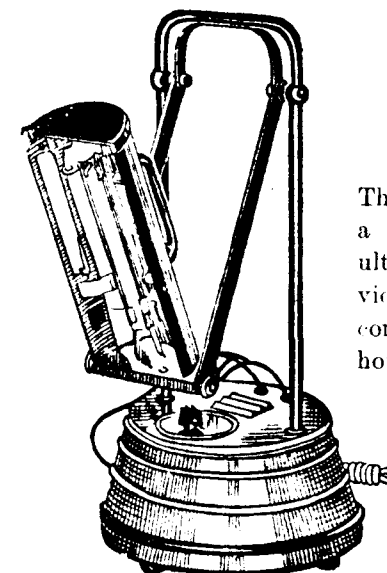
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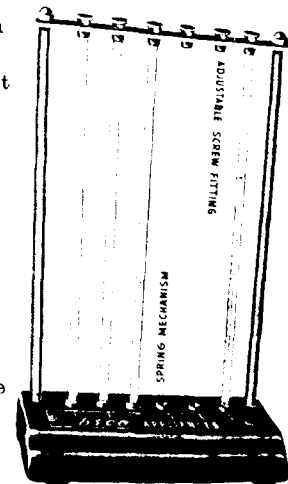
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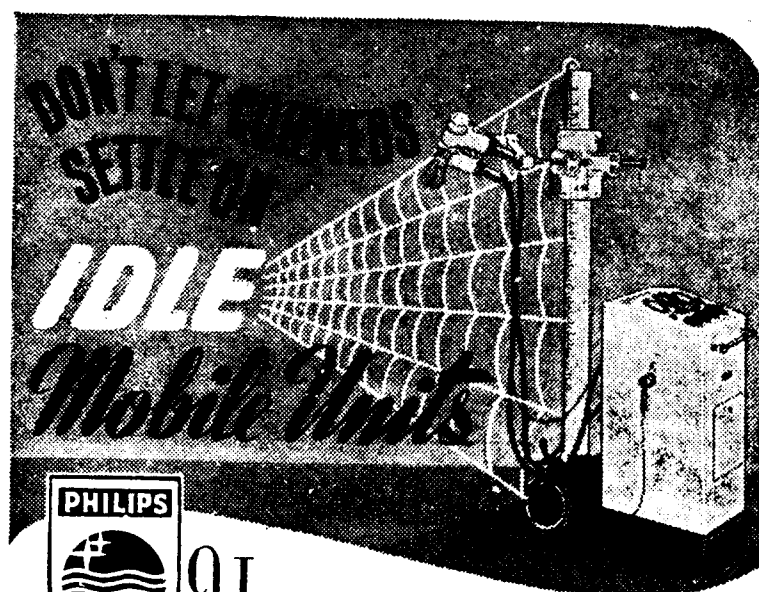
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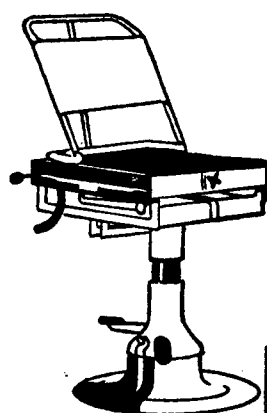


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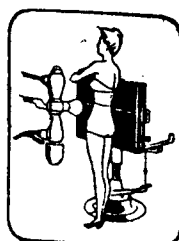
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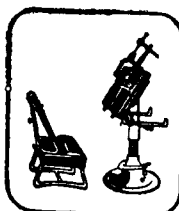
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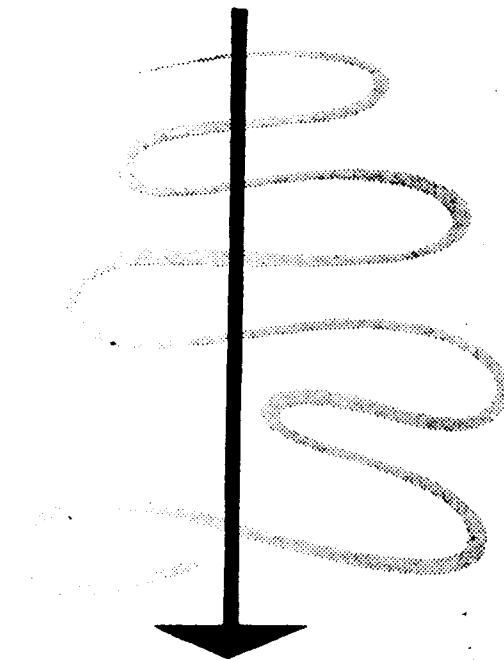
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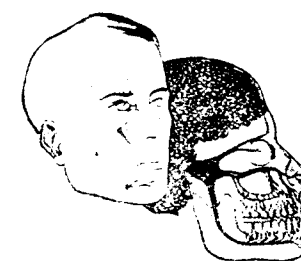
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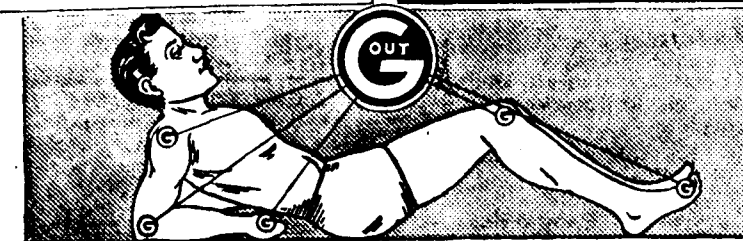
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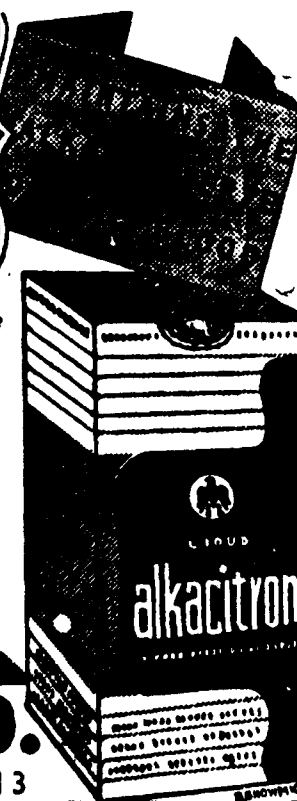
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Deficiency Diseases

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NOW-A-DAYS it is a common thing for a medical practitioner to come across deficiency diseases in their everyday life. So I take the opportunity to discuss about the subject with my poor knowledge and humble pen.

Deficiency disease may be defined as a morbid condition caused by the lack of a sufficiency of one or more factors present in a good mixed diet. Prophylaxis, therefore, consists in making certain that the food contains all the proximate principles, minerals, and vitamins in sufficient amount; here we are concerned specially with the vitamins.

The vitamins or accessory food factors are certain apparently indifferent substances, required in small quantities to maintain normal health although of no substantial food value as a source of energy. Modern researches in vitamins really started by Hopkins in 1912. Funk introduced the word "Vitamine" which was subsequently changed to vitamin. Recently chemical formulæ have been found including methods of manufacture by synthesis.

The absence of a vitamin in a food is determined by certain signs of disease appearing in the experimental animal when put on it for sometime and subsequently cure of the disease when the missing vitamin is added. The signs of deficiency appear if—

(1) The food has not the necessary amount of one or several of the vitamins,

(2) If the need for these is increased as in a woman during pregnancy and lactation and in a growing child.

(3) When on account of disturbances in the digestive system, these are not sufficiently absorbed.

As a general rule, it may be stated that anything which raises the metabolism will also increase the demand for the vitamins and in this connection infection, toxæmia and pregnancy must be in specially noted. There is no doubt that milder degrees of vitamin deficiency may and do pass unrecognised because of cursory clinical examination and lack of appreciation of their early manifestations. When a mild deficiency exists it can easily be eliminated in the majority of cases by the provision of an adequate mixed diet without having resort to special vitamin preparations.

The optimal vitamin requirements at various ages are given below, but for the prophylactic treatment of hypovitaminosis little need be done for the individual with a healthy digestive system except to provide a good mixed diet.

Recommended Daily Allowances of Vitamins

	Vit. A I.U.	Vit. B I.U.	Ribo- flavin Mgm.	Nicotinic Acid Mgm.	Ascorbic Acid Mgm.	Vit. D I.U.
Adult	5,000	666	3.0	20.0	75.0	...
Infancy	1,500	130	0.6	4.0	30.0	800
Childhood 1—3 years	2,000	200	0.9	6.0	35.0	800
10—12 years	4,500	400	1.8	12.0	75.0	...
Adolescence	5,000	666	3.0	20.0	100.0	...
Pregnancy	6,000	600	2.5	18.0	100.0	800
Lactation	8,000	700	3.0	23.0	150.0	800

(This table is approved by the Food and Nutrition Board of the National Research Council, U.S.A.)

The therapeutics of any deficiency disease is based on a knowledge of three things :—

- (1) The clinical picture of the disease in question.
- (2) The diet required to make good the deficiency.
- (3) The highly concentrated preparations which are available for the supply of large amounts of the missing factor.

It is important to remember that in deficiency diseases the deficiency is frequently multiple. Accordingly, in addition to supplying the vitamin, the lack of which is apparent, it is necessary to provide food containing an abundance of all essential factors.

The table below indicates some foodstuffs which contain relatively large amounts of various vitamins :

Vitamin A (or its precursor)	Vitamin B	Vitamin C	Vitamin D
Liver. Fish liver oils. Cheese Tomatoes. Spinach. Carrots	Liver. Kidney. Lean meat. Bacon ham. Whole meal bread. Oat meal. Nuts. Peas and beans. Rice bran. Yeast. Marmite. Bemax.	Potatoes in large amount. Tomatoes. Oranges. Lemons. Grape fruits. Black currants.	Fish liver oil. Tinned salmon. Egg-yolk.

Several vitamins are soluble in fat as vitamins A, D, E. and K. These are stored in the body and the deficiency takes sometime to produce symptoms.

The others are water-soluble as vitamin B complex, C and P. These are not stored as much and least probably vitamin B complex. Its deficiency thus causes symptom early.

Vitamin "A"

Source.—The yellow plant pigment Carotene is transformed in the animal body into colourless vitamin A. Carotene and another yellow pigment, Cryptoxanthin, present in yellow maize are capable of this transformation and are thus the precursors of vitamin A. (provitamin A).

Carotene is largely present in green leaves and growing shoots. Vitamin A is also present in liver, liver oils (especially of fish) also in yolk of eggs, butter and milk of green grass fed cows.

The natural sources for a human being are green vegetables, milk and eggs. For therapeutic purpose it is obtained from fish liver oil or synthetically; of the former the best source is Halibut oil and Cod liver oil is fairly good. Shark liver oil is also a source. Several Indian fish oils both of salt and fresh water have this vitamin; one obtained from the fresh water fish is called vitamin A₂.

Pathology.—The most important function of vitamin A is to promote the nutrition of epithelial surfaces, and the regeneration of visual purple in the retina and possibly also to maintain the healthy function of the nerve cells. In its absence the epithelial cells tend to atrophy, become keratinized and desquamate. All epithelial surfaces are liable to be involved, but particularly the cornea, skin, and urinary tract.

Deficiency signs are in connection with epithelial cells and vision.

1. Skin :—Dryness of the skin with papular eruption.
2. Growth :—This is retarded.
3. Eye changes :—
 - (a) Imperfect accommodation in dimlight—Nyctalopia, after-ward nightblindness.
 - (b) Xerosis or dryness of the conjunctiva and cornea.
 - (c) Xerophthalmia and keratomalacia.
 - (d) Purulent ophthalmia.
 - (e) Finally loss of sight.
4. Liability to recurrent respiratory and bowel infection.
5. Defective formation of enamel-making cells of the teeth and injury to the gums causing pyorrhœa alveolaris.
6. Formation of renal calculi are sometimes attributed to this deficiency.

Treatment.—An adult healthy human being requires about 3,000 units and a growing child, 6,000 units of vitamin A daily. This is contained in rather more than a teaspoonful of Cod liver oil. A child needs roughly double the adult requirement because of the demand from active growth. In pregnant and lactating woman the demand for vitamin A is also increased. The therapeutic dose should be 30,000 units or more till improvement is obvious. An over dose has no marked toxicity.

To combat with the deficiency, chief sources of vitamin A are to be remembered. A good general diet, however containing some other following, egg, liver, carrot, spinach and tomato, is all that is generally necessary to meet these requirements. If for financial or other reasons an adequate diet cannot be obtained, it is advisable to prescribe *Cod liver oil, Halibut liver oil or some proprietary preparations—as Avoleum (B.D.H.); Prepalin (Glaxo); Adoxolin (Glaxo).

The actual dose varies with the intensity of the deficiency. When the manifestations of hypovitaminosis are severe, as much as 600,000 I.U. should be given daily. For milder degrees of deficiency a dose of 3m, 1 capsule of one of the above preparations, three times daily, generally suffices.

Recent work by Stewart suggests that an adequate supply of vitamin C is also of importance in the prevention of nightblindness.

In addition to the administration of the necessary vitamins, appropriate local treatment for the lesions in the eyes, skin and mucous membranes must be given. Drops of Cod liver oil can be instilled into the conjunctiva every morning and evening and

* A teaspoonful of Cod liver oil = 6,400 I.U. A drop of Halibut liver oil = 3,200 I.U.

1% Atropine ointment every night. For the skin a zinc ointment suffices; for mucous membranes Hydrogen Peroxide or Euglavin 1:1,000 may be used.

Vitamin "B"

The water-soluble vitamin B complex contain :—Thiamin, Riboflavin, Nicotinic Acid and Nicotinamide, Pyridoxine, Pantothenic Acid, Biotin, Para-amino-benzoic Acid, Inositol, Choline, Folic Acid, Vitamin B-complex and also probably vitamin B₁₀ and B₁₁. Their exact significance in human nutrition is in many cases unknown. Even as regards Vitamin B₁ some doubt has arisen as to its relationship to the development of the beriberi syndrome. At present facts about Pyridoxin, Pantothenic Acid and certain other members of the complex are not sufficiently definite in relation to human nutrition.

Thiamin and Aneurin (Vitamin B₁) :—This is obtained from yeast, pericarb and germs of various grains, also from milk, eggs, tomatoes, and animal liver. It is not stored in the body and symptoms of deficiency appear early. The deficiency causes anorexia, malnutrition and retarded growth. But more important is polyneuritis (one such is beriberi). Carbohydrate metabolism is disturbed; intestinal tone is lost causing constipation and flatulence.

If the deficiency is greater, signs of myocardial weakness and sometimes œdema appear as is seen in beriberi.

Vitamin B₁ is also of value in various kinds of neuralgia and neuritis, especially sciatica. It is necessary during pregnancy and lactation, in infection and in hyperthyroidism especially of long duration. It is an excellent tonic after prolonged illness, as after typhoid fever, in combination with Nux Vomica and dilute alcohol.

The total Aneurine requirement for an adult is about 1 mg. and a child 0.5 mg.

Benerva, Betalin, Bedone, Berin, Vibex are some of the commercial preparations of vitamin B₁.

Riboflavin (Lactoflavin, Vitamin G) :—It is a constituent of the vitamin B₂. This is obtained from liver and kidneys which are the richest source. Yeast, malted barley, egg and milk are good sources. The signs of deficiency are :—

(1) *Mouth* :—Pallor and subsequent ulceration at the angles of the mouth. (Angular stomatitis, cheilosis).

(2) *Tongue* :—Magenta coloured tongue with papillæ flattened and hypertrophied.

(3) *Skin* :—A mild erythema associated with a fine desquamation of the skin.

(4) *Ocular disturbances* :—Photophobia, congestion of the sclera, hypervascularisation of the cornea (Rosacea keratitis) leading to corneal opacity and impairment of vision.

(5) Seborrhœa of the nasolabial fold.

It is better to mention here that clinically Riboflavin and Nicotinic Acid deficiencies are often combined.

The normal requirement for an adult is about 3 mg. per day and a child 1 mg.

Nicotinic Acid and Nicotinamide:—Nicotinic acid has been found of great value in the human disease of pellagra; hence this vitamin is called P.P. (pellagra preventing) factor.

The deficiency shows—

- (1) Skin:—Characteristic dermatitis.
- (2) Mucous membrane:—Glossitis and stomatitis.
- (4) Brain:—Lassitude, mental torpor and emotional instability.

Pyridoxine (Vitamin B₆):—Natural sources are seeds of cereal grains, legumes, yeast, liver, egg yolk, meat and fish. Hexabetalin and Benadone are the commercial preparations. It is used in:—
(1) Pellagra; (2) vomiting of pregnancy; and (3) agranulocytosis.

Pantothenic Acid:—Natural sources are yeast, peanuts, whole-wheat, liver and eggs.

Its function on human being is not known but it is used with other members of vitamin B complex in multiple deficiency.

Biotin:—Its function is unknown.

Para-amino-benzoic Acid:—This is present in yeast and liver extract. It produces a good result in the treatment of rickettsia infection.

Inositol:—This is found in animal tissues, vegetables and fruits.

Choline:—Its deficiency causes fatty degeneration of the liver and kidneys.

Folic Acid:—It is obtained from green leaves of plants, yeast and from liver and kidneys. Its variants are:—(a) Vitamin M; (b) Vitamin B-complex; (c) Vitamin B₁₀; and (d) Vitamin B₁₁.

It is used in:—

- (1) Macrocytic anæmia with megaloblastic bone marrow especially in sprue syndrome.
- (2) Other nutritional macrocytic anæmias.
- (3) Addisonian pernicious anæmia.
- (4) Other refractory anæmias.
- (5) Megaloblastic anæmia.
- (6) Granulocytopenia and thrombocytopenia.

A new member of the B complex of the vitamin family is now available for practical use. Vitamin B₁₂ was isolated from liver some months ago and found to be a potent specific for pernicious anæmia and other diseases involving nerve degeneration.

However, there was one major obstacle: short supply. One ton of whole liver yielded only 20 milligrams of the vitamin substance. A team of scientists in the Merk Research Laboratories levelled that obstacle by discovering a process whereby the mould that produces Streptomycin can be made to yield B₁₂ in almost limitless quantities.

Vitamin "C"

Ascorbic Acid is essential for certain cells of mesenchymal origin. As this vitamin is not stored in the tissues, a regular intake of it is necessary almost daily. Recently it has been named cevita-mic acid. It is easily destroyed by heat especially in the presence of air and alkalies.

Sources.—Among the common articles of diet containing large amount of vitamin C are citrous fruits, black currants and tomatoes. Uncooked potato juice and sprouted vegetables are also fairly rich in ascorbic acid, a moderate amount of which is present in fresh beef and liver broth. Tinned fruits retain their vitamin C potency. Pasteurization may, and often does, lead to destruction of the ascorbic acid of milk.

The clinical manifestations are:—

(1) Scurvy:—(a) Loss of weight, emaciation, weakness, pallor, stiffness in leg muscles; (b) swelling of the gums; (c) fungating masses project beyond the teeth which loosen and fall out; (d) swollen tongue; (e) enlarged salivary and lymphatic glands; and (f) skin dry and rough.

(2) Albuminuria and constipation usual, sometimes diarrhœa.

(3) Hæmorrhages:—Subcuticular bruising, purpuric rash, petechiae round hair follicles, especially on thigh; intra-articular into the knee; subperiosteal nodules; œdema of ankles; hæmoptysis and hæmatemesis; cardiac distress; irregular pulse, hæmic systolic murmurs; headache early, delirium later; necrosis of jaw in advanced disease.

(4) Microcytic anæmia, disturbed metabolism and liability to respiratory infections.

Chemical test for Vitamin "C" deficiency.—Vitamin "C" output in the urine is proportional to its intake. So any evidence of diminished vitamin C intake by testing the urine. A blue dye 2·6 dichlorophenol indophenol, available as tablet, is reduced to a colourless form with vitamin C.

Test:—The patient passes urine and he is given orally 6x50 mg. tablets of vitamin C at once; the urine is collected again after six hours. One indicator tablet dissolved in 30 c.c. of water is added to 20 c.c. of urine, acidulated if necessary. If blue colour changes to red and decolourised within half minute, the urine contains more than 5 mg. per 100 c.c. and deficiency does not exist. If these changes do not take place, test the second sample or other samples after taking vitamin C till the changes appear.

Requirements:—The best preventive measure is undoubtedly the provision of a good mixed diet, taking special care that there is a plentiful supply of fruit and vegetables. Where these are available there is no necessity for the wholesale distribution of tablets of ascorbic acid. The daily requirement of the adult is probably amply supplied by 75 mg. of ascorbic acid while the infants' needs are met by 30 mg., the average content of half an orange.

Relatively higher amounts are required during the periods of growth or when infections are present.

The minimal daily amounts recommended are 1 teaspoonful of sweetened orange juice in the first month of life, gradually increased to 4 teaspoonfuls by the end of the third month. Tomato juice in double these amounts is equally efficacious.

Vitamin "D"

The nonsaponifiable fraction of the oil, the animal sterol, cholesterol and the vegetable sterol, phytosterol present in various animal and vegetable products, subjected to ultra-violet radiation, produce vitamin D. It has now been found that this property is not of cholesterol itself but of an impurity in it called ergosterol. This sterol was originally isolated by Tanret from Ergot and hence the name. A similar sterol or one closely allied to it has been obtained from a wide range of lower plants, especially from yeast. All these on irradiation yield vitamin D. In fact, vitamin D contents of a large number of foodstuffs may be augmented by irradiation. Leafy vegetables however do not contain much vitamin D.

Bourdillon first isolated it in crystalline form and called it Calciferol. Irradiated Ergosterol or Calciferol, Vitamin D₂, in the constituent of commercial vitamin proportions is obtained from vegetable source. About ten provitamins D have been recognised, of these one is Ergosterol and the other Dehydrocholesterol; on irradiation, the former makes vitamin D₂ and the later vitamin D₃.

The human skin also contains a sterol and this, exposed to sun's rays or ultra-violet rays, produce vitamin D₃.

Vitamin D₃ is naturally present in fish liver oil (especially of Cod and Halibut), in egg-yolk and to a less extent, in butter.

Vitamin D₁ was the name given to Lumisterol-Calciferol mixture and not to pure Calciferol. Vitamin D₄ is Dehydrocalciferol.

The amount of Vitamin D in some fish liver oils

FISH LIVER OILS	I.U. per Gm.	I.U. per tea-spoonful	FISH LIVER OILS	I.U. per Gm.	I.U. per tea-spoonful
Bluefin tuna	40,000	180,000	Halibut	1,200	5,400
Sword fish	10,000	45,000	Boston Mackerel	750	3,375
Yellowfin tuna	10,000	45,000	Pufferfish	570	2,565
Black-sea bass	5,000	22,500	Turbot	260	1,170
Rock fish	1,400	6,300	Cod	100	450
Chinook Salmon	1,300	5,850	Haddock	10	45

Vitamin D values of the edible portion of some common foods

Food	I.U. per 100 Gm.	I.U. per 100 calories	Food	I.U. per 100 Gm.	I.U. per 100 calories
Butter	80	11	Salmon:—		
Cheese, cheddar	33	8	Pink	600	294
Clams, long	6	8	Red	800	392
Cream:—			Sardines, canned	600	288
Thick	20	5	Liver:—		
Thin	10	5	Beef	45	35
Eggs:—			Calf	15	12
Dried, commercial	220	40	Chicken	50	39
Whale	50	34	Hog	45	35
Yolk	150	44	Lamb	20	16
Fish:—			Milk:—		
Herring	1,200	840	Dried	16	3
Mackerel	1,100	792	Evaporated	5	4
			Fresh, whole	2	3
			Cysters	5	6
			Shrimp	150	183

Deficiency:—The deficiency of vitamin "D" may give rise to: (1) Rickets; (2) osteomalacia; and (3) tetany.

Therapeutic uses in other diseases:—(1) Healing of fractures; (2) lead poisoning; and (3) surgical tuberculosis.

Requirements:—Jeans and Stearns, on the result of a careful evaluation of all the literature on this subject, conclude:

(1) The normal artificially fed baby probably requires between 300 and 400 units daily.

(2) Normal breastfed baby requires less than the artificially fed, nevertheless, it would seem to be a desirable measure of protection to give the same amounts as to the artificially fed infants.

(3) Prematurely born babies may very well be given twice as much as the normal infant during the period of most rapid growth and thereafter the same amount as normal infants.

(4) For children between infancy and adolescence the allowance should be 300 to 400 units of the vitamin along with a pint and a half of milk, for the sake of assuring desirable retention of calcium and phosphorus.

(5) Adolescents probably should have between 300 and 400 units, although data for estimating their need are inadequate in amount.

(6) The requirements of adults remain to be determined.

(7) The optimal allowance for the pregnant woman is not known but it is desirable to give them 400 to 800 units.

(8) The requirement during lactation may very well be greater than at any other time and that it might be well to allow 800 units per day with a diet furnishing abundant calcium and phosphorus.

(The allowances recommended by the Food and Nutrition Board of the National Research Council are in accord with these conclusions of Jeans and Stearns.)

It will not be out of place to give a short note on Food and Nutrition Board:—At the meeting of the National Nutrition Conference called by President Roosevelt and held in Washington in May, 1941, the Food and Nutrition Board of the National Research Council presented the Recommended Dietary Allowances. These figures, to quote the Board, were obtained as follows:—

“..... the literature on the subject of each of the dietary essentials was critically appraised, and in addition judgements as to the various requirements were solicited from a considerable number of nutrition authorities in addition to members of the Board, especially those whose research bore particularly on the problem. On the basis of this evidence tentative allowances were formulated. These were resubmitted to contributors for criticism and reformulated in the light of the comments made. The values thus revised were presented before a section meeting of the American Institute of Nutrition in 1941 and members invited to submit further evidence for any changes that seemed indicated. After final discussion and some minor revisions they were adopted by the Board in May, 1941. The values as presented thus represented the combined judgement of more than fifty persons qualified to express an opinion on this subject. This does not mean, of course, that every contributor would fully agree with all the figures as given. It does not mean, however, that the values are ones they were willing to accept tentatively, until standards derived from more extensive and exact research data can be obtained. The term Recommended Allowances rather than “Standards” was adopted by the Board to avoid any implication of finality.

Vitamin “E”

In 1935, Evans and his associates, O. H. and G. H. Emerson, obtained from wheat germ oil a crystalline compound belonging

to the alcohols of high molecular weight (sterols), which was potent for the prevention of sterility. To this they gave the name *alpha*-tocopherol. Since the identification of *alpha*-tocopherol two other naturally occurring substances have been found which have the same function. These have been named *beta*-tocopherol and *gamma*-tocopherol. Many synthetic compounds chemically related to these tocopherols are now known which exhibit vitamin E activity.

This is a fat soluble vitamin largely present in the wheat germ oil, also in oats, lettuce leaves, and other growing green leaves and in germinating seeds. It is to a less extent present in animal tissues also as in muscles, fat and viscera.

It is fairly resistant to heat, light, air, also to acids and alkalis at normal temperature and is insoluble in water.

Deficiency of vitamin E causes.—1. *In the female*:—(a) sterility and abortion; (b) pregnancy toxæmia; and (c) reduction of the amount of breast milk.

2. *In the male*:—Degenerative changes in the testes; spermatozoa lose their motility and degenerate.

3. Degenerative changes in the voluntary muscles and involuntary muscles of the heart and genital organs. This results in muscular dystrophy with increased fibrosis and deposition of fat.

4. Degenerative changes in the nervous system—as amyotrophic lateral sclerosis.

Requirements:—The human requirement of this vitamin is not known. This vitamin occurs in such abundance in so many common foods that there is very little likelihood of a deficiency of it in average diets.

An international unit of vitamin E has been established. It is defined as one milligram of a standard preparation of synthetic *alpha*-tocopherol acetate.

Vitamin “K”

Dam and his associates in Denmark had obtained evidence of some disturbances in the blood-clotting power as due to the lack of a vitamin-like factor which Dam named vitamin K. It was found that the decrease in coagulability of the blood was due to a lowered content of prothrombin, one of the substances required for normal blood clotting. This resulted in a lengthening of the time required for the blood to clot.

Work on the isolation of the active substance was carried on intensively by many investigators in Europe with the result that by 1939 two vitamins K had been isolated, K₁ from alfalfa and K₂ from putrefied fish meal. However, the two vitamins are so much alike in activity that they are commonly referred to simply as vitamin K.

Sources.—Vitamin K may be synthesized by micro-organisms naturally present in the intestines, so that small amounts may be obtained in this way, but the vitamin is so widely distributed among different kinds of food that there seems to be little likelihood of a dietary deficiency of it. The green leaf vegetables, tomatoes, cauliflower, egg-yolk, soyabean oil and liver are all good sources of this vitamin.

Deficiency.—Deficiency of this vitamin from any cause results in a low prothrombin level. A pathological condition which does not respond to administration of vitamin K, is that of hemophilia, indicating that this condition is not due to a deficiency of this vitamin.

Requirements.—Human requirement for this vitamin has not been determined as yet. Clinically dosages of one to two milligrams daily have been found effective and are commonly used.

Vitamin "M"

Professor Paul Day and his associates have reported that in experiments with monkeys they found that something in yeast which is not identical with any of the known vitamins is necessary to keep the blood in normal condition. They have tentatively named it vitamin M. It has not yet been identified, nor is it known whether other species of animals require it.

Vitamin "P"

In 1936, Rusznyak and Szont Gyorgyi announced that they had found in papprika and lemon juice, a substance distinct from ascorbic acid which they named vitamin P, the letter P being used because they believed that it protects against permeability in capillary walls. Preparations containing this factor they called Citrin.

Vitamin P has not been isolated in pure state, but Citrin, prepared from oranges and lemons, and Hesperidin, a crystalline compound of the Flavonol group, have been found under experimental conditions, both in human beings and animals, to have some effect in increasing capillary resistance.

The recommended dose is two tablets thrice daily—each tablet containing 150 gm.

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JULY '49]

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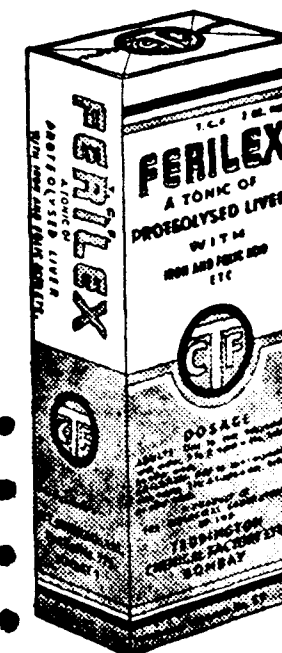
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Balanced Diet for the South Indian Vegetarian

N. KRISHNASWAMY, M.B., B.S.,

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THE dietary allowance recommended by the National Research Council of America for a sedentary man weighing 154 lbs. is as follows:—

Calories	Protein gms.	Calcium gms.	Iron mg.	Vita- min A I.U.	Thiamine mg.	Ribo- flavin mg.	Niacin mg.	Ascorbic Acid mg.
2,500	70	0.8	22	5,000	1.2	1.6	12	75

As the average South Indian weighs much less, usually about 125 lbs., his requirements can conveniently be cut down for a moderately active man, to 2,500 calories and 60 grams protein, and achieving this within his poor means will be difficult enough.

The South Indian is a vegetarian by choice and by necessity. Even the usual South Indian nonvegetarian can only be said to occasionally lapse from vegetarianism, taking eggs and meat very occasionally indeed, once a week or less often. There is no reason on earth why, by a judicious choice of food items, he should not be in the pink of health on his vegetarian diet. Tradition dies hard anywhere, and the eminent Sir Frederic Gowlands Hopkins, who will be remembered by students for making the world vitamin-conscious, wrote that in the field of nutrition and foods, tradition tends to accumulate prejudices as often as truth. To quote Sherman, the modern authority on Nutrition: "Tradition has accumulated a strong prejudice which attributed superiority to animal protein, and inferiority to proteins of vegetable food. This, we know from modern research to be an unsound generalisation, yet this prejudiced and prejudicial inheritance from a prescientific yesterday persists. Chemical research on the Aminoacid constitution of proteins and nutritional research with human subjects in balance experiments and with laboratory animals over long segments of the life cycle including periods of rapid growth, rank the proteins of soyabean and groundnuts with animal proteins in chemical nature and nutritional efficiency; and show further that the proteins of our ordinary peas and beans need but little supplementation to nourish us equally well."

Proteins.—These must contain the ten essential Aminoacids—Arginine, Histidine, Leucine, Tryptophane, Phenylalanine, Methionine, Threonine, Lysine, Isoleucine and Valine. Cystine is essential to normal metabolism, but can be formed from Methionine if adequate amounts of the latter are present in the diet. Wooley has found that the Peptide 'Strepogenin' is also necessary for optimum

growth and hence Aminoacids alone do not form all parts of the protein story. Rice lacks only Lysine among the essential Aminoacids, and this is contained in plenty in groundnut and pluse proteins, whose lack of Cystine and Methionine is covered by their presence in rice protein. Hence, taken together, in the mixed diet, these vegetable proteins are as first class as any animal protein. One's difficulty is in being able to get enough protein. Too much of groundnuts and pulses brings on indigestion, and yet it is to these one has to look for more protein which is within the reach of the poor. Milk solves the problem beautifully well, when a person can afford to get enough of it, as its protein is the very best nutritionally. In fact, the whole problem of keeping the South Indian fit consists in getting him more milk. Though the optimum intake of protein has been put down as anywhere from 60 to 120 grams a day, it has been shown by experiment that persons get on well on 50 grams or even 30 grams of protein a day. Of course, it is wise to look out for as much protein as possible, as the body definitely benefits from more protein, in the diet.

Carbohydrates being the cheapest source of calories, the diet invariably contains a disproportionately large amount of them, and that means the body needs more of the vitamins of the B complex to enable it to digest this excess. To get enough calories, once the need for protein has been looked into, the carbohydrates of cereals, sweet potato, plantain, sugar and jaggery are all welcome.

Fats.—Supply concentrated fuel and give satiety value to food. The naturally occurring fats contain unsaturated fatty acids which are now known to be essential for good nutrition. The hydrogenated oils fail to supply these. The vegetable oils do not contain vitamin A, but the vegetarian looks to the green leafy vegetable to supply this. Vegetable oils are fairly cheap, and are a very useful form of 'packed calories.'

Of the *minerals*, the problem hinges round calcium and the vegetarian gets all he needs of this from milk and green leafy vegetables. The presence of phytic acid in ragi prevents absorption of its bountiful calcium. There is evidence that the male adult needs little or no iron. The allowance will be provided if the diet is sound in other respects. Sodium and Chlorine, one takes in as common salt and in the hot days, a little more of it than usual is welcome.

Vitamin A.—The daily quota necessary is from 3,000 to 5,000 international units. For the vegetarian, apart from milk, the green leafy vegetable is the source of vitamin A in the form of its precursor Carotene. Carotene is said to be utilised by the body only half as well as vitamin A and hence double the necessary amount of it has to be provided.

Thiamine.—1 to 1½ milligrams of this per day is necessary. One will get this comfortably well when one wisely takes his rice in

handpound or parboiled form and does not wash the rice excessively and takes enough groundnut and pulses.

Riboflavin.—About 1½ mgs. per day is necessary and this can conveniently be had by taking enough pulses and milk. Three-fourth pint milk contains ½ mgm. of Riboflavin.

Niacin.—The modern view is not certain how much the body need of 12 mg. a day is provided by the daily intake of foods and how much is made by the bacteria in the intestinal tract.

Ascorbic acid.—50 to 75 mg. is the optimal intake. People are known to thrive well on as low an amount as 20 mg. a day though large amounts definitely contribute to a feeling of plus health. The poor man looks to his homegrown tomato as the chief source of this vitamin. Greens contribute their quota too. Adults have little need of vitamin D and, any way, there is no lack of sunshine in the tropics.

Here is a list of foods that will suit a middle class vegetarian excellently well and give him a balanced diet :

Food	Amount in oz.	Calories	Protein grams	Fat grams	Carbohydrate grams	Vit. A I.U.	Vit. B ₁ I.U. 333 I.U. = 1 mg.	Vit. B ₂	Vit. C mg.	Ca grams	P grams	Fe mgms.
1. Rice	8	800	18	1	178	—	229	—	—	0.016	0.384	5.04
2. Milk	16	300	15	16	22	816	—	++	—	0.544	0.416	1.12
3. Groundnut	2	310	15	22	14	36	171	++	—	0.028	0.282	0.88
4. Dhall	2	200	13	1	13	126	108	++	—	0.021	0.160	5.00
5. Vegetable oil.	2	500	—	56	—	—	—	—	—	—	—	—
6. Sugar	1	110	—	—	28	—	—	—	—	—	—	—
7. Jaggery	1	100	—	—	25	—	—	—	—	—	—	3.25
8. Clusterbeans.	4	63	4	—	10	376	—	+	56	0.148	0.56	6.60
9. Tomato	4	23	—	—	4	366	46	—	37	0.08	0.020	0.08
10. Amaranth	4	54	6	—	6	4,000	32	+	198*	0.57	0.12	24.56
Total	...	2,460	71	96	300	5,720	586	...	291	1.387	1.832	46.63
Wheat	3½	345	12	1	71	108	230	+	—	...	...	...
Sweet potato	3½	131	1½	...	31	10	—	++	24	...	...	...

* Uncooked.

Rice is a much maligned food. It is the fashion to decry it as just a starchy food. But, more than half the world's population has wisely chosen it as the staple article of food. It is easily digested. It is a good source of calories, an ounce of it yielding over 100 calories. Its protein is of the very best variety, its only

relative deficiency being in Lysine which is found in abundance in milk and pulse protein. So far back as 1915 Van Slyke found that the endosperm protein of rice contains notably more of some of the nutritionally essential Aminoacids than does the endosperm of wheat, and so, even milled rice has good protein value. Handpound rice is a plentiful source of thiamine. Parboiling preserves a good proportion of thiamine, which gets driven into the endosperm. It is the high milling of raw rice which takes away so much of the allotment for an active man, but that is crying for the moon just now and 8 (10) ounces is all that is doled out to him now-a-days. Wheat is an equally good food and one is lucky if one gets so much as 2 oz. of it a day in addition to rice. Here again, the white flour is bereft of a good lot of essential protein and thiamine, compared to the whole grain.

Groundnut called peanut in America—is a valuable addition to the diet of the South Indian vegetarian. It is very rich source of first class protein, being especially rich in Lysine, Tryptophane, Phenylalanine, etc. A couple of ounces of it per day is easily digested and does nothing but good. Its high thiamine content is very useful to the obstinate polished rice eater. Its satiety value is high due to its high fat content. The eating of roasted whole peanuts is nutritionally an excellent food habit and is also exceedingly convenient. Sherman calls it the equivalent of meat and butter.

Pulses are as rich sources of protein and thiamine as groundnuts and better sources of Riboflavin. Cooking improves the nutritive and assimilable value of their proteins. Sprouted pulses are refreshing to eat and they also provide 15 mg. vitamin C per 100 gms. A couple of ounces per day yields rich dividends.

Ragi and cholam are good cereal sources of carbohydrates and proteins and it is well for one to get accustomed to eating them, as other more palatable cereals are scarce now. For the poor, they form a very important source of calories and proteins.

Sweet potatoes are a godsend in these days of scarcity of rice. They are cheap good sources of calories and tasty. True, their protein content is low but that protein is first class protein, relatively rich in Arginine, Cystine, Histidine, Lysine and Tryptophane, which are among the Aminoacids upon which nutritional efficiencies of food proteins chiefly depend. It is a good source of vitamin. A standard serving of 100 grams (3½ ounces) provides about 1 milligram of iron. Sweet potatoes also serve health in that their presence in the digestive tract favours the predominant development of the more beneficial types of bacteria; and also that after their absorption from the digestive tract, the mineral elements help the blood and tissues to maintain their alkaline reserve. All this is true of potatoes also, but they are thrice as costly.

Vegetable oils :—Gingelly and groundnut oils are cheap good sources of energy and add taste and satiety value to food. There is no need to waste money on costly ghee.

Sugar and jaggery yield quick energy and serve to add to the calories. Jaggery, in addition, contains traces of iron.

Green leaf vegetables :—Amaranth is cheap and about 4 ounces of it per day yields all the vitamin A one needs, in the form of carotene and it is also a rich source of calcium, riboflavin, and vitamin C and iron. Coriander leaves and drumstick leaves are equally good and there is no reason except a fat purse why one should hanker after the costlier cabbages.

Green vegetables :—Cluster beans are cheap and good sources of vitamin A and C, and yield their mite of protein too. 4 ounces of these are a decent daily allotment. Bhendi, Snakegourd, bittergourd, green plantains, cucumber, brinjal, tender jack are all items that form a pleasing variety of vegetables. Yellow pumpkins are a good source of vitamin A. The cooking of vegetables should not be carried to excess. An acid medium like tamarind serves to preserve the food value, while the addition of baking soda for easy cooking is destructive of food-values.

Fruits :—Tomatoes should form a necessary daily item of food. 4 ounces of them per day yield good nutritive value in the form of vitamin C, thiamine, and vitamin A and satisfy the appetite. For those that can afford, oranges form a good item of diet. Here is what Sherman says of oranges—"Orange and orange juice stimulates the flow of digestive juices, supplies vitamin C in high concentration and in a form which holds its vitamin value well, furnishes body fuel not only in the form of its sugars but also in the form of its citric acid and citrates which burn readily and with a high degree of completeness in the body. It aids the body in maintaining its normal alkaline reserve. It promotes good intestinal hygiene and after digestion and absorption it helps the body tissues to utilise more efficiently the calcium that they contain and that they receive from the food". Ripe mangoes and papayas are good sources of vitamin A. The country guava and the native gooseberry (amla) are good sources of vitamin C. Plantain fruits are only useful as ready source of energy, an average sized fruit weighing 3½ oz. yielding 100 calories.

Milk :—Milk is the vegetarian's elixir of life. It represents the most economical and efficient transformation of animal feeding stuffs into human food. It is the most outstanding source of the specific nutrients in which it is most important to enrich our dietaries. The carbohydrate of milk-lactose is non-irritating, easily digested, and helpful to the hygiene of the intestinal tract in that it tends to promote the predominance of the favourable sources of bacteria. The

fat of milk contains the nutritionally essential fatty acids, and it has the great advantage of entering the digestive tract in an already emulsified form. Milk proteins are easily digested, yielding amino-acids of such kind and in such proportion as to be in the first rank of nutritive efficiency. They are not liable to undergo objectionable putrefaction in the digestive tract. Milk is the largest contributor of calcium in the dietary. Its mineral content helps in the maintenance of the body's alkaline reserve. It contains all the known vitamins, though the thiamine and vitamin C values are very low. It is the richest source of riboflavin. For those that can afford it, a pint a day is a very good allotment. It can be taken as it is or as curds or as buttermilk after separating the butter. A little even is of great help, as it will serve to balance the diet. It is well recognised now that the best way of supplemental protein feeding consists in giving milk $\frac{1}{2}$ pint and $1\frac{1}{2}$ ounces of dried skim milk powder at a time, providing 25 grams protein and 240 calories. Physicians may well advocate this regimen twice or thrice a day instead of asking their patients to go in for the costly nasty tasting protein hydrolysates.

Food-yeast being a vegetable food, will be of great help in increasing the vitamin B complex content of the diet. $\frac{1}{4}$ oz. per day, mixed up with jaggery, is easily digested.

One point to be remembered is that every meal should be a mixed diet consisting of rice, pulses, milk etc. as it is only when taken together that the different proteins yield their combined aminoacid value.

Thus by a judicious combination of rice, millets, groundnut, pulses, greenleafy and green vegetables, fruits and milk, the South Indian vegetarian can have as balanced and as nutritious a diet as his non-vegetarian compeer.

A New Growth-promoting Substance

At the 1947 Congress of Pure and Applied Chemistry, Prof. Jansen of Holland, showed that summer butter contains a trace nutrient of growth-promoting influence additional to that of the known vitamins. This growth-promoting substance had been concentrated by fractional distillation in *vacuo* of fatty acid esters from summer butter. In the same line of progress but on the other side of the Atlantic Research Workers of the U.S. Bureau of Dairy Industry at Beltsville claim that there is an unidentified nutrient of the "vitamin kind," in milk liver extracts, egg yolk and grasses. This research has been in progress for a number of years. The nutrient which the U.S. workers claim to have recognized cannot be found in cereals or cereal flours, in yeast, or in egg albumin. They argue that cattle must be acquiring it from grass and roughage feeds. — *Food Manufacture*, 23: 11,477 (1948).

T.N.S.R.

Vitamins

DR. K. C. TRIVEDI,

D.M.O., B. B. & C. I. Rly., Gangapur City.

SINCE a decade or so, the physician and his patients are quite enchanted with the word "Vitamins" that their uses in a synthetic medicine have been very wide and popular especially during war years when shortage of food was universally acute. The market today is flooded with numerous patent "Vitamins" in all forms and combinations and advertised to the lay public, who have been made to feel that the use of these "Vitamins" would cure all their ills. As a consequence of this, indiscriminate use of this synthetic stuff is being made without realising for a moment that this practice is not only expensive but often useless. If the public would only just look around, they would realise that most of the requirements are easily and abundantly available from natural sources at a very limited cost and understand the unnecessary of resorting to these synthetic patent vitamins unless it be in the form of extra requirements needed to supplement the frugal sources at their disposal.

In the interest of the Nation, it is incumbent on the Government's Health Authorities to bring home this simple fact to the notice of the public. The use of the press and the education of the new generation along these lines are a few among the many methods by which this can be done.

The succeeding paragraphs should give ample idea of the main "Vitamins" vital for the upkeep of health and also the common ailments arising out of lack of one or more of them and how these "Vitamins" could be procured easily and economically from natural sources. These are mainly the results of my experience over a long period of cases suffering from vitamin deficiencies.

Vitamin A.—It is abundantly found in fish liver oils, butter, cream, cheese and in quite a moderate quantity in liver, kidney, green as well as yellow vegetables, fruits, egg yolk and tomatoes. This vitamin is essential for the growth of the individual, and the health of the eyes, skin and mucous membrane. Deficiency of it would be seen from the retarded growth, night blindness, gross anatomical changes in the eye, dryness of the cornea (xerophthalmia), itching and burning sensation in the eyes followed by reddening of the lids (xerosis), greyish and foamy triangular patches on the conjunctiva (Bitots' spots). The person has also a greater susceptibility to infection.

Vitamin B₁ (Thiamine).—It is also known as "Morale Vitamin" as it was used to be given to the fighting pilots in the War to keep them fit. This is mainly found in meat, fish, groundnuts, fresh peas, soyabeans, melons, potatoes, whole grain and unpolished rice,

green vegetables, fowl, brewer's yeast and milk. The main use of this vitamin is for carbohydrate metabolism, functioning of the heart, nerves and muscles, besides the growth. Hence the lack of it would show the symptoms of retarded growth, nervous disorders, loss of appetite and weight and disorders of intestinal functions. It is also very useful for tropical country to eradicate tendency of lassitude.

Vitamin B₂ (Riboflavin).—The source is practically the same as for B₁. It is essential for growth, health of the skin and mouth, cell activity, functioning of the eyes and the carbohydrate mechanism. The person having lack of this vitamin B₂ would have retarded growth, premature old age, loss of hair, loss of defence powers, lesions at the corners of the mouth, inflammation of the tongue, dimness of vision, early cataract-like symptoms and intolerance of light.

Niacin.—Meat, fowl, fish, potatoes, whole grain and enriched products, groundnuts and brewer's yeast are the main sources. It is required for the functioning of the alimentary system, nervous system, health of the skin and carbohydrate mechanism, besides the growth of the individual. Apparent symptoms would be shown as smoothness of the tongue (glossitis), skin eruptions, digestive and mental disorders.

Pyridoxine.—It is available in varying forms from fish, whole grain products, milk and pulses. The specific function is yet not known but it is supposed to be required for protein metabolism, functioning of the muscles and nervous system and health of the skin. The possible symptoms seen are skin eruptions, besides few vague symptoms like irritability, insomnia and muscular rigidity.

Pantothenic acid.—Milk, meat, whole grain products and liver are the natural sources. Its specific functions and symptoms due to its deficiency are still unknown and undetermined. But it is supposed to help normal hair production and growth of the healthy skin.

Vitamin C (Ascorbic acid).—It is abundantly available from all citrus fruits, berries, melons and other fruits like guava, papaya, tomatoes, raw vegetables, chillies and sprouted grains. The richest source of this vitamin is in "Amla" known to the indigenous public and *vaidyas* since times immemorial for its health and life-giving properties. Therefore amla chatni or jam (*murrabba*) and pickles are used by our countrymen in daily life—though not realising its advantages.

This vitamin is necessary for cell activity, maintaining strength and function of blood vessels, development of teeth and bones and formation of supporting tissues. The deficiency of this vitamin leads to sore and bleeding gums (scurvy), bleeding around bones and under the skin (bruise).

Vitamin D (Sun-shine vitamin).—It is known sun-shine vitamin also because we get it through the rays of the sun. It is also present in fresh liver oil, fat fish, liver, eggs and milk. It is very essential especially in childhood when the bones and teeth are growing. It also promotes growth, regulates calcium and phosphorus metabolism. The decay in teeth, soft bones and poor development is due to lack of vitamin D.

Vitamin E.—It is found in seed germ oils and green vegetables, the specific function being unknown yet. Probably it is required for normal reproduction and normal functioning of muscles and nervous system. Deficiency symptoms are vague and undetermined.

Vitamin K.—The source of it is in orange juice, tomatoes, cauliflower, cabbage and green vegetables. It is essential for normal clotting of the blood, the lack of it being shown in various hæmorrhages.

One should plan his meals in such a way that one gets all the necessary quantity of these vitamins in his diet. For this, raw vegetables and fresh fruits should be the part of his diet. In cooked food, a large part of these vitamins are destroyed, so it is also necessary to remember that proper methods of cooking are very essential.

This article should appeal to every body interested in the up-keep of his health easily and economically and has a special reference to those authorities who are in charge of establishments like "Canteens" supplying food to the labouring classes. The ideas given above can be easily incorporated in the procurement and preparation of balanced diet. This should result in an immense benefit to everybody at no extra cost.

By kind permission of the Chief Medical Officer, B. B. and C. I. Rly., Bombay.

Plant Nutrients and Vitamin C

The vitamin C in oranges, limes and other citrus fruits tends to fall as the nitrogen supply of fertiliser or manure treatments increase has been established in America and the West Indies; this has since been found to be true also of black-currants. Research carried out in England on the Costwold and Mendip varieties by growing them in plots receiving different manures (natural and artificial and chemical) and bone meal, compost etc., showed that the highest vitamin C content was registered by the no treatment plots and the inorganic fertiliser plots with their rapidly available nitrogen supply gave the lowest contents. This is only a preliminary research.

The larger nitrogen supplies naturally gave greater yields so that despite the reduction in vitamin C, the total vitamin production was highest in these higher nitrogen plots.—*Food Manufacture*, 23: 11, 494, 1-11-48. T.N.S.B.

Nutritive Value of Roots and Tubers, With Special Reference to Sweet Potato

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THE subject of the nutritive value of roots and tubers, especially of sweet potato, has now assumed topical interest. The Food Ministry of the Government of India has recently set up a Subsidiary Food Board Commission to find out the nutritive value of wheat flour admixed with sweet potato flour. A sum of rupees ten lakhs has been sanctioned to carry out experiments on diets based on wheat but incorporating varying proportions of sweet potato flour and to popularise such wheat-sweet potato flour diets. The New Delhi message announcing this news added that this scheme forms part of the campaign to make the country self-sufficient in food and that it was prompted by the observations of the Prime Minister based on his personal experiences of *chapathies* made of 75 per cent of wheat flour and 25 per cent of sweet potato flour which he found to be good and tasty. The observations of the Prime Minister are not entirely unexpected.

Compared to cereals, roots and tubers are heavy yielders, because the yield of cereals in India at present is very low indeed. During periods of food shortage, or rather cereal shortage, roots and tubers can, and should, play a useful role. In countries where the growth of population has outstripped land development, cereals have been increasingly replaced by roots and tubers. The Famine Enquiry Commission has recommended in no uncertain terms the partial substitution of cereals by roots and tubers.

In addition to being heavy yielders, roots and tubers are, when reduced to the same standard of moisture, richer in carbohydrates, mineral matter, calcium, vitamin B₁ and nicotinic acid than cereals. But they suffer from a deficiency of proteins and fat. Diets in which roots and tubers replace cereals, even though partially well, naturally, be relatively deficient in proteins and fats; it may be desirable to overcome this deficiency, if resources permit. The increasing number of hydrogenation factories erected recently, and in the process of erection in the country will sooner or later result in a relative glut of oilcakes. Being rich in proteins and containing fairly suitable for supplementing such cereal-tuber root diets. Since groundnut enters largely into the *Vanaspathi* industry, the use of groundnut oil cake in the diet of our population would mean a very welcome diversion from its present use either as a cattle food or as manure. The problem of overcoming the obvious deficiencies of cereal-tuber roots diets is, therefore, a simple problem.

The principal root vegetables and tubers of India are tapioca, sweet potato, potato, colocasia and the yams. Of these, the yams and colocasia do not lend themselves to extended use as a flour capable of being admixed with cereal flour, partly because of the presence of a mucilaginous substance in them impairing dehydration and partly because of the presence of an acrid substance in them. They should, therefore, continue to be used only as vegetables. There remains then only three which could, and should profitably, have extended use: tapioca, potato and sweet potato. They have a fairly uniform composition, being essentially starchy foods.

To take up tapioca first: Tapioca is extensively cultivated in various tropical countries. It is usually called cassava or manioc, the term "tapioca" being applied to processed products obtained from the root. In India, however, the root itself is called tapioca. Introduced into Travancore during the last century by one of her rulers, tapioca is now extensively cultivated in the State and in the adjoining district of Malabar and the Cochin State. During the war years and after-years of continued food shortage and relatively poor imports of food—the area under this crop in Travancore, Cochin and Malabar was nearly doubled with the result that the spectre of famine which decimated Bengal was mostly averted. Tapioca has certain redeeming features; it has also a darker side to it. It is a high yielding dry crop, growing in any kind of soil and requiring not much attention. It is for these reasons that tapioca has often been referred to as a "lazy man's crop." While yields as high as 10 to 15 tons per acre have been reported from other countries, the average yield in India has been computed only at 2 to 3 tons per acre. Even so, the return of calories per unit area from tapioca is very much higher—at least, four times—than the return from rice or other cereals. Unfortunately, it is exceptionally low in protein, in the fresh state it is only 0.7 per cent, and is also poor in other respects. Its consumption as a staple article of food cannot be justified on nutritional grounds. But in times of emergency such as these, where a choice is between starvation and some kind of food, cultivation and consumption of tapioca may be encouraged. Instead of using it as a staple article of food, there is no reason why it should not be used in conjunction with some cereal rich in protein. Obviously, wheat suggests itself. Wheat is, amongst cereals, richest in protein, containing nearly 50 to 80 per cent more protein than rice. It will, therefore, be not difficult to have mixtures of wheat and tapioca flour which will compare favourably in protein content with diets based entirely on rice.

It should not be understood that such mixtures of wheat and tapioca will provide an ideal diet, though it will perform a useful function in relieving the cereal shortage obtaining in India at present. While the admixture even with wheat cannot be heartily

recommended, the objection to admixing with rice, ragi, etc., is even stronger. If under special extenuating circumstances, such admixture has to be resorted to, it is imperative that the resultant flour should be supplemented with protein-rich foods. The areas where tapioca is cultivated in India are unfortunately not growing wheat but only small amounts of rice. The temptation to mix rice and tapioca should be resisted unless attempts are made side by side to enrich the protein content of the diet.

Thus far about tapioca. Potato is extensively cultivated and consumed in foreign lands whereas the consumption of potato in India is not considerable. Realising that potato is the best insurance crop against food shortage, the Ministry of Food in England subsidised potato cultivation there during the war years. This subsidy acted as a sufficient incentive to the farmers to increase the area and yield of potato with the result that the food requirements of her population were partly met by potato. Even during peace time, the consumption of potato in foreign countries was far higher than what we are accustomed to believe in the case of a vegetable like potato. The prewar *per capita* daily consumption of potato was 9 ounces in England, 16 ounces in Germany and 19 ounces in Belgium. To approach anywhere these consumption levels is impossible in India, because our climate is unsuited for its cultivation, except in isolated areas, and because of a paucity of cultivable land which can be diverted for potato cultivation.

There remains finally sweet potato which is eminently suitable, not merely on agricultural grounds but also on grounds of taste and palatability. If potato is the tuber of the West, sweet potato is the tuber of the East. The Chinese cultivate sweet potato on a large scale and it enters into their diet in some parts even more than does rice. The U.S.A., particularly the Southern States, cultivate sweet potato on a fairly wide scale. Prof. Afzal Husain mentions some varieties of sweet potato which are only 3 month-crops. According to him, two crops a year, each yielding 200 maunds of tubers grown over a moderate area, would convert the traditionally deficit Bengal and Bihar into surplus areas not only for carbohydrates but also by releasing additional area for fodder which in turn will increase the supply of milk. This is not an ambitious programme and is easy to execute.

Sweet potato does not need much propaganda to popularise it. Tender sweet potato is a favourite with the young and the old alike. Baked slices of mature sweet potato are equally well relished and it is not uncommon to find them included in the wares of petty vendors around street corners.

Sweet potato is, like tapioca and other vegetables of this group, a heavy yielder. But unlike tapioca, it needs a better soil and proper attention. Given half the care and attention as is bestowed

for the cultivation of cereals. Sweet potato will yield at least 4 to 5 times the amount of calories per unit area. Animal experiments have shown that cereal diets in which the cereal has been partially replaced (replacement to the extent of about 25 per cent) by sweet potato have given rise to growths in experimental animals almost comparable to stock diets. In similar experiments wherein the cereal replacement has been effected by tapioca instead of sweet potato, the growth observed was slightly inferior.

No reliable data exist on the acreage sown under sweet potato. But the farmers in India have a robust farm economy born of inherent common sense. Prof. Afzal Hussain feels that the Indian cultivator is more realistic than he is often credited to be. For instance, in the densely populated tracts of Bihar and Travancore, the area under sweet potato and tapioca increased considerably, "not on account of any special propaganda nor through financial aid or efforts of administration, but almost entirely because of the well-established efficiency of these crops to provide cheap and abundant food, and the ease with which they can be grown under diverse climatic conditions and soils of varying potentialities."

It is therefore desirable that a certain amount of reorientation of our ideas of cereals *vis-a-vis* tubers is necessary. The existing idea that we should obtain most of our energy and protein requirements from cereals may be suitably modified if we are to be self-sufficient in the matter of food. To meet our energy requirements, tubers may be included in the diet in such proportions as would furnish say 10 to 30 per cent of the total calories. It may not be far wrong if it is assumed that the extent to which we can persuade ourselves to shake off the "cereal mentality" in favour of roots and tubers, will determine the time taken by the country to become self-sufficient in food. As a short range policy, it has everything to recommend it. It should not make us complacent about a permanent solution of the problem which should concentrate on increasing the yield of cereals by using improved seed strains and by manuring, and a fuller utilisation of such foods as fish, birds, etc., which do not need additional land for their propagation.

Butter in the Tropics

A new type of butter-spread, containing dehydrated butter to which hydrogenated butter fat salt and skimmed milk powder have been added is now being produced in Australia and specially intended for marketing in tropical countries. The melting point for this product is 106°F as compared with 80°F for butter. This new form of butter has a higher food value than ordinary butter but has the same appearance.—*News from Overseas, Food Journal*, Oct. 1948.

Common Vitamins and their

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Popular Name	Chemical Constitution	Solubility	Occurrence
Vitamin A	Carotene (hydro-carbon).	Fat-soluble	Butter, eggs, corn, sweet potatoes, cod-liver oil, fresh milk.
Vitamin D	Ergosterol	Fat-soluble	Milk, butter, egg-yolk, cod-liver oil.
Vitamin B group			
B 1	Thiamin (heat-labile)	Water-soluble	Plant-embryo, rice-husk, yeast, eggs.
B 2	Riboflavin	"	"
	Nicotinic Acid	"	"
	Pantothenic Acid	"	"
	P-amino-benzoic acid	"	Liver, yeast, milk, vegetables.
	Folic Acid	"	"
Vitamin C	Ascorbic Acid (heat-labile)	"	Fresh fruits and vegetables, fresh meat and milk, adrenal cortex.
Vitamin P	Flavone	"	Fresh fruits and vegetables.
Vitamin E	a-Tocopherol	Fat-soluble	Wheat-germ, lettuce, meat.
Vitamin K	2 Methyl-1 3 Phetyl-1 4 Naphthoqui- [none]	Fat-soluble	Alfalfa, spinach, intestine (bacterial action) liver of mammals and fish.

Chief Characteristics

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Function and Uses	Effects of Deprivation
Anti-infective.	Keratinizing metaplasia of conjunctiva, trachea, bronchi etc., xerophthalmia, night-blindness.
Controls calcium metabolism, calcareous deposits in hyper-vitaminosis.	Rickets, tetany, osteomalacia, dental caries.
Anti-neuritic.	Beri-beri, neuritis of alcoholism, pregnancy and diabetes, myocardial affection.
Normal tissue respiration.	Severe eye-affections, cheilosis.
Normal tissue oxidation.	Pellagra.
Growth of many bacteria.	Necrosis of liver and renal cortex.
"	"
Anti-pernicious anæmia activity.	"
Development and maintenance of inter-cellular substance of mesenchymal cells.	Scurvy, Barlow's disease, secondary anæmia.
Controls capillary permeability.	Hæmorrhages.
Necessary for fertility.	Sterility in male, death of foetus in female, necrosis of skeletal muscle.
Manufacture of prothrombin.	Hæmorrhages in new-born, obstructive jaundice etc.

A Plea for a National Diet

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AFTER August 15, 1947, our national leaders are trying their best to unify the whole of India into one unity politically and thus create one Indian Nation and a Secular State. But at the same time if the Indian Nation has to become strong and healthy it is necessary that in the matter of diet there should be uniform diet in all the provinces as for instance the diet of Northern India is rich and nutritious while that of Southern India is poor and not sufficiently nutritious. At the same time according to Bhore Committee Report, an ill-balanced and insufficient diet giving about 1,750 calories per day is typical of the diet consumed by millions in India.

Food is the instrument of nourishment and the basic principles of food are divided into :—(1) Protective food constituents; (2) energy-yielding constituents; (3) mineral elements; (4) vitamins or accessory food; (5) water; and (6) oxygen.

Protective constituents are mainly proteins which are necessary for the growth and repair of the tissues and cells. The daily requirement of protein has been estimated at 1 gramme per kilogramme of body weight. It is not necessary that these proteins should be from animal food. Cereals, milk and milk products may provide sufficient amount. Energy-yielding constituents are carbohydrates and fats which on being metabolised produce heat or energy mineral elements. There are nearly 20 elements necessary for the building materials for the structure and for regulation of various functions of the organs. All of them are concerned more or less in controlling the normal exchanges of the body fluids and permeability of the cell membrane.

Some maintain blood neutrality. Some are useful for contractility of muscles and excitability of nerves and some are used up in the formation of digestive juices. Some are necessary in carrying O_2 from the lungs to the tissues and of CO_2 from the tissues to the lung. Most important of them are :

Calcium, the daily requirement is	..	0.68 gm.
Phosphorus	"	1.5 gm.
Iron	"	15 mg.
Iodine	"	1/1000 mg.

Vitamins.—Each vitamin has its specific relation to certain structures e.g.

Vitamin A :—Epithelium and nerves.

Vitamin B :—Gastric and intestinal tract and nervous system.

Vitamin C :—Cement substances and arteriolar system.

Vitamin E :—Reproductive system.

The actions of most of them are closely interrelated.

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Water :—It has been said that “the first rule in dietetics is to drink water in abundance.”

Proper oxygenation.—Suitable clothing and regular physical exercise.

The best food consists of : (1) Cereal grains or mixture of cereals, milk and milk products, butter, cheese, buttermilk, egg; (2) green leafy vegetables; (3) root vegetables; and (4) legumes and fruit.

Faulty food is directly or indirectly responsible for a very large proportion of ill-health.

Nutrition can be defined as processes or a series of co-ordinated processes whereby the nourishment of the body is affected and the structure and integrity and functional efficiency of every cell is maintained. It consists in taking in and assimilation through chemical changes of metabolism. The primary purpose is to establish and sustain the structure and function of all organs of the body to keep the mechanism of the body in perfect running order and also to prevent the disturbance or impairment of structure or function of organs or parts of the body which is diseased.

Nutrition depends on a number of conditions :

- (1) Most important is the constitution of food.
- (2) Adequate oxygenation of blood and tissues.
- (3) Efficiency of the processes : digestion, absorption, assimilation, circulation and excretion.
- (4) Proper exercise of the body.
- (5) Rest and sleep.
- (6) Freedom from worry and emotional excitement.
- (7) General hygiene.
- (8) Sunlight.
- (9) Inherited characters.

It is not only the responsibility of the Government but it is also the responsibility of the medical profession as well as teaching institutions to educate the public to understand proper and well balanced diet. Every medical man must insist on a certain type of diet and advise whoever comes under his examination or contact to introduce such a balanced diet. Uniformity of diet all over India can thus be easily brought about and the disparity which exists between the diets of different provinces may come to an end and thus the nation's health be improved remarkably. Of course economic conditions of the majority are such that such a rich and nutritious diet is not possible, but if a particular type of diet is advised all over people may easily adopt it as for instance the people in Eastern and Southern India can be made to realise that rice which is their staple diet is not correct but a diet of cereals or mixture of cereals, milk, leafy vegetables and fruits is necessary. If this is insisted upon such a uniformity may be achieved sooner than expected.

Food Provincialism

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Food is essential to sustain life. Different forms of life have different types and kinds of food. In a animal life we find different animals taking different things as food. Human beings living in different parts (countries) of the world take foods which are widely different in nature and quality. India is a compact geographical unit but even here we find that her inhabitants—different compound parties—take as their staple food articles, which contain dietary food principles, in extremely different proportions. I shall here consider the various different food articles of the different provinces of India.

India is a vast country and is divided into many provinces. The people are of different castes. Their habits and religions differ. The foods they take also differ. The climate is different in different provinces. The temperature varies from 120°F to 0°F. The chief crops to supply food articles are rice, wheat, millet, barley, maize, various pulses, some oil seeds, various vegetables and a few fruits.

Rice is the staple food for Bengalees. With the rice they take pulses, and curries prepared from vegetables. Many of them take fish; and milk and milk preparations are regarded as delicious food articles. Meat and egg are not taken by all. Fruits are only sparingly used. Vegetables and fish are invariably cooked in mustard oil.

Many of the Hindustanis, who live in Behar, U. P. and C. P. take *chapathi* made from wheat flour and cooked pulses. They want some ghee with these articles. Some take rice but not with relish. The poor may resort to *Chattu* (powdered pulse after baking). Most of them do not take fish. Maize is also taken abundantly.

The people of Orrisa generally take rice and dhal and in many respects the food resembles the Bengali diet.

The Punjabis generally take *roti* made of wheat flour and most of them are meat-eaters.

The Marwaris are as a rule vegetarians, and they do not take any animal food. Wheat flour and ghee are their chief food.

The Madrasis are fond of rice, and boiled rice is their chief food.

Though India is an integral country, the staple foods differ in different provinces. What may be the cause of this and what is the influence that is exerted on the people of the different provinces, are no doubt good topics for discourse.

Food in whichever variety it is taken, must be a balanced diet, and must yield sufficient calories needed for healthful living. Taste differs and the choice of food depends not only upon the tastes of different people but also upon the climatic condition of the place. It also depends upon the habit of the individual concerned.

Different groups of food are taken by different groups of people with the ultimate result of healthful living but of different measures. The principle of food is, that it should contain all the principles of food in proper proportion; that is, the food must be a balanced one. The different diet therefore depends upon its physiological effect upon the individual people of the province. The food should be easily digested and absorbed in the body. If a Bengali takes the diet of another province, neither it will satisfy his appetite nor it will be digested easily. This satisfaction is a basis of the choice of the particular diet. The cheese which is extolled as a very good food and very much nutritious, would be nauseating to an Indian peasant and it may be also indigestible. It is a bad idea that people of warm climate should take less food than those of cold climate. The difference lies between the dissipation of heat from the body and the prevention of loss of heat from the body, and this is done by wearing thin or warm clothings.

Dietetics may formulate the kind and amount of food which is required for health but individual taste cannot be governed by anybody. It is wrong to say that because meat contains the proteins of high value and therefore every individual should take meat. An article of food which is taken with relish by an individual is repugnant to the other. Similarly, the diet which is consumed by the people of one province may not be sustentative to the people of other provinces. The diet taken by the people of one province is most suitable and satisfying to the people of that particular province and must not be interfered with. It may be due to the peculiar nervous constitution of the people of that particular province and it is a law to themselves. It may be also said as the law of nature, one's own for that province. One should restrain himself from saying anything arrogantly against the usual articles of diet of the people of any particular province.

The Story of Sugar

A brief history of sugar entitled "*Sugar down through the Ages*" is being distributed by Lamborn & Co of U.S.A. The story begins with the first mention of sugarcane in India, eight centuries before the birth of Christ, and traces its expansion down to the present day. It tells of the beginning of sugar processing, the origin of beet sugar, the impetus given to the beet sugar industry by Napoleon, the effect of wars and politics on the cane and beet sugar industries and other important highlights in various countries of the World. The author is Samuel Schoenfeld, statistician in charge of the statistical department of Lamborn & Co., Sugar Brokers of the U.S.A.—*Food Manufacture*, London, 23, 10, 1948, p. 487.

Realization of Full Value for the Money Spent on Our Food

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IT seems to be axiomatic in these hard days with soaring prices of every article of necessity, especially of food, and with lower earning capacity, that we must exercise our minds to make the articles we use, last longer, give us greater benefits and greater happiness, to enable us to obtain greater return from the money we spend. Nature shows us a splendid path in the amount of energy stored and work accomplished by a full-term pregnant woman, who in spite of little change in the calories she takes, is capable of piling up about 20 lbs. of body-weight in addition to the 10 lbs. or more required for the foetus and its accompaniments. Learning to obtain "Full value" is an art wellworth cultivating even for its own sake.

The word "Food" has not necessarily the limited meaning of what we purchase in the market, but its utilization in the body for growth, repair, heat, energy, disease-resisting powers, procreative capacities, for longevity, for satisfaction of a primary need, and for happiness. Food must, therefore, be considered right from the point of view of its origin in the soil, to all other factors which contribute to its use in the body. Farming in all its aspects, quick marketing, correct but varied purchases according to the needs of a balanced diet, the art of cooking and of serving, the art of reducing food waste at every stage, the psychological aspect of food and nutrition and habit formation are factors which are not only good in themselves but are useful for building up character and increasing the sum-total of our happiness.

Land in India as also in many parts of the world had been deteriorating with consequent deterioration in crops, in the health of the people and that of farm animals; dairy products are at the lowest level both in quantity and quality for want of proper fodder and there is not even a swallow of milk to go round. Fish industry both inland and that in the sea is still in its infancy. Transport and marketing facilities for fresh food articles are in the hands of middle men whose first concern is profit so that parts of the country which are most productive are perhaps in need of even the barest necessities of life and articles good or bad are passed on to those who are free with their cash. The art of storing grains from the depredations of insects and creatures, large or small, is still to receive adequate attention. Dehydration, canning, pasteurization, and cold storage are in an experimental stage. We are making a start from the scratch. All that we have to see is that we don't let any one forget what apparently are but side issues.

Scientific farming helps us not only to increase the quantity of food and make the land yield more than two heads of corn

where only one was formerly available, but to increase the quality of its proteins, its salts and its vitamin contents. Artificial manuring with chemicals had its days; we are now returning to improvement of the soil by natural methods and by organic manures; by elimination of weeds, insect pests and fungus pests and by correct watering. Mechanical farming is also adding its quota to the increase in the amount of food for the money spent. Back to land is a worthwhile cry if farming is made a lucrative business.

Education in diet and nutrition is our second great need. Balanced diet and its implications are so little understood that the present propaganda has not given sufficient incentive even to few individuals to meet their own requirements at least in a partial way. The slogan of "Grow more vegetables" has fallen on deaf ears. "Kitchen gardens" have ceased to be the pride they were a decade or two ago. Hydroponics or soil-less cultivation is still a curiosity in spite of its possibilities in crowded cities and its cheap but efficient turnover. Bee farming, a valuable source of excellent food and vitamins, is looked upon more as a fad, than as a healthy hobby or vocation. Educating the adults has produced little results. *We must now tackle the youngsters* in the schools, teach them to love nature and interest them in the resulting benefits by incorporating such subjects in their studies and in their text-books and make "deficiency diseases" a thing of the past.

Even our hospitals do not yet realize the necessity of engaging the services of a dietician and getting full value out of her. The patients' diets are monotonous, unappetizing, unattractive and often served in such a shoddy, indifferent and heartless way that it is enough to drive away a sane person's appetite, let alone a patient's. With all due deference to experts in medicine, I would like to maintain that 50% of the credit in curing a patient is due to the Nursing Profession and 30% should be due to the diet that is given him. The total amount of calories required for each patient and the constituents of food are rarely looked into by the medical officers who do not realize the value of a diet prescription. Even our typhoid patients continue to be dieted on the old irrational lines of 50 years ago with butter-milk and orange juice. Dieto-therapy, which should really form 30% of every therapy is practically non-existent. The employment of Dieticians to every hospital would not only bring down the per capita cost of treatment, add so much to the mental and physical contentment of the patients and have an enormous propaganda value that there would be a quick turnover in the patients and the hospital facilities made available for a larger number. The dietician would not only provide correct dietary but introduce variety, prepare them in the nicest way, serve them hot or cold as per patient's taste. Stimulate his appetite with cheerful words of solace and march him on to the road of

recovery and out of the hospital in double quick time than what would otherwise have been possible. Study of the seasons and of the markets, the art of storing food, the art of cooking and that of serving are lost arts in these days when kitchen work has come to be considered an abomination, even in private households. If more value is to be realised for the same amount of money and labour spent, no work should be considered below one's dignity as kitchen work is now-a-days considered to be.

What is good for a diseased person (a patient) is more than good for a healthy person and for a devotee of strength. We want *organised canteens* in charge of dieticians, canteens which can pay their way and give a return in health and goods a dozen fold than the commercial restaurants would. Dieting is an art which deserves to be revived and made popular in lieu of the "hurry" which seems to be the curse of city life. Conditions found in the Taj Mahal Hotel can be created even in the slums, if there is a "will" behind it. The whole of our outlook towards diet must be changed. Only when we learn to look at diet as a source of pleasure, same as music, drama, cinema etc., then alone shall we escape the curse of present ill-health and the necessity of founding more and more beds in our overcrowded hospitals. We want more propaganda to be health-minded rather than be hospital minded.

The books of Hindheed and others labelled as faddists have a lot to teach us regarding our food. The use of fruits, vegetables, and milk, and the method of eating, chewing food a dozen times before swallowing has more than a grain of truth in the satisfaction food gives us, in increasing nutrition and in lessening the total amount of food required. Predigested foods like germinated grains, bread raised with yeast, require to be popularised. The possibilities of *artificial vegetable* meat prepared from edible brands of yeast have been lost sight of, as a paying commercial proposition. Some of the vitamins even can be prepared in the laboratory much more cheaply than what the present bazar can afford us.

We badly need a *food campaign*—a campaign for its scientific production, for its utilization, for its education even in our school days, a campaign which would cover the vast organizations of agriculture, dairy farming, fresh and salt water farming for fish, a campaign for quick transport and better marketing, a campaign from the consumers' point of view, a campaign in the art of cooking, of serving and of table-manners, and we can do no better than *make a start of it in the schools*, in our labour congregations and welfare centres where its need is greatest and would be warmly appreciated.

Dietetics and Nutritional Disorders of Rural Ceylon

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IN the present day, when the slogan, "Eat and be Healthy" is heard from all sides, Ceylon is also keeping pace with the rest of the world in the problem of food and nutrition. By health talks and other propaganda much progress has been made in educating the masses on the value of taking a well balanced diet in order to maintain good health. Thanks to the pioneers in Ceylon in the field of nutrition, majority of our urban population have already appreciated the benefits of a healthy diet. But, there is still much to be achieved in this respect in rural Ceylon.

Like anyone else in the world, food is the primary concern of the Ceylon villager too. He is generally a cultivator or a farmer, who toils day in and day out, to produce food. Yet, he pays little or no attention to the nutritional value of his own diet. He still maintains the same monotonous diet that his ancestors were once used to. He little realises that science has since revolutionised the world. He does not care to know that every article of his diet has been tested and experimented upon and that each constituent of it has got a definite function to perform in his body. The fact that the selection of food has also become an art today is a mystery to him.

Alas! it is not his fault. His poverty and ignorance are responsible for it. The ordinary villager in Ceylon is poor and as such his diet should naturally be poor. This state of affairs, however sad it may be, will continue for sometime more until the standard of life of the common man is raised. This is, indeed, a national problem.

In the circumstances, one would naturally expect cases of malnutrition in large numbers in rural areas of this island. As one who has associated for a number of years with the less fortunate of my countrymen, I have had the occasion and opportunity to study their habits and environments. It has been my pleasure and privilege to investigate deeply into their afflictions and ailments. I am, therefore, in a position to vouch for the fact that most of their complaints are due to nothing but nutritional disorders.

It is a known fact that the quality of a diet is assessed from its nutritional value. No longer do we think of filling the stomach with anything and everything. More attention is now paid to the quality of the food rather than to the quantity of it.

Foods, as we are aware, consist of the following factors, *viz.* :

(a) Proteins, the builders of the flesh.

(b) Carbohydrates, the energy producers.

(c) Fats and oils, the storers of fuel for the system.

(d) Minerals, which go to help excretions and formation of blood, bones, etc.

(e) Vitamins, the most essential food factors without which no life could exist.

It has been proved beyond doubt that good health could only be maintained by taking a diet where all these factors are available in proper proportions. Deficiency in any will have its effects in the human system in some degree or other.

The average male adult of rural Ceylon, being a moderate manual worker, requires about 3,200 calories of food for a day, while a woman of the same class needs nearly 2,800 calories. Children require proportionately less, varying from 750 to 2,100 calories, while women in maternity should get at least 2,900 calories. Labourers doing heavy manual work need much more, on an average of 75 more calories for each hour of work.

I do not propose to discuss here with illustrations, the exact nature of the diet of these people. However, suffice it to say, that the ordinary diet of the Ceylon villager does not have a caloric value of even 2,200. It is deficient in almost all the food factors, most prominent of them being protein especially of animal origin, calcium and vitamins A and B₁ and B₂ (Riboflavin).

Proteins.—Proteins are available in both animal and vegetable origin. But the former are generally superior and it is pointed out that at least one third of the proteins consumed should be of it. In some instances, specially in the case of vegetarians, proper protein intake should be maintained by taking a mixture of pulses and cereals. The best source of proteins in Ceylon diets is milk. Other common foods where these are available are fish, meat, liver, eggs and pulses. Owing to religious and other reasons meat, egg and milk consumption in rural Ceylon is very low. These people are in the habit of selling their milk and eggs in order to buy other foodstuffs which are far inferior in their nutrient value.

Proteins, being the flesh-forming factor in foods, which is necessary for the growth of man, children require more of these than adults. Expectant and nursing mothers need still more. The following table gives the estimated requirements of proteins for different individuals for a day:

1. Adult male	.. 75 grammes
2. " female	.. 65 "
3. Child at 10 years	.. 70 "
4. " 4 "	.. 45 "
5. Expectant mother	.. 80 "
6. Nursing mother	.. 100 "

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As pointed out earlier the protein value of the diet of our villager is almost the minimum. Hence, nutritional disorders due to the insufficiency of these are very common in these areas.

Many cases of general debility with rapid wasting among infants and children are brought to our dispensaries and hospitals for treatment. Most of these are due to protein deficiency. These are usually the offsprings of poor parents. History often reveals that the child was brought up on rice congee or coriander water when the mother went dry after a few months of nursing. Poverty prevents feeding the child on cow's milk or any kind of infants' foods. Mothers of these areas always think of coriander water as a substitute for milk. This has been a home remedy from times immemorial and older people seem to have great faith in it. However, I am of the opinion that it has no sufficient food value for a growing child. This, or rice gruel, contains very little or no proteins. The infant appears to thrive on these for some time and begins to waste rapidly as no flesh could be formed on a diet without proteins. Unless proper nourishment is given the child dies after sometime.

Milk feeding centres and child-welfare clinics have now been established in different parts of the island at Government expense in order to prevent this sad state of things. This, no doubt, is a great boon to the poor parent, if these are patronised with due interest. Propaganda and persuasion of health and other officers in this connection deserve much praise and appreciation.

Nutritional dropsy is another disorder due to protein deficiency, seen occasionally. The repair of the wear and tear of the body is not feasible if the intake of protein is very small. In case of slight deficiency the child becomes weak and debilitated while general oedema sets in, in extreme cases. The swelling starts at the ankle at first and gradually extends upwards involving the whole body in a few days. Abuminuria is not usually present in such cases and thus, the possibility of nephritis so common in childhood may be excluded to confirm diagnosis of this condition. The disorder too, is common among children of poor families, who are fed on rice congee or other foods like yams.

Nutritional dropsy is also observed in poor expectant mothers whose intake of proteins is very low.

Cirrhosis of the liver is another nutritional disorder common in Ceylon, due to protein deficiency. This, as a rule, is a disease confined to alcoholics. The Ceylon villager is generally a total abstainer. It is, therefore, interesting to find out how it is possible in such a person.

Our dishes usually contain large quantities of appetising and flavouring agents like condiments, which really have no food value. When taken constantly for a long time they will necessarily be poisonous to the system owing to their cumulative action. Some

toxins are also taken in by us with some of our foodstuffs, quite unaware of their presence. All these poisons, as a rule, get absorbed and damage the liver in the absence of an antidote. Proteins are believed to be the natural antidote for such toxins. Hence, a diet deficient in proteins will not protect the liver from damage caused by different poisons which enter the system. In such a deficiency cirrhosis of the liver will be the ultimate result.

Carbohydrates, fats and oils.—These food factors are the chief sources of energy and strength for the work of muscles and organs. Fats and oils help the proteins and carbohydrates in their action within the body and being very rich in fuel values they store and reserve it for future use. They also serve as a protection for the flesh from external damage.

Sugars and starches are carbohydrates. They are available in abundance in cereals like rice and kurakkan, which form the principal diet in rural Ceylon. Other common foodstuffs like dhall and sweet potatoes also contain these in fair quantities.

Fats are of animal origin while oils are obtained from the vegetable kingdom. Fats usually are not included in the diet of the ordinary villager as such foods like butter and ghee are expensive. Ghee is sometimes prepared in village homes, but it is utilised only for medicinal purposes.

Cocoanut oil is the only vegetable oil that is used by these people.

The proportion of carbohydrates and fats and oils is not very important in the upkeep of the general health of man. There are no nutritional disorders due to the deficiency of these. However, sugars and starches are foods giving energy and strength, and lack of these in the system will bring about a state of asthenia.

A few cases of myocarditis and myocardial degeneration have been noticed in these areas. A poor man's diet is usually rich in carbohydrates, as foodstuffs containing these are less expensive. Carbohydrates are easily converted into fat within the body. In the circumstances, an excessive use of carbohydrates by a person not doing sufficient work can produce cardiac disturbances due to fatty degeneration.

Diabetes can also be regarded as a nutritional disorder due to overeating and excessive use of carbohydrates although there are other causes for the same.

Hypovitaminosis A, D and E may result in the event of the intake of fats and oils being low as these are fat soluble vitamins.

Obesity is due to excess of fat in one's system.

Minerals.—Foods should contain minerals in sufficient quantities for the health of man. Of the minerals that are necessary for

the body only Sodium Chloride is taken in its proper form. All others are available and taken in, in the diet. Iron, calcium, phosphorus, and iodine are other important minerals without which good health could not be maintained.

Most of the foodstuffs in Ceylon, specially the green leaves like *Ipomœa Aquatica* (Kankun), *Amarantus gangeticus* (Thampala), *Alternanthera sessilis* (Mukunuwenna) are very rich in minerals.

As iron helps in the formation of blood, anæmia is the disorder due to the deficiency of this mineral in the body. Foodstuffs, very rich in iron, are available in large quantities in rural Ceylon. But it is strange that anæmia is very common among the rural population. Although a large number of these cases are treated daily at our medical institutions, defective nutrition is not the cause of all. Malaria and hookworm are responsible for a good percentage of them.

Chronic nutritional hypochromic anæmia is a disease due to faulty nutrition common in poor classes in rural areas occurring chiefly among women of child-bearing age. Such women require a diet very rich in iron to make up for the periodical loss of blood and also for pregnancy.

Chlorosis is identically the same condition in young girls. This form of anæmia is also common in our rural districts.

When a woman becomes pregnant, owing to toxæmia of pregnancy and the alteration of appetite, the iron intake will become less and anæmia invariably develops. At times, it becomes secondary to an existing anæmia. This condition is known as hypochromic anæmia of pregnancy.

Nutritional hypochromic anæmia of infancy and childhood is the name given to a form of anæmia in infants and children born to anæmic mothers. The pregnant mother should be given a good mixed diet in order to prevent anæmia of her infant. The hæmoglobin level of every child falls during the first two months of life which cannot be prevented by any form of treatment. This becomes normal during the third month, but at times falls once more, especially in poor children, making them anæmic for a further period. In such cases a change from milk to a good mixed diet proves beneficial at times.

Calcium and phosphorus, we are aware, are necessary for the formation of bones and teeth. Hence these are essential for the growth and health of children.

The requirement of calcium for different individuals is approximately as follows :—

1. Adult	..	5 gramme, per day
2. Young child	..	75 " " "
3. Adolescent	..	1 " " "
4. Nursing and expectant mother	1.25	" " "

It is interesting to note that Nature has provided in mother's milk, calcium and phosphorus in the best proportion suitable for the infant. In the circumstances mother's milk is the best food for the child. These minerals are available in sufficient quantities in all the milk and milk products. Ceylon foodstuffs, as a rule, are not very rich in calcium, but phosphorus is found in most of them. Foods that are fairly rich in calcium are kurakkan, ladies' fingers (Bandakka), drumstick leaves, centella asiatica (Gotukola), Amaranthus or thampala and gingelly seeds.

Since the Ceylon villager has a prejudice against milk and the ordinary foodstuffs are poor in calcium, his diet should normally be deficient in this mineral. He considers that milk produces worms and other gastric disturbances in children. Owing to this false notion, the growth of these children is retarded and they become stunted and even crippled. Many skin diseases are noticed in this part of the island more due to calcium deficiency than anything else.

Vitamin D helps the absorption and retention of calcium in the blood. Hence, calcium deficiency is closely associated with that of vitamin D. Dental decay, rickets, osteomalacia, and infantile tetany are the nutritional disorders pertaining to the deficiencies of these.

Of these dental decay is very common in the rural districts of Ceylon. More than 70% of the younger population are subject to it.

As Sodium Chloride is taken daily by all, nutritional disorders due to an insufficiency or excess of it are not very common. It is estimated that about half an ounce of salt is excreted in sweat and urine of man in a day. This quantity should be replaced by the diet.

Heat cramps are complained of by some people. This is the disorder due to lack of salt in the system.

Many mothers complain that their children are in the habit of eating sand, charcoal and pieces of earthen ware etc. This is at times found in pregnant women too. This peculiar craze is known as geophagy. Villagers attribute this condition to hookworm or other worm infection. Although worm infection is usually associated with this, mineral deficiency is the real cause for this abnormal desire.

Goitre is another nutritional disorder brought about by the deficiency of iodine in the diets.

Vitamins.—“Good wine requires no bush,” said that immortal poet, Shakespeare. Similarly, vitamins require no introduction in the present day. Everyone in every walk of life has appreciated the fact that vitamins are the essential food factors without which no life could exist. In fact, the world has grown overconscious with regard to these so many brands of different vitamins in various

preparations are available in the market, with the result there appears to be an indiscriminate use of them by the public.

All vitamins which were first isolated in natural foodstuffs have now been synthesised. Any of these can be bought at a moment's notice. For the maintenance of good health, sufficient vitamins are available in a balanced diet. Hence, the selection and preparation of one's diet are very important.

In discussing deficiency diseases or nutritional disorders due to vitamin deficiency, it is necessary to bear in mind, that the demand for these essential food factors in individuals varies according to the age and other conditions like pregnancy and lactation. The requirement of vitamins is also increased in cases of infection, fever, toxæmia of pregnancy and other conditions which raise the metabolism. It should also be noted that avitaminosis can occur when there is defective digestion and other forms of gastric disturbances.

In this article, I do not propose to discuss avitaminosis at length. My remarks will be confined only to a few of the nutritional disorders brought about by the deficiency of principal vitamins found in foods which go to form the diet of the Ceylon villager.

These foodstuffs contain only the undermentioned vitamins, viz.: Vitamins A, B₁, B₂ (Riboflavin and Nicotinic Acid) C, and D. Anyone consuming plenty of fresh vegetables and fruits and taking exercise in the open air and sunlight will receive the benefits of all these vitamins.

Vitamin A.—This vitamin was first isolated in 1937 and was synthesised ten years later. It is needed for the growth and the building of new cells, retinal pigments and normal epithelial tissues.

Daily requirements of this vitamin for different individuals are as follow:

1. Adult	..	5,000 international units	
2. Pregnant mother	..	6,000	„
3. Nursing	..	8,000	„
4. Child	1,500 to 5,000	„	(according to age).

Each gramme of this vitamin contains 3,000,000 international units.

The diet of the majority of the population of the rural districts of this island contains very little or no vitamin A. Being fat-soluble it is available in many animal fats, like butter, ghee, fish, liver oils, eggs etc. Foods of vegetable origin do not contain this except in the form of carotenes or provitamins, from which vitamin A is readily formed in the body. In the circumstances hypovitaminosis A is very common in our villages.

In vitamin A deficiency, the growth of the superficial layers of the skin and mucous membranes, specially of the eyes and respiratory organs, is affected. Various cells and tissues get atrophied lowering the power of resistance to infection. This hypovitaminosis A is often a predisposing cause of tuberculosis of the lungs.

Xerophthalmia, Bitot's spots and night blindness are the diseases of the eyes caused by the deprivation of this vitamin.

In xerophthalmia, there is dryness of the eyes owing to the lachrymal glands getting involved. The eyes are not bathed in tears as usual and degeneration of the cornea sets in. Consequently, a condition of purulent conjunctivitis with corneal thickening and ulceration develops. More than 60% of blindness in Ceylon is believed to be due to this.

Night blindness is caused by the cessation of regeneration of the visual purple of the eye due to a lack of vitamin A.

Bitot's spots are caused by chronic hypovitaminosis A. There is increased pigmentation over the eyes with white patches in this condition. Complete blindness will follow if no proper treatment is undertaken in time.

Many skin diseases due to vitamin A deficiency are also found in Ceylon. Phrynoderma, hyperkeratosis of the skin or toadskin is the commonest. This is characterised by a dry and unhealthy skin with an eruption found often on the posterior aspect of the arms.

Ichthyosis, a condition characterised by the dryness and formation of scales or horny growths on the skin, found in some illnourished children is also caused by hypovitaminosis A. This, as well as other skin diseases such as lichen or pityriasis pilaris, and acne vulgaris respond beautifully to vitamin A therapy.

Vitamin B.—Vitamin B is composed of many components. There are as much as nine of them. Hence, it is known as vitamin B complex. I shall mention only three of them in this article.

Vitamin B₁ which is called Thiamin in America and Aneurin in Great Britain is required for carbohydrate metabolism. This was first isolated in 1931 and was synthesised in 1936.

Daily requirements of this vitamin are as follow :

1. Adult	..	1.8 milligrams.	
2. Pregnant mother	..	1.8	"
3. Nursing	..	2.3	"
4. Children	..	0.4 to 2	" (according to age)

333,000 international units are available in each gramme of this vitamin.

Ceylon foodstuffs which are rich in this component of the vitamin B-complex are country rice, grams, dhals, fermented toddy, milk, liver and pork.

Hypovitaminosis B₁ is well marked in elderly people. General debility accompanied by dyspepsia, constipation, anorexia and cardiovascular disturbances seen in them are, more often than not, due to this condition.

This is called antineuritic vitamin. Neuritis specially of the arms and legs is due to this deficiency. Polyneuritis is caused in extreme deficiency.

Vitamin B₂ or Riboflavin.—Riboflavin was first isolated in 1933 and synthesised in 1935. It is necessary for cellular oxidation and carbohydrate absorption.

Daily requirements are as follow :

1. Adult	..	2.5 milligrams	
2. Expectant mother	..	2.5	"
3. Nursing	..	3.0	"
4. Child	..	0.6 to 2.3	" (according to age)

Ceylon foodstuffs rich in riboflavin are sweet potatoes, unripe plantains, eggs, meat and fermented toddy.

Angular stomatitis is the commonest condition caused by riboflavinosis. This is characterised by fissured lesions at the corners of the mouth. The so-called "geographical tongue" is also found in this condition. Cheilosis is a sign of early deficiency but in advanced stage there may be glossitis.

Eye affections such as photophobia and keratitis are also common in riboflavinosis.

Nicotinic acid or P.P factor.—This was isolated as a vitamin in 1935. It is essential for the body for carbohydrate and protein metabolism.

Daily requirements are :

1. Adult	..	18 milligrammes	
2. Expectant mother	..	18	"
3. Nursing mother	..	23	"
4. Child	..	4 to 20	" (according to age)

In Ceylon it is available in foodstuffs like pulses, meat, fish and starchy roots.

Pellagra is the chief disorder due to the deficiency of this vitamin. Fortunately it is not common in Ceylon.

As in the case of other vitamins a deficiency of these will also cause general debility.

Dermatitis is also found, at times, to be due to this deficiency.

Vitamin C.—This vitamin was first isolated in 1925 and synthesised in 1933.

It is essential for the formation of intercellular material and healing of wounds and fractures.

Daily requirements are :

1. Adult	..	75 mgms	
2. Expectant mother	..	100	„
3. Nursing	..	150	„
4. Child	..	30 to 100	„ (according to age)

Fresh fruits like oranges, cashew, guava, nelli or Indian gooseberry and green chillies, drumsticks and some leafy vegetables are rich in it.

Scurvy is the chief disease due to hypovitaminosis C.

Loss of energy and vague pains of the body are at times responsible for the deficiency of this vitamin.

Gingivitis is also possible due to hypovitaminosis C.

Vitamin D.—Vitamin D is the anti-rachitic factor of Cod-liver oil while vitamin A is the anti-xerophthalmic factor.

This was first isolated in 1929. It is essential for calcium-phosphorus metabolism.

Daily requirements are :

1. Adult	..	400	I. U.
2. Expectant mother	..	400—800	I. U.
3. Nursing „	..	400—800	I. U.
4. Child	..	400—800	I. U.

This is found in the same foods as vitamin A. It is not available in vegetable foodstuffs. This is found in abundance in the rays of the sun. Hence children exposed to sunlight do not develop rickets even if the diet is deficient in the vitamin.

As pointed out under calcium, rickets, osteomalacia, infantile tetany and some forms of dental decay are due to hypovitaminosis D.

Avitaminosis in Ceylon cannot, with advantage, be grouped under particular vitamins. Most of such disorders are due to poly-vitamin deficiencies.

Before concluding this article, I wish to refer to certain disorders, more or less peculiar to this area, which I have found to be those pertaining to nutrition.

Since assuring duties at this station, I noticed that more than 75% of adult patients who come for treatment at my dispensaries complained of a condition referred to by them as “RUDAWA.” This is a Sinhalese word peculiar to this area which means literally “Aches and Pains”. Being a malarial station, one would naturally get the impression that these are the complications of that disease.

But I found that no amount of quinine, iron, arsenic or salicylates would relieve them of their aches and pains. Hence, a detailed examination was done on a few selected cases.

All these people were very anæmic. Their hæmoglobin scale varied from 40–55%.

Urine :—Normal in every case.

<i>Faeces</i> :—D D.	Nil	100 % of cases.
Ascaris ova	+	5 % „
Amœbic cyst	Nil	100 % „
Spleen	palpable	1 % „
„	slightly	3 % „
Malarial parasites	Nil	100 % „

No serious illness within three months in any.

Diet :—All rice eaters and vegetarians. Only 5% consumed milk. 3% used fermented toddy.

In the absence of hookworm and malarial infection, anæmia due to these had to be ruled out.

They were treated with large doses of Vitamin B₁ complex and liver. A balanced diet was also prescribed. Every case responded beautifully to this form of treatment and the so-called “Rudawa” was completely got rid of. I am now convinced that this was a disorder due to faulty nutrition.

A series of diseases of infants and children is referred to by the Ceylon villager as “RATHAGAYA”, a Sinhalese term which means literally “Red disease”. Gastric disturbances in the new born and cutaneous conditions in infants and children, are included in this. Infants born to anæmic and under-nourished mothers are usually subject to these conditions. In the case of other children, malnutrition has very often been found to be the cause of them.

Many cases of infantile convulsions are seen in this locality. High fever, usually malaria, is, no doubt, responsible for these. But convulsions always occur in infants and children who are weak and debilitated due to malnutrition.

Respiratory diseases such as bronchitis, pneumonia and pulmonary tuberculosis among children as well as adults are found in large numbers in this area. In majority of cases the victims are debilitated people whose resistance power had been lowered by vitamin deficiency.

I have found several cases of recurring rhinitis in small children. They were treated with cod-liver oil and before long they were free from that condition which lasted for several months.

Another series of diseases pertaining to ear, nose and throat and even eyes which are referred to by the villager as "Peenasa" English equivalent being catarrh, are very common in some districts. I am aware that some people are treated by the so-called specialists (all Ayurvedic) for months at a stretch. My experience is that most of these cases are nutritional disorders due to vitamin and mineral deficiency. They are easily cured by vitamin preparations, calcium and iron, and a good mixed diet.

In conclusion, I wish to emphasize the fact that many nutritional disorders are common in rural Ceylon, and that most of the ordinary ailments seen are very often due to defective nutrition.

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Nutritional Contributions of Wheat

Wheat and wheat flour have played a strategic role in preventing mass hunger and starvation in various parts of the world. Wheat flour is one of the least expensive sources of food. No other single food item will supplement calories so well as bread. A pound loaf of plain baker's bread provides 1,200 calories and a pound of flour roughly 1,600 calories. Half a loaf of bread yielding eight one ounce slices with one level teaspoonful of butter or margarine *per slice*, provides 900 calories.

75 to 85 per cent of the caloric value of flour comes from starch. All essential amino-acids are represented in the proteins of wheat, flour and bread. The amino-acids in these do not however, occur in sufficient or in as well proportioned quantities relative to human requirements as in various other food proteins particularly those of eggs, milk and meats.

Dietary protein derived in proportions of 1/2 to 2/3 from foods of plant origin is entirely adequate in quality to meet all protein needs for normal growth, development, reproduction and lactation. As foods of plant origin are usually cheaper than foods of animal origin the economic benefits of such mixtures are obvious.

Half a loaf of bread provides about 18 grammes of protein which is 30% of the total necessary for protein maintenance of normal human adults, other than pregnant and lactating women.

The Council on Foods and Nutrition of the American Medical Association as early as 1939 advocated the restoration, to the milled wheat flour, of iron, thiamin, riboflavin, and nicotinic acid, by adding these in suitable amounts to the flour before issue. This enrichment programme has been of great benefit to the American diet and particularly to persons and families with moderate to low incomes.—(Editorial, *Jour. Amer. Med. Assoc.*, 27-11-1948).

T.N.S.R.

Nutrition and Health

DR. M. A. SHUKOOR,

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I wish to discuss some problems connected with food and nutrition as they are facing our country. I hope you could all spare a few moments of your precious time towards this vital subject which has been and is baffling many authorities of our times.

As we are all aware, human beings have been consuming a variety of articles as foodstuffs. It is also agreed that our ancestors did not have so many problems to solve as we have been forced to face today. Therefore now that some things have to be done, one should be prepared to face the realities, only to eradicate the defects in society and not to overlook them for vanity's sake. Neither the articles of foodstuffs have changed in their principal constituents nor the human beings who have been consuming them for their food for centuries. What then should be this great defect of society with respect to food and the standards of health, though all over the world people have been moving with a plume in their hats for all their wonderful achievements and in fact are very proud for having successfully subdued nature.

Man in the process of transformation from the Homocipian to the highly civilised man had to reshuffle and readjust his ways of living, suiting of course to the environment in which he is placed. Thus, there has been considerable change in the time-table of dietary with ultimate effects on assimilation either due to the form in which these foodstuffs are consumed or in the defect in readjustment of suitable processes of assimilation and absorption while furnishing the essential needs of the body. This scheme of ill-adjustment has been causing ill-health on a nation-wide-scale.

The standard of human constitution is so varied that any one common programme may not answer the needs of all the communities living in different zones of the globe. This requires of us to understand the significance of the various food constituents to appreciate the correct process of nutrition of the body. Once Mahatma Gandhi said that "everyone should regard it as his bounden duty to know some of the fundamental facts concerning his body." Every one of us should have a thorough knowledge of the role played by food in keeping the body fit. When our knowledge of the foodstuffs is full, it is not difficult to make our choice of the foodstuffs and cultivate the habit of making a well balanced diet. It will only be possible then to maintain the health of the individuals at about the required standard, thus enabling to occupy their proper place among the nations of the world. Therefore it should be the duty of the Government to popularise, 'Health Education' as in other advanced countries so as to raise the health levels of the individuals and of the community.

Sir Robert McCarrison observes, "that there is no subject more worthy of the consideration of those, whose life is spent, or to be spent in guarding national health."

After a good deal of investigation it is now universally accepted that the subject of nutrition covers a wide range of social and economic problems.

"It is a difficult task, my fellow citizens, to speak to the belly, because it hath no ears."—Cato.

In India, at any rate, the evidence of malnutrition is not wanting and its marring effect on our population has been responsible for lowering the working standards of our workers. The Agricultural Economics Conference is deliberating on the intricate problems of food and agriculture. The religious and rational are endeavouring for the same fulfilment: *more food*. The expert with all his limitations undoubtedly has a keyrole to play in the economic development of India. Yet he must know his people and the people must know him.

Sir Manilal Nanavati, President of the Agricultural Economics Conference in his Presidential Address said—"This war has brought home to us the weakness of the Indian economy on account of the Bengal famine and epidemics in other parts of the country in 1943-'44, in which over a million people lost their lives." But surely this was a total war, most beastly in its kind, and people must have died of starvation in every part of the world. Our layman is misinformed. It has been my painful experience that a very large part of the educated population are unaware of the principle of nutrition, although the chief cause of wide spread malnutrition in India is of course—*Poverty*.

During the last 75 years continuous deterioration in the condition of the masses has taken place. In 1880 India had a surplus of foodstuffs to the extent of 5 million tons and to day we have a deficit of 10 million tons. Nearly 30% of the population in India is estimated to be suffering from chronic mal- and under-nutrition. The current topic is "Food Policy." This is summed up in these words "*Food For All*," simple to utter said Prof. J. J. Anjaria and called it a revolutionary slogan. Further, according to Prof. Keshav Iyengar a multi-purpose attack on all socio-economic fronts "is what is needed. In India we are on the eve of fundamental constitutional changes and it is well on the cards that India may, in spite of the logic of economic facts being against it, have to be carved up into two or more parts on the basis of the two-nation theory." But the unity of the nation has in practice been disregarded and not unoften violated in the conduct and administration of human affairs.

According to Gangulee, ignorance, apathy and dietary customs add to the contributory factors to faulty nutrition and ill-health.

Need for Food

The human body and the several foodstuffs consumed have much the same elements in the chemical composition. It is through food, air and water that the human body has to be kept fully supplied. This enables it to perform its functions on which directly depends the standard of health. There is no perfect food that can alone satisfy all the needs of nutrition so as to provide materials to replace wear and tear of the body and furnish protection against the infections to which it is freely exposed. Dr. (Mrs.) Dubash writes in *Indian Journal of Social Work* as follows:

"A few decades ago it was chiefly a matter of opinion which foods were good and nourishing and which were indigestible and harmful. No exact data was available. The choice of food was, and still is, governed by convenience, tradition and individual tastes. During the last three years the subject of food and nutrition has been most carefully investigated by physiologists and bio-chemists and is now a science based upon ascertained facts and measurements. The knowledge gained by scientific research is available for general use and although it is by no means complete, yet enough factors are known to afford a reliable guide to the choice of proper food. Feeding experiments have shown that in man and animals the perfect growth of the body and its resistance to micro-organisms depend more largely upon food than on any other hygienic factor."

Proximate principles of food.—It suffices to say that the popular classification of foodstuffs is based on the chemical composition dividing them into six different groups namely, *Carbohydrates, fats, proteins, inorganic substances, vitamins and water*. Each one of these of course has a specific part to play in the growth of the human body. It is enough at this stage to say that children and young adults require three to four times as much food in proportion to the rapid growth as that required by the grown-ups.

Mrs. Sarojini Naidu, in a speech, has emphasised that independence should also mean freedom from want—and that means—as much as it means anything else—"Enough Food For All."

Vitamins and their importance.—Further it was due to the efforts of Magendie, we owe our knowledge of several kinds of nutrient principles of food—vitamins. Animal experiments have conclusively proved that one cannot live on a mixture of pure carbohydrates, fats and proteins. The importance of vitamins have reached such a stage that their requirements for the satisfactory growth of the human body have now been fully established. The absence of an adequate supply of vitamins affects health, growth and reproduction. The English humorist, A. P. Herbert, gives

us some good advice in the course of one of his delightful verses :—

“Vitamin ‘A’ keeps the rickets away, and succours the meagre and nerves,
 ‘B’ ’s what you lack of the stomach is slack,
 And ‘C’ is the foe of the scurvy, so when a man dines—
 Let him murmur these lines or sure he will live to deplore it—
 Just ask yourself what disease have I got,
 And which is the Vitamin for it.”

Water.—The role of water is to maintain the required concentration of the foodstuffs within the body cells and help in the elimination of waste products. It has been shown that a healthy person can fast for forty days without any disability provided he takes adequate quantities of water.

Foodstuffs

Our foodstuffs, with the exception of salts, are derived from both the plant and animal origin. It is the plant world which sustains us all, since the animals largely depend for their sustenance upon plant foods. Thus the elements of nutrition come primarily from the vegetable kingdom. For, the general well being of the masses depends on the agricultural turn over of our country as in other countries. To eradicate food shortage, a fair application of science to agriculture has to be thought of.

Foods of plant origin may be broadly classified as follow :—

1. *Cereals* :—Wheat, millet, rice and barley.
2. *Pulses* :— Gram, peas, beans and lentils.
3. *Vegetables* :—Potatoes, onions, cabbages, cauliflowers, green peas, beans, cucumbers, drumsticks, etc.
4. *Fruits* :—Bananas, oranges, mangoes, melons, plums, papayas, apples, dates, rasins, figs, nuts, etc.
5. *Oil seeds* :—Mustard, groundnut, and sesame.
6. *Sugar* :—Canesugar, jaggery, and honey.

The animal sources of food are :

1. *Milk and milk products* :—Milk, cream, butter, dahi, ghova and cheese.
2. *Eggs* :—Duck, hen, turtle and fish.
3. *Fish* :—Fresh and sea water.
4. *Meat* :—Mutton, and beef and poultry.

In the United States fresh water *tortoises* and *iguana* are just as popular. In France *frogs* are widely famed for the table. Mexicans eat *giant-water-bugs*.

Milk is the nearest approach we possess to a perfect food known, that could be used as a substitute.

Digestion.—The food we all eat stays in the stomach for a couple of hours and later passes into the intestines, where digestion takes place and it is carried to the different parts of the body through blood. In this journey through the food canal which in grown-ups is about 30 feet long, food is digested and absorbed and what is left is passed out. The food we consume every day does go through complicated process within our body before it is digested and finally absorbed. Whatever we may eat, it is only useful to the body by way of its final products of metabolism. It is now evident that food is essential for the growth and satisfactory functions of the body. The food supplies to the respective organs of the human body suitable nourishment, enabling it to repair the tissues of the body. This fact explains the great need for the different proximate principles of food.

Indication for Food

Hunger.—The call for supply for more food is sounded through a physiological phenomenon, called ‘hunger’ which is co-ordinated with a particular state of the mind called psychological factor, in conducting the sensations of hunger to the special centres.

In short, the empty feeling inside is “hunger.” We all use our food in running, walking, exercise, breathing and talking. It is mostly in movements of your muscles, while at work or in rest, that we use our food as fuel. Food is used in a hundred and one jobs done almost every day without our being aware of them.

However, so far as the highly civilized populations are concerned, I doubt very much if they are answering to these physiological stimulations. By going through the daily routine timetable of food, various articles of foodstuffs are poured down the gullet at regular intervals whether one is hungry or otherwise. By our acquired habits, in leading a so-called civilised life, no attention is being paid towards the real needs of the body. And there are many homes where no attention whatsoever is either paid to the quality or quantity of food consumed.

The amount of food actually needed depends on climate, diet, and occupation. While, fatigue, fear, anger, worry and such emotional disturbances affect the process of digestion further, to completely eliminate emotional disturbances is almost impossible. This factor, I wish to emphasise most in the case of infants and children whose satisfactory growth depends upon the balance of the mind of the parents. The present day parents are highly strung and are paying very little attention towards the general wellbeing of their children. I am quite aware of cases where the children are underfed in going through the table manners, while others feed

their children, most mechanically, without the least appreciation and appetite for food. The ultimate result is ill-health and affected growth of the citizens of tomorrow. We must remember that "food" is the instrument of nourishment and nutrition is "the act of using it."

Diet.—The problem of adequate nutrition is one that has grown in importance in recent years. This problem is no doubt a very complicated one, with so large a population living under the stress of poverty. The requirements of diet and its relation to health can be best understood and the significance of the various food constituents fully appreciated if we all have at least reasonable knowledge of food and nutrition with reference to the art of maintaining health.

It should be agreed that "Health" is something more than merely freedom from disease, and that many symptoms of ill-health may, and to a large extent are really attributed to faulty diet. Defective nutrition is undoubtedly responsible for a general lowering of their working efficiency.

The most striking defects of average Indian dietaries are :

- (1) Excess of carbohydrates (starch and sugar).
- (2) Low protein contents.
- (3) Inadequate fat.
- (4) Poverty of vitamins and inorganic constituents.

It is now recognised that one of the fundamental causes of poor physique, widespread ill-health and disablement of the people living in South India is their low and deficient dietary standards.

How much to eat.—According to Dr. Galen, "More are killed by gluttony than by the sword."

It must be a common observation that we all eat as much as we require. Some eat more, others less, depending upon their own capacity. Besides the phenomenon of eating directly depends on the appetising nature of the food, but always, just enough, to keep alive, keep healthy and to keep fit for work.

Sauclorius, a Professor of Medicine in Padua in Italy was the first to experiment on the subject of eating. Further, the quantity necessary depends upon the sex, age, climate, and the type of manual labour done.

So far as India's dietary is concerned food grains are the most important. Rice is the staple food for at least 240 of the 400 million people of India, but unfortunately rice does not supply enough of the several substances the human body needs. The milled and polished rice is deprived of the proteins, vitamins and minerals.

You will not be surprised to know that a large proportion of the population in India lives on the margin of subsistence.

Nothing, it has been proved, has so much impaired the health of a worker and added to the already heavy death rate in the country than the fact that so many workers have to forego a good nourishing midday meal.

Food rationing system.—Further "Food Rationing" introduced as a war time measure is still being continued and under existing conditions there is every probability of its continuance for an indefinite period. The standard of living and the very low graded ration supplies are really affecting the working capacities of our labourers. The food grains that are being issued are quite unfit for human consumption. To give an example 'B' Class Ration Card holders are receiving compulsorily American maize which has been the cause of many cases of gastro-enteritis. You will not be surprised if I say that the wheat and rice we receive as our rations are partly affected by moisture and partly destroyed due to the action of insects. This ration, in my opinion, is completely devoid of nutritional value altogether. In one word, some of these articles are 'horrible'. Due attention towards this is urgently needed to avoid a greater disaster.

Dietary habits.—You are all aware that the Government prohibited milling of rice, but the public got it milled and polished before use. This shows clearly how strong habits and prejudices are with some people even when these are actually harmful to themselves. More often it will have been noticed that the milk in our homes will have been heated repeatedly and to a very high degree, thus destroying all the vitamins in it. In the process of cleaning and cutting vegetables most of the useful layers, rich in minerals and vitamins, will have reached a dust bin quite unconsciously. To get rid of the old habits is a slow process, but we can and must do so when they are found to be wrong and retarding progress.

It has been estimated that the average yield of raw milled rice from paddy is about 68%, though the outturn of fine qualities may be as low as 56% whereas the yield from hand-pounded paddy is calculated to be about 72%. By resorting to single polishing of rice, instead of double polishing, a saving of about 6% has been claimed. "Not only, therefore, we have become food conscious and nutrition conscious, but have to help others to become conscious of all that the word "food value" implies.

People living in different parts of the globe have different habits and are accustomed to particular types of food. The foods taken in the North and the South are very much different depending upon the race of mankind. Those in the North have no bias against animal proteins as we find in the South. Further, having

acquired alien habits and principles we are made to discard useful portions of a good many foodstuffs in the process of its preparation, as a direct result of which medical men are more often seeing deficiency diseases and these are largely contributing to the increasing death rate.

In many homes articles of food prepared at one time are preserved to be consumed for over long periods. This is equally true of both the rich and the poor. This is done while going on pilgrimage and long distance travels with the object of avoiding inconvenience based on caste restrictions, prohibiting them from eating and drinking with others. Many of these people wish just to appease the hunger by anything. Moreover they do not believe in 'food poisoning' and of the later serious consequences. Neither appetite nor racial habits can be depended upon to guide the choice of food. Dietary customs and prejudices have an unfortunate effect on nutrition, because they stand in the way of adjusting our food requirements to changing conditions of life and labour. We could certainly improve our existing dietary habits by a wise selection of the available food. The vital importance of a sound knowledge of domestic science and dietetics is gradually and surely being recognised all over India. By this dietetic knowledge one could easily bring within the reach of 'slender purse' useful and nutritious articles necessary for the maintenance of health standards.

The attainment of positive health is a duty which we owe to ourselves and to our country. For without health we cannot be fit to play our role in the great adventure of life. Good health is part of the wealth of a nation.

Exercise.—A man weighing 250 lbs. must climb 20 flights of stairs to rid himself of the energy from one slice of bread. In walking he may dissipate 100 calories per horizontal mile. He must walk 36 miles to rid himself of one pound of fat. Exercise is very essential for the digestion of food and for its proper assimilation.

Food hygiene.—Every one of us will surely have had occasions to see almost daily foodstuffs being sold by the roadside by the vendors. These eatables are kept fully exposed to the dust, insects and a free handling by the purchaser, thus increasing the chances of contamination with infected material. These have been largely responsible for the every day increasing incidence of infectious diseases in our country.

A word about personal hygiene would certainly not be out of place. Further, no cleanliness is observed by the vendors during the process of preparation. No attention is either paid to the conditions of the clothing or the state of their hands and finger nails. The party is quite careless and indifferent to the condition of the vessels employed during cooking. Most of our housewives with a

few children have to attend to the domestic duties while at work whether at home or under private employment. No particular attention whatsoever is possible in discriminating cleanliness and filth. The idea I am pressing home is that to these mothers their children's untidiness is not objectionable at all. The excreta of these 'angels' is not truly objectionable. This, I may tell you, is most insanitary.

Most of us are not used to eating raw vegetables. But of late being in close association with the Westernised ways of living, the use of "salads" have become more common in Indian homes. The result is that some parasitic worms get easy access, into the human system through these foodstuffs, which escape proper cleaning.

Adulteration of foodstuffs.—In spite of the fact that there is legislations in this country to prevent adulteration of foodstuffs, yet this could not be prevented altogether. There has been no co-operation between the producer and the consumer. To quote an example, the milk sold as a nutritive fluid is all that matters, and it is nobody's concern to prevent milk being added to water or water being added to milk for purposes of trade and good returns. This should be regarded as a great disservice as it deprives the mother and the infant of its nutritive value. In India, many more articles like ghee, butter, oils and flour are freely adulterated.

Effect of war.—It is true war results in aggression, but in this attempt, man has had lot of opportunity in studying adverse conditions through which man had to hold to his post. It has taught us many lessons about food and its relation to health. During these periods deficiency diseases have to be fully studied.

Nutritional disorders.—The food consumed, if deficient in any of the proximate principles, will be unable to meet the needs of the body. Out of the food taken a good amount of the nutritive substances are being lost in the process of cleaning and cooking on the Indian style. Further, due to functional inefficiency the capacity to digest and metabolise food is yet another cause of malnutrition and its resulting deficiency diseases. Beri-beri, scurvy, anæmia, pellagra, rickets are a few of the many, but of the more common of the deficiency diseases. All these diseases could well be avoided altogether if proper attention is paid to one's food. For the future standards of our men and women, to enable them to take their place in society, this matter has to receive utmost attention, or else it is and will be the cause of good number of cases of disabled men and of course a great economic loss to the country.

Further, we may be getting enough food and yet be suffering from malnutrition. That is why Sir Robert McCarrison points out that malnutrition is not itself a state of ill-health, so much as the cause of many states of ill-health." If we look around us, we will

find that a very large proportion of our population is under-nourished and that faulty diet is largely the cause of the lack of mental and physical energy of the individual (Gangulee).

It is worth while remembering that persons who do not show signs of deficiency diseases are entirely free from malnutrition and that their diet is well supplied with the essential nutrients. However, there is always the possibility of defective absorption and assimilation by the body under adverse conditions. In these cases signs of deficiency will show up, in spite of the fact that their diet has been well balanced.

In rickets and osteomalacia, there is softening of the bones resulting in deformities and crippling. In women child-bearing becomes difficult. We do not see more osteomalacia in the South, except in women kept behind the "purdha" who are the worst victims. Thus this is one of the greatest of the social evils.

Balanced diet.—It has been the burning topic of the day that we should have a 'balanced diet.' The popular conception about balanced diet is that one should consume properly weighed out quantities of foodstuffs to satisfy the principal needs. However, each of us has the right to interpret a statement independently and according to one's own standard of learning. A balanced diet really signifies that these foodstuffs taken should be able to supply the different proximate principles of food in their proper proportion needed by the body for maintaining it in a fit and healthy state. A Southern Indian normally consumes much more food than a Northern Indian, but yet from the point of good health there is vast difference between these two individuals. Now, you will all have a fairly good idea of the different proximate principles of food and their necessity for the maintenance of health. All that is left for us now to do, is to think whether such a diet is within the reach of us all. This question requires of us to consider the earning standards of an Indian as a whole, so that it will be then quite clear how the living standards are miserably below the most minimum standards laid down by any country. It is enough to say that a large proportion of our population cannot afford even the basic needs of the body. This is the cruel Irony of Fate."

Furthermore, the Indian population are quite indifferent towards their diet. For the sake of religious sentiments, some very useful articles of diet are not consumed because, prolonged fasting, and charity which are mostly abused have been largely responsible for the low standard of health in this country. Some religious precepts preach the torture of human body for the winning of emancipation. Fasts are undertaken according to the whims and fancies of every individual. These people fail to understand that according to the existing standards of dietary, all of us are keeping

partial fasts, for want of foodstuffs under the scheme of strict rationing. Finally, charity has been greatly abused. Many families in spite of their own personal difficulties, believe in feeding others. By feeding able-bodied beggars, purohits, and guests no good purpose is served, except that they are rendered more poor and grow more helpless at every step.

The reason for this cannot be the ignorance or perversity of our people. "Quiteself-respecting people are apt to lose control over themselves. They quarrel over a meal like dogs that fights over a bone." Mothers have sold their children for a few annas, and husbands have deserted their wives. In other words, the society is simply shattered to pieces if its members are starved beyond a certain limit. I may tell you here that the chief cause of slavish mentality after centuries of foreign yoke is starvation which has been responsible for the general deterioration in the body and mind and they are thus unable to assert their legitimate rights and privileges. "Inefficiency and slackness are produced by under-nourishment." The great disparity in the amount of work turned out by Indians in comparison with other peoples of the world is chiefly due to want of sufficient food. "Over a million infants below the age of one year die annually in India. This inexcusable mistake is due to the negligence on the part of the mothers, who are ill-informed about the care of the infant." It is more pathetic to know that these mothers do not know about their own selves. So far as procurement of foodstuffs is concerned, it is no doubt difficult but yet in a large majority of cases the necessities are also made available to them but these are not properly utilised. It may interest you to know that dietitians trained at the Haffkine Institute have been employed by the Government of Bombay to visit Government Institutions, Hotels, Hostels, etc., to advise and make suggestions for improving the nutrition standards and methods of better cooking.

Always try to eat a 'balanced diet'. The foodstuffs we consume should be rich both in quality and quantity. An ill-balanced diet may be sufficient in quantity and yet lead to malnutrition because of its qualitative defects. Also try to avoid food monotony by serving a variety of food in accordance with your family budget.

The following menus will provide all the necessary vitamins and other substances needed by the body to maintain health :—

Have a whole wheat dish in place of rice and rice preparations. Take pulses regularly as they are rich in proteins. Include in the daily menu at least 8 ozs. of milk for every adult and 16 ozs. for every child. Buttermilk, evaporated milk, may be substituted for part of milk. At least once a day provide a cooked leafy vegetable as well as potatoes, or other root vegetable, but remember that these should not be *over cooked*.

Meat or fish should be provided once a day, or as an alternative use eggs for those who have no objection. Vegetarians may take more milk instead. Use 'salad,' prepared out of raw vegetables such as carrots, or cabbage finely chopped with tomatoes with plentiful supply of lettuce. Never forget to use fresh fruits daily. If they are not available preserved and fried fruits may be used.

For children do not stint on the butter as it is a good source of vitamin 'A'. Sugar and sweets should be included in the form of simple desserts. Plan to utilize milk and fruits as much as possible in preparing the desserts.

Food waste.—The full extent of loss which occurs as a result of damage to stored grains by insects, rodents, and moisture is not generally realised. This is sufficient to feed the entire population of India i.e., 400 millions for 22 days. If this loss is prevented 18 million people would be fed at 1 lb. a day for the whole year.

It is estimated that 100 rats consume 27 maunds of grain in 12 months. The fecundity of rats is great and a single pair can produce 800 rats in a year. Please imagine the amount of damage and waste if all these rodents are left unchecked.

Due to defective storage in unhealthy and unsuitable places fairly large quantities of food grains are being wasted both in the Ration Godowns and Ration Shops, and for that matter in the illegal godowns of the ugly black marketeer. It should be the duty of every citizen to fight out this social evil and never encourage a black marketeer under any circumstances.

Some people think that we have these problems due to our increasing population, and chronic starvation of the people in India is due to over population. Kale Mitchell says, "it is true that the present production of food is wholly inadequate but the reasons for this inadequacy lie in the system of production and the failure to develop the available resources, not in any absolute over-population." The prime cause of half-empty stomach is empty pockets." For it has been a common observation that the quality and quantity of food improves as the income rises.

Need for Agricultural Development

Of the creation of God all animals eat their food, except man who grows his food. Others are unable to do so.

The primitive man was leading the life of a beast, killing and collecting its food. If only this method was left unchecked by nature, there could hardly be any animal left in the world. The act of killing is only a means of the "survival of the fittest." Luckily enough the discovery of agriculture made it possible for the soil to feed and maintain longer larger numbers of human-beings.

According to the Anthropological Department of the Calcutta University, no less than three and a half a million people died of starvation and of disease caused by starvation. The same state may be too true also of other provinces. By a closer understanding and cooperation between the consumer and the producer this great economic disaster could be averted altogether and the outcome would certainly be a source of happiness.

Conclusion.—A generation ago, millions gave their lives in a 'Crusade' to make the World safe for democracy. The large scale bloodshed ended in complete victory—democracy appeared triumphant everywhere. And then every thing went wrong. Elation and enthusiasm gave place to disillusionment and frustration. The men whom their country needed became men without work, homes for heroes proved to be slum tenements, hundreds of thousands of this country's children remained below the poverty line. However, as you all have seen, that within a little more than 20 years of their triumph "the crusaders of democracy were facing disaster on the beaches of *Dunkirk*."

Democracy must not only win the war, it must win peace as well. Democracy will only live on and become once again a dynamic force if it can boldly turn those techniques and discoveries to its own purpose, using them to put an end to unemployment, insecurity and want and to open up new frontiers of human life and freedom.

This is a task which cannot be left to the statesmen and the experts. It is the individual responsibility of every citizen. The essence of a democratic community is that its citizens should take an active part in its decisions and this is more imperative than ever in our age. Active citizenship is the indispensable condition of freedom in a planned society. But the citizen can only take active part in the welfare of the community, if he is properly kept informed about the choices and its possibilities before hand.

Battle for health.—There is one aim about which there can be little dispute, and it is the 'Battle for Health.' It is no academic objective, but something which affects the life and happiness of every one of us. This is a battle in which all must play their part. To every one of us who are doctors, "most of the problems of our patients are not simple questions of a bottle of medicine, or an operation, but rather of economics, sociology and psychology." I believe that social advance springs only from the basis of factual information. In applying the technique the verbal and visual approaches are combined to drive home the facts of health on which the new democracy must be built.

The battle of health is not fought only in hospitals, and laboratories, and at the bed-side of the sick people. It is fought in the commission, in the factory and the mine, in fields where food is

grown and in shops where it is sold; in the schools and in the home, "where a crooked manufacturer pushes a worthless patent medicine, or a jerry-builder runs up houses unfit for human habitation, the social drawbacks of modern society. We are all of us in this war. Each of us must fight his own battles and face his ultimate defeat with dignity. We cannot make a man well against his will. But we could certainly teach him and persuade him what he ought to do if he wants to be well since healthy men and women are a great asset to society. Man fights infection partly by general sound health, fresh air, enough exercise, enough rest and hard work, partly by a specific defence developed against each individual type of germ. However it should be forgotten that the "health regulations and rules are not to be planned for all times but for the day."

Deciding what is wrong is the hardest part of the doctor's job. But the doctor cannot do his job if the patients do not come in time. What stops them is fear and finance.

Fear of being found ill by the doctor can only be overcome by education.

Finance.—For a worker, illness means loss of earnings and loss of employment, so fear of poverty is added to ill-health. The answer is complete national health insurance for all. Such a scheme is not only a social necessity but an absolute necessity. Health like happiness, appears elusive.

Finally what we must do, to have a healthier country and a healthier world. The people must be well fed. They must be well housed. They must have work to do and must do work. They must have money for their needs. They must have proper health services and they must be taught health and the laws of health. This is no job for doctors alone. It is a job for all of us. "We have the means, but only by willing work with all our might, can we bring it about."

In conclusion, I wish to make this point clear that this is not intended for those who want to escape from reality. My aim is not to amuse but to instruct, not to impart knowledge for its own sake, but so that it may be used to good and practical purpose. This article is in fact "a bullet in the battle of health."

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Nutrition—What it Means

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KNOWLEDGE regarding the quantity and quality of food required to keep a man in health is nutrition.

Caloric requirements.—An adult person living an ordinary everyday life in a temperate climate requires 2,400 calories per day.

Protein requirements.—The protein should be derived from a variety of sources and a part of the protein should be of animal origin.

Adult male	..	1 gm. per kilogram of body weight.
Pregnant women	..	do. do.
Nursing mothers	..	2 gms. do.

Fat requirements.—Fat must be a constituent of the normal diet. They are the carriers of the fat-soluble vitamins.

Proteins are broken down in the body into proteose and peptones in the stomach, and into amino-acids in the intestines; these are absorbed into the blood-stream and from there are taken out to build up fresh tissue.

Carbohydrates—supply energy to the body by their oxidation.

They are classified as : (1) The monosaccharides which require no digestion before absorption.

The disaccharides are hydrolysed into monosaccharides before absorption.

The polysaccharides (starch and dextrin) are hydrolysed by amylolytic enzymes into maltose which is hydrolysed into glucose.

Inorganic salts.—Calcium deficiency results in badly formed bones and teeth. It also results in decreased growth rate and premature death. Milk and green vegetables are the richest sources of calcium.

Copper (traces) are required for the formation of hæmoglobin.

Iodine.—The simple goitre is due primarily to a deficiency of iodine in the body.

Iron is necessary for hæmoglobin formation. When it is deficient in the food, anæmia develops.

More iron is assimilable from foods when ascorbic acid is taken also.

Magnesium.—When the amount of magnesium in the diet of young rats is reduced the rats show great irritability and some of them die.

Vitamin Content of Foods

Food	Protein	Fat	Carbo- hydrates	mg. per 100g.		
				Calories	Ca	Fe
Biscuits	9.3	33	57.5	505	23.6	1.57
Bread white	7.9	7	53.7	260	23.1	1.0
„ whole meal	8.4	1.6	43.8	229	30	2.70
Rice polished boiled	2.3	3	29.6	133	1.3	.16
Oat meal porridge	1.5	.9	8.2	48	6.3	.47
Butter	.4	85.1	Trace	793	14.8	16
Cheese	24.9	34.5	Trace	423	310	57
Egg yolk	16.2	30.5	..	350	131.5	6.13
Milk	3.3	3.7	4.6	67	120	.08
Cream	1.8	42	2.3	467	59.2	.23
Beef	21.3	32	..	385	5.8	4.6
Chicken boiled	26.2	10.3	..	2.3	10.7	2.1
Mutton leg boiled	25.8	16.6	..	260	3.6	5.1
Fruits :						
Apples	.3	Tr.	11.7	49	..	..
Bananas	1.1	..	19	83	..	..
Dates	2	..	63	270	..	..
Grapes	.6	..	15.5	66	..	..
Grape-fruit	.6	..	5.3	24	..	..
Oranges	.8	..	9.1	40	..	..
Pineapple	.3	..	16.5	69	..	..
Plums	.6	..	9.6	42	..	..
Vegetables :						
Beans	7.1	..	17.1	99	..	..
Cabbage	1.3	..	1.1	10	..	..
Carrots	.6	..	4.3	20	..	..
Cauliflower	1.5	..	1.2	11	..	..
Onions	.9	..	5.2	25	..	..
Parsnips boiled	1.3	..	13.5	61	..	..
Peas	5	..	7.7	52	..	..
Potatoes	1.4	..	19.7	87	..	..
Tomatoes	.9	..	2.8	15	..	..

Milk Analysis

	Cow	Human	Goat	Ewe	Ass
Sp. gravity	1.0315	1.03	1.0305	1.0341	1.036
Water	87.27 p.c.	87.41 p.c.	85.71 p.c.	80.82 p.c.	89.64 p.c.
Casein	3.02 „	1.03 „	3.20 „	4.97 „	.67 „
Albumen	.53 „	1.26 „	1.09 „	1.55 „	1.55 „
Fat	3.64 „	3.78 „	4.78 „	6.86 „	1.64 „
Milk sugar	4.88 „	6.21 „	4.46 „	4.91 „	5.99 „

Protein in cow's milk :—Casein 2.86 per cent.
 Albumin }
 Globulin } 0.56 „
 Sugar 4.78 „

Age of the cow :—The yield of milk increases until the 12th year.

Pasteurisation is the process of heating milk not less than 162°F for at least 15 seconds; this is sufficient to destroy any pathogenic organisms, *e.g.* *C. diphtheriæ*, *B. dysentericus*, *B. typhosus* and organisms of the typhoid—paratyphoid group, virus of foot and mouth disease. *M. tuberculosis* may escape actual destruction but their virulence is impaired to make them harmless. Pasteurisation does not produce appreciable change in the physical and chemical characters of the milk.

The ideal milk supply would be milk obtained from healthy cows under the cleanest conditions and consumed immediately.

Organisms found in milk: (1) Acid producing varieties, (a) *B. acidilactici*, (b) *B. acidibutyrici*. (2) *M. Tuberculosis*. (3) *C. Diphtheriæ*. (4) *B. typhosus*.

Condensed milk :—In the manufacture of sweetened condensed milk, the maximum temperature reached is between 80° and 90°, in which temperature it is kept for a few moments. Sweetened condensed milk is never sterile; sporing aerobic bacilli have been isolated.

In unsweetened condensed milk the milk is boiled down under reduced pressure. About 80 per cent is sterile.

Dried milk :—It means skimmed milk concentrated to the form of powder by the removal of water.

Ice-cream :—It is divided into three types:

(1) Cream ice in which milk fat forms one of the main ingredients.

(2) Custard ice made largely from cornflour.

(3) Water-ice contains water, sugar and a flavouring agent.

Bread is made by mixing and fermenting flour, water, salt and yeast, sugar and fat.

White bread is made with white flour.

Whole-meal bread is made from the entire wheat.

Rice for human food consists of the kernel which is covered with a brown skin. This skin together with the germ is removed by the polishing. Those who consume polished rice suffer from beri-beri.

Sago is a starch prepared from the pith of the sago-palm.

Vitamin Content of Foods

Food	Vit. A content. Unit per 100 g	Vit. B ₁ Unit per 100 g	Riboflavin Unit per 100 g	Vit. C mg. per 100 g	Vit. D Unit per 100 g
Butter	4,000	..	·008	..	60
Cheese	1,200	10	·17	..	..
Cream	..	..	..	..	50
Egg white	..	150	·4	..	..
„ yolk	1,500	160	·5	..	..
Milk	300	20	·2	1·5	..
Meat Beef	..	50	·2	..	..
„ chicken	..	60	·05	..	..
Mutton leg	50	80	·27	2·5	..
Bread white	..	20	·05	..	..
„ whole meal	..	120	..	..	..
Oat meal porridge	..	150	·02	..	..
Rice polished	..	..	..	..	..
„ unpolished	..	70	·07	..	..
Vegetables Asporagus	..	..	..	..	..
Beans	..	160	..	..	40
Beetroot	..	70	..	..	..
Cabbage	900	55	·05	..	6
Cauliflower	..	108	..	..	80
Onions	..	40	..	..	60
Parsley	..	..	..	..	9
Peas	..	70	·08	..	25
Potatoes	..	40	·01	..	24
					15



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W. H. O. Programme for 1950

"WE are here as one solid block to work for world health and I venture to submit that our work for health includes mental health as well as physical health. The epidemic of fear and suspicion is more dangerous for man than cancer or malaria or tuberculosis. It is a virus that has got to be eliminated if we are to live, and if we can eliminate it here, we shall be the direct means of eliminating it elsewhere," observed RAJKUMARI AMRIT KAUR, India's Health Minister, addressing the Second Assembly of the World Health Organisation which held its sittings at Rome. It was one of the biggest gatherings held to discuss matters concerning the health of the people of the world and administration experts and health executives from 70 countries took part in formulating the programme of work for the year 1950.

It might appear out of place why in an organisation wedded to the cause of the improvement of the health of the people all the world over there should be any need for an observation of the kind above referred to. And to understand the need that had arisen for such an outspoken appeal, one must refresh his memory with all that had taken place previously in this organisation. And the most important of these is the decision previously taken by Russia, Byelo-Russia and Ukraine to withdraw from this organisation. The reasons are not far to seek. The suspicions which exist in the political field between nations permeated into the proceedings of this organisation with the result that these countries felt that no useful purpose would be served by continuing to be members of this organisation. And the lesson had not been learnt by the rest. As observed by Mr. S. W. R. D. BANDARNAIKE, Minister for Health and Local Administration in Ceylon who attended this Session as

the representative of his country, a distressing feature of the proceedings was the inclusion of politics into the proceedings of the session by various power groups, who vied with one another for prominence."

A resolution requesting those countries to reconsider their decision to withdraw from this organisation was moved by RAJKUMARI AMRIT KAUR at this session and it was adopted by the Assembly by 44 votes to nil. In commending this resolution to the Assembly she said that the absence of those countries had created a lamentable gap. "If we are really keen," she said, "to have the collaboration of the Soviet Union, we should not allow any mistakes on their part to permit us to commit any error. While constructive criticism is always welcome and indeed necessary, I think it will add to our stature if we cease to indulge in mutual recrimination. We can make an enormous contribution towards the breaking of those barriers which to-day divide nations. But we can only do so if we refuse to think in terms of blocks." We do not know whether this appeal will have the desired effect and whether power politics will cease to play its ignoble part in this organisation in future.

It is well also to remember what happened to the Health Organisation established under the auspices of the League of Nations which was established after the end of the First World War at the instance of President Wilson. While the nations that joined the Covenant subscribed to it in the open, they surreptitiously did everything to undermine it, that President WILSON got thoroughly disgusted and kept the United States out of the organisation to which he had himself laid the foundation. And the non-entry of the U.S.A. gave a free hand to the powerful nations which held prominent positions in the organisation to carry on their nefarious activities unchecked with the result that that organisation came to grief, and with it the health organisation established under its auspices and which was doing solid work for the improvement of the health of the people of the world.

In an organisation devoted to the cause of health there is no room for power politics. Every one of the nations which has joined it must devote its whole attention only to the problem of world health. By introducing power politics into such a humanitarian organisation, and creating suspicion in the minds of some nations, the organisation ceases to have that force and power which it must possess if it is to fulfil the purpose for which it is established. Any gaps created by making some nations keep out of the organisation will, to that extent, seriously affect its working and to that extent affect its usefulness. The problem of world health is one unified whole, and the absence of health or the prevalence of disease in one part of the world is bound to have its reactions and repercussions in other parts, however strong and powerful the

barriers erected are. It is time therefore for the nations who are members of this organisation to keep their politics within their countries and confine themselves to purely humanitarian work in this organisation. If this is done, we are sure the lamentable gaps that have now been created will cease to exist and the nations which have withdrawn from this organisation will reconsider their decision as desired by the Assembly, take an active part in the proceedings of the subsequent sessions and contribute largely to the achievement of the purpose of this organisation.

The Assembly has adopted an ambitious 18,000,000 dollars programme to combat disease and its causes throughout the world in 1950. Malaria, tuberculosis, and for the first time mental health, figure high among the priorities in the budget. This amount is to be made up of 7,000,000 dollars from the regular contributions, 500,000 dollars from former United Nations Relief and Rehabilitation Administration funds and 10,624,000 dollars from extra voluntary contributions. From the meagre reports published in the Press, we are unable to understand why eight countries, including Australia, Czechoslovakia, Hungary, Poland, Bulgaria and Albania abstained on the vote approving the programme. The abstention of the latter five countries is understandable in view of present trends in European politics. But the abstention of Australia is significant. And the Press Trust of India should not have left the public guessing as to the causes. If it is due to the fact that Australia felt the allotment is so small that it is hardly sufficient to serve the purpose, we can understand it and sympathise with it too, for we feel that the work of the kind the organisation has undertaken is so big that many more times the allotted amount is necessary to carry it out. But even for a portion of this amount, the President had to make an earnest appeal for voluntary contributions, over and above the usual quota. If power politics is eschewed altogether from this organisation, if all the nations who are members of this organisation work in unison, it should not be difficult to find out the funds required to carry out the stupendous task.

We are glad that the problems of food and nutrition received considerable attention at this session. Two joint conferences on food and nutrition with the United States Food and Agricultural Organisation will be held, one in Rio De Janeiro and the other in Bangkok. The Assembly has also decided to appoint six field teams on nutrition, to be attached to teams working on maternal and child health and tuberculosis. The principles of the new World Sanitary Regulations drawn up by the Organisation have also been accepted and they are expected to come into force in 1951, to replace the existing sanitary conventions and quarantine regulations. We shall defer our comment on these regulations till we have before us the full text of the same.

As we have stated above, the task undertaken by this organisation is stupendous and it requires the unstinted and hearty cooperation of all the nations of the world to carry it out successfully. Only if mutual suspicions and recriminations are eschewed altogether, can the purpose of this organisation be well served. Let us hope, that with the lessons of the past before them to serve us beacon light, all the nations will work in unison and bring about the happy consummation of the achievement of positive health to the people of the world.

The Fight Against Tuberculosis

ONE has only to compare the incidence of, and mortality from, tuberculosis in the United States of America with the position obtaining in this country, to realise how much leeway has yet to be made to place India on a par with that country. Dr. J. E. PERKINS, Managing Director of the National Tuberculosis Association in the United States, addressing the 4-day Commonwealth Tuberculosis Conference held in London, and attended by nearly 1,200 specialists from 50 countries, contrasted the annual death rate from the disease in his own country, 30 for every 100,000, with India's 500,000 deaths a year, and said that the Indian mortality rate was five times that of the United States. What has been achieved in the United States cannot be impossible of achievement in India if only proper and effective measures are taken to combat this wasting disease.

Dr. RAM CHANDRA ADHIKARI of the Bengal Tuberculosis Association explained the position in India. He spoke of our country as "a vast population breeding and dying lavishly". "Denied all facilities of diagnosis and treatment, the victims," he said, "spread infection far and wide and die a slow death, to fatten the earth which no longer fattens them." As pointed out by him, the poverty, mal-nutrition, insanitary living in extremely congested houses, ignorance and bad social customs, and the prevalence of malaria and diabetes have all combined to bring about a high incidence of tuberculosis. While India required half to one million and a half beds for tuberculosis patients, we have but 7,000 beds all over India; and the number of doctors qualified and with sufficient experience of tuberculosis work probably does not exceed 200 in the country. No wonder India has become the hotbed of tuberculosis, not only endangering the nation, but also other nations of the world in the process.

The alien rulers in whose hands rested the administration of the country paid meagre attention to this important problem. With the achievement of independence and the transfer of power to the hands of the real leaders of the people, a change has come about in the outlook of the government, and realisation is growing that

unless something effective is done to combat the disease, it will sap the nation of its strength and vitality. If the prevention and elimination of tuberculosis are to be brought about, the problem has to be tackled in many fronts. The poverty of the people has to be wiped out, insanitary living in congested and ill-ventilated houses has to be put a stop to; ignorance of the people has to be removed; bad and unhealthy social customs have to be eliminated; the prevalence of malaria and diabetes has to be controlled; and above all mass inoculation of a preventive vaccine has to be introduced at once.

It is a matter for gratification that at the helm of the Health Department of the Government of India we have a lady of exceptional humanity, wide outlook and a large sympathy for the sick and the suffering. And it is a great relief that in spite of their many preoccupations the Government of India have seriously taken up the task of manufacturing on a large scale the vaccine known as B.C.G. While this will help detect the incidence, provision has to be made side by side for the treatment of the afflicted, not to speak of the other ameliorative and preventive measures needed to prevent the spread of the disease far and wide.

Dr. P. V. BENJAMIN explained the plan of campaign that should be carried out in India to bring about a fall in the incidence of, and mortality from, tuberculosis. While he conceded that what has proved successful in other countries cannot but have the same effect in India, he pointed out that the standard of living and the conditions in which people lived are better in those countries, and this naturally therefore makes all the difference. What is wanted therefore is the creation of conditions in India in which the B.C.G. vaccine will produce as good a result as it has produced in other countries.

It is estimated, Dr. BENJAMIN said, that 100 million people in India are likely to be tuberculin-negative and will need vaccination. If at least 50% of these can be vaccinated during the next five years, and if succeeding generations can be continuously tested and vaccinated, then in about 15 or 20 years, he said, we may be able to note an appreciable reduction in tuberculosis morbidity and mortality. According to his estimate, one team of vaccinators consisting of a doctor, a nurse or health visitor and other necessary staff with a mobile van can test and vaccinate about 100,000 persons a year. Two hundred such teams should be able to test all the tuberculin-negative people in the country in five years. It would involve an expenditure of 30 million rupees to equip them and require another thirty million rupees to work them. In addition 40,000 tuberculosis clinics and about five lakh beds for patients are required as against 125 clinics and 7,500 beds and about 200 odd doctors now available. The provision of these clinics and the beds required will require thousands of crores.

It is a programme which costs heavily and the Government who have to face a number of unforeseen and complicated problems may feel that it is too big a task and too heavy an expenditure to be undertaken at this critical juncture. And this must be the reason why the allotment made is so small as to demand an appeal from the Health Minister to the members of the Legislative Assembly to press for larger grants. As we have pointed out on many previous occasions, any expenditure under this head is only an insurance against this fell disease which will bring about a rich harvest in course of time, and we trust that in spite of other demands on their lean purse they will give top priority to this problem and do everything in their power to arrest the spread of this disease. Even the raising of a loan for this purpose will be quite justifiable, if India's representatives are to sit erect in world health conferences and tell their colleagues from other countries that they are doing everything possible to place their country on a par with other nations.

Gleanings From Medical Press

MEDICINE AND THERAPEUTICS

Aureomycin.—(*Lancet*, p. 69, 8-1-49).

In an annotation, the value of this new versatile antibiotic in the treatment of several diseases is discussed. It is certainly active against many of the rickettsiae, certain viruses, and many gram-negative and gram-positive organisms. It is effective in rocky mountain spotted fever, Q fever, typhus and rickettsial pox (a relatively new disease) and psittacosis. Some cases of atypical (primary) pneumonia have responded very well to it. There is reason to hope that in brucellosis, aureomycin will do better than any previous treatment. Urinary infections with *B. coli-aerogenes* group, and similar infections of the peritoneum have been successfully treated with it. It is now being tested with *Salmonella* infections, including typhoid fever. It may prove useful in some forms of meningitis, as it readily passes the blood-brain barrier. It is active against several organisms not affected by penicillin or streptomycin. Most organisms do not become resistant to this antibiotic. This antibiotic seems to be effective in a number of ocular infections. Braley and Sanders of Columbia have used it locally in a 0.5% solution of a borate salt in saline. Inclusion

conjunctivitis vernal, follicular and influenzal conjunctivitis, due to staphylo and pneumococci improved within a few hours and cleared in 2 days. It is as effective as penicillin in other more chronic and serious diseases of the eye, and it is *non-irritating* to the inflamed eye.

Unlike streptomycin, aureomycin is non-toxic in therapeutic doses. The only side effects noticed so far, are occasional nausea and some pain on injection, even which will disappear with the elimination of impurities. T.N.S.R.

Toxic effects of Tridione.—(*Lancet*, 59-62, 8-1-1949).

It is generally agreed that Tridione is one of the most effective drugs used in the treatment of *petit mal*. Though its toxic effects are recognized, the impression gained by practitioners from published accounts is that serious reactions are rare. Briggs and Emery have described the toxic manifestations and complications that developed in a small series of cases treated in the Sheffield Children's Hospital. The reactions were so severe that they feel the

dangers of the drug outweigh its therapeutic value.

Of 10 cases (children from 6 to 13 years of age) of *petit mal*, tridione reduced the frequency of the fits in 7. Of 4 children who were treated for over six months 2 showed a severe depression of the neutrophil count. After 13 months' treatment 1 child developed purpura, and a severe depression of all the elements of the bone marrow. He recovered after blood transfusion. One child, after 4 months' treatment, developed a nephrotic condition and died. In this short series, the toxic complications proved more dangerous than the disease it was used to treat. T.N.S.R.

Penicillin in endocarditis.—(*Rev. Med. Chile Santiago*, 76, 1948, *Abst. J.A.M.A.*, Dec. 1948).

Armaz Cruz and collaborators report on penicillin therapy in 12 patients with sub-acute bacterial endocarditis. The drug was given intramuscularly in daily doses of 500 to 800,000 units for 2 consecutive months. Permanent cure was obtained in 7 patients. Two died in the course of treatment because of cardiac insufficiency and 2 had a reinfection. The twelfth discontinued the treatment at an early stage. T.N.S.R.

Dangers in use of Penicillin in diphtheria.—(*New Jersey Med. Soc. Jour.*, 45, Aug. 1948; *Abst. J.A.M.A.*, 138, 17, 1948).

Stein points out that diphtheria has been increasingly prevalent during and after the war. An infection of the upper respiratory tract by the diphtheria bacillus, may be and is often, hastily diagnosed as ordinary pharyngitis. This would naturally lead to neglect the use of antitoxin and to have recourse to the use of penicillin, thus masking the diagnosis and giving a chance to the toxin to spread. The author reports a case illustrative of the tragedy that followed the use of penicillin. The patient was treated with penicillin and discharged on the 9th day. Later he had to be readmitted but died on the 27th day. Necropsy revealed diphtheritic

myocarditis. The author reports two other cases which illustrate the possibility of a confusion between follicular tonsillitis and faucial diphtheria. A fourth case reported was one of nasal diphtheria. Penicillin cannot replace antitoxin in the successful treatment of diphtheria. T.N.S.R.

Vitamin E preparations in nodulo-ulcerative granuloma of legs.—(*Arch. Derm. Syph.* 57, April 1948).

Burgess and Pritchard report the case of a diabetic woman aged 52, with nodular lesions in the legs. Diagnosis of erythema induratum was made. Rest and orthodox supportive treatment resulted in partial cure. A year or so later ulceration occurred on the left shin and progressed till both shins were badly affected. Following two biopsy tests, after hospitalization, a diagnosis of necrobiosis lipoidica was made. She was given daily intramuscular injections of a preparation of vitamin E in oil (Natopherol) 250 mg. for 10 days. Improvement was noticed in a week. As daily injections in the hips were painful, 100 mg. daily was given by mouth. After a month, healing had occurred. The treatment was continued for 3 more months and only a residual atrophic scar was visible. Histological studies showed that the collagen fibres had been completely rehabilitated; the granulomatous reaction and lipoidal depositions had totally disappeared. This was ascribed to the treatment by vitamin E preparations. T.N.S.R.

Can bed-bug bites cause bullous erythema?—(*Jour. Am. Med. Assoc.*, p. 1206, 18-12-1948).

The lesions caused by the bed bugs occur usually on the ankles and legs in groups of three or three lesions in a line, which medical students often refer to as "breakfast, lunch and dinner"—to form a striking clinical picture. Ordinarily the lesions consist of either small oedematous papules, wheals or purpuric macules, rather than bullae; but bullae may occur in highly sensitive and susceptible skins which react violently to noxae of any sort. T.N.S.R.

Intravenous treatment of anæmia with an iron-sucrose preparation.—(*Lancet*, 1-1-49, 11-15).

An appreciable number of persons with iron-deficiency anæmia do not respond satisfactorily to iron-preparations by mouth and a larger number suffer such gastro-intestinal upset from oral administration of iron, that they cannot take enough to relieve the condition. In such cases particularly, it is necessary to have recourse to parenteral routes. Drs. Slack and Wilkinson of the Department of Hæmatology of the Manchester Royal Hospital, prepared a stable solution of iron with sucrose, (after several trials for such a preparation) and used it intravenously in repeated doses on 120 persons, sixty of whom had pronounced iron-deficiency anæmia.

The solution was prepared as follows:

"Dissolve 5.8 grammes of anhydrous ferric chloride in 50 c.c. of distilled water, in an evaporating dish over a water-bath at 95°C. and add 25 grammes of saccharose. Stir well till dissolved.

"Dissolve anhydrous sodium carbonate 1.8 grammes, and sodium hydroxide 5 grammes *separately* in 25 c.c. water *each*. Add *slowly* the carbonate solution to the ferric chloride solution stirring well and allowing the carbon dioxide to come off after each addition. Next, add the sodium hydroxide solution, stir well for 15 minutes, and filter through a Whatman No. 42 filter paper. Distribute into bottles (rubber-cork); autoclave for 20 minutes at 116 pressure per sq. inch." After autoclaving they obtained a clear dark-brown solution of about pH 10.5, which remained stable at room temperature for at least 12 months. This solution contains 2 per cent elemental iron.

The scheme of dosage is 25 mg. (1.25 c.c. of the solution) on the first day, 50 mg. on the 2nd day, 100 mg. on the third and 200 mg. (10 c.c. of the solution) on the 4th and succeeding days. Occasionally patients had 200 mg. twice a day with an interval of six hours. The iron-saccharose solution was given from an all-glass 5 or 10 c.c. syringe with a No. 2 stainless steel needle (Record

type) into antecubital veins at the rate of about 2 c.c. per minute. No follow-on lavage of the vein was required provided that the same vein was not used on consecutive days.

Only one of 60 patients developed mild reactions at 200 mg. level; all the others tolerated 200 mg. daily without any reactions. The treatment was usually completed in 10 out-patient visits or less if 200 mg. doses were given twice daily. The patients did not need to rest after the injections. All of these patients showed the usual classical symptoms of iron-deficiency anæmia; of these 60 patients, 10 had proved refractory to full doses of iron by mouth over long periods.

The experience gained in 18 months in treating 60 patients with iron deficiency anæmia, and other patients, has shown that the iron-saccharose preparation was a relatively safe and effective vehicle for giving iron parenterally. The response to treatment was very good, 95 per cent cures being recorded with little or no reactions and a very low incidence of very small local venous thromboses (only 4 in over 800 injections). In almost all the patients, there was a rapid and complete amelioration of the classical symptoms, such as dyspnoea, palpitation, loss of appetite, dyspepsia, tiredness and a more gradual but equally complete return to normal nail formation. At the instance of the authors Bengers Ltd. have successfully prepared the iron saccharose solution, under the name ferrivenin which has also been used and found equally effective, in similar conditions and in the anæmias of pregnancy.

T.N.S.R.

Diabetic ketosis.—(*Lancet*, 8-1-49, pp. 56-59).

Drs. Black and Malins of the Birmingham Hospitals instituted a comparison of the orthodox and intensive methods of treatment on 170 consecutive cases of diabetes. Diabetic coma is always due ultimately to lack of insulin. Clinically this is brought about in three possible ways, (1) excess of diet; (2) inadequate administration of insulin; and (3) intercurrent disease, usually infection increasing the severity of the diabetic

state. A history of diarrhoea and vomiting at the onset is surprisingly common.

The history of the onset of coma is extremely valuable in diagnosis. Coma coming on suddenly (*e.g.* while walking in the street) is never diabetic and may be hypoglycæmic. True diabetic coma may be rapid but *not sudden* in onset and is heralded by symptoms evolving over hours. Vomiting is always a prominent symptom: intense thirst, and weakness are usual and abdominal pain, mainly epigastric, is very intense; air-hunger (Kussmaul respiration) is highly characteristic and can only be confused with that occurring in aspirin poisoning or in uræmia—all due to acidosis. The acetone odour in the breath of the patient cannot be mistaken. The text book tables of contrasting signs of diabetic and hypoglycæmic coma merely confuse the inexperienced by including unessential features. All too common is the student who examines the intra-ocular tension, decides (often wrongly) that it is low and then cannot remember which type of coma this sign suggests.

Outline of treatment:—(1) An initial dose of soluble insulin 200-400 units intravenously, immediately the diagnosis is made. 200 units to those in stage 1, 300 units to those in stage 2 and 400 in stage 3.

(2) As rapidly as possible an intravenous drip is set up and in the first 15 minutes a pint of normal saline is infused: a second pint in the next 15 to 30 minutes and a third pint at the same rate.

(3) Then a solution of 5% glucose in physiological saline at the rate of one pint per hour.

(4) A urethral catheter is simultaneously passed and the bladder emptied every 30 minutes and each specimen of urine is examined with Benedict's solution and Ferric Chloride.

(5) Doses of 50 units of soluble insulin is injected *into the drip tubing* every half hour till urine becomes acetone free (by Gerhardt test).

(6) Occasionally trouble is experienced by persistent vomiting. Routine gastric lavage is not usually necessary

as it has the risk of aspiration pneumonia. Vomiting and nausea disappear with the abolition of ketosis. Oral fluid is restricted to sips of water for a few hours. If vomiting is very persistent, the authors pass a Ryle's tube and aspirate the stomach contents at regular intervals. Acute dilatation of the stomach is a certain indication for aspiration. The drip is stopped only when the patient is again able and willing to take glucose fluids by the mouth.

By using the above method of intravenous administration of large doses of insulin and physiological saline in 170 cases the mortality was reduced from 28.7 to 6.6 per cent. The importance of the recognition of chloride depletion and its rectification are emphasised.

T.N.S.R.

Temperature recording.—(*Br. Med. Jour.*, pp. 972-73, 4-12-48).

Drs. Moncrieff and Hussey of the London Institute of Child Health have instituted a series of comparisons between the temperatures taken in the armpit, groin, rectum and mouth and those taken for varying periods of time in those situations from half a minute to five minutes. The results are very instructive and call for the urgent need of adopting standard procedures and times.

The present investigation was on 32 sick children (6 weeks to 10 years) and the temperatures were taken at 6 a.m. and 6 p.m. over a period of six consecutive days. A standard 'half minute' thermometer was used. From the results recorded, they conclude, that (1) the highest temperature was in the rectum which is nearly 1 degree higher than the groin, and 0.2 degree higher than the mouth, 1.3 degrees higher than the axilla; (2) the lowest recording is that in the axilla which is 0.4 degree lower than the groin and considerably lower than the mouth or rectum; (3) the average half-minute clinical thermometer does not attain maximum reading until at least five minutes, when the skin temperature is being recorded in the axilla and the groin. It is argued that the axilla and the groin should be discarded as sites for temperature readings.

The *British Medical Journal* in a leaderette comments on the above findings and strongly urges the need for each patient having his own thermometer kept in a safe antiseptic solution or in a cupboard: it should be sterilized when the patient is discharged. The leaderette concludes by saying:—"Taking the temperature is a simple procedure—so simple that frequently insufficient care is taken particularly in the choice of site, in inserting the thermometer properly, in leaving it in for a sufficient length of time (at least two minutes for a half minute thermometer) and in sterilizing it after use. We are prepared for technical errors in complicated laboratory tests, but often forget the possibility of errors in simple bedside procedure. T.N.S.R.

Trauma in initial pneumothorax.
—(*Dis. Chest. Chicago*, 14, 1948, *Abs. J.A.M.A.*).

Tchertkoff *et al* are of the opinion that every initial pneumothorax is of necessity first a traumatic pneumothorax. The needle entering the potential pleural space punctures the visceral pleura and air from the lungs escapes into the pleural space. This is true irrespective of the type or character of the needle used for puncture. The initial manometer readings are really those of the traumatically produced pneumothorax and it is into this space that air may be added from the A. P. apparatus. 82 consecutive patients admitted, as suitable for A. P. treatment into the Sea View Hospital, Staten Island, N.Y., were carefully studied and it was found that the lung condition and size of the needle were the primary factors which decided the extent of trauma produced in the pneumothorax.

The smaller needle resulting in less trauma gives a smaller collapse. In 67 initial A.P.s., the collapses obtained with a large needle was approximately twice that with a small one. In cases of moderate pulmonary involvement the size of the needle is of minor importance, as excessive collapse and dyspnoea are uncommon. In 16 cases of bilateral disease, in which A.P. was induced with a small needle, 3 patients became dyspnoeic: one required deflation. In 14

similar cases induced with a large needle 8 became dyspnoeic and 4 of these required deflation. In patients with extensive disease, the dangers of initial A. P. may be minimised by the use of small gauze needles. In bilateral involvement the use of small gauze needles appears essential if a manageable collapse is the desired end. T.N.S.R.

Recent advances in the treatment of lymphomas and leukemias.
—L. F. Craver, M.D., New York, (Condensed from the *Cincinnati Journal of Medicine*).

One rather unexpected and beneficial effect of World War II was the discovery of a chemotherapeutic way of treating certain tumors, particularly the lymphomas, with nitrogen mustard.

Within the past 4 years we have treated 303 cases with nitrogen mustard at Memorial Hospital, New York City. These cases include 232 of the lymphoma-leukemia group, of which 102 are Hodgkin's disease, 66 lymphosarcoma, and 64 leukemia. In addition to those, there are 48 cases of carcinoma, most of which are carcinoma of the lung (33 cases), and 16 cases of sarcomas.

The dosage of nitrogen mustard is 0.1 mg. per kilo of body weight, injected once a day for 4 successive days. To obtain the desired effect, one may have to increase the dose considerably. The total dosage depends on the response of the individual case to this therapy.

Toxic effects are local and general. One has to be extremely careful to get the drug entirely into the lumen of the vein, to avoid a severe inflammatory local reaction. Systemic effects are notable chiefly in the gastro-intestinal tract (nausea and vomiting) and in the hematopoietic system (temporary leukocytosis, followed by a leukopenia.) With some of the newer nitrogen mustard compounds there have been cerebral toxic effects.

The methylbis compound of nitrogen mustard has become indispensable in the treatment of Hodgkin's disease, particularly those cases with constitutional symptoms such as night sweats and fever. Adjuvant X-ray therapy is

usually necessary. The shortcoming of nitrogen mustard in the treatment of this disease is that beneficial effects are too often only transitory.

In cases of lymphosarcoma, the effect of nitrogen mustard is less satisfactory than in Hodgkin's disease, though in some patients we have observed satisfactory results for a short time. Follicular lymphoma and lymphosarcoma respond poorly to nitrogen mustard therapy. In cases of chronic leukemia, I believe that X-ray therapy is much satisfactory.

Nitrogen mustard therapy has produced dramatic—though only temporary—effects in the anaplastic type of bronchogenic carcinoma of the lung.

Urethane:—This preparation, in massive doses, was partially effective in one case of lymphosarcoma, and in a few cases of chronic leukemia. It is suitable for administration in the patient's home.

Isotopes:—Polycythemia vera seems to respond satisfactorily to radioactive phosphorus. One can obtain a smooth but somewhat slow effect by means of P³². If the patient needs quick relief, a phlebotomy is more advisable, because the phosphorus may take a month to show its effect.

Of the leukemias, I think the chronic myeloid type is best suited for P³², particularly the case which does not present a large spleen or liver. With those features, X-ray treatment is more suitable.

Surgery:—In early localized lymphomatous diseases, surgery alone is of great value in selected cases. In others, combined operation and irradiation is good.

Antibiotics:—Although these substances are not known to have any effect on the primary disease process in cases of lymphomas and leukemias, they provide symptomatic relief when patients develop chills and fever, even though no infection can be demonstrated.—*Digest of Treatment.*

Penicillin treatment of subacute bacterial endocarditis.—A. Morgan Jones, R. Herring, F. A. Langley and S. Oleesky, University of Manchester and Manchester Royal Infirmary, Manchester, England. *Brit. Heart J.*, 9:38-64, January 1947.

The treatment of subacute bacterial endocarditis by penicillin is described in 33 unselected cases, of which 15 died and 18 recovered. The minimum period of follow-up was six months. In most cases the exercise tolerance was good prior to infection, and the initial symptoms of the infection were vague and nonspecific. Twenty-eight patients had rheumatic, 4 congenital and one combined rheumatic and congenital heart disease. *Streptococcus viridans* was isolated in 26 cases, a nonhemolytic streptococcus in 5, *Hemophilus influenzae* (penicillin-resistant) in 1 and pneumococcus in 1 case. Of the 25 patients who lived to complete treatment all but 3 had a standard course of treatment consisting of 0.5 mega units of penicillin daily for twenty-eight days given by three-hourly intramuscular injections. Penicillin pyrexia was common, and 2 patients developed urticarial rashes and 1 patient thrombopenia.

During treatment there was a steady gain in weight, the blood sedimentation rate fell slowly but did not become normal until about five weeks after completion of treatment, and the hemoglobin rose slowly though the maximum improvement took place in the four weeks period after treatment.

Assessment of the degree of recovery in the 18 successful cases shows that 12 were back at their old occupations without apparent deterioration in exercise tolerance. Teleroentgenograms show a steady increase in heart size as the disease progresses. After successful treatment this enlargement ceases, but any enlargement previously incurred is irreversible. The clinical and roentgenologic findings in 3 cases suggest that stenotic valvular lesions may occasionally develop or increase after the infection is cured.

No patient in this series relapsed after the standard course of penicillin, but from subsequent experience we know that this can happen even if the organism is sensitive. Relapses following inadequate therapy if promptly detected and adequately treated do not appear to prejudice the ultimate outcome. In the unsuccessful cases an attempt was made to assess the degree of control of infection by: (1) clinical criteria; (2)

valve histology; and (3) postmortem culture of vegetation. It could be concluded that in patients completing the treatment, the infection can be controlled though healing is not advanced until three months after control of the infection. Of the causes of death, heart failure was the most important, being present in nearly half and the principal cause of death in two-thirds of the fatal cases. Both myocardial and valvular damage due to infection contributed to failure, but the latter and in particular aortic lesions played the more important role. Four patients died in uremia but additional possible causes of death were present. The renal pathology in the unsuccessful cases was characterized by diffuse glomerular lesions, whereas focal embolic lesions were uncommon. Major embolic accidents may occur at any stage of the disease and were responsible for 3 deaths. Seven cases were associated with pregnancy; 5 mothers and 6 children survived. One case had an infected patent ductus arteriosus. This was ligated four months after penicillin treatment and we suggest that if infection of the ductus can be arrested by penicillin this will lead to such a general improvement that the risk of subsequent operation will be materially diminished.

Assuming the organism is sensitive the predominant factor of importance as a guide to prognosis is the duration of infection before treatment. This depends on early diagnosis. This disease should be suspected at a stage when nonspecific symptoms predominate and signs are few, then repeated blood cultures by an adequate technic will establish the diagnosis.—*Quarterly Review of Medicine*.

Streptomycin in the treatment of intestinal tuberculosis.—N. Markoff, M.D., Translated and Digested from the *Schweizerische Medizinische Wochenschrift*.

We have used streptomycin in the treatment of five cases of intestinal tuberculosis. Since our results in these cases have been favourable so far, we are presenting a study of our technic and results.

Various observers have found that after parenteral administration of streptomycin about 2-6 per cent of the drug is excreted via the intestine. Excretion reaches a maximum within the first two hours, and is complete by the end of 24 hours. Streptomycin can also be demonstrated in the peritoneal fluid following parenteral administration.

Oral administration of this drug divided into small doses, may be advisable in the therapy of intestinal infections, because streptomycin is unchanged by the gastric juice, and there is little absorption from the bowel. Local therapy in the intestine is also satisfactory, if no stronger than a 0.5 per cent to 1.0 per cent solution is used.

Ulcerative and hyperplastic forms of intestinal tuberculosis are commonest in the ileo-cecal region. It seemed to us worthwhile to try local therapy by means of a high colonic injection of streptomycin solution, inasmuch as such an injection, if properly given, will pass through the ileo-cecal valve into the distal portion of the ileum. Accordingly, we used solutions of 250 mg. of streptomycin dissolved in 500 cc. of physiologic saline, to which a few drops of tincture of opium had been added. Injections were given daily for 14 to 15 days.

All 5 of the cases in this study received parenteral as well as enteral (local) therapy with streptomycin.

In case the principal involvement is in the lower colon and in the rectum, where proctoscopic study is possible, colonic irrigation with streptomycin should be equally satisfactory. If, on the other hand, the tuberculous lesions are most extensive in the proximal portions of the small intestine, as is less likely to be the case, oral or parenteral streptomycin therapy might be considered. No toxic effects would be expected, if streptomycin were given orally, since absorption from the intestinal lumen is minimal. Large doses would have to be given over a long period of time, however, so the cost of oral treatment would be considerable; parenteral therapy might therefore be more advisable because of its greater economy.

Two effects of streptomycin therapy are noted, in intestinal tuberculosis.

First, there appears to be a detoxification, with improvement in the general condition, a falling of fever, and improvement of the appetite. Then there is also a favourable influence locally, as manifested by a regression of the peritoneal signs and of the symptoms attributable to ulceration. Roentgenologically the ulcers may be observed to heal. Functional stenosis may also disappear. A normal stool habit is re-established, as is the return of normal stool metabolism.

The injections were well tolerated by our patients. No undesirable local effects followed the treatment. After a few days of therapy, all 5 patients showed a striking symptomatic improvement. This

has persisted at least 6 months, in every case.

We have not yet observed a complete cure, however. The roentgenologic changes, too, clear up only incompletely. Yet our preliminary results have been so good, particularly in contrast to those obtained by other methods of therapy, that we feel justified in continuing the streptomycin treatment which we have described in this article.

We have observed no untoward side-effects of streptomycin in this group of cases. On the other hand, neither did we notice any amelioration of the existing pulmonary tuberculosis.—*Digest of Treatment*.

OBSTETRICS and GYNÆCOLOGY

Autotransfusion in ectopic pregnancies.—(Rep. Tenth. National Med. Congress, Turkey, 31st Oct. 1948).

Dr. Halel Ciray, Chief of Obstetric and Gynecological Dept. of the Ankara Model Hospital, reported on his experience of ten years in the auto-transfusion of blood in 247 ectopic pregnancies. Auto-transfusion was begun in 1938 and during ten years was applied in 134 cases to patients between 17 and 44 years of age. Ectopic pregnancies usually occurred in the first, in the second to seventh and after the tenth pregnancy.

Autotransfusion of 600 to 900 cc. was given to patients with moderate hemorrhages, 1300 to 1800 cc. in serious ones, and 2200 cc. were given in 2 grave cases. 6 of the 134 died and of 65 not given autotransfusion 5 died.

The autotransfusions were made by means of the Zank instrument. The abdomen always contained a great deal of blood in ectopic pregnancy ruptures. The peritoneum was opened and the blood was collected in cups with a special instrument and together with the squeezed coagulated blood strained through five layers of gauze into a warm basin containing 3% citrate solution amounting to 1/10 of the blood and often with an additional 20% solution of serum dextrose. It was then immediately injected slowly into the patient's vein.

Slight rise in temperature and chills were noticed in a few cases. In most patients there was a rapid improvement in pulse, and symptoms of shock promptly disappeared.

This procedure is simple, perhaps crude, but can be and has been successfully applied under primitive conditions obtaining in many places. There is no need as in transfusion to determine blood groups search for Rh factors. Make cross matchings test for Wassermann and Kahn reactions and prompt life saving can be attempted. T.N.S.R.

Intravenous iron in the treatment of anaemia of pregnancy.—(*Lancet*, 1-4-'39, pp. 14-16).

Drs. Gowan and Scott of the Glasgow Royal Maternity and Women's Hospital used Ferrivenin, a stable saccharated oxide of iron prepared by Benger's Ltd., similar in every respect to the stable iron-saccharose solution prepared by Drs. Slack and Wilkinson of Manchester, to treat 25 anemic pregnant women. The initial Hb reading in these was 16 to 60 per cent. In addition to the usual symptoms and signs of anaemia of varying severity, many had trophic changes such as glossitis, cheilosis, koilonychia and edema.

These authors found that the iron-saccharose solution used by them,

not relieved or supplement was required within two hours after the spinal was given. The 158 patients who were given light gas for delivery of the infant received it for their comfort. There were 827 infants (4 twins) delivered. Seven were still born and 6 failed to survive. The uncorrected fetal mortality was 13 or 1.5 per cent. There were no maternal deaths. It has been our feeling that low spinal anesthesia has not been ideal for all patients. If labour is progressing rapidly and may be terminated within twenty to forty-five minutes, some type of inhalation anesthesia is adequate. On the other hand, if labour is progressing slowly with rather infrequent contractions of a mild character, it may be unduly prolonged by the use of spinal. This type of anesthesia is best suited to those patients in whom the contractions are frequent and hard with relatively slow dilation and effacement of the cervix.—*Quarterly Review of Obstetrics and Gynecology*.

Penicillin in drops for prophylaxis against ophthalmia neonatorum. A single instillation method.—H. Charles Franklin, University of Tennessee College of Medicine, Memphis, Tenn. *South. M. J.*, 41: 320-26, April '48.

DERMATOLOGY

Riboflavin in skin diseases.—(Abst. 2202 in *Abstr. World Med.* from *Vet. Vener. Derm.*, No. 2, March 1948).

It has been found that, when there is a deficiency of riboflavin the skin respiration and oxidation are lowered and the physiological entity of the skin undergoes deterioration. A syndrome consisting of dermatitis, glossitis, cheilitis occurs, which disappears on treatment with riboflavin. Aene roseacea, is also believed to be due to ariboflavinosis. Good results have been obtained in the treatment of seborrhea, seborrhea, and streptococcal infections of the skin of the eczematous type with riboflavin.

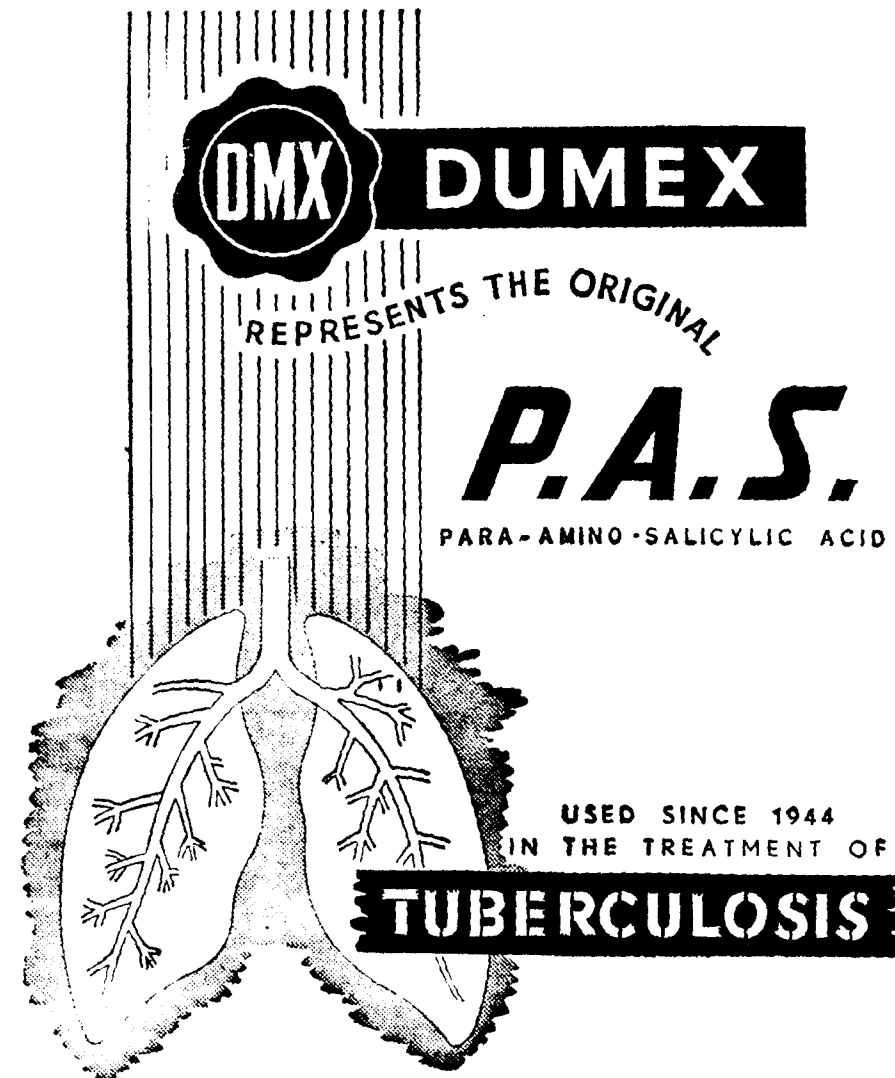
The authors found that it was not the absence of riboflavin from the diet

For a five months' period each newborn infant received penicillin eye drops for prophylaxis. The solution, which consisted of a concentration of 2,500 units of penicillin per cubic centimeter of sterile isotonic sodium chloride, was refrigerated at 59°F. and replaced with a fresh solution every five days. The newborn's eyelids are separated and the eyes flushed well with sterile isotonic sodium chloride solution. Four drops of penicillin solution then are instilled in each eye. Of 1,177 infants 13 (1.1 per cent) showed pus in one or both eyes following penicillin prophylaxis, usually on the seventh day. All cultures were positive with two-thirds of the isolated organisms being staphylococci. The incidence of 1.1 per cent is low compared to that of 6.0 per cent for silver nitrate prophylaxis and compared to that of 2.0 per cent for the multiple instillation method for penicillin prophylaxis. Follow-up examinations in the home on the fourteenth to seventeenth days showed the incidence for the finding of pus to be 2.9 per cent. The corresponding incidence for the multiple instillation penicillin method was 3.1 per cent; that for silver nitrate prophylaxis was 2.4 per cent. In no case was the gonococcus responsible for the conjunctivitis.—*Quarterly Review of Obstetrics and Gynecology*.

which caused the various skin diseases, but a disturbance of its excretion in the urine. A definite relation exists between excretion of riboflavin and the amount of unoxidised products of metabolism. In cases of Lupus, there is not only a low content of riboflavin in the urine but also a lower content of nitrogen and an increased excretion of chlorides. Patients with Lupus were given 100 gm. of casein in 6 days and along with it 46 gm. of protein and 500 mg. of riboflavin.

The increase of protein intake caused better absorption of riboflavin. During vitamin therapy it is essential, therefore, to give the patient extra-protein.

T.N.S.R.



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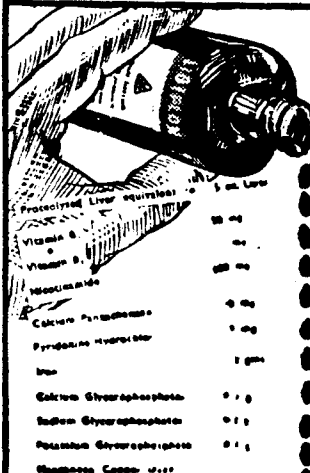
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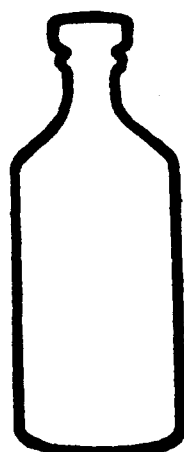
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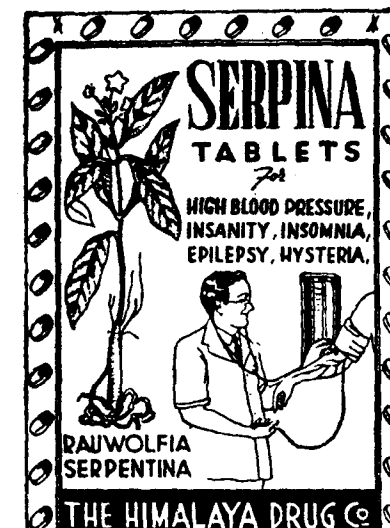
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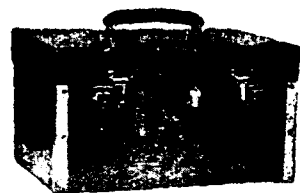
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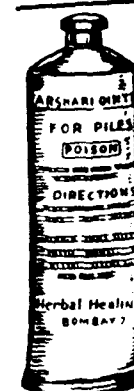
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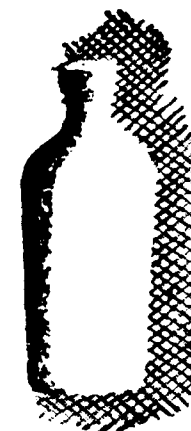
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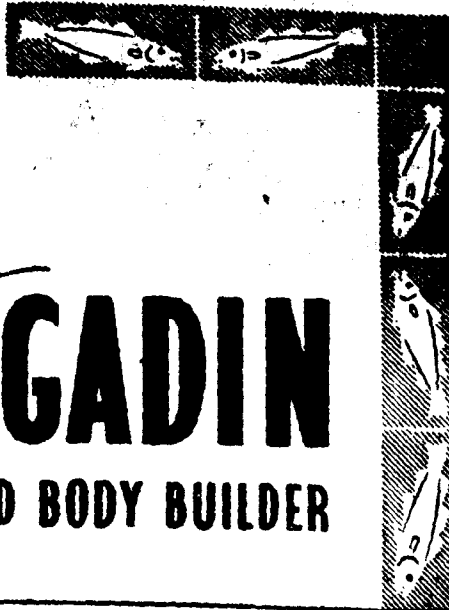
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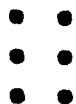
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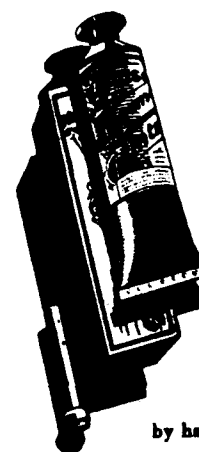
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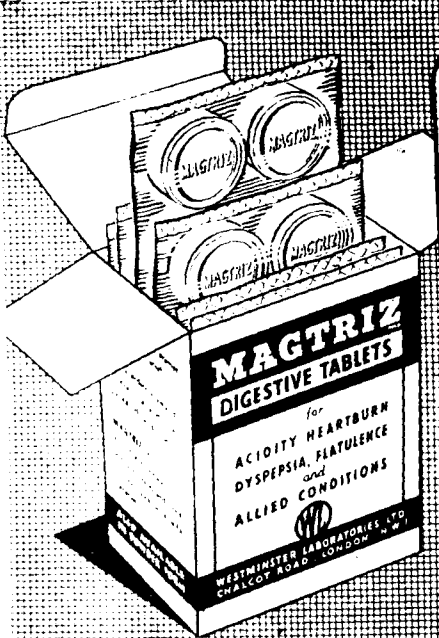
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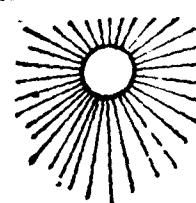
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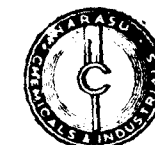
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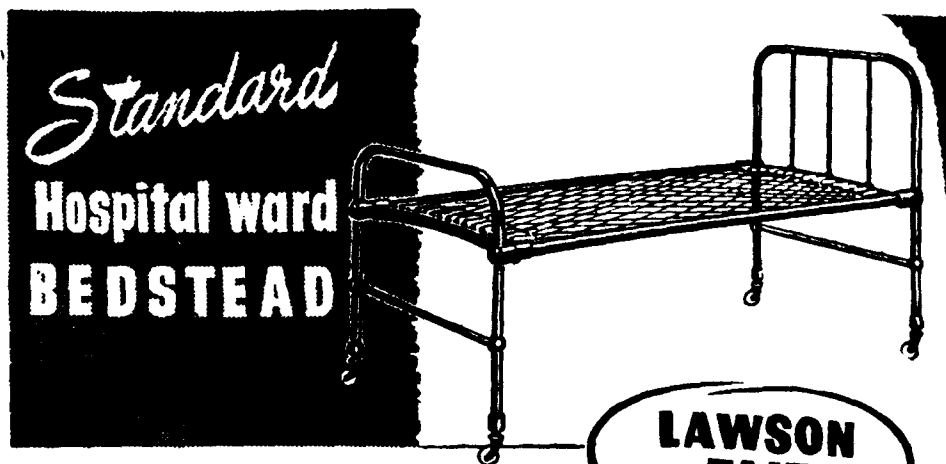
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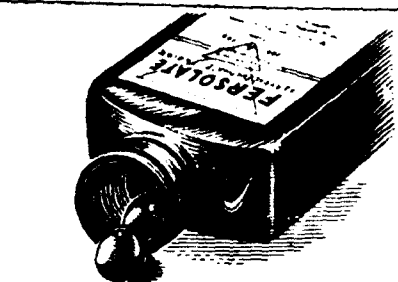
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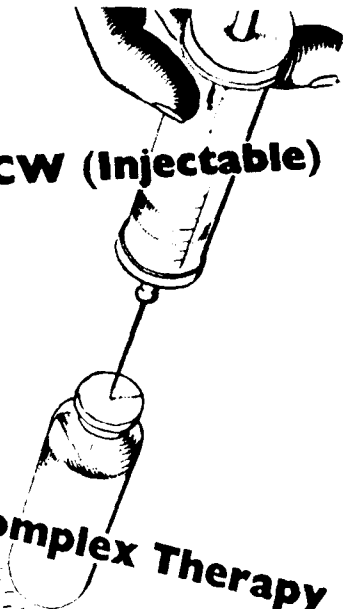


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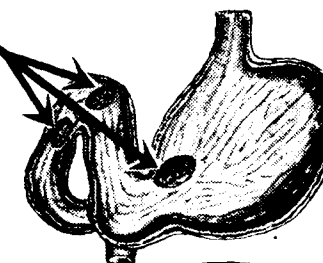
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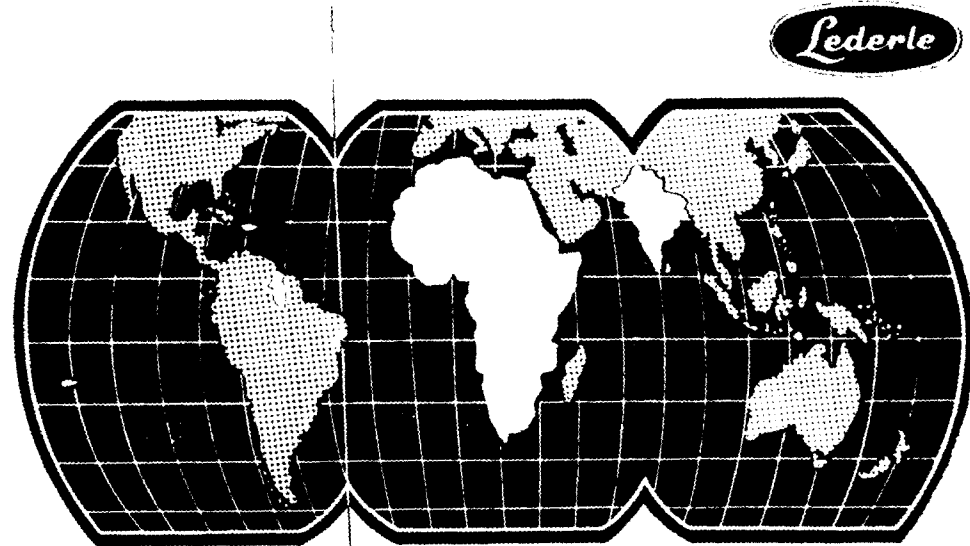
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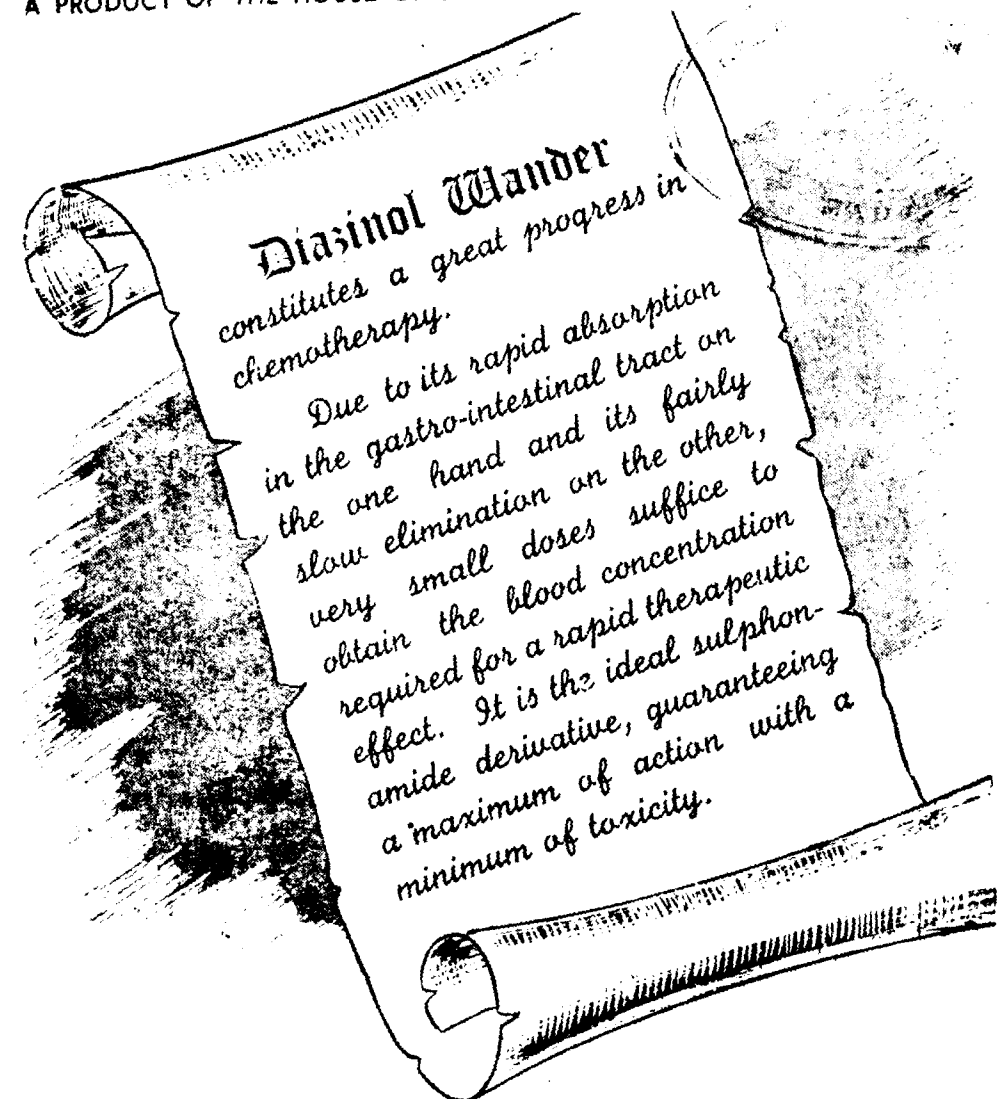
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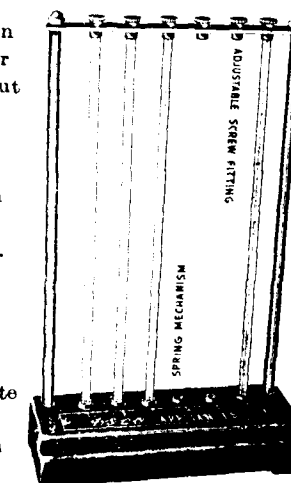
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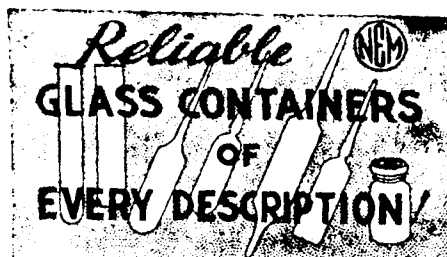
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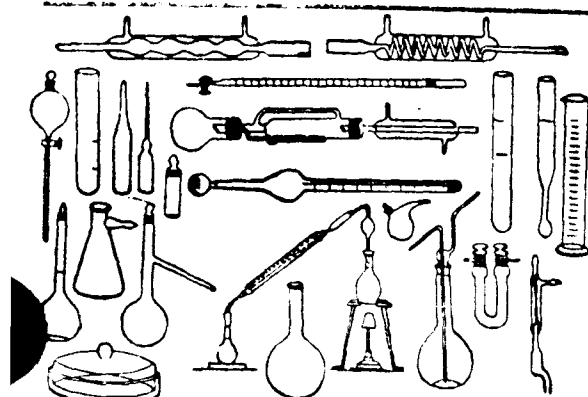
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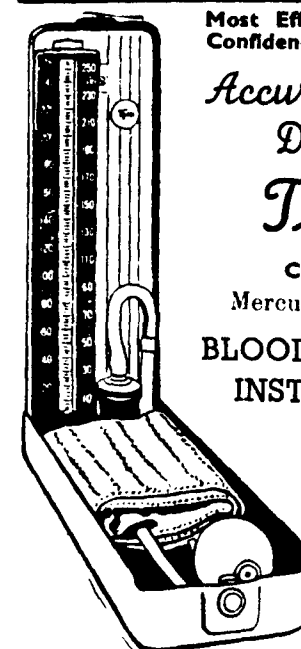
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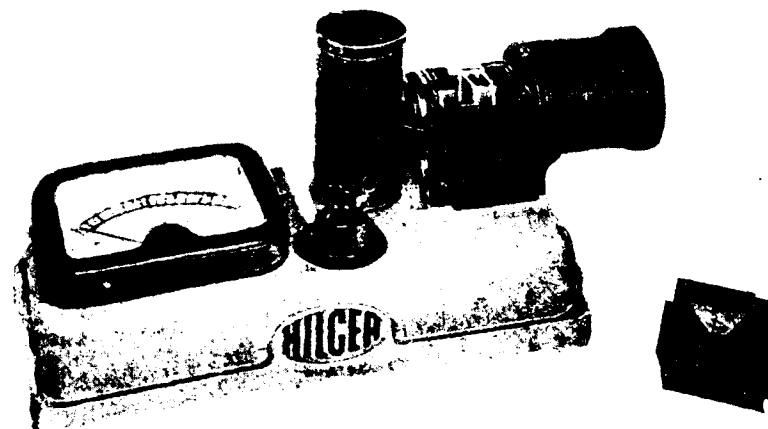
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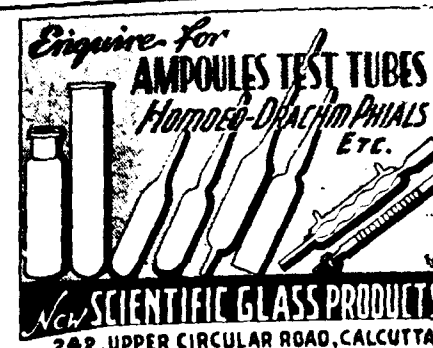
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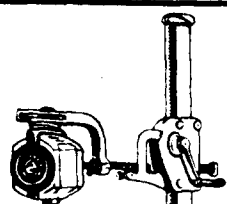
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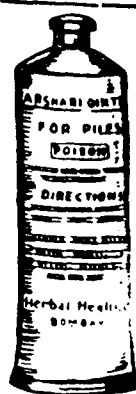
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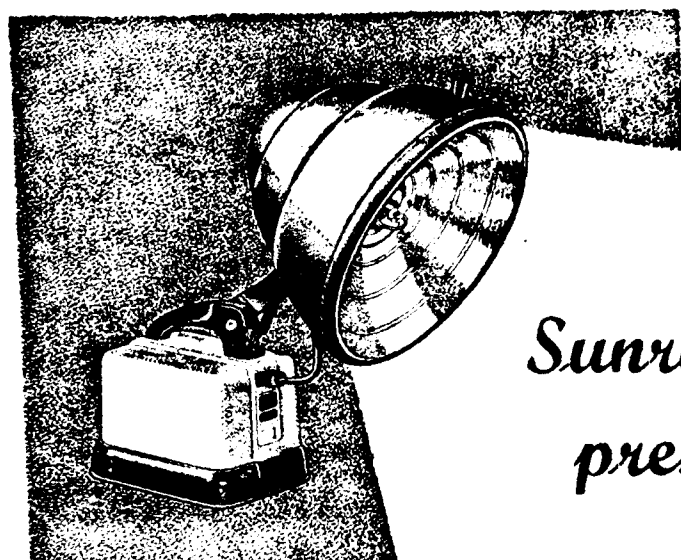
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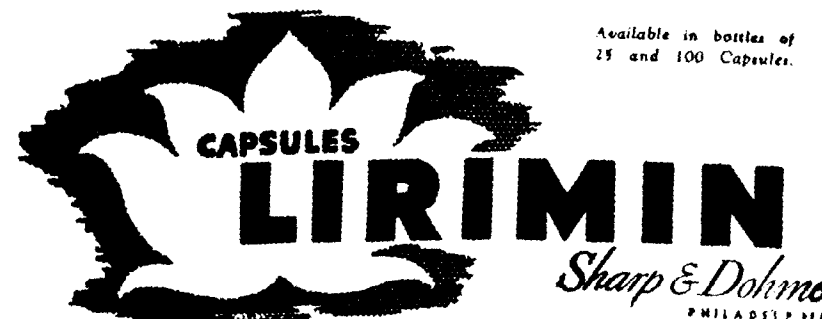
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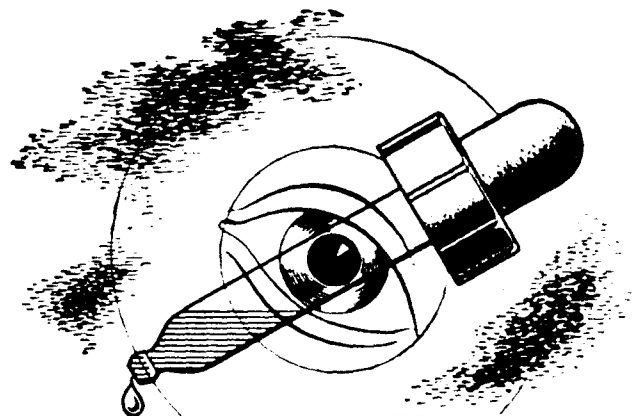
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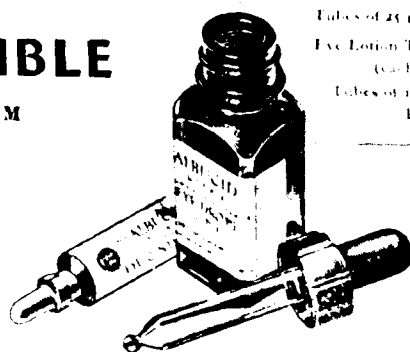
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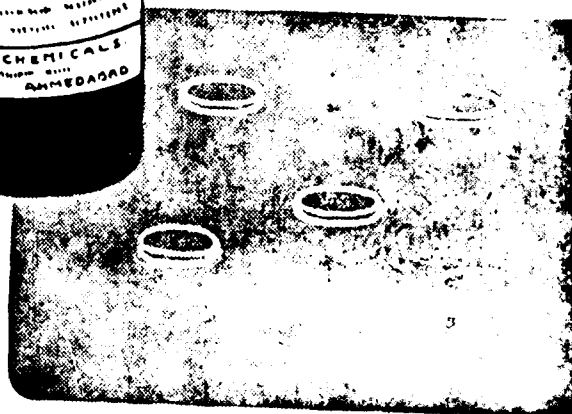
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Original Articles

Treatment of Typhoid Fever*

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TYPHOID FEVER, though a preventable disease, is still prevalent in the city. The incidence of typhoid fever is an index of the sanitary state of any particular city. Judged by this, our sanitary state will be considered very low. At no time of the year are we completely free from typhoid fever, though there are peaks reached in summer months. In some years, as in 1938, epidemics have broken out. The incubation period varies from 4 to 24 days though the usual period is 12 to 14 days.

Preventive treatment.—As I said at the beginning, the prevention of this disease is essentially the problem for the Public Health Authorities who should supervise all food articles like milk, meat and fish and also protect the water supply and the sewage disposals. Effective measures should be taken against the housefly. If every case is notified, as it should be, according to the regulations, and proper isolation is effected and the contacts protected with inoculation, we should be able to stamp out the disease.

Vaccination.—T. A. B. Vaccine contains 1,000 millions of B. Typhosus and 750 millions each of B. Paratyphosus A & B per c.c. For adults an initial dose of 5 c.c. is given deep subcutaneously, followed a week later by 1 c.c. Proportionately less dose for children. Immunity sets in within two weeks of the second injection and gradually lessens. It may be assumed safely that the

*Specially contributed to THE ANTISEPTIC.

immunity is quite good for the first year, and it is markedly reduced during the course of the second year, leaving practically no immunity for the third year. Contra-indications for inoculation are debilitated states such as pulmonary tuberculosis, late pregnancy and chronic interstitial nephritis. It should be clearly borne in mind that even the persons who have been inoculated may get the disease; but the risk is considerably lessened. Though oral vaccines are available, they are not completely dependable, and, at the present state, should not be depended upon entirely.

Curative treatment—Typhoid fever so long as it is not complicated, needs more careful nursing than doctoring. It is essential to hospitalise as early as possible, since most of the patients cannot afford to have nursing facilities at home. The earlier the patient is hospitalised the better. Particular precautions to be taken are the mouth, the skin and pressure points. In addition to ordinary cleansing of the teeth, I prefer equal parts of fresh lime juice and glycerine for painting the teeth and gums and also to give a small bit of lime so that it promotes free salivation. Provided patients have been hospitalised sufficiently early with this simple procedure, I have never met with parotitis in the last ten years.

Diet.—While various kinds of diet are advocated, the diet I have been following consists of arrow-root kanji 2 pints per day and sago kanji 2 pints per day and well-skimmed buttermilk 2 pints a day, orange juice or tomato juice 6 to 8 ounces to which is added glucose $\frac{1}{2}$ to 1 ounce. This gives a calorific value of over 1,500 calories. This diet is given to uncomplicated cases. If there is any diarrhoea, the patient is mainly nursed on whey and albumin water and thin arrow-root kanji and as soon as the diarrhoea is controlled, the usual diet is resumed. If, on the other hand, the patient is constipated, the quantity of arrow-root kanji is reduced and more of sago kanji and milk is given. It is better to citrate the milk even in cases of constipation. This diet is followed till the fever is completely normal. On the third day of the normal temperature, the patient is given the soft portion of the bread boiled in milk, milk feeds, custard and mashed potatoes. On the 6th day of convalescence, rice and curds are given. On the 10th day he is discharged and advised to continue bland diet for a fortnight. I give all my cases, so long as there is no diarrhoea, an emulsion of Shark-liver-oil, 2 drams of the oil to one ounce of the emulsion, so that the patient will have 6 drams a day which gives 600 calories. The advantage I claim with this emulsion is that it supplies a fairly good calorific value and also in an easily assimilable form. I have examined the motion of patients getting this Shark-liver-oil emulsion, but have not seen fat globules in the motion, indicating that the oil has completely been absorbed in the intestinal tract. Of course, this oil emulsion is not given to the cases suffering from diarrhoea. In addition to supplying the calorific

needs, it also supplies vitamin A and D. I have noticed that patients are not emaciated even by a prolonged illness like typhoid when they are getting Shark-liver-oil emulsion.

Drug treatment.—Till very recently, no drug could be called specific for typhoid fever. One of the anti-biotics called 'Chloromycetin' has been found to be very effective against enteric infections notably typhoid fever and other salmonella infections. The treatment is rather costly. Chloromycetin is supplied in capsules of 0.25 gms. of 12 in a bottle. The initial dose is 50 mgms. per kilogram of body weight. Then 25 gms. every two hours till the temperature returns to normal and after that 4-hourly for the next 5 days. The total average dose is 19.1 gms. per patient for about 8 days. No evidence of toxicity is observed. The drug is not as yet freely available apart from its cost. I have used Streptomycin in four proved cases without any benefit.

Complications.—*Constipation*.—I personally feel typhoid cases suffering from constipation are less toxic than those suffering from diarrhoea. It also helps in our giving the patient a better diet and besides this is a complication which can easily be controlled by a glycerine enema on alternate days.

Diarrhoea.—Diarrhoea in typhoid indicates a toxic case. The greater number of loose motions indicates the degree of toxicity. If diarrhoea is persistent, it calls for restriction in the diet, and particularly the intake of milk should be greatly restricted, if not altogether avoided. I personally prefer for these cases thin arrow-root kanji and no other article of diet for a day or two, as arrow-root leaves practically no residue by the time it reaches the lower end of the small intestines where inflamed Peyer's patches are present. The diarrhoea gets controlled in quite a large percentage of cases. If still the diarrhoea persists, a simple acid mixture like Acid Sulphuric Aramaticus 20 mms., Tr. Belladonna 10 mms. and Syrup Auranti 1 dram, aqua Anissi 1 oz., one ounce mixture thrice a day. If still intractable, colonic washes with Sodobicarb, dram 1 to pint 1, followed by 2 per cent Tannic acid retention enemata is very useful. As the diarrhoea gets controlled, the diet can be gradually increased with whey, rice kanji, or sago kanji and skimmed butter milk. Generally cases of diarrhoea are associated with meteorism. For meteorism, flatus tube may be passed and Turpentine stupes may be given, and, if still not relieved, Turpentine enema may be given. Occasionally I have used an essential oil mixture twice or thrice a day with considerable benefit.

Toxaemia.—Toxaemia is more often met with in cases with diarrhoea and meteorism. For these cases plenty of fluids are administered by mouth and if it is not possible to give it orally, a continuous nasal drip may be arranged. If diarrhoea is not present, then I prefer continuous Drip Saline per rectum. As is quoted by

Col. McRobert in 1940 in a series of toxic cases continuous Drip Saline takes away the toxicity. During the last two years, I have tried a tin preparation called 'Aldestan' for these toxic cases. A bulk supply of this preparation was placed at my disposal by the kindness of Messrs. Hare Brothers. I have myself used it in a little over 30 cases and I have given this drug to the other physicians for about 15 cases. To begin with, I was using this drug only for the severely toxic cases or cases with complications like hæmorrhage and for late cases. The makers advocate that the tablets should be given for early cases to get the best results; but since I wanted to see the effect of this drug in proved cases and also in toxic cases, I could not start the treatment sufficiently early in most of my cases. My impression of Aldestan therapy in typhoid cases agrees with that of Dr. Patel. As noticed by him, I also found that the mortality rate was reduced, but the most favourable effect was seen with regard to toxæmia (except in the very few cases in which the patient was admitted very late in a severe degree of toxæmia and in a moribund condition). With Aldestan the toxæmia cleared. By the end of 48 or 72 hours the toxæmia was completely controlled, that is to say, the patients needed very little attention. But the temperature itself persisted. In none of my series of 45 cases was any complication like mental confusion or leukopenia observed. The duration of the fever itself is not altered. It looks as though with the administration of Aldestan we are treating a typhoid fever minus the toxæmia. Three of my cases had relapses. Though relapses occurred, toxæmia did not occur. Aldestan is a proprietary tablet manufactured by Chemica Limited of Haifa, Palestine, for early cases. It is an organic tin with the chemical name 'Heptadecyl Aldehyde Stanoxysearate Plus Stannum Colloidale'. Each tablet contains 0.12 gm. of metallic tin. I have used 2 tablets 3 times a day for the adults and proportionately less for children. The treatment has to be given for 12 consecutive days irrespective of whether full defervescence has taken place already or not. Treatment is discontinued forthwith if the patient responds paradoxically, i.e., if the mental condition deteriorates. Fortunately, none of my series of cases showed any such deterioration. The action of Aldestan is aided by administering Potassium Iodide 10 grains per day. I add this Potassium Iodide with the Shark-liver-oil emulsion. The tablets have to be thoroughly crushed before they are taken in water. It is recommended by makers not to use Sulpha drugs orally; but by injection. I feel Aldestan has no bactericidal effect. Probably it neutralises the toxin after they are liberated by the organisms, as otherwise it is not possible to explain the controlling of the toxæmia without at the same time controlling the temperature. The beneficial effect of Aldestan is noticed in hæmorrhage cases also. In one of my cases, after a brisk hæmorrhage, the boy was in such a bad state that we had to give him blood transfusion and since rigidity of the abdomen developed, the abdomen was

opened and no perforation was detected. The hæmorrhage recurred and I started him on Aldestan at that stage. To my surprise the hæmorrhage did not recur the next day, and the toxæmia was completely controlled in another day and the boy left the hospital alive. Such a case without the tin preparation would certainly have proved fatal.

Hæmorrhage and perforation:—Both are dreaded complications, but fortunately with the advent of tin preparations like Aldestan, hæmorrhage may be controlled more satisfactorily. Even then, if hæmorrhages are sufficiently brisk, blood transfusion is called for. Before blood transfusion is got ready, I prefer to give auto-hæmotherapy. This consists of drawing 15 to 20 c.c. of patient's own blood with a little citrate solution in the syringe and injecting the same intramuscularly. Proportionately less quantity may be used for children. Sometimes when the patient is in a very dehydrated state, this may not be quite an easy procedure. In such cases 1/2 grain of Morphine and 1/100 grain of Atropin can be given each subcutaneously or intramuscularly. As an alternative, Hæmoplastin 2 c.c. subcutaneously every 4 hours or Coagulen Ciba 20 c.c. subcutaneously twice a day may be tried. I have had very good results with Congo Red 1 per cent solution 15 to 20 c.c. intravenously. The diet should be reduced as in a case of severe diarrhoea. It is advantageous to have it iced. In any case, the feeding should be cautious so as not to evoke a fresh hæmorrhage. If the bowels do not move for two days after the hæmorrhage, Glycerine enema may be given. In cases of perforation, immediate surgical attention is the ideal treatment. At present, the mortality for typhoid ulcer perforation is very nearly 100 per cent. This is due to the long delay between the time of perforation and the time of operation and also due to cases being transported from the residence to the hospital or nursing home after the perforation has occurred.

Relapses:—Relapses occur anywhere from 1 to 10 days after the previous illness. It is strange that fever should relapse at the time when the immunity is at its height. The usual explanation given is that the relapse is due to a different strain of organism from that which caused the previous illness. This is not a very satisfactory explanation. Sometimes there may be 2, 3 or 4 relapses, the maximum that I have seen. The relapses may occasionally be worse than the previous illness. Patients may even die during the relapse, but usually the relapses are mild. For these relapse cases and for cases in which the temperature persists for more than 40 days, I have used Typhoid Vaccine in the strengths of 5 million, 10 million and 20 million per c.c. subcutaneously every fourth day with considerable benefit. After the first injection, the temperature may actually rise a little more than before, but on the second or third day, it settles down to normal.

Parotitis :—For parotitis, if observed sufficiently early, Penicillin 1 lakh units in 3 c.c. of Pyrogen-free distilled water twice a day completely controls the swelling. I have not had any need to submit my cases for surgical interference. But, if the cases are sent after the fluctuation has set in, then surgical drainage is necessary.

Other complications are rare and include phlebitis, periosteal abscess, laryngeal and tracheal ulcers, gangrene of the limbs and cholecystitis. For phlebitis, the affected limb should be immobilised with sand bags for 4 weeks. After that, passive movements may be carried out. The other complications need surgical attention.

Convalescence :—I generally keep the patients in bed for at least 10 days after the fever has subsided. On the third day of convalescence, the patients are given the soft portion of the bread and milk. On the 6th day of convalescence and after, they are given rice and curds. On the 9th day they are given a bath with an antiseptic lotion and on the 10th day they are discharged with advice to continue to have bed rest at home for another month. Slightly longer period is recommended for the more complicated cases. Prior to being discharged, every third day patient's urine and motion are sent for bacteriological culture and only after the 3 negative culture reports are got from the laboratory, are they discharged. If at any time a culture comes positive, at least two subsequent cultures must come negative before their discharge.

Treatment of carriers :—It is unfortunate that there is no specific treatment. I have known at least one case in which repeatedly the motion culture was positive for typhoid bacilli for over 9 months irrespective of the various measures adopted. Saphir and Howell report rapid cure of the intestinal carriers following the oral administration of 3 doses each of 4 gms. of soluble Iodothaline at 3 day intervals as used for cholecystography. Cholecystectomy is supposed to be a cure for 75 per cent of the intestinal carriers, but due to the risk involved, it is not quite an easy thing such as cholecystectomy for carriers.

Total number of cases treated with Aldestan (nearly all of them toxic cases)	30
Mortality : 7	Mortality rate : 23%
Mortality on average :	11%

The high mortality is because treatment for most of the cases was confined to toxic cases only.

In all the 30 cases, blood culture was positive for B-typhosus and Widal was positive 1 in 200 or above.

My thanks are due to the Superintendent, Government General Hospital, Madras, for trying this drug, and to the Surgeon-General with the Government of Madras for permission to write this article.

Rheumatic Diseases*

A. V. S. SARMA, M.B., B.S., D.C.H. (Eng.), F.D.S. (Lond.),
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WESTERN writers compiling text books for students of medicine make the statement that rheumatic diseases are rare in the tropics. The truth is far from this. As a worker whose privilege has been to serve the poor, and particularly in the State Hospitals, the writer is convinced to write with pardonable pride and reliable data on this important subject of rheumatic manifestations in South India.

Rheumatic fever has been the subject of intense study and four hypotheses have been put forward to explain the condition :

1. Nonspecific streptococcal infection (*Streptococcus Pyogenes*-Poynton and Paine. Streptococcal allergy).
2. The allergic hypothesis postulates that the rheumatic fever is an allergic manifestation but the allergen is not definitely identified (Klinge, 1929-'30; Vanbel, 1932; Knepper and Waaler, 1934-'35; and Knepper 1935-'36). Aschoff (1935) questioned the status of the nodule known by his great name and said to have been reproduced by the above German workers in experimental work.

3. *Streptococcus Pyogenes* as a specific agent, sorethroats due to infection with *Streptococcus Pyogenes* precede rheumatic attacks (fever, arthritis, carditis) has been acknowledged due to studies by Sheldon (1931), Collis (1931) and Coburn and Pauli (1935). The proof is in the detection of high concentrations of specific antibodies—antihaemolysin (Todd, 1932), agglutinin, compliment-fixing antibody, precipitin and antihaemolysin (Coburn and Pauli 1932), and antifibrolysin (Stuart—Harris, 1935.)

Further and sustained studies also indicate that an actual infection of *S. Pyogenes* is the basis of rheumatic fever. Green (1939) has done convincing work in this study.

"Sulphanilamide treatment is useless in the acute stage, but according to Coburn and Moore (1939) and Thomas *et al* (1941) its administration over long periods almost unfailingly prevents relapse during that time."

4. The virus hypothesis (Schlesinger, Signy and Amies, 1935) incriminates a virus (? virus of pleuropneumonia in cattle).

"Vitamin C deficiency may be an integral part of the mechanism in the pathogenesis of rheumatic fever." (Rinehart, 1935-'36.) Abbasy and his colleagues think that there is greater metabolic need and use of vitamin C in this condition.

* Specially contributed to THE ANTISEPTIC.

In rheumatic manifestations the mesodermal derivatives appear to be the targets of the disease processes, and this view has been expressed already by McKowen, and in this connection respectfully and strongly supported by the writer.

The clinical entities amongst the rheumatic diseases are the following:—

- (1) Sore throats (pharyngitis and tonsillitis).
- (2) "Growing Pains"—subacute rheumatism?
- (3) Acute rheumatic fever (arthritis).
- (4) Rheumatic Carditis:—peri-, myo-, and endo-carditis.
- (5) Pleurisy and Bronchopneumonia.
- (6) Nervous manifestations:—Sydenham's chorea and delirium.
- (7) Rheumatic nodules.
- (8) Dermal manifestations:—Erythema marginatum rheumaticum and erythema nodosum?
- (9) Alimentary manifestations:—Vomiting: chronic intestinal indigestion, and appendicular disease?
- (10) Myositis; Fibrositis; Toritcolis; Orchitis etc.

At the Government Royapettah Hospital, Madras, the writer has seen a large number of patients with rheumatic cardiac involvement; but for purposes of this communication, patients with heart failure (though definitely of rheumatic origin) are eliminated from this series. During the last 27 months, 40 patients (ages 8 to 36 years) with active rheumatic manifestations were seen. The particulars are: (1) Active rheumatic fever (arthritis) 16; (2) Rheumatic endocarditis (mitral valculitis 18; aortic valvulitis 2); (3) Rheumatic myocarditis 2; (4) Rheumatic pericarditis 2. In addition to these forty, two cases of chorea were seen in the out-patient department. The cases of chorea seen and studied elaborately were from Government Stanley Hospital, when the writer was attached to that institution. A few cases of chorea came to the writer's notice in private practice, but this manifestation is certainly of low incidence. Two cases showed added involvement of the tricuspid valve and they are included in the above 18 cases. One case showed amongst the two aortic lesions, both stenosis and regurgitation; and the other was a pure aortic regurgitation. One of these 40 cases showed rheumatic nodules on the elbows. Excepting for a couple of patients, the rest were poor patients. The above figures are from the in-patient register and the real incidence is much larger, as the out-patient and the children's clinic first meet the rheumatic patients and advise them. Thus the figures are a quality representation and not a reflection of the quantum of the rheumatic diseases coming into a large city hospital in Madras during the corresponding period.

During a recent survey of school boys (ages 10 to 20 years) in a large High School in Madras, out of 506 boys examined by the writer, 94 had frankly septic tonsils (20%), and 18 boys unquestionable rheumatic involvement of the heart (V.D.H.) i.e. 4%. Eight had pharyngitis (1½%), and six dental caries (1%). Pharyngitis, tonsillitis and dental caries are ætiologic agents in rheumatic pathology and thus the risk obviously is enhanced by another 22½%. This emphatically establishes that the Rheumatic Disease of the Heart at least is a common condition in the tropical countries.

A patient was under the writer's care with advanced rheumatic mitral disease and recurrent arthritis. The noteworthy features in the patient were: (1) Splenomegaly (M. T. crescents found in the blood); (2) Rheumatic V. D. H. with moderate failure; and (3) Very great comfort of the patient as compared with contemporary controls. Is there anything beneficial in malaria infection antagonising rheumatic processes? and, if so, is malaria common in India, a potent factor counteracting to an extent the rheumatic diseases, and minimising morbidity of rheumatic origin? It is reasonable to think that neuronic syphilis is less common in India as a result of malaria infection; and, on an analogy, it will not be wrong to think that rheumatic chorea at least is certainly much rarer than in the British Isles.

I. Sorethroats.—The word sorethroat is meant to include pharyngitis and tonsillitis. Rheumatic sorethroats are difficult of recognition as such, and therefore every sorethroat must be treated with care and suspicion. The condition is common in chill weather, and at changes of weather, particularly after staying in crowded places (cinema houses) and in ill-ventilated rooms. The causal organisms are Streptococci (usually hæmolytic), Pneumococci, B. Influenzæ, and Fusi-spirochætal organisms.

Pyrexia, malaise, vomiting, anorexia, difficulty in swallowing are present except in very mild cases. The throat appears congested and the tonsils swollen, and the lymph nodes at the angles of the jaw enlarged and tender. A sorethroat occurs even after tonsillectomy, when slight swelling and diffuse redness of fauces and pharynx are present with all possible risks as after tonsillitis.

Follicular tonsillitis is a clinical condition of severe septic throat, and it may be recurrent. Complications include peri-tonsillar abscess (quinsy), retro-pharyngeal abscess, otitis media, suppurative cervical adenitis, acute pulmonary infections and septicæmia. The more dreaded complications are rheumatic polyarthritis, rheumatic carditis, acute nephritis, purpura, and erythema nodosum. Carditis is likely to escape detection; and to prevent this, the heart should be carefully and periodically examined after every sorethroat, as otherwise irreparable myocarditis and valvulitis might creep in.

Treatment consists in rest in bed till temperature is kept normal for 48 hours at least, light diet, and a brisk purgative to begin with, and warmth to the neck for the first few days are essential. Mistura Sodii Salicylas internally, and application of Mandl's paint to throat or Potassium Chlorate gargles are indicated. It is simple and still safe to give the above treatment only, unless the severity of infection (as gauged by tachycardia, high pyrexia, or complications) demands prompt use of Sulphanilamides or Penicillin. Penicillin lozenges are helpful.

Chronic infection of the tonsils and adenoids:—Usually the result of recurrent inflammation and helped in persistence by overcrowding, bad ventilation, infected atmosphere and defective dietary.

Local symptoms:—Adenoid facies, snoring, nasal voice, retching and vomiting. Persistent enlargement of lymph glands at angles of jaw, chronic nasal catarrh, and otorrhœa, cervical adenitis and halitosis.

General symptoms:—Ill-health characterised by pallor (anæmia), enlargement of lymph nodes in the neck, axilla and slight splenomegaly and mild fever.

Transient albuminuria, catarrhal gastritis, enteritis, vomiting and diarrhœa or constipation, abdominal colic (simulates appendicitis). Deformed chest with chronic tracheitis and bronchitis (asthmatic bronchitis), and a constant risk of broncho-pneumonia particularly in children.

Frontal headache, giddiness and fainting and insomnia are common particularly in adults. In children bedwetting and tendency to facial tics are sources of trouble.

Chronic oedematous nephritis, and rheumatoid arthritis are associated with chronic throat sepsis. The relationship between chronic naso-pharyngeal infection and acute rheumatism is not settled, and therefore tonsillectomy is not indicated in all rheumatic children.

Treatment of chronic naso-pharyngeal sepsis is removal of the infected tonsils and adenoids. Occasionally there is a sharp rheumatic exacerbation after tonsillectomy and as prophylactic one may use autovaccines before surgical attention. Penicillin or Sulphonamides preparatory to the operation are now the therapeutic choice.

II. Growing pains (Subacute rheumatism).—Aches and pains in the limbs, particularly in the lower limbs and located to muscles generally, are common in pediatric practice. Rheumatic children complain of painful limbs. But all the aches and pains in limbs are not always indicative of active rheumatism. They occur in asthmatic children (Bray); in tuberculosis; during convalescence from debilitating illnesses like measles, influenza, small-pox, typhoid fever and

dengue; in chronic indigestion and worm infestations (ankylostomiasis and ascariasis) and associated with flat feet. Sometimes these pains indicate leukæmic infiltrations beneath periosteum.

Wilfrid Sheldon stresses the relationship of the growing pains to wet weather and fatigue. Treatment in non-rheumatic cases consists in rest and toning up. Ascariasis, ankylostomiasis, chronic malaria, congenital syphilis, and early vitamin B deficiency will be remembered.

III. Acute rheumatic fever.—“An acute infection of unknown origin characterised by multiple arthritis and the frequent occurrence of inflammation of the endocardium of the valves of the heart, with resulting cardiac lesions”—H.L. Tidy.

Ætiology:—Climate: Temperate climates (especially British Isles) bear the brunt of the disease.

Season:—Related to rainfall and wet weather. In Madras the incidence appears high in January to March quarter.

Age:—Rare under 3 years; maximum incidence between 15 and 35 years.

Sex:—More common in females except between 10 and 15 years.

Heredity is marked.

Predisposing factors:—Poverty, damp and wet, unhealthy throats. One attack predisposes to others. The views on the primary factor have been tackled in the beginning.

Morbid anatomy:—In the body the rheumatic currency is in terms of the Aschoff's nodes now accepted as the essential lesion.

They are 'submiliary' spindle-shaped bodies and exemplified in the myocardium. Histologically there is a necrotic centre amidst fibroblastic proliferation and surrounded by lymphocytes and plasma cells with Aschoff's large endothelioid cells with one or more nuclei. Finally these are replaced by fibrous tissue. Valvular changes are predominant in endocarditis. The synovia of the joints is hyperæmic, but never suppurates.

Symptoms:—Preliminary sorethroat or acute tonsillitis usually clearing and having 10 to 14 days interval before the rheumatic attack which has an abrupt onset marked by irregular joint pains. Flushed facies, swollen and tender joints, moist skin with sweats, sorethroat, pyrexia, tachycardia, and insomnia serve the clinical picture.

Large joints are affected, inflammation is metastatic or wandering from joint to joint. Extensive effusion into joints or suppuration is unknown. Persistent pyrexia after five days under salicylate therapy suggests endocarditis or pericarditis. Tachycardia is (100 to 120 per minute) responsive to salicylates.

Apical first sound if poor in quality forebodes ill. A systolic murmur audible at apex may be myocardial (disappearing on treatment), or endocardial subsequently progressing and becoming permanent. A mid—, late—, or early— diastolic murmur and prolongation of pH interval (E.C.G.) are noteworthy. Febrile albuminuria may be present.

Initial polymorphonuclear preponderance in blood and subsequent secondary anaemia are common.

Acute symptoms subside after ten days if untreated; but under salicylate relief is evident after 4 days.

Rheumatic fever may be acute but cardiac lesions are the rule. Relapses are common. Complications:—(1) Cardiac; (2) hyperpyrexia; (3) pulmonary; (4) nervous; (5) dermal; and (6) rheumatic nodes.

Cardiac lesions are part of the disease like arthritis. Hyperpyrexia (108°F) is rare and does not occur in children under 12 and complications are pleurisy and pericarditis. Pulmonary are chorea (mainly in children) and delirium (cerebral rheumatism) which is generally associated with pericarditis and hyperpyrexia and carries heavy mortality. Dermal complications include erythema, purpura and erythema nodosum. The rheumatic nodules indicate severity.

Diagnosis.—Acute arthritis deformans (osteo-arthritis) chooses small joints. In adults septic arthritis in pyæmia and septicæmia, gonorrhœal arthritis, arthritis after scarlet fever, scarlet fever, and dysentery are easily differentiated as also gout.

Mortality is about 3% in acute attacks and is due to cardiac involvement. The indirect mortality is great from cardiac damage. Hyperpyrexia carries a heavy toll.

Treatment.—The aim is to protect the heart with rest in bed for at least 1 to 3 months till after normal temperature is achieved.

Diet:—Milk and fluids during pyrexia. Plenty of vitamins (particularly C). For the painful joints warmth and, if necessary, externally Methyl Salicylas. Orally a mixture of Sodium Salicylas with Sodii Bicarb thus:

Sodium Bicarbonate	..	gr. lx
Sodium Salicylate	..	gr. xx
Syrup	..	3 i
Ad aqua	..	3 i

Dose 1 oz. every 2 hours for six doses: later every 4 hours till temperature falls. Then three times daily for further 3 weeks.

Aspirin or Salicin is an alternative. The Salicylates are specific in giving relief; temperature falls and joint pains subside in 4 days

in the absence of complications, but it is doubtful if it arrests cardiac damage. For severe pain Dover's Powder and for hyperpyrexia hydrotherapy are advised. Sulphonamides and Penicillin are withheld in the acute phases, unless subacute bacterial endocarditis is suspected.

Rheumatic fever is unknown in children below 2 years, and differs from the illness in adults. Articular lesions are slight and overlooked. Recurrent tonsillitis or sorethroat may be the only manifestation or probably endocarditis may be the only disease process without any other indication. Complications like chorea, pericarditis, anaemia and subcutaneous nodes are more common.

Diagnosis is from acute osteomyelitis, acute poliomyelitis, scurvy (age under 2), congenital lues (epiphysitis, symmetrical synovitis), Still's disease (heart is spared; splenomegaly).

IV. Rheumatic carditis.—The rheumatic damage in the heart is always part of the disease.

Endocarditis:—Frequency (50%) increases with relapses and diminishes with age. Children never escape. The mitral, mitral and aortic, aortic alone, and pulmonary valves are affected in that order. The writer has seen mitral lesion in 18, aortic lesion in 2 in the present hospital series. Tricuspid lesions were realised in 2 patients. Mitral stenosis develops slowly and is not appreciated in the first attack. Pathological changes are of simple endocarditis. After the rheumatic attack has passed, pathological changes are progressive in the valves. Mortality is low in the first acute attack.

Mitral stenosis: The morbid anatomy:—The mitral valve is described as a button-hole contraction or funnel-shaped stenosis. Left auricle dilated and hypertrophied. Right ventricle is dilated and hypertrophied. Right auricle is later dilated and hypertrophied. Small left ventricle. Ante-mortem thrombi seen in left auricle.

Symptoms of mitral stenosis:—Slight shortness of breath with failure of compensation, dyspnoea, cough, palpitation, and irregular heart are obvious. Physical signs are: Forcible pulsation, normal apex beat. Presystolic thrill, area of cardiac dullness shifting to right of sternum. At mitral area presystolic murmur to the right of the apex (crescendo) ending in loud first sound. Second sound reduplicated. Mid-diastolic murmur as also frequently systolic murmur (indicating incompetence). Pulmonary second sound is accentuated and reduplicated. Over tricuspid area may be a systolic murmur (regurgitation). Pulse becomes irregularly irregular with fibrillation (presystolic murmur disappears but mid-diastolic murmur is still heard).

Radiographs of heart:—A-P position; Prominence of left upper border. Pulmonary artery dilated. Heart enlarged to right of

sternum. Right anterior oblique position: Dilated left auricle projects into retro-cardiac space. Barium swallow shows œsophagus pressed by curving left auricle. (*Vide Figs. 1-a and 1-b*) X-ray pictures of chest (*vide Figs. 1-c and 1-d*) E. C. G.: P high or bifid. Right sided preponderance.

Complications:—Bronchitis; Recurrent attacks of Endocarditis; Embolism. Disturbances of rhythm (Auricular fibrillation); Hæmoptysis and Hæmostomosis; Paralysis of left vocal cord.

Diagnosis is from characteristic physical signs—presystolic thrill ending in systolic shock. Presystolic murmur ending in loud sharp first sound. Pulmonary second sound accentuated and reduplicated. (Presystolic murmur occurs in aortic incompetence and adhesive pericarditis). Tuberculosis has to be eliminated.

Tricuspid stenosis:—(Rheumatic and generally associated with mitral stenosis). It is recognised by the presystolic murmur at the tricuspid area but generally suspected if a patient with mitral heart failure is remarkably comfortable in bed.

Aortic stenosis or regurgitation may be rheumatic in origin: the former is recognised by the systolic thrill, anacrotic pulse, small pulse, small pulse pressure, harsh systolic murmur at the aortic area, and hypertrophied left ventricle. Aortic regurgitation is recognised by water-hammer pulse, hypertrophied left ventricle, diastolic murmur better heard along the left border of the sternum and large pulse pressure. X-ray pictures are rather characteristic.

Mitral incompetence of rheumatic endocarditis has for its morbid anatomy thickening, deformity contraction of the valves; shortening of chordæ tendinæ and papillary muscles; thickening and contraction of the valve ring (calcification). Aschoff's nodes are seen in the ring and myocardium. The changes in the heart are seen in and hypertrophy of left auricle, of left ventricle, of right ventricle and of right auricle finally. Decompensation is due to recurrent endocarditis, intercurrent disease and fevers, abnormal rhythms (auricular fibrillation). Symptoms are shortness of breath on exertion, palpitation and bronchitis. Facies is ruddy. With failing compensation, palpitation, dyspnoea, cough, hæmoptysis, œdema of feet set in. Later sleep-starts, generalised œdema, scanty urine, enlarged and tender liver are seen. Finally lividity, orthopnoea, insomnia, vomiting and general œdema are seen and ascites. Death is after recurrent attacks of failure.

The physical signs are apex beat displaced outwards, forcible cardiac dullness increased to left and later to the right. Apical systolic murmur (may partially or completely replace first sound) conducted into the axilla. Pulmonary second sound accentuated. Systolic murmur audible over tricuspid area late. Pulse may be practically normal until decompensation sets in.

Radiographs:—Prominence on left upper border due to left auricle and pulmonary artery. Enlargement of left ventricle.

Rheumatic Diseases

A. V. S. Sarma.



FIGS. 1-c & 1-d.

To right—A patient with failure after mitral disease.

To left—A young adult with early mitral stenosis without failure.

[*Vide page 574.*]



FIG. 2.

Rheumatic chorea: Hyperextended fingers and facies are noteworthy.

[*Vide page 576.*]



FIG. 3.

Rheumatic chorea: Hyperextended fingers and characteristic facies are noteworthy.

[*Vide page 576.*]



FIG. 4.

Chronic intestinal indigestion. (Geographical tongue present). He has apical systolic murmur in addition.

[*Vide page 578.*]



FIG. 1b. R.O.A. with barium swallow, showing dilatation by hypertrophied left auricle on the barium filled oesophagus. [Vide page 574.]

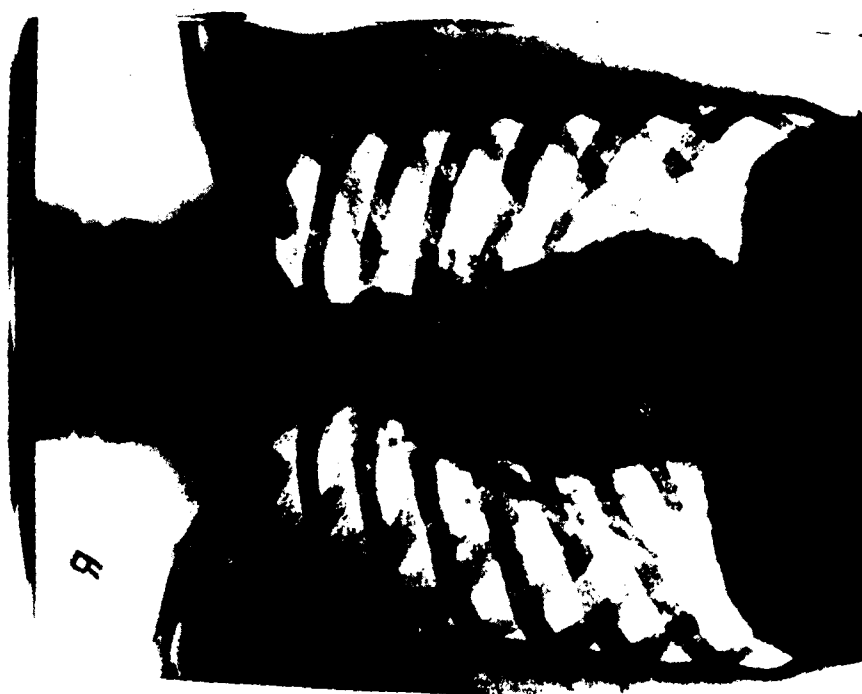


FIG. 1a. A.P. view showing mitralisation.

Severe incompetence is suggested by forcible apex beat with small pulse and great width of cardiac dullness.

Diagnosis is by apical systolic murmur conducted outwards, accentuated pulmonary second sound, lateral increase of cardiac dullness and rheumatic history. Presystolic murmur proves the point. Functional murmurs and murmurs of relative incompetence have to be remembered.

In children under 12 years of age "Endocarditis may be sole rheumatic manifestation" (Garrod); pure incompetence is common as also pericarditis and stunting of growth is common in advancing cases.

Rheumatic myocarditis is frequent and leads to dilatation.

Rheumatic pericarditis is common in children. Mortality is high in first attacks. May be associated with or not with endocarditis. Effusion occurs in 20 per cent and is never purulent. Arthritis is generally severe. In the writer's series 2 cases were encountered (both in poor patients). One was treated as such and made good recovery in the hospital; the other was treated outside for the first week with heavy doses of Sulphonamide and later admitted. His total white count was a little over 7,000; differentially P. 55; L. 25; M. 5; E. 5; B.P. 110/80 mm. of Hg. Pulse paradoxical. Cyanosis, dyspnoea and cardiac embarrassment present. Oxygen therapy and penicillin started; the latter was useless. The condition quickly responded to oral Salicylates in larger doses and this again proves the futility of Sulpha drugs and Penicillin in the acute rheumatic phases.

Morbid anatomy is that acute fibrinous pericarditis and may develop effusion. Symptoms are pain (often absent especially in young children), dyspnoea with cyanosis, and fever (even hyperpyrexia). Physical sign is in hearing friction sound on auscultation over precordium; it is near the sternum, systolic or to-and-fro and very superficial. This is to be differentiated from pleuro-pericardial and endocardial murmurs. Death may occur at any stage.

When effusion has occurred cyanosis, dyspnoea, pain, pulses paradoxus, hyperpyrexia, vomiting and pressure symptoms like cough, dysphagia, hiccup or aphonia are all present. The physical signs are absence of cardiac impulse, disappearance of apex beat, dullness increased with transverse extension beyond limits, collapse of left lung (Bamberger's sign); muffled heart sounds, sometimes friction sounds. Radiograph shows a heart shadow which is median. Differential diagnosis is from a dilated heart. Exploratory puncture is suggested in doubt.

Treatment is as for active rheumatic disease.

So long as activity of the disease is persisting, anaemia, loss of weight, tachycardia (even while asleep) and increase of erythrocyte sedimentation rate are present.

V. Pleurisy and pneumonia.—Rheumatic pleurisy is a rare condition. An elderly patient (asthmatic and subject to allergic or rheumatic arthritis) suddenly developed a catch in the chest and later developed pleurisy with effusion. Paracentesis revealed sanious fluid when even malignancy in the lung was suspected. The condition cleared with rest and change of place. Today he is 8 years older and working. This condition was regarded as rheumatic pleurisy with effusion. In the Government Royapuram Hospital, Madras, two children came under the writer's care with signs and symptoms of bronchopneumonia and a mid-diastolic murmur as also septic tonsils. They did not respond to chemotherapy but to simple salicylate therapy; and the condition was suspected to be rheumatic in nature. Recently in the Royapettah Hospital the writer met with a similar child and it was again a case of failure with chemotherapy and success with Salicylates and the last fact is of great diagnostic importance in practice.

VI. Nervous manifestations.—Rheumatic chorea (Sydenham's chorea) is common in children and characterised by irregular involuntary muscle spasms and by frequent occurrence of endocarditis.

The writer can recollect at least seeing 2 to 3 cases every year.

Aetiology.—Age between 3 and 15 years. Females 70%. Markedly hereditary. Related to acute rheumatism (arthritis precedes or succeeds endocarditis; or pericarditis co-exists. Tonsillitis and rheumatic nodules are common). Nervous strain is an exciting agent as also pregnancy.

Morbid anatomy.—Endocarditis is present in 90%. Diffuse meningo-encephalitis described in which the pia-arachnoid, cerebral cortex, the caudate nucleus, the red nucleus and possibly the superior cerebellar peduncles are affected. A focal lesion of the Corpus Luysii will cause hemichorea on the opposite side.

Symptoms.—The movements are irregular, involuntary, purposeless and spasmodic. They cease in sleep. Paresis, inco-ordination and hypotonus are present. Frequently hand, face, and legs are affected. (*vide Figs. 2 and 3*). Hemichorea is known. The child becomes generally irritable, and drops down things. Respiration becomes spasmodic sometimes, mastication and deglutition are affected. Aphasia may show.

Involvement of the heart is a dread. Endocarditis and pericarditis are Scylla and Charybdis in the prognostic steering and therapeutic journey with chorea. Temperature shoots up with complications, otherwise is slight with decrease of sedimentation rate. Knee jerks are delayed and then sustained. Paresis (paralytic chorea) is never permanent. Mania may supervene. Subcutaneous nodules appear and demand rest in bed. Anæmia is later found.

Pain is rare; association of arthritis with chorea is extremely rare; such published cases are curiosities. Sphincters are normal. Skin may show rheumatic erythema or purpura. Urea is high in urine. C.S.F. calcium is low.

Hemichorea, paralytic chorea, chorea of pregnancy, chorea insaniens, chorea gravis (movements of great severity) are types elaborated for descriptive detail.

The duration is generally not over two months and recovery occurs but with risk of relapses and cardiac involvement. Mortality is 2%. Danger lies in endocarditis and pericarditis and hyperpyrexia, pregnancy, chorea insaniens and chorea gravis.

Chorea is to be differentiated from hysteria, tics, and habit spasms. The writer uses the periodically recorded handwriting by the patient in gauging the therapeutic success.

Treatment consists in rest in bed, nourishing diet, Aspirin, sedatives and leisurely convalescence. Arsenic is useless. Belladonal (Sandoz) has proved helpful in the writer's hands as observed in 2 patients in the Government Stanley Hospital.

VII. Rheumatic nodules.—These nodules found over bony prominences like the olecranon and nuchal lines are rarely felt. While frequently seen in England the writer has actually hunted for them and could recollect only 2 cases wherein they were felt; one in Government Stanley Hospital, and then the second in the Government Royapettah Hospital, Madras. Such patients deserve rest in bed as the heart is liable to silent damage.

VIII. Dermal manifestations.—Erythema marginatum rheumaticum, purpura and erythema nodosum are described. The writer has watched a child with rheumatic mitral stenosis during the last 5 years, and she is now 16 years old. On attaining puberty she showed on the shins typical erythema nodosum, the rash corresponded with a recrudescence of arthritis, tonsillitis, and precordial discomfort.

The other two conditions interest the clinician from cardiac viewpoint and the dermatologist looks at the skin conditions primarily.

IX. Abdominal manifestations.—The bowel is rich in lymphatic accumulations and there is no reason why certain types of digestive upsets may not herald rheumatic invasion just as sore throats indicate the same enemy. There is a girl (10 years old) under the writer's care for the last 6 years. She is subject to cyclical vomiting and has also unhealthy tonsils. Her brother is an asthmatic and maternal uncle typical rheumatic subject. This little girl recently developed severe vomiting, and after 2 weeks typical rheumatic chorea. A young Marwari man developed mitral regurgitant murmur at the apex 20 days after a bout of gastroenteritis (treated as for acute bacillary dysentery); and

about 3 years later developed a picture of typical mitral stenosis with regurgitation. A young man of 20 years developed what was then diagnosed as acute appendicitis 10 years ago; the pain has been regular and intensity has decreased recently. Operative treatment was refused by the patient. He has been noticed by me since the attack of appendicitis, below par in health, with sore and septic throat, and an apical systolic murmur which has been observed 3 months after appendicitis and persistent and with accentuated pulmonary 2nd sound. Investigations have suggested chronic appendicitis and rheumatic cardiac involvement. To date the patient is in the same state but is in active service. The mother and a sister of the patient are asthmatics; father is suffering from hyperpiesia (B.P. 210/120). This is interesting because appendicular lymphatic tissue might have also served to damage the heart.

A few children with septic tonsils, carious teeth and stomatitis have been watched by the writer for their digestive upsets usually classed under chronic intestinal indigestion. Appetite is poor, tongue is raw and patched with fur; abdomen is doughy with soft and painless hepatic enlargement; anæmia, low fever, constipation or diarrhoea are present; and the build is below par. This is earlier or later associated with apical systolic murmur like the bruit of mitral regurgitation and persistent tachycardia. The impression is that the scenes of rheumatic carditis can well set in unnoticed unless the physician expects the possibility. The following is an example: A boy (*vide Fig. 4*), 5 years old, has been attending the Children's Clinic, Government Royapettah Hospital, Madras, for pertussis controlled by vaccine. Even before the pertussis the patient had unhealthy throat with tonsillar glandular enlargement at the angles of the jaw and a geographical tongue. Slowly the boy has developed an apical systolic bruit and is now having what appears to be early mitral lesion. This is only one of the many watched and the conviction about digestive upsets stealthily developing a sore heart is with the writer.

X. Myositis, fibrositis, orchitis torticollis etc.—Vague complaints as above as also atypical orchitis may indicate a rheumatic state. Prolonged observations are necessary to rule out rheumatic damage in the cardiac capital, the most important muscle in the human body.

(The writer is indebted to Dr. P. R. Kalyanasundaram, M.B., B.S., Superintendent, Government Royapettah Hospital, Madras, for all the help and encouragement received in the preparation of this communication).

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Modern Treatment of Leprosy

(A Report of 10 Cases on Diasone Treatment)

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LEPROSY is known from ancient times. It is mentioned in the scriptures of Hinduism, Islam and Christianity. The treatment of leprosy with oils of Hydnocarpus and Chaulmoogra is probably as old as the disease itself. It originated in India at least 2,500 years ago, for it is described in the Sushruta Samhita of about that period. It has recently been pointed out that these writings indicate clearly the use of the oil of Hydnocarpus Wightiana. In the 19th century, European physicians in India found this oil being used by practitioners of Indian medicine, and began to take an interest in it. The oil was administered by the mouth and by inunction, and various workers in India and other countries tried this form of treatment, some reporting some benefit and others little or none. From 1879 onwards, various chemists studied the Chaulmoogra oils, isolated their fatty acids and prepared their salts, and these also were administered by mouth to patients with leprosy. The ethyl esters of Chaulmoogra oil were first prepared in 1904 and marketed in 1907.

Injection treatment of leprosy was instituted in 1894 in Egypt where Chaulmoogra oil was injected. Later, other workers injected various forms of the oil and also its ethyl esters and the salts of the fatty acids. The use of these preparations was confined to certain centres till about 1920. The excellent results of treatment reported by workers particularly in Hawaii and in India, encouraged the adoption of various forms of this treatment in most countries of the world, and in spite of its limitations which are widely recognised, it is now the standard treatment in most countries.

The two preparations in common use are Hydnocarpus oil (usually Wightiana, but sometimes Anthelmintica, etc.) with 4% Creosote and the ethyl esters of the oil with 4% Creosote. The latter preparation is less viscous and easy of administration but more expensive.

Recently, the advent of Sulphones in leprosy has revolutionised the treatment. It was first tried on mycobacterium tuberculosis in animal experiments by Feldman *et al*, 1942, Petter and Prenzlau, 1944 but without any benefit. Its usefulness in leprosy has been acclaimed by the Carville workers in U.S.A. (Faget, Pogge, and Johnson, 1948). The composition of these drugs is fairly simple. They are derivatives of Diamino-Diphenyl Sulphone.

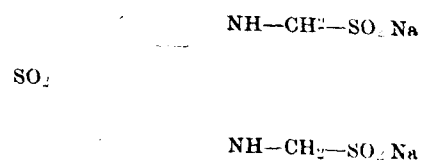


At present, 3 of them are available in the market.

* Specially contributed to THE ANTISEPTIC.

(1) *Promin*:—Diamino-Diphenyl Sulphone. N.N'didextrose Sulphonate is put up in sterile, aqueous solution in ampoules of 5 c.c. (2 gms.) and 12.5 c.c. (5 gms.) and is to be given intravenously.

(2) *Diasone*:—Disodium Formaldehyde Sulphoxylate of Diamino-Diphenyl Sulphone.



This is available in tablet form. The tablets are sugar coated. Each tablet contains 0.3 gms. by weight of Diasone.

(3) *Sulphetrone*:—Tetra-sodium Phenyl Propylamino-Diphenyl Sulphone Tetra Sulphonate, also available as tablets of 0.5 gms. each.

These drugs are only useful in the severe or lepromatous type of leprosy, and have not yet proved their usefulness in the benign or neural form.

Dosage and method of administration.—Promin is given parenterally by intravenous route only, while Diasone and Sulphetrone are given orally. The dosage has to be assessed carefully for each individual depending on the general constitution of the patient and his blood picture. It is safer to start with smaller doses and then gradually increase the dose to the limit of tolerance. Estimations of R.B.C. and Hb percentage are necessary at the commencement of treatment and every fortnight during the course of treatment.

Promin is given usually on 6 days in a week, treatment being omitted on Sundays. To begin with 2 gm. (5 c.c.) are given I.V., gradually increasing upto a maximum of 5 gms. (12.5 c.c.) It is the least toxic of the three; but most expensive and very few people can afford it at present.

Diasone is given orally. As a good working rule, 3 tablets are allowed per day in the average patient. The tablets are swallowed with a little water immediately after meals. It is desirable to give compounds of iron, side by side with Diasone, to counteract the resulting anaemia. Out of the preparations available, Fersolate (Glaxo) is the cheapest and most effective. Three tablets of this drug can be given with 3 tablets of Diasone. Out of the 3 Sulphone drugs, Diasone is the most toxic and patients complain of many toxic symptoms while taking the drug.

Sulphetrone is also given orally but the dosage is much high. Nine tablets (4.5 gms.) a day is the dose recommended. But some

people tolerate even 12 tablets a day without any detriment to their health. Three tablets are generally taken after each principal meal three times a day with a little water.

Toxic symptoms observed were mostly on patients taking Diasone. They complained of headache, dizziness, loss of appetite, feeling of weakness in the limbs, pain on walking and easy fatigue. These symptoms are analogous to those of Sulphonamide intoxication and are probably due to deficiency of Vitamin B group. The Sulphone drugs, as in the case of Sulphanilamides, probably interfere with the biosynthesis of these vitamins in the intestinal tract, thereby causing a deficiency of these vitamins in the system, and it has been noted that all these symptoms cleared after giving 2 tablets of Yeast, three times daily after meals or Vitamin B complex parenterally.

Lepa reactions were quite common during the treatment but these cannot always be attributed to Diasone, as they are seen in the usual course of disease.

Anaemia is easily counteracted by giving Fersolate tablets, one t.d.s. during the course of treatment. In some cases, the anaemia improves rapidly after giving Liver Extract parenterally.

In one case, which is not mentioned in the series below, a peculiar blue discolouration of the skin, of the face and extremities was noticed in the earlier weeks of treatment. This was in a girl aged 7 years, with fairly advanced leproma, who was taking 2 tablets of Diasone a day. On referring to the literature, it was found that such reaction has been reported by other workers. It is not cyanosis, although it looks very much like it. It is due to the circulation in blood of a detoxication product of Diasone in the process of excretion. It usually disappears if you persevere with the treatment.

No renal complications were seen, as the urine of all the patients treated was examined for albumin and casts periodically and was found to be normal.

The following is a report of 10 cases who were put on Diasone. The few patients who were available for treatment were chosen at random. Out of them, 8 were cases of advanced leproma and 2 were cases of atypical leprosy.

Case 1.—S. R. S., A L₂ (moderately advanced nodular leprosy) case of several years duration. He was taking Hydnocarpus oil injections since 1935 without any benefit. In the beginning of 1947, he was examined and was found to have nodules on the face and ear lobes, anaesthesia over the hands and several hypo-pigmented, anaesthetic patches over the body. Complained of dimness of vision. He was given Promin I.V. 5 gms. alternate day for 3 days in the week for about 6 months. A total of 877 c.c. (351 gms.) was given. Dimness of vision improved. Nodules flattened out and general condition improved. Smear became negative in many places.

We stopped the Promin, as the patient could not buy any more due to the exorbitant cost of the drug and were giving him only oil injections. On 20-11-'47, smears were only 1+ in a few areas. But in April 1948 smears again showed good number of globi in each of the sites from where smears were taken. The condition had deteriorated. So, Diasone was started on 3-4-'48. As the general condition of the patient was satisfactory, 3 tablets of Diasone were given daily with 3 tablets of Fersolate from the beginning. Injections of the oil were stopped, as the patient did not tolerate them. The stuff was not absorbed at all from the site of injections and gave rise to much pain and suffering. Patient did not show any untoward reaction with Diasone. We increased the tablets to 4 per day after a month's treatment. His blood count recently done showed R.B.C. = 4.5 millions and Hb 80%. Smears were examined on 3-2-'49 and found to be completely negative. Patient is still continuing the tablets although the smears are negative.

Case 2.—A L_3 (advanced case of nodular leprosy) case of 4 to 5 years' duration. For the last 2 years, she has been taking oil injections. She first came with nodules on the face, extremities, and back, and swelling of both hands and feet. Eye sight normal. Blood showed anæmia. (R.B.C. 2.55 millions, Hb 14.5%). Diasone was started from 1-6-'48. One tablet (0.3 gm.) was given per day to begin with. Three tablets of Fersolate were given in addition to improve the blood picture and injections of Liver Extract 2 c.c. biweekly. In the second and third week, the number of tablets of Diasone was increased to 2 per day and from the 4th week onwards, the dose was increased to 3 per day. Blood examination was done every week, but no further deterioration took place in the blood picture. On the other hand, it improved to 4 million R.B.C. and 70% Hb on 1-8-'48. The dosage was maintained. The nodules have completely disappeared. Patient feels considerable improvement in her general condition. She is able to walk long distances, which she was not able to do before. Her smears taken on 3-2-'49 showed reduction of bacilli in almost all the fields and those that are seen show disintegration. She is still taking the tablets without any detriment to her health.

Case 3.—A L_3 case of about 6 years' duration. Smears were highly positive in all the areas. Showed thickening and nodulation of both ear lobes. Skin of the hands and feet extremely shiny. Scattered nodules all over the body of various sizes ranging from 1 mm. to 5 mm. in diameter. Patient was getting oil injections for the last 5 years without any noticeable improvement. He was put on Diasone on 5-2-'48. Three tablets were given from the beginning along with Fersolate and Yeast. Patient did not have any reaction and other toxic manifestations during the last one year of treatment. Smears taken on 3-2-'49 show great improvement. Patient looks completely normal in appearance but he is still showing 1+ to 2+ in some places.

Case 4.—A case of atypical leproma. Came with multiple hypo-pigmented patches all over the body. Patches were raised and succulent. Smears showed scanty isolated bacilli in various fields. He was put on Diasone 3 tablets a day with 3 tablets of Fersolate on 1-9-'48. Patient complained only of constipation and anorexia during the treatment. He was rendered completely negative in all the areas after 6 months' treatment. Lesions have become flattened out and with intradermal injections of oil, they disappeared completely leaving no signs of the disease.

Case 5.—A case of L_1 patient had anæsthetic depigmented patches over both cheeks and one over left thigh. Slight thickening of ear lobes, and shining appearance of the skin of the forearms and legs was present. Smears from various sites showed 2+. The patient was put on 2 tablets of Diasone per day initially from 23-9-'48. During the 2nd week, the dose was increased to 3 tablets per day and he developed temperature, nausea and dizziness. The drug was stopped for a week and re-started with 2 tablets per day. It is being continued without any ill-effects and it has resulted in the disappearance of one of the macular patches on the right cheek and the one over the left thigh. The shining appearance of the skin has disappeared. Recently on 3-2-'49, smears showed reduction of bacilli in all the smears but he is still 1+.

Case 6.—A L_2 case with nodules over the ears and shining appearance of the skin all over the body and numbness over the dorsum of left hands. Patient used to get occasional epistaxis. There was no ulcer but only congestion of the nasal mucosa. The patient was started on 3 tablets of Diasone per day from 1-4-'48 along with Fersolate and Yeast. On 5-10-'48, he had a reaction and the tablets were stopped till 26-10-'48. From 27-10-'48 to 15-1-'49 the patient had only 2 tablets of Diasone per day and from 16-1-'49 he has been taking 3 tablets per day. On 15-2-'49, smears were taken. The bacilli are definitely reduced in number and are granular in appearance.

Case 7.—A case of L_3 of several years' duration, was first seen in September, 1945, with fairly big sized nodules over the earlobes and all over the body. From that time onwards, he was getting S. C. and I. D. injections of oil and Ester respectively at weekly intervals. His smears taken on 13-10-'45 showed 6+, 3 years after treatment with oils, on 9-9-'48, the smears were 4+. The improvement, being not very satisfactory, after 3 years of oil treatment, Diasone was started in September 1948. Patient was put on 3 tablets of Diasone along with Fersolate and Yeast. At the beginning of December 1948 patient had a reaction resulting in the stoppage of the drug for a fortnight and then the dosage was reduced to 2 tablets per day. Patient had no ill-effects since then. Nodules on the face have flattened out. Smears taken on 10-2-'49 showed 2+.

Case 8.—A case of L_2 with much infiltration of the skin of the face and nodules over the ear lobes and trunk. Smears taken in 1946 showed 3+ to 4+. He was taking S. C. and I. D. injections for the last 2 years. From 5-5-'48, he was put on Diasone, 3 tablets a day and on 22-12-'48, he got a reaction and the tablets had to be stopped for a week. The patient was given a few injections of Mercurochrome 1% and the reaction subsided. From 1-1-'49, he resumed taking Diasone, 2 tablets per day. The patient has been on this reduced dosage of Diasone with no ill-effects. The size of the nodules has decreased and the infiltration of the skin is reduced. Smears taken on 9-2-'49 showed 1+ to 2+.

Case 9.—An atypical case of leprosy with only a single, raised, elevated patch over the left elbow. Smears taken from the patch were negative. The patient was put on Diasone 3 tablets a day from 27-4-'48 upto 1-6-'48. He was also given oil and Ester injections simultaneously. The patch disappeared completely after 3 months treatment. Patient stopped taking the tablets but continued the injections. The patch reappeared on 1-10-'48. The patient was re-started on Diasone from 1-10-'48 and the patch has again become flattened out and almost invisible.

Case 10.—A case of L_2 , first came to the Department with a lepromatous nodule over the right ear and coppery coloured shiny, scaly skin all over. He had no nasal or eye complications. He was started on Diasone from 13-9-'48 and also given injections of oil and Ester simultaneously. As his general condition was below par, the patient was given 1 tablet a day in the first week, 2 tablets per day in the second and third weeks and 3 tablets per day from the fourth week onwards. In addition, he was also given 100 mg. of Vitamin B, daily subcutaneously as he had oedema of both legs and inability to walk. Patient stood the treatment well and showed remarkable improvement. Oedema of the legs disappeared after a month's treatment. Scaliness of the skin got reduced. His nodules became flattened out, shiny appearance of the skin was not noticed. Smears taken on 3-2-'49 showed great reduction in the number of bacilli and breaking up into fine dots.

Discussion.—Sulphones are useful only in the lepromatous type of leprosy and in some of the atypical cases. It is the early leproma which derives the maximum benefit from the Sulphone treatment. The late cases, although clinically show remarkable improvement, bacteriologically are still +ve to smears. In the 10 cases reported above, it is very difficult to assess the real value of Sulphones, as they have been tried on cases receiving the routine oil injections. Out of the 10 cases, only one of the advanced cases (Case No. 1) became negative within 6 months of taking Diasone. But he had taken Promin for a similar period and it is too early to give any opinion as he has to be watched for a further period of 6 months to one year. Clinical improvement is ahead of bacteriological improvement.

with Sulphone therapy. The atypical case (Case No. 4) was rendered negative in about 3 months. It is not justifiable, in this case also, to attribute the improvement to Diasone, as these types of cases, get well with the oil treatment itself. But in Case No. 9, which is also an atypical case, we are in a position to assess the beneficial effects of Diasone, for with Diasone and oil injections the patch disappeared. But the patch reappeared when Diasone was stopped and oil injections were continued and the patch regressed once again when Diasone therapy was re-started.

The toxicity of the Sulphones, particularly of Diasone, is the only drawback in its administration and one should be cautious in the early stages of treatment. It is necessary to do repeated blood examinations for the R.B.C. count falls. This danger is obviated to some extent, by giving iron concurrently with Sulphones. Once the patient has taken his maximum dose for a few months without diminution of Hb percentage and reactionary symptoms and has made definite improvement both as regards his leprosy and in his general health, the same precautionary methods cease to be necessary and treatment may be continued by an intelligent and reliable patient with the minimum of supervision. The Sulphones were used only for lepromatous cases, as they were the more serious cases. We hope to try this drug on a large number of patients and in neural cases when the cost of the drug comes down, or if some firm or philanthropic individual places at our disposal a large supply of Diasone. We have tried Sulphones on a small number of neural cases. As far as our experience goes Sulphones seem to exert a favourable effect on the trophic ulcers and the patches, but they do not cause any definite improvement with regard to claw hand or foot drop. The position of Sulphones in neural cases can only be assessed after a larger trial with greater number of cases.

Summary.—The Sulphones are of great value in the treatment of severe or lepromatous type of leprosy. They clear up the eye and nose complications in leprosy. A report of 10 cases put on Diasone therapy is given. Some of its toxic effects and their prevention is discussed.

My thanks are due to Dr. R. Subramaniam, M.D., M.B.O.P. (Lond.) for help and guidance in writing this article.

Oxygen Therapy in Shock

Dr. Ohlsson of Sweden reports on his experience and the successful results obtained with the administration of oxygen in all cases of shock. Every patient likely to have shock should receive oxygen prophylactically in a concentration not exceeding 60% at N. T. P. A patient affected by shock should receive 100% oxygen until shock is relieved. Oxygen is of great value in shock-treatments not only for the suppression of hypoxia but also for its good effect on circulation similar to that of transfusion. There is no time limit for treatment with 100% oxygen. It can safely continue as long as the shock itself lasts.—(Lancet, 15-1-'49, 121).

—T.N.S.B.

* Scabies: "Observations on the Treatment of"

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In the months of November and December 1945 I was working in the Labour Relief Camp Hospital at Thambyuzayat (Burma). We received a large number of labourers from the Japanese Camps on the well-known Burma-Siam Railway. Majority of them were suffering from scabies. Out of 902 patients 540 patients were treated for scabies either for the skin lesion only or for the skin lesion along with some other disease. Enough quantity of Sulphur was not available and Benzyl Benzoate was also unavailable. Under the circumstances the following treatment was adopted:

I. On admission gunny sac clothings and dirty rags used by the patients were removed and burnt. Other articles of clothings were disinfected in the T.O.T. disinfectant. All the patients were provided with plenty of soap, hot water and cocoanut husks for scrubbing and bathed as a parade, one nursing sepoy being appointed to supervise the bath parade. The treatment commenced from the next day.

First day:—The whole body was sprayed with D.D.T. 5% in kerosene oil second grade in the early hours of the morning. The patients were exposed to the sun's rays for three hours. This was followed by a hot water bath with plenty of soap and cocoanut husks. For scrubbing no nail brushes were available and cocoanut husks were used instead.

Second and third days:—Hot water bath with soap and cocoanut husks.

Fourth day:—Repeat *vide* first day.

Fifth day:—As on second and third days.

Six, seventh and eighth days:—Rest. No bath or any local applications.

Ninth day:—Local application of Skat all over the body in the morning. Hot water bath with soap in the evening.

Tenth day:—Cure. No further treatment necessary.

II. Benzyl Benzoate.—This should be the standard treatment of scabies if the financial condition of the patient permits.

(a) Benzyl Benzoate; Isopropyl or Ethyl Alcohol; Soft soap $\bar{a} \bar{a}$ to make 120 *i.e.* equal parts.

(b) Benzyl Benzoate 25 per cent, Vanishing cream base to 100 per cent.

* Paper read before the Third Gujarat and Kathiawar Provincial Medical Conference at Surat on 25-3-49.

(c) Benzyl Benzoate 200 c.c.; Lanette Wax S. X. 10 gms.; Water 800 c.c.

(d) Benzyl Benzoate drachms 2 minims 20; Ol. Arachis drachms 4; and Gum Acacia qs. Aqua ad ounce 1; an emulsion to be prepared.

(e) Instead of Isopropyl alcohol in (a), industrial Methylated Spirit may be used.

Patient is instructed to take a good bath with hot water and soap and told to use a rough napkin, or a piece of towel to scrub all the parts, special attention being paid to the affected parts. Use of brushes is painful and not practicable for the average Indian home.

The body is allowed to dry and the cream emulsion or ointment is applied all over the body from the neck to the toes, irrespective of the fact that many parts may seem unaffected, and the body allowed to dry. Put on clean clothes. Repeat the application at night without a bath.

Next day the same procedure is to be followed. For a severe case I recommended treatment for four days *i.e.*, 8 applications of the ointment or the lotion and for a mild case 6 applications *i.e.*, treatment for three days.

The bath may be postponed for a period of three days in the cold climate.

Preparations like Ascabiol (May & Baker), Uniscaboint (Unichem), Anascab Emulsion (Chemo-Pharma. Lab. Ltd.), Scabicide (R.S. Industries), Scabon, Scabiezma (I.R.I.), Anascab ointment with Sulphur (Chemo-Pharma.), Scabion (C.D.C.), Scabisol (Prof. Gajjar's Std. Chemical Works Ltd.), and Scabizan (Zandu) are all very useful preparations. But the Benzyl Benzoate emulsion prepared in the dispensary as in (e) will be quite useful but the stinging of the Methylated Spirit will be the drawback and it requires constant shaking as the lotion rapidly separates into 2 layers. For poor patients in India we would be justified in using Benzyl Benzoate emulsion 30 per cent in Arachis oil as in formulae (d).

III. Sulphur deposition method.—After the bath with soap and hot water and thorough cleansing, the body is allowed to dry. Apply 40 per cent Sodium Thiosulphate solution to entire body excepting the head and neck. Allow to dry for 15 minutes and then apply 5 per cent solution of Hydrochloric acid and allow to dry for 15 minutes. Repeat when dry during the same day. Full course is two such treatments on 3 successive days. The Hydrochloric Acid precipitates a fine Sulphur powder from the Thiosulphate solution which is said to be more effective than ordinary flowers of Sulphur.

I have used this method as a routine in 800 cases in the 59 Indian General Hospital in Kohima and I was not satisfied with the results and I resorted to the good old Sulphur ointment.

IV. Sulphur.—1. (a) Sulphur Precipitate 60 grains; and Paraffin Mollis Flav. 1 ounce.

(b) In sensitive individuals use 30 grains Sulphur to one ounce.

2. Sulphur Precipitate; Balsam of Peru; Castor oil ā ā 12 gms. or c. c.; Lanoline; Petrolatum ā ā to make 120.

If possible Lard should be used as the base instead of Vaseline. For children $\frac{1}{2}$ to $\frac{1}{4}$ strength to be used.

The ointment gets hard in cold climates and the following emulsion has been extensively used by me and found to be very useful for the cure of scabies:

3. Sulphur Emulsion 10 per cent.

Method of preparation:—Take $1\frac{1}{2}$ ounces of mucilage of Acacia (half ounce Pulv. Acacia and 1 ounce of water). Emulsify with oil Arachis 2 ounces. Sulphur Precipitate or Sublimate 44 grains is to be used for ounce 1 of emulsion. Lightly triturate mucilage in a mortar, add whole of oil and continue trituration till emulsified. Place Sulphur in a dry mortar, powder well and add to the emulsion.

N.B.:—Sulphur separates on standing but can be redissolved by shaking. Four ounces of emulsion is enough for one patient.

4. Ung. Sulfuris Alkaline:—Sulphur Sublimate 10 to 20 grams; Potassium Carbonatis 10 gms.; and Vaseline or Lard 100 gms.

This has got better penetrating power in the burrows due to alkalinity.

V. Danish ointment.—Basic Sulphides of Potassium and Zinc with elemental Sulphur in an emulsified base of Lanoline, Petrolatum and water. This is said to be effectual in 24 hours, a single inunction being sufficient. Ointment is to be applied all over the body below the chin.

VI. Benzyl Benzoate Compound Lotions.—1. Benzyl Benzoate 10 per cent; D.D.T. 1 per cent; Benzocaine 2 per cent to be applied as in No. II. Uniscab lotion (Unichem.) is prepared according to this formula.

2. The anti-scabies preparation of the United States Army contains apart from Benzyl Benzoate, an addition of 6 per cent D.D.T.

VII. The following ointments are very useful for scabies with secondary infections:

(a) Benzyl Benzoate 25 per cent; Sulphathiazole 2.5 per cent; Sulphanilamide 2.5 per cent; 5-Amino Acridine 0.1 per cent in a cream base.

In scabies with secondary infections the treatment is to be carried out as in 2 but after the body is dry after the application of Benzyl Benzoate cream, emulsion or ointment apply the above ointment over the infected parts. Or else this ointment is to be applied as in No. II. Uniscab compound (Unichem) is made according to this formula.

(b) Ammoniated Mercury $2\frac{1}{2}$ per cent; Balsam of Peru 10 per cent; Betanaphthol 2 to 5 per cent; Sublimed Sulphur 5 to 10 per cent in a vaseline base. Quite useful in infected scabies.

(c) Sulphur may be omitted from (b) and Betanaphthol increased to five to 10 per cent for those with an idiosyncrasy towards Sulphur.

(d) An ointment containing Benzyl Benzoate 20 to 25 per cent along with Sulphur, Camphor, Sulphanilamide, Sulphathiazole and Sandalwood oil in Lanoline. Vaseline base is quite useful in scabies with secondary infections. Scabizan (Zandu) contains the ingredients, Benzyl Benzoate 15%; Benzyl Acetate 5%; Sulphur 4%; Zinc oxide 4%; Sulphanilamide 4% in an ointment base 68%.

(e) Benzophenyl-Mercury—Fatty acids dissolved in neutral oil (Scabin-Synthetic). This should be liberally applied all over the body below the chin for three to four consecutive days.

VIII. Derris Roots.—(Contains Rotenone). To one gallon of water add four ounces of powdered Derris Roots. To a cupful of this add a drachm of soap flakes. Apply six times in two days. It is better to dilute this to half strength to avoid irritation.

IX. Pyrethrum 0.7 per cent; Phenol 0.5 per cent; Oxyquinoline Phormate 0.6 per cent; in vegetable oil to be applied daily after the bath as usual for three to four days. May be used upto seven days if no irritation occurs.

X. Mitigal (Dimethyl-Diphenylene Disulphide) (Bayer).—This liquid is to be applied all over the body below the chin for two to three consecutive days after a good bath with thorough scrubbing of the body. It is not available for general use at present.

XI. 1. Tetmosol (I.C.I.).—Contains Tetmos 25 per cent Polyglycerol, Ricinoleate 10 per cent in 65 per cent Alcohol.

The solution is to be diluted by adding one part of Tetmosol to two or three parts of water stirring gently during the addition. The diluted liquid is to be prepared fresh when required.

Method of application:—Same as in 2. This is to be carried out on two or three successive days. Discarded clothing and linen should be disinfected, if possible.

Advantages:—It is painless even on raw surfaces and children also tolerate it quite well. It is a clean watery solution. I have found it useful and effective in mild cases of scabies and it is cheaper than the Benzyl Benzoate creams and emulsions available in the market.

2. *Tetmosol Soap* (I. C. I.):—Very efficient for controlling scabies. It prevents infestation as well as effects a cure if used regularly. When one patient from a family suffers from scabies the rest of the members should be examined and if lesions found routine anti-scabies treatment should be prescribed for the affected persons and the rest of the persons should use the Tetmosol Soap. As this was not available I have no personal experience of the same.

XII. *Crotonyl-N-Ethyl-O-Toluidine* (10 per cent—Eurax J. R. Geigy, S. A.).—This is said to be superior to the other preparations including Tetmos No. 11. This drug was tested in vitro on *Psoroptes Cuniculi* and the following results were noted:

Wetting of isolated mites with 10 per cent concentration of Septiolan and Tetmos showed a doubtful action on the exposed mites as all the mites exposed to the corresponding solutions were not killed. The period until commencement of optimum effect varies widely with different preparations. With Mitigal 30 150 minutes passed before parasites became motionless while with Benzyl Benzoate and Crotonyl-N-Ethyl-O-Toluidine (Eurax active substance) the maximum action occurred within 10 minutes. This very small latent period of action in vitro is justified by the clinical response manifesting first by cessation of the itching.

Similarly the effect of 2 per cent solution of this substance along with the 2 per cent solutions of Mitigal, Benzyl Benzoate, Tetmos and Septiolan were noted on *Psoroptes Cuniculi*. With Eurax active ingredient 2 per cent all mites were killed within 48 hours and this was the only substance out of the above mentioned having such an effect.

Eurax active ingredient has a remarkable bacteriostatic action on different organisms which when compared with well known antiseptic like Rivanol is interesting to note. Its action on Streptococci and Staphylococci is more powerful than the action of Rivanol on these organisms in equal strengths and conditions.

It is a simple colourless application without baths and scrubbing. There is no soiling of clothes and local and general tolerance to the drug which has intensive bactericidal and antiseptic effect is quite good.

Instructions for cure:—No preliminary bath is to be taken. If bath is taken wait till completely dry as it penetrates dry skin very well. Use about 2 ounces of Eurax for rubbing into the skin over whole body except face and scalp. Particularly the affected parts

(commonly affected are spaces between fingers and toes, wrists, armpits, buttocks and genital organs) should have a liberal application and rubbing. Repeat treatment within 12–24 hours. Underwear and clothing should be changed after second application but if this is not possible they should be dusted with Neocid powder. Take a bath 2 to 3 days after the second treatment.

It is better to treat all members of the family though they apparently look unaffected.

XIII. *Drugs*.—Sulphathiazole (M & B 760 or Cibazol tablets). Tablets are quite useful in scabies with secondary infections. Three to four gms. (6 to 8 tablets) a day for 5 to 6 days along with an alkaline mixture will be sufficient over and above the local treatment.

XIV. *Injections*.—Various injections are used for scabies by the general practitioners.

(a) Collosal Sulphur.

(b) Scabiezma (I. R. I.) containing Benzyl Benzoate 10 per cent and activated Sulphur 0.2 per cent. The Director of the Industrial and Research Institute Ltd., Bombay, has written to me that some doctors order for 100 ampoules packing of this preparation and the results are favourable as reported to the representative of this firm by the doctors. I have no personal experience of this preparation and the doctors in this town have used this preparation along with the local treatment, so one cannot say which one is doing good to the patients.

(c) 10 c.c. of 10 per cent Calcium Gluconate with Autoblood 5 to 10 c.c. (Calcium I. V. and Autoblood I. M.)

(d) Milk or Milk with Iodine injections. (Iodo-ladecolan Miolan with Iodine, Ancolan, and Iodolan, etc.)

(e) Soluthiazole, Soluseptasine or Cibazol injections.

(f) Vitamin B-complex injections if vitamin B deficiency is noticed.

(g) Aminophylline 0.5 gm. in 20 c.c. distilled water. This gives relief in itching for 30 minutes to 12 hours.

(h) Magnesium Sulphate 10 to 25 c.c. of 10 per cent solution intravenously for relief of itching.

(i) Penicillin for secondary infections.

(j) Sterilised sea water 2 to 3 c.c. subcutaneously daily for ten days. No other local or general treatment. 280 cases were treated by Major Chowhan with this treatment. Sixty per cent were considered practically cured in this series.

These are really unnecessary and the local treatment if necessary accompanied by oral administration of Sulphathiazole is quite sufficient.

XV. Remarks.—D. D. T. is effective against the lesions of scabies but should be used under conditions when no other scabicides are available.

The Indian Army Medical Directorate is of the opinion that there is no evidence that D. D. T. preparations are effective in the treatment of scabies. We were able to tide over our difficulties with D. D. T. when the other scabicides were not available and the result was fairly satisfactory. These results are found by other workers also.

The addition of D. D. T. to lotions (a), (b) in No. VI is suggestive of the efficacy and usefulness of this drug in scabies though to a limited extent.

For general practice Sulphur emulsion and Benzyl Benzoate emulsions prepared in the dispensaries should be the drugs of choice for average mass of people in our country. Where quickness, cleanness and efficacy of the preparation matters and no financial consideration is to be taken into account, Eurax (Geigy) should be the drug of choice and used for the quick cure of scabies.

Injections are not important in this disease except in cases where there is deficiency or marked secondary infections. The oral administration of Sulphonamides is a great advantage in secondarily infected scabies.

A few patients get itching after 3 to 4 days treatment with Sulphur due to mild dermatitis. This yields to local applications of Zinc et Calamine lotion (Calamine prep. and Zinc oxide each 20 grains. Liq. Calcis Hydroxide 60 minims and Aqua ad ounce 1).

If the itching recurs after 8 to 10 days there is recurrence of the disease either due to inefficient treatment or reinfections. If the patient has been treated with Sulphur first it is advisable to treat him with Eurax or Benzyl Benzoate preparations next time.

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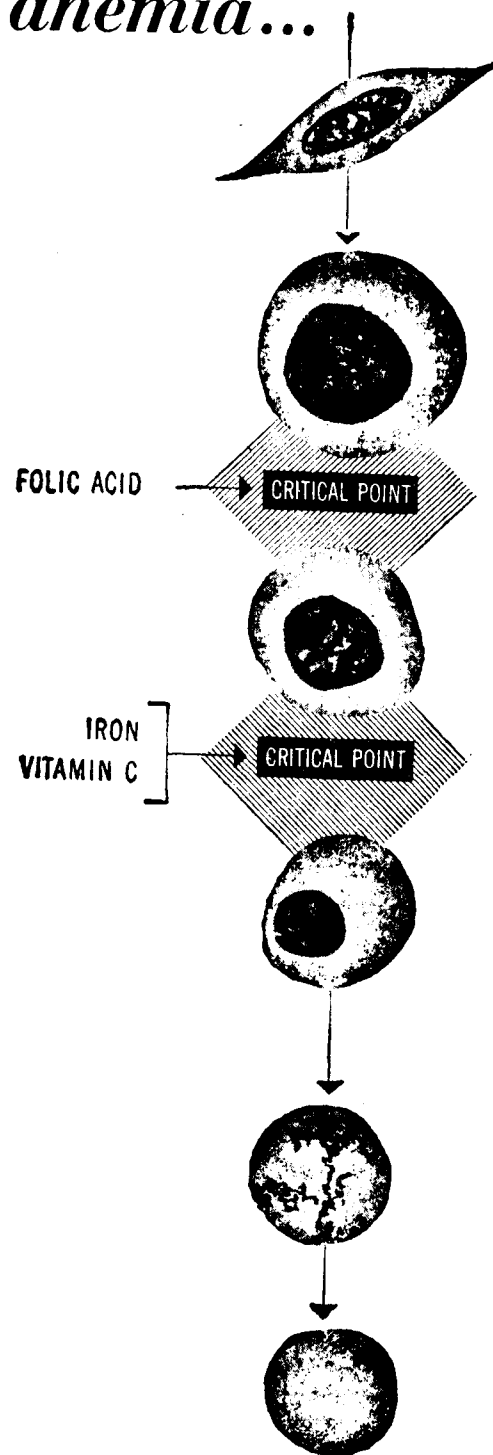
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The Eye and its Care*

C. K. BHALERAU, M.B., B.S. (Bom.), L.O. (Madras),
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THE eye is an important organ of the body, the importance of which is unfortunately realised only when it is damaged and the vision is lost. It can be said with confidence that here in India, about 30 to 40% of the eyes lost, could be saved, provided adequate knowledge about the care of the eye as well as adequate treatment is given to the poor illiterate masses of this country. It is a matter for pity that thousands of babies lose their eyes every year at birth owing to venereal diseases present in their parents. It is nothing short of criminal to allow this ignorance to destroy the very basic structure of our society.

This article is therefore an attempt to clarify certain points with regard to the proper care of the eye and the prevention of certain diseases that might otherwise destroy the sight permanently.

Anatomical structure of the eye.—The eyeball lies in the orbital cavity which is somewhat like a pyramid with its base in front. There are two walls, nasal and temporal, formed by the orbital bones. The orbit is traversed posteriorly by three openings, the main opening being the optic foramen which is traversed by the optic nerve and the ophthalmic blood vessels.

The orbit serves to protect the eyeball safely from all external injuries. The walls of the globe are composed of dense elastic membrane, with the cornea in front and the sclera on all sides. The sclera is covered in front by conjunctiva. The sclera thus forms the outer protective coat. There is a middle coat, which is vascular and is made of choroid, the ciliary body and the iris. Lastly, there is an inner sensory or nervous coat, made of retina.

Function of the eye.—The main function of the eye is to see objects clearly. This is done with the help of the following structures:—(1) Transparent cornea; (2) the lens; (3) retina; (4) optic nerve; and (5) visual centre in the brain.

Damage to any of these structure is likely to affect the vision. Thus, if the transparency of the cornea is destroyed owing to repeated ulcerations or chronic trachoma, the vision is likely to be affected, as the visual image is not distinct. Similarly a cataractous lens is a great hindrance to proper vision. Any damage to retina, optic nerve or the optic centre either through diseases like syphilis or tumour is likely to destroy the vision permanently making the chances of recovery pretty remote.

Thus after dealing with the anatomy and the normal function of the eye, the question arises as to how to take care of the eye, so

* Specially contributed to THE ANTISEPTIC.

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that the vision is maintained at normal level. I will therefore take up first those factors or causes which are likely to affect the vision, so that, if proper attention is paid to these factors, it may be possible to prevent any loss of vision in a large section of our population. In the end I will try to give some positive guidance which may be found to be quite useful.

The first and the most important factor that usually affects the vision is the deficiency in the nutritional value of the diet. The nutritional value of the vegetarian section of our population (and that comprises a vast majority of the population) has gone down to a very low ebb and people are finding it very hard to make their diet proportionate and a balanced one. For example the main diet of the local inhabitants of this area (Chattisgarh) consists mainly of dal and rice with occasional additions of green vegetables and onions. Fruits and other articles like ghee, milk, butter, etc. are a source of luxury to these people, and very few can afford to include them in their daily diet. Thus, if their basic diet is analysed one finds that it consists more of carbohydrate, less of proteins and fats and very little or practically nil of vitamins A, D and C. As these people are used to take unpolished rice, they get vitamin B in plenty and so one comes across with this deficiency very rarely. These vitamins are the vital components of our diet and their deficiency is likely to affect the vision, in addition to various other generalised diseases produced in the body.

Taking these vitamins in serial order one finds that vitamin A is of great importance in so far as our vision in darkness or dim light is concerned.

It is found that the retina consists of two types of cells (1) cones and (2) rods. The cones are found to be active during day light and the vision is therefore maintained during the day with the help of these cones. But during dim light or during night, the rods get active and the vision is maintained during dim light by the help of these rods. It is also found that for the growth and development of these rods, vitamin A is of great necessity. Hence any deficiency in vitamin A is likely to affect the growth of these rods, with the result that ultimately the vision begins to fail during dim light. The main source of vitamin A is carrot, shark-liver-oil, milk and milk products, fish, eggs, meat etc. One should therefore make it a point to include some of these articles in their daily diet so that there may not be any chance of developing any deficiency in this vitamin.

As I said before the diet of the local inhabitants of this area is very poor in vitamin A and so one comes across a good number of cases showing signs of vitamin A deficiency. Vitamin A deficiency is particularly common amongst children, who come with symptoms of night blindness as the earliest manifestation of this deficiency.

Some people who take this opportunity to consult the medical man, at this stage, are benefited because the disease can be checked by pushing vitamin A in large doses, by mouth or by injections. But unfortunately the masses are so illiterate that they fail to understand the significance of this red signal; with the result that process of keratinisation develops in the conjunctiva and later on in the cornea, resulting in complete destruction of the eye.

Thus, night blindness, xerosis and keratomalacia are some of the external manifestations of vitamin A deficiency, so far as eye is concerned. As I said before these are preventable diseases, provided one takes vitamin A in sufficient quantity in his diet.

Vitamin B.—It is a water-soluble vitamin and is found in the following articles of diet: (1) Outer pericarp of rice, wheat and maize; (2) green vegetables; and (3) milk and milk products.

Deficiency of this vitamin leads to the development of keratitis and formation of small recurrent corneal ulcers leading to corneal opacity, thereby affecting the vision to a great extent.

In order to avoid the deficiency one should try to take unpolished or slightly polished rice and green vegetables in the diet.

Vitamin C.—This is again a water-soluble vitamin and is found in juicy fruits like lemons, oranges, sweet limes and green vegetables.

Deficiency in this vitamin leads to hæmorrhages in the eye.

Hæmorrhages in the eye can occur in any of the following places:—(1) Sub-conjunctival; (2) hæmorrhage in anterior chamber; (3) hæmorrhage in vitreous; and (4) hæmorrhage in retina.

Excepting the first condition, hæmorrhages in all the other places are likely to seriously affect the vision, and damage the eye permanently. Hence one should never allow the deficiency of vitamin C to develop and this can be achieved by taking juicy fruits in diet regularly. Inclusion of fruits in diet should never be looked upon as a source of luxury, but should be considered as one of the essential articles of diet.

Vitamin D.—This vitamin is not particularly connected with the visual efficacy but its presence in diet is helpful in maintaining the orbital bones and cartilages in a healthy condition. It is usually associated with vitamin A and is found in those articles in which vitamin A is found in plenty.

The second condition that seriously affects the vision is the venereal diseases. These diseases have been playing havoc with lives of millions of people all over the world and have been responsible for the loss of vision both in adults as well as in new born infants.

Two of the most important venereal diseases are syphilis and gonorrhea.

Syphilis is a slow and at times imperceptibly advancing disease with few early symptoms but leading to serious catastrophe in its tertiary stage. It not only rests content to be with the sufferer alone, but spreads on to the future progeny making them cripple and life long invalids.

The diseases of the eye due to syphilis can be divided into following stages :

(a) *Primary stage* :—A primary chancre of the lid is not quite uncommon, though of course it is a variety. It reacts quickly to the antisyphilitic line of treatment.

(b) *Secondary stage* :—At this stage of the disease, the chief ocular involvement is the development of interstitial keratitis affecting both the eyes. This is more or less common in children and is the manifestation of congenital involvement of the disease.

In adults the manifestation of secondary stage may give rise to :—(1) Iritis ; (2) iridocyclitis ; (3) episcleritis ; (4) scleritis ; (5) choroiditis ; (6) retinitis ; (7) retinochoroiditis ; and (8) optic neuritis ultimately leading to optic atrophy.

Any of these conditions, if untreated or treated inadequately, may give rise to serious visual disturbances leading to complete blindness.

Tertiary stage :—It is a stage of gumma formation leading ultimately to the destruction of the eye. Gumma at the sclero-corneal junction is quite common. Similarly gummatous involvement of the retina leading to its detachment and destruction of the eye is quite common.

There are some of the syphilitic involvements of the eye which can destroy the vision and also the eye if adequate treatment is not given from the very beginning of the infection.

Gonorrhea is another dreadful venereal disease which primarily affects the mucous membrane especially the urethra in males and vagina, cervix and female urethra in females.

Any contact of the gonorrheal germs with the conjunctiva leads to a severe inflammation of the eye with a purulent discharge. If this condition is not treated immediately, ulceration of the cornea takes place which ultimately leads to perforation, panophthalmitis and loss of the eye. Thus it is found, that many women who suffer from acute gonorrhea during pregnancy infect the eyes of their babies at birth and are thus responsible for the loss of eyes in their babies. It should therefore be made a rule that any woman going in for delivery should be scrupulously examined for the evidence of gonorrhea and, if found, she be treated energetically for eradicating the disease. Similarly babies born of such mother should be carefully handled, and their eyes be washed and Penicillin

solution be instilled at regular intervals. Many babies will be saved from this catastrophe if proper attention is paid both to the mother in the ante-natal period and the care of the eyes of the babies at birth.

Besides the actual contact of the eye with the gonorrheal germs, it is possible for the toxins of the germs to circulate in the blood from the site of infection (urethra in males and urogenital organs in females) and invade the delicate structure of eye especially the iris, the choroid and lastly the retina. Thus we come across with cases of iritis, choroiditis, retinochoroiditis and retinitis occurring in persons having suffered from this disease some years ago, thereby suggesting that the site of infection still exists. This often happens when the treatment for acute infection has not been adequate. The vision is thus permanently lost as a result of this infection and it is then too late to remedy the mischief already done.

Thus we see what a severe catastrophe one has to face owing to these dreadful venereal diseases. It is possible for a person to be away from the clutches of these diseases provided one tries to understand the disease in its complicated form. It is very unfortunate that the illiterate mass inhabiting this continent underestimate the severity of the infection and thus fall an easy victim to these dreadful diseases. And finally to add insult to injury one finds that after having contracted the disease the person is denied both adequate information and knowledge about the disease, as well as adequate and prolonged treatment for want of trained personnel and equipment. It is quite possible that if proper propaganda is carried on and the masses are made to understand the severe consequences of the disease, as is done in the West, it would be possible to reduce the number and thereby prevent any damage to the eyes as a result of the complications of these diseases.

Similarly, adequate number of centres should be opened for the regular treatment of such persons so that the disease does not take a heavy toll of human lives. Thus the new born babies will be spared from infection and the eyes will not be lost owing to ignorance. The Government have therefore got to come to the aid of the medical profession in at least removing the colossal ignorance that still exists among the masses.

The third factor which affects the vision is Trachoma. It is a slow advancing disease, which is quite controllable in the early stages, but which seriously affects the vision if left untreated or treated inadequately. Unfortunately one can never be sure of having cured the trachoma even after a considerable period of treatment. The patient must remain in constant touch with the doctor and must follow his advice as to the line of treatment from time to time.

Trachoma, if untreated for long, leads to the following complications :—(a) Trachomatous pannus ; (b) Corneal ulcers ;

(c) Trachomatous ptosis; (d) Entropion; (e) Trichiasis; (f) Xerosis; and (g) Symblepheron.

Any of these complications are sufficient to damage the vision to a considerable extent.

The treatment of trachoma takes a long time and it should never be tackled lightly even in its early form. It spreads by contact, through hands, towels, and kerchieves and so one should take proper precaution while remaining in the company of those suffering from this disease.

Next in order comes the infection of small-pox which has unfortunately been responsible for the loss of thousands of eyes every year, both in adults and babies.

Children are more prone to this infection and so it has taken a heavy toll of human eyes in them mostly due to ignorance and superstitious beliefs. It is very unfortunate that many people in this part of the country still believe that small-pox is a disease which occurs in an epidemic form owing to the wrath of some Goddess. They therefore stoutly refuse to take any medical aid that may be offered but feel content by trying to satisfy the Goddess by offering her some sacrifice. The theory of virus infection does not satisfy them.

During the infection of small-pox, the eyes are usually affected; the eyes get congested and there is lacrymation. If the eyes are not kept clean, ulcers appear on the cornea which ultimately perforate, thereby leading to complete destruction of the eyes.

It has been a common sight to see the babies getting cured of small pox (without any treatment whatsoever) but having lost one or both the eyes in the end.

People therefore need to be told that adequate medical aid, wherever possible, should be taken in this disease in order to prevent such a catastrophe.

During the infection of small-pox, the eyes should be scrupulously kept clean by Boric lotion wash and instillation of Argyrol or Penicillin drops at regular intervals. Any sign of ulcer formation in the cornea should be attended with proper care and instillation of Atropin 1% and castor oil drops helps to bring about healing of the ulcer and thus prevents further complications.

Observing the Solar Eclipse with naked eye often leads to damage of macula leading to partial blindness. Hence one should be careful in avoiding to see bright light without proper protection for the eyes. It has been a common practice amongst some Brahmans to offer prayers to the Sun in the early morning and trying to look at it with the naked eye with the belief that it improves their vision. This is, however, a wrong belief because the strong actinic rays of the Sun bring about a change in the refractive power of the lens

leading to the development of cataract. And people with early cataract find that they are able to see objects at near vision clearly without any glasses. This has given them a sense of false satisfaction that their vision has improved as they are able to discard their old pair of glasses. This is, however, known as the 'second vision' but the change once started in the lens progresses with the result that the vision deteriorates till the cataract gets matured. The vision can however be restored after the mature cataract is removed by operation.

Accidents have certainly been responsible for the loss of eyes in a considerable number of cases, especially those working in factories. But since accidents will remain as accidents one can never be sure as to when they will occur. But still, persons working in factories, where there is any risk to their eyes, should be given proper protection for the prevention of accidents by the authorities concerned.

Lastly I must say a few words about the type of medical aid given in villages by certain quacks for the different ailments of the eye. Sometimes the medicines suggested by these quacks, to be used for eyes are so irritating that instead of giving any relief considerable damage is done to the eye with the result that the vision is lost. Hence one should be careful in not trying to get the external diseases of the eye to be treated by such quacks, even though the trouble may not be quite severe.

In the end I will deal with certain preventive measures which one should adopt in order to avoid any infection to the eyes.

Personal hygiene of keeping the hands and face clean with soap and water at least twice a day will go a long way to keep the eyes in good condition as, very often, the infection is carried from dirty hands to the eyes by direct contact. Washing of face in a Chilamehi and taking bath in tank water where the water stagnates, is very harmful to the eyes; because the dirty water is a source of infection to the eyes. Unfortunately the system of taking bath in tank water and also utilising the same water for cooking purposes is very much prevalent in this part (Chattisgarh, C.P.) and here it is common to see epidemics of cholera every year, along with different infectious diseases involving the eyes, occurring every now and then.

Any sign of acute inflammation of the eye should not be looked upon lightly, but should be treated by a qualified medical man. One should try to avoid the quacks in so far as eye diseases are concerned because once a damage is done to the eye it is very difficult to rectify it.

Failing eyesight should be immediately corrected by suitable glasses. Sometimes it is found that children attending school, while sitting at the back benches, find it difficult to read what is written on the blackboard with the result that they remain behind

the class. Such children should specially be tested for defective eyesight and necessary glasses prescribed. Similarly some students are found to be in the habit of reading books at a very close distance. This suggests the possibility of defective vision and hence should be corrected before any further loss of vision takes place.

Students are at times found to cultivate the habit of reading books in the artificial light while lying down on their cots. This is a wrong method because it brings about a strain to the eyes which finally leads to astigmatism requiring glasses of complicated number to correct the vision. Students should therefore be given proper instructions with regard to carrying out their studies at home while reading at night. Attention should be paid to the proper intensity of light used for study as dim light strains the eye. Similarly the direction of light should be such that it does not directly reflect on the eyes. The seats should be comfortable as otherwise the student is unable to concentrate on his studies for long. Similar attention about the light and the seats has to be paid in the class room. The blackboard should be placed at such a position that every student in the class room is able to see clearly what is written on it. Long hours of study at night, especially in the artificial light, brings about a change in the refractive power of cornea giving rise to symptoms of eye strain and possibly astigmatism.

Regular medical inspection of boys at school, especially of their vision, should be carried out by qualified doctors so that the boys suffering from any defect could be detected and treated properly.

As for the involvement of the eye in venereal diseases a word of caution be sounded that "Prevention is better than cure." If a person tries to understand these diseases in their true colours and tries to avoid them (and it is quite possible), he would be removing the source of a great danger to his eyes.

As for the unfortunate person who has already contracted the disease, the only advice that could be given is that he should make it a point to get himself treated thoroughly at the very outset in order to prevent further complications. The treatment is rather long and arduous but it is worth the trouble as compared to sufferings one has to undergo in later years owing to complications.

Similarly prevention from small-pox and its complications by repeated vaccinations is better than treating the condition when already present. Every child should be vaccinated upto the age of 3 years and revaccinated when attending the school.

The eyes should be protected with goggles when one has to work in bright light.

These are just a few preventive methods which, I think, if followed properly, will go a long way in keeping the eyes in sound condition.

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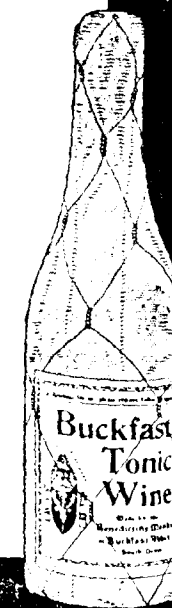
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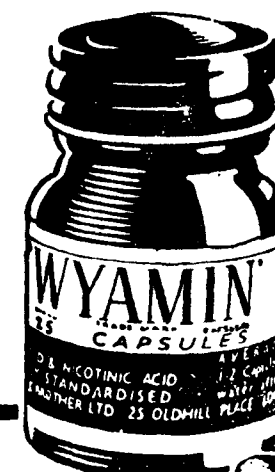
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Menorrhagia and its Modern Treatment *

RAMANIK H. DESAI, L.C.P.S., L.T.M.,
Supdt., S.M. Maternity Hospital, Santh Pipli, Nadiad.

Definition.—Menorrhagia indicates an excess of menstrual flow. The bleeding comes from menstruating endometrium. The endometrium is undergoing the normal and regular cyclical changes or it is having cyclical changes which are abnormal as occurs in irregular menorrhagia associated with ovarian dysfunction at puberty or the menopause.

Menorrhagia signifies bleeding which is independent of menstrual function.

Aetiology.—I. Due to local pelvic disease.

II. Due to endocrinopathies.

III. Due to constitutional disease.

I. Local pelvic disease.—Uterine fibroids.

Subserous fibroids cause little or no bleeding. But submucous and interstitial fibroids cause excessive bleeding. Specially the submucous form of fibroid produces profuse bleeding and leads to severe anaemia.

The bleeding is not due to endometrial congestion but to interference with the efficient contraction and retraction of the uterine musculature.

Benign polypi of the uterus give rise to bleeding.

Salpingo-oophoritis produces various effects on the menstrual function. The menstrual periods are increased in frequency, partly due to pelvic hyperaemia and partly due to the disturbing effect on the secretion of the ovarian hormones.

II. Endocrinopathies.—Occur at any age, but are common at the menopause.

Types of bleeding:—In one the flow is increased in intensity and duration but the cycles remain regular. In the other which is commoner the bleeding is so irregular that the cycles cannot be distinguished. The duration of flow may vary from a few days to several weeks. In many cases in addition to menorrhagia of varying degree there is also intermittent bleeding in the intermenstrual phase. Specially more common at puberty, and menopause. And at menopause, the period of amenorrhoea continues for weeks or months followed by severe bleeding. The endometrium is grossly overgrown and thick. There is hyperplasia at the follicular phase of the menstrual cycle.

Ovaries show characteristic changes, corpora-lutea are absent and there are unruptured follicles. There is continuous oestrogenic hormone effect and complete failure of the corpus luteum hormone.

*Specially contributed to THE ANTISEPTIC.

It has also been known that excessive menstruation may be due to hypofunction or hyperfunction of the thyroid, more often the former. It is not understood how the thyroid acts but it is probably through a secondary effect on the anterior pituitary function.

Excessive bleeding at puberty is generally due to follicular endocrine origin, although it may be due to ovarian new growth, abortion, or tubercular disease of the uterus.

In older women exploration of the uterus with curette and ring forceps must be done to exclude carcinoma of the uterus.

III. Constitutional causes.—This is not an important group.

Acute infectious diseases are sometimes associated with increased menstrual flow. Menorrhagia may be a trivial symptom of decompensated heart disease, cirrhosis of the liver and high blood pressure.

Menorrhagia with irregular cycles are found in alcoholism. Blood diseases such as primary anæmias, purpura scurvy and hæmophilia produce excessive and prolonged bleeding. Fear anxiety and emotional states produce excessive bleeding.

Treatment.—When excessive bleeding is due to local or constitutional disease it should be treated by drugs. Surgical measures consist of dilatation of the cervix and removal of hyperplastic endometrium, polypi and small submucous fibroids, myomectomy, hysterectomy and removal of inflammatory masses.

Drugs.—Ergot was much used before the discovery of sex hormones, but its value is limited. Pituitary and calcium are not advocated. Iron has an important place in the treatment of menorrhagia with secondary anæmia.

In some cases the anæmia seems to aggravate the menorrhagia. Thyroid extract may be a specific drug in certain cases where there is low basal metabolism.

Treatment of cases due to ovarian dysfunction :—This is known as the irregular climacteric menorrhagia, also known as metropathia hæmorrhagica.

Many patients with menstrual irregularity undergo spontaneous recovery and do not require treatment. Progesterone injections 2 to 5 mg. daily produce cessation of hæmorrhage. Anti-pituitary leutinising substance such as Antuitrin S. Gonan etc. 100 to 200 rat units are advocated but the results are not as good as Progesterone.

Testosterone controls bleeding effectively, 10 mgm. daily for three days. Totally 250 mgm. may be given in one month. Illogical though it seems there is an increasing tendency to treat functional menorrhagia with estrogens. Their effect is explained as a stimulation of endometrial growth—when injections are stopped the sudden lowering of blood estrogen level causes breakdown of endometrium which is cast off and the bleeding stops.

In cases in which bleeding is severe or persistent and do not yield to the above treatment curetting is indicated. This checks the bleeding at least temporarily, but also establishes the diagnosis and eliminates malignancy.

The curetting should be followed by the insertion into the uterus of adequate dose of Radium. X-rays will produce the same effect but Radium is more convenient.

Metrorrhagia :—This form of uterine bleeding is always due to uterine or other local disease. It may occur at any period of life. Before puberty metrorrhagia is uncommon.

During reproductive life the bleeding occurs in the form of irregular bleeding between the menstrual flow. The rhythm of the cycle is unchanged. When it occurs after the menopause it is an indication of cancer.

This type of bleeding takes the form of spotting or staining in the early stages occurring after coitus, defecation or severe exertion, or it may be caused by vaginal examination. In the advanced stage of the disease the bleeding may be severe and fatal.

Ovarian carcinoma produces bleeding after the menopause stage. It is due to abundant secretion of estrogenic hormone from the cells of the tumour.

Treatment is surgical, radium and X-ray.

Menstrual toxin :—Menstrual blood is fatal to rats when injected. It is not a product of hæmolysis. Is destroyed when kept at room temperature, so it is not a bacterial toxin. It is a product of tissue catabolism.

Sex hormones when given I.V. and tested produce vaso-dilatation in normal endometrium. In atrophic endometrium no changes are produced.

Stillbœstrol is less active than natural estrogens. Pituitrin and Adrenalin produce prolonged vaso-constriction. Prostigmin produces prolonged vaso-dilatation. Testosterone Propionate has vaso-constrictive effect. Induction of uterine bleeding by estrone and progesterone.

The hormones are dissolved in organic solvent and precipitated in the syringe by addition of Saline. The resulting suspension is injected intragluteally.

Estrogen 5 to 10 mg. or Progesterone.

Menstruation in relation to vitamin B complex, liver normally destroys or inactivates endogenous estrogens. Liver has lost this action in insufficient vitamin B complex.

Cases and Comments

Transverse Fractures of the Neck of the Femur Treated with the Smith-Peterson Nail*

Case Report

E. H. EVANS, B.A., M.D., F.A.C.S.,
Medical Supdt., The Miraj Medical Centre,
Miraj Mission Hospital, S.M.C., Miraj.

A Brahmin woman, aged 75 years, lost her balance while walking over uneven ground and fell heavily on her right side, after which she had severe pain and limitation of motion in the right hip. Examination showed other clinical signs of probable fracture of the neck of the femur. X-ray showed a transverse fracture of the femoral neck with poor position of the fragments. Besides the above findings the examination showed weakness, senility and marked anaemia but no other gross abnormalities. (Hæmoglobin 40%—Salhi and B.P. 110/60). A surgeon who had examined this patient before I saw her is reported to have advised against the use of the Smith-Peterson nail, stating that the patient was too old and weak to stand the operation. She was very uncomfortable, however propped up in bed with sand bags on each side of the right thigh and leg. Dr. H. O. Closson, our orthopedic surgeon, had recently left for Kodaikanal, otherwise this case would have been referred to him.

Four kinds of treatment were apparent possibilities—

- (1) Continue with the sand bags and Fowler's position.
- (2) Sand bags and Fowler's position plus some form of traction.
- (3) Spica plaster cast of both hips extending from the lower ribs to the right instep and to the left knee.
- (4) The insertion of a Smith-Peterson nail.

The patient was co-operative and willing for whatever treatment was advised. Several days elapsed in trying to build up the hæmoglobin and in arranging for a blood transfusion but no compatible donor could be found. Finally it was decided to insert the nail, trusting that a donor would soon be found.

The patient was placed on the Hawley table and, after relaxation had been obtained with intravenous Sodium Pentothal, moderate traction with internal rotation was applied and a Roentgenogram taken in the operating room with the portable X-ray unit. This showed the fragments to be in good position. Therefore being careful not to change the position of the thigh and leg, the patient was fastened on the Hawley table with thighs and legs extended and abducted. Then with the aid of local anaesthesia, a 4" horizontal incision was made at the posterior edge of the

trochanter and the trochanter exposed. A $\frac{1}{2}$ in. hole was drilled in the cortex of the trochanter and guide wires were inserted repeatedly to determine the best position as checked by anterior-posterior and lateral roentgenograms. Finally a satisfactory position was obtained and a $3\frac{1}{4}$ inches Smith-Peterson nail was driven in, its full length. X-ray showed the nail to be in good position. The patient's right leg was unbound. It could be rotated easily in all directions, proving that the nail had not penetrated the femoral head and was not impinging on the acetabulum.

The patient was returned to her hospital room. Her pulse was at first normal but soon became rapid and in spite of intravenous glucose there was considerable shock. Fortunately a suitable donor was found in the person of a member of our staff and the resulting transfusion was, I believe, most important in preventing disaster. Further progress was satisfactory. She soon began to move her toes and then to flex her thigh and leg, first by passive then by active motion. The wound healed by first intention and at the end of 3 weeks she was sitting up in bed and flexing her thigh completely. The lack of pain on movement was very gratifying. She wanted to get up on crutches and go home at the end of 2 weeks but was warned not to think of doing so before the X-ray showed beginning healing. Six weeks were given as the minimum period of hospitalization and she was warned not to get up on crutches until the X-ray showed evidence of solid healing. Six months after the pin was inserted, was advised as the probable time to begin to walk, at least no weight bearing was allowed before that time. A posterior plaster of Paris shell was made extending from the lower angles of the scapulae to the right toes and to the lower edge of the left buttock. The patient was to be found in this when she was transferred to her home.

The operative technique and postoperative care in this case were as near like that of Dr. Paul Brand, of Vellore and Dr. Closson as I could make it. I am, and ever will be, most grateful to these two orthopedic surgeons who took care of my wife when she had a similar fracture on May 18, 1948. She has made a perfect recovery. When, in her case, we were considering the operation for insertion of the Smith-Peterson nail some of my good surgical friends advised against it as being rather risky. However, after having observed her case very closely, also one done in Miraj this past year by Dr. Closson as well as the case now reported, I feel that the use of the Smith-Peterson nail is by far the best method of treatment of this condition, especially from the point of view of the comfort of the patient and the likelihood of complete cure. Also by this method there is less danger of embolism, stiff joints, shortened limbs and, in the case of the aged, of terminal bronchopneumonia. I also advocate this method knowing that complete immobilization of bone fragments is essential for rapid, normal healing of fractures

* Read before the Christian Medical Conference, Kodaikanal.

and the only method by which fractures of the neck of the femur can be completely immobilized is by a fixation of this sort. Certainly sand bags, various methods of extension or even plaster casts will not effect such complete immobilization. By this method the bone itself can be absolutely immobilized while the hip and knee joints are being used and it is well known that muscle and joint movement under such conditions aids materially in bone healing. Nevertheless, I do not advise early ambulation in these cases on account of the danger of slipping and falling when using crutches or by inadvertently bearing weight on the injured bone or otherwise putting a strain in the neck of the femur. The results of any of the above may be disastrous principally because they may result in further injury to the already embarrassed blood supply to the head of the femur, not to mention the retarding of bone healing. It is one thing to allow a patient to make free movements with the leg and thigh while lying in bed and quite another to allow him or her to be up on crutches early and run the risk of further accident around the house or garden or in getting into and out of a bath. Monthly roentgenograms should be taken and ambulation allowed only after X-ray evidence of good bone healing. Usually this is present after six months. Complete healing should have taken place after one year and the Smith-Peterson nail can then be removed or left in place indefinitely, as seems best in the individual case.

To summarize I would emphasize the following:

1. Use a Smith-Peterson nail whenever possible.
2. Prolonged rest in bed for the patient but early movement of the injured extremity, first by passive and later by active exercise.
3. Monthly roentgenograms to check bone healing.
4. A posterior plaster of Paris shell for transportation to the patient's home.

Pain as an Initial Symptom of Pulmonary Tuberculosis

Bariety and Lesobre report on their observations on 3,711 admissions to the Tuberculosis wards of the Hotel Dieu; 249 complained of pain, either as an initial symptom or during a relapse or contralateral spread. Pain was amongst the early symptoms in 10% of cases and was prominent in 2%. Of 100 cases in which it was one of the early symptoms, in 20 it was the sole symptom, in 57 it was the prominent symptom, and in the remaining 23 it was incidental. The intensity and duration varied. It was localised to a limited area which might be tender and was usually on the same side as the lesion, though not anatomically related to it in some cases.

Artificial pneumothorax was attempted in 67 out of 100 cases and was successful in 50. In 6 of these there were no adhesions and this was thought to demonstrate that the pain was not in all cases of pleural origin but might be referred from the bronchi or lung parenchyma.—(*Rev. Tuberc. Paris*, 12, 6-27, 1948).

T. N. S. R.

Case Report of Uterus Didelphys

KRISHNABAI R. PATIL, M.B., B.S., (Bom.), L.M.D.G.O., M.R.C.P., F.R.F.P.S.,
Shree Sayaji General Hospital, Baroda.

Name: Kashiben Nathubai, age 25 years, para 2nd, village lady.

Admitted 15-1-'48 for hyperemesis gravidarum.

Gives history of menses 3/15 days from puberty till 1 year back before admission; since one year the course was 3/30 days!

No history of dysmenorrhœa any time; history of chronic malaria and cough since one month.

This patient was admitted for threatened abortion on 12-9-'42 and was under observation for 3 days till the bleeding stopped. She was discharged on 15th Nov. '42. Pregnancy was on right side; she never returned afterwards. But it was found that she had abortion at home at that time.

Present illness:—Pregnancy 2 months and 6 days. Malaria 1 month back and having fever and cough off and on and vomiting since then; motions and urine free.

Condition on admission: patient slightly anæmic and neuræsthenic; otherwise everything normal.

P. V. Report.—The vaginal orifices were seen by external inspection; two separate vaginas. Left vagina was like a virgin, while the right was dilated; two separate cervixes with their oses were felt separate at the top of each cervix.

Two separate uteri were felt. The right uterus was anteverted and more on the right side of the middle line of abdomen and was enlarged upto the size of two months' pregnancy with all other signs of pregnancy.

Left uterus slightly enlarged, soft. Uterine pulsation was also felt on that side and it was more to the left of the middle line.

Blood pressure 100/64.

Treatment for hyperemesis was given and patient was discharged cured on 30-2-'48.

Patient was readmitted on 9-2-'48 for bleeding P. V. since 4 p.m. the previous day and pain over the lower abdomen.

On 10-2-'48 she expelled P. V. some pieces of membrane (Decidua?) at 4 a.m. At 10 a.m. same day P.V. was done. On speculum examination it was found that blood was coming from the left side and right side completely normal.

Symptomatic treatment was given. On the 11th and 12th bleeding was not much marked and pain also had gone less. On 12th night patient complained of pain again in the left lower

abdomen and again expelled P. V. cast of the shape and size of uterus (Decidua from the left uterus?)

It could not be examined microscopically as laboratory apparatus was out of order.

Slight bleeding continued till the patient went home against advice on 18-2-'48.

On 3-4-'48 patient came again. Bleeding P.V. had stopped 5 days back before admission.

This time height of uterus $7\frac{1}{2}$ inches; movements felt since 8 days; duration of pregnancy was then of 4 months and 25 days.

After this nothing was known till she came to show her full term baby about 4 months old on 10-11-'48.

She stated that she had no trouble at delivery time and the delivery was conducted at home by a village *dai*.

Weight of the child was 10 lbs. on 10-11-'48.

This condition is due to complete non-fusion of the two Mullerian ducts.

A case is recorded in the Eden Lockyer's Gynaecology and a picture is also shown that the patient had two separate uteri with their cervixes, two vaginas, two bladders, two urethras, two external parts (vulvæ); her pelvis was very broad.

She had given births to babies from both sides.

The case report of this case is sent because such cases are very, very rare.

Treatment of Coronary Thrombosis and Thrombo-embolic Disease

A controlled study was initiated by the American Heart Association to determine the value of dicoumarol therapy in coronary occlusion with myocardial infarction. Veer, Marshall, and Kuo of the Pennsylvania Hospital participated in this work. There were 36 treated cases and 51 controls. Prothrombin times were kept between 30 and 35 seconds, control times being 13 to 15 seconds. The initial dose of dicoumarol was 300 mg. daily for 2 or 3 days and the maintenance dose thereafter was less than 100 mg. daily for about a month. Among the controls thrombo-embolic complications occurred in 12.9 of whom died. There were also 9 deaths from other causes. In the treated cases thrombo-embolic complications occurred in 6 and only 2 died.

The results of an analysis of the first 800 cases of cardiac infarction treated with dicoumarol collected by a Special Committee of the Am. Heart Assoc. show that the death rate in the controls was 24% and in dicoumarol treated cases only 13%. Thrombo-embolic complications occurred in 19% untreated, and 9% of treated patients. The value of anticoagulants in the treatment of phlebothrombosis and thrombophlebitis is stressed. —(Trans. Coll. Phys. Philadelphia, 16, 1948).

T.N.S.B.

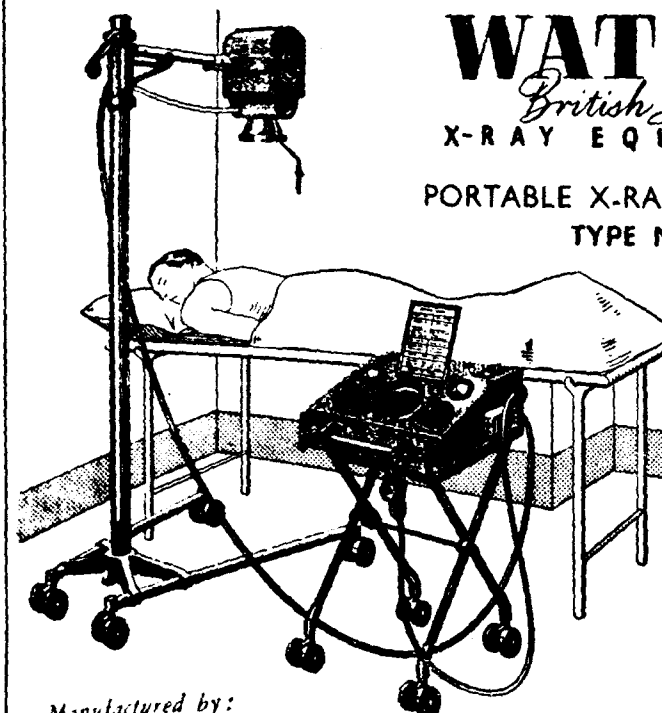
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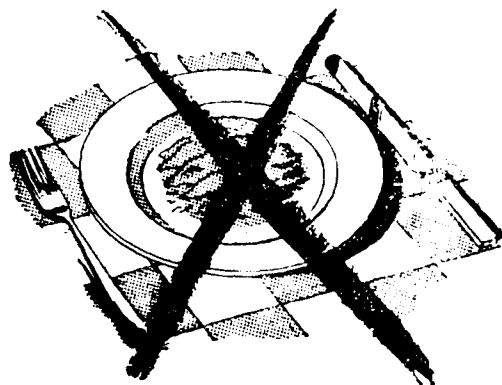
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I presume that the bronchial wall might have been sensitised to the amœbæ and its disintegration products.

5. *Penicillin in hepatitis*:—In two of my cases I tried Penicillin, besides Emetine, since the patients were severely toxic; and I was gratified with the results obtained; fever and toxæmia disappeared quickly. That there is a definite place for Penicillin in intestinal amœbiasis, has been shown by W. H. Hargreaves (1945). I based my treatment on similar argument, but it might be questioned that since the pus in liver abscess is bacteriologically sterile, "how does Penicillin act"? The answer is as follows: In hepatitis the active vegetative forms of amœbæ reach the liver *via* portal circulation and along with these amœbæ secondary bacterial invaders must also be reaching the liver. I presume that there is a preliminary bacterial invasion, which for some unknown cause dies out as the abscess is formed. Penicillin removes this bacterial infection earlier.

References:

1. Manson Bahr.—The Dysenteric Disorders.
2. F. W. Price.—A Text Book of the Practice of Medicine.
3. Trans. Royal Society of Tropical Medicine and Hygiene, 1945.

S, Mount Pleasant, Baseline Road,
Colombo.

Eighteen Months of Streptomycin Treatment in a Tuberculosis Sanatorium at Davos, Switzerland

Dr. E. Cordasini treated 170 cases of tuberculosis of all types with Streptomycin in a Sanatorium in Switzerland. His experience is very much the same as that of American authors with the exception that his results were favourable in tuberculous empyema and in bacilliferous effusions after adhesion-section. After detailing his experience in several individual cases, he states that Streptomycin cannot replace the Sanatorium or collapse therapy. It is indicated in (1) early pneumonic tuberculosis and toxæmia with or without tracheo-bronchitis; (2) an acute flare-up in chronic pulmonary tuberculosis; (3) recent hæmatogenous spread; (4) hæmoptoeic and post-operative bronchogenic spread; (5) as a protective cover for surgical operations; (6) tuberculosis of the pharynx and larynx, if of exudative type; (7) to relieve toxic gastro-intestinal symptoms in intestinal tuberculosis. In nearly all types of cases, streptomycin caused a rapid reduction in toxicity by retarding the growth and multiplication of the tubercle bacilli, and it may make collapse therapy possible in an otherwise unsuitable case. Because of the possible development of Streptomycin resistance this drug should be carefully administered *only* when the indications are absolutely clear and well defined.—(*Schweiz. Med. Wchr.*; 78, 28-6-1948; *Abst. World. Med.*, Jan. 1949.

T.N.S.N.

A Case of Intestinal Tuberculosis Treated with Streptomycin

CAPTAIN M. L. CHAUBEY, M.B., B.S., L.T.M. (Cal.), P.M.S., O.I.C.,
Civil Dispensary, Aonla (Dt. Bareilly U.P.).

A FEMALE patient, S. D., aged 28 years. Occupation: Household Indian lady.

Complaints.—Pain in the abdomen all over duration—about six months. Diarrhœa with mucous-stools numbering 20 or less. Duration 6 months. Fever: evening rise of temperature ranging from 99° to 102° F. Duration 6 months. Loss of weight and appetite.

Personal habits.—Nothing in particular.

Past history.—No definite history of dysentery or any other ailment.

Family history.—No case of tuberculosis has been recorded in either family.

History of present illness.—About 8 or 9 months back she delivered a female child without any complication at that time. Few weeks later she developed fever and later on got loose motions mixed with mucous and occasionally with pain during defecation. This condition went on till she has reduced very much in her health and is now unable to move from bed.

Examination.—*Condition before treatment*—General condition:—A young lady, very weak and reduced too much. No flesh on bones. Anæmic moderately. Weight 82 lb., temp. 102° F., pulse 120 per minute.

Alimentary system:—Tongue—sore. Teeth—clean. Gums—healthy. Throat—clear. Liver and spleen not palpable. Boat-shaped abdomen. Gurgling sensation present in the right iliac fossa. The caecum felt as a thickened tender mass. Mesenteric glands enlarged and tender. Some of them had the size of a big potato. Tenderness all over, more marked in the iliac fossae. Uterus not enlarged.

Lungs:—No cough. Nothing abnormal detected. No X-ray was taken.

Heart:—Rate 120. No other abnormality detected.

Urine:—Albumin in trace. Nothing more abnormal detected.

Stool examination:—Few cysts of E. H. detected, few R.B.C. and pus cells also detected. Vegetable and starch undigested particles were found.

Blood:—No M.P. detected. D.C. Poly. 58%; Lympho 36%; Mono 4%; Baso 2%; and Eosin. nil.

Therapeutic test:—Emetine 1·2 gr. for 6 days I.M. given. With other adjuvants of amœbiasis such as Enterovioform and Sulpha-guanidine 2 tabs. aa t.d.s. were given. The number of stools was

reduced to 6-8 but no other clinical relief such as lowering of temperature or reduction in the size of mesenteric glands or pain was noted. Tenderness remained at the same degree. Further examination of stools revealed no cysts.

Clinical diagnosis:—Intestinal tuberculosis.

Treatment.—Complete rest in bed was advised. Elixir Neogadine one table spoonful twice b.d. Osteocalcium tablets 2 t.d.s. with meals. Mixture carminative oz. i S.O.S.

Streptomycin:—I.M. injection 5 gm. Twice daily morning and evening for 24 days. Six gms. of Streptomycin could not be obtained so far. Berin 25 mgms. each day was combined with Streptomycin to reduce the toxic effect on nerves.

After the above course of Streptomycin the patient is put on Colloidal Calcium 1 c.c. and Liver Extract 2 c.c. I.M. on alternate days.

Duration of the above treatment:—From 18-3-49 to 28-4-49.

Present condition:—Temperature 97° to 98° F. Pulse 70 to 78 per minute; weight 82 lb. Appetite: not improved. Glands: nil. Tenderness: nil. Gurgling sensation: nil. Number of stools 1 to 3 per day solid.

Comments.—From the above facts one will see that the condition has improved much. There is almost clinical relief of all the symptoms but the weight of the patient is stationary almost and the appetite has not improved. I fail to find any cause for this. Is this due to some toxic effect of Streptomycin? I shall be obliged for any advice in this direction.

Arsenical Encephalopathy and Vitamin B₁

Sexton and Gowdey found that there was a close resemblance between the symptoms and pathological appearances of arsenical encephalopathy and those of acute deficiency of B₁ vitamin. The incidence of cerebral reaction following the wider use during the last 10 years, of rapid methods of arsenical treatment of syphilis in the U.S.A. has been about 1 in a 100. The authors estimated the ratio of lactic to pyruvic acid, in the blood of patients receiving the 'Mapharside' 5 days' treatment. In vitamin B₁ deficiency the pyruvic acid rises above normal. In ten out of 14 patients treated with Mapharside by the intravenous drip method the level of pyruvic acid rose early and remained above normal till Mapharside was stopped. There was an appreciable rise in the blood sugar also right through the treatment period. The muscles of the legs and arms became increasingly sensitive to pressure. The venous injection of 600 mg. of vitamin B₁ (six hundred milligrammes) caused a rapid fall in the above condition. The authors consider that vitamin B₁ is of value—almost as good as BAL—in the treatment of the lesions of the nervous system caused by arsenical toxicity. —(*Arch. Derm. Syph. Chicago*, 56, 634.)

T.N.S.E.

A Neglected Case of Chronic Amoebic Dysentery Treated with Vitamin B Complex

DURGADAS GHOSHE, M.O., L.M.F., L.T.M. (Cal.),
Darjeeling.

AN old clerk of nearly 52 was suffering from diarrhoea and dysentery for 5 or 6 years. On the 1st year as he says he had diarrhoea but the doctor did not care to examine his stool—no specific treatment was given. He had motions 15-20 times daily.

On the 2nd year, he treated himself scientifically but may be incomplete treatment of Entero Vioform, Emetine, Carbarsone, etc., as he says without any good effect. In these ways he had several other treatments such as Kabiraj, Homoeopathy, etc. without any proper response. He had also several other diagnosis of cancer rectum, piles dysenteric (ulcer) stricture, rectal prolapse, etc.

On the 6th year he came to me for treatment. I examined him properly and found him with general oedema, marked anaemia Hb. 35%. Heart sound weak and feeble pulse, low blood pressure. Several times uncontrollable diarrhoea with blood and mucus with prolapse of the rectum. Urine—trace of albumin.

Stool report:—Cysts of Ent. Hist. seen later. No blood corpus detected. No other abnormality.

Differential count:—Neutro. 65%; Lympho. 26%; Eosin. 4%; and Mono. 5%.

Blood report:—W.B.C. 6,200 per cmm.; R.B.C. 2,37,000 per cmm.; and Hb 35%.

Finding him in moribund condition and quite unfit for general treatment of amoebic dysentery. I put him straight to symptomatic treatment.

(1) *Simple diuretic* for general oedema, Theobromine Sodi Salicylas, Caffein Citras, Digitalis etc.

(2) *General food and tonic* such as high protein diet—Soup essence of chicken, curd whey, Bemax, Marmite, Belvita, Yeast etc. containing vitamin B complex.

(3) Vitamin B complex m xx t.d.s. (oral).

Vitamin B complex with Liver Extract daily 1-2 c.c. and Folic Acid.

After continuing the above treatment for some days the swelling was gradually disappearing, his control over the motion came back, his diarrhoea was less and he could take more food. By-and-by he could take and digest normal food. His stool is formed now but contains still cysts of Ent. Hist. but no blood or mucus or pus cells.

Conclusion.—The interesting thing to note here is the action of vitamin B complex and high vitamin B over the amoeba. (Ent. Hist.).

Here I can point out the copy of letter of Dr. C. McQuiere of Janti Sankos Medical Association published in I.T.A. Circular 152 (*Royal Exchange*, 28th Oct. '42) in which he was interested to note the prophylactic action in 'Haria' drinker (country liquor) in coolies who as he classified that the "Haria drinker" had 10-14 p.c. the amoebic infection against the non-'Haria drinker' 50-80 p.c. The difference between Paharian men and women the former of whom drink Haria while the latter don't is conclusive that the high vitamin B complex content of the 'Haria' is prophylactic against amoebiasis. An experimental brew with baker's yeast was not successful. All Europeans have therefore been advised to take vitamin B complex in the form of Bemax, Marmite, Yeastvite etc.

I request my professionals for trial in cases where the usual treatment of amoebic dysentery cannot be undertaken.

Namring T.E.,
P.O. Rangli Rangliak.

A Case for Diagnosis

MD. MOINUL ISLAM, L.M.F.,
Maldá (West Bengal).

A MUSLIM female, aged 20 years, mother of a child, was having high continuous temperature for about 6 days. She complained of pain in the chest and vomiting. She had friction rub and all complaints were relieved by intravenous injection of Glucose Sol. 25% 25 c.c. combined with Calcium (Sandoz) 10% 5 c.c. (2) Intramuscular injection of Cibazol 5 c.c. and Mist. Pot Iodide containing Pot Iodide gr. iii, Thiocol gr. v, Pot Citras gr. x, Syrup Vasak with Tolu 3 p. and Aqua ad 3 i.

After a month or so, I was again called to see the patient. She was getting temperature at noon with rigor and temperature came down to normal at night with perspiration. The patient became alright by intramuscular injection of Q. Bihydrochlor (Sach.) 10 gr. 2 cc. and orally ordinary Alkaline mixture.

After 15 days or so, again she got temperature and got relieved by anti-malarial drugs.

Thus, I treated her for about 4 months and within this period, she was prescribed with various medicines. Quinine by mouth and injection, Atebrin (Bayer), Liver Extract with Vitamin B-complex, Quino-Haemogen (B.I.), Bymine Amora etc.

All these medicines could relieve her temporarily for 2 or 3 weeks and nothing could check the relapse.

During this long period I treated, nothing abnormal was detected in the lungs and heart. Spleen and liver not palpable. Urine and stool—normal and regular. The patient was found anæmic only.

The relations of the patient called another renowned physician of the town, who diagnosed the case as K.A. and pushed a full course of Stibatin (Con.) Glaxo.

After completion of K.A. specifics, again I was called to treat her for continuous temperature. This time anti-malarial drugs failed to check the temperature. The patient now complained of intense pain in the lower abdomen and had menstruation of foul odour and blackish in colour.

A lady doctor was consulted and she diagnosed it to be a case of uterine ulcer. She was treated with Acriflavine lotion and injection of Penicillin total 5,00,000 units in divided doses every 3 hours.

With this treatment, pain subsided, menstruation became alright, but temperature was as before i.e., lowest temperature 99°F and highest 103°F.

She was X-rayed and no abnormality was found in the lungs, sputum report found negative for acid fast bacilli. Urine culture negative for B. coli. Blood negative for M.P. and K.A.

The patient now passed on to a 'vaidya.' It was reported that the patient under his treatment was getting better.

After 2 months, suddenly I was called at the dead of night to see that patient.

I found, to my great surprise, that the patient whom I left 2 months back stout and healthy, was now reduced to a skeleton.

She was fully unconscious, temperature 101°F, stiffness of the neck, Kernig's sign - - -, pupil widely dilated. I diagnosed the case to be Meningitis (T.B.?). Realising the gravity of the case, another local physician was called for consultation. He confirmed the diagnosis to be T.B. Meningitis (?). Streptomycin ½ gm. was pushed intramuscularly and Glucose Sol. 25% 25 c.c. with Hexamine 4% intravenously. Next morning, the patient became worse. In spite of pushing various heart stimulants, the patient expired the same evening. I am not yet sure about the diagnosis of the case, and the Case Report is given with a view to get some comments from my colleagues.

An Unusual Case of Thread Worms

R. G. DESAI, L.C.P. & S. (2002.),
Formerly House-man and C.M.O. Sussoon Hospitals, Poona.

Patient's name: Mr. Anilkumar; Caste: Hindu-Brahmin, vegetarian, age 11 years.

Patient had fever with rigors one evening. The maximum temperature noted on that day was 105°F . I was called the next morning. On thorough examination, I could not detect anything abnormal in any of the systems which would maintain a steady temperature of 103°F for over twelve hours. However considering the onset of fever with rigors, Inj. Quinine-Bi-Hydrochlor gr. v was given intramuscularly. The temperature remained constant during the next twentyfour hours. I was again called the next morning. The temperature was 102°F . Pulse was 90 p.m., and respiration 22 p.m. Again Inj. Quinine-Bi-Hydrochlor gr. v was given intramuscularly. Along with this Mist. Diaphoretic and Quinine Sulph. gr. v capsules i b.d. were given. This too had no effect and the temperature continued as before with slight variations.

The next day i.e., on the 5th day of the sickness, the tongue was coated with reddish and clear margins—typhoid tongue. There was tenderness in the right iliac fossæ and peristalsis were very sluggish in that area. The temperature was 102.6°F and the pulse was 94 p.m. Respiration 22 p.m. Eventually it was diagnosed as typhoid and treated accordingly.

The patient passed a normal course till the evening of the 10th day of the sickness. On that day at about 6 p.m., the patient had convulsions. The pulse and temperature were 104 p.m. and 103°F respectively. Convulsions were toxic in nature. Consciousness was present. Pupils were normal but the reaction to light was sluggish. On actually observing the convulsive fits, which would be unusual in a case of enteric, I thought that the mischief was due to round-worms in all probability.

Accordingly—R. Santonin
Soda Bicarb
Calomel

gr. iii
gr. vi
gr. ii

in powder form was given the same evening and a Saline aperient the next morning.

It was reported to me at 2 p.m. on the eleventh day of the sickness, that the patient had passed a bunch of worms and that it was kept for my observation. When I saw it, they were not round worms but thread worms about 200 in number. After another about three hours he again passed the same quantity of worms. The next day again twice worms were expelled in smaller quantities. On the third day after passing worms i.e., on 13th day of the sickness, the temperature touched normal and remained so.

The case in the early behaviour simulated enteric picture, but the convulsions made me to change my diagnosis.

Near Tower, Navsari.

[616]

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Leprosy in India

THE Second Session of the All-India Leprosy Workers' Conference which was held in Calcutta from the 29th to the 31st Dec. '48 under the auspices of the West Bengal Branch of the British Empire Leprosy Relief Association and presided over by The Hon'ble RAJKUMARI AMRIT KAUR, Minister of Health, Government of India, has certainly stimulated interest in Anti-Leprosy work and has successfully brought together Leprosy workers, Social workers, and administrative heads of the Government of India for a common purpose. The *Report of this Conference published by the Akhil Bharat Kushta Samiti makes very interesting reading and gives very valuable information.

There is no doubt whatever that leprosy has for centuries past excited a great dread in mankind and a leper has always been treated as an outcast from society. Modern research, however, has clearly proved that this is a groundless fear and that if proper precautions are taken lepers can continue to be useful members of society and with a little care will cease to be a source of danger and infection to the members of their families and their neighbours. MAHATMA GANDHI had included leprosy as one of the important items in his 18 point National Constructive Programme and has added by this measure further importance to Anti-Leprosy Work amongst Indians.

A number of eminent specialists in Leprosy and a number of social workers took part in the Conference, which, we are sure, will produce fruitful results.

* Report of the 2nd All-India Leprosy Conference held at Calcutta, published by the Akhil Bharat Kushta Samiti. Price: Re. 1. Copies can be had from: Shri T. N. Jagadisan, "Sadhana," Edward Elliot Road, Mylapore, Madras-4.

But from the point of view of the social worker perhaps the discussions on the control of leprosy were most interesting and useful. It is due to the selfless work of these social workers that a great deal of advancement has been made in our country with regard to the control of leprosy. The tributes paid by His Excellency Dr. K. N. KATJU, Governor of West Bengal, to the selfless work of the social workers is certainly cast on deserving shoulders.

As the Hon'ble RAJKUMARI AMRIT KAUR, Dominion Minister of Health, correctly observes, for the man in the street the word leprosy fills the mind with horror and loathing. In ancient days sufferers were segregated in miserable houses and were isolated. No doubt such thorough and systematic, though inhuman, segregation succeeded in eliminating the disease from Europe. Modern Science however has taught us that we have no need to be either so drastic or cruel in our methods of prevention. The erroneous impressions and prejudices that are present in the public mind must be eradicated and therefore the need for urgent and organised health propaganda on an extensive scale in India is very necessary. Dr. Muir, than whom perhaps there is no greater authority today, stressed the importance of wide-spread education of the public, especially young men and children, as regards the causation and prevention of the disease, formation of societies in every nook and corner for spreading the knowledge and adopting control measures. Many workers in the field of leprosy who attended the Conference gave impressions of their views and experiences with regard to leprosy control and no one can underestimate the importance of propaganda. To supplement the good that can be done by propaganda the Governments of the Provinces and the Centre should also do their best. The Fourth International Conference on Leprosy at Cairo in 1938 pointed out that the control of Leprosy should be "the inescapable responsibility of the Governments concerned". The Government should spare no pains or money to see that a proper and a vigilant anti-leprosy campaign is carried on in the country. The establishment of leprosy units should be made mainly to conduct survey, collect statistics with regard to prevalence of leprosy in the country and followed by provision in hospitals of beds for the treatment of leprosy patients. Rural units should be set up particularly where local arrangements for segregation of infective cases can be made without much difficulty. There should be provision made for training social welfare officers in methods of leprosy prevention and treatment and there should be more such institutions for the treatment of this dreadful disease.

These and many other such suggestions have been mentioned in the Presidential address of the Hon'ble RAJKUMARI AMRIT KAUR, Dominion Minister of Health, and we are therefore glad that these items have her deep sympathy and are receiving her attention.

We are sure that this Conference will be "the means of inspiring the social workers to come forward and offer their services in this field of work which requires sympathy, understanding and wealth of love to human beings who are solely afflicted both physically and mentally." These words of the Dominion Health Minister should not fall on deaf ears.

Vitamin B₁₂

It is now nearly a year and a half since LESTER SMITH in England and Rickes *et al* in U.S.A., isolated crystalline anti-anæmic factors from the liver, in small quantities, which were far more active and potent and in very much smaller doses, than any other material tried so far. The Medical Press in England and America welcomed the new remedy in cautious but glowing terms. The U.S.A. research workers called this substance B₁₂; the English homologue of this would appear to have been a less purified preparation. RICKES *et al* consider B₁₂ a definitely anti-anæmic therapeutic agent and a "Cobalt Co-ordination Complex" (*Science*, 1948, 108, p. 134). LESTER SMITH (*Nature*, 1948, 162, p. 144) has shown that the molecule has a weight of 1,500, and the cobalt-content is 4 per cent. Cobalt, *per se* has never been considered to be of therapeutic value in pernicious or other anæmias. One ton of fresh ox liver is stated to yield only about 200 to 260 mg. of Vitamin B₁₂; but as already stated, the substance is active and efficient in minute doses and a few microgrammes are enough to induce suitable response in the reticulocytes and in the bone marrow—the latter changing from megaloblastic to normoblastic.

This substance has, now during the last 15 months, been used in a variety of conditions—pernicious anæmia, sprue, nutritional megaloblastic anæmia and also certain other rare conditions, with promising and successful results in each case. The material being scarce the reports are not as numerous as may be expected of such a powerful drug.

SPIES, STONE and ARAMBURG (*South Med. Jour.*, 41, 522–25, June, 1948) have reported on the response of 5 patients to this crystalline compound which was administered in a single dose of 6–15 microgrammes (6 in 4 and 15 in 1). In all cases symptomatic clinical improvement occurred in 3 to 5 days and reticulocytes reached a peak ranging from 12 to 22% from the 5th to 9th day. This was followed by an increase in red cells and Hb. In 5 other patients with tropical sprue 10 to 25 microgrammes were given with good initial response, but the patients soon relapsed. 100 microgrammes would be the minimum dose for producing remission.

SPIES and SUAREZ (*Blood*, 1948, 3) have stated that 400 grammes of fresh liver by the mouth (which may reasonably be expected

to contain 100 microgrammes of Vitamin B₁₂) would be quite ample and effective.

SPIES, STONE, LOPEZ and 3 others (*Lancet*, 1948, Vol. ii, 519) have recorded their findings in the treatment of successive relapses in patients suffering from pernicious anaemia, nutritional macro-anaemia, and tropical sprue, with Folic Acid, Thymene and lastly B₁₂. A daily dose of 6-10 gm. of Thymene, or of 10 mg. of Folic Acid was ample as effective maintenance dose, but B₁₂ (6-23 microgrammes) produced a reticulocyte response.

PATEL of Bombay (*Br. Med. Jour.*, 1948, 1, 934) gave larger doses, 80 microgrammes of Lester Smith's preparation to 2 patients with Indian sprue, but the response was just the same as in Spies' cases with smaller doses.

HALL and CAMPBELL of the Mayo Clinic treated eleven cases of pernicious anaemia (*Proc. Mayo Clinic*, 23, 1948) in relapse with B₁₂ and followed them up for nearly six months. Their results were very promising and they agree that one microgramme of this B₁₂ may be said to equal 1 U.S.P. unit of Liver Extract. In 5 of the cases treated by them, neurologic manifestations improved very satisfactorily and in three others the improvement was remarkably rapid.

"If Vitamin B₁₂ is the anti-anaemic principle then all potent Liver Extracts should contain it, but the purified types have only partial effect on the organic signs and symptoms of those patients with subacute combined degeneration who have no significant anaemia. So the belief that B₁₂ is present in these extracts, and its demonstration as red crystals, by some manufacturers, damps our hopes—based admittedly on very tenuous evidence—that it will relieve chronic sufferers." (*Lancet*, 22-1-49, p. 152).

RICKES and his four collaborators (*Science*, 108, 634, 1948) have isolated from broth cultures of *Streptomyces griseus* a real crystalline material with all the properties of Vitamin B₁₂ including the presence of phosphorus and cobalt, and the ability to produce a clinical response in pernicious anaemia.

STONE and SPINES (*Jour. Lab. Clin. Med.*, 33, 1948) state that glossitis and stomatitis of some pernicious anaemic patients are rapidly cured by injections of Liver Extract or of Vitamin B₁₂ but not by Folic Acid or by Thymene.

A number of workers are engaged on this problem and it is not yet known if it can be synthesised and prepared at a reasonably economic price (from sources other than liver). Meanwhile, the recognised methods of treatment with potent liver extracts—clinically tested before issue—and when necessary (for oral administration) with desiccated stomach, would remain the only reliable economic and effective procedure.

T.N.S.R.

SURGERY

Sulphonamide granuloma.—(*Jour. Canadian Med. Assoc.*, 59, 1-76, July 1948.)

A new pathological entity has been described by Dr. Williams of Montreal.

Application of heat and fomentations having failed to resolve a tender swelling in the left breast of a nurse, the lesion was incised and a small bit of tissue was removed after which sulphonamide powder was dusted into the wound.

Subsequently the wound became tender and exuded a little serous discharge, healed but again opened out showing a sinus. Abscess of the breast was the diagnosis, and was excised. Tissue section revealed chronic inflammation with numerous small areas of granuloma. Additional incisions had to be made as further repeated sinuses formed. The original tissue before dusting sulphonamide powder did not show granuloma but the three specimens removed subsequently were granulomatous.

A dozen other cases of reamputations or re-operations in which pain and discharge from a surgical scar (dusted during the original operation with sulphonamide) had been noticed, have since been reported from a review of the diagnosis made during last year by the author. While the dusting of sulphonamide powder into the wounds at operation may not always produce granulomatous tissue reaction it remains as unabsorbed foreign material in an appreciable number of cases and provokes a granulomatous tissue reaction. T.N.S.R.

Abscesses treated successfully with aspiration and penicillin.—(*Jour. Amer. Med. Assoc.*, 21-8-1948, p. 1531, H. J. Cohen, New York.)

Incision and drainage is an accepted principle in the treatment of abscesses and of purulent collections in the body centres. The introduction of penicillin has modified this.

Drainage of the purulent material by aspiration followed by replacement with

penicillin in isotonic sodium chloride solution has been successfully used instead and obviated surgical intervention. A single injection is enough.

Penicillin is administered for a few days until infection has become localized. It may be given orally, intramuscularly in solution every 3 hours; when abscess is soft aspiration is made by a 20 cc. syringe attached to a 1½ inch 18 gauge needle. After the pus is aspirated with the needle *in situ* a fresh sterilized syringe containing 25,000 units of penicillin per cc. of solution is then attached to the needle and the penicillin is injected into the cavity. The needle is removed and firm pressure is applied for a minute to prevent leakage of penicillin. The quantity of penicillin is the same as the pus aspirated. T.N.S.R.

Surgery in bleeding peptic ulcer.—(*Surg. Gynec. Obst.*, Chicago, 87, Sep. 1948).

Warren and Langman state that they have found it useful to separate operations done during different phases of exsanguination into: emergency, urgent and elective. Of 54 patients with bleeding from peptic ulcers treated by the authors, 29 had massive hæmorrhage; in 10 of 20 who bled rapidly the hæmorrhage continued or recurred. 4 of these 10 were over 45 years of age, and were operated upon. Their postoperative courses were uneventful and there were no deaths.

One of these 4 had a small duodenal ulcer of the anterior wall. A subtotal gastric resection with excision of the duodenal ulcer was done. In the other 3 cases, the ulcers were of the posterior penetrating variety and had eroded large arteries. Each ulcer was treated by exclusion. These three, presented 3 different problems in technical management which call for exclusion rather than excision. The authors stress early 'urgent' operation for all patients with massive hæmorrhage from peptic ulcer who are over 45 years of age, and in

whom the hemorrhage persists after 48 hours following admission, or having stopped recurs.

Subtotal gastrectomy with removal of the lower two-thirds of the stomach including the pylorus should be the plan for these patients. In such cases where the ulcer is technically difficult to remove, a subtotal gastrectomy with exclusion but not removal of the ulcer is advocated. In patients with a large inflammatory mass involving pylorus and duodenum a two stage subtotal gastrectomy should be done. T.N.S.R.

Ovarian metastasis from breast-cancer.—(*Press. Med., Paris*, 56, 4-9-1948).

A Sicard reports on the frequency of metastasis from cancer of the breast, by a reference to 38 cases of women between the ages of 35 and 72, eleven of whom had ovarian metastasis. Castration was performed on 23 of these 38 after amputation of the breast. None presented any signs of metastasis, but in 2 metastasis was present in the ovaries which appeared quite normal. The remaining 13 patients showed early or late stages of metastasis of the bones, lymph nodes or viscera after amputation of the breast or in the absence of any local treatment of the tumour. 9 showed metastasis of the ovaries. In 3, the metastasis was demonstrable on surgical interference, but in 6 only on microscopic examination. In 2 patients castration was performed by irradiation resulting in menopause. The atrophied ovaries showed cancerous cells.

The high incidence of ovarian metastasis from cancer of the breast suggests the suitability of surgical castration in preference to castration by irradiation and also a hysterectomy which besides its hormonal role, may suppress a latent cancerous localization in a large number of cases. T.N.S.R.

Clouding of surgeon's spectacles during operations.—(*Correspondence: Br. Med. Jour.*, 25-12-48, p. 1123).

Dr. Wood Power of Hereford says that for overcoming the steaming of spectacles at operations, he uses the follow-

ing gadget which is simple and efficient. He runs a piece of thick silver wire about 4½ inches long through a folded stitch along the top of the mask. When in place, the wire is moulded to the shape of the letter V. The mask then covers the nose but does not come in contact with it. The method is simple allowing the mask to be removed between operations without any further adjustments. T.N.S.R.

Local injection of penicillin in circumscribed infections.—(*Ann. Surgery*, 127, June 1948).

According to Kaplan and Rabin acute infections are of two clinical types, (a) acute infections like septicemia and cellulitis which do not cause death of the tissue and (b) acute infections causing suppuration and death of tissue as seen in boils and carbuncles. Penicillin produces dramatic results in the former type, but often fails in the latter. The authors found that the most suitable method of penicillin administration in acute localised infections is direct injection into the infected area. This method ensures a high concentration of the drug at the point where it is needed. They inject 3 cc. of distilled water into a bottle containing 100,000 units of penicillin making a dilution of about 33,000 units c.c. Small lesions require 0.5 to 1.0 c.c. at each injection while larger ones (like carbuncles) may require 4 c.c. or more. Local injection was applied in over 300 cases of acute circumscribed infections. In their experience the method is safe, effective and economical. Almost immediate improvement follows the injection in every case and recovery results in a few days. It is, however, recommended that this therapy is reserved for the more severe and serious lesions and for lesions located at points where ugly scars will show up if operated. It is not recommended for the treatment of cellulitis, for infections in the dangerous areas of face or for bone felons. T.N.S.R.

Intestinal changes following irradiation of pelvic cancers.—(*Amer. Jour. Obst. Gynec.*, 56, Aug. 48).

Dr. J. M. Maas of St. Louis has reserved 600 cases which were treated for

pelvic cancers by X-rays. There were 523 cases of radiation sickness and 70 cases wherein permanent rectal changes had occurred. The onset and course of radiation sickness are unpredictable and their management is unsatisfactory. Higher doses of X-ray therapy tend to produce permanent rectal lesions earlier and of a more serious nature. *Radium is a worse offender than X-rays.* Rectal stenosis occurred 48 times in 600 cases, and rectovaginal fistula in 13 cases. Secondary carcinoma of bowels in 10 cases. Factitious proctitis makes up the bulk of permanent rectal changes. T.N.S.R.

Vagotomy.—(*Jour. Intern. Coll. Surg., U.S.A.*, 11, Aug. 1948.)

Mandl performed vagotomy by the subdiaphragmatic route on 103 patients with ulcers of stomach, pylorus, duodenum, jejunum and anastomatic recurrences after resection. 69 had ulcers of pylorus and duodenum; in 13 of these vagotomy was combined with gastrojejunostomy. 12 were complicated by severe coronary and heart disease, chronic lung disease, epilepsy, thyrotoxicosis, megacolon and pregnancy; in no case was the complicating condition aggravated by vagotomy. Only 1 of the 103 operated on, most of them poor risks, died of causes unrelated to the operation. 25 sooner or later had diarrhoea. All were relieved with opiates, sulphonamides, etc.

Vagotomy, Dr. Mandl believes, has a true and solid place in the surgery of peptic ulcer. T.N.S.R.

Indication for emergency operation in severe hemorrhage from gastric or duodenal ulcer.—Dunphy and Hoerr show that the availability of large quantities of blood for emergencies, has influenced the treatment of severe upper gastrointestinal hemorrhage and makes it desirable to re-evaluate the place of emergency operation for this condition. The poor results of emergency surgery in the past, contrasted with the supposedly good results of nonsurgical management, have led in many hospitals to the belief that such cases are medical, and the surgeon is to be called

in only at the last minute to perform a heroic procedure upon a nearly moribund patient. This plan has found apparent justification in the past on the basis that the over-all mortality from bleeding ulcers has been less than the over-all mortality from gastric operations.

There can be no quarrel with the demonstrable fact that the vast majority of patients who bleed from the upper gastro-intestinal tract will get well with conservative measures. Moreover, emergency operation for bleeding peptic ulcer may be one of the most harassing and difficult in the entire surgical domain. But it is likewise a demonstrable fact that some patients will die without operative intervention, and the authors believe that a fair proportion of these patients may be saved by timely surgery.

The crux of the matter lies in the accuracy of the selection of patients for operation. The authors believe that the rate of bleeding is the factor which governs the outcome on conservative management, rather than the age of the patient, the number of previous hemorrhages, and other factors to which various writers have directed attention in the past. The authors follow the rule that if the rate of bleeding is such that a stable circulation cannot be maintained with transfusions roughly approximating 1,500 c.c. of blood per 24 hours, spontaneous cessation of the hemorrhage is unlikely and emergency operation should be undertaken.

A prerequisite for emergency surgery in upper gastrointestinal hemorrhage is a knowledge of the source of the bleeding. Although roughly 75 per cent of these hemorrhages arise in gastric or duodenal ulcers, it must be recalled that approximately 20 per cent come from such lesions as esophageal varices or gastritis which are not amenable to emergency operation.

Another 4 or 5 per cent are due to gastric neoplasms, in which prompt surgery is necessary since there is not hope of healing the ulcer by dietary means. If the source of the bleeding is not evident from the history, clinical findings, and previous roentgenograms, an X-ray

examination of the esophagus, stomach, and duodenum should be done prior to emergency operation.

In a previous report the authors had shown that when cases are divided according to the severity of the hemorrhage into four groups arbitrarily designated as moderate, severe compensated, severe uncompensated, and exsanguinating hemorrhage, the fatalities with two exceptions were in the "exsanguinating" group.

Patients with an exsanguinating hemorrhage are in a very precarious situation, and the authors have come to believe that operation is safer for them than expectant management with even more rapid rates of transfusion. An exsanguinating hemorrhage may manifest itself in one of several ways. Some patients are admitted in profound shock and respond slowly to the usual rate of transfusion, tending to revert into shock soon after each bottle of blood is finished. An occasional patient will respond fairly well to the initial transfusions, but will slowly and definitely lose ground over a period of several days. Some will show an apparent initial arrest of hemorrhage, only to be followed by the sudden development of syncope or shock, giving evidence of rapid, if intermittent, bleeding. In these last patients particularly a prompt intervention is to be recommended, even if several days have elapsed since the onset.

If a patient is in shock on arrival at the hospital, or develops evidence of it while under treatment, he deserves the constant vigilance of a bedside team of internist and surgeon, and is preferably treated on the surgical wards. If the hemorrhage does not seem to be controlled with blood transfusions approximating 500 cc. every eight hours, an emergency operation is to be considered. An exact knowledge of the source of the bleeding, determined by emergency X-ray examination if necessary, is a prerequisite for this type of surgery in order to prevent a useless operation. (Dunphy, J. E., Boston, Mass., and Hoerr, S. O.: *Surgery*, 24: 231-238 August, 1948. The authors are connected with the Surgical Service, Peter Bent Brigham Hospital and the Department of Surgery,

Harvard Medical School Boston, Mass.)
—*Surgical News Letter, United States Information Service.*

Silent gallstone: A 10 to 20-year follow-up study of 112 cases.

Since the advent of cholecystography, the problem of the silent gallstone has become an increasingly important one, several pertinent questions are being asked. How often are gallstones silent and how often is the physician confronted with the problem of the silent gallstone? What advice should be given the patient who has silent gallstone? Should he be told to undergo cholecystectomy or should he be told to await development of dyspepsia or colic before submitting to surgical treatment? Should he be urged to undergo cholecystectomy after the first attack of colic or after several attacks have occurred?

Reviewing the literature, Comfort and his associates found wide divergence of opinion and a lack of accurate data on the problem of the silent gallstone. In the hope of supplying some of the data not now available but necessary for decision regarding treatment of the silent gallstone, a long-term follow-up study of all cases in which gallstones were found incidentally during the course of some other abdominal operations at the Mayo Clinic was carried out.

The records of 998 such cases occurring from 1925 through 1934 were reviewed. Approximately one-half of these were discarded as unsuitable for long-term follow-up because the operation had been for cancer. Many others, including those with duodenal ulcer, were discarded because some of the abdominal symptoms might have been due to the cholelithiasis. Follow-up letters were sent to 184 persons. Replies were received from 115. Each patient was asked if indigestion or colic had preceded the discovery of the gallstones and several replied that symptoms had been present, so that these, too, were discarded. Finally, 112 cases were considered suitable for study. The average age of the 112 patients was 48.2 years when the gallstones were discovered.

It was found that in 61 cases symptoms did not develop. In the 51 cases in which symptoms occurred, 30 patients complained only of dyspepsia and 21 experienced painful seizures. Five of the 21 patients experiencing painful seizures also had jaundice.

Cholecystectomy may be advised but need not be urged, if the patient prefers to accept the chance of experiencing painful seizures or the increased risk of surgical treatment in the event the complication of calculous disease of the biliary tract appears.

Many patients will prefer to have gallstones removed in order to eliminate the threat of painful seizures or severe complications. Others, knowing the higher risk of surgical intervention should complications develop, will prefer to take the chance that no symptoms will develop. Surgical treatment of the silent gallstone may be classified as optional or elective surgery, but surgical intervention should not be postponed after symptoms, and more especially after attacks of colic, appear. (Comfort, M. W., Rochester, Minn., Gray, H. K. and Wilson, J. M.: *Annals of Surgery*, 128:931-937 November, 1948. The authors are connected with the Divisions of Medicine and of Surgery, Mayo Clinic, Rochester.)—*Surgical News Letter, United States Information Service.*

Strangulated diaphragmatic hernia.—Carter and Giuseffi had their attention drawn to strangulated diaphragmatic hernia by observations on two cases observed within one year and the first of which presented a clinical picture so typical that a 24-hour delay before operation occurred, with subsequent death of the patient. Aroused by this incident to review the literature, they were able to collect 39 cases of strangulated diaphragmatic hernia. These cases are summarized here, together with four additional from the Cincinnati General Hospital.

Commenting on the case of the first patient, whose clinical history is presented in detail, the authors say that the correct diagnosis was not made until the thorax had been opened at operation.

In retrospect the confusing features were: (1) the "high diaphragm" which was in reality the herniated stomach whose appearance on the roentgenogram accurately simulated that of an elevated diaphragm, (2) the absence of abdominal distention, (3) the presence of very bloody fluid in the left chest. The features which should have suggested the proper diagnosis were: the history of a penetrating wound in the lower left thorax, the marked vomiting not productive of bile-stained fluid, the dislocation of the heart to the right, and the dullness in the left lower thorax.

Diaphragmatic herniae have been classified by Astley Cooper into three categories (1) Congenital: due to defects in the diaphragm arising from faulty embryologic development, (2) acquired: which develop at points of anatomic weakness, e.g., at the esophageal hiatus, aortic, or caval openings, and (3) traumatic: caused by rents in the diaphragm arising from trauma. Strangulation is infrequent in both congenital and acquired diaphragmatic herniae. Of the 43 cases with strangulation reviewed in this report 34 were traumatic.

Traumatic diaphragmatic hernia showed an increased incidence during and immediately after the First World War, and will undoubtedly show a similar tendency following the recent conflict. Wounds of the diaphragm are not prone to heal, and many observers believe that upon severance of the diaphragm negative pressure in the thorax causes ascent of intra-abdominal organs through the new orifice.

Following a discussion of the symptomatology of strangulated diaphragmatic hernia, the authors say that the following should suggest the diagnosis of strangulated diaphragmatic hernia: (1) signs of acute gastrointestinal obstruction, (2) history of an old injury, (3) physical findings referable to the left thorax, particularly cardiac shift to the right and, on occasions, bloody fluid on aspiration, and (4) roentgenologic evidence of a high left diaphragm.

The treatment of strangulated diaphragmatic hernia is emergency surgery. The senior author emphasized in 1935

the advisability of utilizing the trans-thoracic route for the attack on diaphragmatic hernia. Such an approach is especially suited for small hernia since it allows the operator to investigate the diaphragm under excellent visual conditions. When there is no strangulation of the viscera the incision is adequate for the reduction of the organs and successful repair of the hernia. When a large amount of viscera has been strangulated the thoracic incision should be extended across the costal margin into the abdomen. Opportunity to inspect the strangulated abdominal organs is afforded, and the operator can understand the pathology of viscera below the diaphragm as well as utilize the advantages of better exposure and easier reduction of the hernia afforded by the thoracic approach.

The authors believe that the combined thoraco-abdominal approach should be considered in all cases of strangulated diaphragmatic hernia but that the initial incision should be made thoracically rather than abdominally, and the extension across the costal margin into the abdomen made when the exact circumstances have been appraised from above.

(Carter, B. N. and Guiseffi, J.: *Annals of Surgery*, 128:210-225, August, 1948. The authors are connected with the Department of Surgery, University of Cincinnati College of Medicine, and the Cincinnati General Hospital, Cincinnati, Ohio.—*Surgical News Letter*, United States Information Service.

The incidence and extent of hydronephrosis in prostatic obstruction.—H. L. Kretschmer and F. H. Squire (*Journal of Urology*, 60:1, July 1948) present a study of the incidence of hydronephrosis in 408 cases of prostatic obstruction. These cases are divided into two groups: 186 cases studied in 1933 to 1937, and 222 cases studied in 1945 to 1947. In all cases the diagnosis of hydronephrosis was made by intravenous urography. In the earlier group, the average duration of symptoms before the patient sought medical advice was 60.5 months; in the second group 43 months, a difference of 17

months, or nearly a year and a half. In the first group, there were 80 cases with evidence of hydronephrosis and hydro-ureters, an incidence of 33.43 per cent. The incidence of hydronephrosis was, therefore, definitely less in the group in which the duration of symptoms was shorter. In the first group there were 21 cases of carcinoma, and in the second group 24 cases of carcinoma, an incidence of just over 12 per cent in both groups. This incidence of carcinoma is lower than in any other published series of cases. Hydronephrosis was present in 14 of the 21 cases of carcinoma in the first group and in 10 of the 24 cases of carcinoma in the second group. In addition to dilatation of the ureters, changes in the course of the ureters—lateral displacement, angulation and elevation of ureters at the point of their entrance into the bladder—were found in 86 cases in the combined series. Such changes may be of diagnostic value. Bladder changes and stones—occurred more frequently in the first than in the second group. As the incidence and the extent of hydronephrosis and the incidence of existent bladder disease are in direct relationship to the duration of symptoms in prostatic obstruction, an educational campaign urging patients to seek early relief for such symptoms is justified.—*Medical Times*, Dec. '48.

Streptomycin in the treatment of pyelonephritis, interstitial cystitis, urethritis, and tuberculosis of the genito-urinary tract.—Satterthwaite and White say that among the 200 patients with paraplegia admitted to their hospital, there were many with renal and ureteral calculi in addition to multiple other complications. In addition, there were many battle casualties who had been in bed for long periods and had formed multiple stones of recumbency. Some of these patients developed severe pyelonephritis following acute ureteral obstruction due to calculi. Often these patients were in poor condition and having been operated on for urinary calculi one or more times previously in addition to other operations, it was believed that their condition would not permit a major operation.

The success of streptomycin in eliminating fever, evidence of toxicity, and confining the infection to minimal limits, especially in those patients with *E. coli* infections, permitted the authors to remove urinary calculi by elective rather than emergency procedures. The results of therapy in the 51 cases treated with streptomycin are presented. Each of these patients had prior penicillin and sulfonamide therapy.

Streptomycin was beneficial in 14 of 15 cases of acute severe pyelonephritis which had developed following acute ureteral obstruction. In eight cases with urinary sinus tracts treated with streptomycin, complete healing was obtained in six cases. Moderate improvement was obtained in the other two cases. Two of three patients with chronic interstitial cystitis showed improvement. Total arrest of symptoms was obtained in three patients with resistant gonococcal urethritis.

Five patients with tuberculosis of the genito-urinary tract were treated. Four of these cases had tuberculous cystitis. Each of these four cases had remission of symptoms and healing of the bladder lesions following streptomycin therapy. No improvement was observed in tuberculosis of the seminal tract treated with streptomycin. Early nonulcerative renal lesions were arrested.

The dosage of streptomycin has usually been 1 or 1.5 gm. a day. Except for the tuberculous infections, and the cases of chronic interstitial cystitis, the effectiveness of the streptomycin is usually manifested by the fifth day. In few instances have the authors found it useful to extend the treatment beyond the fifth day. Streptomycin has maximum antibacterial activity at pH 7.8, but the urine was alkalinized in selected cases only. In patients with a history of stone formation, it was not believed safe to attempt to alkalinize the urine.

The authors have been disturbed by the serious toxic reactions in this series of cases. They included five cases of involvement of the eighth nerve. Three of these reactions were severe, one lasting as long as four months before entirely subsiding. Of even more im-

portance were two cases of impairment of auditory acuity, each of which developed as a delayed reaction and did not become clearly manifest until after the cessation of therapy. There was one case of mild neutropenia in this series. One case of thrombocytopenia, purpura associated with streptomycin therapy was observed. It is believed that much greater care and consideration must be given to streptomycin therapy than with penicillin or sulfadiazine therapy.

(Satterthwaite, R. W., Baltimore, Md., and White, T. T., *Journal of Urology*, 60:678-696, Oct. '48. The authors are connected with the Section of Urology, Surgical Service, The Percy Jones General Hospital, Battle Creek, Michigan)—*Medical News Letter—United States Information Service*.

Streptomycin in the treatment of chronic infections of bone.—The purpose of this clinical study conducted by Wilson was to determine whether or not the use of systemic and local streptomycin, in addition to thorough sequestrectomy and meticulous wound care, would hasten the healing of wounds in patients ill with osteomyelitis of long duration.

Twenty-five cases of chronic osteomyelitis are presented, in which discharging sinuses had been present for an average of 19 months. Many types of treatment had been tried, without success. In an effort to promote healing, a plan of therapy was evolved upon the following principles: (1) thorough investigation of the wound bacteria; (2) radical sequestrectomy after adequate pre-operative preparation; (3) the use of streptomycin and penicillin before, during, and after surgery; (4) meticulous wound care after surgery to prevent contamination.

Twenty-one patients have responded favourably to this regimen, and their wounds have healed. Four patients failed to respond, and all have had amputations.

The author emphasizes that the use of streptomycin offers no panacea for the treatment of chronic osteomyelitis. The drug is not a replacement for adequate surgery; but when combined with

thorough sequestrectomy, it is beneficial in the promotion of healing.

No statement is made with regard to recurrence of drainage in these patients. No claim is made that the course of the disease has been altered permanently or that a cure has been obtained in any case. However, the salutary response of the patients to this treatment, which allowed their prompt return to a healthy, useful life, has persuaded the author to present this study as a preliminary report. (Wilson, J. C., Brookline Mass.: *Journal of Bone and Joint Surgery*, 30-A: 931-944, October, '48. The author is connected with the Orthopaedic Section of the Surgical Service, Percy Jones General Hospital, Battle Creek, Michigan.)—*Medical News Letter—United States Information Service.*

Cryptorchism.—L. G. Lewis (*Journal of Urology*, 60: 345, Aug. 1948) presents a review of the literature on cryptorchism and concludes from this and from his own experience that hormone therapy can bring about descent of the testes by activating the normal mechanism of descent if there is no anatomical or pathological condition

that prevents this descent. Hormone therapy should not be employed until the boy approaches puberty, one or two years before the normal expected onset of puberty. At that time, the author considers that antuitrin-S in a dosage of 500 rat units three times a week should be given up to a total dosage of 30,000 rat units. If this does not result in descent of the undescended testis (or testes), operation should be done without delay. Treatment for cryptorchism before puberty is indicated in order to preserve the spermatogenic function of the testis. In the author's experience the Torek operation, a traction suture method, has given excellent results in the surgical treatment of cryptorchism. Preservation of the internal spermatic blood vessels is necessary for spermatogenesis following orchiopexy. If for any reason the testes cannot be placed in the scrotum, they should be allowed to remain in the abdomen when cryptorchism is bilateral, to continue their interstitial function. While it is true that testicular tumors develop more commonly in undescended testes, the incidence of testicular tumors in such testes is not sufficiently high, in the author's opinion, to justify removal of the undescended testis in unilateral cryptorchism.—*Medical Times*, Dec. '48.

MEDICINE AND THERAPEUTICS

Neurologic disturbances with folic acid therapy.—(*New. Eng. Jour. Medicine*, 238, 1-1-1949).

Wagley reports on 14 cases of macrocytic anaemia, one of tropical sprue, 2 of non-tropical sprue, and one case of macrocytic anaemia associated with gastrectomy. In 5 cases of typical pernicious anaemia, the improvement was excellent when refined liver extract was given intramuscularly and maintenance doses were continued at intervals of 4 to 6 weeks. Liver Extract was stopped and patients were given folic acid. 3 patients suffered neurological relapse with diminished vibratory sense. One patient also complained of numbness of hands and feet and developed burning of the tongue. These relapses occurred 6 to 12 months after starting folic acid therapy. Eight patients, in all, had dis-

turbances of varying severity (while taking folic acid) within periods of 8 days to 12 months. Disturbances included difficulty of urination, diminution of vibratory sense, numbness of extremities, and extensive damage to reticulo-spinal tracts.

It would appear, therefore, that the high incidence of pathological neurological signs and symptoms in patients with pernicious anaemia, previously controlled with liver extract, indicates that folic acid treatment is inadequate. T.N.S.R.

Urea-sulphonamide therapy.—Holder and Mackay (*Lancet*, 1938, 549) reported in 1938 the effective treatment of infected wounds with mixtures of urea and sulphonamide (urea about 10%).

They claimed that urea was non-irritating to the tissues and had the power of dissolving the pus and necrotic debris in the wounds, which contains sulphonamide inhibitors. Urea increased the solubility of the sulphanilamide and sulphadiazine in tissue fluids. The addition of 5 per cent urea increased the bacteriostatic effect of the other drug ten fold. Tsuchiya *et al* (*Proc. Soc. Exp. Biol.*, 1942, 51, 245) demonstrated that strains of sulphathiazole resistant staphylococci in a synthetic medium were readily susceptible to a mixture of urea and Na. Sulphathiazole.

The development of sulphonamide resistance is becoming a matter of great importance at present, and any agent which may overcome this resistance is most welcome to the surgeon's armamentarium. The local use of the mixture urea and sulphonamide is now well established.

LaLonde and Gardner (*Jour. Am. Med. Assoc.*, 1948, 138) have successfully treated five cases of meningitis with urea and sulphadiazine. The adult dose was 30 g. by mouth every 4 hours. They consider that urea-sulphonamide therapy is simple, safe and inexpensive and merits trial in resistant infections before resorting to streptomycin. T.N.S.R.

Involvement of the central nervous system during mumps.—(*Amer. Jour. Med. Sci.*, 215, 1948.)

Brown Kirkland and Hein have studied a series of 77 cases of mumps amongst soldiers. Parotitis was present in all but one who had epididymorchitis. Lumbar puncture was made in all cases between the 8th and 12th day of the illness (68 cases) when clinical signs suggesting nervous system involvement was observed (9 cases). Pleocytosis was noted in 26 patients including 8 of the above 9 who showed evidence of meningo-encephalitis. 8 of the 26 complained of headache, 5 of stiff neck, 4 of nausea and vomiting and in one there was a positive Kernig's sign. Symptoms, usually mild, cleared rapidly: headache and nausea were relieved by lumbar puncture. Residual disability persisted in the one case of epididymor-

chitis without parotitis. This patient became irrational with a stiff neck. Right ankle-jerk was absent and right patellar-jerk had diminished. The plantar response on the right was abnormal but not exactly of Babinski type. Mental confusion cleared up in a fortnight; but the vision was impaired, the vocal chords showed paresis of adductor muscles and the voice was harsh and patient was emotionally unstable and had ataxia. After a further 2 months, improvement was partial and ataxia progressed. Slow improvement continued for 3 years and still he has residual disability. One contact with this patient developed typical mumps 14 days after the patient took ill. T.N.S.R.

The treatment of early syphilis with penicillin, neoarsphenamine and bismuth.—(*Br. Jour. Venereal Dis.*, 24, 45-50, 1948.)

McElligott and his collaborators state that from the reports on the results of the treatment of early syphilis with penicillin, it has been evident that among cases observed for the short period of 11 months a failure rate of about 15 per cent is to be expected. The failure rate of 25 to 35 per cent for the longer period of 1½ to 2 years' observation is very disquieting and has caused greater dissatisfaction. Since these later reports became available, there has been a trend generally towards a return to the treatment with arsenical and bismuth compounds which, when used for a sufficiently long period, had given excellent results. A combination of penicillin and an arsenical in a short-period-treatment comprising 10 injections (daily) of 60 mg. arsphenoxide together with a total of 2,400,000 units of penicillin was used in the British Army. The failure even of this treatment to control 18 out of 75 cases of secondary syphilis points to the necessity of improvement of even this combination. T.N.S.R.

Penicillin and caronamide in resistant subacute bacterial endocarditis.—(*Lancet*, pp. 99-101:15-1-1949).

Stuart-Harris and collaborators of the Sheffield Hospital report the successful

use of combined penicillin and caronamide therapy in cases of subacute bacterial endocarditis which had relapsed after repeated courses of penicillin alone. They consider that caronamide is an important adjuvant to penicillin therapy in resistant cases. This is probably due to the high serum penicillin levels obtained by the combination. The giving of caronamide for several days has some unpleasant effect also—chiefly nausea which was relieved by sedatives. The fever and leucopenia observed in 2 cases appeared to be a serious toxic effect; but this was temporary. T.N.S.R.

Dietary treatment of hepatic cirrhosis.—(*Lancet*, pp. 110-111, 15-1-49).

Nutritional deficiency may lead to a diffuse fibrosis of the liver indistinguishable from Laennec's cirrhosis. This condition is usually preceded by fatty infiltration. The most important factors that would prevent an undue accumulation of fat in the liver are *choline* and *methionine*. Attempts have been made in U.S.A., to treat cirrhosis of the liver on the lines indicated by the above findings. Diets rich in protein and of high caloric value have been used. Additional vitamins and often choline methionine have been used as supplements. Patek (*J. Am. Med. Assoc.*, 1948, 138, 543) who introduced this form of therapy has reported on 124 cases of cirrhosis treated and observed during a 10 year period and compared them with a control group of 386 cases seen between 1920 and 1940. In the treated group the duration of life was significantly greater; and the improvement was most marked in cases with large livers. The better prognosis with large livers is easily understandable if the success of the diet really derives from the action of its lipotropic factors in removing fats from the liver. The shrunken atrophic liver which is almost always poor in fat cannot respond easily to these agents. Sellers, Lucas and Best (*B.M.J.*, 1948, 1061) have shown that lipotropic factors exercise a beneficial effect. In many cases of cirrhosis, however, anorexia is prominent at the start of treatment making it difficult to achieve sufficient protein intake. Here

supplements of choline and methionine have proved invaluable. T.N.S.R.

Control of nausea and vomiting due to streptomycin.—(*Brit. Med. Jour.*, 1-1-1949, pp. 13-14).

Bignall and Crofton of the Brompton Hospital, observed nausea and vomiting in 17 of 49 patients treated at the Brompton Hospital during the Medical Research Council trials of streptomycin in pulmonary tuberculosis. On the analogy of urticarial symptoms being considered due to hypersensitivity to either the streptomycin or the impurities therein, the authors decided to try antihistamine drugs such as 'Benadryl' for the control of nausea and vomiting. In four patients with more severe toxic symptoms, controlled investigations were carried out. The symptoms were abolished or greatly reduced when benadryl capsules were given and returned when they were withheld. Control tests were made using identical capsules containing lactose (without the patients knowing it) alternately. Each time lactose capsules were used the symptoms returned and disappeared when benadryl capsules were resumed. T.N.S.R.

Bruising of the heart.—(*Br. Med. Jour.*, 1-1-1949, pp. 10-12 and p. 23).

Parsons-Smith and Williams of the London St. George's Hospital report on a case of cerebral embolism following contusion of the heart. As cardiac trauma, damage to the heart resulting from non-penetrating blows to the chest-wall—may not be recognised as a cause of unexplained hemiplegia in childhood, the case report is of great interest. With a severe enough but non-penetrating blow to the chest-wall, the commoner sequelae which result, are pericarditis, myocardial damage, coronary thrombosis, rupture, alterations of rhythm and disturbances of conduction. The clinical picture may resemble myocardial infarction and be accompanied by corresponding physical signs and electrocardiographic changes. Injuries of this type are usually caused while playing various games: e.g., Hockey, Cricket, Football, Golf, Boxing, Surf bathing and Steeplechase. The symptoms and signs vary considerably but

there may be immediate severe pain, lasting several minutes or even hours, angina pectoris and effort dyspnoea persisting for days or even weeks. Partial heart block may occur which tends usually to persist for some considerable time. Experimental work and necropsy studies have shown that the usual lesion in the heart is a contusion with varying degrees of oedema and extravasation of blood and rarely even a tear in the myocardium. Further, for some reason which is still not readily understood, the right auricle appears to be particularly vulnerable. However, the majority of these patients usually recover (unless otherwise also severely injured) and the exact anatomical lesion is a matter for conjecture. The case reported by Parsons-Smith and Williams was a clear-cut picture of a cardiac contusion with pain, pericarditis and partial heart block, all due to damage done during a boxing match. The boy developed 2 days after injury, a hemiplegia which was embolic in origin. The cardiac injury had obviously spread through the wall of the heart to the endocardium resulting in an intramural thrombus, part of which getting detached, had given rise to the embolus. In children and youths there is perhaps greater chance of cardiac trauma than in adults because the heart being behind a resilient sternum can be the more easily compressed against the spinal column. T.N.S.R.

Oral penicillin in the treatment of gonorrhoea.—(*Vest. Vener. Derm.*, Feb. 1948, Abstr. by Dr. Gilder in *Abst. World Med.*, Feb. 1949).

The treatment of sulphonamide resistant gonorrhoea with oral penicillin was investigated at the central Dermato-Venereological Institute of U.S.S.R. In a pilot study of 35 cases 200,000 units were given in 3 schedules: (1) 40,000 units 4 hourly by day cured 3 out of 10; (2) 40,000 units 2 hourly by day cured 7 out of 11; and (3) 40,000 units 2 hourly by night with the patient fasting cured 13 out of 14.

This last schedule was adopted in treating 97 cases. Soviet penicillin being used in gelatin capsules containing 10,000 to 15,000 units and 0.5 g. Soda

Citras; 47 patients received 200,000 units and 53 patients had 300,000 units, 73 cases had proved Sulphonamide-resistant. Oral penicillin cured 79: gonococci disappeared from the discharges more slowly than after intramuscular penicillin. Discharge usually lasted for from 3 to 5 days but in 7 cases for more than 7 days. In 8 of the 14 failures a second course of 500,000 to 600,000 units orally, cured the infection. T.N.S.R.

Vitamin C in congestive circulatory failure.—(*Polsk. Tyglekarski*, 3, 15-3-48, *Abst. World Med.*, Feb. 1949).

Dr. Aleksandrow studied the behaviour of ascorbic acid in congestive circulatory failure in view of its significance in normal functioning of the cardio-vascular system. He is of the opinion that the relative deficiency of ascorbic acid, in congestive cardiac failure, is of endogenous origin due to a disturbance of cellular respiration. He strongly advocates intake of 300 mg. of vitamin C daily for a fortnight (orally or intramuscularly) and 100 mg. daily as a maintenance dose thereafter. Mersalyl was found to increase loss of vitamin C in urine with consequent lowering of blood plasma level. Strophanthin, on the other hand, had no such effect. The need for an adequate supply of vitamin C when mercurial diuretics are used is therefore to be stressed. In severe cases, parenteral administration of vitamin C, is probably advisable as, in the author's opinion, it is not possible to state with accuracy if the absorption from the alimentary tract can always be relied upon. T.N.S.R.

Management of chronic peptic ulcer.—There is a growing body of opinion which believes that the regimen usually laid down for ulcer patients is too rigid. As with most diseases, the best chance of curing a peptic ulcer lies in diagnosing it early and treating it radically at once, however tempting it is just to stave off the symptoms when they are not incapacitating. But it is a melancholy fact that many ulcers cannot be permanently cured by medical treatment, and when surgery is contra-indicated, is refused, or has been tried in

vain, the best that many patients can hope for is to lead reasonably normal lives with only occasional minor relapses. In these chronic cases, which still form a large proportion of the total, our task should be to help our patient to come to terms with his disability, avoiding restrictions based on tradition rather than evidence, and interfering as little as possible with his normal activities. During an acute relapse rest in bed is essential, but it must not be prolonged to the point of producing irritable boredom, or the aim of mental rest (which is probably even more important than physical rest) will be defeated. Later, when the patient returns to work, he should be allowed reasonable latitude. It is unreasonable to expect a restless, eager, and ambitious man, such as many ulcer patients are, to lead a frustrated vegetable existence. The brake must be applied, but gently and with a nice judgment of the individual.

The need for drastic food restrictions is open to question. Too strict dieting may lead to undernutrition and increase the liability to relapse, besides producing faddism and preoccupation with the processes of digestion. Furthermore, present-day rationing and the shortage of alternative foods make a strict diet both difficult and monotonous. Obvious gastric irritants such as spices, seasonings, peels, and pips are best avoided, but with these exceptions the patient should be allowed to eat anything which does not persistently disagree with him. Much more important than the composition of the diet is the regularity and timing of meals. Little and often should be the invariable rule, and the patient must plan his life so that meal-times are regular and unhurried. Wise employers who allow their dyspeptic employees time off for snacks between meals will thereby avoid the loss of their services through illness; and many ulcer sufferers are valuable skilled workers. The question of smoking will probably never be settled to everyone's satisfaction. No convincing experimental evidence has yet been brought forward to prove that it is harmful. Schnedorf and Ivy found that smoking did not increase gastric acidity; if it had any effect at all, it depressed gas-

tric secretion and retarded evacuation. Both of these actions might be expected to be beneficial rather than harmful. On the other hand, many patients spontaneously cut down their smoking because they find it causes pain. But whether we regard smoking as a harmless habit, as a deplorable tic, or as a shameful addiction, we must face the fact that many people find it soothing to their nerves and cannot give it up without inducing irritability and restlessness. "There is more disadvantage in discontented deprivation than in indulgence," provided the indulgence is not excessive. Once again, reasonable moderation is advisable.

The barbiturates are the only drugs whose value at all stages of peptic ulcer is indisputable. Belladonna best given in the form of *loera*-hyoscine, is useful in the acute stage, for it allays spasm and reduces painful gastric contractions. But there seems little point in continuing it once this stage is passed. As a routine antacids have little to recommend them. Douthwaite contends that it is impossible effectively to neutralise gastric acidity by means of antacids; this can only be done by continuous nasal drip-feeding with milk. Certainly ulcer pain is relieved more effectively by a light feed than by an antacid. Persistent pain which is not thus relieved requires rest in bed. However, if adherence to tradition demands that an antacid be given, magnesium trisilicate or colloidal aluminium hydroxide have the advantage of not producing alkalosis. There are drugs which are positively harmful to the ulcer patient. The danger of insoluble aspirin is now well known; haematemesis may result from its use. The soluble preparations seem less open to objection, but not every patient will remember to draw the distinction, and it is possible that even these increase the likelihood of bleeding; so perhaps it is better to forbid salicylates altogether. Int-er-cu-rent pain which does not respond to phenacetin can safely be treated with the newer synthetic analgesics, which seem to be relatively free from irritative action on the stomach.

The successful management of a peptic ulcer, then, requires on the patient's

part an avoidance of excess, a minimum of fuss, and an acceptance of the inevitable. It asks of the physician a humble recognition of the limitations of therapy and a sparing and humane use of his veto.—*Lancet*, Editorial, Feb. '49.

Chronic appendicitis and mesenteric adenitis in children.—D. H. Manfredi (*Archives of Pediatrics*, 65:591, Nov. 1948) reports 480 cases of chronic appendicitis and chronic mesenteric adenitis in children treated at the Children's Surgical Service of Bellevue Hospital (New York) in 1929 to 1947, inclusive. Only 200 of these patients could be followed up after operation; this lower than usual percentage of cases followed up is due in part to the shifting Bellevue population, and in part to the reduction in the medical personnel and hospital staff during and after the war. The highest incidence of chronic appendicitis and mesenteric adenitis in this series was before puberty; over 50 per cent of patients were eight to eleven years of age. This corresponds with the maximum growth of mesenteric lymph nodes in children before puberty. The symptoms of chronic appendicitis and mesenteric adenitis were much the same, and in some cases differential diagnosis between the two conditions could not be made. Pain was the chief symptom, which was of the intermittent or "crampy" type; vomiting was not always associated with pain; in some cases the temperature was normal, in others there was low grade fever. Physical examination showed slight tenderness on deep pressure over the right lower quadrant. Many of these children were under-nourished. When the diagnosis of chronic appendicitis or chronic mesenteric lymphadenitis was established, appendectomy was done. In 2 cases an acutely inflamed appendix was found and removed. Of the 200 cases followed up, 33 had less than three months care in the clinic. In 114 cases of chronic appendicitis results were satisfactory in 97 cases; and in 8 other cases, satisfactory results were obtained before the case was closed, leaving only 9 cases with permanently unsatisfactory results. In 53 cases of chronic mesenteric adenitis, results were satisfactory in 43 cases,

and in 3 other cases were later considered satisfactory, so that unsatisfactory results were obtained in only 7 cases. Satisfactory results included not only relief of the abdominal symptoms but improvement in general health and nutritional status. On the basis of these results appendectomy is considered to be the treatment of choice in cases of this type, and it also avoids the danger of overlooking an acutely inflamed appendix.—*Medical Times*.

A liberal regimen in diabetes.—H. J. John (*American Journal of Medicine*, 5:537, Oct. 1948) describes a liberal regimen employed in the treatment of diabetics with careful control of the insulin dosage. The patient continues the usual diet, omitting all sugar, pastry and soft drinks and restricting the amount of bread to two slices at each meal, or one slice when potato is eaten. In establishing the correct insulin dosage, blood sugar and urine are examined three times a day, before breakfast, lunch and dinner. On the first day all three levels are usually quite high, and 20 units of protamine zinc insulin are given after the evening check-up. The following morning, the fasting blood sugar is checked and 20 units of protamine zinc insulin given. On subsequent days if the fasting blood sugar is normal, the noon blood sugar somewhat elevated, but the evening blood sugar normal, the dosage of insulin is considered adequate. If the fasting blood sugar is normal, but both the noon and the evening blood sugar is elevated, some regular insulin is given in the morning with the protamine zinc insulin. If the fasting blood sugar does not become normal with the dosage of insulin given, the dosage is increased by 5 units until the fasting blood sugar is brought to normal and is maintained at this level unless insulin reactions occur; if a reaction occurs the dosage is reduced by 5 units. Subsequent check-ups determine whether regular insulin should be added to the morning protamine zinc insulin. During this period of adjustment, the patient is instructed in self administration of insulin, so that by the time the routine is adjusted and the fasting blood sugar is maintained at

a normal level, the patient is "on his own" with subsequent check-ups by the physician as necessary. Fourteen cases are reported in which this plan of treatment was successfully employed.—*Medical Times*.

Rapid healing of peptic ulcers in patients receiving fresh cabbage juice.—Garnett Cheny (*California Medicine*, 7:10, Jan. 1949) reports the treatment of 13 patients with peptic ulcer with raw cabbage juice. As a rule, fresh cabbage juice was prepared twice daily; for the last 3 patients treated fresh celery juice was added to the cabbage juice, as the celery juice makes the drink more palatable, and has been found to contain the anti-peptic ulcer factor. A bland diet was given in which all foods (including the milk) were cooked; this was done to eliminate possible food sources of the

anti-peptic ulcer factor, which is rapidly destroyed by heating. The cabbage juice was kept in the ice box and served to the patient well chilled, 200 cc. five times a day. If patients developed mild abdominal distress or constipation, milk of magnesia was given. No other routine treatment was used. Patients were kept at bed rest until pain was relieved and then were allowed up and about as they desired. X-ray examination was made just prior to beginning treatment and again after six to nine days of therapy. In the 7 cases of duodenal ulcer treated, the average healing time of the ulcer crater was 10.4 days, the longest healing time, 23 days. In the 6 cases of gastric ulcer the average healing time of the ulcer crater was 7.3 days, the longest healing time 9 days. In the 6 cases of gastric ulcer, gastroscopic examination confirmed the X-ray evidence of healing of the ulcer.—*Medical Times*.

EYE, EAR, NOSE & THROAT

The use of keratoplasty in pterygium.—Edeskuty, Otto, *Klin. Monatsbl. f. Augenh.*, 110:48-52, Jan.-Feb., 1944.

Keratoplasty, recommended by Friede against pterygium, seems less effective and much more complicated than the operation described by the author in 1934. The essential cause of the pterygium is the proliferation of the subconjunctival connective tissue, and as long as this is not thoroughly removed, a recurrence is to be expected. After removal of the pterygium from the cornea the subconjunctival tissue together with the conjunctiva is separated from the sclera up to the insertion of the rectus. Then the subconjunctival tissue is dissected from the conjunctiva, cut off, and the thin conjunctiva is put back into place and secured with two sutures. There are no recurrences, if the operation is properly performed.—*American Journal of Ophthalmology*.

The treatment of syphilitic interstitial keratitis.—(Forsyth, W.B., *South. Med. J.*, 41:1015-1022, Nov., 1948).

A simplified programme for the treat-

ment of lentic interstitial keratitis is presented. Typhoid vaccine is used three times a week. The initial dose consists of 250,000 organisms per pound of body weight but no more than 20 million organisms. If the fever lasts four hours and does not exceed 103 degrees, the dose is then doubled; a poor response requires between two and three times the preceding dose. If a triple dose is given, the dose should be tripled in each succeeding injection until a good response occurs. There is little need for going above 12 billion per treatment. Patients who weigh over 65 pounds are given 3.4 million units of penicillin in doses of 40,000 units every 2 hours; those under 65 pounds 50,000 units per pound of body weight divided into 60 injections. In 88 per cent of 70 cases useful vision was restored. Penicillin plus fever therapy results in a more prompt recovery.—*American Journal of Ophthalmology*.

A case of keratomalacia cured by penicillin and vitamin A.—Rizk, K., *Brit. J. Ophth.*, 32:416-419, July, 1948.

A 2-year-old infant developed very severe keratomalacia of both eyes after a brief fever. Both corneas were almost completely opaque, bulged markedly and were covered by deep ulcers. There were few signs of inflammation and the baby seemed to be in no pain. The disease is primarily an avitaminosis A and is not ordinarily considered to be an infectious process. However, penicillin instillations and penicillin in wax were given in large doses. The opacities and the ulcers began to heal almost instantly although the epithelium was slow to regenerate. As soon as vitamin A was given healing progressed rapidly and completely. Dense leucomas remained only in small central areas. Both corneas resumed their normal shapes.—*American Journal of Ophthalmology*.

The present state of the problem of retinitis pigmentosa.—Brit. J. Ophth., 32:411-415, July, 1948.

Although retinitis pigmentosa is most probably caused by disorders of the pituitary gland and to the surrounding diencephalon, it is not a single disease. Two groups are recognized: the inherited and the autonomous; the former may be dominant and recessive. The great majority of the inherited cases are recessive. The autonomous cases are secondary and follow the exanthemata, typhus, malaria, trauma, inflammations, vaccination, persistent vascular spasms and irregularities of nutrition. The author states that there is a clinical difference between the two types but fails to describe that difference.

The outlook for the inherited type is hopeless while that of the secondary type is more encouraging. The author believes that the work of Filatov should receive attention. In 1945 Filatov wrote of treating 110 cases of retinitis pigmentosa with "tissue therapy" but failed to publish the results of these experiments.—*American Journal of Ophthalmology*.

Rhin scleroma apparently cured with streptomycin.—G. B. New and associates at the Mayo Clinic (*Annals of Otolaryngology and Rhinology*, 57:

412, June 1948) report a case of rhinoscleroma successfully treated with streptomycin. Rhinoscleroma is considered by many to be an infection; and organisms of the genus *Klebsiella* can usually be isolated from the lesions. In the case reported, the patient was a woman thirty-two years of age, who had lived in the Far East most of her life. A diagnosis of rhinoscleroma had been made in China in 1938; treatment with autogenous vaccine had resulted in an arrest of the disease for some time. When the patient was admitted to the Mayo Clinic in September 1946, both nostrils were almost completely obstructed with granulomatous tissue, there was scarring of the pharynx, and involvement of the larynx with almost complete obstruction of the airway at the level of the glottis. Culture of granulomatous tissue removed from the larynx by suspension laryngoscopy showed *Klebsiella* organisms in large numbers. In vitro tests showed these organisms to be sensitive to streptomycin. The patient was treated with streptomycin in a dosage of 250 mg. every three hours; treatment was discontinued after the first week because of the development of joint pains, a skin rash and fever. After twelve days' rest streptomycin therapy was resumed and was continued for forty-three consecutive days, a total dosage of 97.25 Gm. It was discontinued at that time because of dizziness and slight nausea. There was definite improvement in the nasal condition after 38 Gm. of streptomycin; after 53 Gm. had been given there was a good airway, and while the larynx showed some scarring there was no evidence of active disease. At the time streptomycin was discontinued, cultures from the nose and from the larynx were negative for *Klebsiella*; there was no granulomatous tissue present in the nose, but cicatricial scarring of the nostrils made a plastic operation necessary. There was no evidence of active rhinoscleroma when the patient was last seen approximately ten months after the completion of treatment. This appears to be the first case of rhinoscleroma reported as probably cured with streptomycin.—*Medical Times*.

OBSTETRICS and GYNÆCOLOGY

Sodium pentothal anesthesia in obstetrics.—Chester L. Cooley and Hubert F. Schwarz, Mary's Help Hospital, San Francisco, Calif., *West. J. Surg.* 56:278-84, May, 1948.

In a series of 316 cases, of which 230 were primiparous and 86 multiparous women, sodium pentothal was used as the anesthetic agent. The above series are broken down as to type of delivery as follows: low forceps (224), cesarean section (25), spontaneous delivery (1 stillborn) (29), breech extraction (4), kielland rotation (28), twins with version and breech extraction of second twin (3), midforceps (1). Two cases were supplemented with nitrous oxide and ether because of blood clotting in the needle. The 1 stillborn delivered was a macerated fetus and known to be dead before the anesthesia was started. A 2.5 per cent solution of sodium pentothal was used. The average amount used for delivery and episiotomy repair varied from 0.25 Gm. to 1 Gm. The average was 0.425 Gm. For premedication sedation and analgesia during labour second grains 1.5 to 3 was given supplemented by demerol. The dosage varied from 50 mg. to 500 mg. In rapid labours where progress was marked on admission the demerol was given in 100 mg. doses intravenously.

About ten to fifteen minutes before starting the sodium pentothal each patient was given atropine sulfate grains 1/150 to reduce the danger of laryngospasm.

It has been showed by the work of Dille, Hellman, Shettles and Stran that none of the drug passes through the placenta in less than five minutes. For this reason the induction should be rapid to avoid second stage excitement. Our average time from start of anesthesia to delivery of the child was three minutes, the longest being six minutes. No serious ill effects were noted in any of our cases. In primiparas the patient was prepared when the head was on the perineum and in multiparas when the cervix was 6 to 7 cm. dilated. To produce rapid anesthesia 10 cc. of 2.5 per cent solution was given within the first minute followed by injections of 1 to 2 cc. as needed. There was a marked decrease in blood loss and lowered incidence of postpartum hemorrhage. There was 1 case of laryngospasm, 1 postpartum hemorrhage about three hours after delivery and again in two weeks which was due to subinvolution. One patient vomited at onset of anesthesia and coughed throughout the entire period. *Quarterly Review of Obstetrics and Gynecology.*

Book Reviews

Campbell's Operative Orthopedics—By J. S. SMITH, M.D., Editor and HUGH SMITH, M.D., Associate Editor, 2 Volumes, 2nd Edition, C. V. Mosby Company, St. Louis, 1949.

The evolution of orthopedic surgery has been slow when compared with that of general surgery. It was the two world wars that gave impetus to this field of surgical work and led able men to specialize in it. Aseptic technique has made it possible for surgery of the bones and joints to be a success. The present book imparts pertinent knowledge on orthopedics to surgeons and specialists. In the first chapter in Volume I, an attempt is made to correlate the mechanical, surgical and physiologic principles of orthopedic practice and throughout the book emphasis is laid on the practical application of these principles. The next three chapters are on apparatus, surgical technique and surgical approaches. Then there are well written chapters on dislocations, fractures, malunited fractures, delayed and non-union of fractures, peripheral nerve

injuries, and amputations. In Volume II there are chapters on arthrodesis, ankylosis and deformity, arthroplasty and affections of bones, muscles, tendons etc. The chapter on anterior poliomyelitis and those on static or postural affections and congenital anomalies are well written.

The two volumes are well printed and profusely illustrated with illustrations and four plates. The subject matter of every chapter is dealt with in a very exhaustive and authoritative manner. Exhaustive bibliography is also given at the end of every chapter. The book is a standard text-book on operative orthopedics and is recommended to all surgeons interested in this type of surgery.

Operating Room Technique By EDWARD LOURSE ALEXANDER, R. N. Supervisor of the Operating Rooms of the Roosevelt Hospital, New York City, etc., etc., 1949, 2nd Edition, 668, illustrations. The C. V. Mosby Company, St. Louis.

To get the best results from a surgical operation, the surgeon and his assistants must get the best assistance from the operating room nurses and all must work as a team. The nurse especially must be exact in every detail of her technique. This book gives details of such work. Both the fundamental principles and methods of operating room technique are fully described and illustrated. The first chapter is devoted to general arrangement of an operating room. There is a chapter on sterilization in which is given a list of chemical disinfectants with their advantages and disadvantages. There are

chapters on suture material, anaesthesia, and the care and sterilisation of equipment. There are well-written chapters on chest operations, genito-urinary system operations, reconstructive surgery of bones, joints and tendons, and operations on the spinal cord. In many of these chapters many of the latest operations are described, giving the list of instruments required for the various operations. The illustrations and general get-up and printing are good. The book will be very useful for the purpose of training nurses in general and other hospitals.

Correspondence

Prejudice against Indigenous Systems of Medicine

To the Editors, THE ANTISEPTIC, Madras.

Dear Sirs,

I have perused the letter published in the February issue of your Journal with interest and noted that the writer desires to secure justice for the indigenous systems of medicine. Since the year 1919, I had been assisting the late Kaviraj Jaminabhushan Roy, M.A., M.B., the Principal of the Astanga Ayurved and I had the chance to study the system comparing with that of Allopathy, as expected, to find out the truth. I had occasion to observe the results of some reputed drugs when one of my grand-fathers used them in our native village in treating rural people who had faith on the same. I have been studying the effects of almost all indigenous drugs, which have been analysed by Lt. Col. Chopra and I may say for these medicines can be safely introduced for the relief of ailing humanity on rational basis as a scientist. It is also a proved fact that the Rishis who introduced such a system were not so foolish to neglect their indigenous drugs, but they used the extracts or the like when these vegetable plants are sent abroad and prepared by the European scientist. So medical men having some idea of the medical science cannot ignore them at all and many now use Makaradhwaja, etc., in their practice when they feel that Allopathic medicines fail to produce results. I should therefore say that every sane medical scientist should conduct research on their application and record the result for others to follow. All prejudices must be given up by those who believe in scientific study. The Rishis were the greatest scientists of the old days and their observations can rarely be called unscientific. If any one studies Ayurveda under a well-versed Kaviraj like late Sital Chandra Chatterjee, I am sure he will have every sympathy with the Ayurvedic system which is the mother of all systems of treatment, like Hakim, Unani and Allopathy. It is certainly an admitted fact that the Western people gave due regard to Ayurveda and they developed it into Allopathy with their knowledge in Physics, Chemistry, Pathology and Materia Medica.

2. Dr. P. A. S. Raghavan might have some wrong impressions and, having no practical experience, might have expressed his personal opinion. I hope, if he be given a chance, he will certainly appreciate the good effects of certain drugs prepared in the Ayurvedic system and will change his views early. The late Dr. Ashutosh Roy, M.B., of Hazaribag gave discourse on the study of Ayurveda and these were published in *The Indian Medical Record* some years back. I think any qualified registered medical practitioner of the Allopathic system may have an idea of the Ayurvedic system from these and proceed in a very reasonable way for the introduction of such drugs instead of advertising the European patents unnecessarily.

3. It is now necessary for the Ayurvedic practitioner to conduct regular and systematic researches in the Hospitals attached to the Ayurvedic Colleges and their results must be published every year in some form.

Yours faithfully,

Calcutta, 13-6-'49. A. K. SARKAR, M.B., D.P.H.,
175-A, Raja Dinendra Street.

Treatment for Styte

To the Editors, THE ANTISEPTIC, Madras.

Sirs,

I have gone through the article "Styte" published in the April '49 issue of your *Antiseptic* written by Dr. Ranjan. I don't know whether the writer means the treatment of styte of chronic nature. As regards my experience I have found Penicillin treatment is very efficacious. Previously when this medicine was not available, I held views similar to that of Dr. Ranjan.

Case note.—An adult, aged 20 years, suffering from styte in his both eyes came to me for treatment. He had temp. 100°F. I gave him intramuscularly a single dose of 2 lacs Penicillin (Glaxo). He was completely cured within 2 days.

Points of interest.—Quick cure. Cheap. Easy to carry out.

My fellow doctors may try this treatment and kindly report the results through this Journal.

Yours faithfully,

Fyzabad, 16-6-'49. C. D. CHOUDHURY, I.M.B.,
Golaghat.

Profession and Practice—A Reply

To The Editors, THE ANTISEPTIC, Madras.

Sirs,

I crave the hospitality of your esteemed journal to publish the following in reply to the letter published by Dr. S. R. Hedge, L.M.P., Coondapoor, in the May '49 issue of your journal.

Dr. Hedge says that he has come across many of the practitioners of Indian Medicine practising Western medicine without knowing fully what they are and how they act. The qualified practitioners of Indian Medicine (L.M.P.s.) have studied Western Medicine also just as the L.M.P.s. and so they are using Western Medicine also in their daily practice having a full knowledge of their acts and ill-effects.

I have come across many Allopathic practitioners using Indian Medicine e.g., Draksharishtha, Dasamularishtha, Chyavanaprash, etc. etc. These practitioners have not at all studied anything about Indian Medicines. In these days of Democracy and National Government there should be give and take policy and one should take anything good from the other system. The Government should not ban qualified practitioners of one system from using medicines from the other system.

I concur with Dr. Hedge in placing a ban on quackery.

Yours faithfully,

Ramaswamy's } P. RAMASWAMI, L.M.P.,
Clinic } 157, Sanankuppam Road,
Ambur, } Ambur (N. A. Dist.)
4-8-'49.

Rural Medical Relief

To The Editors, THE ANTISEPTIC, Madras.

Sirs,

I have received a very large number of letters from the medicos all over India, supporting my views expressed in my article "The Problem of Rural Medical Aid in India" published in the February '49 issue of *The Antiseptic*.

Since it is physically impossible for me to reply to each of my colleagues, I crave the hospitality of your columns to acknowledge the same and thank them for the appreciation, encouragement, and support they have so

kindly extended to me, with my apologies for not writing to them individually.

Most of my friends want action to be taken on the lines suggested by me. It is really a very heavy task and I must confess unless we make a joint effort it will not be possible for us to achieve our ends, viz., (1) to maintain ourselves with the dignity of our noble profession; (2) increase our efficiency; and (3) serve our countrymen who have so long been deprived of any medical attention and allowed to suffer in neglected villages by bringing scientific medical aid within their easy reach.

I venture to suggest that there should be a resolution from the various medical associations who approve of my scheme all over India and a copy of the same be sent to the Provincial and Central Governments for action as far as practicable.

Those of my colleagues who have any influence should contact highly placed medical men, M.L.A.'s, members of Local Bodies, and District Medical authorities etc. and try their best to impress upon them the reasonableness of our demands and, if necessary, should supply them a typed copy of my scheme for perusal and necessary action.

I am confident if the Medical Press and Associations all over India present an united front and create the necessary public opinion by exerting a little, the Government will certainly give effect to my scheme soon.

Much valuable time has unnecessarily been wasted causing good deal of suffering to our colleagues and countrymen, who are paying a heavy toll of lives and it is time something is done immediately to relieve their distress by making the best use of the trained personnel, the mighty Indian Nation has.

I believe *The Antiseptic* has always championed the cause of the medical profession as a whole and that is why it is so popular, and I am sure you will not mind the trouble I am giving you for a noble cause, viz. drawing the attention of the National Government.

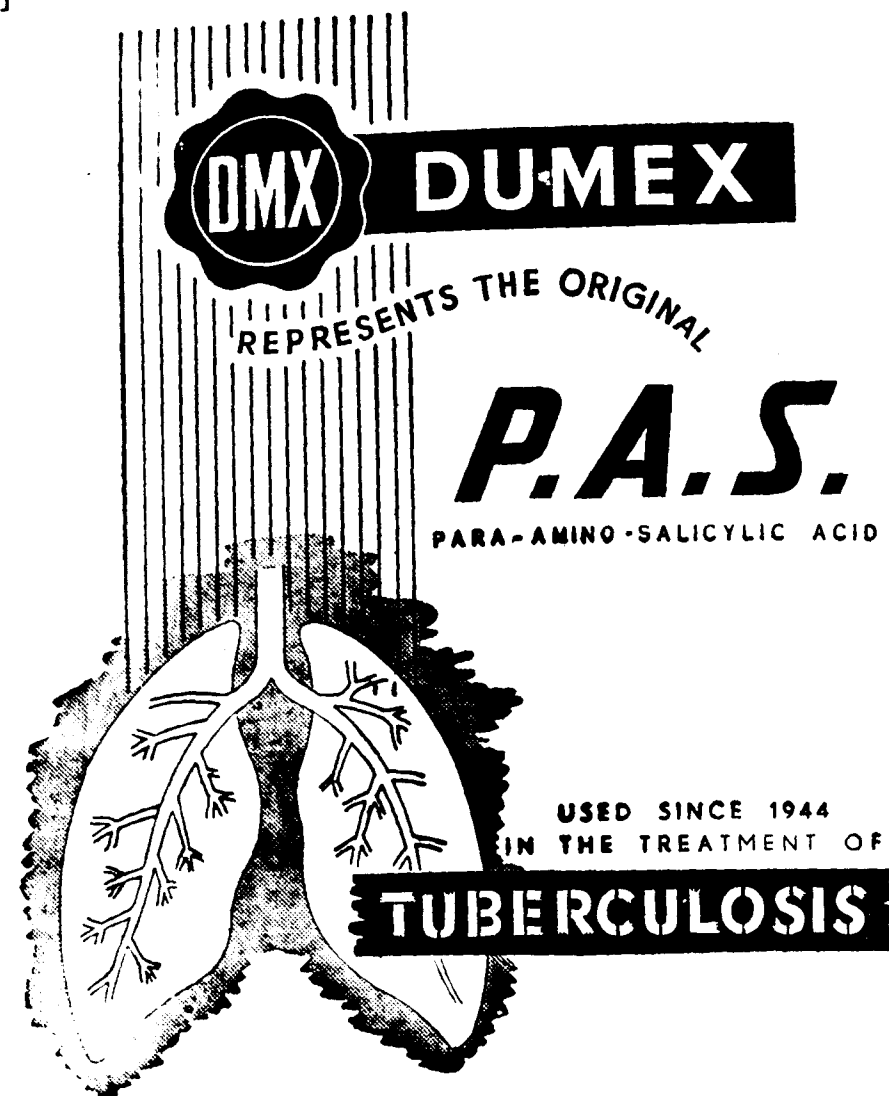
Lastly I appeal to all my professional brethren to do their utmost in dealing with this pressing need of the country.

Yours faithfully,

Barwadih, } GIRINDRA NATH SINHA,
23-8-'49. } Medical Officer, Barwadih,
Palamu

Corrigendum.

In the article entitled "Treatment in Typhoid Fever" in page 564, line 30 in this issue, please read '012 gm. as '020 grain.



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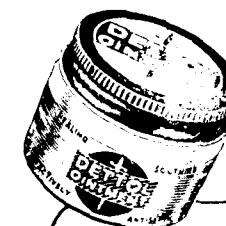
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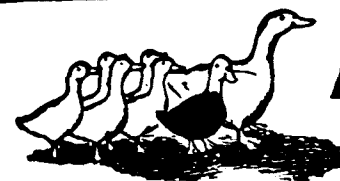
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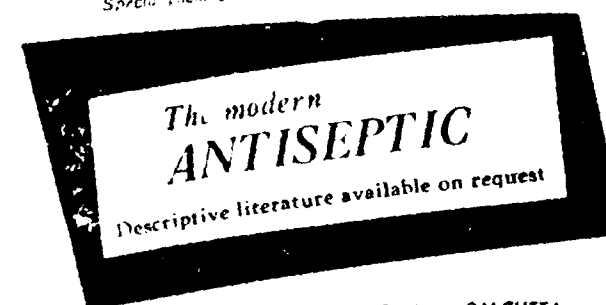
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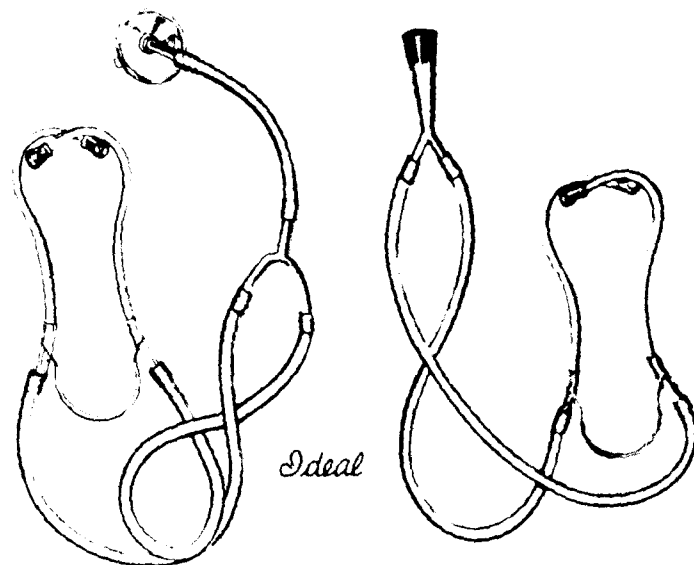
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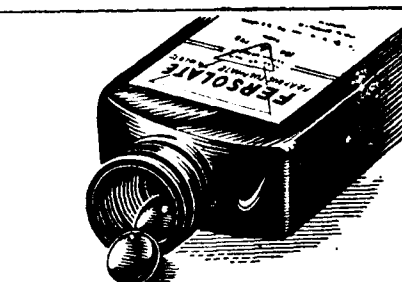


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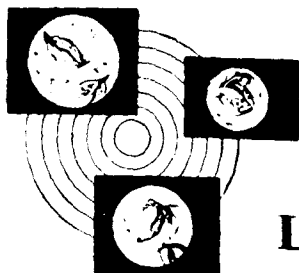
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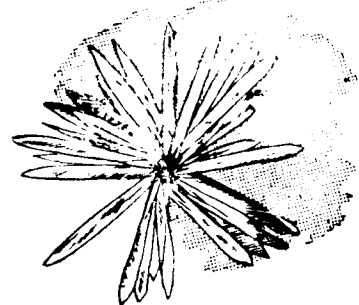
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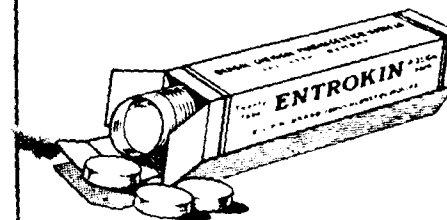
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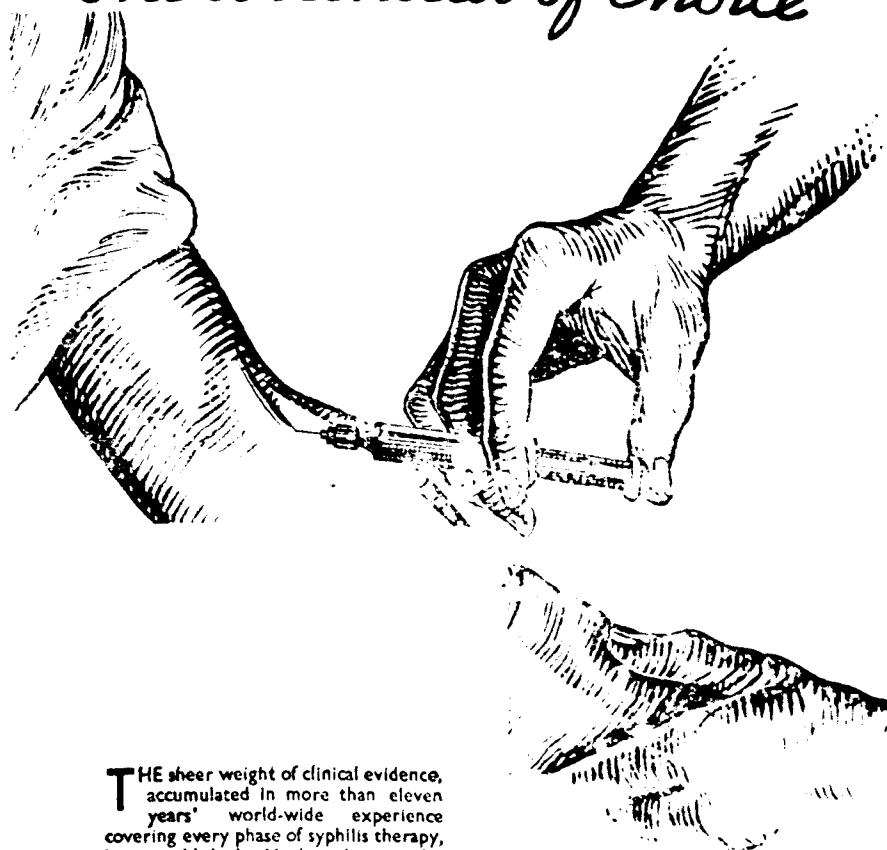
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