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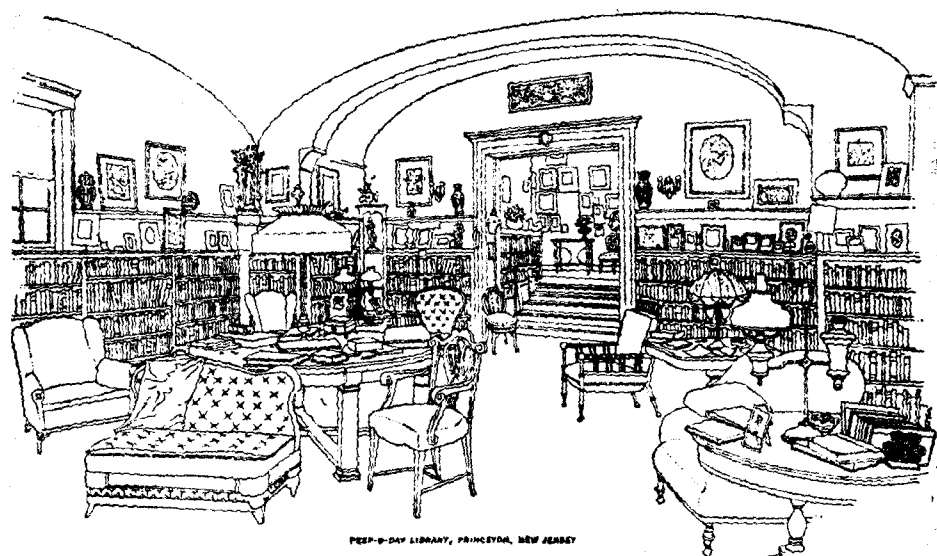
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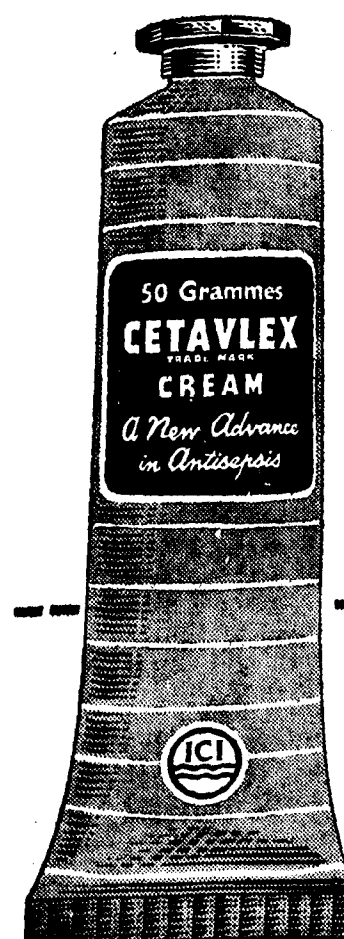
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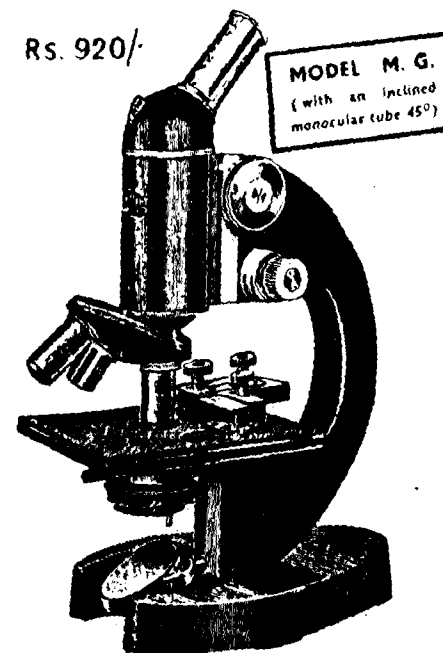
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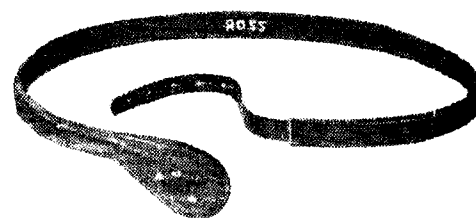
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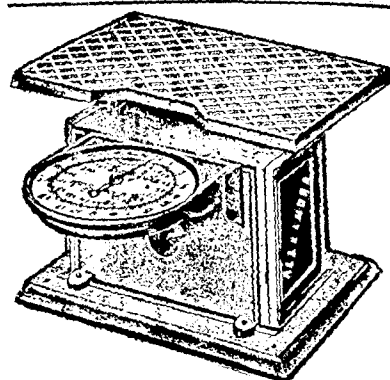
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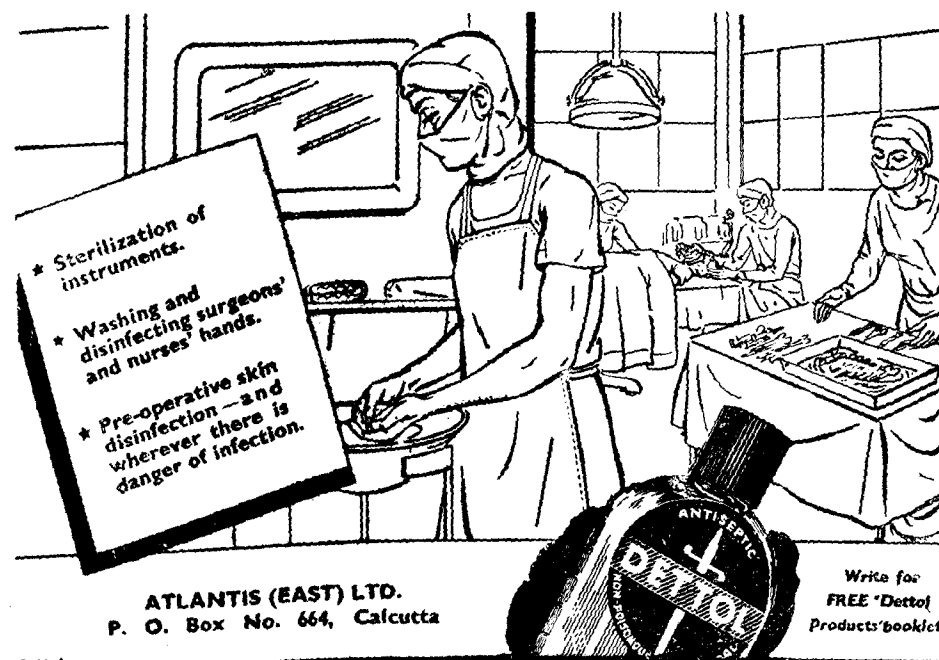


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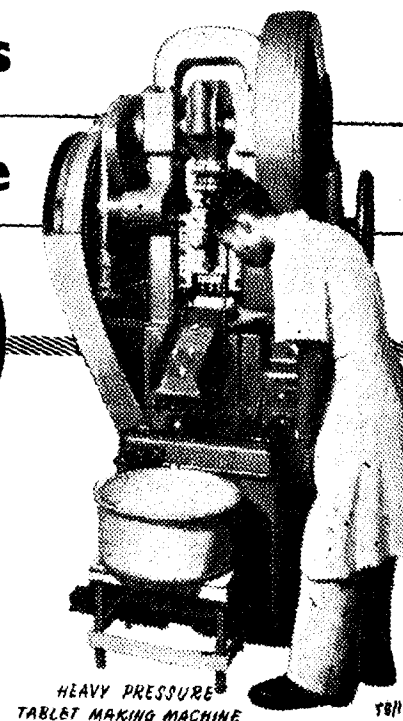
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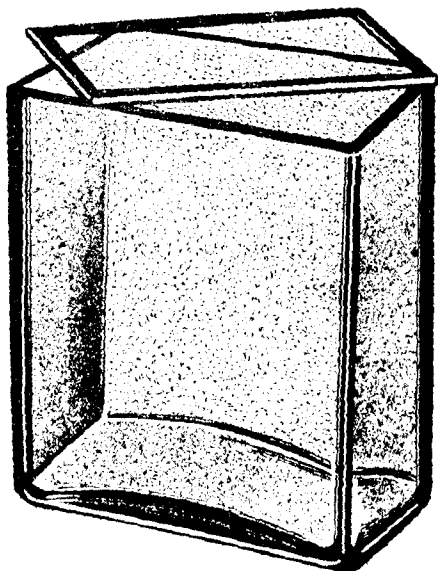
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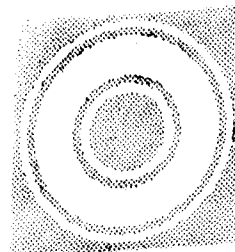
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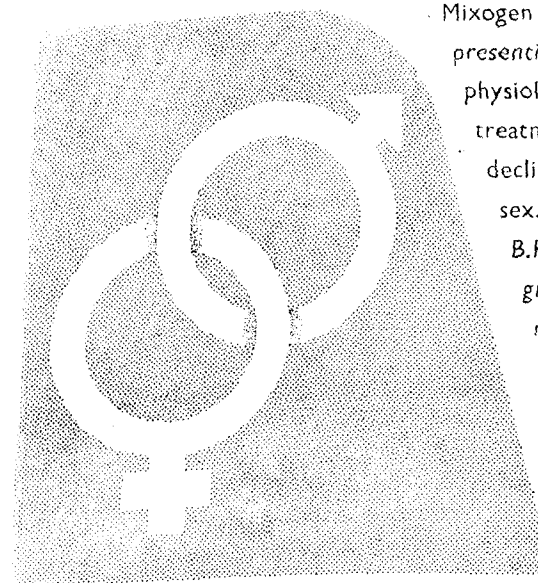
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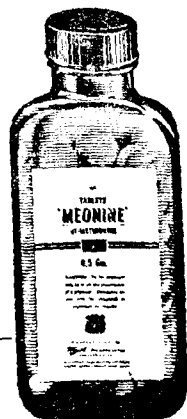
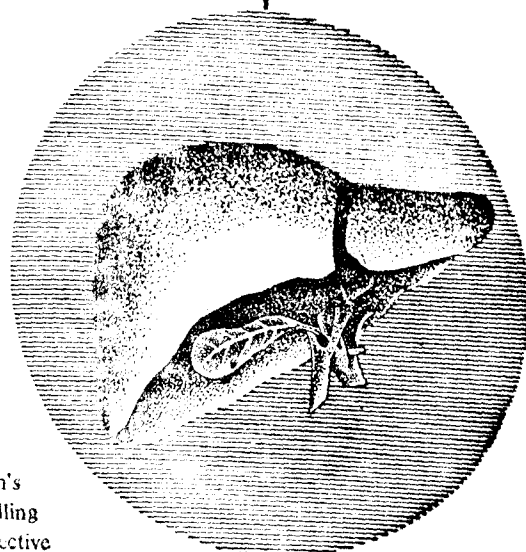
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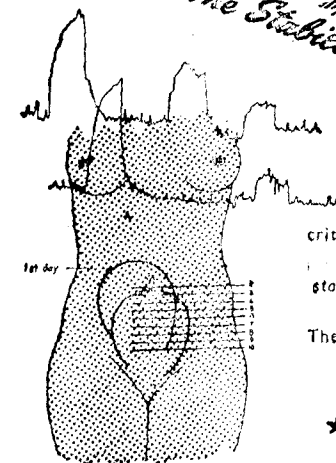
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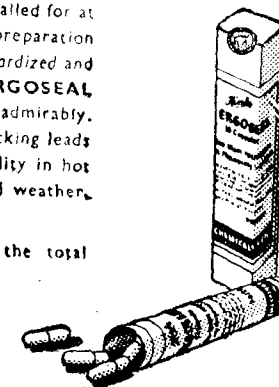
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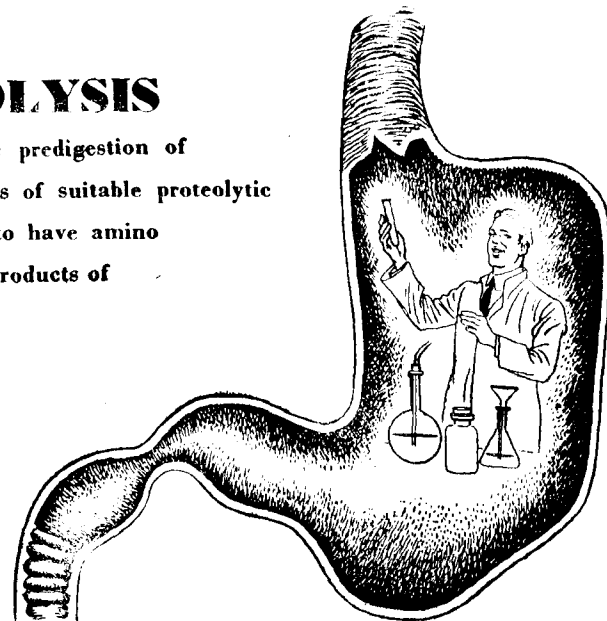
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Vitamin B ₆	1.50 "
Niacinamide	15.00 "
Calcium Pantothenate	1.50 "
Vitamin C	30.00 "
Vitamin A	5000 I.U.
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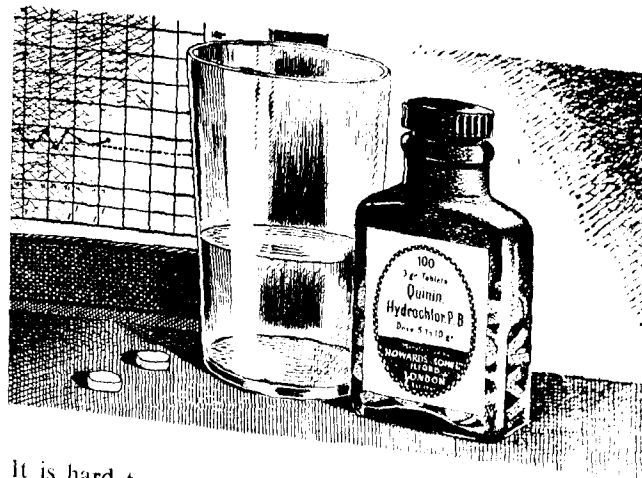
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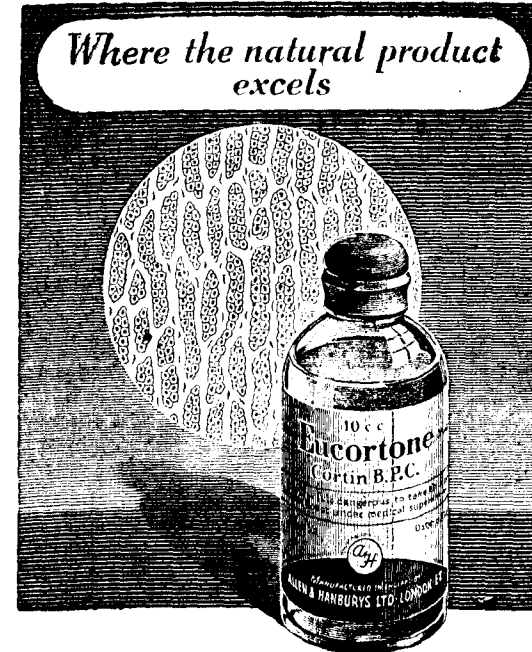


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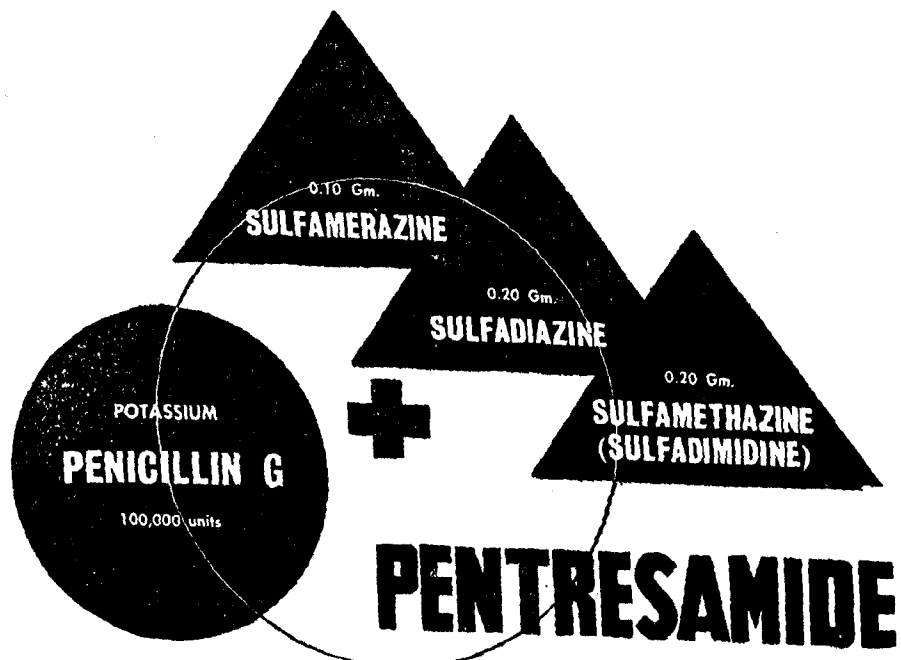
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PENTRESAMIDE contains three of the safest and most effective sulfa derivatives, reinforced with potassium penicillin G.

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WITH PENICILLIN
FOR SYNERGISTIC
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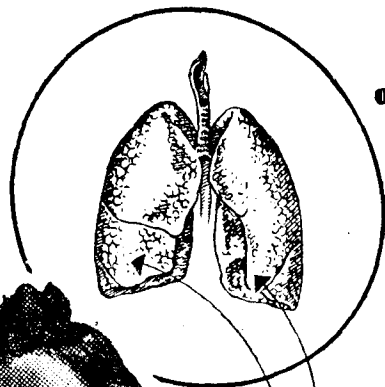




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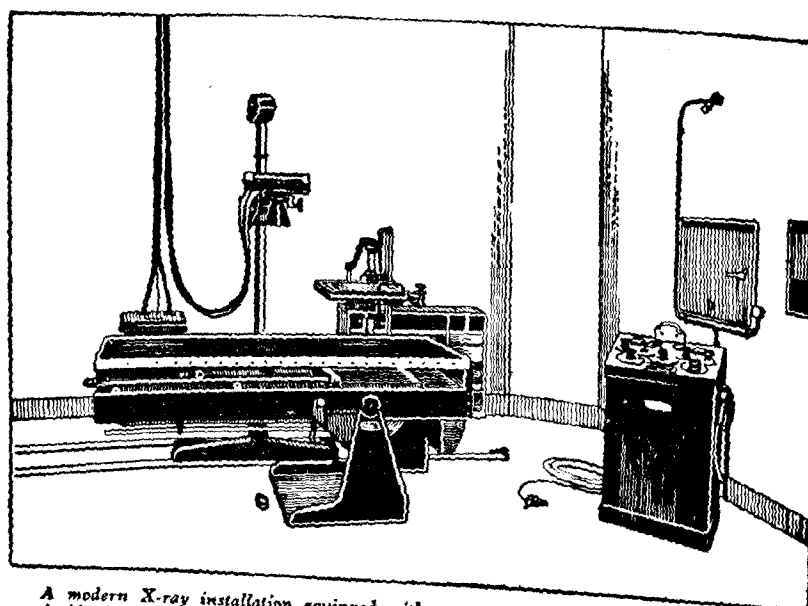


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Original Articles

THE MANAGEMENT OF DEHYDRATION IN SURGICAL CASES*

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WATER is second only to oxygen in importance, in the matter of sustaining life and it is more urgently needed than even food. In the normal individual thirst is a sensitive index in hypohydration, but is not always so in sick people. As surgical cases do not always respond to thirst and hunger stimuli, the surgeon should see that the fluid-intake is adequate and there is no dehydration. To understand the problem of dehydration one should have a clear idea about the physiological role of water in the human system.

Physiology of hydration.—Water normally accounts for 70% of the total body weight and is basically involved in all physiological processes; for all practical purposes, it exists in the "free" state in the body, though there is a negligible quantity in a "bound" state. Water reaching the gastrointestinal tract, eventually enters the blood, the intercellular spaces, and the cells. The portion remaining in the blood and in the intercellular spaces is known as extra-cellular fluid and forms 20%, whereas that remaining within the cells is termed as intracellular fluid and forms 50%. Of the 20% of extracellular fluid, 5% remains in the plasma and 15% in the intercellular or interstitial spaces.

* Specially contributed to THE ANTISEPTIC.

There are two main sources from which the body derives its supply of water:—(1) from water imbibed as such; and (2) from food. (i) Water content; and (ii) water of oxidation—resulting from oxidation of its components within the body.

The water content of food is variable. But the water of oxidation yielded by the metabolism of fat, carbohydrate and protein is constant. 1 gm. of fat yields 1 gm. of water; 1 gm. of carbohydrate yields 0.6 gm. of water; and 1 gm. of protein yields 0.4 gm. of water. 1 gm. of water at 4°C measures 1 c.c. by volume.

About 300 to 500 gms. of water are derived from an ordinary daily mixed diet as water of oxidation i.e., about 12 gms. of water per 100 calories.

Water is excreted from the system through four channels:—

	Amount excreted per day.
1. The kidneys	... 1500 c.cs.
2. The skin (at average temperature and humidity)	... 500 to 700 c.cs.
3. The lungs (expired air at average temperature and humidity)	... 350 to 500 c.cs.
4. The alimentary tract (fæces)	... 150 to 200 c.cs.
Total	... 2,500 to 2,900 c.cs.

As the daily out-put of water under normal conditions is from 2500 c.c. to 2900 c.c. the daily intake to compensate this loss should be 2,500 c.c. to 2,900 c.c. of water, or about 1 c.c. per calorie of food intake. Then again, the normal water-intake depends on the individual, the climate in which he lives and the type of food he takes.

Water-excretion has to perform two physiological functions:—

(1) Dissipation of the body heat by the vaporization of water from the skin and lungs at average temperature and humidity; about 850 to 1200 c.c. of water is required daily.

(2) Excretion of waste products from the body through the kidneys. The normal kidneys excrete 40 gms. of solid waste product out through the kidneys. Each gm. of solids require 15 gm. of water to discharge (40 x 15 = 600) of water will be required daily. Hence for 40 gms. of solid, 600 c.cs. thus depends exclusively on the amount of water available in the body. No less than 600 c.c. of water is required daily for a person with normal kidney function. Any amount less than this, is insufficient for excretion of waste material in solution through the kidneys, as evidenced by increased blood N.P.N. (normal 20 to 40 mg. %). The urinary output should always be more than the minimum i.e. more than 600 c.c. of urine and this will be increased if the body is supplied with plenty of water. A good urinary output is an index of a normal and sound water-balance. Insufficiency of water in the body is always indicated by a small quantity of urine with a high specific gravity.

Though on an average 7000 to 9000 c.cs. of fluid enters the upper part of the gastro-intestinal tract daily, only 150 to 200 c.cs. of water is excreted through the stool.

In surgical cases, the excretion of water, subserves the same two functions as in healthy individuals viz. :—

(1) The dissipation of the body heat by vaporization through the skin and lungs—an adult patient quietly convalescing after a major operation vaporizes 1000 to 1500 c.cs. of water daily. In cases of fever, thyrotoxicosis etc. there is increased production of heat and so from 1500 to 2500 c.cs. of water may be vaporized daily by dissipation, even in equable climates. It is a safe plan to estimate water loss by vaporization in major surgical cases at 2 litres per day.

(2) Washing out of the waste materials through the kidneys in the form of urine. The desirable daily output of urine in most surgical cases is 1000 c.cs. or better still 1500 c.cs.

Dehydration.—When the output exceeds the intake, or there is inadequate intake, the fluid-balance of the body is upset. The body then gets into a negative water-balance and dehydration results. This occurs when the fluid loss is equivalent to 6% of the body weight i.e., about 4000 c.cs.

Clinical feature:—Increasing thirst, sunken face, dry, hot and inelastic skin, dry shrivelled tongue, dryness of the buccal mucosa, sunken and softened eyeballs, depression of the fontanelles in infants, and features of either acidosis or alkalosis, are all diagnostic points.

Laboratory findings:—(1) Blood—there is hæmoconcentration as revealed by the high hæmoglobin content, increased R.B.C. count, increased N.P.N. content and marked plasma-protein concentration. If vomiting is present, there is low blood chloride and high carbon-dioxide combining power, indicating alkalosis. Acidosis is shown by the low carbon-dioxide combining power of blood.

(2) Urine—diminished quantity of urine with a high specific gravity.

The extent of dehydration in a surgical case, can be determined by applying the four tests, recommended by Drew, Scudder and Papps.

(1) **Hæmatocrit index:**—The normal values are for:—males varying from 42 to 50% cells; average 46% cells; and for females varying from 39 to 43% cells; average 41% cells.

(2) **Specific gravity of the blood:**—The normal values are for:—males—1.0566 and females—1.0533—; and the daily range in both cases is 0.0033.

(3) **Specific gravity of the plasma:**—The normal value is 1.0270 and the daily range is 0.0033.

(4) Plasma-protein concentration:—The normal value is 7 gm. % (varies from 5.9 to 7.9 gm. %).

Effects of dehydration:—(1) Loss of body-weight due to reduction in body-water and break-down of fat and carbohydrate first, then of protein in order to maintain normal body-water-level.

(2) Acid-base imbalance—there is a preponderance of acidity in the body. Acid metabolites *e.g.* lactic acid, are produced in the body as a result of the diminished quantity of circulating fluid and consequent depression of oxidation of the tissues.

(3) Blood N.P.N. rises due to a diminished excretion of waste products from the body *via* the kidneys. At least 600 c.c. of water will be required to dissolve 40 gms. of waste products of the body for their elimination through the kidneys.

(4) Rise in the body temperature—occurs owing to a reduction in the circulating fluid.

(5) Thirst—any fall in the fluid content of the tissues tells upon the glandular activities, especially of the salivary glands whose secretion gets reduced with the result that the mouth and throat become dry and the sensation of thirst is felt. Thirst is acute in dehydration. The mouth becomes parched.

(6) Dryness, wrinkling and looseness of the skin and a pinched appearance of the face are all due to loss of water from the deeper layers of the skin and a reduction in the subcutaneous fat.

(7) Reduced intra-ocular tension and enophthalmos.

(8) Depression of the fontanelles in infants.

Common causes of dehydration in surgical cases:—(1) Shock and hæmorrhage. (2) Pyloric obstruction. (3) High intestinal obstruction. (4) Acute gastric dilatation. (5) Post-anæsthetic vomiting. (6) Continuous gastric and intestinal suction without replacement of fluid. (7) Gastric, duodenal, biliary, pancreatic and intestinal fistulæ. (8) Diarrhœa in severe types of acute appendicitis. (9) Burns. (10) Peritonitis. (11) Paralytic ileus. (12) Prolonged operation.

Management of dehydration.—To combat a case of dehydration, 6% of the body weight as fluid is required over and above the normal requirement of 3000 to 3500 c.cs. daily, because in dehydration, there is loss of body-fluid equivalent to 6% of the body weight. Collier and Maddock have drawn up the following chart showing the amounts of fluid equivalent to 6% of different body weights.

Body weight	6 %.
22 lbs.	600 c.cs.
44 lbs.	1200 c.cs.
132 lbs.	3600 c.cs.
176 lbs.	4800 c.cs.

Thus, for every 22 lbs. of body-weight, 600 c.cs. of fluid is required to combat dehydration. The aim of treatment should therefore, be:—

(1) Prevention of dehydration by timely anticipation of the water-balance of the body.

(2) Combating of dehydration at the earliest possible opportunity.

Preventive treatment:—(1) The fluid and food intakes on the day previous to operation should not be curtailed.

(2) In the case of major operations, it is always a good plan to give some fluid parenterally on the day of operation, as the lowered intake of fluid and food by mouth on that day decreases the supply of water to the body. Moreover there may be abnormal fluid loss such as blood loss, vomitus, increased perspiration in a stuffy hot and humid atmosphere and also due to some anæsthetics. Collier and Maddock estimated water loss during the operation and the first 4 hours thereafter, to be about a litre on an average. In tropical countries, another 400 to 500 c.cs. must be added to this figure. Some are of the opinion that during the post-operative period a slightly dehydrated state is required in order to prevent œdema of the brain. As infants and children require much more water than do adults, special attention must be paid during the operation and during the post-operative period. For a few post-operative days, there is often a lag in the urinary output, in spite of a liberal administration of fluids. The fluid in this case may be given rectally or subcutaneously or if these routes are contraindicated, intravenously.

(3) In febrile states *e.g.* septicæmia, osteomyelitis etc. add some fluid over and above the normal requirements for dissipation of body heat by vaporization from the skin and lungs. Liberal drinks will ensure adequate intake in these cases.

Curative treatment:—A case of established dehydration must be tackled in its earliest stage. Otherwise it will be very difficult to break the vicious cycle once established in advanced cases. Early diagnosis of dehydration is therefore, necessary.

A fluid balance sheet should be maintained for every 24 hours in order to estimate the amount of fluid required (*Chart-1* after Crile).

At the end of 24 hours the chart will read:—

Intake	3,000 c.cs.
Output	4,000 c.cs.

It can also be graphically recorded on a temperature chart in ward cases (*Chart-2*). In the particular case (*Chart-1*) 1000 c.cs. of fluid over and above the patient's normal need is required to make good the loss.

rule to make good the existing deficit, ($1.5 \times 0.5 \times 60$) 45 gms. of sodium chloride will be required. Since 1 litre of normal saline solution contains approximately 9 gms. of sodium chloride, 5 litres of this solution will be needed for replacement. Five litres will be 8% of the body weight (60 kg.).

We know that 6% of the body weight in fluid is required to combat dehydration. But in the case cited above, it requires 8% (i.e., 2% more) of the body weight in saline solution. Although the amount of fluid replacement is greater in this case, Collier *et al* believe that their clinical rule based on plasma chloride estimation is a better guide for the correct calculation of fluid and salt replacements. There are, however, some cases which do not tolerate even a small quantity of salt in the immediate post-operative and post-anæsthetic periods. Then again, there is no fixed relationship between plasma chloride on one hand and plasma sodium-ion and extra-cellular fluid volume on the other. *Volume for volume replacement* is the best clinical guide for replacement of lost electrolytes so as to bring it up to the normal.

In cases of shock, burns, intestinal obstruction and peritonitis large amounts of protein and sodium chloride are lost and hence transfusion of plasma or whole blood *plus* normal saline solution will be required.

Severe anæmia and malnutrition complicating surgical cases demand intravenous administration of blood, plasma or amino-acids. In cases of hæmorrhage from external trauma, severe hæmatemesis and melæna, whole blood transfusion is the ideal procedure.

Conclusion.—1. The water-balance of the body depends on fluid and food intakes, climate, activity and age of the individual on the one hand and the eliminating power of the excretory organs (e.g., kidneys, skin, lungs and alimentary tract) on the other.

2. A good urinary output is an index of a good water-balance.

3. A proper assessment of the state of dehydration both clinically and by laboratory findings must be done in every surgical case at the earliest possible opportunity, before active treatment is instituted.

4. An intake-output chart for every 24 hours should be maintained in all cases of dehydration.

5. An outline of the treatment of dehydration in surgical cases is given.

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OBSERVATIONS ON SOME ASPECTS OF JOINT TUBERCULOSIS*

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BONE and joint tuberculosis is fast disappearing from the highly civilised countries but in India it is on the increase. In 32 months at the Orthopaedic Clinic at the V. J. Hospital, Amritsar, 363 fresh cases of bone and joint tuberculosis attended the clinic which formed 9% of the attending cases—not a small proportion.

There are two types of tubercle-bacilli (human and bovine) that produce osteoarticular tuberculosis. Which of the two, causes a particular disease is important from the social and preventive aspects, though the history of the disease-process is identical in both types. Enough work has not been done in our country to be able to assess definitely which type is the more common. It is believed, however, that the human type is the commoner, the reason being that as boiled milk alone is being used by our people in India, bovine tuberculosis cannot make headway amongst the people.

Age incidence:—The disease occurs usually in children and adolescents to a large extent, though adulthood is not immune. The incidence, however, falls above 40 years (*Table I*). Trauma, lack of immunity and habits of eating and possibly open cases are causal factors in the early-age-incidence. Trauma, however, is not sufficient to produce fractures.

Sex incidence:—The disease is more frequent in males than in females but the preponderance is not marked. (58.70% as against 41.30% in this series) *Table II*.

There is a marked difference in the incidence between the weight-bearing and the non-weight-bearing joints. 79.05% occurred in the spine and lower extremities in this series. Sprains and strains are certainly very important factors in the causation of the disease (*Table III*).

Social factors:—The disease is gradually spreading into the rural areas where it will be noted (*Table IV*) 20.40% of the cases in this series have occurred; family history of pulmonary tuberculosis or a history of contact with an open case was not available in the large majority of these cases. Perhaps people do not wish to disclose such a history. The poorer classes suffer much more from surgical tuberculosis than the well-to-do.

Associated other lesions:—It cannot be doubted that bone and joint tuberculosis is secondary to some other deeper focus. But evidence of active lesions elsewhere was available in only 5.5% of

* Specially contributed to THE ANTISEPTIC.

cases. My own belief is that the lesion in the majority of cases is in the tracheo-bronchial glands, where it cannot be diagnosed so easily and is over-shadowed by the manifestation of bone and joint lesions. As much as 34.93% of this series had abscesses and sinuses, which fact goes to show how often the disease is neglected in the early stages (*Table V*). Associated lung lesions were not common in my series, though others have reported quite a large number.

TABLE I

Age	Upper extremity	Lower extremity	Spine
Up to 10 years	17		
From 10 to 20 years	26	48	35
From 20 to 40 years	29	53	51
Above 40 years	4	37	40
Total	76	142	145

TABLE II

Sex	No.	Percentage
Males	213	58.70%
Females	150	41.30%

TABLE III

Site	No.	Percentage
Upper extremity	76	20.95%
Lower extremity	142	39.10%
Spine	145	39.95%

TABLE No. IV

	No.	Percentage
Urban	289	79.60%
Rural	74	20.40%

TABLE No. V

Complications	No.	Percentage
Lesions elsewhere	20	5.50%
Abscesses	43	11.83%
Sinuses	84	23.10%
Dislocation	7	1.92%

Pathology:—The usual pathology is that of a granuloma, which, if untreated, goes on to suppuration, sinus formation and pathological dislocation. One thing which needs emphasis is that the healing process is slow and seldom takes less than 18 months. This is not often, however, realised by the general practitioners. How often does one see plasters applied for a month or two followed by a little abatement of symptom and the plaster is at once removed only to be followed promptly by a reappearance of symptoms; the plaster is again put on for some weeks again, then removed and then again applied and so on. This is due entirely to a lack of proper appreciation of the natural history of the disease.

DIAGNOSIS:—Tuberculosis is a slow, and insidious process: pain, spasm, swelling, and deformity resulting in that order. Feeling out of sorts, slight awkwardness in gait and movement, a feeling of tiredness, apathy and lack of concentration are the earliest symptoms which should arouse suspicion and compel a prompt and thorough investigation of cases. When delayed, the diagnosis is easy but the treatment becomes tedious, prolonged and difficult.

A suspected case of tuberculous synovitis of one of the large joints should be investigated further to find out the actual cause. Aspiration of the fluid and its culture is quite an innocent procedure but often no fluid is available in the joint. Scratching the hypertrophied and tuberculous synovial membrane with a needle may stir up the infectious process further.

Biopsy of the hot joint is not desirable as it is apt to leave sinuses and favour the spread of the disease. But the biopsy of the regional glands, is quite a reliable procedure. It has cleared up many a diagnosis in our hands, especially biopsy of the inguinal gland in suspected knee joint, ankle joint and foot-bone affections. In a suspected tuberculous joint, an X-ray picture of the chest should be taken and the Mantoux test performed. A positive test is of no value but a negative test excludes tuberculosis in a child.

TREATMENT:—Emphasis is again laid on the natural history of the disease. The disease takes atleast 18 months to burn itself out. It is to be emphasised that bacilli will still remain viable but entombed in the thick fibrous tissue; hence all movements of the affected joint, constitute a potential danger as they may cause a reactivation of the disease.

DRUGS:—Chemotherapy is not quite as successful in joint-tuberculosis as in exudative pulmonary lesions. The disease is often secondary to bone-lesions and the granuloma is avascular; hence an adequate concentration of the drug to kill the tubercle bacilli is not possible in the granulomatous lesion of the bone. Streptomycin is a drug which is much abused in treating bone and joint tuberculosis. It is, however, indicated only when there is (1) an acutely spreading lesion accompanied by high fever; (2) when there are sinuses; and (3) when there are multiple lesions. Intramuscular injections of 0.5 g. twice a day should be given for six weeks. 2 gms. PAS 4 times a day orally is usefully combined in order to prevent the appearance of streptomycin-resistant strains of tubercle bacilli. Streptomycin by itself is of little or no value for effecting a cure.

Body-resistance:—We have no measure of knowing the amount of resistance against tuberculosis and no specific method of raising the resistance of the body against it. We know a healthy body is the best guarantee against any invasion and hence we use all measures to improve the health of the individual.

Fresh air:—Really means invigoration; moving air which is at 70°–80°F. temperature and at 60% humidity. Of course it should be free from organic smells and emanations from unhygienic homes and surroundings. The best place where such fresh air can be had is on the hills; but much can be done even in the plains by providing “Khas” purdahs and fans in summer. During winter, conditions are quite good. The patient should be placed in the most airy part of the house, when the treatment is carried out at home.

Sunshine:—Sunshine improves the circulation of the skin when applied to the naked surface of the body. It also helps to manufacture vitamin D in the skin and helps the calcium metabolism of the body. The rays of the morning sun have a rich ultra-violet spectrum. Direct exposure to the sun should however be avoided during the febrile stage, as the metabolism is already very high during fevers. Where sunshine is not available, ultra-violet lamps may be used instead. From whatever source the sunshine is provided, it should be graduated and should not be given at all if there is fever or associated lung tuberculosis.

Good food:—A balanced diet, rich in vitamins and minerals is necessary. Over-feeding is not desirable. Cod-liver oil is fattening and may not be given to a patient who can otherwise afford to take a balanced diet. But to poor patients, the oil provides animal fat and is a good source of vitamins A and D.

Rest:—In the febrile stage perfect and complete rest to the entire body is essential. It minimises the absorption of tuberculus from the tuberculous focus and so helps to stabilise the metabolism of the body. Local rest to the affected joint is most essential for the healing of the tuberculous lesion. Local rest is best given by appropriate splints or plaster cast but it must be remembered that the joints are immobilised in their best functional position, because ankylosis of the joint is not only apt to occur but is often the desired goal. The best functioning positions for the various major joints are:—(1) Spine—extension. (2) Hips—flexion 10°, abduction 10° and neutral rotation. (3) Knees—flexion 5°. (4) Ankle and foot at 90° dorsiflexion. (5) Shoulder—80° abduction, 20° forward flexion and 30° external rotation. (6) Elbow—90° flexion, forearm semi-pronated. (7) Wrist—30° dorsiflexed.

Operative rest:—The history of the disease is such that bony ankylosis is not liable to occur and fibrous ankylosis is liable to flare up with any undue or excessive strain, hence bony ankylosis by surgical means is often desirable. This operation is called arthrodesis. Arthrodesis, however, is the final operation and should be done, when the disease is quiescent for all practical purposes, the general condition of the patient is good and fibrous ankylosis has already occurred. Fibrous ankylosis should be considered on its own merits. If the patient is of sedentary habits, that alone might

suffice, but the manual labourer will almost always require an arthrodesis. In children sometimes the disease may cure itself with a full return of normal functions. A few such cases have been reported in which the knees were involved.

Occasionally excision of the joint may have to be done, especially in the elbow when movement of the joint is desired.

Treatment of cold abscesses and sinuses:—Primarily the treatment of the abscess is the treatment of the source i.e. the bone or joint involved. But along with the treatment of the involved bone or joint, the abscess should be aspirated and 1 gm. streptomycin dissolved in 5 c.c. of distilled water and one ampoule of PAS 25% should be injected into the abscess cavity. The process should be repeated as often as pus accumulates. If the pus is very thick, opening the abscess cavity under strict aseptic precautions by making a small incision, evacuating the pus, closing the incision and instilling the above mixture, give good results.

Sinuses frequently heal under parenteral administration of 0.5 gm. streptomycin twice a day for 20 to 30 days, along with 2 gm. PAS 4 times a day. If sinuses persist, streptomycin and PAS can be injected into the walls of the sinuses in the same doses as for cold abscesses and repeated every fourth day.

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Intravenous use of Quinidine, in Ventricular Tachycardia

Clagett found the intravenous use of Quinidine lactate—a soluble, and pharmacologically effective salt—to be very safe and life-saving in patients who develop ventricular tachycardia and are in a critical condition. 10 c.c. of a solution containing 0.65 gm. Quinidine lactate should be added to 50 c.c. of a five per cent glucose solution and the mixture allowed to enter a vein at a rate not exceeding 2 c.c. per minute. Under constant observation its administration can be discontinued as soon as regular rhythm is reestablished or any toxic symptoms are noticed.—(Am. Jour. Med. Sci., 220, pp. 381–88).

LEUCORRHOEA IN GENERAL PRACTICE*

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LEUCORRHOEA is a symptom-complex and not a disease by itself. It is of considerable importance in gynaecological practice. It is extremely common and more than half of my gynaecological patients have either complained of leucorrhœa or some other main complaint associated with leucorrhœa. I, therefore, think that it is a source of greater annoyance and trouble both to the practitioner and the patient than any other single gynaecological ailment. I have known cases where the leucorrhœa was keeping on for years in spite of expert medical consultations and treatment. Though some do not mind it at all, in many others it has often led to anxiety neurosis and an inferiority complex. This psychological aspect deserves to be emphasised.

I have known women suffering from leucorrhœa who were childless, and who became introspective and blamed themselves for their sterility. Occasionally, a woman with leucorrhœa, may consider it to be a manifestation of cancer and go about spending money for expert consultations and advice probably without much benefit.

We know that, in the newborn, the vagina is lined with the transitional epithelium and the horny cells of the superficial layer are scanty until puberty, when the lining epithelium becomes squamous in type. These horny cells contain glycogen. The sub-epithelial layer contains blood vessels and elastic tissue. There are no glands. Continual desquamation of the horny cells and subsequent decomposition of their glycogen, by the gram positive Döderlein's bacilli which normally occur in the vagina constitute the main sources of lactic acid, which is partly also derived from the decomposition of cervical mucus (a glycoprotein with a carbohydrate radical). The vaginal secretion being therefore, acid in reaction offers resistance to the invading extraneous micro-organisms. In healthy adult women, the vaginal secretion, consists mainly of a transudate from the vaginal squamous epithelium plus some little mucus from the endocervix, and resembles the white of an egg. (Vaginal secretion = squamous cells + Döderlein's bacilli + cervical mucus + acid reaction).

Excessive vaginal transudate, constitutes true leucorrhœa. Döderlein's bacilli are absent, the acidity is reduced or is nil, and the way is open for secondary infection to travel upwards from the vulva.

Causal factors.—The more important among the several causes of leucorrhœa classified and listed in textbooks are:—

* Specially contributed to THE ANTISEPTIC.

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(1) those which cause increased permeability of the vaginal epithelium; and (2) increased vascularity of the subepithelial layer by active or passive congestion. There is usually no initial vaginal infection.

1. *Permeability of the vaginal epithelium* may be increased in various conditions: (a) nutritional deficiency *e.g.*, in anæmias, hypoproteinaemia, malignant cachexias etc.; (b) a low grade vaginal infection. This occurs in women with dirty personal habits (infection spreading upwards from the vulva), neglected pessaries causing vaginal or cervical ulcerations, or foreign bodies in vagina, tumours, etc. There are two common conditions of specific infections *viz.*, a parasitic infection with trichomonas vaginalis and senile vaginitis; and (c) ovarian deficiency, when probably the vaginal epithelium is altered in some way causing an increased transudate *e.g.*, in amenorrhœa, oligomenorrhœa, artificial menopause, climacteric etc.

2. *Increased vascularity*:—Leucorrhœa is of quite common occurrence: (a) in some physiological conditions like puberty, premenstrual period and pregnancy, when the vascularity of the female genitals is increased; (b) chronic retroversion of the uterus and severe chronic constipation are also common causes of leucorrhœa, which I think is really due to the passive congestion induced in these conditions. Correction of these conditions usually cures or greatly reduces the leucorrhœal discharge; and (c) leucorrhœa is not uncommon in cases of congestive cardiac-failure of any ætiology.

Clinical features.—Regarding the clinical features, the main and probably the only complaint is increased vaginal discharge. The patient may be annoyed and worried by it or she may simply complain of whitish or yellowish white stains on the pads and underwears. It is common during the childbearing period, *i.e.*, 20 to 40 years of age. I have failed to connect it definitely with parity, though multiparous women are likely to suffer from it owing to frequent tears and to the laxity of vaginal musculature. When the discharge is scanty it is usually thick, sticky and odourless. When profuse, the discharge is more fluid, and often causes local dermatitis and pruritus. It may be definitely or only slightly yellowish in infected cases and also foul smelling in infections with *B. proteus*, or when foreign bodies and pessaries are present, also in carcinoma and sloughing ulcers and in urinary or faecal fistula. In trichomonas vaginitis the discharge is usually profuse, thin, whitish yellow, frothy and acidic.

Among other secondary complaints that a leucorrhœal patient has to file before us, the most common are headache, backache, weakness of the limbs especially the lower ones, with or without tingling or numbness. As mentioned earlier, some women appear unduly alarmed and manifest anxiety neurosis, some become introspective and suffer from an inferiority complex.

Another important aspect, I would stress here is a belief among the less educated women that this discharge is a loss of 'Dhat' which is a moral stigma. Some others think that their body vitality is being 'washed out' in this way and it requires a great deal of tact and persistence to reassure these women.

DIAGNOSIS:—Diagnosis of the condition requires a proper history-taking, an examination of the discharge, P. V., P. S., and P. R. examinations, the last of which should not be omitted. Gonorrhoea requires to be differentiated from this condition, but the history, nature of discharge and the microscopic examination will settle the diagnosis. Increased endocervical discharge, is not a true leucorrhoea and as such must be differentiated from leucorrhoea. It occurs in endocervicitis and erosion, tears, ectropion etc., of the vaginal cervix. This discharge is usually thick, not profuse, yellowish white, sticky and on speculum examination it appears to come from the endocervix. In true leucorrhoea, the vaginal walls are often generally reddened or in patches due to secondary infection occurring later on.

TREATMENT:—*Local:*—In cases of cervical discharge, purulent or muco-purulent discharge and trichomona vaginalis infection, I prefer to give a vaginal douche with warm sodium bicarbonate lotion (a drachm to a pint of water) daily or an alternate days and advise the introduction of penicillin lozenges (2,000 u.) one or two at a time and colposuephana tablets two at bedtime fairly deep into the vagina daily for 10 or 12 days. In cases of trichomonas vaginitis I advise S.V.C. tablets vaginalis, two at bed time for 10 or 12 days.

In true leucorrhoea cases, where Doderlein's bacilli are absent and the discharge is not acid, lactic acid douches (a drachm to a pint of water) are advised on alternate days for 15 to 20 days. A simple alum douche is required in senile vaginitis. Parenteral antibiotics are useful only when there is evidence of some specific infection. Treatment of the underlying condition is indicated in all cases e.g., hæmatinics for anaemia, oral protein substitutes in hypoproteinaemia, suitable hormonal preparations for ovarian deficiencies, correction of constipation by changing personal habits, adjusting proper diet and using laxatives and correction of retroversion (of uterus) with pessaries or ventrisuspension etc.

One particular preparation was found by me to be very specific:—Myron tablets containing myrrh (bol), guggal, iron and *abhrak* (mica). Myrrh is commonly used by our women during the after puerperium. Probably bol and guggal help proper involution and give tone to the genitalia. They are carminative, stomachic and urinary antiseptics and have emmanagogue properties also. Iron is an age old hæmatinic. *Abhrak* is an alterative, stomachic, urinary antiseptic and stimulant expectorant. This combination of well-known ayurvedic remedies gives an excellent and useful preparation

in the treatment of leucorrhoea in general. I prescribe 4 to 6 tablets daily for a month and then reduce it to three tablets daily for another 4 to 6 weeks; I found them quite satisfactory in the majority of my cases.

1. Summary.—The importance of leucorrhoea in general practice is stressed. Leucorrhoea is of very common occurrence and may have serious psychological repercussions on those suffering from it. Therefore, individual cases call for a suitable psychological approach.

2. True leucorrhoea is an excessive vaginal transudate.

3. Increased permeability of the vaginal epithelium and increased vascularity of the vaginal subepithelial layer are two of the more important causes of leucorrhoea.

4. Correct diagnosis of the origin and cause of the discharge and its associated conditions is essential to achieve satisfactory results in treatment.

5. Besides other measures of treatment the administration of Myron tablets, an Ayurvedic preparation gave good results in my cases.

Insulin Therapy of Chorea Minor

While investigating the use of insulin in disorders other than diabetes, Mayerhofer studied muscular disorders, because muscle sugar in the form of glycogen is an important source of energy for the skeletal musculature. Two or three daily injections of from 3 to 7 units of insulin (while a lump of sugar was taken by mouth) together with a diet rich in carbohydrates acted favourably on the muscular unrest in the early phase of chorea. This calming effect appears so quickly, (within a few days) that the author believes that it is not so much the result of local formation and storage of muscular glycogen but that it is rather brought about by a central, probably endocrine improvement in neurological regulation, which facilitates better coordination of muscular movements. It is also possible that both factors are at work acting synergistically. Although the efficacy of insulin treatment in chorea minor cannot yet be fully explained on the basis of the successful results obtained in 21 cases, the author recommends the practical application of the new therapy. It is at least as effective as the older therapeutic methods and in many cases, it seems to be the best method. The insulin therapy in chorea is also of a certain theoretical interest. The author discusses muscular and particularly endocrine factors that might play a part in the aetiology of chorea.—(*Ann. Paed.*, Basel, 176: 297-308, 1951, *Eng. Abst.*: *J.A.M.A.*, 146: 16, 1951).

MYELITIS FOLLOWING ARSENIC THERAPY IN PULMONARY EOSINOPHILIA *

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ARSENIC is a useful drug and often gives spectacular results in the treatment of pulmonary eosinophilia. During the past decade we have treated a large number of such cases with Acetylarsan; 6 to 12 injections (3 c.c. each) were given in each case intramuscularly twice a week and the results were very satisfactory in most of the cases. Each case was carefully examined before the injections were started and an examination was made of the urine, in order to exclude any possibility of contra-indication to arsenic therapy. Three of our cases developed symptoms of spinal cord involvement, which are therefore, considered worth recording.

CASE I (1945):—A male adult about 35 years old consulted me for recurrent attacks of cough and cold, and bronchial asthma of about two years' duration.

On examination:—Build and nutrition—average; spleen enlarged, about 3 fingers below the costal margin (due to occasional attacks of malaria). Lungs: expiration slightly prolonged with a few scattered rales and rhonchi. No other abnormality was detected. His blood revealed 12,400 W.B.C. per c.mm. with 62% eosinophils.

He was advised to take six injections of acetylarsan 3 c.c. each bi-weekly. After the 3rd injection, he complained of pain in the legs with a certain amount of stiffness and difficulty of walking. He walked with difficulty; spasticity of lower limbs present; knee and ankle-jerks exaggerated; plantar response—extensor; sphincter disturbance—slight difficulty in passing urine; and sensory disturbances nil, except pain in the legs. Blood and C.S.F. were found negative for W.R.

Acetylarsan was stopped, and B.A.L. was given four hourly at first and later on twice a day for 14 days. Vitamin B complex orally and vitamin B₁ parenterally were given in large enough doses. The patient progressed slowly and after about two months became perfectly normal.

CASE II (1947):—A young male, aged about 25 was brought to me with a complaint of paraplegia.

On examination:—Build and nutrition—average; spasticity of both lower limbs; knee and ankle-jerks markedly exaggerated; plantar reflex—extensor; patient unable to walk or even to stand.

* Specially contributed to THE ANTISEPTIC.

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He complained of tingling and numbness in the lower extremities, but there were no objective sensory disturbances. He was not aware of the passage of urine and had incontinence.

History of the illness:—The patient had recurrent attacks of bronchial asthma for which he consulted a local practitioner, who diagnosed the case to be one of pulmonary eosinophilia (Eosinophils in the blood being 78%). After taking 3 injections of acetylarsan (3 c.c.), he noticed heaviness in the legs one morning after rising from sleep. He complained of this to his doctor, who did not seem to have taken any notice of it but continued to give the injections. After the 5th injection, the patient was totally unable to walk and was brought to me for advice.

TREATMENT:—The injections were stopped. B.A.L. was given 4 hourly at first and then twice a day for 14 days. Blood and C.S.F. were found negative for W.R. The patient gradually went downhill and later on developed multiple bed sores, cystitis and terminal bronchopneumonia, and in spite of heavy doses of penicillin, ultimately succumbed after about a month and a half. About a fortnight before death, the spastic limbs were absolutely flaccid with loss of deep jerks.

CASE III (1950):—A male aged 25 was admitted in my ward in the Medical College Hospitals at Calcutta on 16-12-'50 for paraplegia. About 4 months prior to admission, he got himself admitted in a military hospital for pain in the chest, cough and fever. Investigations were made including blood examination and X-ray of the chest, and it was diagnosed to be a case of pulmonary eosinophilia. Acetylarsan 3 c.c. was given I.M. twice a week, and after the 3rd injection, he was discharged from the hospital and advised to take 9 more injections at home. After the 11th injection, on rising from sleep one morning he found that his legs were heavy and he experienced a tingling sensation in both the legs. A few days later, there was loss of strength in both the lower limbs and he could walk only with great difficulty. He could not feel any sensation over the soles of both feet during walking. Tingling and numbness extended upwards from the lower limbs to the abdomen. Then he found that he was unable to pass urine, the bladder becoming distended and painful. He was admitted into the hospital with retention of urine.

On examination:—Build and nutrition—average. P/R—90/20 per min., Temp.—98.4°F. Patient was unable to walk. Marked paresis of both the lower limbs which were slightly rigid. Coordination normal. No abnormal movements. Knee and ankle-jerks—exaggerated. Clonus absent. Plantar response—equivocal at times flexor, at times extensor. Supinator, biceps, triceps and jaw jerks present. Cremasteric and abdominal reflex—present.

Patchy loss of pain and touch sensations over the lower limbs. Cranial nerves—normal. Bladder—retention of urine.

Blood:—R.B.C. : 4.4 millions per c.mm. Hb. : 85%. W.B.C. : 8,800 per c.mm ; Polymorphs 56% ; Lymphocytes 14% ; Monocytes 4% ; Eosinophils 26% ; Urine and stool—no abnormality detected. W.R. of blood and C.S.F.—negative. X-ray of the chest—slight catarrhal condition of both lungs.

TREATMENT:—Patient was given a course of penicillin injections 100,000 units I.M. at intervals of 3 hours, for 1 week and then at 6 hourly intervals for 54 days ; one ampoule B.A.L. 4 hourly for 4 days ; later on twice a day for 7 days. Streptomycin $\frac{1}{2}$ gm. I.M. at intervals of 8 hours for 5 days, then twice daily for 16 days. Catheterisation of bladder at 8 hourly intervals. Vitamin B₁ 200 mg. I.M. daily for 1 month.

In spite of all this treatment, there was no improvement. After about a fortnight the patient developed cystitis and had a temperature varying from 99°F. to 102° to 103°F. After about three weeks, the rigid limbs became flaccid with the disappearance of knee and ankle jerks. Fever continued all the time, the patient later developed bronchopneumonia and died on 4.3.51.

Summary.—Three cases of pulmonary eosinophilia are reported where acetylarsan had a toxic effect on the spinal cord ; one survived and the other two died in spite of the best possible treatment. As no post-mortem examination was possible in the two fatal cases the exact nature of pathological lesions could not be determined. During the course of arsenic therapy we have come across many toxic manifestations e.g. nitritoid reactions, various skin affections including exfoliative dermatitis, jaundice etc., and a few cases of encephalopathy. But I have not come across any other case of spinal cord involvement excepting these three cases of myelitis, heimer reaction does not arise in these cases. The question of Herx-any history of exposure, and blood and C.S.F. were negative to W.R. in all the three cases. The interesting feature is that all the three were cases of pulmonary eosinophilia. May we assume that pulmonary eosinophilia makes the spinal cord more vulnerable to the toxic action of arsenic ? In view of the modern view that pulmonary eosinophilia may perhaps be due to a virus infection, can it be presumed that arsenic in some way gives the virus a greater chance to play havoc on the spinal cord ?

It is therefore considered very important that greater caution should be observed in the treatment of pulmonary eosinophilia by arsenic and that a careful watch should be kept over the patient for detecting the earliest manifestations of spinal cord involvement, when arsenic should be promptly stopped.

VITAMIN DEFICIENCY DISEASES*

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MALNUTRITION is the main picture amongst the under-privileged children appearing in the hospitals and only the advanced cases with serious intercurrent diseases like pneumonia, typhoid or diarrhoea, are admitted owing to the limitations in accommodation.

Sixteen children were admitted into the Government Royapettah Hospital, Madras, under my care during a period of 27 months with markedly advanced nutritional disorders as detailed below:—Canerum oris 1; Nutritional oedema 7; Malnutrition (mixed) 3; Vitamin B deficiency 1; Pellagra 1; Beri-beri 1; Scurvy 1; Rickets with element of scurvy 1.

Out of 506 school boys (10 to 20 years old) examined in Madras City, fiftyfour, or 10% had vitamin A deficiency (marked conjunctival xerosis and a boy had hemeralopia; 3 had dermal xerosis, 2 had keratosis pilaris and 8 had angular stomatitis, 1½%. (Vide article "Panoramic View of Paediatric Practice".

Conditioned deficiencies:—

Vitamins.	Clinical entities.
1. Vitamin A.	Protracted fevers, exemplified in typhoid fever.
2. Vitamin D.	Bronchopneumonia complicating rickets. Conditions of diarrhoea and liver disease.
3. Vitamin B ₁ .	Heart failure. Post-diphtheritic paralysis. Acute toxic polyneuritis. Diseases of the liver. Gastro-enteritis and febrile conditions.
4. Vitamin C.	Rheumatic fever, fevers and toxic conditions, early hepatic disease and dysfunction.
5. Nicotinic acid.	Typhoid fever and conditions with gastroenteritis and hepatic disease.
6. Folic acid and vitamin B ₁₂ .	Celiac disease, diarrhoea, and anæmias associated with nephritis and deficiency of absorption from bowels and storage in liver.
7. Riboflavin.	Non-specific orolingual ulceration in fevers and diarrhoeas. Diseases of liver and malnutrition. In kala-azar, against stomatitis and colitis.

The following diseases were studied:—

- I. Rickets and late rickets. Spasmophilia.
- II. Xerophthalmia and hemeralopia. Dermal xerosis.
- III. Infantile scurvy. IV. Pellagra. V. Beri-beri.
- VI. Nutritional oedema.

Rickets.—In my experience with the under-privileged children rickets is certainly a common condition in hospital practice.

* Specially contributed to THE ANTISEPTIC.

Rickets is a general metabolic disease due to a deficiency of vitamin D, characterised by skeletal changes, especially near the epiphyses and a tendency to catarrh of the mucous membranes.

ETIOLOGY:—Rickets is world-wide in distribution and is said to be rare in the tropics and in Iceland. Children of dark races in temperate zones and premature babies are more prone to rickets. Poverty is important, in spite of the sunshine in India, while sunshine is an unknown gift of Nature in temperate countries.

Rickets may be caused by: (1) Errors of diet, deficiency of vitamin D and excess of cereals (antagonising vitamin D). (2) Lack of sun's light (ultra-violet light). (3) Defective hygiene and confinement. The predisposing factors are: (a) Age; 6 to 18 months. Rickets is never congenital and is unknown before 4 months. (b) Commoner in winter and spring in the British Isles. (c) Climate and locality (temperate zones and large cities. (d) Artificial feeding; but rickets is known also amongst the breast-fed. (e) Prolonged breast-feeding (later than 1 year). This is a factor very prevalent in South India, and is to be attributed to poverty among the poorer classes, if not to ignorance and custom. Late weaning with rice and pepper water is also a factor. (f) Rapid growth.

PATHOLOGY:—In rickets, either blood calcium becomes low (low calcium rickets with tendency to spasmophilia *i.e.*, laryngismus stridulus, tetany and convulsions) or phosphorus becomes low (the more common low phosphorus type). Occasionally both may get reduced to below normal. The plasma phosphatase is increased during the active stages of rickets. Changes are seen best in the ends of long bones near the epiphyses.

The liver may be enlarged and fatty, and the spleen fibrous. As rickets improves the calcium and the phosphorus contents of blood rise and the phosphatase content falls.

SYMPTOMS:—The onset is gradual; manifestations are rare before the fourth month. The infant is said to be flabby, but not always in South India; becoming restless and irritable with sweating of the head.

The skeletal changes are characteristic. The anterior fontanelle closes late. Rachitic "Parrot's nodes" are seen as the bossing of frontal and parietal bones and with the sagittal and coronal sutures, the hot-cross bun appearance becomes obvious. "Cranio-tabes" elicited early in rickets (particularly over lower parietals) is due to osseous rarefaction, and is appreciated also in hydrocephalus and osteogenesis imperfecta. Rickety head becomes square contrasting with the globular head of hydrocephalus.

Delayed eruption of milk-teeth and poor calcification of the permanent ones are seen in rickets.

Rickety rosary (*Figure 1*) due to beading of ribs at costochondral junctions, and "pigeon-breast" type of thorax due to side to

side flattening of chest-wall and "Harrison's sulcus", the horizontal groove on each side of the chest above the hepatic and gastric levels, are typical appearances of the rachitic chest. Some children though not suffering from rickets have soft and springy chest walls.

Kyphosis and scoliosis of spine (dorsal) and pinched pelvis with forward projection of the sacrum are noteworthy; the latter being a dangerous risk in female children.

Enlargement of the epiphysis of the long bones (typified early in the lower end of the ulna) is a common finding (*Figure 2*). X-ray of the wrist is ideal for the study. The normal transverse epiphyseal line becomes irregular and widened, with rarefaction of the bone behind it and a hollowing of the ends of long bones. Cases of standing show a few scorings.

Bending of long bones occurs producing handy legs. Arm bones bend in crawlers. Anaemia (hypochromic) and mild leucocytosis are seen. Loss of muscular tone and greater ligamentary laxity are responsible for delay in sitting and walking. Pot-belly is due to a high cereal diet and to fermentation. Spleen is felt enlarged.

Spasmophilia includes tetany, (*Figure 3*, *vide page 928*), laryngismus stridulus, and convulsions seen in low calcium rickets. Tetany is seen in carpo-pedal spasm and when it is latent is seen by Chvostek's sign, Trousseau's sign and Erb's sign.

Spasmophilic laryngismus stridulus (child-crowing) is due to spasmodic closure of glottis; the convulsions resemble epilepsy.



FIG. 1.
Rickets
(Rickety Rosary).

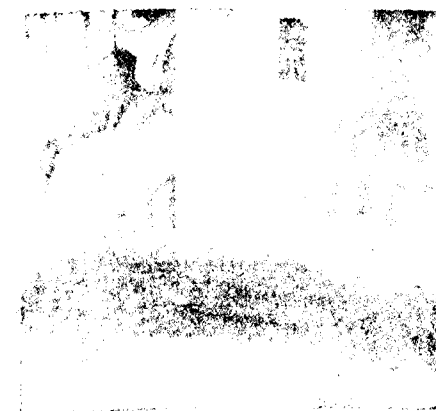


FIG. 2.
The clinical photograph on the left shows the typical syndrome of the "rickety rosary," pigeon breast and Harrison's sulcus. The X-ray photograph on the right shows the lower ends of the ulna and radius which are fluffy with osteoporosis. The X-ray photograph of leg bones below shows (1) increase in width and translucency in the medullary cavity of both bones, (2) irregular growth and ossification of epiphysis and diaphysis, and (3) an ill-defined and widened proliferative zone.

The complications of rickets are bronchopneumonia and diarrhoea.

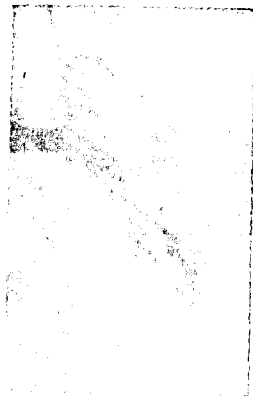


FIG. 3.
Carpo-pedal spasm.
[Vide page 927.]

DIAGNOSIS:—Early symptoms of rickets *i.e.*, restlessness, head sweating and irritability are common to many conditions. Differentiation from congenital syphilis (age under 3 months), and scurvy (9 months age-period) is easy. Early signs are craniotabes and rib-beading in rickets; these are earlier than the radiological signs. Large anterior fontanelle, bossing of the skull, delayed dentition, and bending of the bones are later findings. The “physiological” curvature of the legs seen in the second year are prominent in the lower third of the tibiae.

Anæmia and laxity of ligaments need not suggest blood dyscrasias and amyotonia congenita respectively.

Early radiological signs diagnostic of rickets are seen in the X-ray of the wrist, particularly at the lower ulnar end.

PROGNOSIS:—Rickets by itself is not fatal. Bronchopneumonia and diarrhoea are dreaded complications. The prognosis of infectious fevers particularly measles, pertussis and influenza, is worse with rickets.

Bony deformities persist if treatment is delayed until the child is 3 or 4 years old, when a stunting of growth results with kyphosis, deformed thorax and pelvis, and with bow-legs or knock-knees. Harrison's sulci and skull bossing persist for a long time.

TREATMENT:—Vitamin D is administered. Ultraviolet light is used. Natural source of D is preferred, and overdosage causes calcification of the arteries and kidneys. If cod-liver-oil is not tolerated (diarrhoea, vomiting, allergy), concentrates are administered. Cod liver oil and malt are reserved for older babies. Calci-sures are given systematically, 1 minute to 15 minutes daily or on alternate days. Healing is checked by fortnightly X-raying of the wrists and improvement is shown by the denser and regular epiphyseal line.

Calcium and phosphorus administration may be unnecessary, if an adequate milk supply or the regular use of butter, egg-yolk tetany, parenteral calcium therapy is imperative in addition to vitamin-D.

After a fortnight's treatment the child may be allowed to be up and about. Splinting prevents further bowing of legs. Natural

correction of body deformities occurs in the year following treatment for rickets and therefore, orthopædic surgery may be resorted to, if necessary after a sufficient interval.

Prevention of rickets lies in ensuring proper breast-feeding during the first nine months of a child's life. Rickets is common in children reared on condensed and sweetened milk or on a regimen, rich in cereals (rachitogenic) such as is commonly given to the poorer children of Madras after weaning.

Two teaspoonfuls of cod-liver-oil or ten drops of halibut liver oil as also open-air-life, serve as good prophylaxis.

The vulnerability of premature babies and convalescents to rickets must be remembered.

Vitamin-resistant rickets is a rare form of rickets and needs heavy doses of vitamin D (500,000 units daily) but hypervitaminosis D is a danger to reckon with.

Late rickets.—Infantile rickets neglected and not treated is not the late rickets which was appreciated after the 1914–18 war, in poor factory workers, and ascribed to low mineral and vitamin intake. Osteomalacia, the adult counterpart of rickets, is still prevalent in India amongst *purdah* women.

Late rickets is exemplified by coeliac and renal rickets, and hepatic rickets.

Xerophthalmia.—Xerophthalmia is due to vitamin A deficiency. The lesion lies in increasing epithelial hypertrophy and opacity of the cornea, progressing sometimes to ulceration and destruction. White patches appear on the palpebral and corneal conjunctiva and with conjunctivitis. Night blindness may also be found associated with it.

Five minims of Halibut liver oil twice a day, a good diet with milk and fruit and anti-rachitic treatment are given, as necessary. Vitamin A may be given by injection.

Infantile scurvy.—Barlow has described the morbid anatomy of scurvy.

ETIOLOGY:—Lack of vitamin C in diet. It is present in the juice of fresh oranges, lemons, grapes, swedes, tomatoes and the potato, phyllanthus, and guava fruit. Milk loses its vitamin C in boiling or pasteurization.

Vitamin C is synthesised now.



FIG. 4
Typical lustrous eyes of
keratomalacia—Vitamin A
deficiency.

Age :—Between the sixth and eighteenth months, and mostly in the ninth month, cases of scurvy are usually detected.

The symptoms are mainly of hæmorrhages (*Figures 5 and 6* under the periosteum of long bones; into the gums; and occasionally into the viscera. The attitude of the child is frog-like and limbs appear motionless. The hæmorrhage under the periosteum is large enough to cause a swelling generally below or above the knee. The muscles may be hæmorrhagic. The lower end of femur (X-ray



FIG. 5.

FIG. 5. Scurvy. Note swelling of right knee.

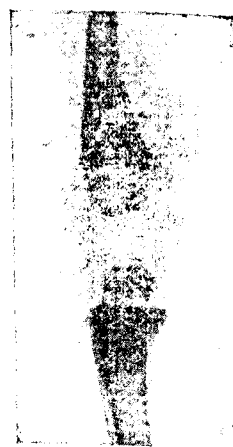


FIG. 6.

FIG. 6. Scurvy. X-rays knee. Note the separation of periosteum due to hæmorrhage on lower end of femur.

picture typical) or tibia and the distal end of radius are common sites for the hæmorrhages. Epiphyseal separation may occur. Hæmorrhages into the gums (which turn purple) may be seen in children with teeth, which then loosen and even fall out. Gums bleed. Bleeding may be on the palate or inside the orbit.

The chest shows scorbutic beading of the ribs, due probably to hæmorrhage at the ribs with cartilages; and the sternum appears pushed backwards. Hæmaturia is early and characteristic.

Cutaneous and visceral hæmorrhages are rare except occasional blood in the stools. Pallor and hypochromic anæmia are present.

Growth ceases in scurvy and is typified by the dense white line of scurvy at the edges of long bones seen in X-ray pictures due to calcification with no corresponding growth. Separation of the periosteum due to subperiosteal hæmorrhage (shell-like bone formation after 3 weeks) may be seen. The normal appearance is restored eventually with cure.

DIAGNOSIS :—Scorbutic beading, hæmaturia, and bleeding into gums mean only scurvy. Differentiation from anterior poliomyelitis, sarcoma, syphilitic epiphysitis, acute rheumatism, and teething is easy enough, not to cause doubt.

PROGNOSIS .—Good. Associated pyelitis, diarrhoea or rickets add gravity. Frank scurvy clears with vitamin C administration in a couple of days; and large subperiosteal hæmorrhage clears in 2 or 3 months.

TREATMENT :—Warm soft bed and gentle nursing. Weight of bed clothes is to be avoided. Baths are omitted till all tenderness clears up.

Fresh fruit juice is to be given daily; at least potato pulp, or potato cream. Fifty milligrams of vitamin C is necessary per day. Initially 50 mg. may be given intravenously and later, 50 mg. orally. There is no risk of overdosage with vitamin C.

Sedatives (Chloral hydras gr. $\frac{1}{2}$ to 1 at bed time) may be used.

Prevention :—Breast-feeding is ideal. Vitamin C is added to the dietary of the artificially fed babies in the form of orange juice from one fruit daily which is sufficient.

In the Jain community which forbids the use of green vegetables and fruit in the diet, on religious grounds, frank and latent scurvy at every age can be seen; and this is particularly so in nursing mothers and children, both unfortunately sharing seclusion (even purdah).

Pellagra :—Pellagra is caused by a deficiency of nicotinic acid in the diet, and is characterised by dermatitis (erythema and thickening or exposed areas of skin), digestive disturbances, and progressive degeneration of the nervous system; œdema may be present in children.



FIG. 7. Pellagra.



FIG. 8. Pellagra (thin legs with scaly skin).



FIG. 9. Pellagra changes skin on legs typical).

The onset is insidious. Irritability, headache, and giddiness, unsteady gait, tremor of the extremities, paræsthesia or anæsthesia of areas of the skin appear. Digestive disturbances (sore tongue, gingivitis, vomiting, and diarrhoea) may occur.

The skin lesions affect the parts exposed to the sun; the face, neck, hands and legs. Later, desquamation and thickening of the skin set in with brown staining (*Figs. 7, 8 and 9 vide page 931*). The course is punctuated with relapses, particularly in the spring months. Emaciation, dementia and paralysis lead to death.

TREATMENT:—Early stages respond to feeding on a high protein-diet (meat, eggs, wheat and casein) and yeast (15 gm. daily). Exposed skin must be protected from sun. Nicotinic acid, (amide to be preferred) has been used with excellent results (daily 100 to 200 mg).

Nicotinic acid, administered by me to typhoid fever patients, helped to prevent the development of pellagra-like conditions.

Beri-beri.—Beri-beri occurs in children particularly in those (breast-fed by beri-beri mothers) under 2 years of age and is characterised by polyn neuritis. It is due to a deficiency of aneurin in the diet. The virulent form occurs in babies 2 or 3 months old who are seized with convulsions terminating fatally. This occurrence is common amongst the very poor, and beri-beri infants come into the hospital in the last stages. In protracted cases, restlessness, breathlessness and aphonia are present. Generalised oedema may appear and death may be sudden due to cardiac dilatation and failure.



FIG. 10.
Nutritional oedema.

TREATMENT is dietetic and consists of incorporating into the diet of milk, eggs, wheat flour, or barley. White rice must be eschewed. The mother's diet must be balanced and rich in vitamins. A teaspoonful of yeast, thrice a day is allowed to mothers. Aneurin has to be given by injection in emergencies and orally ordinarily.

Nutritional oedema.—This is the condition denoting a diffuse pale oedema occurring in ill-nourished children, particularly apparent after an attack of diarrhoea (loss of protein). (*Fig. 10*) Serum proteins are low.

This condition is described here, because along with protein deprivation, vitamin deficiencies are present concurrently; and vitamin B complex therapy by injection is generally useful, along with egg white given by mouth.

Death is common from a silent bronchopneumonia or recurrent enteritis and exhaustion.

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THE PHYSICIAN'S IDEALS AND CODE OF ETHICS IN THE GOLDEN AGE OF AYURVEDA*

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As in other lands and civilisations, so in ancient India too perhaps much earlier than in other parts of the world, the medical man passed through various stages of evolution such as, the oracle and priest, the magic man and exorcist, before he emerged as a practical therapist using drugs, potions, massage and such other intelligible remedies based on a rational understanding of the working of the human mechanism.

The *Rigveda*, the oldest record of civilised humanity, preserved the pictures of all these types, though by that time medicine and the medical profession had already attained their rational metamorphoses. The divine physicians, the Aswini twins, are described as able physicians and surgeons performing miraculous cures and surgical operations even to the extent of providing their patients with artificial limbs and the grafting of animal glands and limbs. Their mortal counterparts in society, though not so dexterous, were possessed of the knowledge of an abundance of healing herbs and therapeutic measures based on a remarkably good knowledge of human anatomy and physiology.

It is in the age succeeding that of the *Vedas* known as the *Samhita* period which is the golden age of the medical classics, that medicine was established on a fully scientific basis, with physiology, and pathology developed and systematised in a form, which we find it difficult to improve upon, even today. The picture of the medical man, his ideals and code of ethics as outlined in the classics of Charaka and Susruta, will now be described briefly.

The purpose of the study of medicine:—The purpose of the study of medicine is described by Susruta in the words of the disciple who approaches a teacher for instruction:—

"For the sake of affording relief from suffering to humanity in its pursuit of happiness, for the sake of prolonging our own lives and for the sake of the general good of the people, we would like to hear the science of life from which accrues to man his good both here and hereafter. It is for that we are here as your disciples".

In ancient India medicine was studied by all classes, but by each class for a different purpose. Charaka explains. "This science is to be studied by the Brahmans, the Kshatriyas and the Vaisyas. By the Brahmanas with a view to benefiting all creatures, by the Kshatriyas as subserving their role of protectors and by the Vaisyas as a means of livelihood; and in general, by all with the object of attaining virtue, wealth and pleasure".

* Specially contributed to THE ANTISEPTIC.

Then there was a golden period when all the Dwijas-Brahmins, Kshatriyas and Vaisyas, practised this art with different motives. As long as mercy was the dominant ideal of civilisation, a missionary spirit guided the profession and princes and ministers renounced or used their worldly power, wealth and position to serve humanity. A number of intellectuals devoted their whole lives to this humane work without any expectation of reward; and they even travelled to distant lands to relieve ailing humanity, and thus laid the foundations of missionary medical relief. Such references to missionary *sadhus* and *sanyasis* are found in various books and in countries far away from India, such as Ceylon, Siam, Burma, China, Bokhara, Persia, Arabia etc. Thus, generally, the Brahmins practised this art for the sake of protecting themselves and their armies, just befitting their natural disposition; and in the ancient eras of our national history which were famous for great battles, they evolved military surgery out of sheer necessity coupled with scientific curiosity. As time went on, there was great need for a larger number of physicians and the Vaisyas naturally came forward with the double object of rendering service and earning a profitable livelihood. As practitioners of the ancient art of healing, the physicians were held in very high esteem by the people.

In the ancient seats of learning, admission of students was regulated by a strict method of examination of the student's fitness—physical, intellectual and moral. Only after the examiners were satisfied with the qualities and the level of intelligence of the aspirant was he given permission to prosecute his studies. There was a ceremony of initiation at which the preceptor kindled the sacrificial fire and administered the oath to the student (wherein the latter was made aware of the sanctity of the profession he was entering) and instilled into him a spirit of dedication as also a code of professional ethics and behaviour to guide him in his professional career.

A graduate in medicine had to obtain the king's permission to practise. It was the duty of the State to protect its people from cheats who might rob people of their money and even their lives in the guise of friends, advisers or healers.

"Having studied the science, having fully grasped the meaning, having acquired practical skill and having performed operations on dummies, with ability to teach the science and with the king's permission, the physician should enter his profession." (Susruta Sutra, 10:3).

The need for such testing and previous approval by the State of a physician, before he set up practice is explained by pointing out the duty of the king to protect his people from the harm that might otherwise befall them at the hands of quacks and charlatans who might successfully pose as real physicians. The existence of such bogus men was considered a blot on the king and the State.

Thus it would appear that in ancient India utmost care was taken to safeguard the welfare of the people from unauthorized and ignorant exploiters, posing as medical men. They took care to maintain a high standard in the profession by strict tests to which applicants to the profession had to submit. In the case of foreigners, the same rigorous tests were applied either by the royal physician or by a council of physicians, before they were accorded permission to practise.

In the post-vedic period which is the golden age of *Ayurveda*, the position of the *vaidya* was at the height of its glory. In the ancient medical classics, we have a complete picture of the physician, his equipment of learning and therapeutic accessories, his dress and manners, his standard of ethics and his general position in society as guide and leader.

Dress:—Like his modern counterpart, the ancient physician of India was conspicuous by his clean and well-washed clothes, his short-clipped hair and nails, and his general smartness and genial temperament. Susruta describes him thus:—

"The medical graduate should enter into the medical profession resorting to the close clipping of his hair and nails, cleanliness, white raiment, holding of an umbrella and handstick, wearing of shoes, and avoidance of gaudy clothes, and imbued with a spirit of helpfulness, brotherhood and sincerity towards all creatures". (Susruta Sutra, 10:3).

It is to be noted that even in England for many centuries, the physician carried a gold-tipped cane in his hand while visiting his patients.

Manners and behaviour:—The physician was expected to be a paragon of gentlemanly qualities. He should not be given to bragging. Even though possessed of learning and skill in his science he should not be loud in proclaiming it to the world. Charaka lays down: "Even though possessed of sound knowledge, one should not boast and speak of it over-much. For though a man be virtuous otherwise, boastfulness makes him hateful to people."

His general attitude must be genial, gentle, modest and sincere. He was to harbour no ill-will against any one and should look upon the destitute, the poor and the helpless as his own kith and kin and be ready to offer help to such.

The *vaidya* was enjoined to seek the aid of other members of his class in the diagnosis of difficult cases and in the determining of prescriptions and pharmaceutical preparations. He must not quarrel with fellows of his profession. A general spirit of geniality and kindness and a supreme ambition to advance the welfare of the people were demanded of him.

Kasyapa says that in addition to these accomplishments the *vaidya* was required to be also a good polemic. If he were to meet and

be interrogated by a professional brother on any point of theory or practice, he must be able to meet him in discussion and if the opponent persists in carping at him, he should deal with him severely and subdue him by reproaches and repulses in satirical terms".

His attitude to women particularly was to be aloof and detached. When he entered a patient's house he was to keep his head bent and not be curious about the things and persons about him. His mind must be devoted solely to the welfare of the patient. If he was called in to treat a woman-patient he should never go unaccompanied and he should neither laugh nor smile nor exchange irrelevant words with her. No gifts offered by her in the absence of the husband are to be accepted. Even if he discovers her to be making amorous overtures, he should not respond. Neither should he divulge them. "In the household of the patients, he should never indulge in jokes with women, not even with the female servants. He should not utter their names without prefixing terms of respect; he should always speak giving the place of honour. He should not try to have any transactions with or show great attachment to them. He should accept nothing from the woman without the knowledge of her husband. He should never enter without informing beforehand. He should neither talk nor sit with a woman in privacy. He should never look at her when she is uncovered or should not laugh at her. He should spurn her exhibition of love towards him but should never expose her."

Vagbhata admirably sums up a true *vaidya*, his attitude and equipment in the following words:—

"He who visits the patient only on invitation, well dressed and having perceived the good omens, concentrates his mind on the patient and the diagnosis of his illness, in the light of the etiological factors, who never divulges any shameful features of the patient's life and who knows the proper time and stage of treatment and uses them, he indeed, is the true physician that achieves success in his treatment".

Fees, presents and remuneration to medical men:—Although the ideal purpose of this noble art of healing is philanthropic service to humanity, medicine has been practised for a long time for the sake of livelihood also. As Susruta says "This science of life is permanent and yielding merit, heaven, fame, longevity and livelihood."

Although people practised medicine for livelihood, yet the mere commercial aspect was never allowed to prevail in the practice of this noble art. In this connection Charaka says that "Those who for the sake of a living, make merchandise of medicine, bargain for a dust-heap, letting go a heap of gold."

Even to the practitioner who never wished to have any remuneration, this noble art was never fruitless. "Practice of medicine is never fruitless; it sometimes gives money, sometimes religious merit, sometimes renown or sometimes the opportunity for study."

That the art of medicine was practised for livelihood even in very olden times can be seen from the following hymn of the *Rigveda*:

"I am a poet, my father is a physician and my mother pounds corn. Thus we follow different vocations with a desire for wealth like kine". (*Rigveda*, 9, 231. 2).

The medical art was practised neither solely for money nor always free of cost. The charging or otherwise of fees depended upon the circumstances of the physician and of the patient. The physician-patient relations engendered a dominant spirit of love and service on the part of the physician and a spirit of appreciation and liberality on the part of the patient. This is proved by the following injunctions of Ayurveda, requiring every practitioner of medicine to give his treatment as also his medicines free in the following circumstances.

"The physician should dispense medicines free to and treat like his own relations the following persons; the Brahmin, the preceptor, the poor, the friend, the recluse, the sage and the helpless whoever of them approaches him for treatment. This tends to good consequence".—(*Susruta Sutra*, 2, 8).

Still the princes and princely men of rank and opulence never failed adequately to appreciate the medical services. Monetary remuneration varied according to the value attached to money in various civilizations at different periods and in different lands.

We read in the story of Jivaka that he received fees amounting to 16000 coins and presents from a patient which represents a sum of money for in excess of the fees received by any modern doctor. The man who received such a big fee from a wealthy man, treated other people without expecting any remuneration. Although the physician was expected not to bargain for his fees, it was made incumbent on the patients to discharge their obligation towards the physician.

"Whoever, having been treated by the physician, does not recompense him, whether or not there be a previous understanding for remuneration, that man is beyond redemption".—(*Charak Chikitsa* 1-4; 55).

Charaka puts the position in strong terms "the fees may or may not have been fixed, but the patient must pay the dues, as otherwise, he cannot absolve himself from his obligation to the physician".

From the story of Jivaka we gather that sometimes the physician undertook to treat a case on a contract, to get the fees only if the case was cured. There are instances also where the fee was settled beforehand and those where the fee was not settled at all.

If a quarrel arose in the matter of fees, the question was, according to Kautilya, referred to a committee of experts for final decision. "That is the fee to be paid which is to be determined by experts". (Kautilya, 3, 13).

Although the physician had his high ideals and a noble code of morality, society was never ungrateful and men of means never failed to venerate the *vaidya* by giving him adequate remuneration in cash or kind. People like Bhishma honoured the physicians who were called in to treat and gave them much wealth although their services were not actually accepted. The State maintained physicians of various descriptions and grades viz., court physicians, village physicians, military physicians and travelling physicians. They were either paid in cash or were given a plot of land and allotted daily rations. As the physician behaved so humanely, society was not blind to its obligations towards these incarnations of the Aswins.

"What need, then, is there to say, that physicians can never be honoured too greatly by mere mortals who are subject to death!" —(Charaka *Chikitsa* 1-4; 50).

There was an unwritten tradition that after a victory on the battle field, after recovery from a long or serious illness and after a happy delivery, everyone, be he a king or a commoner, expressed his thankfulness to the physician by giving presents and rewards.

The ideal, apart from the exigencies of the physician's profession as regards fees, was always to keep in view the principle of compassion and service for his fellow-men and Charaka lays down this ideal in magnificent terms:

"For his part the physician too should regard all his patients as if they were his own children and vigilantly guard them from all harm considering this to be his highest religion.

"With the object of righteousness, wealth and sense-satisfaction, the great sages devoted to righteousness and to seeking the indestructible state, promulgated the science of life."

"He who practises medicine neither for gain nor for gratification of the senses, but moved by compassion for creatures, surpasses all."

"Those who for the sake of a living, make merchandise of medicine bargain for a dust heap, letting go a heap of gold."

"There is no benefactor, either moral or material, comparable to the physician who reclaims back to life and health those who are being dragged away by fierce diseases towards the abode of death, by cutting and severing the noose of death. For there is no other gift greater than that of life."

"He who practises medicine, holding compassion for creatures, as this highest religion, is a man who has fulfilled his mission in life and attains supreme happiness." —(Charaka *Chikitsa* 1-4; 56-62).

Nursing.—Ayurveda gives nursing a significant place by making it one of the four legs of the board on which therapeutics stands. "The physician, the drugs, the attendant and the patient constitute the four basic factors of treatment. Possessed of the required qualities, they lead to the earliest cure of disease." (Charaka *Sutra* 9-3). Thus a nurse was considered as important as the *Vaidya*.

Quacks.—In all ages and in all countries there have been quacks in every profession. But the most dangerous of them all is the quack in the medical profession which takes the responsibility for life or death. The society of the times depicted by Charaka, had a wholesome dread of the medical quack and these quacks must have been quite numerous considering the elaborate manner in which Charaka describes them while referring to their pretensions, manners, talks and equipment.

It is interesting to note that the term applied to such a charlatan and ignorant cheat in Sanskrit is a *Kuvaidya* or *Kuhaka*; the latter meaning a cunning or sinful man. The English term of a "quack" having the same or similar connotation suggests a kinship in evolution from the original '*Kuhaka*'.

It is easy to infer the circumstances that gave rise to the abundance of quacks. The medical profession was among the professions held in great esteem in society. As we have already seen, the physician held an honoured place in society and was regarded as "friend, philosopher and guide of the people." His emoluments in the profession were evidently considerable and aroused the envy of ambitious individuals who aspired for a similar status but had not the equipment needed for it. Such naturally turned into quacks and acquiring the external accomplishments of manner, speech and some professional catch-phrases, imposed on the ignorant and the gullible, and earned their fortunes. Such indeed are the quacks in every age, and the spirited way in which Charaka condemns their evil propensities is evidence of the prevalence then in undesirable numbers of the members of this deceitful tribe.

Quackery flourishes wherever there is a rigorous standard demanded of the genuine professional man which is not easy of acquisition by all people. Strenuous years of study and practice and final approval by the State are needed for practising the profession. Naturally a host of impostors crop up who secretly ply their trade among the ignorant and the gullible. Charaka says that such quacks flourish and roam at large only with the connivance of the king (State.) Thus a great responsibility rests on any civilized State viz., to see that such ignorant and pretentious cheats are not allowed any scope to work havoc among the common people. The ancient state in India judged by the secret methods of the quack as portrayed in Charaka, seems to have fulfilled its responsibility in this respect in quite a laudable manner.

The royal physician.—It was natural that in a society patterned on the monarchical system of government, all the arts and sciences should centre round the person of the king and his patronage should be the means and object of all advancement and progress. The poet, the artist, the scholar, the astrologer, the priest, the physician and the statesman were all attached to the king's court. They humoured and helped the king in his pleasures and pursuits and enriched his mental and physical equipments, while in turn they received his admiration and encouragement and often also lavish patronage.

Moreover the king lived in perpetual fear of being poisoned, and the life of ease and luxury usually led by him made continual inroads on his health. He had therefore, great need to entrust his everyday life to regulation and supervision by the physician. The two aspects of medicine, namely the maintenance of health and long life as well as the combating of disease, found complete application, in the supervision of the king's life by his physician.

The post of royal physician needed trustworthiness, equally with skill and ability and hence it was usually an hereditary appointment as in the case of ministers. We read in Harshacharita that there was the post of a hereditary physicianship to the king called "*Paunarvasava*".

Thus the royal physician was expected to look after the king in every detail of his life so as to enable him to maintain perfect health and longevity. He had to adopt luxurious methods of treatment of diseases as befitting the royal personage, he had to look after the queen with special care during her pregnancy, delivery and puerperium, he was responsible for the health and other physical needs of the prince and of the royal family. Thus he was expected to be an all round expert in every branch of medical science.

All this goes to show how much the medical man was in demand even in ancient times and particularly by the king who had a regular establishment, viz., a dispensary, nurses and a physician of his own. The royal physician was therefore easily the prince of his profession and an acknowledged and respected leader in the realm.

"But the selection of the royal physician was based on such a high standard that only the best, wisest and ablest of all, could ever hope to be chosen by the king" says Charaka. The royal physician's responsibility was indeed very great. In Vagbhata's words:—"The attendance on a king is as dangerous as a sport with weapons, snakes and fire. It can only be discharged by modest persons, through very great dexterity. Having acquired unattainable sway and great honour from the king, one should remain vigilant so as to retain and enjoy them for a long time".

Lastly this subject cannot be complete without quoting the verses of Vagbhata that describe the way in which the physician

should conduct himself before his royal master; they are very interesting and betoken the wisdom of those times. (*A. S. Sutra*, 8).

"Though bidden, the physician should not occupy a seat or mount a carriage that is improper for him in the presence of the king. He should stand in the royal presence and never contradict anything spoken by the king. He must give his advice for the king's welfare in proper time. Whatever is helpful towards his own ends must be spoken, identified with what is pleasing and what serves the king's purposes. At all times, the physician's speech should be consistent with the ends of righteousness and the king's welfare. He should not proffer counsel unless solicited, for such gratuitous advice might easily be deemed very presumptuous. He should never act in a way that is prejudicial to the king's good, for, it would mean destroying his own support. The physician should see that what he says is palatable as well as wholesome. If he wishes to advise the king against an evil course, he should do so in strict privacy and in words that are noble and dignified. But even this he should do only when indifference on his part would be blameworthy. If such advice is met with a rebuff, the physician should hold his peace. Conversation that is distasteful to the king should not be persisted in. As between a man who is learned but a poor psychologist, and a man who is unlettered but is good at reading people's minds, the former, even if he is in high favour, will soon slip into extreme disfavour and the latter from even extreme disfavour will rise into high favour. It is only after acquainting the king that any measure, however small, should be undertaken. As regards the treasury and the royal harem, the physician's visits to these places should never be uncalled for and when they do take place, they should be as brief as possible. He should show great satisfaction even at the bestowal of small rewards without betraying a haughty frame of mind. While at court, he should avoid confidential conversations with any one other than the king himself, he should also eschew gossip-mongering, hostile disputation, imitating the king either in his sartorial habits or in his pleasures and recreations. But if the king himself has bestowed anything as a mark of favour it should be worn for enhancing the royal pleasure; and while careful in being attentive before his royal master at all times, the physician should allow himself only a smile when the occasion demands a loud laughter. When a secret relating to some one else is being narrated, the physician should behave as though he was dumb, when a secret concerning himself is being divulged, he should put on the quadruple armour of deafness, fortitude, sweetness and perfect ease of manner. He should not take excessive pains in order to gain a too highly exalted position; for it will be found that the joy of soaring high cannot compensate for the pain of the fall when it comes". (*Ashtanga Sangraha Sutra*, 8).

To be such a royal physician, would no doubt need all the wisdom, caution and ability that only the very best of men are capable of. In conclusion, it is necessary to remember the description of the true physicians given by Charaka.

"They are well born, of wide learning, of vast practical experience, skillful, pure, practised of hand, self controlled, fully equipped with all the appurtenances (of healing), in full possession of their faculties, conversant with the normal course of nature, able to take prompt and appropriate decisions; these are to be known as the saviours of life and destroyers of disease".—(Charaka Sutra, 29-7).

Ayurveda

Shree Dr. B. Pattabhi Sitaramayya, Governor, Madhya Pradesh, in the course of his address to the 4th M. P. Provincial Medical Conference held on 11-10-1952 at Amaravathi, said :—"We are so much taken up with the Western system of medicine that we disdain to talk of the Ayurveda system, which flourished from the 27th century B.C. to the 16th century A.D. Foreign invasions have been the ruin of indigenous sciences..... The Indian medical practitioners of old shared in common the three fold ideal of human life—Dharma, Artha and Kama. Ayurveda is a branch of the *Atharva Veda*, and consisted of eight branches viz., (1) Medicine. (2) The science of the special senses—Eye, Ear, Nose, Throat and Mouth. (3) Surgery. (4) Toxicology. (5) Psychotherapy. (6) Pædiatrics. (7) Rejuvenation. (8) Virilification.....

The Ayurvedic system is based on the theory of humours. The humours form a subject of study abounding in interest. They are not as yet identified so as to be honoured with long, organic chemical formulae with appropriate chains and links.

We gather, however, that *Vaatha*, *Pitha* and *Kapa*, represent the essences of all the food materials digested in the alimentary canal by the several processes of digestion classified broadly into three distinct groups. They are said to be complex material substances, when they are generated in the alimentary canal and can be collected and measured, but in the tissues, they can be recognized only by their effects. We are sure, we shall understand them better by clinical and biological research conducted in a team work along with men qualified to interpret Ayurveda and not in water-tight compartments as at present.

Diagnosis which was originally linked to the whole system as in the theory of humours and looked upon as an affection of the whole body, which later became located in systems and organs and was still later narrowed down to the tissues, has through vitamins once more become related to the whole body and it only remains for some one to link it once again to the humours."

PREVENTION OF BLINDNESS*

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IN our country the number of recruits to the army of the blind is increasing every day by leaps and bounds. Are we to wait till people actually get blind before we take necessary steps to arrest this national calamity? Sir Clutha found that at least two thirds of the blind could have been saved from blindness if only the necessary precautionary measures had been taken at the proper time. The problems of the blind are vast. Half-hearted measures will not touch even the fringe of this great national problem. It needs the State's interference with herculean courage and devotion and also the whole-hearted cooperation of individuals and public bodies. Although there are many kind, generous and charitably disposed people, all their fine traits get exhausted and a complacent attitude is adopted by them by only giving alms and expressing sympathy rather than making constructive efforts. The misery, unhappiness and great economic loss, resulting from blindness could be relieved greatly by tackling the problem in three ways:—

1. The prevention of blindness.
2. The education of the blind.
3. The rehabilitation of the blind.

"Prevention is better than cure".—This applies with greater force to this malady than to any other. Recent advances in ophthalmology provide us with very efficient therapeutic measures in the shape of drugs and instruments. With the help of these, we could also increase the efficacy of the preventive measures and considerably reduce the incidence of blindness. The cost involved in preventing a man, woman or child from becoming blind or even in curing him of his blindness when it overtakes him, is very much smaller than the enormous loss accruing to the nation through having to maintain these unfortunates for long years and the economic loss due to their being useless for any work. Ameliorative measures taken for prevention and for education do not in the long run cost much to the country because there is no great dearth of trained personnel and necessary material needed for the purpose. This humanitarian work is of immense benefit to all concerned.

It is upon the cooperation of all the people of the country and particularly on its wealthier members, that the ultimate success of this campaign will largely depend. The State governments should bear the main responsibility for the major social services intended to benefit the mass of community, services originally pioneered by private charity and by religious institutions. Nevertheless the best

* Specially contributed to THE ANTISEPTIC.

features of voluntary efforts are still available and form a stimulating part of our entire social fabric. Governments reflect the people's will, and they should have the sympathy, goodwill, support, and voluntary service from everyone throughout the land. Charity should subserve a greater purpose than merely providing temporary satisfaction to the giver or inadequate relief to the receiver. Philanthropists endowed with wealth must be aided by the government to provide organized charity, and guided to invest their munificence in causes which are deserving and worthwhile.

Extent of blindness.—As already mentioned, Sir Clutha found that in India, 273003 are totally blind and about equal number partially blind. These figures err perhaps on the side of too little, and correct statistics are not available, due to various reasons.

Causes of blindness.—India is a country of vast distances with wide variations in climate, customs and manners and these also affect the incidence of blindness and the causes leading to it. Blindness may be the result of: (1) inheritance; and (2) environment. With regard to inheritance, it is now generally accepted that venereal diseases are mostly responsible for causing blindness. The environment, has also got an equally important share in the mischief. Environment includes physical, infective, nutritional, social, educational, mechanical, accidental, economical factors and also diseases like cataract and glaucoma.

1. *Physical*:—Frequent dust-storms, the blazing dazzling sun; the furies of the wind and weather throw great strain on the eye. People inhabiting the northern and western plains of India suffer most. A hot-dry climate predisposes to the loss of eye-sight due to infection and cataract formation etc.

2. *Infective*:—There are many infections which can cause inflammation of the eye. In fact the majority of cases of blindness are due to such infections. The chief inflammations of the eyes are conjunctivitis, keratitis and iritis. Tropical diseases and lowered vitality and sepsis in the body make them further liable to infections.

Purulent conjunctivitis is not by itself a cause of blindness but when neglected leads to corneal-ulcers, which may cause partial or complete loss of sight. It is well to realise that infection spreads through ignorance and unclean habits and also crowding in unhygienic surroundings.

Trachoma is aggravated through repeated attacks of conjunctivitis. Complications occur leading to a diminution of sight. Trachoma is rife in northern India but is rare in Bengal. Trachoma and its complications are also common causes of blindness.

Smallpox is responsible for a fairly large number of blind people in India. Efficient vaccination against smallpox in infancy will save more eyes than the best effects of all the eye hospitals put together. It is deplorable that efficient vaccination in infancy and

revaccination at suitable intervals, are not being universally enforced throughout the country.

3. *Nutritional*:—Researches in dietetics have shown that people may die not only of over-eating but also of under-feeding. For the proper functioning of the eye, a supply of nutriment adequate in composition and in quantity is necessary. Rationing, adulteration and scarcity of food have all made this a really big problem of national importance. The ills of man are being attributed more and more directly or indirectly to nutrition. The part played by malnutrition is thus great. In addition to the calorific value of food, greater attention should be given to minerals and the vitamins. The evil effects of a low calorific diet, ill-balanced as regards protein, fat, carbohydrates or salts are well known. Cases of attenuated and manifest vitamin deficiency are gradually increasing in number showing the present poor state of nutrition among our people. A vitamins (except E) have an effect on the eye, as deficiencies of these manifest themselves sooner or later by characteristic signs and symptoms in the eyes. If these deficiencies are not supplied and made good in time, they lead to serious and permanent damage to the eyes, ultimately resulting in blindness.

4. *Social causes*:—Superstition, ignorance and conservatism in our country are proverbial. Ignorance causes the spread of contagious diseases like conjunctivitis. *Purdah* prevents access to efficient medical aid. Bad ventilation and close huddling together of inmates help in spreading the infection rapidly to every one. Wrong notion about preservation and improvement of sight are responsible for many sore eyes. "*Surmas*" which are very often irritants containing antimony and zinc, are frequently applied to the eyes. The irritant and gritty particles therein cause burns and scratches on the delicate surface of the cornea, which later develop into ulcers; perforation and loss of the eye may then result. The probe by which the *Surma* is applied, is responsible for spreading the infection from one person's eyes to those of another, to the entire family and also to neighbours or friends by the continuous use of the same infective probe on all persons. In addition to the evil effects of this *Surma* the great danger is that much valuable time is wasted in prolonged treatment, which could have been avoided by consulting an eye specialist and getting the right treatment in time.

5. *Charlatans and couchers*:—(e.g., Quacks, Naturopaths, Malik Sattias, Rawals). These wise-cracks are here to-day and gone the next day. It is not possible to meet them twice. Very often by the use of their powers of suggestion and persuasion, they hold out to the ignorant, hopes of prompt and immediate results which however, in the long run spell disaster. In the majority of cases the eyes are damaged beyond repair. At least 20% of the blindness could be prevented if there is suitable legislation to punish these

couchers, and prevent the sale of irritant remedies used for treating eye diseases. The State should prosecute and punish the quacks who thus endanger the life of the people.

6. *Refractive error and opticians*:—Neglected refractive error and squints, if properly treated by competent persons, will prevent blindness.

From time immemorial opticians have been concerned with prescription of glasses in England. This unfortunate practice is still in vogue in many foreign countries. With the advances made in surgery, the osteopaths have become merged into the registered surgeons. The examination of the eye for prescribing glasses has been put on a more scientific basis; it is beyond the scope of the ordinary optician. The difference between a qualified optician and an ophthalmic surgeon is akin to that between a grocer and a dietetician. The latter prescribes a diet ascertained scientifically to be the best for the needs of the body. This diet can be easily dispensed by any grocer. Like the optician, the grocer is concerned only in selling his goods. He is not concerned whether the diet agrees with the customer or not. The average optician's knowledge of eye diseases and their treatment is practically *nil*. Patients who go to consult the optician are usually those who suffer from dimness of vision, the treatment of which will depend on the cause. There are many serious eye diseases in which the early symptom is dimness of vision. If one misses the warning symptom, the condition will progress beyond repair by the time the patient reaches the eye specialist. Diseases like glaucoma, tumours etc., are some of the few maladies which are often missed by the optician. Even if the defect is due to a refractive error, it is not easy to prescribe suitable glasses. Prescribing suitable glasses is an art by itself and needs great precision, experience and training. Each patient will have to be assessed individually and his error corrected.

Besides dimness of vision, the other common symptom for which glasses are prescribed, is headache with pain in the eyes, which may be due to various causes other than mere error of refraction. I have seen glasses prescribed for conditions like sinusitis, glaucoma etc. Wrong glasses are often prescribed for squint. It is folly and false economy to consult an optician for errors of refraction and prescription of suitable glasses. Though it looks cheaper at first, it is really very dear in the long run, as one may have to pay a heavy penalty and even lose his eye sight and perhaps also his very life in the bargain. Ignorance of the masses, lack of proper facilities, poverty and false economy underlie these wrong procedures, which help in the success of the opticians. The public and the Government should therefore, realise the disadvantages and the evils of this system, and safeguard the welfare of the eyes in order to prevent people from becoming blind.

7. *Accidents and other injuries*:—Even in the best managed house, factory or workshop accidents *will* happen. With machinery becoming more and more elaborate and more popular, the chances are increasing for accidents and other bodily injuries. A stitch in time saves nine. The strict enforcement of preventive measures in places where, such chances of injuries (like foreign-bodies, wounds and electric irritations etc.) to the eyes are great, will save the eye-sight in the injured eye or save the uninjured eye from being also lost due to sympathetic ophthalmia. Facilities for giving immediate first aid treatment and examination by an eye specialist should be provided and made readily available.

8. *Errors in treatment*:—*Treatment by the patient*:—The patient fails to realise the potential danger to his eyes lurking even in minor complaints. Even when medical facilities are available, he fails to utilise them. The "*grandma remedies*" are first tried and if they fail his neighbour's prescriptions are used. If these also fail a Hakim, Vaid, Sattia or Homœopath is consulted. After thus wasting time and money and when the minor malady has developed into a major trouble, the patient visits the general practitioner or attends the local dispensary. A few go to the eye specialist. The consequent result is that very few eyes get cured, after all this great labour and the majority are ruined. A few days or in difficult cases, a few weeks in a hospital under skilled care and attention will save people from having to spend the rest of their lives in utter darkness, misery, agony and poverty. About ten million eye-cases are treated every year in hospitals and by private organizations. And perhaps a still greater number is being treated privately. Government agencies are extremely few and inadequate in the urban areas and practically non-existent in the rural areas. There are no lack of facilities or eye-specialists to treat the well-to-do. It is only the large mass of poor people who can afford next to nothing, that are bereft of treatment while they need every attention possible. The existing machinery is far too inadequate and meagre to make even the slightest impression on this gigantic problem.

Eye-fairs and camps.—Eye-fairs and camps are cheap imitations of the Egyptian mobile hospitals. These camps are organized by private individuals or charitable bodies who invite eye-specialists to perform eye operations in the field. There is no means of ascertaining the bonafides and the qualifications of these specialists. Specialisation in eye diseases has been very much misunderstood in India and has become synonymous with cataract-extraction and prescribing of glasses. Deterioration has reached a climax, and even laymen and compounders are performing eye surgery on poor innocent patients! The rich people consider it an act of charity, which will bring them fame, to support these eye camps, while the doctors see in them a means of winning a name and fame. Extreme poverty, and ignorance of our people, and inadequate medical aid in villages

are responsible for the success of these fairs. As in other branches of medicine, it is not only the skill of the surgeon that counts in successful operation but also the pre-and post-operative care that plays an equally important role. The beauty of eye work lies not in the volume of work done but in the effective and safe procedures adopted. A good cataract extraction is really worth spending time and money necessary for ensuring satisfactory results and proper care and nursing for a cataract case can be had only in a well-established hospital. These fairs when conducted with the help of competent qualified doctors to look after the operated cases, might be of help in the interior of districts, where ignorant sufferers have no facilities for cure. The fairs may be allowed only if minor surgery alone is undertaken and transport facilities are arranged for those needing hospital treatment. Eye-fairs not conforming to these conditions should be condemned and the State should take steps to put a stop to all eye-quackery.

The ideal method.—The ideal method would be to provide facilities for medical aid by establishing well-equipped hospitals and outpost dispensaries in the heart of villages. Such centres will examine and recommend serious cases for treatment in district hospitals. In all district hospitals there ought to be a specialised eye department under a well-qualified eye specialist. Facilities should also exist in these hospitals for sending or transferring difficult cases to general hospitals for consultations or specialised treatment. And above all, there should be an expert ophthalmic adviser for every State, who should establish contacts with all eye specialists and from time to time give the necessary advice and direction both to the Government and to the eye specialists in the prevention of blindness and thus coordinate all eye relief work.

Adequate finance and competent trained medical personnel are needed in order to carry out this scheme. So long as we are not able to put such arrangements into operation, it will be necessary to have alternative schemes, e.g., mobile hospitals.

Mobile hospitals.—This system was organised in Egypt in 1903. They are definitely better suited to our needs than the fairs. They are essential for launching a drive against eye diseases and for educating villagers in the proper care of their eyes. Mobile hospitals will afford relief to the villagers, who are unable to leave their homes, and go to towns to get the necessary treatment. The same object can be achieved in even a better way by the village dispensaries acting as outposts, field-agents and treatment under better conditions. Until such time as an organised chain system of dispensaries and hospitals and a sense of awareness on the part of villagers are established, the work would be best carried out by mobile-eye-hospitals, which should devote most of

their time to preventive work, without taking up difficult surgical operations.

Proposed scheme for eye-relief work.—1. *Society for prevention of blindness*:—There ought to be a branch of this organisation in each district head-quarters and it should have as members, representatives from the Education and Public Health Departments, the Municipalities and District Boards who should all form a social service group along with the local M.L.A's. They should coordinate all agencies engaged in eye-relief work, and organise annual conferences, where representatives from all branches should meet, compare notes and exchange ideas; they should work out a common plan to combat blindness, and enlist the help of leading ophthalmologists for giving lectures on recent advances in ophthalmology.

2. *Afternoon-clinics*:—There should be several afternoon eye clinics in each town for those who cannot attend the hospitals in the mornings. Local eye specialists should be requested to take charge of these clinics, assisted by a part-time dresser to attend to patients and a sweeper to clean up. These clinics should be open for two hours in the evenings and contain sufficient equipment to examine the eyes of the patients thoroughly and carry out refraction tests.

3. *School clinics*:—The surgeon will, with the help of the school authorities examine all the students for defects, errors of refraction or other eye diseases, and maintain records of the periodical examinations. He should organise also a "Parent's Day", when he can enlighten parents regarding the general care of their children's eyes. With a little education of this type, it would be possible to reduce eye defects by about 25%.

4. *Ophthalmia neonatorum clinics*:—The eye surgeon will examine and advise on the treatment of infants or children attending maternity and welfare centres. In this way, early infections of the eyes could be detected and the children saved from permanent blindness. Visiting nurses attached to these clinics should follow up the cases in their homes. Ophthalmia neonatorum should be made a notifiable disease.

5. *Eye camps*:—The surgeon should arrange to go to villages, examine, treat and advise the villagers about their eye conditions. For ordinary cases he should distribute medicines free of charge to the poor. Those suffering from serious diseases should be persuaded to go to the hospitals for treatment; he should also give talks to the villagers regarding eye hygiene and the prevention and cure of eye diseases.

6. Government and public opinion should be enlisted to do away with quacks who still flourish even in large towns. Propaganda

should be made through radio talks, lectures in the city and villages and in all schools, pamphlets, and popular articles in the newspapers and educational films.

7. The State Government should, as already stated *supra*, appoint an adviser to establish contacts with eye specialists, voluntary agencies and the Government, coordinate the work of all these and advise them in all matters relating to prevention of blindness and the rehabilitation of the blind.

An Eye for an Eye

With the coming into operation in Sept. 1952 of the Corneal Grafting Act it is now possible for the first time in England, for a person to bequeath his eyes for the use of corneal graft surgery and the benefit of his fellow men. In addition, the new Act enables the person in lawful possession of a body to permit the eyes to be taken and used for this purpose, provided, of course, that there is no known objection from the dead person during his lifetime or from any relatives.

The development of corneal graft surgery was introduced in Austria about 50 years ago. It is only in more recent times, however, with the vast improvements in technique and results which have come from the French school of ophthalmic surgery, that the demand has far outstripped the supply of corneae. The scope and safety of the operation in skilled hands is now such that over 50 per cent of the suitable cases of corneal opacity show restoration of sight to a greater or lesser degree.

The anomaly in the existing law was that no person under any circumstances was legally entitled to remove the dead man's eyes for any reason whatsoever.

The new Act is certainly to be welcomed. What the Corneal Grafting Act means in practice is that a person who wishes to be a corneal donor need only make a simple signed statement: "I (full name) request that after my death my eyes be used for therapeutic purposes". A copy of this statement should be given to his relatives or those with whom he lives and to his executor if he has one. Then, if at any time he goes into hospital and lets the authorities there know of his wishes, or if he dies at home and his family or doctor informs the nearest hospital, every effort will be made to see that his wishes are carried out. Where no express request has been made, however, the eyes will be removed after death only in those hospitals associated with the special centres where corneal grafting is done.—(*Medical World*, Oct. 10, 1952).

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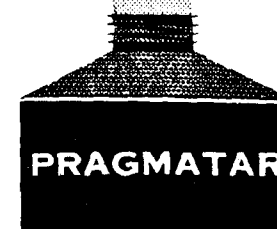
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Cases and Comments

RENAL RICKETS

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In renal rickets, bony deformities of infantile rickets are present and particularly knock-knee and dwarfism. Signs and symptoms of renal fibrosis (thirst, polyuria, sallow and dry complexion, pale urine of low specific gravity with occasional casts and traces of albumin) are all present.

Osseous rarefaction in renal rickets has been ascribed by Cannon and Orr to hyper-parathyroidism and consequent osteitis fibrosa, as a result of low serum calcium and nephritis. Serum phosphates are raised (as much as 14 mg. per 100 c.c.) as the kidneys are unable to excrete them. Parsons attributes this disturbance in Ca : P ratio as the cause for failure of osseous calcification. Tetany is unknown because of co-existent acidosis. Prognosis is hopeless. Jaemia ends the picture. Graham and Oakley improved the bone condition by administering large doses of alkalies along with vitamins

D and A. Light orthopaedic apparatus may be needed for the bony deformities.

The following are illustrative cases.



FIG. 1.
Renal Rickets. A boy of 7 years with knock-knee anæmia, and picture of renal fibrosis. Height 3'3". Weight 23 lbs.



FIG. 2.
Renal Rickets. (Note knock-knee).



FIG. 3.
Renal Rickets. X-rays wrist. (Bony changes present).

Reference :

Sarma, A. V. S.—Vitamin Deficiency Diseases in Infancy and Childhood, The Anti-Septic, June 1949.

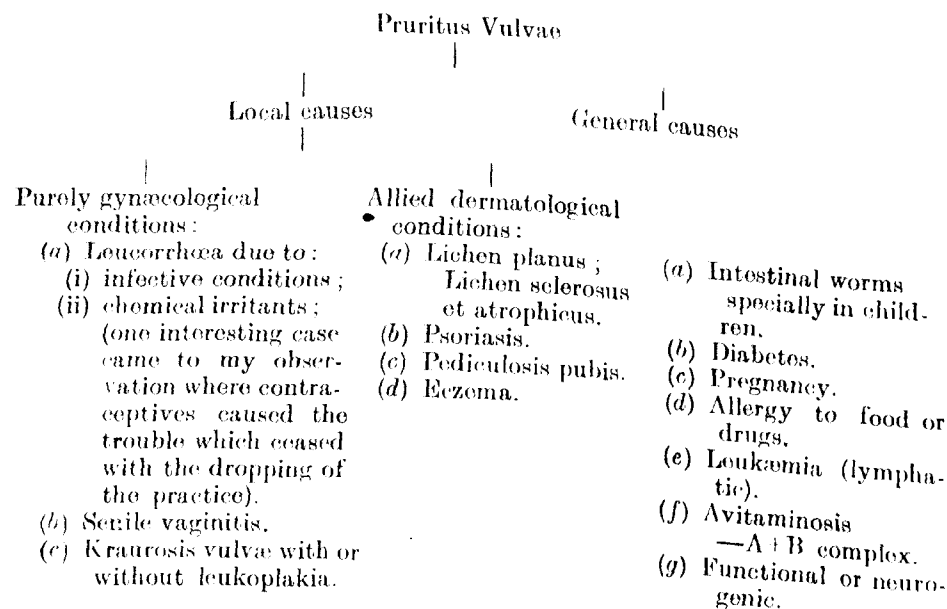
SOME INTRACTABLE CASES OF PRURITUS VULVÆ

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PRURITUS vulvæ is sometimes, a very distressing symptom and if of some duration, may produce neurosis in the patient; it can also be a headache to the general practitioner.

The important point in the management of such cases is to give quick symptomatic relief which is essential to reassure the patient. Next comes the question of ascertaining the ætiological factor and its removal. Here again in certain cases the attending physician is at a loss to decide, as to whom to consult—a gynaecologist or a dermatologist,—and in some border line cases one is perfectly justified in consulting both; the ætiological factors, may be classified as under:

Ætiology:



In an ætiological study of this condition, Hill found that "in approximately 75% of cases of pruritus vulvæ, a neurogenic or functional factor was the probable cause. Lichen sclerosus et atrophicus, kraurosis with or without leukoplakia and senile pruritus make up approximately 15% of the cases. The remainder including diabetes, infections caused by trichomonas and fungi, allergy to food and drugs are responsible for only 10% of the cases, it is a functional disease which, in the words of Becker and Obermayer may be defined as "one in which no structural changes can be found, either on gross or microscopic study. The

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changes seen especially on microscopic examination are vascular spasm, œdema, and cellular infiltration, conditions which can revert to normal without residual organic change. A functional disorder may however, lead to organic disease in some instances. If a person has dry neuro-dermatitis, the first symptom of which is itching, and scratches sufficiently to produce lichenification, such is definitely on the organic side and is classified as a physical dermatosis".

A modern gynaecologist with progressive ideas will always take into consideration, the possibility of a psycho-somatic disorder in cases where there is no organic lesion to explain the subjective complaint. In fact, the recent researches in gynaecology have shown that if the fundamental biological events like puberty, menstruation, reproduction, menopause, etc., in the life of a woman are properly governed by the regular action and inter-action of the 'Hormones', there is no reason why an imbalance in the nervous control of the functions of these endocrine glands arising from the various emotional states of the individual, should not produce gynaecological disorders of functional origin, similar to what might be produced by an organic lesion in the particular endocrine gland or glands in question.

According to the teaching of the late Professor Warthin, "Unrest is the greatest attribute of the protoplasm and it is more so in subjects with functional disorders, where again the maximal changes are manifested in the nervous and vascular systems. Such potentialities may be read even in their pre-natal hyperactivity and is more manifest in their infancy when the child cannot but comply with the higher impulses. In their adult life, their hyper-kinetic nervous system is responsible for their "overacting" habits with the maximum expenditure of energy. Becker and Obermayer, while explaining the mechanism of the neuro-dermatoses state that "there seems to be a definite balance between the functional disease and the sensation of fatigue. While the person is on the go, he does not feel tired, but is troubled by the functional disease. When he is put to bed and isolated from the outside world, he gradually becomes very tired and the symptoms of his dermatosis improve. When he again resumes unrestricted activity, the feeling of fatigue disappears and the functional disease takes its place. Fatigue is a sensory phenomenon, as is pruritus". These facts are to be remembered in the management of such cases. In a discussion of the role of the nervous system in the causation of functional disorders, Alvarez says "it seems to me that their symptoms can most easily be explained as due to an instability of their autonomic or involuntary part of the nervous system which causes it to play disconcerting tricks on the heart, blood vessels, digestive tract, kidneys, and skin". The consensus of recent opinion in this matter is that when either the fatigue factor or the inherent "unrest" in the individual produces an imbalance in the control of the hypothalamic centre, the resultant

production of acetylcholine, sympathin or histamine is responsible for the various signs and symptoms of functional diseases.

As a result of the recent functional studies undertaken by Van De Erve, Becker, Petersen, Lynch and others, the causative inter-relations between various functional diseases have been brought to light. Patients with neuro-circulatory instability have usually one thing in common, *viz.*, their low B.P. (and sometimes low B.M.R. also). The presence of one functional disorder in an individual always gives room for the development of other allied conditions, particularly when attention is focussed on the particular symptom and not on the individual. Thus, the consulting physician now-a-days finds also that it is quite possible for a certain individual who goes to him with some functional gastro-intestinal disturbance, to have had some neuro-dermatosis in his childhood and to develop some sexual neurosis or psychoneurosis in the near future or even to fall in the group of allergic diathesis and get asthma or vasomotor rhinitis or hay fever or a migrainous type of headache and so on. So the management of the underlying mental irritability and of the nervous exhaustion together with symptomatic treatment is the pivotal point in psychosomatic therapy for functional diseases.

DIAGNOSIS:—Case-taking is very important in gaining the confidence of the patient, and also because the apparently minor details obtained in this procedure, often prove very useful and effective in the later treatment.

A careful local examination will reveal that in many cases leucorrhœa is an associated factor and the character of the discharge is often very suggestive. Thus a thin foamy offensive discharge in a young lady with a "strawberry vagina" is almost characteristic of *Trichomonas vaginitis*. On the other hand, in the ante-natal clinics, a lady with an angry-looking diffuse vaginitis with scanty thick cheesy discharge, is in all probability suffering from a fungal infection. In the gynaecological outpatient-clinic an elderly lady with a scanty blood-stained discharge with soreness of the vaginal mucosa is a diagnostic case of senile vaginitis due to oestrogenic deficiency. *Kraurosis vulvæ* with or without leukoplakia is another condition found in the menopausal age. Here the lesion is confined to the mucous membrane of the vulva and the underlying pathological changes usually come in the three classical stages. Leukoplakia is a very common complication of this lesion and malignancy may at times be a terminal event in the picture. In lichen sclerosus *et atrophicus*, unlike *kraurosis vulvæ*, the white plaques extend to the peri-anal region and in the later stages, the entire area undergoes atrophic changes. Lichen planus is another dermatological condition that should be remembered in the differential diagnosis and the case report of an atypical distribution of the lesion may be of interest.

A young telephone operator came complaining of intense itching of very recent origin over the vulva and the inner side of the thighs; she had no other trouble. On examination, the labia majora, and the inner sides of the thighs were found to be covered with characteristic bluish white, shiny flat-topped papular lesions, which at places were confluent to form islands with a shiny whitish scaly covering. The lesions were absolutely isolated and the rest of the body was completely free from it. To confirm the diagnosis of lichen planus, a dermatologist was consulted and our provisional diagnosis was very soon corroborated by the further spread of the characteristic lesions over the flexor aspects of the forearms, over the shin bone and then over the whole of the trunk. The first appearance of the isolated lesion over the genital muco-cutaneous junction is the point of interest in the early diagnosis of this case.

Management:—In the presence of a positive finding, the treatment becomes very easy. Leucorrhœa, if present should be controlled first. Local hygiene is very important. Arsenical preparations like S.V.C. are very effective in *trichomonas vaginitis*, whereas gentian-violet or triple dye proves almost specific in fungal infections, like moniliasis. In senile vaginitis, oestrogen therapy both locally and parenterally gives quick relief. For lichen sclerosus *et atrophicus* and *kraurosis vulvæ* with or without leukoplakia, the treatment is surgical. For lichen planus, injections of sodium thiosulphate with glucose, along with large doses of Vit. B₁ and locally liniment calamine with Goulard's lotion gives very quick relief. Later on, injections of Liver Ext. with Vitamin B complex and C and Mist. Hydragryri orally are to be continued, till the lesions have completely disappeared.

In children, the stool examination often reveals the presence of oxyuris or other intestinal worms and so specific treatment relieves the pruritus.

The possibility of an associated diabetes should always be borne in mind and the urine should always be examined, as a routine measure, in intractable cases. Lymphatic leukæmia has been mentioned only to complete the list. A careful history-taking often helps the examiner to determine accurately the exciting factor in an allergic condition, which actually has the trigger action.

Last but not least, is the management of the functional group, where no definite ætiological factor can be ascertained. The only positive finding in such cases is an eczemoid lesion over the affected site, which remains more or less hyper-sensitive due to the irritative hyperplastic and hypertrophic changes of the nerve endings and any slight irritation produces pruritus which by further irritation of the area completes the vicious cycle. This is a very important factor to be remembered in the management of such cases. Psychologically these patients almost always suffer

from an inferiority complex and are very despondent and pessimistic in their attitudes. They take it for granted that the disease is incurable and consequently lose all interest in life and in the world around. Shyness and mental instability often make them avoid the doctor, and instead make them resort to old grandmothers in the house or in the neighbourhood, who suggest and even provide quack nostrums which, when applied serve to produce or keep on the irritation, and make the patient's condition worse than ever.

The first and the foremost point in the management of such acute conditions, is to gain the confidence of the patient, by giving her the fullest assurance that the disease is curable within a very short time. Quick symptomatic relief is essential for this purpose and for such conditions, the following preparation has given excellent results in my hands in some very intractable cases, even at the peak of the irritative stage.

R Procaine hydrochlor
Ascorbic acid
Calcibronat

250 mg.
100 mg.
1 tablet.

Ft. pulvis; send 8 such. Sig. One pulv. 3 to 4 times a day after meals in the acute stage and then reduce the dose gradually. Locally liniment calamine with phenol or liq. carbonis detergens 5% is a very helpful antipruritic agent. The frequent use of boric acid compresses improves the condition of the local tissues. The break in the vicious cycle helps to a very great extent in the restoration of the normality of the tissues concerned. Sedatives should be prescribed liberally. Superficial X-ray therapy may be tried in selected cases. Once the patient gets relief, her mental strain is greatly reduced and then the attending physician, who would by now have gained her confidence should not omit to find out the underlying cause for the psychosomatic instability. Various types of sexual neurosis, can very often be attributed to the underlying mental condition and once the clue is obtained, the patient must be re-assured about the complete correction of the same. The following report on a recent case will be of interest.

A newly married young lady came complaining of intractable pruritus which developed shortly after her marriage and the symptom used to exacerbate only periodically, just about a week before the menstruation and used to disappear completely with the onset of the menstruation. She was definitely in a morose condition when she was examined for the first time, which happened to coincide with her period of exacerbation. She was purposely kept waiting for a good length of time, during which there were discussions on various topics including her own hobbies and it was observed that during all this time she was not in the least uncomfortable even for a second. Repeated and complete laboratory investigations gave no positive clue. There was no history of

leucorrhœa. The only finding was local eczematoid lesions over the site, with raw areas at places due to recent scratchings. The relative absence of the symptom, when the attention of the patient was diverted, the absence of any other obvious ætiological factor, made one wonder, whether the disease might have a functional origin. She was given the treatment of the acute stage (detailed *supra*) and she felt very much better within a short time. Then after gaining the confidence of the patient in the course of further conversations, the great fear she had for pregnancy was detected, which dated back to her witnessing the confinement of her elder sister at which she happened to be present. In her own words she could very vividly describe the great sufferings of her sister's labour-pains, which often haunted her like a nightmare, specially just before the periods which she very anxiously awaited. This could very well explain the periodicity, coinciding with the state of her mental instability. The couple had very weird ideas about the use of contraceptives and guidance in this matter gave the lady a sense of complete security and since then she is absolutely free from this distressing symptom.

In conclusion, the control of the environmental factors, the treatment for nervous exhaustion by ensuring rest and periodical vacations, the encouragement of mental diversions in the shape of suitable hobbies and adequate sedation are, in brief, the main principles of psychosomatic therapy in neuro-dermatoses.

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Calcutta-4.

Newer Therapeutic Procedures in Pruritus Ani

A group of 62 patients with anal pruritus showed a good response to topical application of an antihistaminic preparation, propenpyridamine maleate. This was applied in the form of a cream in a concentration of from one to three per cent. This application was made before going to bed, and it followed a starch or tar bath. Average duration of treatment was 24 days, but improvement, generally followed only two to three applications. The therapy may be only palliative. A concentration of 5 per cent sodium propionate and 5 per cent sodium caprylate in an aqueous or cream base was successfully employed, in much the same way as the antihistaminic described above, in another group of 21 patients with anal pruritus.—(N. Y. St. J. Med., 51, 1408-1410, Squibb Abst., 2; 1952).

LEUKÆMIA— SOME CLINICAL TYPES OF ONSETS

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LEUKÆMIA is the most mysterious of all blood diseases. Depending on its onset and mode of progress, leukæmia may be of three clinical types, viz., Acute, Subacute and Chronic. Of the three, the chronic type is the classical one with an enormous enlargement of spleen and liver and a spectacular appearance of the blood picture.

Leukæmia is a disease which appears in various forms stimulating many other diseases and its symptoms may be manifest in any part of the body. This is because of its basic pathology, wherein the undifferentiated white cells infiltrate into all the tissues of the body and some may undergo proliferation in certain sites. Leukæmic infiltration may be gross, thus accounting for an enlargement of organs and of pressure symptoms. Leukæmic patients may seek advice, for symptoms other than the actual disease, e.g., neurological lesions, Meniere's syndrome, dermatological manifestations, dental trouble, visual changes, bone and joint symptoms, hæmaturia, purpura, abdominal tumour, glandular enlargement and many other conditions showing general symptoms arising from anæmia, such as lassitude, fatigue, lack of energy, palpitation, shortness of breath. These symptoms may be preludes to the simple or chronic type or some of them may be known when the history is given out or when the case is presented for examination e.g., purpura, stomatitis, fever, toxæmia and other distressing symptoms or some hæmorrhagic manifestations. The female reproductive system may show evidence of infiltrations in some part of it. Amenorrhœa or scanty menstruation is common and fertility is decreased; abortion may also occur frequently. Scotomata and even blindness may be produced and evidence of cranial nerve palsies are found in some cases. Meningeal symptoms may be seen. Girdle pain and paresis with symptoms of subacute myelitis of the spinal cord are also found. So, we should assess all signs and symptoms with an open mind and arrive at the diagnosis of this mysterious and difficult-to-diagnose disease. I am setting out in tabular form all the relevant observed facts in detail, in seven cases of the disease which presented varying types of onset.

Discussion.—In this series seven cases of leukæmia have been reviewed; of these 4 patients had fever at the onset. In one case fever was accompanied by swelling of the face and gums and in another swelling over the left thigh and joints. In a third case there were respiratory symptoms and another case (of a female) complained of uterine bleeding among other symptoms; it was remarkable that the patient seeking advice for general anasarca was found to be a case of myeloid leukæmia. One patient came up with meningeal

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LEUKÆMIA—SISIR KUMAR KUNDU

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symptoms. In this small series of seven cases we see as many modes of onset.

A typical clinical presentation is made by Wintrobe and Mitchell (1940) who state that the disease may simulate inflammatory conditions, abdominal and cardiac disease, bone and joint disease, skin disease and affections of the central nervous system, the respiratory system and the genito-urinary tract. Osler in his text book describes leukæmia as a disease characterized by permanent increase in the leukocytes of the blood associated with hyperplasia of leukoblastic tissue. It has since been shown that leukæmia is a condition in which proliferated cells may or may not appear in the blood (Whitby). The acute forms of leukæmia offer a striking contrast to the chronic forms both clinically and pathologically. The disease may commence with startling suddenness and its true character may not be suspected till near the end. The disease may occur in a subacute instead of an acute form, and is apt to be mistaken for infectious mononucleosis or other benign infections of the leukæmoid variety. There is a close clinical resemblance to agranulocytic angina, which however may readily be eliminated by the blood picture; septic conditions of the mouth, scurvy, acute rheumatic fever and essential cytopænia are to be considered. Every case of stomatitis or unusual ulceration of the mouth and pharynx merits a blood examination. Vaughan and Harrison (1939) however, take the view that myelosclerosis arises as a more primitive hæmopoiesis than does leukæmia.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
I	K. C.	Hindu	Male	14 years	20-6-'52	Death on 29-6-'52
Complaints		Condition on admission			Laboratory data	
(1)	Ulcer right cheek.	Patient pale, anæmic, gums very much swollen, ulceration in the cheek, trismus present, neck rigidity present, muscles in the back stiff, Kernig's sign positive; spleen and liver both palpable two fingers below the costal margin.			20-6-'52. Blood—Hb: 9 gm; R.B.C. 3.5 mil; W.B.C.: 8000; Poly: 54 per cent; Lympho: 28 per cent; Myelocyte: 4 per cent; Myeloblast: 14 per cent.	
(2)	Pain in the precordium.				Blood: 24-6-'52: Hb: 8.5 gm per cent; R.B.C.: 3.45 mil; W.B.C. 14000; Poly: 44 per cent; Lympho: 20 per cent; Myelocyte: 8 per cent; Myeloblast: 28 per cent.	
(3)	Severe pain in lumbar region.					
(4)	Severe pain in neck.					
(5)	Inability to lie down. Duration 15 days.				27-6-'52. Blood—Hb: 8 gm. per cent; R.B.C.: 3.12 mil; W.B.C.: 26000; Poly: 36 per cent; Lympho: 20 per cent; Myelocyte: 12 per cent; Myeloblast: 32 per cent. Blood: Biochemistry; Total protein: 4.8 gm. per cent; Serum album: 2.9 gm. per cent; Serum globulin: 1.9 gm per cent; Creatinine: 1.2 mg per cent; N.P.N.: 36 mg. per cent; Uric acid: 2 mg. per cent.	

Speciality :—Ulceration in the cheek, severe pain in neck and lumbar region. Inability to lie down—Symptoms of meningitis.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
II	P. P.	Hindu	Male	12 years	8-5-'52	Death on 13-5-'52.

Complaints	Condition on admission	Laboratory data
(1) Fever-remittent type. Duration—5 days.	Pale, anæmic, poor nutrition, spleen palpable one finger, liver palpable two fingers below the costal margin. Axillary group, cervical group, inguinal group and popliteal group of lymph glands palpable. No bony tenderness, soft systolic murmur in pulmonary area.	9-5-'52. Blood—Hb: 30 per cent; R.B.C.: 1.75 mil; W.B.C.: 25200; Poly: 3 per cent; Lympho: 2 per cent; Myelocyte: 70 per cent; Myeloblast: 25 per cent; Total protein: 4.8 gm per cent; Serum albumen: 3 gm per cent; Serum globulin: 1.8 gm per cent; Creatinine: 1.2 mg per cent; N.P.N.: 36 mg per cent; Uric acid: 2.5 mg per cent; Calcium: 6.8 mg per cent.

Speciality:—Fever—Swelling of the face and gums.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
III	R. S.	Hindu	Male	29 years	9-11-'51	Discharged on 12-1-'52.

Complaints	Condition on admission	Laboratory data
(1) Gradual enlargement of the abdomen, 6 months. (2) Cough with expectoration—15 days. (3) Bleeding gums.	Pale, anæmic, spleen palpable 2 fingers below the costal margin. Abdomen enlarged; flanks bulged fluid in the abdomen.	12-11-'51. Blood—Hb: 40 per cent; R.B.C.: 1.43 mil; W.B.C.: 27400; Poly: 68 per cent; Lympho: 8 per cent; Eosino: 2 per cent; Myelocyte: 22 per cent; N.P.N.: 33.3 mg per cent; Uric acid: 4.1 mg per cent; Creatinine: 1.3 mg per cent.

Speciality:—Bleeding gums, cough with expectoration, ascites.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
IV	M. R.	Hindu	Male	22 years	7-6-'51	Death on 18-6-'51.

Complaints	Condition on admission	Laboratory data
(1) Rise of temperature. Cough with expectoration. Duration 6 weeks. Bleeding per gum. Extreme anæmia. Hurried respiration.	Poor nutrition, pale, anæmic, spleen and liver palpable 2 fingers below the costal margin, gingivitis present, friction sound in the left mammary region, systolic murmur in all the cardiac areas, superficial and deep reflexes exaggerated.	9-6-'51. Blood—Hb: 16 per cent; R.B.C.: 1.01 mil; W.B.C.: 153700; Poly: 15 per cent; Lympho: 5 per cent; Myelocyte: 60 per cent; Myeloblast: 20 per cent; N.P.N.: 32 mg per cent; Uric acid: 3.5 mg per cent; Creatinine: 1.2 mg per cent.

Speciality:—Bleeding gum and respiratory symptoms.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
V	S. B.	Hindu	Male	2½ years	30-3-'52	Death on 4-4-'52

Complaints	Condition on admission	Laboratory data
Fever—irregular, intermittent—2 months. Swelling of the cheek 1½ months. Swelling over the left thigh above patella. Swelling of the glands. Enlargement of the abdomen. Swelling of the right elbow and left-wrist joints.	Pale, emaciated, puffy, swelling on the right elbow and left-wrist. Spleen—enlargement upto umbilicus 2½ fingers below the costal margin, liver not palpable, lymph glands cervical and inguinal groups enlarged.	2-4-'52. Blood—Hb: 25 per cent; R.B.C.: 1.5 mil; W.B.C.: 13,600; Poly: 20 per cent; Lympho: 58 per cent; Mono: 6 per cent; Eosino: 6 per cent; Myelocyte: 10 per cent; Normoblast: early and late forms.

Speciality:—Fever—Swelling of the joints, and over the thigh.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
VI	B. D.	Hindu	Male	15 years	13-11-'51	Death

Complaints	Condition on admission	Laboratory data
Swelling and vague pain all over the body, palpitation.	Abdomen enlarged, liver enlarged two fingers below the costal margin, lymph glands enlarged specially axillary group.	14-11-'51. Blood—Hb: 7.5 gm; R.B.C.: 2.25 mil; W.B.C.: 50,800; Poly: 4 per cent; Lympho: 5 per cent; Mono: 1 per cent; Lymphoblast: 90 per cent; N.P.N.: 30.6 mg per cent; Uric acid: 2.6 mg. %; Creatinine: 1.2 mg per cent.

Speciality:—Vagus pains all over the body and general anasarca.

Case No.	Name of patient	Religion	Sex	Age in years	Date of Admission	Result
VII	I. P.	Hindu	Female	40 years	3-3-'52	Death on 14-3-'52

Complaints	Condition on admission	Laboratory data
Intermittent rise of temperature—one month's bleeding per vagina.	Pale, anæmic, emaciated, puffiness of face, swelling eyelids, feet oedematous, spleen palpable two fingers below the costal margin, liver palpable, tenderness over the manubrium of sternum, uterine bleeding.	5-3-'52. Blood—Hb: 30 per cent; R.B.C.: 1.63 mil; W.B.C.: 63,800; Poly: 10 per cent; Lymphoblast: 12 per cent; Myeloblast: 10 per cent; Myelocyte: 68 per cent.

Speciality:—Bleeding per vagina, intermittent rise of temperature.

Summary.—1. Leukæmia may start with or without any characteristic symptoms and may be referred to a disease presenting symptoms of nearly all the systems of the human body.

2. The clinical pictures of 7 cases varying in their modes of onset are presented.

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Combined Therapy and Drug Resistance (In Urinary Tract Infection)

Kimmelman *et al* studied 37 cases of urinary tract infections, which included uncomplicated cases of cystitis, urethritis and pyelonephritis, as well as those complicated by calculi, strictures and obstructions. They treated them for 7 days with daily doses of the following:—Intramuscular injections of 1 gm. streptomycin, and 200000 units of penicillin; sulphadiazine 2 gm. orally. The urine became sterile in 16 cases which were of the uncomplicated type. The bacteriological findings were not satisfactory in 21 cases, 19 of which were of the complicated type. Bacterial strains resistant to all the 3 drugs emerged in all these 19 cases systematically. The urine and faeces of seven patients were found on repeated examinations to contain nearly all the resistant strains indicating that these organisms were derived from the faecal flora of the patients. In spite of the fact that the organisms persisted in many cases good clinical response was obtained in all the cases. The untoward toxic symptoms. If the cause of obstruction or complication (*viz.* calculi, stricture etc.) be removed, this combined therapy will result in permanent cures according to these authors. —(*J. Urol.*, 65, 668, 1951).

Arrhythmias: Procaine Amide Compared with Quinidine Therapy

Schaeffer tested the two drugs quantitatively in 2 patients with ventricular and one with auricular arrhythmias with the main object of comparing the clinical efficacy of procaine amide and quinidine in the treatment of arrhythmias and seeing if procaine amide was more effective in ventricular than auricular arrhythmias. The results indicated that quinidine was approximately 4 times as potent as procaine amide; thus for every 0.065 gm. of quinidine required to produce the required therapeutic effect, 0.25 gm. of procaine amide may be used instead. Procaine amide was found to be just as effective in ventricular as in auricular arrhythmias. Procaine amide is administered orally but causes nausea and vomiting; also a large number of capsules are required for an average effective dose; but it is still certainly of value in the case of patients who are intolerant to quinidine. Further, procaine amide was found to be superior to quinidine for intravenous administration. —(*Am. Heart. Jour.*, 42, 597-604, 1951).

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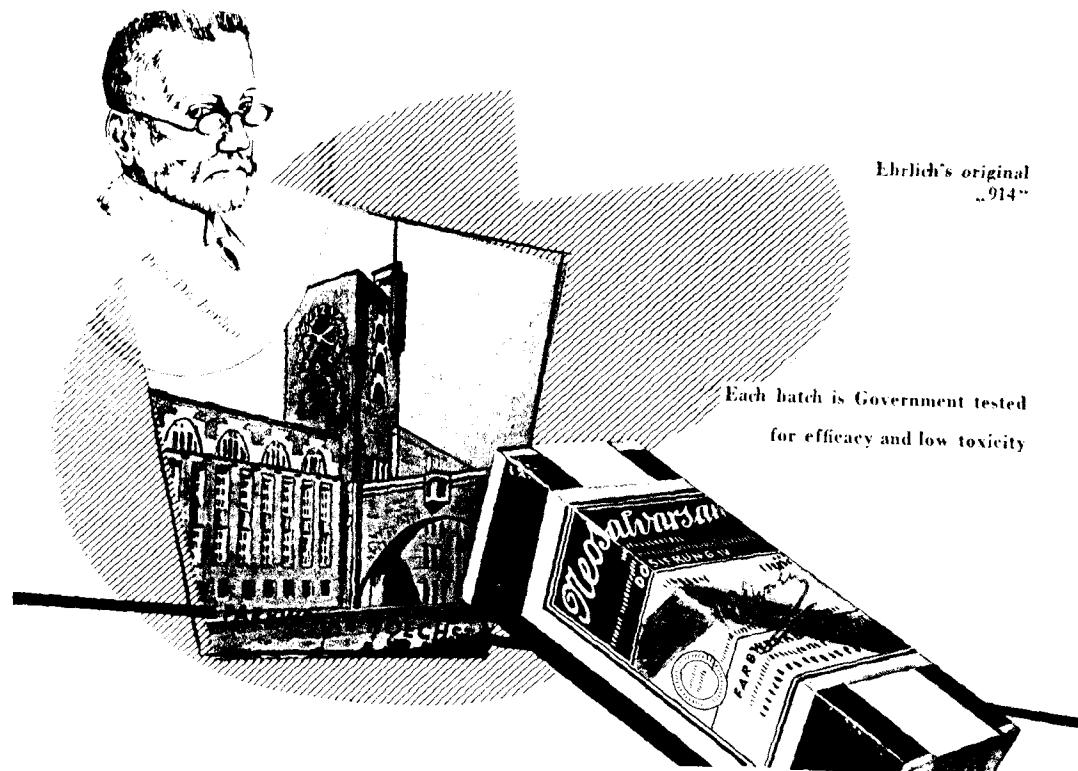
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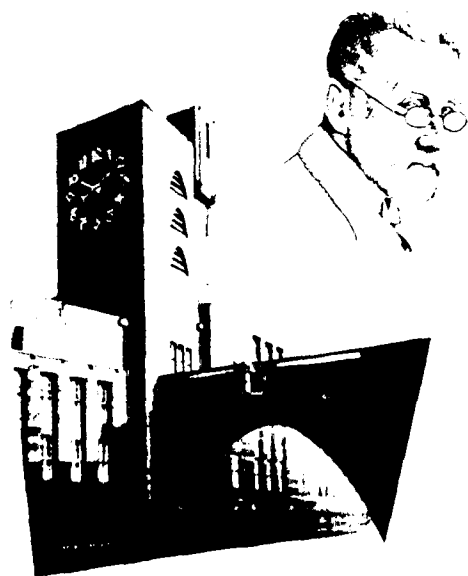


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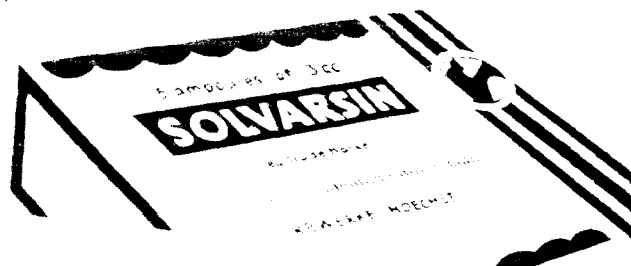
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MEDICAL EDUCATION AND THE ALL-INDIA MEDICAL COUNCIL

OUTSTANDING problems of the medical profession in India were discussed by Dr. C. S. PATEL, President of the Medical Council of India, at the 38th Session of the Council held in New Delhi on Friday the 14th November '52. Among these, was the introduction of a double shift system in Medical Colleges, with the primary object of meeting the urgent need for more medical men and women to afford relief to the suffering poor in rural areas. The Executive Committee of the Council had recommended the double shift system, wherever suitable arrangements in this behalf could be made by the Universities concerned. The All-India Medical Council, the highest academic body dealing with the question of medical education, accepting the recommendation of its Executive Committee, passed a resolution to the effect that this immediate measure was very vital for supplying the deficiency in medical personnel. The Council also recommended that medical colleges be permitted to admit each year an additional number of students not exceeding 25% over and above the number approved by the Council for each institution. The resolutions will be sent in the usual course to the Government of India for approval, after which alone they will become effective.

The Vice-Chancellor of the Madras University Sri Dr. A. L. MUDALIAR criticised the two proposals, as they would in his opinion, lead to deplorable results in the maintenance of standards of medical education in the country. "It was unthinkable" said he "that the Medical Council should pass such a resolution. It will have also serious repercussions on the value that will be attached to Indian medical degrees in foreign countries". Answering this criticism

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Dr. PATEL reminded Dr. A. L. MUDALIAR, that the genesis of the proposal to admit 25% over and above the number approved by the Council was that several colleges were actually admitting students far in excess of the number approved by the Council and in any case in much larger numbers than the extra 25% which the Council now proposed to allow. The idea underlying the Council's resolution in this regard, was "to restrict the number to a reasonable limit". Any college admitting extra students under this resolution will be required to see that the requirements laid down by the Council in respect of staff, accommodation and equipment are complied with and the concerned Universities will have to satisfy themselves that these conditions are being observed".

And as regards the double shift system, Dr. PATEL said the intention was to permit its introduction only in those colleges where proper standards could be maintained. Dr. PATEL referred to a statement made by Dr. B. C. ROY of Calcutta, the mover of the resolution, to the effect that the double shift system had been in vogue in Calcutta for some years and was working quite satisfactorily there. In answer to Dr. A. L. MUDALIAR's warning that the Council's attitude should receive the attention at the hands of both the Inter-University Board and the Government of India, Dr. PATEL declared that attempts from any quarter to lower the standards of medical education in India would be opposed by him and the Council with all their might. Dr. A. L. MUDALIAR in his rejoinder stated that the dangers of the double shift system were too obvious, particularly at a time when owing to a rapid increase in the number of medical colleges great difficulty was being experienced in getting qualified teachers even for the present numbers. "Now that the Council had by a majority given its seal of approval to the double shift system" stated Dr. A. L. MUDALIAR, "it is not unlikely that pressure will be brought to bear on Universities to adopt this system at least in certain States."

Dr. PATEL did not however, agree with Dr. MUDALIAR's contention that there would be a dearth of suitable clinical and non-clinical teachers. "There is no dearth" said he "of consultants with post-graduate qualifications who could be appointed as clinical teachers and as regards non-clinical teachers, if the colleges concerned were prepared to pay them properly there should be no dearth of such teachers."

We have examined the *pros and cons* of the proposals in all their aspects and we cannot help feeling that the Council's resolutions are only permissive legislations, framed with the sole object of affording, in every possible way maximum relief to the suffering millions in the country, without in any way sacrificing efficiency or lowering the standards of medical education. To our mind, the fears of Dr. A. L. MUDALIAR are not well founded and perhaps somewhat exaggerated too. If as Dr. B. C. ROY, the doyen of the

medical profession in India has stated in his speech before the Council, the double shift system has been working satisfactorily in Calcutta, there is no reason why it should not be introduced in other medical colleges of India as well. The suggestion has been made that the real state of affairs about the proper and satisfactory working of the system at Calcutta, should be investigated by duly qualified inspectors or visitors sent out for inspection, and we have no doubt that such an investigation or inspection would bear out Dr. B. C. ROY's considered statement that the double shift system was functioning well. We are inclined to agree with Dr. PATEL that there is no real dearth in our country of suitable, highly qualified persons amongst the consultants and general practitioners with post-graduate qualifications, who would gladly accept clinical and non-clinical teaching posts provided they are offered, adequate emoluments, security of tenure and responsible positions in the respective institutions. In any case, there is undoubtedly a strong and urgent case for training a considerably larger number of students than at present to meet the needs of rural medical relief and for the introduction of the double shift system in all medical colleges to secure this object. Initial difficulties there will be, and these are not insurmountable provided there is healthy and hearty co-operation and goodwill from all concerned. The introduction of the double shift system may obviate the necessity for instituting courses offering lower medical qualifications for rural medical practitioners—a proposal which is being stoutly opposed by large sections of the profession and the public and which the All-India Medical Council also considers to be undesirable.

BETTER CARE OF WOMEN AND CHILDREN

THE Union Health Minister RAJKUMARI AMRIT KAUR laid the foundation stone for the B. R. NAIDU ward in the G. K. NAIDU Memorial Hospital for Women and Children at Coimbatore on the 23rd October 1952. Sri Dr. R. K. SHANMUKHAM CHETTY presided on the occasion. The Union Health Minister stressed the need for a large number of socio-medical workers. "Madras" she said "has led the rest of India in women's welfare work as well as in numerous other departments of activity and a Woman's Welfare Department of Government was functioning for about 5 years in Madras. A recent report by the Madras Government stated that the family welfare and community service centres organised by the Women's Welfare Department were the "pivotal points of the department".

The Union Health Minister felt overburdened with the thought that with the evergrowing expenditure on "Defence" very little was available for the nation-building activities like Health and Education. She could not give adequate relief to the sick and suffering people. She however, agreed that considerably more

attention should be paid to the welfare of women and children and that adequate maternity facilities were needed for the women of the land. An all-out effort should also be made to bring down infant mortality.

Sri Dr. SHANMUKHAM CHETTY paid a tribute to the Union Health Minister for her sincere and tireless efforts in improving the conditions of health in India, and stated that financial stringency associated with the Union Government, he turned down many requests but with reluctance and a heavy heart. There were, however, certain items of expenditure and certain fields of public activity for which an excuse of financial stringency should never be made. No great nation or State had laid down arms on the ground of want of finance in the world's history. Millions and millions of dollars and pounds had been spent and some of these astronomical sums of money had been found by Governments. If Governments could find money for devastating wars, one might ask "should they not find money for meeting the demands for such basic needs as education and public health?"

We in India talk of a welfare State—a somewhat ambiguous word. The only way in which we could achieve that ideal was by encouraging private charity and private enterprise, although the idea of a welfare State meant to many people that the Government would find money for every welfare activity. Sri Dr. SHANMUKHAM CHETTY was of the opinion that "Governments should declare that they would contribute 50 per cent of the capital health activities under certain conditions". The other half should be found by private enterprise.

The States at present are not able to do as much in this direction as may be necessary but they still do what they can. Much valuable help has been received—for which the nation's grateful thanks are due to them—from the WHO and UNICEF. In the highly organized welfare States of the World e.g., England, the State gives every possible attention to the mothers of the nation and to the children who are future citizens, but in countries like India, voluntary effort and help are essential to achieve this end. It will be very long before our Union Government is able to find funds to meet even the "half share of capital and recurring expenditure to all hospitals and educational institutions." So philanthropy should take its share and we are sure that Madras which has been leading in every good undertaking calculated to advance the interests and welfare of the people in many directions, will keep up her tradition and serve as a model for her sister States to copy.

Gleanings From The Medical Press

MEDICINE AND THERAPEUTICS

Immunization against scrub typhus.—(*Am. J. Trop. Med. Hyg.*, 1, 1, Jan. 1952).

During the last few years, the problem of the therapy of scrub typhus has been conquered and control measures based on protection of the individual against the bite of the vector mite have been developed to a highly satisfactory state. The search for a practical method for immunization against field exposure to scrub typhus has been continued since the satisfactory maintenance of anti-mite measures by the individual subject to field exposure, requires constant intelligent attention.

A report by Smadel *et al.*, is concerned primarily with the duration of immunity in volunteers subjected to the combined procedure of inoculation with live vaccine and chemo-prophylaxis; the resistance of such persons to a homologous and a heterologous strain of *Rickettsia tsutsugamushi* is examined in detail:

The immunity which developed in volunteers as a result of suppressed infection with *R. tsutsugamushi*, obtained by inoculation of live vaccine followed by a course of chloramphenicol chemoprophylaxis, was essentially the same as that displayed by volunteers who, following inoculation, experienced overt disease which was terminated by specific therapy.

Immunity to the homologous strain of rickettsiae persisted at a high level in most persons for at least 1 year and in some for longer periods.

Resistance to infection with heterologous strains of *R. tsutsugamushi* was of a transient nature. Even within a month after inoculation with one strain an appreciable number of persons became ill following injection with a heterologous strain. By the end of a year, all were again susceptible to heterologous infection. During the period of waning immunity, the disease which

resulted from the heterologous strain was modified from the classical picture. Indeed the illness observed in the test shortly after recovery was so mild that it would probably not have been recognized as scrub typhus if rickettsæmia had not been demonstrated. On the other hand, the disease which resulted when the individuals were tested after 1 year generally presented the typical picture of scrub typhus.

Action of insulin on the liver.—(Annotation, *The Lancet*, 25-10-1952).

Sherlock *et al.* (*Clin. Science*, 11, 1952) studied 'normal' and diabetic patients by hepatic vein catheterisation, and found that the liver was largely but not wholly responsible for the fall in blood sugar level after an injection of insulin. In normal persons, there was a correlation between the lowered hepatic output and increased peripheral utilisation of glucose; this was not however, apparent in diabetics in whom two types of response could be distinguished. In one group, corresponding to the elderly obese diabetic often with cardiovascular complications, the effect of insulin was mainly an increase in peripheral utilisation of glucose, but with a relatively slight fall in blood sugar; whereas the other group—the young thin diabetic with minimal complications—responded to insulin by a large drop in the capillary glucose level mainly due to diminished hepatic production. Aspiration biopsy of the liver showed normal liver cells in the hepatic-sensitive group and fatty change in the hepatic-insensitive group. (*Lancet*, 1951, ii. 698).

It now seems possible to have a unitary conception of the action of insulin in normal persons and in diabetics; for insulin has been shown consistently to stimulate the formation of liver glycogen, if freed from the opposing effects of hypoglycaemia, with release of

adrenaline and of contaminating glucagon derived from the pancreatic alpha cells.

The use of triethylene melamine in neoplastic diseases.—(*A. M. A. Arch. Int. Med.*, 89:3; March 1952).

Wright *et al* of the Cancer Research Foundation, Harlem Hospital, New York reported in 1950, the beneficial effects obtained with triethylene melamine, in the treatment of 14 human beings suffering from lymphosarcoma, Hodgkin's disease, chronic myelogenous leukaemia, fibrosarcoma, reticulum-cell-sarcoma, and mycosis fungoides. No improvement was obtained in cases of anaplastic sarcoma, osteogenic sarcoma and carcinoma. Karnofsky and his associates (*Arch. Int. Med.*, 87, April 1951) confirmed the above findings substantially. Wright *et al* treated 28 further patients suffering from neoplastic diseases, using this chemotherapeutic agent and followed up six of the 14 patients in their first series.

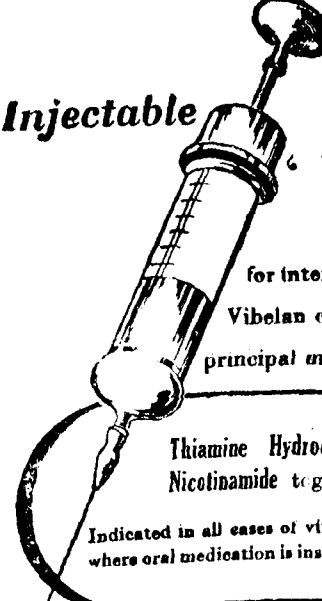
Triethylene melamine (Lederle) was administered in doses of 5 or 10 mg. daily in courses of 1 to 4 days or in the dosage of 1 mg. daily in courses of 5 to 15 days. The average dose per course was 5 mg. daily for 3 days. The total dosage per course varied from 5 to 30 mg. The maximum total dose given to a single patient was 120 mg. in 168 days. When an initial course of 15 to 20 mg. produced no therapeutic effect after 15 days, and when the patient was free of its toxic effects (nausea and vomiting) a repeat-course was given. Improvement occurred in 18 of the 42 patients thus treated, 9 in the latter 28, and 9 in the first 14 cases. The cases thus benefited were:—Four of six persons with Hodgkin's disease, three with lymphosarcoma, 2 of three with reticulum-cell sarcoma, one with chronic myelogenous leukaemia, and one with mycosis fungoides. The most dramatic improvement was noted in patients with lymphosarcoma, Hodgkin's disease, chronic myelogenous leukaemia and chronic lymphatic leukaemia. No improvement was observed in any of the patients with carcinoma in the authors' cases.

Acne in young men treated with diethylstilboestrol.—(*Arch. Dermatol. Syphil.*, 65, pp. 601-608, 1952).

White and Lehmann of the Brooke Army Hospital, Texas, record the results of their study of 26 hospital patients and 71 private patients with acne, treated by them during a period of 2½ years. Every alternate case in the hospital series received an average total dose of 88 mg. in 50 days of diethylstilboestrol, as also 21 of the 71 private patients. The remainder served as controls and were given tablets of sodium bicarbonate. Determinations were made of the urinary excretions of 17-ketosteroids, in the hospital cases before, during and after they had received the diethylstilboestrol medication. Suppression of the urinary 17-ketosteroids was noted in 14 of the treated patients and a definite gynecomastia in nine of these 14 patients. These effects disappeared about 3 weeks after stopping the diethylstilboestrol. All the hospital patients had better clinical results than the 71 private patients but no significant difference was noted in the 21 diethylstilboestrol treated patients as compared with the controls. Even in the hospital cases there was not appreciable difference between the treated cases and the controls.

Tuberculous ulceration of the oral mucosa.—(*Med. Gaz., Univ. Durham.*, 46:3, 44-46, June 1952). Dr. Bryson, Dental Surgeon of the Newcastle-Upon-Tyne Dental Hospital records several cases of tuberculous ulcers of the oral mucosa.

By far the vast majority of lesions are secondary to some other primary tubercular lesion in the body. The modes of spread from such other lesions have been described as: (1) Actual contact. (2) Direct extension. (3) Haematogenous route. (4) Sympathetic spread. The normal protective mechanisms of the mouth tend to support, haematogenous spread. Bacteriologically, it has been shown that tuberculosis of the oral cavity occurs infrequently in cases of pulmonary tuberculosis when the sputum is positive, and paradoxically oral lesions are frequently found where there is difficulty in demonstrating the



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presence of any bacilli in the sputum. Trauma is a predisposing factor in the presence of an infected sputum and also a prolonged chronic irritation, which sets up in the tissues a state which promotes the growth of the organism, e.g., loss of muscular tone, accumulation of waste products, and a diminished circulation to the part. The situations of the oral tuberculous ulcers are said to be the following in order of their frequency: (1) The tongue, the tip primarily and the border and floor of mouth secondarily. (2) Soft palate. (3) Lower and upper gums. (4) Lips and hard palate.

Clinically the primary lesion has been described as a slightly raised red area with a glossy appearance. Pressure produces yellow spots and usually there is a painless swelling of associated lymph nodes. The typical ulcer of a secondary nature is due to a breaking down and ulceration of several of the above areas, producing a large shallow lesion of irregular shape with undermined edges. The surface of the ulcer is usually covered by a greyish white slough, through which reddish raspberry-

coloured granulations protrude. With tuberculous ulcers, there is little surrounding induration but the lymph nodes draining the area affected may be enlarged. The most predominant symptom is pain, due to the shallowness of the ulcer.

TREATMENT: Prior to the advent of antibiotics, treatment was mainly palliative. Caustics or actual cautery may be applied locally. Ultra-violet rays, radium or Grenz rays may also be used. In some cases, infiltration or regional block with local anesthetics may be needed to relieve pain and in extreme cases section of the nerve trunk, e.g., lingual nerve.

Nowadays, streptomycin is being used successfully. In a recent report from U.S.A., on ten cases, all healed satisfactorily with only two recurrences which healed satisfactorily as a result of second courses of this drug. In cases where the oral lesion is found prior to the discovery of the systemic lesion, then treatment of the disease as a whole will benefit the oral lesion, using local treatment purely symptomatically.

SURGERY

New AP technique.—(*Lancet*, 1, 1,278, *Med. World*, 3-10-52).

Good inductions with no serious complications (such as excessive collapse or air embolism) have been claimed recently by Moyes and Scott (1952) in 71 out of 78 trial cases, by a simple method in which the lung is deliberately punctured by a fine bore needle, thus allowing air to leak from the alveoli into the intrapleural space. Of the 7 failures, 3 remained failures even after resort had been made to the traditional method of induction.

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that the lung has been punctured and an intrapleural space found. Radiography usually reveals the presence of a pneumothorax at the end of 24 hours, throughout which time the patient has been rested in bed. If this is the case, the chest wall is again infiltrated, air bubbles being aspirated as the parietal pleura is pierced. A Saugmann or fine Peter Edwards needle, connected to a pneumothorax apparatus, is then introduced. The amount and timing of this first refill depend upon the degree of collapse shown radiographically, but 200-400 ml can usually be given if the intrapleural pressures are satisfactory. The subsequent management of the pneumothorax follow along orthodox lines.

Bimedial lobotomy in chronic mental illness.—(*Am. J. Psychiat.*, 262-65, Oct. 1952)

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- (6) Polystan Tubes

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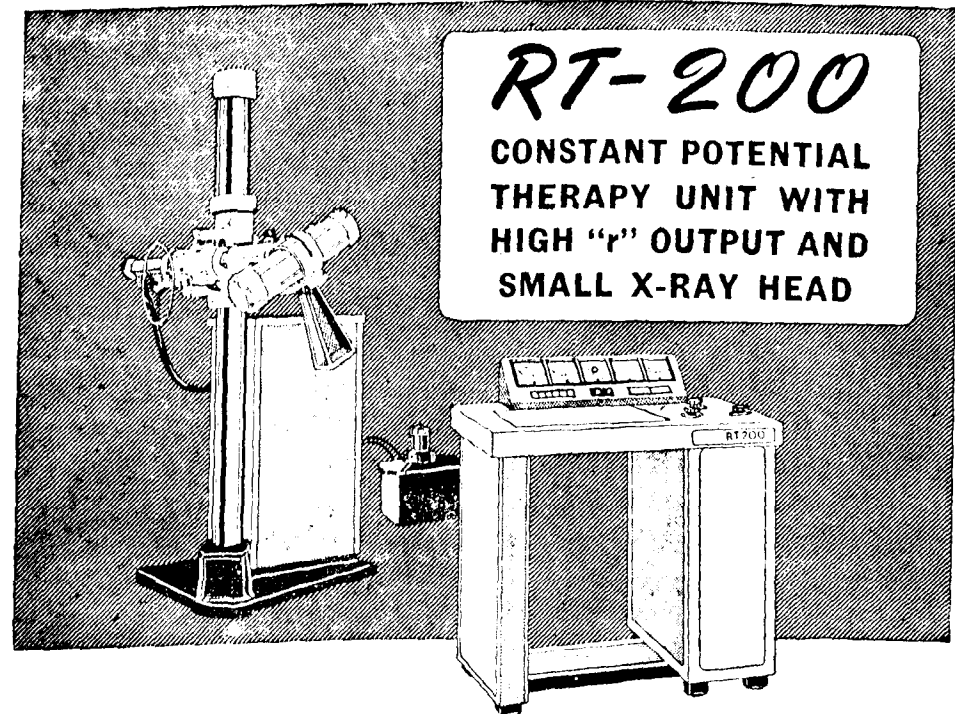
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Studies made by Greenblatt and Solomon at the Boston Psychopathic Hospital for over 9 years have carried the conviction that frontal lobe surgery is capable of effecting a rise in the level of adaptation of the chronic mentally ill patients. Bimedial lobotomy was found to be superior to either the conventional bilateral lobotomy or the unilateral lobotomy. The reduction in anxiety, tension, hostility, and impulsivity is dramatic, the improvement initiative and ability to form object relationships, the increased capacity to work and to get along, the recession of psychotic symptoms—all were most significant and important. In group situations, patients who received bimedial operation were more interested in interaction, more alive to group needs, more productive and organized in their activities than patients receiving the other operations. Psychological tests suggest that they made definite gains in abstraction capacity. There was no mortality in the total series of cases. The immediate postoperative morbidity of bimedial surgery was no greater than other operations and the incidence of untoward complications no greater than for conventional bilateral lobotomy.

For the present, at the Boston Psychopathic Hospital, bimedial lobotomy has replaced standard full bilateral operation in surgical treatment of chronic mental illness.

The present status of cardiac surgery.—(*Postgrad. Med. Jour.*, Sept. 1952).

Congenital heart disease:—Although the surgical treatment of pulmonary stenosis is now soundly established it is well to recall that until 1944 these cases were of interest only to the morbid anatomist; it was only when Helen Taussig realized that the essential abnormality in cyanotic children was a deficient blood flow from heart to lungs that therapeutic interest was aroused. With Taussig's support Blacklock (1946) devised the operation of systemic-pulmonary anastomosis, since named after him. This increases pulmonary blood flow, alleviates the crippling disability and transforms the life

of these pathetic children. This advance stimulated interest in the surgical treatment of heart disease and cardiologists began to assess the operability of an unsuspected backlog of thousands of similar cases.

Congenital deformities account for 2.5 per cent of heart disease. The principal abnormalities occur in the pulmonary outflow tract and include pure pulmonary stenosis and the tetralogy of Fallot. Untreated the prognosis is grave. In pure pulmonary stenosis the obstruction is nearly always at the valve, there is no ventricular septal defect, and cyanosis, if it occurs, is due to a patent foramen ovale. Right ventricular pressure is high and sudden right-sided heart failure a constant threat. Pulmonary valvotomy through the right ventricle by the technique of Brock (1948) and Sellors (1948) is the treatment of choice. Systemic-pulmonary anastomosis is dangerous as it does nothing to relieve the strain on the right ventricle and adds to that on the left.

In the more common tetralogy of Fallot the stenosis may be infundibular or valvular or occasionally both. The narrowing of the outflow tract and the ventricular septal defect diminish pulmonary blood flow and cyanosis is present to a varying degree. Diagnosis is relatively easy. Valvotomy relieves the valvular stenosis and the low infundibular stenosis may be resected. Unfortunately a general infundibular hypoplasia is often present or a high subvalvular obstruction occurs too near a normal pulmonary valve to be divided with a valvotomy. For these an extra-cardiac systemic-pulmonary anastomosis should be done. In general, valvotomy is indicated for valvular stenosis and recent reports suggest that in experienced hands the operative mortality is less than that of the Blacklock procedure. When the latter procedure is indicated in infants and in other cases where a high aortic arch and short subclavian artery prevent a subclavian-pulmonary anastomosis, the Potts aortic-pulmonary anastomosis is indicated. In most cases the results of these operations for pulmonary stenosis

have been immediately good, but in a proportion the improvement has not been fully apparent for some months until the pulmonary outflow tract and arteries have enlarged to accommodate the increasing blood flow.

Other common abnormalities amenable to surgical correction include patent ductus arteriosus and coarctation of the aorta. The most urgent indication is bacterial endocarditis as Tubbs (1941), who tied the first infected ductus in 1938, has shown. Others include cardiac failure, under-development and pulmonary hypertension. The operation is usually easy, an occasional difficulty being due to a wide short ductus for which division and closure of the ends is required in place of simple ligation; the mortality is almost nil below the age of three years.

By contrast the surgical correction of coarctation of the aorta is a difficult procedure. Despite this it should be advised for all patients below 30 years of age who have large hearts, a rising blood pressure or complications. Gross (1951) has recently reported the use of preserved aortic segments in 19 cases in which resections left a long gap requiring insertion of a graft to bridge the defect. Grafting has other applications and is made much easier by the formation of a blood vessel bank.

Constrictive pericarditis:—In constrictive pericarditis, pericardectomy to release the heart may produce marked improvement. There is an increasing tendency to operate early, under streptomycin cover, in young patients with a history of tuberculous pericarditis. In the older, chronic group the extent of the heart or liver damage influences the prognosis.

Mitral stenosis:—Undoubtedly the greatest advance in the surgery of the heart is the relief of the disabilities and poor prognosis of mitral stenosis. It has been estimated that 25 per cent. of heart disease is of rheumatic origin and conservative estimates have indicated an incidence of 5,000 cases of mitral stenosis per million population.

Surgical treatment should be considered for the majority of cases of mitral

stenosis, but there are certain general indications and contraindications. The principal indication for valvotomy is disability, such as dyspnoea on exertion or inability to carry on a normal occupation. For severe orthopnoea, cardiac asthma and pulmonary oedema valvotomy should not be long delayed as these signs betoken threatening pulmonary hypertension. Auricular fibrillation, severe hæmoptysis, frequent attacks of pulmonary oedema, emboli or recovery from congestive cardiac failure demand early operation. *Contraindications* to valvotomy are recent rheumatic fever, severe mitral incompetence and a significant proportion of disability due to associated aortic diseases evidenced by electrocardiographic and radiographic changes. Time may show that marked pulmonary hypertension contraindicates valvotomy, and the importance of permanent changes in the pulmonary arteries has yet to be assessed. Age is important because patients below 20 run the risk of recrudescence of rheumatic myocarditis, but this danger has to be weighed against the severity of the symptoms or dangers of severe hæmoptysis. In the majority the actual or potential myocarditis is over-shadowed by the mechanical obstruction.

Pregnancy causing complications is an indication for mitral valvotomy, not for hysterectomy. Cæsarean section or early forceps delivery may be employed as an alternative but these cases need careful supervision in the post-natal period and early valvotomy if they deteriorate. Some cases with congestive failure from mitral stenosis may be considerably improved by ligation of the inferior vena cava, but valvotomy should be performed in the following 12 to 18 months before deterioration recurs.

The treatment of regurgitation is still in the experimental stage but both here and in America the insertion of a trans-ventricular pericardial flap below the mitral orifice has been successful.

The early results of mitral valvotomy have been dramatic in the majority of cases. Most patients are

to forest an active life and enabled to recommence their previous employment. Provided active myocarditis does not recur, there is no reason for believing these results to be temporary. The outlook in most cases has been radically altered.

Cardiac trauma: Surgical treatment for cardiac trauma is seldom required in this country. However, experiences in two world wars and more recently in India have shown that wounds of the heart are not invariably fatal. Elkin (1941) and Harkin (1946) reviewed the treatment of wounds and removal of foreign bodies and their success in these procedures has put this type of surgery on a firm basis. For those cases reaching hospital, transfusion and the relief of cardiac tamponade by pericardial aspiration are indicated, but continued bleeding calls for exposure of the heart and suture of the wound.

Myocardial ischaemia: In contrast to the successful treatment of deformities and mitral stenosis no great advance has been achieved in the alleviation of myocardial ischaemia by surgery. Despite a trial of many different procedures resection of the upper five thoracic sympathetic ganglia, if necessary on both sides, provides only symptomatic relief when active treatment is indicated.

The surgery of the heart is therefore in a phase of rapid development. Active experimental work and tentative clinical application are progressing and procedures for the treatment of aortic stenosis and regurgitation, atrial septal defect, pulmonary hypertension and aneurysms may soon be forthcoming. In the next decade a combination of intrathoracic and peripheral vascular surgery bids fair to constitute the speciality of cardiovascular surgery. —A. J. P. Graham, M.B., F.R.C.S., *Annals*.

Complications of artificial pneumoperitoneum. (*Tuberculology*, 12:4, April 1952).

Dr. Harry Shubin, Visiting Physician to the Rush and Philadelphia General

Hospital, draws pointed attention to fifteen complications of artificial P.P. in the treatment of tuberculosis, and warns against the injudicious use of this method. Artificial P.P. introduced by Banyai (*Lancet*, 60: 120, 1940) in 1931 is often the treatment of choice in patients with acutely active and progressive tuberculosis, who are too ill for immediate thoracoplasty or resection and in whom A.P. is either complicated or unsuccessful. Is P.P. an innocuous procedure? Can it be used as freely as we are at present using and be safe? What might we expect in the way of complications? Shubin enumerates fifteen complications which must be anticipated, many of which could be prevented: (1) The non-tuberculous complications are appendicitis, cholecystitis etc.; acute appendicitis occurs more frequently in patients receiving P.P. than in the remainder of a hospital population treated for pulmonary tuberculosis. (2) The moderate shoulder pain or epigastric distress, especially following initial treatment, are usually transitory. (3) Dyspnoea and cyanosis may occur due to the encroachment upon the pulmonary volume by the upward pressure of the diaphragm. (4) Nausea and interference with the appetite from mechanical disturbance of the stomach may be easily controlled. (5) Subcutaneous emphysema, the result of injecting air into the abdominal wall, can be prevented with careful and proper technique. (6) Puncturing the intestines or other viscera can usually be avoided, unless marked adhesions exist. (7) Cardiac decompensation resulting from distortion and displacements of the heart and great vessels producing an increased load on the heart, is important in patients with a previously damaged heart. (8) Aggravation of potential hernial sacs into true hernia from increased intra-abdominal pressure is fairly common. (9) Mediastinal emphysema with spread to the subcutaneous tissues of the neck, resulting from a congenital defect in the diaphragmatic attachments, can be relieved only by stopping P.P. (10) Spontaneous pneumothorax complicating P.P. therapy has been given little attention in the literature. The probable mechanism is the existence of a diaphragmatic defect,

either inflammatory congenital, traumatic, or degenerative in origin. (11) Air emboli, though occurring less frequently than in A.P. can and still do occur. In the last 14 years, Shubin had 2 cases: one who had a convulsive seizure while air was being administered but luckily recovered; another a woman of 46, who received P.P. for 2 years and who after 350 c.c. of air, became dyspnoic, cyanotic, pulseless and died at once. Autopsy revealed air in the heart chambers, pulmonary and cerebral vessels. (12) Torsion of the spleen associated with P.P., though not commonly encountered, may be seen more frequently hereafter in association with the increasing use of P.P. (13) Presence of fluid usually clear, but at times turbid varying from 150 to 1500 c.c.s., caused by a tuberculous peritonitis or by the artificial P.P. (14) Intraperitoneal haemorrhage occurring

as a complication of P.P., could be caused by the puncture of a vessel in the abdominal wall just beneath the parietal peritoneum or from a ruptured vascular adhesion. (15) The effect on the peritoneum is important, autopsy and microscopic findings showed a chronic inflammation of the peritoneum in 5 cases, which could be considered a result of air and pressure.

Shubin then gives details of a patient who died after 2 years' treatment with P.P. as a result of generalized non-specific peritonitis secondary to pneumoperitoneum. He is not necessarily against the use of P.P. which he says seems to be getting more popular in the Eastern countries, but he is certainly against its injudicious use and wishes all medical men to be on the alert for at least fifteen complications.

BOOK REVIEWS

What Everyone Should Know About Tuberculosis—By Dr. M. SANTHOSHAM, M.B., B.S., F.C.C.P., 1952. Crystal Publishing House, Vepery, Madras. Price Rs. 4/12/-

Tuberculosis is one of the worst scourges in India. It takes an enormous toll of human lives and incapacitates many more. It has a high mortality. This can be attributed to the lack of facilities for treatment, to poverty and more than anything else to the ignorance regarding the fundamentals of the disease and the method of combating it. Dr. Santhosham is therefore to be congratulated on bringing out this book on "What Everyone Should Know About Tuberculosis". The book is addressed to those suffering from the disease and others interested in the patients. The question that rises uppermost in the minds of every patient is 'Can tuberculosis be treated with success and what are the prospects of a normal life after treatment?' Dr. Santhosham has answered this question in a very clear manner

when he says "with the co-operation of an obedient patient, a careful doctor and a sympathetic and sensible guardian, tuberculosis is to be feared no more than any other simple ailment". In this book there are useful chapters on:—Is Tuberculosis hereditary; Is Tuberculosis a disease of the poor; Can old people and children get tuberculosis; Sanatorium treatment, Home treatment; Prevention of tuberculosis etc. On the question of the value of B.C.G., Dr. Santhosham recommends it to all individuals who are tuberculin negative. He thinks that some day B.C.G. will be a complete answer to the problem of tuberculosis. There are a few plates illustrating tubercle bacilli and other subjects. The book is written in simple language and makes interesting and useful reading. We recommend the book not only to those suffering from tuberculosis but to those who have to attend upon the sick patient. It may also be useful to the rural medical practitioner.

BOOKS RECEIVED

The following books have been received since 15-11-52 and the courtesy of the Publishers in sending them is acknowledged. Reviews will be published from time to time—Ed.

1. **Physical Medicine Series, Vol. I. "Muscle Relaxation as an Aid to Psychotherapy"**—By GERALD GARMANY, B.Sc., M.B., Ch.B., M.R.C.P., D.P.M., Physician to Psychiatric Department, Westminster Hospital, Physician to Psychiatric Department, Westminster Children's Hospital, Lecturer in Psychiatry to Westminster Medical School, Recognised Teacher, University of London, 1952. The Actinic Press, London. Sh. 5 6 net

2. **Synopsis of Obstetrics**—By JENNINGS, C. LITZENBERG, B.Sc., M.D.,

F.A.C.S., Late Professor Emeritus of Obstetrics and Gynaecology, University of Minnesota Medical School, Minneapolis, 1952. The C. V. Mosby Company, St. Louis.

3. **Textbook of Surgery**—By H. F. MOSELEY, M.A., D.M., M.Ch. (Oxon.), F.A.C.S., F.R.C.S. (E), (Edg.), Assistant Professor of Surgery, McGill University, Associate Surgeon, Royal Victoria Hospital, Montreal, Canada, 1952. The C. V. Mosby Company, St. Louis.

4. **Human Parasites and Parasitic Diseases**—By K. D. CHATTERJEE, M.D. (Cal.), Visiting Physician, R. G. Kar Medical College, Belgachia, Calcutta, 1952. Sree Saraswati Press, Ltd., Calcutta-9. Rs. 65/-

CORRESPONDENCE

To The Editor, The ANTISEPTIC, Madras. Sir,

There is a male child here who will complete 3 years in March next. Ever since its birth, it is living only on milk. It refuses to take any other food including fruits. Milk itself has to be forced on the child. The total quantity of milk now

being given is about 15 ounces a day. The child is otherwise normal in all respects.

The anxious parents of the child will be highly thankful for any useful suggestions for inducing the child to take the food suitable for the age.

Dharwar, Yours faithfully,
25-11-52. K. S. KAMALAPUR, M.B., B.S.

NEWS AND NOTES

Sulphadiazine Production in India

A pharmaceutical and dyestuffs plant with an eventual capacity to produce enough sulpha drugs to cure most of the infectious diseases of India is being opened in Balsa, near Bombay. Atul Products Ltd., has been created with 90 per cent of its capital in India, and the remaining 10 per cent invested by the American Cyanamid Co. at the invitation of the Indians, who wanted the active interest and experienced participation of the American Company in the project. Atul contracted with American Cyanamid for technical assistance, loan of technical personnel, and the purchase

of raw materials needed for the production of fine chemicals and pharmaceuticals.

Sulphadiazine, which has proven its effectiveness against plague, will go into production first. Folic acid, a powerful antidote to the anaemias and malnutrition which sap the energies of millions in India, and aureomycin will be produced as soon as possible. The sulpha drugs are a specific against such diseases as cholera, pneumonia, blood poisoning, genito-urinary and respiratory ailments, many of which have been largely eliminated in the western world through public health activity.—(Extract from 'Pharmacy International', June 1952).

E. R. Squibb & Sons combine with Mathieson Chemical Corporation

E. R. Squibb & Sons, the internationally known manufacturer of ethical pharmaceuticals, has recently combined with the Mathieson Chemical Corporation, a major producer of industrial and agricultural chemicals and petrochemicals in the U.S.A. This combination has paved the way for an even greater development of research, manufacturing and marketing facilities of both companies throughout the world. Co-ordination of the broadened research facilities of both Squibb and Mathieson is expected to make available new specialities to the medical profession everywhere. Wherever possible, there will be manufactured locally. Since the end of World War II Squibb manufacturing facilities have been established locally in Mexico, Cuba, Columbia, Peru, Argentina, Uruguay, Brazil and in Europe and the Far East.

Late in 1950 Squibb and Sarabhai Chemicals, Baroda, began a programme in India under which Sarabhai is now manufacturing an extensive line of Squibb Products, including antibiotics, vitamin preparations and medicinal specialities. One of the outstanding achievements of Squibb and Sarabhai was that they were the first in India to make available the dramatic new drug, Nydrasid, for the treatment of tuberculosis. Rigid control, emphasis on high standards of quality and the availability in India of the latest advancements in Medical Science to come out of the United States, are stated to be important features of the Sarabhai-Squibb programme.—(J. W. Thompson Co's Press note).

Afghanistan Launches Large-scale Sanitation Programme

"The first large-scale sanitation and pure water supply programme ever to be undertaken in Afghanistan has now been launched by the Ministry of Health under the personal leadership of the Minister, H. E. Ghulam Farouq Khan, M.D.," said Mr. J. N. Lanoix, (Haiti) WHO Sanitary Engineer, who has just passed through Delhi on his way home. "Kabul is the only city at present with a piped water supply, and this serves

only about one quarter of the city's population." He found that by far the largest number of city and village dwellers have since time immemorial got their drinking water from open ditches, and mistakenly believe that "running water" is always fit for consumption. During his stay, Mr. Lanoix, assisted in the construction of the first scientifically planned septic tank in the whole country. He also helped design an automatic-flush latrine in the buildings of the Ministry of Health, to serve as a model for future constructions.

No public health laws are known to exist, Mr. Lanoix declares, nor are there any public health personnel, sanitary inspectors, or medical men specialised in public health. In this country of 12 million people, there are in all 22 engineers, all trained abroad, and only two of them are civil engineers.

"The Ministry's new environmental sanitation project is thus embarking on a practically virgin field" declares Mr. Lanoix. Its first objective is to organise a series of training courses in different aspects of hygiene and sanitation for nurses and mid-wives, medical students, workers in the control of malaria, typhus etc., and also for school teachers. The plan also provides for developing standard designs of sanitary installations for urban and rural communities, and for surveying, designing and executing water supply and sanitary installations for government institutions and other public buildings.

Control of typhus and malaria—Mr. Lanoix also worked with a WHO-assisted malaria control project in the Kunduz Khanabad district of N. Afghanistan which, in its second year of operation, gave anti-malaria protection to a population of nearly 150,000 living in 210 villages scattered over 820 square miles. The Afghanistan Government has recently allotted a budget of 2,335,000 Afghanis (U.S. \$ 137,000) for expansion of anti-malaria projects this year in 10 further areas including Kabul the capital.

Each winter, in the intervals of other work, Mr. Lanoix assisted in the Government's large-scale anti-typhus projects in Kabul and in Kandahar. During the winter of 1951-52, he

reports, more than 300,000 persons with their beddings and other clothing were dusted with 44,190 pounds of DDT powder. Instead of the usual severe winter epidemics of typhus, only four cases were recorded in Kabul city and one in Kandahar Province. A total of 13 tons of DDT for anti-typhus campaigns was donated to the Government by the UNICEF.

Mr. Lanoix's work in Afghanistan will be continued by another WHO Sanitary Engineer who is expected to arrive there within the next month or two. —(WHO Press Release, 13-10-1952)

'Hotycin' A New Antibiotic

Research scientists of Eli Lilly and Company have discovered a new broad-spectrum antibiotic which they claim does not produce disturbing side effects, and is as effective as many of the antibiotics now in use.

The new compound also appears to be effective against many organisms which have become resistant to penicillin or other antibiotics.

Clinical trials in over 100 patients in leading clinics have shown that massive doses of 'Hotycin' were tolerated without evidence of toxicity and without interference with the normal physiology of the intestinal tract.

Hotycin is classed as a broad-spectrum antibiotic by virtue of its activity in the laboratory when screened against many penicillin-susceptible organisms, plus those causing typhus, undulant fever, Rocky Mountain spotted fever, and others. Patients known to be allergic to penicillin are stated to have also taken 'Hotycin' without any ill effect.

The new drug appears to permeate from the bloodstream into the cerebrospinal fluid, a desirable characteristic in the treatment of such diseases as meningitis. 'Hotycin' is effective when given by mouth. Most of the patients treated so far have received capsules filled with the antibiotic in powder form. The peak level of effectiveness occurs about an hour after administration and the drug is detectable in the blood for about eight hours. —(Eli Lilly's News Release).

Two WHO Physiotherapists Assigned to K.E.M. Hospital, Bombay.

Two physiotherapy specialists, Mr. R. L. Jacques (U.K.) and Mrs. Page Coleman Mehta (U.S.A.), have this month joined the staff of the King Edward Memorial Hospital, Bombay, on a two year assignment from the World Health Organisation to help develop physiotherapy training with a view to the ultimate establishment there of an All-India Training Centre in Physiotherapy. WHO is also providing teaching equipment for the new centre to a value of \$5,000. Mr. Jacques who is a Member of the Chartered Society of Physiotherapy, London, is arriving in Bombay for his new assignment today (November 1). Previously he was senior physiotherapist at the Orthopaedic Rehabilitation Annexe at Perranporth, Cornwall. Mrs. Mehta was trained at the Columbia University School of Physical Therapy, New York, and until 1951 was Assistant Chief Therapist at the Goldwater Memorial Hospital for the physically disabled. She joined the K.E.M. Hospital staff earlier in October. The Government of India requested WHO's help in instituting the centre following the recommendations of a three-member team of poliomyelitis experts provided by WHO which visited several parts of India in 1950. According to the team's observations, polio accounted for considerably more than 20% of the total crippling of Indian children, thousands of whom needed rehabilitation. The team further observed that although K.E.M. Medical Centre had been giving poliomyelitis treatment for the past 15 years, its total capacity was far below the needs of the community, and recommended that the existing facilities should be used as the starting point for a physical therapy training programme of high quality.

Miss Sue Bruton, one member of the polio team, remained in India for some months in 1950 to assist in a short course of physiotherapy training at the K.E.M. Hospital. (WHO Press Release, 1-11-52).

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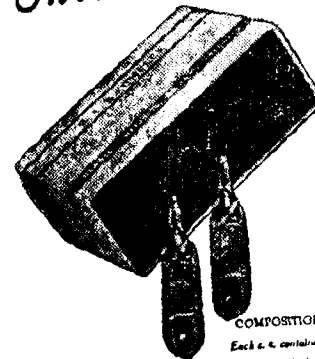
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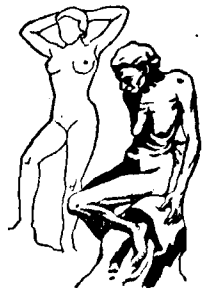
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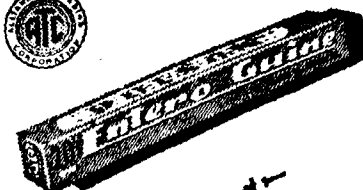
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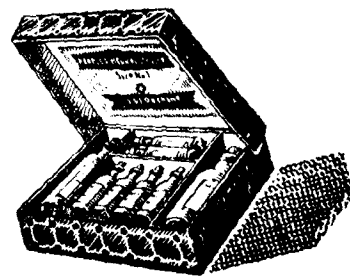
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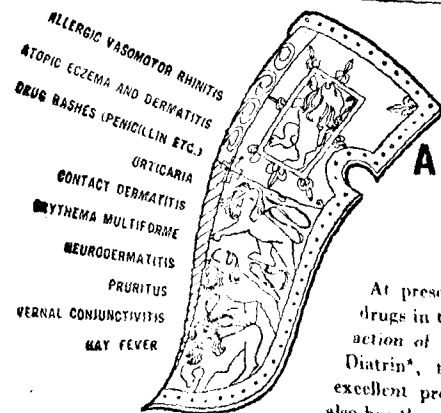
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¹ Britton C. J. C. (1950); Practitioner, 164, 458

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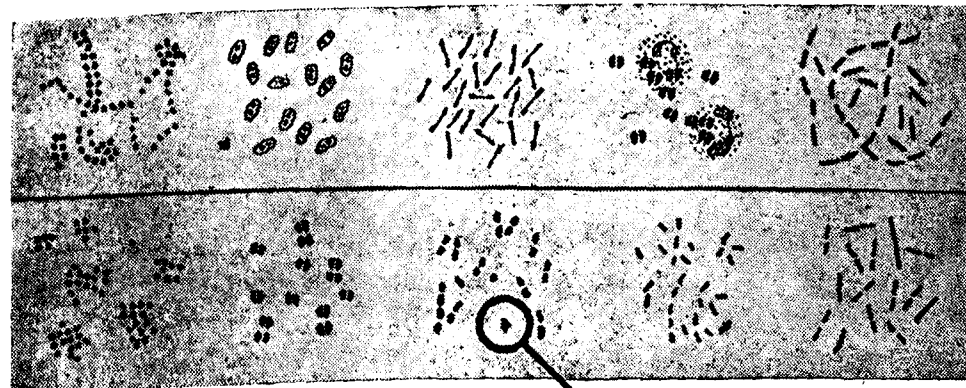
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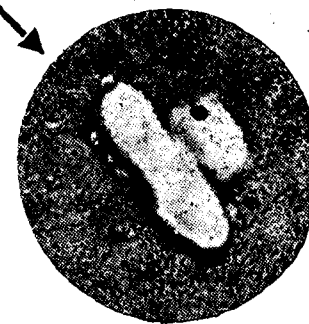
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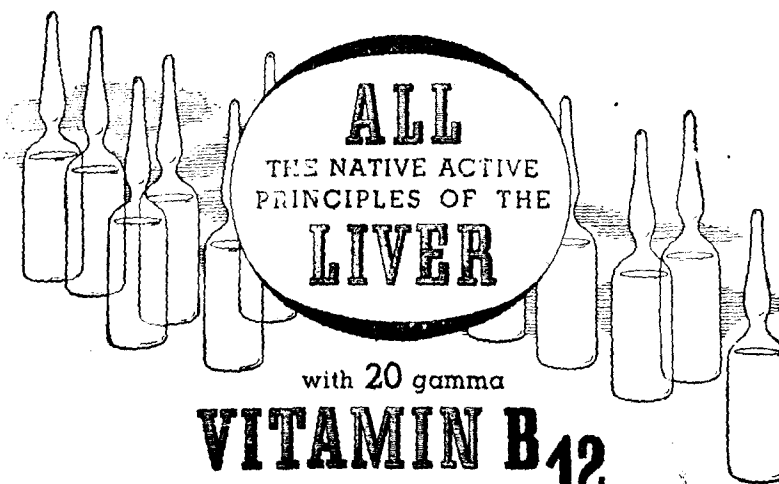
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* Vining, C. W. (1932),
Lancet, 2, 99-101.



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„ 0-11 0-13 1-5 2-5 Glaxo	„ guinidine „ 24-8 13-0	Bandages 6 yds. x 3" JJ 4-0 doz.
Strepto c P.A.S. Lepetit 6-2	„ thiazole Eng. 38-0 19-0	Hot water Bag 3-4; Ice bag 1-12
Dihydro Strepto lgrm. Glaxo 2-4	„ mezathine (100 6-14) 30-4	Hypo. Syringe (S.N. Re. 1 more)
Merck Hold 2-0 Pfizer 2-4; Merck 2-1	„ diazine USA 74-0; MB 42-0	A.G. Jap. 2 5 10 20 30cc.
Procain Penicillin 20 laos Gl. 5-8	„ „ Boots 41-8 500; BDH 39-0	0-10; 0-14; 1-3; 2-0 3-0
Ind. Govt. Dumex Pf. Gl. 1-8	Sulphatrone (100 9-12) 41-4	Italy 1-4 2-0 2-12 4-0 6-0
4 laos x 10 cc. Oily Eng. 8-8	Sulphatriad MB (100 9-0) 44-0	Germ. 1-0 1-4 1-12 3-0 4-12
3 laos x 10 cc. Oily Eng. 8-8	Sulphonamide pwd. 1 lb. 10-0	Record Ger. 3-6 5-8 6-8 10-4 13-12
Penicillin Skin Oint 1-12 Eye 0-14	„ oream 4 oz. Lilly 5-4 doz	„ Comp. 6-4 9-0 11-4 —
„ Tab. 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	Gentian Violet Jelly 4 oz. Lilly 4-4	„ Italy 3-14 5-0 7-0 9-8 12-4
„ Lozenges 20 1-4 [2 laos x 10 5-8	Emetine amps. BDH 1 gr. x 12 7-8	Boston 5-0 6-0 7-0 11-12 15-4
„ Tab. 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	„ 1 gr. x 12 13-0; 1/2 gr. x 25 13-8	B.D. Lock 8-4 13-0 14-4 17-0 23-10
P.A.S. Dumex 100grm 10-5 11-4-0	„ 1/2 gr. x 12 13-0; 100x1/2gr 52-0 box	Japan „ 1-14 2-14 4-0 6-0 8-8
„ 100 tab. Bayer 6-6; Italy 3-11	„ 1/2 gr. x 12 13-0; 100x1/2gr 52-0 box	Italy M. case 1-4 1-12 2-2 3-0 —
„ 250 Italy 9-0; 500 16-4	„ „ Endo 6 x 1/2 gr. 2-14	Metal case Ind. 50cc. 6-0
P.A.C. tab. 75 5-6; 250 14-12	„ P.D. 1/2 gr. x 6cc 7-2 1 gr. 11-0	Hypo Syringe 50 cc. S.N.
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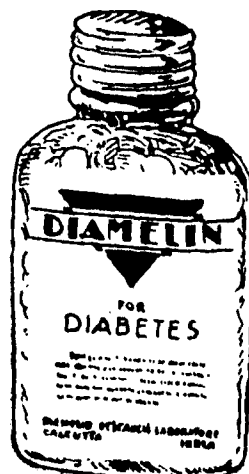
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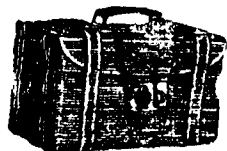
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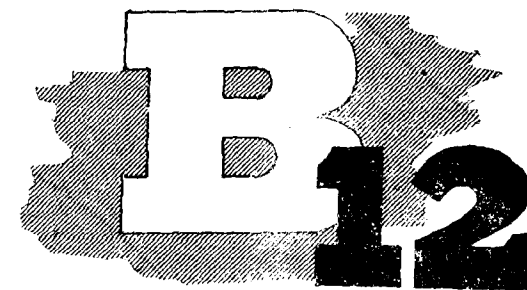
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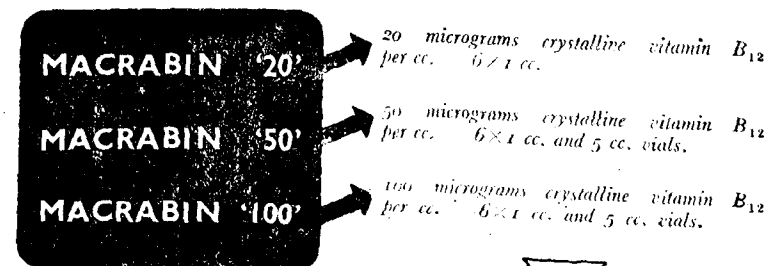
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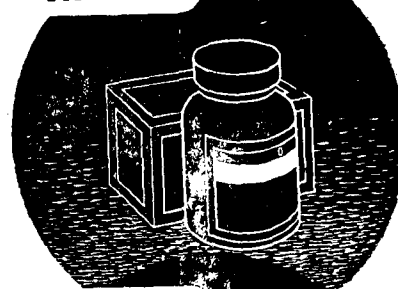
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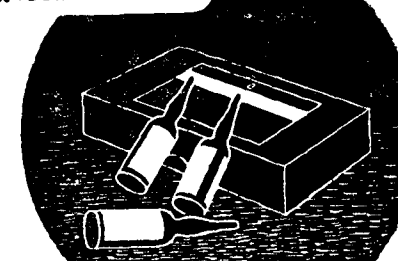
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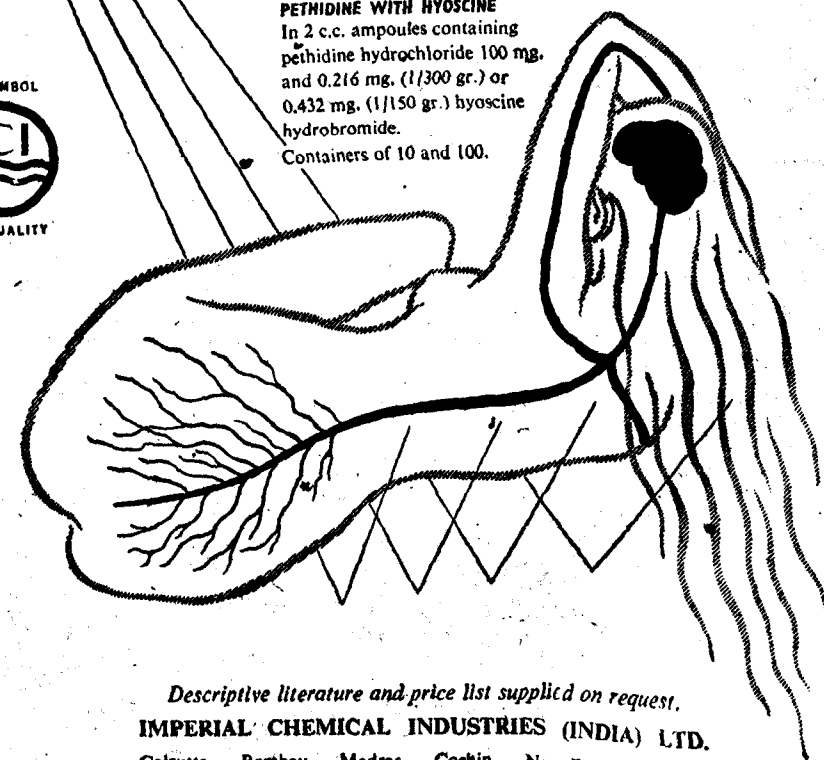
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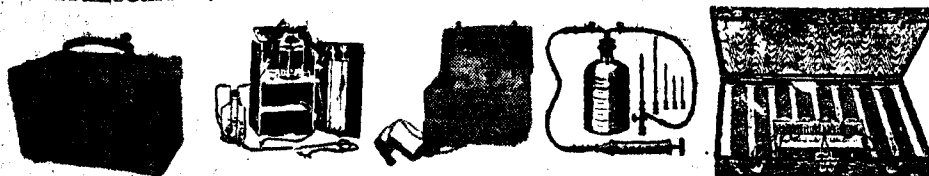
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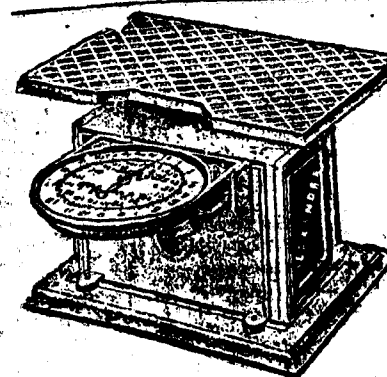
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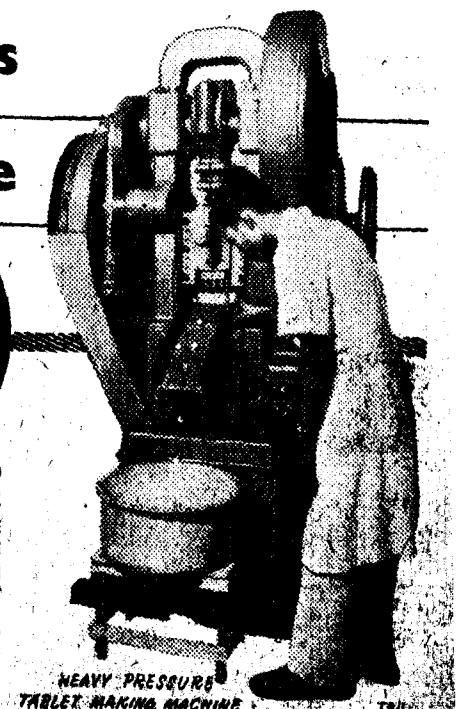
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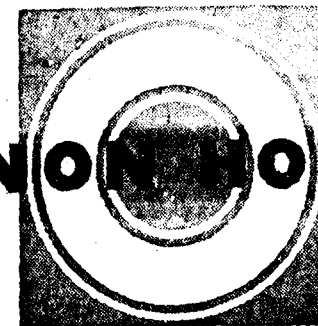
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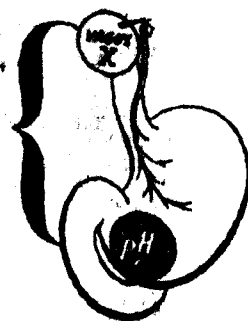
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Clinical observation shows that these conditions are accompanied by protein depletion, resulting in a negative nitrogen balance. The condition of the patient may further aggravate this, owing to his inability to consume the food offered. In such cases care should be taken to include in the diet selected foods of high protein value which are palatable and easy to assimilate.

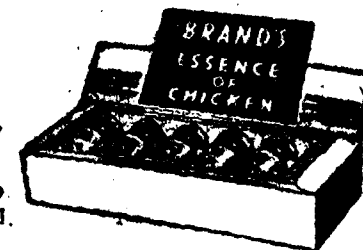
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CHLORUREMIC
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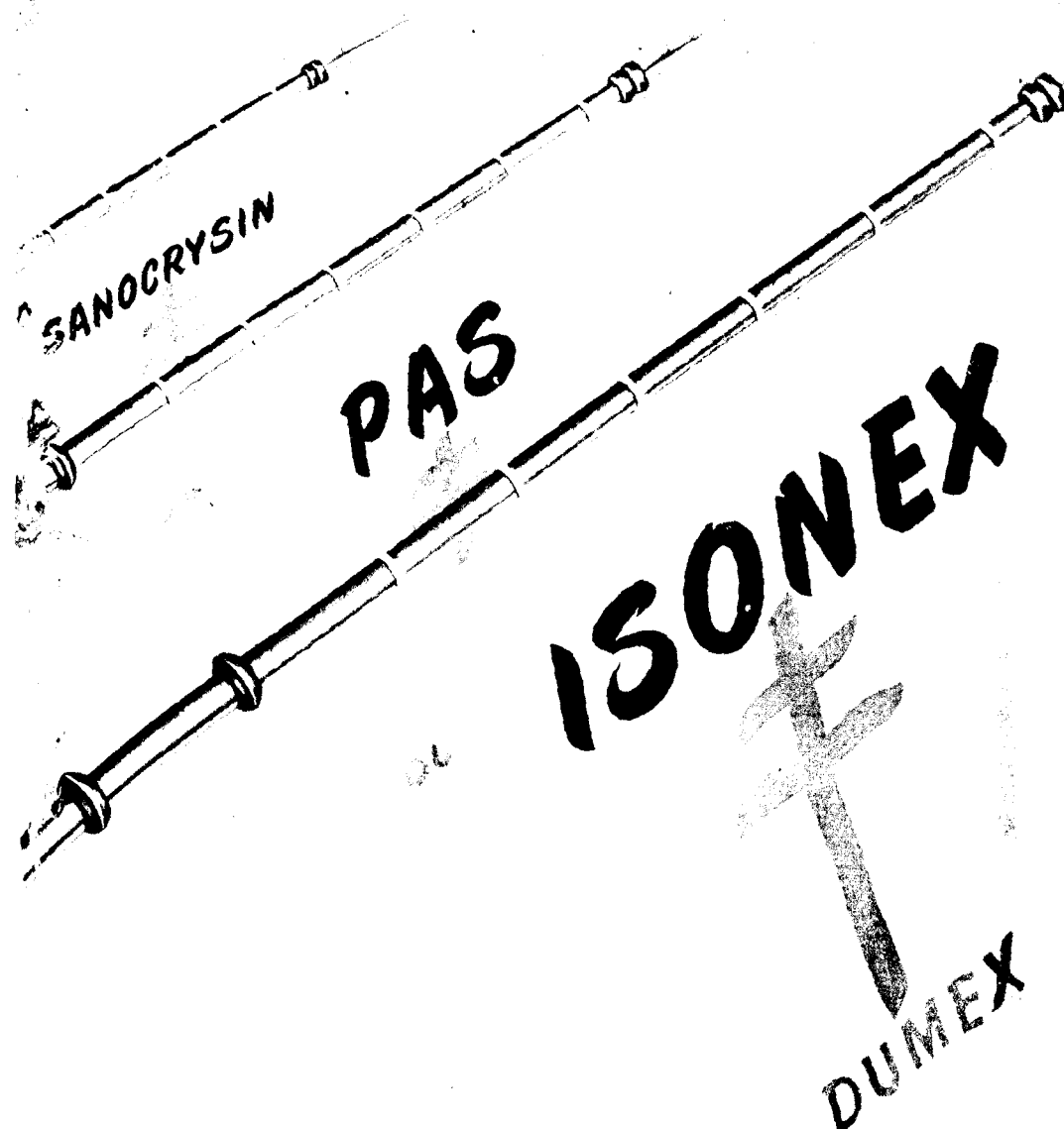
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Packings: 24, 100 & 250 Tablets.

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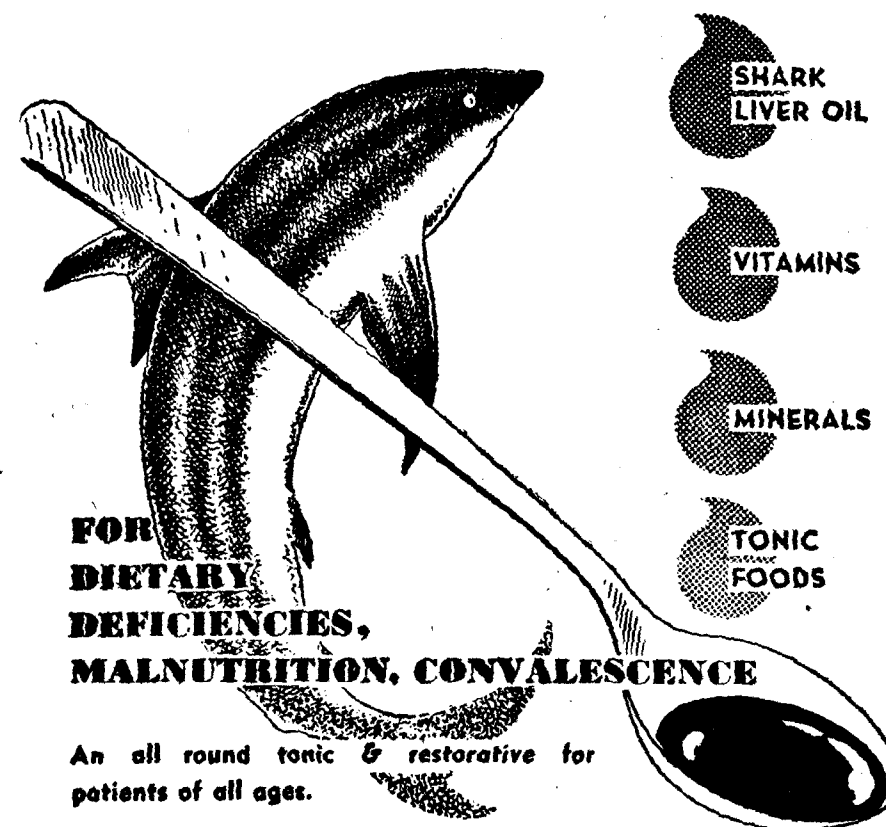
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THE ANTISEPTIC

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Hypophosphites of Lime, Sodium & Potassium	10 grs.
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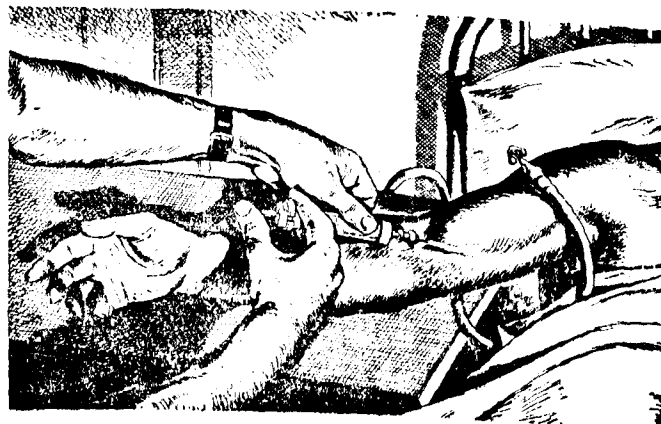
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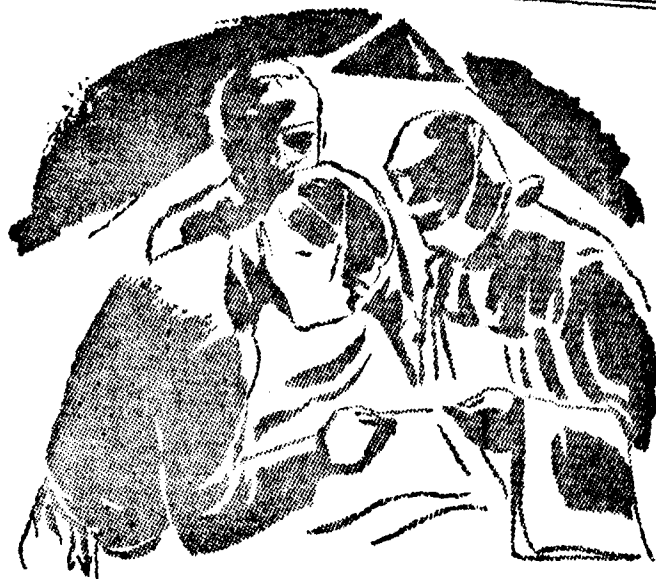
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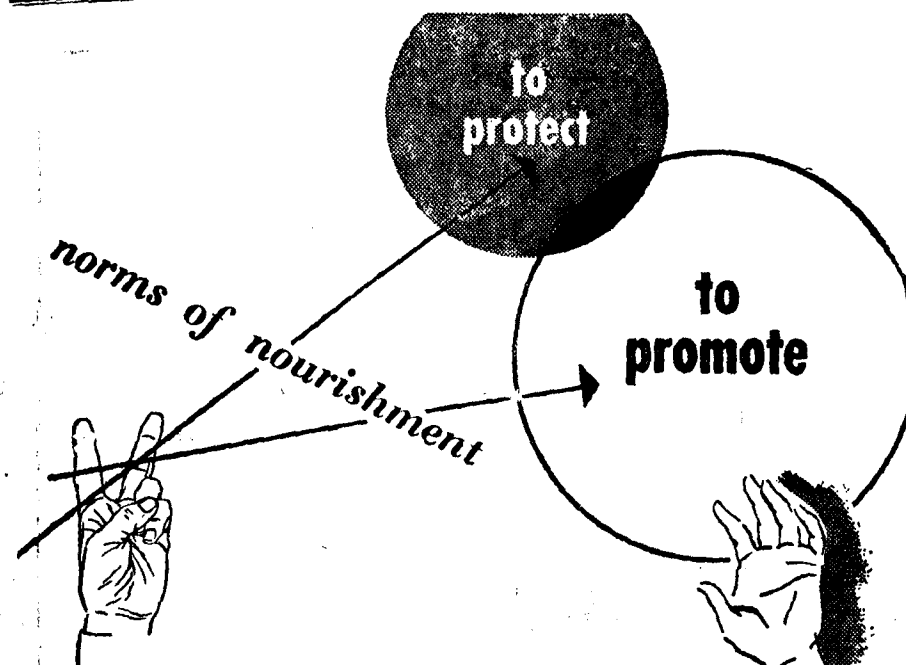
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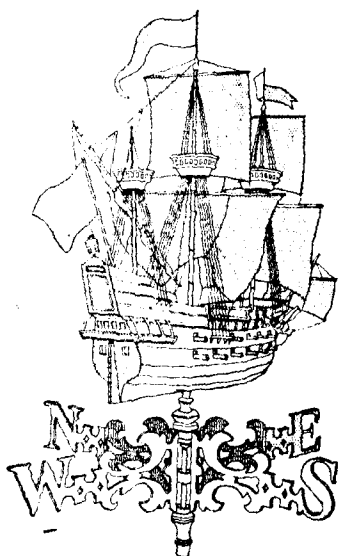
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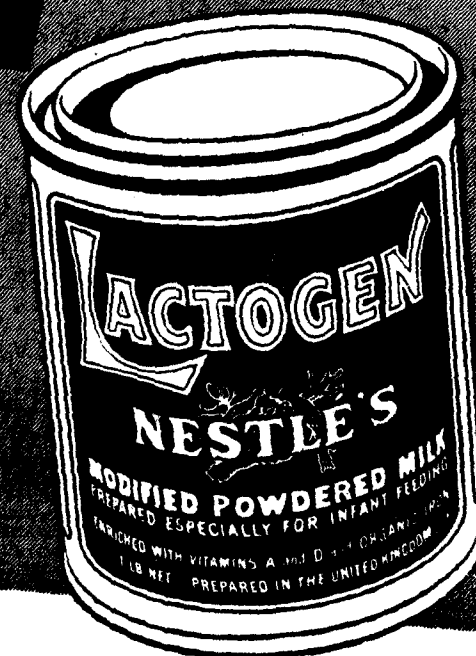
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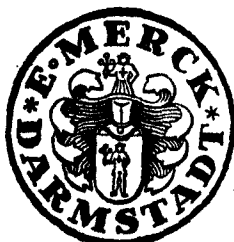
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1. Sayer, R.J.; Michel, J.C.; Moll, F.C., and Kirby, W.M.M.:
Am. J. M. Sc. 221:256 (March) 1951.

2. Bickel, G., and Platner, H.: Schweiz. med.
(Jan. 6) 1951. Wchnschr. 81:1

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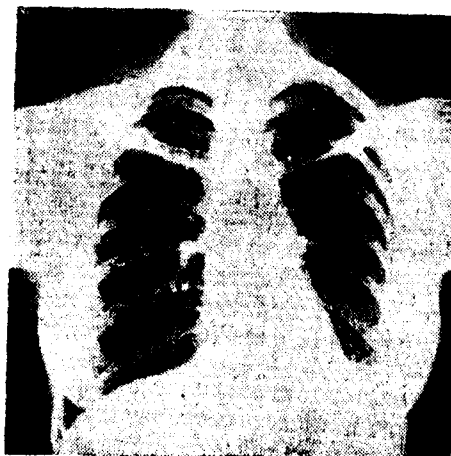
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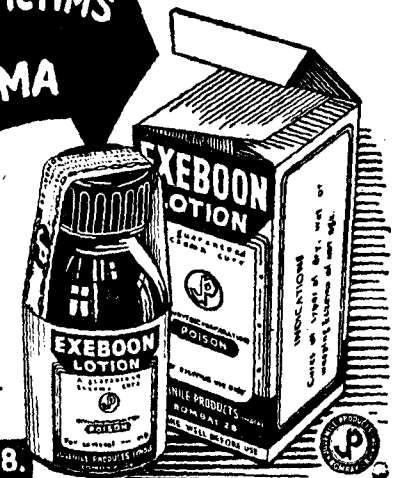
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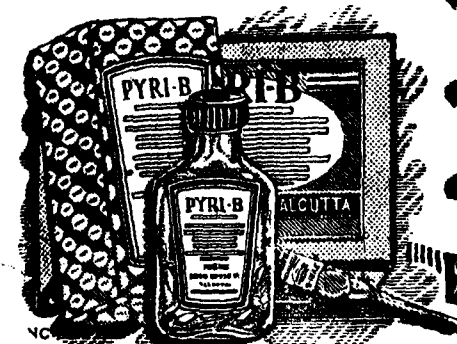
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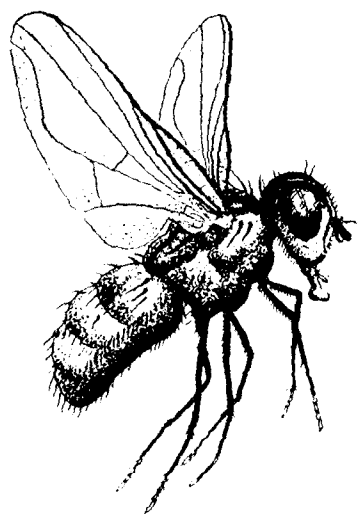
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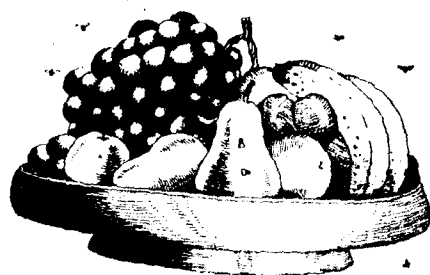
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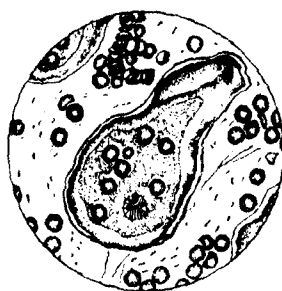


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Original Articles

GENERAL ADAPTATION SYNDROME*

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STRESS plays an important role in the modern every day life of man and the process of adaptation to the stress is constantly at work as a series of reactions on his part. The general adaptation syndrome GAS is an attempt at generalization on the basis of such known reactions. GAS forms an important trend in modern medicine and so a review of its salient features is here attempted.

The syndrome GAS attempts at integrating the results of animal experimentation and of clinical observation into a single hypothesis. Hans Selye, the exponent of this hypothesis, is a Canadian professor of experimental medicine and surgery. He attempted to produce artificially in animals pathological conditions observed in human beings. He claims to have produced rheumatoid arthritis in the ankle joints of rats by injecting formalin into the joints. The condition was greatly aggravated when deoxycortone (an adreno-cortical steroid) was injected simultaneously, and the condition was prevented from occurring when cortisone (another adreno-cortical steroid) was injected along with formalin. Similarly he was able to produce experimentally a variety of pathological conditions which were aggravated by one group of steroids and ameliorated by another group. These experiments led him to formulate in 1936, his theory of 'Alarm Reaction' which he developed into the 'General Adaptation Syndrome' ten years later.

* Specially contributed to THE ANTISEPTIC.

The principle on which the hypothesis of GAS is based, is that all living matter responds to stress by certain reactions, and the basic pattern of these reactions remains the same irrespective of the stressing agent (stressor). This uniform reaction-phenomenon constitutes the general adaptation syndrome. Aberrations in this physiological reaction to stress in the form of GAS may give rise to pathological conditions which may be grouped under the generic term 'Diseases of adaptation'. A number of heterogeneous conditions like rheumatoid arthritis, nephrosclerosis, Cushing's syndrome, arteriosclerosis, acute gastrointestinal ulcerations, Addison's disease etc. have been included under this heading. At first sight it appears incredible that these polymorphic conditions should owe their origin to one and the same cause viz. the GAS. But in view of the multifarious types of stress and the conditioning factors that modify the response, one cannot very lightly dismiss the probability.

In a living organism every stress evokes a defensive response having two components: one is the specific response, the other is the non-specific response. Instances of the specific defence-response are: hypertrophy of a muscle as a result of prolonged increased work, increase in the basal metabolic rate during cold weather, increase in the secretion of adrenalin in hypoglycæmia, etc. Here the stressors are, overwork, cold and hypoglycæmia, and the specific defence responses are, hypertrophy of the muscle, stimulation of thyroid, and secretion of adrenalin respectively. Specific antibody-formation may be called a specific defence response, while the alterations in the blood counts may be considered part of the non-specific defence-response. The non-specific and the specific responses may be compared to the general and particular properties of a chemical substance, say, an acid. Thus hydrochloric acid will have certain general properties in common with other acids forming a group and specific properties by which it distinguishes itself from other acids in that group.

The total response of the organism to a stress consists of a standard uniform general response, the GAS and a variable specific response. The latter varies with: (a) different stressors; (b) differing extraneous conditions—the environment, climate, diet, previous diseases etc.; (c) heredity; and (d) the target organ and its state. This may be compared to the electric current producing different results like heat, light, sound, energy etc., at the periphery depending upon the target apparatus employed.

Stress is capable of producing damage as well as adaptation. Disease consists of the results of disordered reaction to stress and to the damage arising from it. Medicine has so far considered damage and damaging pathogens, and to a great extent neglected the disorders due to deranged adaptation. The doctrine of GAS will therefore, undoubtedly draw our attention to this neglected aspect of medicine.

Parts of the body which are suddenly overwhelmed by a stress of great magnitude, or those parts that are not well protected against stress by the systemic mechanism of GAS may show evidence of damage in the form of necrobiosis of cells. Waterhouse-Friedrichsen syndrome in which bilateral hæmorrhages occur in the adrenals, is an example of the sudden exhaustion of GAS, under the influence of a powerful stressor.

It will be interesting to find out whether similar but minute stresses added in the reaction phase of the organism will invoke better resistance. If it is found to be true it will give support to the homœopathic principle of treatment 'Like cures like.'

The non-specific defence response which is general and adaptive in nature, constitutes the general adaptation syndrome of Selye. This is a general 'call to arms' of the whole adaptive mechanism of the body in response to external or internal stress which may be potentially non-lethal or even innocuous.

GAS consists of three phases:—

1. *Alarm reaction (AR)*, which is produced by a continuous stress and consisting of two stages: the stage of shock, followed later by the stage of 'recovery from shock' or the stage of counter-shock. The stage of shock represents the initial submission of the organism to the stress. The stage is passive and is accompanied by hypothermia, hypotension, hæmo-concentration, increased capillary permeability, hypochloræmia, transient hyperglycæmia, leucocytosis etc. The stage of counter-shock represents the mobilization of body defences, and is manifested by a fall in the eosinophil count, thymo-lymphoid involution, hyperchloræmia, and particularly by an increased production of corticoid substances.

2. *Phase of resistance*:—During this stage, the defences of the body come into full play and the enemy is held at bay.

3. *Stage of exhaustion*:—When the defence is inadequate or cannot be maintained for long, the enemy tends to gain mastery and defeat appears inevitable. Many of the changes noticed in the alarm reaction, which had disappeared during the stage of resistance, reappear as preludes to death.

General adaptation of the organism for defence against the stressor is geared by the concerted action of the hypothalamus-hypophysis system. Humoral or nervous impulses from the site under stress, warn this defence-headquarters of the imminent danger and the adaptive mechanism is set in action to prepare the organism for overcoming the stress. The adaptive defence is launched by the hypothalamus representing the autonomic system and the hypophysis representing the endocrine system.

The hypothalamus defence mechanism:—The hypothalamus working through the splanchnics of the autonomic system stimulates the adrenals into secreting more adrenergic hormones,

adrenalin and nor-adrenalin in the blood. Adrenergic stimuli are also sent to the effector or target organs. The important effect of adrenergic stimulation during general adaptation, is vaso-constriction with a rise in blood-pressure. Cholinergic discharges may take place simultaneously. The concurrent cholinergic and adrenergic stimulation of the effector organ probably helps to stabilize its function by preventing any gross deviation during stress. The autonomic system works also in other ways viz., by influencing blood-sugar-water metabolism, blood counts etc.

The hypophyseal defence mechanism:—The primary response of the pituitary to the stress, is by 'a shift in the anterior-lobe-hormone production.' As a result there is a diminution in the production of the somatotrophin, gonadotrophin and the thyrotrophin hormones of the pituitary, and an increase in the production of ACTH (adrenocorticotrophin hormone). ACTH stimulates the adrenal cortex into secreting abnormal quantities of adrenal corticoids.

The adrenal cortical hormones—the corticoids consist mainly of two groups—the gluco-corticoids and the mineralo-corticoids.

The gluco-corticoids (cortisone and compound F) cause transformation of non-sugars into sugars i.e., gluco-neogenesis. They also produce important changes in the blood, like lymphopænia, eosinopænia, granulocytosis, increased phagocytosis and antibody-formation. They prevent the formation of granulation tissue and the production of arteriosclerotic changes. In their activities they generally counteract the influence of the mineralo-corticoids.

The mineralo-corticoids (desoxycorticosterone and compound S) mainly influence the electrolyte balance in the blood. In other respects, they act chiefly in opposition to the gluco-corticoids.

These two main groups of cortical hormones are stimulated by two separate pituitary hormonal mechanisms. Pure ACTH is predominantly glucotrophic. The pituitary factor is predominantly mineral-trophic. It is suggested that the stress causes the adrenals to liberate cortical hormones. If there is a disproportionate overproduction of one group of corticoids over the other, diseases of adaptation appear. Generally the gluco-corticoids are the 'good fairy' and the mineralo-corticoids, the 'evil fairy' for the living organism. So the diseases created by the 'evil fairy' should be amenable, according to Selye's hypothesis, to the gluco-corticoid hormones.

Selye's hypothesis failed to rouse sufficient interest in the scientific world till September 1950 when Hench and his colleagues working at the Mayo Clinic independently reported miraculous cures of rheumatoid arthritis by cortisone. This is a gluco-corticoid isolated from the suprarenal cortex by Kendall in 1941. Soon after this report, a number of conditions claimed by Selye as diseases of adaptation, were reported to be favourably influenced by cortisone. This clinical evidence gave strong support to Selye's hypothesis and

his dream envisaged on the strength of animal experimentation came true and was realized in actual practice. The clinical experiments at the Mayo Clinic with cortisone thus helped to bring Selye's neglected hypothesis into prominence. The support which Selye's experimental conclusions obtained from Hench's clinical trials with cortisone, will remain as an outstanding landmark in the history of medicine. The stress and GAS, bid fair to stand the test of time and to revolutionize medical thought and medical concepts in the years to come.

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'Jayashree'
Deshmukhwardi, Poona City.

Treatment of Pneumococcic Meningitis with Penicillin as Compared with Penicillin plus Aureomycin

Among 43 patients with pneumococcic meningitis treated with massive parenteral doses of penicillin thirteen (30%) died. Among fourteen similar patients treated with aureomycin in addition to the same dose of penicillin, eleven or 70%, died. The last 14 of the 43 penicillin-treated patients were treated alternately with the 14 penicillin-aureomycin-treated patients. Among this control group of penicillin-treated patients there were three deaths. There was no essential difference between the two groups with respect to age, the number of organisms in the spinal fluid, mental status, portal of entry, pneumococcic complications, the presence of other diseases, or the day on which therapy was started. It is concluded that the poor results with the penicillin-aureomycin combination were not due to the chance inclusion of more severely ill patients in this group, nor did toxicity to aureomycin seem to account for the results. Rather, the evidence seems to favour the conclusion that penicillin and aureomycin are mutually antagonistic when employed together in the treatment of pneumococcic meningitis. It appears unwise to use combinations of penicillin with aureomycin, terramycin, or chloramphenicol in the treatment of patients with pneumococcic meningitis, or in the treatment of any patients, even those with milder infections in which antagonism has been shown *in vitro*. Consistently good results have been obtained in the treatment of pneumococcic meningitis with doses of 1,000,000 units of penicillin at two hourly intervals without the use of the intrathecal route. Further investigation of regimens employing insoluble penicillin salts in order to produce similar serum and spinal fluid concentrations is indicated, since these may simplify the dosage schedule.

Since good results have been obtained by the use of aureomycin therapy alone in pneumococcic meningitis, further studies should be made on the efficacy of aureomycin, terramycin, and chloramphenicol, without adjuvant penicillin in the treatment of this disease.—(Lepper, M. H., and Dowling H. F., *A.M.A. Arch. Int. Med.*, 88, 4, 489-495, 1951).

CHOLINE IN NUTRITION AND THERAPY*

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CHOLINE is a member of the vitamin B complex essential for the functioning of animal organisms. Because of its increasing importance particularly in controlling fatty livers and other associated hepatic disorders it was considered desirable to review our present knowledge regarding the functions of choline under various physiological and pathological conditions. Choline is widely distributed in nature as a component part in the phospholipid molecule. An approximate idea of the choline content of various food materials is given below.

Choline content in various food materials in mg. per gramme.

Material	Choline	Material	Choline
Wheat ..	0.92	Egg yolk ..	17.13
Polished rice ..	0.88	Milk powder ..	1.09
Peas (dried) ..	1.88	Fish ..	0.87-2.0
Potato ..	1.06	Lamb shoulder ..	1.19
Spinach (sun-dried) ..	2.38	Beef liver ..	8.30
Cabbage ..	2.5	Lamb kidney ..	3.8
Soyabean ..	3.0	Ham ..	0.88

The importance of choline in nutrition has been recognized only in recent years after Best¹ had demonstrated its role in the prevention of fatty liver in depancreatized dogs. Besides being considered essential for the growth and lactation² of experimental animals when placed on diets free of choline, or its precursors, the animal showed characteristic symptoms which included fatty degeneration of the liver, renal lesions, ocular hæmorrhages, regression of the thymus etc. It has been observed that a condition of fatty and enlarged liver is often a precursor of cirrhosis and other diseases of the liver in man. The study of the function of choline and other lipotropic factors has been augmented by findings concerning the influence of other dietary factors on the metabolic functioning of the liver. These concepts have revolutionised the basis of early methods of therapy, particularly those which advocated the use of extremely restricted diets. Today, nutrition-therapy in hepatic diseases is considered an essential adjunct to all routine medical and surgical treatments. The essence of the modern therapeutic diet in liver diseases is the provision of liberal amounts of calories, proteins and carbohydrates, reduced amounts of fat, supplements of B vitamins and the lipotropic factors such as choline, its precursors and related compounds.

* Specially contributed to THE ANTISEPTIC

Relationship between choline and methionine.—The discovery of the relationship of choline to methionine resulted from the fact that both these substances were able to prevent the accumulation of fat in the liver or cause the disappearance of such liver-fat if it had already accumulated. After Best and his associate³ demonstrated that the fatty liver induced by feeding a low-protein high-fat diet could be prevented by the addition of choline to the diet, Tucker and Eckstein⁴ found that methionine was equally effective as a lipotropic agent. This behaviour of methionine was later demonstrated by Vigneaud and others⁵ to be related to its ability to function as a transmethylation agent whereby it yields the methyl groups which enable the aminoethyl alcohol readily synthesisable from glycine to be converted to choline. Thus in rats, mice, dogs and probably in man also, methionine can partly subserve the important function of a dietary substitute for choline. The reverse process of the formation of methionine from choline under some dietary conditions has also been proved by studies with isotopically tagged molecules. Though choline cannot replace methionine in the diet and although homocystine (a demethylated form of methionine) did not sustain the growth of rats on a choline-free diet, choline *plus* homocystine was found to be effective in place of methionine⁶. It has been actually shown by du Vigneaud and others⁷ that under such conditions choline worked as a transmethylation agent, methyl groups of choline being transferred to homocystine with the resultant synthesis of methionine. Thus, the requirement of choline and methionine will vary according to the levels of protein and choline-containing substances present in the diet.

Considerable research work has been done in recent years to find out the adequate level of choline and methionine in the diet required for growth and maintenance. The growth-stimulating effect of dietary choline in young rats in contrast to the absence of such an effect in older animals has been explained by a preferential utilization of methionine for growth in the older animals⁸ so that the addition of choline does not decrease the demand on the available supply, whereas in the young animals several metabolic processes are active in the overall utilization of the amino-acid; and the introduction of choline in the diet supplies the needed methyl groups for at least some of the processes, thereby releasing methionine for growth. Thus, the greatest stimulation for growth by choline was obtained at 200 mg. level. Unless adequate amounts of choline are supplied, a low protein diet may bring an acute deficiency of choline superimposed on a deficiency of essential amino-acids. On high-protein diets (methionine-rich) however, the choline requirements of rats may usually be largely satisfied by the methionine present in the diet. It may be presumed that no sharply preferential affinity for methionine is possessed by the biochemical reactions concerned with protein synthesis as compared with reactions occurring in the transformation of methionine to choline⁹.

Function and metabolism of choline.—The role of choline in nutrition may be divided into two categories:—(a) the utilization of the intact molecule of choline; and (b) its ability to furnish a labile methyl group. The growth-promoting effects of choline in young rats, its ability to form lecithin and its effect in preventing fatty livers and hæmorrhagic kidneys are believed to be due to the whole molecule of choline. As a transmethyating agent it furnishes labile methyl groups which are transferred to homocystine to form methionine and thence to glycocyamine to form creatine. This capacity of choline is similar to that of methionine and betaine though under certain conditions these two substances cannot wholly replace choline. The function of choline in preventing hepatic cirrhosis must be distinguished from that of cystine and methionine in preventing hepatic hæmorrhage and necrosis¹⁰. The observation that betaine under certain conditions was only a third as effective as choline in the prevention of hæmorrhagic kidney-syndromes in rats has been explained by assuming that only one of the three methyl groups of betaine was labile¹¹. The mechanism of lipotropic activity of choline is believed to be tied up with the functioning of the intact choline molecule and that of methionine is explained on the basis of its available methyl groups which permit the synthesis in the body, of choline from non-methylated precursors. It is considered likely that choline exerts its lipotropic effect by stimulating the rate of turn-over of phospholipid formation on the liver specifically, by being incorporated into newly-formed lecithin molecules. This explanation is based on the current belief that phospholipid formation is an essential pre-requisite to fat transport and utilization. That it actually does stimulate the rate of phospholipid turn-over has been demonstrated by means of tracer technique^{12 & 13}. It is important to realise that while labile methyl groups are essential for the synthesis of choline, they are not essential to the phenomenon of lipotropisms, the lipotropic effect being dependent more upon the entire structural unit of the compound.

Little, however, is known of the fate of choline after oral or intravenous administration. A recent report¹⁴ indicates that though choline is not excreted significantly in the urine of a normal person, almost two thirds of the orally administered choline is excreted as trimethylamine, due to bacterial transformation of choline in the intestine. In liver diseases, however, the urinary trimethylamine elimination after choline administration is delayed or decreased. The authors suggest that the bacterial flora of the intestine is possibly altered in the patients with hepato-biliary diseases in a quantitative and/or qualitative manner, which might explain the reduced formation of trimethylamine in these conditions. Studies on the urinary excretion of intravenously administered choline may give results which can be correlated with the results of utilization of orally administered choline as measured by the phospholipid turn-over with P 32¹⁵.

Interrelationship of choline, vitamin B₁₂ and folic acid.—A large volume of work has been done in recent years regarding the possible role of vitamin B₁₂ and folic acid in the utilization of choline or choline precursors for the maintenance of normal liver fat, prevention of renal damage and promotion of growth in experimental animals^{16,17}. In the presence of sub-optimum levels of choline or methionine, both B₁₂ and folic acid afford complete protection against kidney damage thus showing choline-sparing action¹⁸ and since they seem inter-related, the requirements of one of these nutrients cannot be established unless the levels of the other two are taken into consideration. The authors suggest that in the treatment of megaloblastic anæmias it may be advantageous to consider the use of all the three nutrients. The same group of workers have recently reported that the reduction of the choline requirement for the maintenance of liver by B₁₂ and folic acid may be due either to the biological synthesis of additional choline or to the increased utilisation of the choline¹⁹. Schæfer and Knowles suggest that folic acid functions primarily in methyl synthesis and B₁₂ functions in either the transfer or the utilization of labile methyl²⁰.

Role of other nutrients.—The experimental production and control by means of diet, of fatty liver and ultimately of liver necrosis and cirrhosis represents one of the major advances of modern times in the diagnosis and treatment of diseases of the liver. Besides the activity of lipotropic factors the role of other nutrients like protein, fat and vitamins in the metabolism of the liver cannot be ignored and liberal amounts of calories in the shape of carbohydrate and protein must be added. Inadequate absorption, metabolism and storage of the vitamins is a common result of liver diseases. Deficient dark adaptation (vitamin A deficiency), osteoporosis (D deficiency), prolongation of blood-clotting-time (K deficiency), have all been recorded as common complications of chronic liver-diseases. The provision of extra-supplies of these vitamins by oral or parenteral administration therefore, becomes necessary. The requirements of the B-vitamins are likewise heightened in liver diseases, as the damaged liver not only interferes with absorption of the vitamins but may also fail to store or even metabolise them. Mere supplements of these vitamins may not always correct the effects of their deficiency; excess amounts must be provided.

Clinical uses of choline.—Encouraged by the results of animal experiments, which demonstrated the effect of choline and other lipotropic substances on the production of cirrhosis of the liver on the one hand and the arrest of the conditioned preservation of the liver on the other, clinicians applied the principles to human sufferers from cirrhosis. In a survey of 247 cases of cirrhotic patients extending over 10 years, Steigman²¹ found that a diet high in protein and carbohydrate but low in fat supplemented by choline or methionine proved to be very effective as judged by the lower mortality rates.

Other beneficial effects besides fat-removal, were noticed as a result of this therapy. A significant number of patients did not however, respond to lipotropic-therapy and the author considers that those cases perhaps represented cirrhosis of a type not due to nutritional deficiency. Several cases of hepatic cirrhosis characterised by ascites and large palpable livers^{22, 23} treated with choline-chloride in doses varying from 1.5 to 6 gm. daily, (with added cystine and inositol in some cases) showed clinical improvement; e.g., elimination of the ascites and increase in the serum-protein-level. As small doses (even up to 5 g. daily) of choline or methionine were found ineffective^{24, 25}, in the treatment of functional disorders of the liver, which accompany infectious hepatitis, a daily dose of 20 g. choline-chloride for 2 to 3 weeks has been suggested; the use of such a high dose however, usually leads to ketosis. Choline was found effective (given intravenously 1 g. daily in a 5% solution) in patients with pernicious anaemia who had failed to respond to purified liver extracts²⁶. It was concluded, that an adequate amount of the anti-pernicious anaemia factor was stored in the liver but not effectively elaborated because of the fatty state. As has been summarised by Jukes (*loc. cit*) "the complex nature of cirrhosis and its grave prognosis, make it difficult to accumulate clear-cut data with respect to the amelioration-effect of any dietary ingredient but results to date indicate that supplementation with choline is a desirable adjunct to supportive treatment".

Requirement:—As stated earlier, the choline requirement of a normal adult depends on the content of methionine and other related substances in his daily diet. On the basis of a 100 mg. per 100 g. of ration, which is usually adopted in animal experiments, the choline requirement of an average adult man would be about 500 mg. daily. In diseased and pathological conditions however, much higher than this maintenance dose would be necessary. Doses of 20 mg/kg. body-weight was found necessary to prevent the appearance of fatty liver in animals²⁷ and the curative dose must necessarily be 3 to 4 times more. On this basis the curative dose for a man of 70 kg. (140 lb.) would be about 6 g. daily but may have to be 3 or 4 times more in some cases. "The effective curative dose must approach the toxic dose, the danger being a sudden flooding of the circulation with choline and a consequent depression of the heart and blood-pressure," was the conclusion reached by the *British Medical Journal*²⁸.

Choline has also been administered intravenously both in animals and in man during recent years. Cats can tolerate 15 mg/kg. body-weight without toxic effects while 30 mg. produces a reversible arrest of respiration and 35 mg resulted in death²⁹. As the material was rapidly destroyed in the body, 0.8—0.9 mg/kg. body-weight (in 0.2 to 0.4% solution per minute) may be injected practically indefinitely. (This dose would correspond approximately to 3 g. per hour

in man). For intravenous therapy a daily dose of 1.0 g. in a 5% solution was found to produce the minimum unpleasant reactions, and so it may be continued for as long as 2 weeks. Higher doses (5 or 10 gm. as 1% slow drip-infusion over 3 hours) were usually accompanied by nausea, vomiting, sweating, abdominal discomfort and depression³⁰.

Summary.—Choline is a member of the vitamin B-complex, essential for the proper functioning of animal organisms. Besides being essential for growth and lactation its value in the prevention of fatty liver and haemorrhagic renal lesions has been demonstrated in experimental animals. Where the deficiency persists the fatty liver is followed by cirrhosis and other hepatic diseases. The action of choline is thus mainly directed against the deposition of excess fat in the liver. Under some dietary conditions choline can replace methionine and *vice versa*, because of their ability to serve as trans-methylating agents. The requirement of choline therefore, depends on the level of protein (methionine) and other related substances present in the diet.

Some inter-relationship has also been observed between choline folic acid and vitamin B₁₂. In the presence of sub-optimum levels of choline or methionine, both B₁₂ and folic acid afford complete protection against kidney-damage thus showing choline-sparing action.

The exact requirement of choline is not known. Since choline is widely distributed in nature as a phospho-lipid complex, the average human diet usually contains 250 to 600 mg. Based on animal experiments the curative dose for an average adult man may vary from 6 g. daily to 3 or 4 times as much, depending on the severity of the pathological condition; but these higher doses may approach the toxic level. Besides oral administration, choline has been administered intravenously also to animals and men during recent years; a daily dose of 1.0 g. in 5% solution has been found to produce the minimum of unpleasant reactions. But higher doses (5 to 10 gm.) have been found to cause nausea, vomiting, sweating, depression etc.

Clinical evidence is accumulating to show that some types of liver-cirrhosis, particularly those of nutritional origin, are often favourably influenced by choline. The effect seems to be more pronounced when choline is combined with folic acid and vitamin B₁₂. The diet however, should be rich in proteins. Supplementation with choline therefore, is a desirable adjunct to supportive treatment.

My thanks are due to Dr. U. P. Basu, D.Sc., F.N.I. for his valuable suggestions in preparing this review.

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Tuberculous Abscesses and Empyema following Penicillin Therapy

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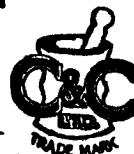
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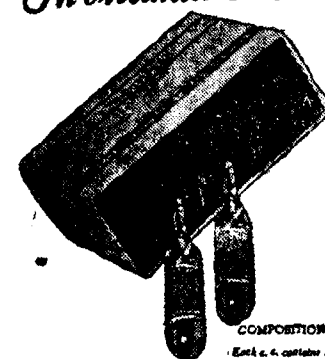
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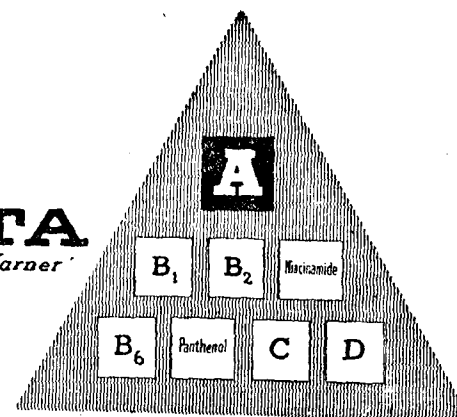
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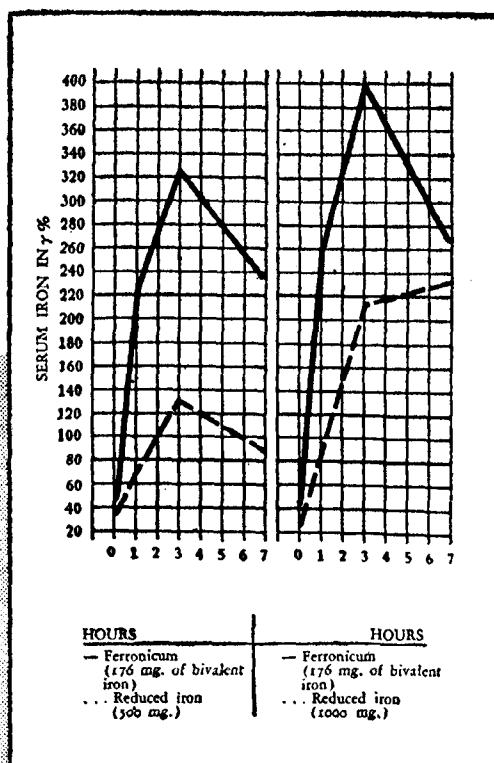
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DURING the past twenty five years I have treated a large number of cases of *Ascariasis* under varying conditions and presenting symptoms which simulated several other diseases, *e.g.*, pneumonia, typhoid, pulmonary tuberculosis, rheumatism, cerebral malaria, acute abdomen, multiple neuritis, meningitis, dengue, excitement, epilepsy, rectal irritation, peptic ulcer, colic, diseases producing sub-normal temperature, puerperal sepsis and pleurisy.

I have invariably diagnosed ascariasis by the following signs and symptoms:—

(1) Crepitatory sounds on auscultation at the navel or in the area immediately above it (abdominal auscultation); (2) twitchings especially during sleep; (3) excitement; (4) bluish conjunctiva with sweats, if in a child; (5) pain in the region of the navel; (6) protuberant abdomen which neither sags entirely nor shows up unduly prominent while the patient is reclining; and (7) transitory loss of consciousness.

I attach particular importance to the crepitatory sounds heard on auscultation of the abdomen at the navel or just above it, as this was invariably present in 99% of my cases. I dewormed a patient on the tenth day of continuous fever with hæmorrhage, which had been diagnosed as typhoid by the attending physician. The result was dramatic. The patient passed a round worm and soon became normal. I treated a boy aged four years who was sweating profusely and whose conjunctiva was found to be bluish. The boy was given santonin. He passed two worms on one day and one more worm later, and was soon all right.

Some children have protuberant abdomens while others have not. Protuberant abdomen in children is due to:—(1) Pot-belly, in which the belly sags down when the child assumes the reclining posture; (2) infantile liver, in which the upper abdomen is prominent in sharp contrast to the lower, except when complicated by ascites; (3) worms, in which the abdomen neither sags down entirely as in (1) above, nor shows a sharp contrast as in (2) above.

In the case of children without protuberant abdomens, diagnosis of ascariasis is somewhat difficult, as several other conditions have to be ruled out. Ascariasis often simulates several other diseases. Some of these will be dealt with below, in the shape of case reports.

I. *Ascariasis simulating pneumonia*:—A boy aged 9, had high temperature and cough. The pulse-respiration ratio was upset.

* Specially contributed to THE ANTISEPTIC.

There were definite signs of pneumonia in the right lung. The sputum was neither rusty nor stringy but frothy; it showed no pneumococci. Crepitatory sounds could be heard over the navel. Urine was free from albumen. Santonin was given and the boy passed a number of round worms and was immediately all right.

II. *Ascariasis simulating typhoid*:—A girl aged 12 years had continuous fever for ten days; there was a sudden intestinal hæmorrhage and this was certainly unusual in enteric after 10 days. The crepitatory sounds (navel) were heard and the W.B.C. count showed 10,200; it was therefore, diagnosed as a case of ascariasis; santonin expelled the worms and the hæmorrhage stopped. The temperature also came down to normal. Another peculiar case was that of a boy S., aged 14, who had continuous fever. The temperature headache, and restlessness were all typical of typhoid. But I noted certain other peculiarities:—(1) The boy threw out his tongue before becoming unconscious, and after a transient spell he would talk complainingly. (2) There were frequent flushes in the face. (3) The boy was always in an excited mood. I therefore, sought for and found the crepitatory sounds in the region of the navel. I was then sure of my diagnosis. In order to be quite sure, a WBC count was made. That stood at 9400. Santonin and Mag sulph did not bring out the worm. The case then simulated pneumonia and there was also irritation. The neck muscles were stiff. There was hyper-excitability of the reflexes. But there was no Kernig's sign. Another dose of santonin was given. He began to improve though he did not pass any worms. The flushes and also the excitement continued although meningeal trouble abated. He became constipated. I gave him Mag sulph in solution. He passed broad motions in one of which he passed a round worm. The flushes then disappeared and also the excitement. The worm left the intestines only after a month, in spite of repeated doses of santonin followed by a purge.

III. *Ascariasis simulating pulmonary tuberculosis*:—A well built adult with remittent fever and cough accompanied by puerile breathing here and there, was diagnosed as a case of pulmonary tuberculosis. The patient was advised to go to Madanapalli. On the way, when he had reached Bezwada his temperature suddenly shot up; feeling very nervous he returned home. On the night of his return he felt a severe burning sensation in his abdomen and abnormal hunger. He stealthily entered the kitchen and ate rice with mango pickle to his heart's content. Next morning he passed a round worm and became free from all symptoms!

IV. *Ascariasis simulating rheumatism*.—An young boy, aged 7 years, had a swelling on the right wrist. There was neither fever nor any other sign of inflammation excepting the pain. I had previously treated all his sisters for worms. Crepitatory sounds over the navel were present. He passed a number of worms after

santonin, and got over his trouble. I saw similar cases subsequently and found that they all had an affection of the right wrist.

V. *Ascariasis simulating cerebral malaria*:—G., aged twenty-five had fever of 102·8°F with repeated convulsions. There were also signs of bronchitis. He was becoming conscious between the attacks of convulsions. Convulsions in malaria at his age and for that comparatively low temperature are not usual or common. Suspecting worms, I treated him for ascariasis and he passed a large number of worms and was cured.

VI. (a) *Ascariasis simulating acute abdomen*:—At a monthly meeting of the doctors of Nair's Hospital in Bombay, which I once attended, a surgeon of that hospital described a very interesting case. The patient progressed very satisfactorily for nine days after a short-circuit operation on the intestines. On the night of the ninth day there was a call for him from the hospital saying that the patient was sinking. He thought that the stitches might have given way, and opened the abdomen and put his hand in. He felt something twisting on his finger which to his great surprise was a round worm.

(b) *Ascariasis simulating appendicular abscess*:—G. B., aged 18 years had fever, nausea, vomiting, pain and tenderness at MacBurneys point, and swelling of the size of a small apple; and her right thigh could not be extended. Asked whether she was constipated, she said that she was having small and frequent motions of a liquid consistancy. I auscultated the abdomen and heard numerous crepitations. After taking her blood for WBC count I gave her penicillin empirically and as a measure of caution. The WBC count was 12000. The swelling had assumed the size of a big apple. On the next day she passed a number of seat worms in her diarrhoeic stools. The swelling was still the same, although her pain was less. Then I gave her Sodii sulph. In one of the motions, she passed a round worm. From the next day onwards the swelling began to subside and in three days' time she was able to walk. With anti-anæmic treatment she became quite all right.

VII. *Multiple neuritis simulated by ascariasis*:—R., aged 32, complained of numbness and pricking and darting pains in her legs. I elicited tenderness in the calf-muscles. On further investigation she told me that her hands twitched now and then and that she experienced jerks in her body. I made abdominal auscultation and heard the crepitatory sounds. Santonin and purge brought out the worm. The pains which resembled multiple neuritis subsided after the treatment.

VIII. *Ascariasis simulating meningitis*:—I was called to see a patient aged 50 having 103°F, with a low muttering delirium, stiff neck and hyperexcitability of the reflexes. There was no Kernig's sign. There were abdominal crepitations, and a drooping jaw. The

back muscles were not stiff. This kind of incongruity is noticed in a case of worms. This case was treated by an unqualified person and the patient died.

IX. *Ascariasis simulating dengue*:—Mrs. V., had an attack of fever which, to all intents and purposes, looked to be remarkably like dengue. I told the patient and her husband that it was dengue. On the fifth day of the fever the patient suddenly vomited and brought out a round worm along with the vomit. The temperature fell and the patient was all right.

X. *Ascariasis simulating excitement*:—K. K., a boy of 15 had a peculiar shake-up. I had an urgent call at night and I found that the patient was greatly excited and there was a big crowd of people around him singing *Raghupathi Raghava Rajaram* to soothen his nerves. I put the boy to bed and cajoled him into sleep. The later reports stated that punctually at 9 p.m. the boy would jump out of bed, become restless and finally get scared. I elicited further that the boy used to go to bed at 8-30 p.m. and would get excited punctually at 9 p.m. I wanted to break this (9 p.m.) periodicity; so I was with the boy from 8 p.m. and did not allow him to go to sleep till after 9-15 p.m. There was no excitement till then. I thought I had mastered the situation. But at 9-45 p.m., he got the attack. Now it was plain that the first half hour of sleep was responsible for the attack. This twitching in sleep is a recognisable sign in persons harbouring round worms. I then auscultated the abdomen and found the crepitations there. I prescribed santonin and a purgative. The boy passed a lot of pin-worms, but not the round worm. After giving him santonin thrice subsequently the boy passed a round worm. The excitement became gradually less and finally disappeared in a week's time.

XI. *Epilepsy simulated by ascariasis*:—M., aged 14 years was having epileptic attacks numbering five on some days. In between the attacks the girl twitched a lot. There was paresis of the left leg and left hand. The left side of the body alone used to perspire. The right side of the body was warmer than the left. These twitchings in between the attacks, suggested to me the presence of round worms. With no more help or clue, I made bold to give santonin. The result was that the girl passed a number of round worms and got rid of her attacks of what were mistaken for epileptic fits.

XII. *Ascariasis causing rectal tickling*:—A gentleman came to me and told me that he had taken santonin 7 times. "Every time the worm appeared to come down into the rectum and returned back" he said. I made a P. R. and felt the tail at one time. I conjectured that the worm was having its hold higher up and that it was sending its body and tail downwards. Under chloroform, I dilated the rectum and as soon as the tail appeared I caught hold

of it with an artery forceps and then applied two more, one above the other. The worm was brought out to the great relief of the patient.

XIII. *Ascariasis simulating peptic ulcer*:—A woman aged 18, had a slight evening rise, pain over the epigastrium and slight icterus. She then developed nausea and vomiting. The irritation of the stomach was so terrible that even water was not retained. Nothing relieved her. There was no tenderness in the epigastrium. The pain was slightly relieved by gentle massage over the epigastrium. She appeared acutely ill, and would not leave her bed all the twenty four hours. The abdominal crepitatory sounds were there. How to expel the worm when the stomach was so irritable was the question. Luckily for her a worm was passed without any intervention; gradually nausea and vomiting disappeared, but the patient had become anæmic.

XIV. *Ascariasis simulating colic*:—A boy of 12, suffering from colic for over 4 months was diagnosed by the crepitations over the navel to have ascariasis. Santonin worked well and the boy was relieved of his colic.

XV. *Ascariasis simulating diseases producing subnormal temperature*:—A child of five, was brought to me for 'coldness' of the body, and sweats. Pulse and respiration were normal. Temperature was 95°F. The temperature had been like that for fifteen days, during which period hakims had tried to raise the temperature by stimulants, but in vain. I heard crepitatory sounds over the navel. I decided not without some hesitation, to give santonin along with some stimulants. Santonin was accordingly given and the result was not alarming. Stimulants were continued even after the expulsion of the worm; but the temperature did not come up to normal till after a week had elapsed.

XVI. *Ascariasis simulating puerperal sepsis*:—Mrs. V. N. had temperature, restlessness, sweats and a foul-smelling discharge. The signs and symptoms resembled those of a case of puerperal sepsis. Her bowels were constipated for five days, so she was given an enema. In the returning fluid two round worms floated out. After this the smell in lochia disappeared; the temperature touched normal; and the woman had a sense of well-being.

XVII. *Ascariasis simulating pleurisy*:—A goldsmith in Madikonda had pleuritic pain in his left chest. The rub was distinct. He had to be sitting in one particular position for four days and four nights. He could neither bend, nor lean, nor even move without bending the back. Morphia did not relieve the pain. In fact the patient grew worse. He had nausea all the time. On the fifth day he got up all of a sudden and demanded fowl, mutton, and pots of milk etc. He then developed twitchings. I took the clue

and gave him santonin and a purge. He passed the worm and was soon well again.

Conclusions.—Diagnostic clues:—Crepitatory sounds are invariably heard over the navel in ascariasis. Twitchings especially during sleep are confirmatory. Bluish conjunctiva in a boy with sweating over the whole body is suggestive; bluish conjunctiva in a child perspiring only over the head suggests rickets. Bluish conjunctiva in an adolescent who is lean and lanky, would suggest tuberculosis. Transient loss of consciousness in remittent or intermittent fevers suggest ascariasis.

The Control of Gastric Acidity

"Gastric hydrochloric acid is the greatest known hindrance to the healing of peptic ulcer" (Sippy). The inadequacy of most forms of therapy in controlling acidity is well known. Aluminium hydroxide gel and magnesium trisilicate when given hourly failed to neutralise the gastric hydrochloric acid for more than a quarter of an hour—this conclusion has been reached by many independent observers. All alkalis given by mouth, even in large doses, have such a transient action as to be valueless. Hitherto the most effective method of neutralizing stomach contents over long periods has been the continuous intra-gastric milk and alkali drip introduced by Winkelstein (*Amer. J. Surg.*, 15, 523). This is usually well-tolerated by patients but has practical disadvantages. Drs. Douthwaite and Shaw of the Guy's Hospital, London hit upon the method of providing sucking tablets containing milk solids and alkali. Accordingly a tablet was prepared which could be conveniently lodged between the cheek and the gum, would dissolve slowly and yet satisfactorily depress the gastric acidity. It was palatable to the patients, was 1 inch in diameter and 1/5 inch in thickness and consisted of:—Solids from whole milk combined with maltose and dextrans 40 grains; magnesium trisilicate 3.5 grains, mag. oxide 2 grains, calc. carbonate 2 grains, mag. carb. 0.5 grain, and ol. menth. pip q.s. If lodged between the gum and cheek it was found to take 20 to 30 minutes to dissolve and its food value was about 11 calories. The authors tested these tablets on eleven patients, with suitable controls, and found that the continuous sucking of these tablets between meals, starting half an hour after each meal and continuing till going to sleep was the most convenient and effective method of neutralizing gastric acidity. Their effect was more prolonged than that obtained by any of the customary forms of alkali therapy, apart from milk-alkali drip. It is suggested that the continuous sucking of these tablets (which were prepared for the authors by Messrs. Horlicks Limited) will hasten cure and prevent relapse of peptic ulcers.—(*Br. Med. Jour.*, 26-7-1952, pp. 180-182).

THE PUBLIC HEALTH SERVICES IN THE UNITED STATES OF AMERICA*

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THE Public Health Service of the United States is 153 years old today and is the principal agency of the Federal Government for the nation's health, operated under laws passed by United States Government.

The Public Health Act of 1944 established the basic organization of the Service, consisting of four statutory bureaus, viz.: (1) the Office of the Surgeon-General; (2) the National Institutes of Health; (3) the Bureau of Medical Services; and (4) the Bureau of State Services. The administration is vested in the Surgeon-General, and an Assistant Surgeon-General, who is appointed from the members of the commissioned corps. These four administrative units are responsible for specific functions. The Surgeon-General's office is the bureau of business management. The National Institute of Health controls Scientific Research, the Bureau of Medical Services administers the programmes for hospital medical care and related activities, and the Bureau of State Services attends to the cooperative federal state health programmes. The work of Research, Clinical and Public Health Practices, is executed through (a) the National Institute of Health; (b) the Bureau of Medical and State Services; the organisational structure of these services reflects two main concepts. One is the flexibility which enables the services to adapt to rapid advances in scientific research and development, and the second is the consideration that related programmes are best administered by grouping them together from the stand point of major emphasis on clinical research and improved public health practice.

The function of the office of the Surgeon-General is personnel administration, budget and fiscal administration, supply, business—management of public health services and the operation of the divisions of international health and public health methods. The records for the year 1950 show that the U.S.P.H.S. administered approximately 321.5 million dollars (about 1607.5 million rupees) in appropriations and authorizations. Eighty per cent of this amount was allocated to agencies and institutions in the form of grants. Fifteen per cent was spent on the entire operations of the U.S.P.H.S. including hospital and medical care programmes, quarantine services in-service research activities, and technical aids to the States. The remaining five per cent was the budget for providing the needed facilities for the public health services. During that year the full time employees of the services numbered 16,300, and a part-time

* Specially contributed to THE ANTISEPTIC.

staff consisting of consultants, and Members of the National Advisory Councils listed 747 persons. The commissioned corps of the P.H.S. comprised 1,185 officers of the regular corps and 967 reserves. These included physicians, dentists, scientists, nurses, dietitians, pharmacists and physiotherapists.

The National Institute of Health which carries out the major part of the research programme, is located on 300 acres of land near Bethesda, Maryland. This great institute includes sections on (1) cancer, (2) microbiology, (3) heart diseases, (4) dental research, (5) mental health, (6) arthritis and metabolic diseases, and (7) neurological diseases and blindness. The laboratories are up-to-date and extensive and are the finest in the world today. It was in the year 1930 that the parent institute first came into existence, and seven years later, a cancer section was added. The National Mental Institute was established in the year 1946, and then followed a rapid expansion by the formation of the Heart Institute (1948). Dental Research Institute (1948). Institute for Neurology and Blindness (1950). The Division of Arthritis and Metabolic diseases was also established as full-scale Institute in the year 1950. A clinical centre with 500 beds was under construction during my visit in the year 1950, and was scheduled to reach completion by 1952. This is designed to permit basic experimental research and clinical studies of the different problems under investigations. The staff and facilities for medical care, physiotherapy, recreation, spiritual ministry, and social welfare, compare very favourably with those provided in the best hospitals anywhere else. In the fiscal year 1951, the combined budgets of the National Institutions of Health amounted to 46 million dollars (230 million rupees). The Americans consider that their very survival as a free nation depends on the progress of their scientific knowledge and therefore, lay great stress on their research programme. Both in their own laboratories, and in their support of investigations in hundreds of other centres they are helping to increase the Nations Research-man power, as well as its ability to combat diseases.

The Bureau of Medical Services

This Bureau operates the Hospitals and the out-patient Medical care system for legal beneficiaries of the Public Health Service. It also assists the States and Communities in the construction of Hospital and Health facilities and also aids in the development of Medical Hospital Nursing, and dental resources. The average daily census of patients was 7,470. In order to afford improved care to the patients, training programmes are conducted at the hospitals, residencies for physicians, and dentists, and through on-the-job informal teaching to maintenance-personnel. Further, about 150 clinical research studies are encouraged at the P. H. S. Hospitals every year. One of these projects is the study on tumour, conducted

at the Tumour Clinic at the Marine Hospital, Baltimore, Md. with the cooperation of the Cancer Institute.

The Bureau of Medical Services is concerned with administration of the National Hospital Construction programme and survey. Financial assistance, technical advice, and professional leadership are made available to State and the local Governments, as well as to non-profit organisations so that community needs for hospitals and other health-facilities may be measured and met. This Bureau is also concerned with foreign quarantine programme, i.e. examination of conveyances, goods, and persons arriving at the sea and border points of entry.

The Bureau of State Services

The chief function of this Bureau is (1) Prevention of diseases; and (2) Promotion of good health for all the citizens. It serves and works with health agencies of the states to improve individual and community health by assisting states and local communities to strengthen and expand their health programmes. Besides the financial grants-in-aid the Bureau offers advice, consultations, and technical assistance to state and local agencies on many health matters. Some divisions of this Bureau investigate new public health techniques and conduct demonstrations which point the way for state and local action. The services of specialists are lent to the state and the local health departments to help solve specific problems and to conduct training courses, seminars and other educational programmes for state and local health personnel. The Bureau also collects and publishes health statistics, to enable the states to note the trends and determine future courses of action. The Bureau is made of sixteen divisions and centres and are essentially organised in three major groupings: (1) Personal health services for control of communicable and chronic diseases, and to improve community health. (2) Environmental health services for control of external factors in our environment which affect our health. (3) Staff and administrative services to handle internal management and functions which help states apply and use such necessary services as public health education, public health nursing, vital statistics and the grant-in-aid system. The high lights common to the various divisions of the public health service are; (a) sodium fluoride demonstration programme; (b) multiphasic screening; (c) the division of chronic diseases; (d) the division of venereal diseases; (e) tuberculosis; (f) some of the tests which are commonly included in the multiphasic screening are X-ray for tuberculosis, and other chest pathology, hearing and vision tests, urinalysis for diabetes, blood pressure for hypertension, measurements for height and weight, and blood tests for syphilis and anaemia.

The function of the communicable disease centre is mainly epidemiological survey to trace the course, incidence, and transmission of

specific diseases. Malaria has been most successfully eradicated in the U.S.A. and quite a successful campaign has been launched for control of murine typhus fever, tuberculosis and venereal diseases.

Public Health Methods and International Health

This division started as an office for statistical investigations is concerned today with the application of sound statistical methods to a wide variety of public health problems, chiefly in the field of social sciences. The U.S.P.H.S. has assisted in many ways the pan-American sanitary organisation, and the institute of inter-american affairs. During the past year the health programmes were in operation in Greece, Liberia, Indo-China, Iran, Paraguay, Peru, Korea; health-missions are also sent to the under-developed areas of the world under the "Point four programme".

Public Medical Programme

The roll of the Government whether federal, state or local in providing medical care, is presented under four general heads:—

1. Medical care supplied to groups for whom the government has assumed complete responsibility.
2. Programme for prevention or treatment of specific types of illness or disability such as cancer, tuberculosis, mental or chronic diseases, permanent injury or deformity.
3. Programmes of general medical care services, primarily for the needy.
4. Programmes affecting the health of the entire population.

Groups served by the federal programmes:—The federal government assumes complete responsibility for the supply of medical services to certain very large groups, principally to members of the armed forces, to veterans, to members of the merchant marine, to its Indian wards, to the inmates of the federal prisons, to persons who become disabled in government service, and to certain groups which vary in size and character with changing economical and political conditions. The service rendered by the federal government to these various groups may be given by physicians at government expense. It may be given in hospitals owned or operated by the federal government or in general or special hospitals which contract to accept such patients.

Armed forces:—Complete medical care is provided to members of all the armed forces and for certain of their dependents. The services include health examinations diagnostic procedures, consultation, treatment and hospitalization. If the facilities for army and navy are found to be inadequate, they are supplemented through civilian resources. The total strength of the armed forces in U.S.A. in the year 1949 was 1,492,000, i.e., approximately 1 per cent of their population (148-millions). In the year 1945 this

number shot up to nine times, i.e., the total army was 12,364,000. It is estimated that during peace time at any given period, about 22 per cent of the active-duty strength will be hospital-patients. The hospital care is provided through 48,642 beds in 119 army, navy, and air-force hospitals.

Veterans:—The number of living veterans of all wars in the United States as on June 30, 1950, was in excess of nineteen millions or 12.7 per cent of the total population. Complete medical and dental care is provided to any veteran with a disability incurred in line of duty or aggravated by military service. This care includes both hospital and out-patient service and provides complete treatment, medical appliances, pharmaceuticals and all needed special services, such as physical therapy, and rehabilitation services. Hospital is also provided for non-service-connected illness if a bed is available and if the veteran is financially unable to pay the cost. The veterans administration operates its own general and special hospitals and also purchases a substantial volume of care from civilian hospitals and private physicians and dentists in private practice. The total cost of medical and hospital care for veterans exceeded 500 million dollars in the fiscal year 1949-50. A programme for the construction of new hospitals, estimated to cost three-quarters of a billion dollars is under way. This will provide 67 modern hospitals with a total of 38,600 beds. During September 1949 five of the new hospitals reached completion; 39 were under construction and 23 were in the planning stage.

Members of the Merchant Marine

Since 1798, the government of the U. S. has provided general medical care for the sick and the disabled naval men. Operated by the public health service for this purpose, there are today 24 marine hospitals. Eighteen out-patient dispensaries, and ninety-six medical relief stations. These provide hospitalization, general, medical and dental care, and also the preventive health services, for more than 200,000 American merchant sea-men, the members of the U. S. Coast Guard, and certain other beneficiaries of the service.

Indians:—The Bureau of Indian affairs in the United States Department of the Interior, provides health services for some 400,000 Indians on the reservations in the U.S.A. and Alaska. Those services include health examinations, dental care, and both in-and out-patient care in hospitals and in the sanatoria. There are 61 hospitals for Indians with a total bed capacity of 3,343. The cost of health facilities and activities of the Indian services exceeded 5 million dollars in 1945.

Prisoners:—In co-operation with the Bureau of prisoners, the Public Health Service furnishes medical, dental, and psychiatric services, in the 27 federal penal and correctional institutions, and during the year 1947, care was provided to 34,000 federal prisoners.

An additional 107,000 prisoners in state penal institutions also receive medical care through the government.

Other groups:—The National Leprosarium at Carville is operated by the public health service, and is open to any citizen infected with leprosy. Hospitals are maintained at Lexington, Kentucky, Fort Worth and Texas, for care of persons addicted to narcotics and for certain types of mental diseases. To meet certain temporary needs, the Federal Government has organised a very considerable number of emergency medical services, of one sort or another. One of these was the emergency maternity care to the wives of men serving in the four lowest grades of the military forces. Medical care is also afforded to their children under one year, under-law-provision by the Congress in 1943. During the year 1945 this programme provided comprehensive service to almost 1.5 million mothers and infants at a total cost of 127 million dollars. At its height it is estimated that one out of every seven births in the nation was served under this programme.

Programmes for Specific Types of Illness

It was during the First World War that the government considered it desirable to assist the states in setting up a programme for the prevention of venereal diseases in the civilian population, as part of a broad effort to prevent the development of these diseases in the armed forces. This received enormous support from all the states and although funds were withdrawn after the war, much of the progress made was maintained by the states at their own cost. The Congress allotted a substantial sum for control of V.D., in the year 1938. This served as an impetus to different states. Working on this experience the federal government made an appropriation in the following years, for similar campaigns in the field of tuberculosis, cancer, heart and industrial diseases, and psychiatric disorders.

Mothers and children:—The passage of the Shepard-Tower Act in the year 1921 marked the beginning of the activity of the federal government towards improving the health services of the country as a whole. Increasing sums were made available by the Congress in the succeeding years, which suggests that these services were welcomed by the people as effective and essential. Public law 734 was passed in the year 1950 and this enabled the Congress to increase the grants to states from 11 million to 16 million. Grants for the crippled children's programme were also increased from \$7.5 millions to \$15 millions; the different states rendered further contributions, which enabled the public health departments to extend still more elaborate and extensive services to mothers and children. The programme for crippled children includes services in the fields of medical, surgical, diagnostic and treatment services. In the year 1948, 175,000 crippled children received benefit of this

programme, and of these 30,000 patients spent about two million days in hospitals or convalescent homes.

Tuberculosis:—In the United States a total of 83,470 beds are provided for tuberculosis, and these are operated by different agencies as follows:—

- The Local Governments operate 44 per cent.
- The State operates 31 per cent.
- The Federal Government operates 12 per cent.
- The non-governmental agencies operate 13 per cent.

A broad programme for X-ray screening has been developed and as many as 14 million persons received the benefit of this programme, during the year 1949-50.

Mental diseases:—In the year 1949 the states provided 705,423 hospital beds for the mentally ill patients. This constitutes about 49 per cent of all the hospital beds. The operation responsibility is shared by different agencies in the following proportion:—

- The States own and operate 84 per cent.
- The Federal Government operates 9 per cent.
- The Local Governments operate 4 per cent.
- The non-governmental agencies operate 3 per cent of them.

No fees are collected from the patients, for the service rendered, except in some few states. Mental clinics are established as a part of the general hospitals in most cities, with a view to detecting early cases, and giving them the benefit of close observation, guidance and such treatment as may be necessary. The National Mental Health Act passed in the year 1950, authorised grants to the states, to the tune of \$3,550,000 for development of mental hygiene clinics and child guidance-services in local communities. In all but sixteen states, the Health Department has been officially designated as the mental health authority to develop mental hygiene clinic services, under the provisions of the Mental Health Act.

Chronic diseases:—The problem of chronic diseases has attained its present dimension due to the following factors, viz.: (1) aging of the population over a longer span of life due to improved living-conditions; (2) the discovery of improved methods for prevention and treatment of most of the acute illnesses, and (3) education and consequent activities which eliminate accidents and hazards leading to premature death. In the past, cities and countries maintained alms-houses to take care of the aged and the infirm-poor. Some states have provided more systematic and elaborate facilities in the form of chronic hospitals and nursing homes to meet the needs of the chronically ill persons. Out of the many problems of the present day, cancer is the most important one. The government plays a significant role by launching a methodical campaign for

early detection and treatment of these cases. An elaborate service is offered to the population through the National Cancer Institute, and federal grants to non-profit institutions for cancer-research, and to health departments for cancer detection and consultation clinics.

Vocational rehabilitation

The vocational rehabilitation office of the Federal Security Agency, provides technical and financial services through the state-agencies to persons who may be handicapped physically or mentally. In such cases where financial eligibility is established according to specifications provided under law, any and every type of medical care is extended inclusive of medical, psychiatric, surgical examination or treatment, hospitalization, convalescence care, dental and nursing care, physical, occupational or speech therapy, medical supplies and drugs. The Federal Government also provides for the administrative cost, including expenditure on vocational guidance and placement. During the year 1949 about 58,000 disabled men and women were rehabilitated and placed in suitable jobs at a cost of 30 million dollars.

General medical care for the needy

Before the passage of the Security Act in the year 1936 the Federal Government had only short programmes in the field of medical care for the needy. The local communities took most of the credit for these services. Now medical care is more closely integrated into the federal security programmes. Federal grants-in-aid are distributed through state agencies to provide medical care to recipients of public assistance in local jurisdictions. The Social Security Act requires that federal funds for public assistance be paid directly to the client in a lump sum, without limitation as to the purpose for which the money is required. This prevents the state and local agencies from using federal funds to purchase medical care direct from the persons or agency supplying the service. As a result, the provision of medical care for public assistance clients in many states is limited to the inclusion in the assistance payment of small amounts which the client is expected but not required to use for medical care. It is considered that the direct provision of medical services is far superior to the provision of funds to the client for this purpose. Since the enactment of Public Law 734 in 1950 the ban on use of public assistance funds for purposes of purchase of medical care has been lifted, thus enabling the welfare agencies to develop service programmes which direct payments to the providers of medical care. The medical care extended to the public in different states is not the same. Some states have an organised programme only in their cities; but none beyond their city-limits, except in a few stray instances.

About 5 to 6 million persons (4 per cent of the population) of the country receive medical care at public expense. In some of the wealthier states medical care and hospital services are generally provided to the recipients of public assistance. With a view to rendering medical aid to the poor, the government either conducts its own hospitals or alternatively purchases medical care required for the poor in the absence of the government-owned hospitals, from non-governmental agencies. Local governments and states hospitals, from non-governmental agencies. Local governments and states offer 122,000 general hospital beds, and the non-governmental agencies contribute 349,000 beds. The Public Health departments also have a medical care programme sponsored by them, consisting of: (1) medical and hospital care; (2) dental care; and (3) nursing care, for the indigent, medically indigent people, and the poor. In the past health departments mainly functioned towards control of communicable diseases, *viz.*, typhoid, small-pox, diphtheria, plague, whooping cough, etc., and in course of time the incidence of epidemic diseases dropped down at a very fast rate on account of improvement in the educational and general health standards. The health departments could therefore, well afford to shift their main strength and attention from mere epidemic control work to a wider range of services including mass screening for tuberculosis, clinics for cancer detection, diabetes, *anæmia*, and allied diseases. The immunisation programme conducted by the P.H.S. is admirable. In the year 1948 the immunisations achieved consisted of 1.4 million vaccinations, and 1.5 million diphtheria toxoid inoculations.

Medical research:—Medical research work is considered to be one of the vital functions of the departments of army, navy, and public health services. Some of the outstanding discoveries in different sciences are to be attributed to the officers of these departments. The marine hospital had a hygiene laboratory as early as 1901 and almost simultaneously a volume of research began to flow from this centre, then a very small unit, but now expanded almost to an unimaginable size and scope known as "National Institute of Health"—the largest research centre in the world. The federal government extended the field of research still further, in recent years, through grants of large sums of money to their universities and medical schools. The problem of the United States of America today is not merely the control of epidemic conditions, since they have almost ceased to exist due to the most elaborate and scientific methods of control developed and practised in the past. The average span of human life has increased significantly, due to the elimination of the common health hazards, and the health services have now focussed their attention on eliminating problems which somehow remained unexplored in the past, *viz.*, the problems of old age, chronic diseases, cancer, heart and mental disorders.

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Coronary Thrombosis and its Response to Treatment

The Committee of the American Heart Association recommended in 1948 the use of anticoagulants in the treatment of coronary thrombosis. Many have since reported favourable results with the use of heparin and dicoumarol in thrombo-embolic complications. Dr. Rae Gilchrist, Cardiologist of Edinburgh, gives his latest results using tromexan instead of dicoumarol in some cases. Approximately 43 per cent die from the 4 major complications of acute coronary thrombosis (*viz.*, shock, heart failure, thrombo-embolic incidents, and sudden deaths) during the first six weeks, amongst a group of conservatively treated patients, while the death rate was only 21 per cent in a corresponding group receiving anticoagulants. Deaths from shock are less frequent when anticoagulants were used. Graham *et al* found that 55 of 59 patients with angina pectoris obtained prompt relief of symptoms when given injections of heparin once or twice a week although pain returned when inert injections were substituted. The value of anticoagulants in severely ill patients has been established beyond doubt; but "it is difficult to justify their routine use in all cases of coronary thrombosis" is the verdict of the *British Medical Journal*. There must be a conscious selection of cases suitable for anticoagulant therapy. This fact has been brought out by the results obtained by Russek and Zohman in a series of 1047 cases which were treated by them conservatively dividing them into 'good' and 'bad' risks. The good risks included those who, on admission gave no history of previous infection, intractable pain, severe or persistent shock, cardiac enlargement, gallop rhythm, heart failure, and arrhythmias; in the good risks the mortality was only 3 per cent, while 60% died in the group showing one or more of the above signs. In a study of coronary heart disease amongst medical men, by Morris and his collaborators, published in the *British Medical Journal*, Vol. 1, p. 503: 1952, it was reported that the majority of deaths from coronary thrombosis occurred during the first week, that the time of greatest need for therapy was in the first few days of the very first clinical attack and that the death during this period was mostly due to shock and congestive heart failure. Gilchrist therefore, emphasizes the importance of early treatment of heart failure. Though the circulatory changes during cardiogenic shock are still obscure, the hypotension appears to be due to the failure of the viable myocardium and in a severe case he advises the use of digoxin as a cardiac stimulant, inspite of the largely theoretical objections to its use in the presence of a recent infarct. The evil effects of prolonged hypotension, which can itself cause ischaemic changes in the myocardium are no doubt recognized; but there is unfortunately no reliable method of raising the blood pressure. Pressor drugs are still largely in the experimental stage and transfusion has proved a failure in most cases. Further research into the causation and treatment of cardiogenic shock is advocated.—(*Br. Med. Jour.*, 16-8-'52, pp. 351-55 and p. 378).

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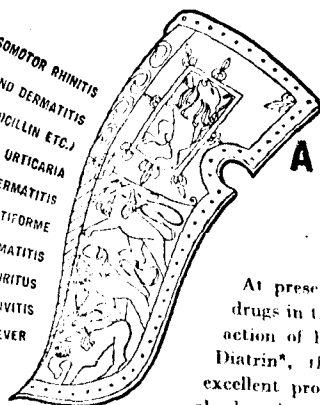
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¹ Britton C. J. C. (1950): Practitioner, 164, 458

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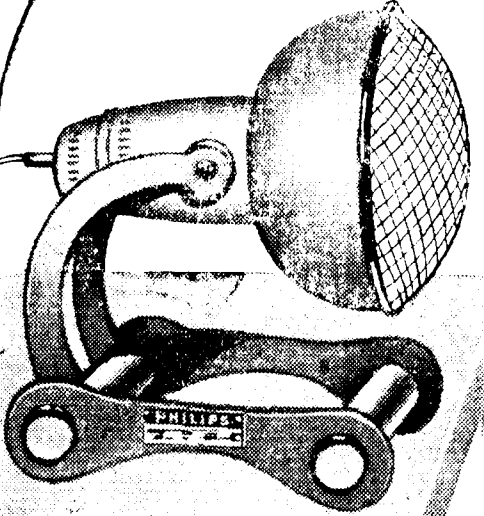
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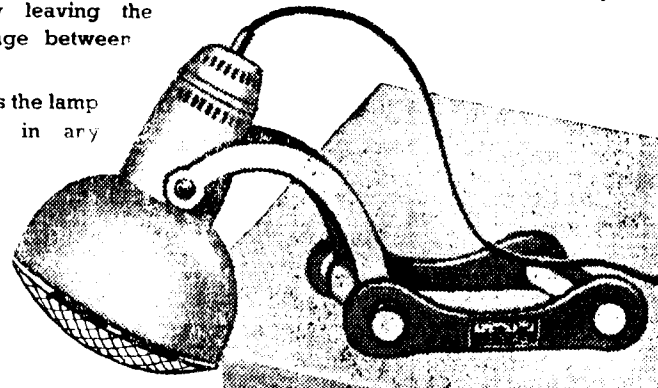
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A NEW ERA IN THE DRUG-TREATMENT OF LEPROSY*

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LEPROSY is a chronic infectious disease, caused by Hansen's bacillus (*Mycobacterium lepræ*). It is a disease primarily of later childhood, adolescence, and early adult life, though clinical leprosy has been reported in individuals before the age of 2 and after the age of 90.

It is estimated that there are about seven million sufferers from leprosy in the world. Three million of these are within the British Commonwealth, mostly in India and Africa, and of this three million some 300,000 are infective cases in need of prompt treatment, if further infection and spread are to be prevented. But actually proper and adequate treatment is now being given only to about 4,000 of these sufferers.

Though it was first introduced into England about 950 A.D., persons known to be lepers were shunned by the rest of the community since the middle ages. Rigid rules of segregation were enforced in order to prevent the spread of the disease. There was no treatment. The leper was merely put out of sight—and forgotten. And leprosy is no longer a common disease in England.

The reason why people dread leprosy is due to: its disfiguring effects, its persistence (entailing prolonged and intense suffering for many years) and above all the mental anguish involved in facing life as an outcaste from society.

Although the manner in which the infection is transmitted from person to person is still a moot point, leprosy has now come to be considered much less contagious than was once believed. In the past, when no effective treatment was available, the policy of segregation may have been justified as the only way of protecting the rest of the community, but indiscriminate segregation where it is still practised today encourages a victim to hide his condition as long as he can, resulting in other members of the household getting infected. Also the disease thereby progresses too far to benefit by suitable effective treatment administered in time.

Leprosy is slow and insidious in its onset, and may take two different forms: the lepromatous type and the neural type as defined by the International Congress of Leprosy in 1938. The method of treatment, the prognosis, and the degree of infectiveness, vary with the type. Tuberculoid leprosy is non-infective or only very slightly so. Whereas the lepromatous type is infective to children on prolonged contact and also to a small minority of susceptible adults.

The neural (N) Type.—All cases of the "benign" form of leprosy, showing disturbances of a polyneuritic nature (i.e., alterations of

* Specially contributed to THE ANTISEPTIC.

peripheral sensation, trophic disturbances, atrophies and paralyses and their sequelæ or macules of a non-lepromatous type (leprides, usually with localized sensory disturbances) or both come under this type. These cases show relative resistance to the infection, have a comparatively better prognosis as regards longevity although some amount of mutilation may take place, and usually react positively to leprolin (lepromin test). The skin lesions are typically but not invariably negative for *M. lepræ*, in bacteriological examinations, though scrapings from the nasal mucosa may be positive; many of these lesions are histologically of a tuberculoid nature. A characteristic feature of tuberculoid leprosy even in its early stages, is that the skin lesions get anaesthetised against light, tactile and thermal sensations. The lesions show well-demarcated edges, and partial pigmentation, and the peripheral nerves near the lesions may be thickened. Bacteriological examination of lesion tissues shows no bacilli though typical tuberculoid changes in the dermis of the affected regions are found in pathological examinations.

Lepromatous (L) Type.—All cases of the "malignant" form of leprosy, relatively non-resistant and of poor prognosis, usually negative to leprolin (lepromin test), exhibit lepromatous lesions of the skin and other organs, especially the nerve trunks. Bacteriological examination usually reveals numerous bacilli. Disturbances of a polyneuritic nature may or may not be present; they are usually absent in the earlier stages but occur in the later stages of the primarily lepromatous cases, and are often also found in cases arising secondarily from the neural form. The two types are often liable to be confused with each other, if proper diagnostic methods are not employed. On careful examination, the lepromatous type may appear in its early stages as a dull flush on the ear-lobes, cheek or other portions of the body. There is no anaesthesia. The edges of the lesions as they develop are ill-defined, and merge in the surrounding skin; the lesions may spread until a large area of the body has become involved. Microscopic examination reveals the presence of *M. lepræ* in large numbers. Nodules containing numerous bacilli, (as many as 7,000 million per sq. cm. of tissue) may appear on the forearms, trunk, and face.

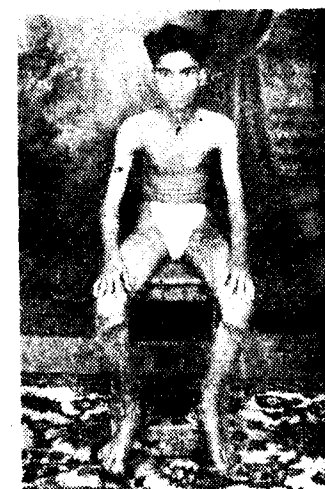
In the prognosis of a particular case of leprosy, use is made of the lepromin test which, in its modern form, involves the use of a standard refined lepromin obtained from specially treated nodules. To carry out the test, one drop of the lepromin is injected intradermally. The appearance of a red inflamed wheel about one or two inches in diameter 48 hours later indicates a positive reaction; this means that the patient has a high natural resistance to the disease and is likely to respond well to treatment. A negative response means that the patient's natural resistance is low and the treatment will have to be more protracted and should be carefully controlled. Tuberculoid cases usually give a positive reaction and

lepromatous cases a negative reaction. The different types of leprosy which are commonly prevalent in our parts are illustrated in the following photographs of cases still under treatment.



(1)

Photograph 1.—Lepromatous type of leprosy in a Mahandra boy J. R. of Bhimavaram, aged 15 years, unmarried. The ears, nose and lips are distorted and there are nodules on the back, forearms, cheeks, chin and neck. Lesions are present on the whole of the back, knees, feet and buttocks. He has been suffering for 13 years

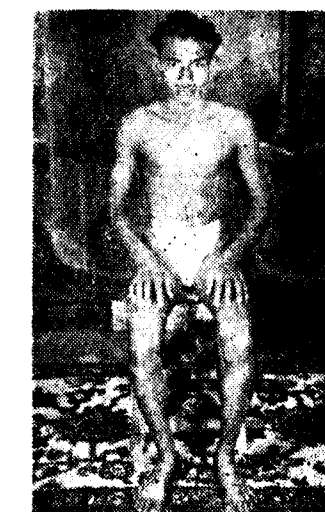


(1)



(2)

Photograph 2.—Neural type of leprosy in a Mahandra boy J. C. A. of Bhimavaram, aged 24 years, who has been suffering for 18 years, married, but no children. Both the ears, and nose are swollen and distorted, and there are nodules on the forearm, fingers and feet; lesions are present on the wrists of both the arms and white spots (leucoderma?) on the chests and knees.



(2)

The neural type of leprosy may be anaesthetic or macular. In the former, there is evidence of involvement of the nerve trunks only (polyneuritic changes and sequelæ without macular skin lesions); while in the latter the lesions may consist only of flat maculæ or of raised tuberculoid macular patches in some cases. The neural type usually follows a long and chronic course. The digits of the hands and feet suffer distortion and degeneration. Ulcers on the hands and feet are common. Areas of anaesthesia

may be extensive. The disease usually becomes dormant, or undergoes remission at certain periods.



(3)

Photograph 3.—Tubercloid leprosy in a shoemaker K. V. of Bhimavaram who has been suffering for 20 years. The lesions have well demarcated edges and show partial pigmentation. The enlargement of the breasts is a fairly common feature in advanced cases of leprosy.

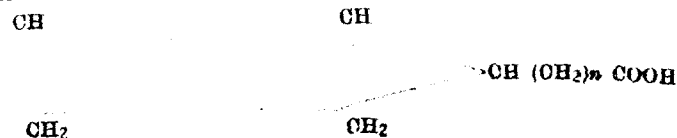


(3)

The lepromatous type is usually malignant in its behaviour. The mouth and pharynx often suffer extensive mutilation; the eyes are invaded resulting in blindness, and the viscera may also be involved.

Infectiveness.—Individual resistance varies greatly; close and prolonged personal contact is usually necessary for the transmission of the infective agent. Contact during infancy is more liable to result in infection than in later life. Many individuals are practically immune to leprosy, hence the susceptibility of man to the disease varies very widely.

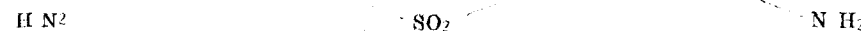
TREATMENT.—For many centuries fixed oils obtained from certain trees of the natural order Flacourtiaceae have been used empirically in the treatment of leprosy. Those used most are: chaulmoogra oil and hydnocarpus oil; but as these are solid or highly viscous they do not readily lend themselves to therapeutic use in their natural state. Research work carried out during many years in various research laboratories in collaboration with clinical workers in the field, has shown that the pharmacological properties of the oils depend on the presence of a particular fatty acid with the following construction:



(In chaulmoogric acid n is 12, in hydnocarpic acid n is 10). In the natural oils the acids are combined as glycerides, but modern treatment makes use of preparations consisting of a selected fraction

of the esterified acids in a form that is well tolerated. The addition of 4 per cent. of creosote minimises local pain and irritation.

The newer drugs:—A new era in the drug treatment of leprosy began with the discovery in 1943 that drugs of the sulphone group were active against acid-fast bacteria. The parent substance of the group is 4:4'-Diamino-diphenyl-sulphone:—



Diaminodiphenylsulphone was first synthesised in 1908 but it was not until 1937 that its pharmacological properties were investigated. It was found to have a remarkably antibacterial activity but although it became well established in veterinary medicine early trials on human beings were quickly abandoned because the compounds appeared to be dangerously toxic. At present several sulphone drug preparations have been put on the market by different manufacturers under different trade names *e.g.*, promin, diamidin, diasone, sulphetrone, cryosulphone, neustab, novotrone, diphone, soluphone, and solfone.

Technique of administration:—A dose of 200 mg. a day should not be exceeded. The patient takes the drug for six days, and has one day's rest, or takes it continuously for 4 weeks and then has 1 week's rest. As the absorption of the drug depends on various factors when given orally, the method of choice is to administer it by the intramuscular route. Promin is used solely for intravenous administration.

Precautions during treatment:—The diet, general care and freedom from secondary infections, should all be carefully adjusted and controlled. As these drugs have got a general depressant action on the hæmogenic function of the bone marrow, the blood should be frequently examined for hæmoglobin and total red blood cells; the urine and blood concentration of sulphone should also be tested frequently.

Reaction:—On the appearance of fever or the appearance of inflammatory nodes, the drug should be discontinued for a short time, also when the hæmoglobin percentage goes below 70% and hæmatinics and restoratives such as iron preparations, B. complex, liver extract and vitamin C etc., should be given until the normal hæmogram is restored.

Sulphones are readily absorbed and slowly excreted. They should be continued for a long time, taking particular care to detect the earliest sign of intolerance. The results will then be very encouraging.

Therapeutic response:—Within two weeks of starting the treatment the patient usually feels some improvement. After 6 months?

treatment remarkably good results are manifest. A week's rest after treatment for three weeks in ordinary cases and 2 weeks' rest after 6 to 8 weeks' treatment in bad cases, should be the rule. The drug is excreted slowly, concentrations of the drug are manifested in the skin, mucous membrane and in the eyes. Best results have been achieved when the drug had been continued over a period of four years.

The social welfare aspect:—The aims of social welfare service are three-fold:—non-medical care of the patient in the institution, care of his relatives and interests outside the institution and care of patients not isolated in an institution.

The patient in the leprosarium:—The social welfare service should care for the patient's spiritual, mental and physical well-being. The patient enters or is put into an institution not only for his own benefit but also in order to protect the community from infection. He thus helps society and is therefore, entitled to be treated well by society, when he gets better. Social welfare services should cater to the needs of the patient's education, occupation, recreation and his spiritual uplift.

(1) *Education:*—Schools are necessary for the children, and illiterate adults can be taught to read by one of the modern simplified methods. Educated patients can act as teachers; the educational department should provide suitable and adequate equipment. Vocational training should be developed and such trades and cottage industries taught as building, carpentry, masonry, metal work, leather work, weaving, tailoring, basket-making, manufacture of locally grown agricultural products, etc. Practical training should be given to all patients in both general and special hygiene. Cleanliness of body, clothes, dwelling places and their surroundings should be taught both by precept and daily practice. The patient should be made wise about the causes of leprosy, its nature and the methods of treatment and prophylaxis. He is more likely to follow the rules intelligently than the untaught scot-free leper; when he recovers and returns home he will be a missionary of hygiene and leprosy control.

(2) *Occupation:*—Doomed to remain for years, it may be for the remainder of his life, in a leprosarium, how is the patient to spend his time? Only occasionally he requires hospitalisation, and his medical treatment takes up only a short time of the day. Patients are of different sexes, ages, trades and occupations; some have been accustomed to sedentary, others to hard physical work; some are able-bodied; others are weakened or crippled by the disease. Still all of them should have something to do, suited to their capacity and general condition. Communal drill and physical jerks have been found to be of great value, as they encourage regularity and help to develop the physique, and also prevent or minimise deformities.

Occupational therapy is an important item in treatment; when wisely planned it benefits the patient in many ways: thus, it enables him to maintain his self respect, it prevents him from brooding over his ailment; it keeps him fit and thereby renders medicinal treatment easier, better tolerated and more effective; finally it helps to prevent serious deformities like the claw hand etc., which are otherwise very liable to occur.

(3) *Recreation:*—Patients should be encouraged to organise their own games and reactions. Music concerts and dramas encourage the creative instinct and please the spectators and the actors. Concerts, and cinema shows, by outside agencies at frequent interval will be of great æsthetic and curative value to nervous persons. These will incidentally help the suffering patients to improve their own efforts at providing entertainments and recreations. Open air theatres are best suited for patients in leprosaria, though provision for indoor performances during inclement weather should be made where possible. Libraries should be provided with a good selection of books and periodicals.

(4) *Spiritual:*—There are some obvious reasons for the need of a spiritual background in a leprosarium: (a) the majority of the patients suffer from chronic mental depression at the incessant thought of their ailment, they are also conscious of the fact that they are abhorred and loathed even by their relatives and friends; (b) they have lived in new surroundings away from their homes and occupations and from all that they prized in life. All these disquieting factors require to be composed in order to help the patients to become cheerful and contented. They should be encouraged to have a new outlook and purpose in life and an assurance and courage to face the future with a light and blithe heart.

Cerebral Manifestations of Acute Myocardial Infarction.

Cole and Sugarman of the Lebanon Hospital, Los Angeles basing their findings on a careful study of several cases, emphasize the fact that cerebral manifestations may be the predominant symptomatology of acute myocardial infarction. They have cited six cases in great detail. Syncope, convulsions, coma, or hemiplegia may be the only presenting symptoms of acute myocardial infarction. In the six cases presented, central nervous system symptoms so dominated the clinical picture that the brain was suspected as the seat of the pathological process, and the cardiac accident initially was overlooked. No evidence of cerebral thrombosis, embolus, or hæmorrhage was found at autopsy. They attempt to differentiate the picture of acute myocardial infarction with predominantly central nervous system symptoms from the combined acute vascular lesions of the brain and heart.—(*Am. J. Med. Sci.*, 223, 1, 1952).

TREATMENT OF BRONCHITIS*

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THERE has so far been no specific drug which can cure bronchitis. Even the "wonder drugs" of today have not proved very useful. Cough remedies and cough syrups of various descriptions and makes still rule the day and are in great demand by the public although none of them give any real or lasting benefit.

This state of affairs, to our mind is largely the result of a want of proper understanding of the correct pathology of the disease and of the mode of action and proper dosage of the various drugs that are used in the treatment of bronchitis. We therefore, undertook this 'pilot' study in order to find, if possible, a rational and sensible approach to the effective treatment of the disease.

Bronchitis may be either : (a) productive—useful, adequate, or beneficial, or (b) unproductive—useless tussal insufficiency. A productive cough brings out the product of inflammation, foreign bodies if any, or a plug of mucus from the respiratory tract.

Bronchitis is really the successful drainage of the secretions from the inflamed bronchi, under the effect of coughing. In unproductive or tussal insufficiency, the sputum is so thick that little or none of it is expectorated even under the strain and efforts of coughing.

One of the most interesting causes of bronchitis is "Allergy" and the terms "Allergic Bronchitis" and "Asthmatic Bronchitis" have become familiar. They are of two types, viz. : (1) the reversible and (2) the irreversible types.

In the reversible type tissue changes are induced by antigens, like pollen, foods and sera and are characterised by oedema, spasm of the smooth muscles and stimulation of the mucous glands. Only the conducting portion of the lungs is affected in this condition. In the irreversible type tissue changes are induced by antigens, like bacteria and their end-products, sera or drugs, resulting in the death of the cells and damage to the vascular tissues.

Fog, damp and cold are the most common agents that readily affect the delicate mucous membrane of the bronchial tree, which becomes oedematous and if the oedema extends further, the peribronchial tissues are also affected; the openings of the secretory glands are nearly obliterated, interfering with normal ciliary movements. No consistent or specific bacterial infection to account for

the disease has so far been established, though micrococcus catarrhalis, staphylococci and streptococci as well as pneumococci are all found in the bronchial secretions. In the absence of any of the above mentioned causes, a virus infection is usually suspected. The cough is dry and of a hacking nature in the acute stage of the disease. This is due to congestion of the mucous membrane and spasm of the muscular tissues. Breathing becomes difficult, slight pyrexia is usually present with general malaise and distress. Later on, when the oedema subsides, the thick mucous secretion becomes liquefied, the sputum becomes more copious and easy of expectoration. This is the second or the final stage of bronchitis. The pathological changes may affect any part of the bronchial tree: from the larynx to the bronchioles. Tracheitis, bronchitis and bronchiolitis are synonymous terms, but are used to denote the extent to which the disease has progressed.

There are four main factors to be considered in the treatment of bronchitis viz. : (1) The relief of congestion and reduction of inflammation of the mucous membrane; (2) the relief of the spasms of the bronchial musculature; (3) the liquefaction and removal of the mucus or mucopus, from the lumen of the bronchi; and (4) the prevention of complications.

The relief of congestion and inflammation.—The time-honoured traditional treatment for this condition is by administering the "stimulant cough mixture" which is believed to stimulate cough, promote secretion, and also lubricate and soothen the inflamed bronchial mucous membrane. This statement is based at best on conjecture, and not on facts ascertained by accurate scientific methods, using proper and suitable controls.

The common drugs used in making up this mixture are ammonium chloride, ammonium carbonate and ipecacuanha. The hospital stock mixture called "Expectorant cough mixture No. 3" is of the following composition :—

R Ammonium carbonate	... gr. v
Tincture scilla	... ℥ v
Vinum Ipecacuanha	... ℥ x
Spt. ætheris nitrosi	... ℥ xxx
Aqua ad. q.s.	... 3 i

Sig. Mixture to be given three or four times a day.

Ammonium chloride is a saline expectorant, soluble in water and prescribed in acid mixtur, as it loses its potency in the presence of the alkalies. The useful dose is 5 grains every two hours or every hour if necessary. In how many instances, are such frequent doses known to have been prescribed or administered ?

Ammonium carbonate.—"If concentrated or given in a large dose, both the carbonate and bi-carbonate, cause gastric irritation leading to nausea and vomiting. Doses not sufficient to cause vomiting, stimulate the bronchial secretion reflexly through the vagal

* Specially contributed to THE ANTISEPTIC.

mechanism and are therefore, used as expectorants in many kinds of sub-acute and chronic lung diseases." (Majumdar)

Ipecacuanha.—Perry and Boyd pointed out that ipecacuanha is capable of increasing the secretion of glands of the bronchi. The increased secretion by diluting the viscid inflammatory product assists in the dislodgement and removal of it from the respiratory passages. The emetine and saponin contents of ipecacuanha are believed to be responsible for its therapeutic influence. Bash and his collaborators who studied the action of ipecacuanha recorded that the viscosity of the mucus was lowered but its pH was not influenced. There was a pronounced increase in some patients while in others no change or decrease was noted. Pick and Wasicky thought that the expectoration caused by ipecacuanha was mostly due to the relaxation of the smooth muscles of the bronchi.

Ipecacuanha has no direct action on the bronchial membrane and should be given in toxic or sub-emetic doses to be of any real value. It acts, like the salts of ammonia, through the vagus supplying the stomach. Ammonium salts are powerful gastric irritants and are liable to do harm, particularly in cases of gastritis and to persons with gastro-duodenal ulcers. In patients in whom vagotomy has been performed for some condition or other and the nerve supply has been cut off, the salts of ammonia and preparations of ipecacuanha will have absolutely no effect. Are we justified in carrying out the "scorched earth policy", i.e., try to save the lungs at the expense of the stomach? To what extent will the small quantities of the ingredients in the so called stimulant mixture help in combating the bronchial condition?

Relief of bronchospasms and oedema.—The parasympathetic nerves supply the bronchial musculature through the vagus nerve. Any drug that could counteract or antagonise the action of the parasympathetic system should relax them. What are the drugs in our pharmacopœia that can produce this effect? Out of a large number only three are being largely used, viz., belladonna, codeine and ephedrine.

Belladonna.—The active principle is atropine. Belladonna is a powerful anti-spasmodic and has a tendency to dry up secretions in the body as well as in the bronchial mucous membrane; it is usually prescribed in combination with codeine, a very useful pill being Ext. belladonna viride $\frac{1}{4}$ grain with codeine phosphas $\frac{1}{2}$ grain.

Morphia, codeine and its derivatives.—These are used in cases of tussal insufficiency where there is no thick mucus to be expectorated. Codeine, either in the form of syrup or a pill, is frequently used for this purpose. Syrup codeine phos, B.P.C., contains $\frac{1}{4}$ grain of codeine in one drachm and is widely used. The adult dose should be two drachms given three times a day, for several days. Doses smaller than one drachm are ineffective.

Morphia is restricted to those cases of (1) aortic aneurysm, pressing on the bronchi or trachea; (2) inoperable tumours of the lungs or mediastinum; and (3) certain cases of cardiac decompensation failure with irritable cough. Morphia is a powerful depressant of the respiratory centre. It diminishes the muscular tone of the striated muscles including the diaphragm; inhibits the action of the glands of the bronchi preventing the normal excretion of mucus. It has a tendency to dry up the mucus membrane making the cough more distressing and irritating.

The excessive use of codeine is to be avoided. Morphia, except in the conditions noted above, is prohibited. Giving codeine and belladonna over and above what is absolutely essential is illogical and even dangerous. Suppression of cough is to prevent the normal excretion of the mucus; and any accumulation of the mucus in the bronchioles is fraught with danger. It may provoke or help the mobilisation of active pathogenic bacteria, leading perhaps to serious consequences.

Liquefaction of mucus.—Christie rightly remarks "the use of an expectorant or cough mixture to influence the secretion of the bronchial glands, is very much hallowed by tradition and a *wide*, or even *wild*, variety of drugs have been used.... Potassium iodide is excreted partially by the bronchial mucous glands and in passing through them stimulates secretion. *This certainly occurs in patients hypersensitive to iodide, but whether there is any such action in normal individuals, is doubtful.*"

The experimental observations of Taft and Levin show that potassium iodide is excreted through the bronchial mucosa in 15 to 25 minutes whether administered orally or intravenously. Bash, Holinger and Poncher noted that after the administration of potassium iodide the viscosity and the pH of sputum were lowered. Potassium iodide is administered in the form of enteric coated tablets of $7\frac{1}{2}$ grains to 15 grains each or in solution in syrups used for flavouring or as a saturated watery solution, three or four times a day. Barach is of opinion that potassium iodide is one of the most valuable drugs to combat intractable bronchial spasm and inadequate expectoration of viscid mucus. The ingestion of 4 or 5 c.c. of a saturated solution daily, in divided doses, for four days, followed by one or two cc. over an indefinite period causes the secretion from the bronchi to become thinner and lessens the possibility of the formation of mucus plugs in the smaller bronchi.

Our centuries-old treatment of bronchitis by "steam inhalation" may still be relied upon. Its use has been clinically proved very useful particularly in the case of children. Bash, Holinger and Poucher carried out careful investigations on the effect of the steam or moisture inhaled on the physical and chemical properties of the sputum and noted that after steam inhalation, the viscosity

was greatly reduced and the dried residue and the total nitrogen content had been markedly reduced. The addition of volatile oils to the steam increases the secretion of the glands of the bronchial system and stimulates bronchial peristalsis and ciliary movements.

Relief of mucus.—The most valuable and readily available measure for the relief of mucus is 'hydration'. Water is the best of all expectorants—much better than the "stimulant cough mixture" of doubtful utility. This simple but effective measure of relief has not however, found a place in text-books. Hydration liquefies the mucus, prevents inspissation and thickening that lead to a choking and obstruction of the bronchi. Warm drinks are very helpful. To quote Feingold "it may seem paradoxical to emphasise the importance of giving large quantities of fluids 1,000 to 2,000 c.c., in 24 hours—in a disease in which tissue oedema plays such an important role in the production of the symptoms, but clinical experience has consistently demonstrated, often with dramatic response in a few hours, the benefit of such therapy."

A 5% dextrose solution in water is most valuable when given intravenously. Saline solutions should *not* be used as there is already sodium chloride retention in the system. The use of steam inhalation, preferably medicated with Tr. Benzoin Co. or a volatile oil *e.g.* eucalyptus oil or a combination of these will greatly help in the removal of mucus from the bronchi.

Relief of oedema and bronchospasms.—There are quite a large number of sympathomimetic drugs for the treatment of the allergic bronchitis; epinephrine and ephedrine which have the properties of vasoconstriction and muscular relaxation, are the two most commonly used of these drugs.

Drugs like Isopropylarterenol (Isuprel), Isopropyl-epinephrine (Aludrine) and Isopropyl-nor-Adrenalin (Isoprenaline) are powerful broncho-dilators. They have no vasoconstrictor-action and cannot therefore, efficiently control the oedema of allergic bronchitis.

Epinephrine is a most rapid and powerful broncho-dilator and vaso-constrictor. It should prove of great use in the active stages of allergic bronchitis, but owing to the short duration of its action, its use is limited to acute asthmatic episodes.

The antihistaminics have a tendency to constrict the blood-vessels and dilate the bronchioles. Despite these desirable properties, many clinicians use them very sparingly, because the results obtained with them have been disappointing. They should be used cautiously, for owing to their atropine-like action they dry the mucous secretion and aggravate the cough.

Xanthine drugs like alkaloidal caffeine, aminophylline and theophylline, owe their efficacy to their broncho-dilator action. They have a vaso-constrictor-action as well, but the peripheral vaso-dilator action is the more predominant one.

Rectal suppositories of Theophylline-ethylene-diamine (Aminophylline) are very useful in the case of infants on certain occasions. If the suppository is not available, one can safely use a 10 c.c. vial containing 0.25 gm of aminophylline diluted with 20 cc. of water and give it as a "rectal cocktail."

For children, a combination of equal parts of a solution of 1:100 or 1:200 of Neo-synephrine and 1:100 of Isuprel in 10% glycerine could be used by nebulization. We have used with good results the nasal solution of Isopropyl-nor-adrenalin (Isoprenaline) diluted to suit the needs and ages of the patients. Antistine-privine solution is another combination useful for both children and adults. The use of bronchodilators in powder form or in "dust" is risky as severe and alarming palpitation of the heart has been found to result.

When antihistaminics are given orally the least toxic ones are to be preferred. A few patients derive some benefit by the use of Pyribenzamine by day and Benadryl by night. But none of these antihistaminics have given appreciable relief.

Ephedrine.—By virtue of being a stimulant of the sympathetic nervous system, it causes relaxation of the bronchial muscles and is used in doses of 1/4 to 1/2 grain three or four times a day. It may be used instead of atropine or belladonna. This drug should not however, be repeated too frequently as the duration of its effect diminishes with each successive dose. If given in excess, it produces unpleasant side-effects like jittery shakes, wakefulness and nervousness. This drug should be used very cautiously in cases of hyperpiesia, as it has a tendency to raise the blood-pressure, especially in the aged persons.

Other forms of treatment.—Mustard poultice over the chest was the old time practice. This was followed by Antiphlogistine. One fails to understand the rationale behind the grand idea of applying external heat to control a disease in an organ placed within a bony thorax and inches away from the seat of its application. Perhaps there is better sense in the "hot foot-bath" and a stiff dose of brandy together with 5 or 10 grains of aspirin than in this thermotherapy. It has already been pointed out *supra* that there is no specific organism that would account for bronchitis and none of the organisms that are usually present in the secretion, may be responsible for the disease. Strange to say, auto-vaccines were prepared and used. Many extolled them to the skies while others unequivocally condemned them as useless. Sulphonamides were once very popular but have now been discarded. Penicillin, in all its forms next came to be used, even as a snuff and the results were not considered uniformly good. It is our experience that penicillin and sulphonamides, inspite of their drawbacks, benefit

certain cases and good results are obtained, particularly when complications set in.

Penicillin is best given by inhalation, 100,000 units in one charge, as powder or in solution, the treatment being carried out every three or four hours. One such charge is usually sufficient for three or four treatments.

Carbon dioxide.—On the basis of the observations of Henderson, Banyai administered carbon dioxide to many patients suffering from bronchitis, and found it very useful in all cases where there was tussal insufficiency and hacking cough. He says “the benefits resulting from its use are noticeable subjectively and objectively:—(1) Spells of strenuous exhausting cough are prevented, and rest is thereby secured for the patient and particularly for his lungs; (2) an unproductive cough is transformed into a useful one; (3) directly after inhalation the amount of expectorated sputum is increased and its character changes from a heavy, thick and tenacious type into a thinner, serous and more watery kind; and (4) the use of expectorant drugs and narcotics could be reduced.”

The effectiveness of carbon dioxide is manifestly due to the following factors:—(1) Being a powerful respiratory stimulant it induces increased inspiratory movements of the diaphragm and the chest wall, which in turn causes a stretching and dilatation of the bronchial tubes; (2) it stimulates the myoelastic structures of the lungs and causes powerful peristaltic movements of the bronchi; and (3) it liquefies mucopurulent inflammatory exudate that stagnates in the bronchial tract. This treatment cannot however, be carried out in most stations for want of adequate facilities.

Discussion.—Since bronchitis may be produced by several causes the physician should first ascertain and then treat the cause, which may be a distant irritation, *e.g.*, cardiac, pleural, abdominal, diaphragmatic, pharyngeal, aural, or tubercular and sub-diaphragmatic inflammation. It may also be due to foreign bodies, intestinal worms, thoracic aneurysms and eosinophilia of the lungs.

Antihistaminics and drugs of the xanthine group, may be of value in bronchitis due to allergic irritation. A few atomised sprays of any antihistaminic solution like Antistine, Privine, Neosynephrine, 1:100 or 1:200 or Isoprenaline, are useful. Where none of the above are readily available, a 2% aqueous solution of ephedrine will act just as well. Care should be taken not to give drugs of the phenobarbital group, simultaneously with the antihistamines, as such medication is reported to have produced disastrous results.

Morphia is effective in bronchitis of cardiac origin and should be given with caution and in appropriate doses only. The cough

and dyspnoea due to failing compensation of the heart could best be treated with digitalis or other specific drugs.

In ordinary bronchitis due to cold and damp with no definite pathology, the treatment should be directed towards (1) the reduction of the inflammation of the bronchi; (2) the relief bronchospasms; and (3) the increase of the glandular secretion of the bronchi.

In the first stage of the disease, codeine, atropine and ephedrine, are indicated. The traditional “stimulant cough mixture” is absolutely without effect in this stage of the disease. Hydration and steam inhalations with volatile oils or/and Tinct. Benzoin Co. are very useful. (Menthol 3 grains in compound Tincture of Benzoin 60 minims, added to a pint of steaming but *not* boiling water). Turpentine stupes three or four times a day, to the chest—a time-honoured treatment—is effective particularly in children, who cannot or will not inhale the medicated steam.

In the 2nd stage of the disease, when liquefaction of the mucus is desired, 7½ to 15 grains potassium iodide three or four times a day in the form of a syrup or as saturated solution or as enteric coated tablets, will be very helpful. The ammonium salt, more especially, ammonium chloride (5 grains) every two hours will be effective. Every other expectorant has its own limitations. Hydration and steam inhalation will be helpful even in this stage and may be continued for a prolonged period.

Inhalation of carbon dioxide is a new advance in treatment and should prove very useful. But unfortunately its use will be limited to only the rich who could afford such treatment in a large hospital. Most of our hospitals are not provided with carbon dioxide and the necessary B.L.B. inhalers.

Of course, adequate bed-rest and nutritious diet are essential. “Feed the cold and starve the fever” is an age-old adage, which is not without some significance. When there is a slight temperature and generalised pain over the body, a small dose of aspirin will be effective; when complications are apprehended or have set in, penicillin and sulphonamides are promptly indicated.

Quite often a combined therapy is used: combinations of several expectorants, and sedatives are usually given at the same time; for instance, Ammonium carbonate or chloride, Ipecacuanha, Tolu, Tr. Camphor Co. or Syrup of Codeine and Potassium Iodide, are prescribed at the same time. This sort of “Molotov’s Cocktail” is to be condemned as it is illogical, irrational and wasteful if not also harmful. (“Molotov’s Cocktail” is a medley contraption of fuse-operated petrol bottle-bombs, incendiary and destructive in nature, which is hurled over the enemy’s camp, for multiple destructive purposes!).

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Bowel Infections in the Tropics

Dr. Adams of Liverpool opening a symposium on the chemotherapy of tropical diseases, before the section of Tropical Medicine of the Joint Session of the British and Irish Medical Associations, held on 11.7.1952, at Dublin said:—"In bacillary dysentery, British practice had been to prefer one of the unabsorbable sulphonamides, though the Americans often used sulphadiazine. The correction of dehydration and the alkalinization of the urine were important when using absorbable sulphonamides, as with these there was the danger of crystalluria and renal blockage. In cholera, vibrios multiply so rapidly that chemotherapy would be too late to be useful. Concerning amoebic dysentery, it was unwarrantable to ascribe to *E. histolytica* bowel infection a limitless range of indeterminate symptoms remote from the abdomen. For bringing an acute attack under control, emetine hydrochloride given for a few days intramuscularly was still unequalled. To eradicate basic intestinal infections, a combination of drugs was effective in most cases. In a series of cases treated by Dr. Adams, he found aureomycin cured 23 out of 27 infections and terramycin cured 46 out of 49. These two were useful additions to the range of amoebicidal drugs; their main value was their capacity, when given with the older amoebicides, to eradicate the occasional refractory infection. Their indiscriminate use in ordinary cases of amoebiasis was not recommended." In the discussion that followed Dr. Adams's conclusions found unanimous support. Prof. H. E. Shortt Director of the King Institute, Guindy presided. — (*B.M.J.*, 26.7.'52).

Hypopotassemia in Diabetic Patients in Coma

Intractable shock which often follows coma controlled by insulin, is due to lack of contractility of the myocardial fibrils from insufficiency of serum potassium. Bertolini and Scapellato emphasize the importance of serum potassium in regulating muscular contraction and indicate the causal factors of hypopotassemia in the course of diabetic coma. Regression occurs in ECG changes in coma, after the administration of potassium and diabetic coma is also controlled thereby.—(*Gior. Clin. Med.*, 32, 1951: Abst. in *J.A.M.A.*, 21.7.1951).

DIAGNOSIS OF TUBERCULOUS MENINGITIS IN CHILDREN*

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EARLY symptoms of tuberculous meningitis are unreliable and later ones, excluding the terminal ones are suggestive of the diagnosis; and thus the diagnosis can be either extraordinarily easy or extremely difficult in a given child. Any doubt in this direction has to be explored relentlessly until elimination or confirmation regarding the disease is obtained.

The duration of the illness may be from 6 days to 6 weeks; and an acute form may supervene on symptoms of intracranial neoplasm due to a tuberculoma.

Children that came under my care in and outside the hospital were seen with one or more of the following:—fever, fits, drowsiness, incessant crying, vomiting, diarrhoea or cough.

The following table summarises the symptoms of tuberculous meningitis:—

Prodromata.—Importance of previous head injury; measles; pertussis; loss of appetite; irritability and wasting.

STAGE I (Meningo-cortical irritation): duration 1 week; heralded by fits; fever (high). Cerebral type of vomiting. Headache. Rapid pulse becoming slow and irregular. Constipation. 'Hydrocephalic' screaming. Contracted pupils. Restlessness and muscular tremors. Bulging fontanelle with photophobia and a commencing squint.

STAGE II.—(Rising intracranial tension) duration 1 week:—Attitude of flexion; child lies on the side. Dysphagia. Drowsiness. Constipation, wasting and carinated abdomen. Irregularity of pupils, squint, ptosis and papilloedema. Fits. Pyrexia (lower grade). Slow and irregular pulse and respiration. Head retraction and trachy cerebrale.

STAGE III (Paralysis and coma) duration 1 week:—Drowsiness deepens into coma. Fits and paralysis. Spasms and contraction. Hemiplegia, monoplegia and Weber syndrome. Eyes half open and dilated pupils. "Typhoidal" stage with rapid pulse, diarrhoea, incontinence. Loss of corneal and conjunctival reflexes. Hyperpyrexia heralding death. Choroidal tubercles. Kernig's sign.

Tuberculous meningitis can be a clinical type of acute miliary tuberculosis, rare under 5 months of age, and even with a negative Mantoux test. Constipation, headache (complained by only older children) appreciated by hearing 'screams' and vomiting form a

* Specially contributed to THE ANTISEPTIC.

diagnostic triad described by many writers, but unfortunately do not afford a very valuable basis for diagnosis in my experience as every practitioner knows in South India that the elusive ascariasis can present all the above symptoms. It is honest confession to say that many children with meningeal manifestations due to ascariis infestations have made me think at one time or another of the dreaded tuberculous meningitis.

Lumbar puncture yields cerebrospinal fluid which is characteristic and diagnostically helpful. C.S.F. is under pressure, forms a cob-web coagulum on standing with increase in protein, slight fall in glucose (stressed as the most reliable single finding during recent times) and a definite fall in chlorides (below 650 mgm. %), and with a usual lymphocytic or rarely polymorphonuclear preponderance. B. tuberculosis can often be demonstrated in the centrifuged C.S.F. and diagnosis can thus be clinched.

My impression is that a meningeal heave, irregular pulse and lowered chloride count in C.S.F. form a reliable tripod of diagnosis.

Tuberculous meningitis has to be differentiated from the following:—1. *Typhoid fever*:—Widal test may be positive up to 1 in 100 even in tubercular meningitis, but agglutination in increasing titres suggests typhoid fever only.

2. *Pneumonias* (especially apical types):—Predominant pulmonary signs and pulse respiration ratio and at least therapeutic response are helpful.

3. *Ascariasis*:—This common condition can simulate tuberculous meningitis so thoroughly that I can recollect many errors in this direction. Lumbar puncture and follow-up will decide the diagnosis. The lowered sugar content in C.S.F. singularly helping in the diagnosis of tuberculous meningitis is a point on which much has to be said. The normal values for sugar in C.S.F. vary and therefore, dependence on a lowered chloride content of C.S.F. is justifiably more in vogue and fairly reliable in the diagnosis of tuberculous meningitis.

4. *Encephalitis* and *encephalomyelitis*, (polio and mumps included). Lumbar puncture settles the point.

5. *Otitis media* and its complications, intracranial.

6. *Intracranial tumours*:—(Tuberculomata). When a tuberculoma ruptures into the C.S.F. a typical picture of tuberculous meningitis supervenes.

7. *Congenital syphilis*:—Manifestations are generally in the third month. Serum reaction and therapeutic response are aids.

8. *Cerebrospinal meningitis*:—Occurs with marked head retraction. Lumbar puncture helps.

9. *Malaria* specially cerebral malaria. Blood examination and therapeutic benefit from antimalarial drugs help.

10. *Pyelitis*:—Urine examination and culture aid.

11. *Subacute bacterial endocarditis*:—Cardiac condition and changing murmurs and emboli are characteristic.

12. *Teething*: indigestion, malnutritional states and scurvy.

13. *Incubation of eruptive fevers*:—Here is a field which may delude the most wary physician. Guarded prognosis and conservative treatment are essential, till the eruption or the lumbar puncture settle the issue. During the incubation of measles in a baby, I have seen suspicions of tuberculous meningitis being raised. Lumbar puncture results also suggested the possibility of tuberculous meningitis; but measles-rash put the child very safe.

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Chloramphenicol for Pelvic Inflammatory Disease

Stevenson and his co-workers treated with chloromycetin thirty two patients, 15 with pelvic inflammatory disease of the non-puerperal type with pelvic abscess, nine with infected abortion, two with post-partum sepsis, five with subacute salpingitis without pelvic abscess and one with ruptured appendix. The infecting organisms were isolated and found to be chiefly *B. coli*, nonhæmolytic streptococci, and *B. aerogenes*. 29 of the 32 patients showed a mixed infection. Staphylo-albus was the offending type in one case, while beta-hæmolytic-streptococci were isolated from a case of septicæmia following criminal abortion. A total daily dose of 2 gm. in divided doses of half a gram orally every three hours was given for 10 days. 21 of the 32 patients had previously been treated with penicillin, sulphadiazine and/or streptomycin and 16 of these 21 derived absolutely no benefit, three showed poor response, and fairly good response in two. Only three of the 32 patients failed to respond in adequate measure to treatment with chloromycetin.

The clinical response to this antibiotic was manifest in pronounced symptomatic improvement within 48 hours, rapid disappearance of peritonitis and subsequent regression of the tubo-ovarian inflammatory masses; the patients were able to undergo exploratory laparotomy within a month in the average case. Women who had large pelvic abscesses were treated quite effectively with chloromycetin; and posterior colpotomy, with drainage of the abscess, was not necessary for a rapid cure, in patients who were treated exclusively with chloromycetin from the very beginning.—(*Am. J. Obst. and Gynecol.*, 61, pp. 498-514, 1951).

THE VALUE OF ANTIBIOTICS IN TREATMENT*

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ANTIBIOTICS now enjoy a wide reputation, since their advent revolutionised the treatment of many medical and surgical diseases which formerly took a heavy toll of human life. The combined use of chemotherapy and antibiotics has reduced the incidence of respiratory diseases. "The combined death-rate from influenza and pneumonia is only half of that six years ago and one-fourth of that in 1937, when chemotherapy and antibiotics were not known. Diseases like tuberculosis, diarrhoea, enteritis, pneumonia etc., which headed the death-roll forty years ago and offered problems to the patient and the physician, have now lost much of their terror.

The list of antibiotics is growing rapidly. The extravagant claims made by manufacturing firms have yet to be proved in many cases by repeated trials and tests, before assigning them to their proper places in therapeutics. But some of them have established their usefulness and deserve to be considered more closely.

Penicillin.—Penicillin is the first of the series and its value in therapeutics, medical and surgical is now fairly well established. Infections caused by gram-positive organisms *beta*-hemolytic streptococci, pneumococci, *alpha*-hemolytic streptococci, gonococci and pirochetal infections, gas gangrene, etc. are readily controlled by it. The discovery of procaine penicillin in aqueous suspension or in oil has obviated the necessity of frequent injections. Even with the soluble salts of penicillin it has been found both convenient and effective to increase the dose gradually at each injection. I use frequently 2 or 3 lacs units of penicillin twice daily, even in cases of pneumonia in children with encouraging results.

The use of *caronamide*, a stable crystalline substance which resumably delays the renal excretion of penicillin, along with penicillin has increased the plasma concentration of the antibiotic from 1 to 32 times. A combination of 2 g. each of caronamide and sodium benzoate orally further enhances the plasma penicillin levels. It is however not advisable to use them in genuine cases of renal disease.

The advent of oral penicillin has further facilitated the use of the antibiotic and obviated the necessity for frequent pricks with the needle; but recourse to this route should be had only in milder infections or when the intensity has been alleviated by parenteral administration. The higher doses needed, often as much as five times the parenteral dose, and the cost to the patient are the main drawbacks to its oral use.

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The local use of penicillin in general surgical conditions like wounds, boils, abscesses, carbuncles, sinuses, and empyema cavities, in eye conditions and in many staphylococcal and streptococcal skin diseases, has changed the entire outlook and prognosis of these diseases.

Aureomycin.—It has a wider range of activity and is inimical to a variety of both gram-positive and gram-negative bacteria; and protozoal and viral infections. The greatest advantage is its effectiveness when used orally. In cases of vomiting and in comatose conditions or in fulminating infections, the intravenous route is to be preferred as it produces promptly high concentration levels in the blood. Aureomycin has proved beneficial in practically all the infections sensitive to penicillin. Further, virus or virus-like diseases like atypical pneumonia, lymphogranuloma venereum, trachoma, herpes zoster, whooping cough, mumps, virus influenza etc., are amenable to it.

It is still in the experimental stage as far as prophylaxis and treatment of syphilis are concerned and the available reports are somewhat conflicting.

Cases of acute gonorrhoea and epididymitis, especially those resistant to penicillin respond to it. Soft-chancroid responds to both local and oral administration but the treatment should be continued for 2 to 3 weeks to effect a cure.

I have tried it in whooping cough. If started early, it mitigates the intensity and increases the interval between paroxysms more effectively than any other drug. It has been tried in certain skin infections like dermatitis herpetiformis, pemphigus, erysipelas, boils and carbuncles. It is quite effective in a number of diseases. Genito-urinary infections of mixed bacterial etiology and gram-negative infections of the coli group also yield to aureomycin.

It is being tried in cases of both acute and chronic amoebiasis as it is effective against the cystic as well as the trophozoite forms. The evidence goes to show that the drug is directly amoebicidal. Claims have been advanced by some about its efficacy in sterilizing carriers.

Terramycin.—This is a comparative new-comer into the field of antibiotics. Like aureomycin, it has a wide range of activity against gram-positive and gram-negative bacteria, both aerobic and anaerobic and against certain of the viruses also. Its therapeutic range is more or less the same as that of aureomycin. It can be used locally, orally and intravenously.

Streptomycin and dihydro-streptomycin.—These are also active against gram-positive and gram-negative organisms. Their toxic action in producing cochlear nerve palsy and tendency to bacterial resistance have limited their use. Their main use now is in exudative forms of tuberculosis, preferably in combination with

* Specially contributed to THE ANTISEPTIC.

PAS. The drug has proved in its worth urinary tract infections and also in endocarditis caused by streptococcus faecalis.

Chloromycetin.—This is another poly-target antibiotic with bacteriostatic and bactericidal properties against a wide range of both gram-positive and gram-negative organisms, bacillus typhosis and paratyphoid A and B and also viruses. It is effective orally; in infants and children it can be given also rectally. It can be combined with other antibiotics and sulphonamides. It has proved effective in treating acute gonorrhoea and syphilis. Urinary infections, both bacillary and coccal are amenable to its action.

It has however, been most extensively used in the enteric group of fevers. It controls the temperature in 3 to 5 days and the general physical condition improves appreciably. The consensus of opinion favours the view that the drug should be continued for 2 or 3 days after the attainment of normal temperature in order to prevent relapses; smaller doses at longer intervals will do.

The chronic typhoid carrier-state does not seem to be affected at all by chloromycetin but enteritis following enteric fevers responds to it rapidly.

Secondary complications like bronchitis, broncho-pneumonia following measles are readily controlled with this antibiotic. Clinical experience in pertussis has been quite favourable. The number and intensity of the paroxysms are reduced regardless of the stage at which the drug is begun.

This antibiotic has been administered in gonococcal infections and in syphilis, but the results so far obtained do not show any special advantages over those obtained with penicillin and aureomycin.

It exerts a favourable influence on trachoma; within 24 hours photophobia and lacrimation are lessened; and corneal involvement is prevented, if the treatment is started early.

Summary.—The therapeutic activities of some of the main antibiotics which have stood the test of time and trial are briefly reviewed. Laboratories of manufacturing firms and bio-chemists over the whole world are constantly adding to the list. It is unfortunate that with the exception of penicillin and perhaps streptomycin the rest of the antibiotics are much too expensive to be within the reach of the large proportion of our suffering humanity as India is a poor country and the majority of the people cannot afford to buy them. Efforts, are being made by our Union Government with the combined help of the WHO and UNICEF to manufacture Penicillin in India and make it available at cheaper prices. We also, we hope, will see the other antibiotics come to be manufactured in India in course of time and sold at cheaper prices.

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Amer. Heart J., 1949, 37, 531. Brit. Heart J., 1950, 12, 54.

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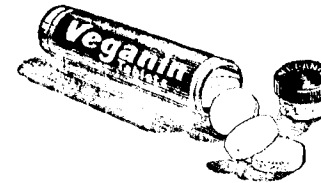
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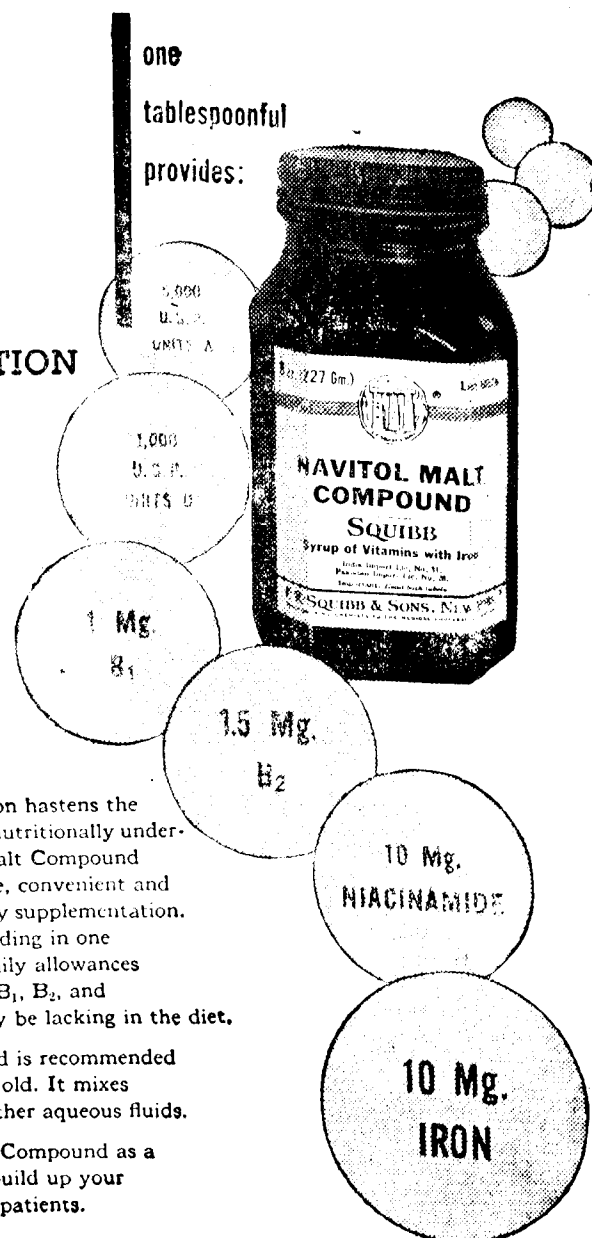
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Cases and Comments

TWO UNUSUAL CASES OF DEATH FROM ACCIDENTAL INJURY

K. C. JACOB, B.A., M.D.,

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MINOR injuries sustained during the process of splitting firewood are not infrequent; but it is rare that injuries inflicted during this act turn out to be serious and rarer still to find them severe enough to cause death on the spot. During the latter half of 1951, two such fatal cases were examined in this department and in view of the unusual method of causation and nature of the injuries, it is considered that brief reports about them will be of interest.

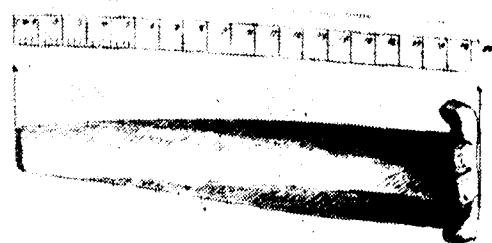
Report of Cases

CASE I.—History:—S., Hindu, male, aged 35, and G., another adult male, were engaged in splitting wood at 4 p.m. on 7-7-'51 in a firewood depot in Poonamallee Road near Aminjikarai, Madras, using an iron chisel and hammer. The chisel about 7½" long, was made entirely of iron, weighing 45 ozs., pointed at one end and almost flat at the circular top, the diameter being about 2⅜"; (*Vide photo* on page 796). A piece of iron breaking off from the chisel-head used by G., flew in the direction of S., who was standing at a distance of about 12 feet and pierced his body on the left side of his back. S., had no clothing on his body above the waist and the injury caused profuse bleeding. He was taken at once by G., to a practitioner of indigenous medicine in the neighbourhood who advised the victim to be taken to the Government General Hospital as he was not in a position to remove the foreign body or to control the bleeding. Within ten minutes, and before even a cart could be brought to transport him to the hospital, the victim died having lost in the meanwhile, a large quantity of blood through the wound. The body was sent to this department on 8-7-'51 by the Inspector of Police, Aminjikarai, with a requisition to conduct a *post-mortem* examination. Accordingly the examination was conducted by Dr. P. S. Babu Naidu on the same day.

Autopsy abstract:—The body was that of a fairly well nourished individual 5 feet high. A pair of khaki shorts and a torn piece of red cloth with bloodstains were found on the body. A punctured wound ⅝" x ⅜" was present on the left side of the back just below the lower border of the 10th rib, about 5" away from the midline. The external wound was directed downwards and inwards and showed lacerated margins. On dissection, the punctured wound was found entering the pleural cavity through the 10th intercostal space, passing through the diaphragm and extending through the

entire thickness of the pulp of the spleen to the middle of the visceral surface and a piece of black metal $1\frac{1}{8}'' \times \frac{1}{2}'' \times \frac{1}{8}''$ was found embedded in its substance. (See photograph). The abdominal cavity contained 20 ozs. of blood and the left pleural cavity about 10 ozs. Except for the appearances due to loss of blood, there was nothing pathological in the rest of the viscera.

1. Photo of a sketch of an iron chisel and its irregularly flattened top portion.



2. Photo of the specimen of spleen in Case I showing the site of entry of the iron piece on its diaphragmatic surface.

CASE II. *History*:—A., Hindu male, aged 30, was engaged at 3 p.m. on 28-9-'51 in splitting firewood by means of a hammer and an iron chisel, similar to the one shown in the sketch, in a depot at Kancheepuram-Sabapathy Mudali Street, Kondithope, Madras, when a piece of iron chipped off from the flattened top of the chisel to the Casualty Department of the Government Stanley Hospital, Madras, at about 4-30 p.m. and after the necessary first-aid, was admitted in the Bryson Ward of the same Hospital. In the casualty front of the left thigh at its upper part. The patient was unconscious, gasping for breath and the pulse was almost imperceptible. Cora-mine, glucose, A.T. serum, A.G.G. serum, oxygen and saline were ordered, and the wound was cleaned and dressed with pressure

bandage. After treating for the collapse under local anæsthesia, at 4-55 p.m., the wound was enlarged, a foreign body consisting of a bit of iron about 2 mm. in thickness was removed from the wound, the femoral artery was ligatured and after controlling the bleeding points, the wound was partially closed. Subsequently, in spite of suitable measures for combating shock and collapse the patient died at about 8-30 p.m. The body was sent by the Police to this Department at 12-30 p.m. on 29-10-'51 for a *post-mortem* examination which was conducted on the morning of the next day by Dr. C. B. Gopalakrishna.

Autopsy abstract:—The body measured 5' 4'', weighed 109 lbs. and was that of a well-built person. There was an irregular partially sutured wound over the inner aspect of the left thigh $3\frac{1}{4}'' \times 2\frac{1}{2}''$ the upper end being $3\frac{1}{2}''$ below the Poupart's ligament. On dissection, the femoral artery was found tied in two places and the femoral vein in one place. Other viscera were normal except for the effect of blood-loss.

REMARKS.—It is a common sight in the firewood depots of Madras to see well built muscular individuals, very scantily clothed usually with only a small loin cloth engaged in splitting wood with the aid of hammer and chisel. Examination of these iron chisels would often show the irregularity of their upper surface, several bits having broken off from the edges during gradual daily use (see sketch). No mishap however, takes place ordinarily and the workmen continue to earn their living in this way, doing this work for days and months on end. It is a strange coincidence that within the space of four months, two such innocent hardworking men became the unfortunate victims of fatal injuries caused by small fragments originating from their own tools. In one case, it was a co-worker's chisel that shot out the projectile, while in the other, the offending metallic piece was part of his own chisel. Bleeding resulted which was not easily controlled by first aid measures since the spleen and the femoral vessels respectively, were involved in these two cases.

It is interesting to speculate whether these fatal injuries would have resulted if the projectiles had to pass through a layer of clothing. Though climatic conditions and the arduous nature of the work may be partly responsible for the scantiness of the clothing, yet poverty has also to be reckoned with, as a contributing factor. It is sad to reflect, therefore, that poverty expressed in lack of proper clothing should *per se*, have contributed to the gravity of the accident which in its turn, led inevitably to more poverty by snatching away the breadwinner of the family. It is painful also to note that the force of the heavy blow on the chisel by the hefty workman in Case C, should have become the propelling force for the projectile which caused his own destruction.

Another interesting point to speculate on is the assessment of responsibility in these accidents, in relation to the Workmen's

Compensation Act and also about the question of culpability if one is raised in a Court of Law. How far is the employer responsible in such cases where the tools provided by him are not up to the mark in temper and other qualities, where sufficient space is not made available for the workmen to do their work at a safe distance from one another, and where facilities to render 'first aid' in sudden accidents are not even thought of.

Acknowledgements.—My thanks are due to the Superintendent of the Government Stanley Hospital, Madras, for permitting me to extract notes about Case II from his hospital records.

Aureomycin in Acute Gonorrhœa

63 male patients between the ages of 14 and 56 suffering from acute gonorrhœa were treated by Wright *et al.* with aureomycin. A single capsule containing 500 mg. of aureomycin was given initially and a second dose of 500 mg. six hours later. The clinical follow-up showed that the course of the disease was strikingly uniform in all these 63 patients. Within 24 hours, smears and cultures were negative for gonococci in most cases, and the thick purulent discharge had disappeared completely, though a few patients had a thin watery discharge which was however, free of gonococci. After 48 hours, the urethral discharge had completely disappeared. Sixty patients of the 63, who were fully followed up were cured, *i.e.*, they showed no clinical symptoms and bacteriological smears and cultures were negative. The other three were therapeutic failures. With the dose employed toxic reactions were quite minimal and high urinary levels of the antibiotic were obtained, which persisted for at least 48 hours in 3 of 4 patients. The results showed that aureomycin is as effective as penicillin in the treatment of acute gonorrhœa. Aureomycin however possesses certain definite advantage over penicillin:—(1) ease of administration; (2) minimal toxicity limited to the gastrointestinal tract; (3) little or no increased drug-resistance of the gonococci (4) beneficial effect in concurrent gram-negative bacterial urinary tract infections often found associated with gonorrhœa, and not amenable to penicillin therapy. Aureomycin should therefore, be considered one of the agents of choice in the treatment of acute gonorrhœa.—(*Urol. and Cut. Rev.*, 55; pp. 203-206: 1951; abst. *J.A.M.A.*, 21-7-1951).

Diet and Appendicitis

From a review of the literature, Van Ouwerkerk gained the impression that acute appendicitis is comparatively frequent and dangerous in Northern Europe, America and Australia. Among native populations in Asia and Africa, but not among Europeans living there, appendicitis is rare. When the natives eat the richer diets of Europeans, then they also have a higher incidence of appendicitis. With a diet consisting of small amounts of rice, coarse vegetables and almost no meat or fats, such as was given to Dutch women and children in a Japanese internment camp, appendicitis almost disappeared. This would appear to indicate that there is a relation between diet, particularly the fat content and the incidence and mortality of appendicitis.—(*Arch. Chirurg. Neerland*, 3, p. 164, Eng. Abst., *J.A.M.A.*, 19-1-52).

FULL TERM BROAD LIGAMENT PREGNANCY

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Professor of Obstetrics and Gynaecology,
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PATIENT, M., aged 27 years was admitted to the hospital on 21st June 1951, with a history of vaginal bleeding for 2 days following an amenorrhœa of 5 months. Prior to this she had 4 menstrual periods which were scanty but at regular intervals of 28 days lasting for 4 to 5 days. Gradual enlargement of the abdomen had been noticed and foetal movements had been felt for the past 5 months but ceased 15 days back. She was getting regular, though scanty menstruation, and thought she was pregnant. She had some discomfort in the abdomen for one month and complained of pain in the back and abdomen simulating labour pains for the past 2 days. She was para 5+0, 5 full term normal deliveries, the last delivery being 21 months before.

General examination of the patient.—Patient looked pale, and seemed to have a moderate amount of pain in the abdomen. Temperature normal, pulse rapid 128/minute, respiration 20/minute, blood pressure 120/60 m.m. Hg. Tongue slightly coated. No abnormal signs in the chest. Breasts not active.

Blood examination:—Total R.B.C. 3 millions/c.m.m. Total W.B.C. 4,800/c.m.m. Differential count: polymorphs 60.0 per cent; lymphocytes; 38.0 per cent; eosinophils 2.0 per cent; hæmoglobin 42 per cent; C.S.R. 40 m.m./hr.

Abdominal examination:—A firm mass filling the abdomen from the symphysis pubis to the xiphisternum. No foetal parts could be palpated. A round mass about 3" in diameter was felt in the right iliac fossa. The mass seemed to get harder at shorter intervals and was thought to be the uterus undergoing contractions. Foetal movements could not be felt. Foetal heart sounds could not be heard. No tenderness anywhere.

Pelvic examination:—Cervix, soft, and pushed forwards behind the symphysis pubis. Body of the uterus could not be reached. A large firm mass was felt, filling the posterior fornix and this seemed to be continuous with the mass felt *per abdomen*. Foetal parts could not be felt. There was a slight discharge of dark blood on the fingers.

X-ray of abdomen was done on the same day. A foetus of about 40 weeks was lying across the abdomen transversely with the head in the left iliac fossa. There was over-lapping of bones suggestive of foetal death. Diagnosis of full term extra-uterine pregnancy was made.

Laparotomy was done on 23-6-'51. The abdomen was opened by a sub-umbilical median incision and a big mass came into view. As the extent of the mass was difficult to make out and there were

several thin adhesions, the incision was extended upwards by 2½". The adhesions were freed all round. There were 2 masses. The mass on the right side was the uterus enlarged to the size of about 10 weeks' pregnancy. Close to the left side of the uterus was a large firm mass filling the whole abdomen. The omentum and small bowel were adherent to this mass. A vertical incision about 4" long was made in the anterior wall of this mass and a macerated foetus of the size of about 40 weeks was extracted. The placenta was removed in 3 pieces. Some old blood came away from this cavity but there was no fresh bleeding on the posterior wall of this cavity; pelvic colon could be felt. Some gel-foam was left in the cavity and the incision in the wall of the cavity was closed with a continuous layer of No. 1 catgut.

The left tube and ovary could not be identified. The right tube and ovary were normal and the right tube was ligatured by Madelener's technique as the patient wished to be sterilised. The abdomen was closed. Blood transfusion ½ pint given during the operation. The patient left the operation theatre in good condition.

The post-operative convalescence was a stormy one. Maximum temperature rose up to 103°F during the first week, 102°F during the 2nd week, 100°F during the 3rd and 4th weeks, and gradually dropped to normal in the 5th week. A mass was felt on the left side of the abdomen which was increasing in size. The temperature did not drop even after the use of different antibiotics. On 8-7-'51 the mass was explored and drained. Blood-stained pus discharge came out. The temperature came down to normal but there was a rise of temperature again as the drainage ceased. The mass was drained a second time on 27-8-'51 and after that the patient made an uneventful recovery and was discharged from the hospital on 12-9-'51 in good condition.

Antibiotics for Underweight Infants

Answering a question whether aureomycin and chloromycetin (which have been successfully used to promote growth in poultry and animals) are likely to be useful in the treatment of retarded growth in children, who show no obvious endocrine disorder, the *British Medical Journal* for 3rd May 1952, states: "There have been no reports of the effect of chloromycetin on growth-but aureomycin has been found to make a marked difference in the weight-gain of infants suffering from fibrocystic disease of the pancreas. It has also been used for premature babies, and in a small series, recently reported, the treated infants gained weight more rapidly than did the controls, perhaps because they were protected by the aureomycin from the infections which attacked a number of the controls.

These antibiotics are not without danger, especially in the youngest age groups, because of their interference with the normal vitamin synthesis in the gut and because of their effect on the mouth. Stomatitis and thrush have repeatedly occurred and the possibility of a generalised moniliasis must be borne in mind. Their use in the treatment of retarded growth in children is not advisable except perhaps in cases where chronic and repeated infection is clearly responsible for the retarded growth.—(*B.M.J.*, 3-5-'52, p. 985).

A CASE OF IRITIS AFTER B.C.G. VACCINATION

S. C. ROY, M.B.,

(Gold Medalist), Ophthalmic Surgeon, L.M. Hospital, Asansol.

A. K. G., a Hindu male, 24 years old, came to me on 24-7-'51 with a history of redness, pain, watering and photophobia in the left eye for four days.

On examination, the following changes were found in the eye:—

1. *Conjunctiva* showed hyperæmia with circumcorneal injection.

2. *Cornea* showed a few discrete areas of infiltration at the upper part. These areas involved the layers of the cornea from the epithelium up to a major portion of the substantia propria. A few pannus ran from the limbus vertically down to these areas of infiltration.

The vessels of the pannus came from the limbus and were just under the epithelium of the cornea. There were 4 to 5 of these areas in all, each the size of a pin's head and each infiltrated area had a vessel running to it.

3. *Iris* was irregular and slightly contracted.

These were no precipitates on the back of the cornea and the anterior chamber was normal and the fluid not turbid. The sight in this eye was 6/36.

The other eye was normal.

There was adenitis of the left parotid region.

About a month and a half before the ocular symptoms started, the patient got a B.C.G. inoculation in his left arm on the deltoid region during a mass B.C.G. vaccination campaign in the coal field area of Asansol.

The inoculated spot on examination showed a persistent sinus oozing out some serous fluid.

Before he came to me, the patient received a course of penicillin injections and sulpha-drugs by mouth without any effect on the ocular symptoms.

Wassermann and Kahn's tests were negative.

He was put on salicylate mixture with hot compresses and atropine ointment to the eye.

During the next few days slight conjunctivitis occurred with a few minute ulcers of the cornea at the periphery. Antiseptic drops for the eye were used and also vitamin B₂ injections which were later omitted as these were excreted through the urine.

Two points arose for consideration in this connection *viz.*, (1) Could the iritis be the direct result of the B.C.G. inoculation? or (2) was it a manifestation of local allergy or hypersensitiveness due to the liberation of some unknown substances in the body on the impact of the B.C.G. inoculation? The latter was thought to be more probable and the patient was treated with calcium injections and an antihistaminic drug (antistine).

As the sinus on the arm healed, the eye also healed gradually; the degree of improvement in the two was so closely interrelated that the condition of the eye reflected the condition of the sinus in the arm and *vice versa*.

The patient made a gradual recovery and in 8 weeks' time the sinus, the keratitis and iritis all healed up simultaneously.

The vision in the left eye improved to 6/9.

Early Rising in Obstetrics and Gynaecology

Haultain and Irvine of the Bangour and Eastern General Hospitals, Edinburgh, record their observations on 1970 consecutive hospital and private obstetric cases, 28 caesarean sections, and 285 major abdominal and vaginal operations, in which early ambulation was practised. The patients were made to rise usually within twenty-four hours of, and certainly not later than thirty-six hours after delivery or operation. This was advantageous to them and no untoward complications occurred. The routine for puerperal cases was:—Patients who have had normal labours and spontaneous deliveries before 8 a.m., were allowed up for bed-making at 5 p.m.; on the 2nd day they were allowed up for meals and to go to the toilet; on the 3rd day they were allowed to handle their babies in the nursery; and from then onwards they were allowed up for a little longer each day, taking a bath on the 8th day and going home on the 10th day. Patients with perineal lacerations and episiotomies with sutures were treated no differently. They were swabbed twice daily by the nurse and sterile pads applied till the 7th day, when sutures are removed and a bath is taken. All patients have exercises for four days a week for half an hour daily. Only severe cardiac, and acute tuberculous cases, eclamptic and severe pre eclamptic cases do not follow this routine. Women delivered by caesarean section are allowed up within 24 hours, but their movements are more restricted for 2 to 3 days. Usually they are allowed to go to the toilet on the 5th day. All the patients rest however, in bed for a considerable period every day.

Early rising did not interfere with the healing of the perineum and involution seemed to be accelerated. The persistence of red lochia may possibly be increased. In cases of pelvic floor-repair the healing of wounds was not influenced adversely by the early rising and catheterisation was far less often needed. The diminution in the use of bed-pans was appreciated by both patient and nurse. Early rising seemed to be of great benefit not only to the puerperal patients but also—even more—to the patients who had undergone major abdominal operations. In the U. S. A. the vogue for early ambulation was based chiefly on the presumption that thrombosis and embolism are greatly reduced by getting the patient up soon after operation. Haultain who went to U. S. A. in 1947 was very much impressed with the American practice and decided to give it a trial in his own practice at the hospital and in domiciliary treatment.—*The Lancet*, 8-10-51, pp. 607-610.



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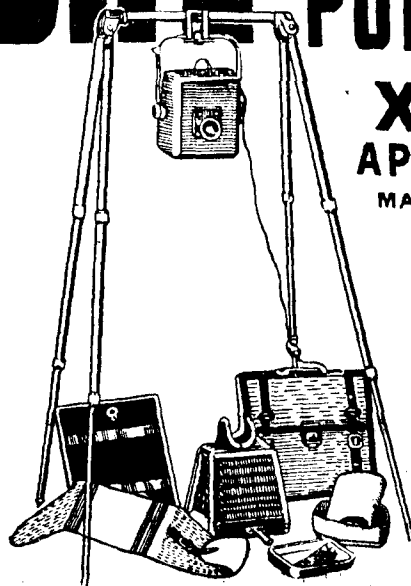
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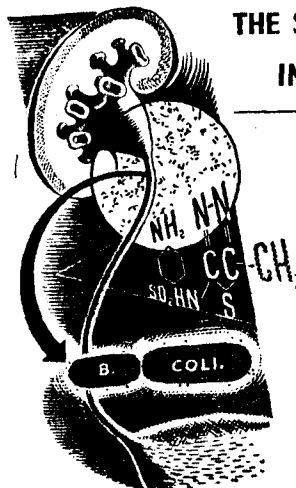
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LEPROSY RELIEF AND CONTROL

(A BRIGHTER AND MORE CHEERFUL OUTLOOK)

At a Conference of the Secretaries of the Kushta Nivarana Sangh (Leprosy Relief Association) held at the Rajaji Hall on Friday the 26th September, Hon. A. B. SHERRY, the Minister for Public Health in the Madras State referred to the treatment of leprosy and said that the new sulphone drugs are stated to be giving good results. The new treatment with these drugs has certainly created a new sense of hope in the minds of the patients and also of the doctors. "The happiest feature of leprosy work in the Madras State is the very close co-operation between voluntary agencies and the Government" said the Minister of Health. Speaking at a public meeting on the next day he stressed the importance of preventive measures and said that the Government had to provide greater facilities for the treatment of the disease by organising a network of treatment centres. The pilot scheme of Leprosy Control at Tirukoilur was intended to develop a pattern of co-ordinated control, the voluntary agencies working in close co-operation with the medical and public health departments of Government. A great deal of organisational and educational spade work has to be done to bring home to the minds of the people the importance of segregation, preventive measures and the removal of the unmerited social stigma that is attached to the unfortunate sufferers, through irrational fear.

Madras State has been far ahead of other states, also in the matter leprosy control. *The Leprosy Review* of London in a recent issue complimented Madras "as being more progressive in its outlook on leprosy than other parts of the world." Besides providing

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facilities for leprosy treatment and research at two sanatoria and at various district and taluk hospitals and dispensaries, the State Government pays capitation grants to 19 sanatoria, 12 of which are run very efficiently by Christian missionaries and the rest by other private agencies. Five special clinics have been developed in the Tirukoilur Pilot Scheme of Leprosy Control, each village or group of villages looking after its own patients, their isolation etc. Mr. T. N. JAGADISAN, the enthusiastic Secretary of the Sangh is working as honorary organiser in that area. Like tuberculosis, leprosy has brought in its wake several social problems. Even if a specific and positively dependable cure for leprosy becomes available, we would not be able to solve all the problems. For every mutilated and crippled case, amongst the 12,00,000 patients suffering from Hansen's disease in our country, and every cured case not re-absorbed into useful employment in the community-set-up, should be considered as much a failure as any lack of success in our attempts to discover a specific cure for the disease. So the problem is two-fold:—(1) medical relief and the successful treatment of the sufferers and (2) the rehabilitation of the mutilated victims of the scourge.

The sulphones mark a notable advance in the treatment of leprosy but at the same time they have several limitations, the greatest of which is the unduly long time taken for the complete elimination of the lepræ bacilli from the skin and nerves. It usually takes from 2 to 5 years for these acid-fast organisms to disappear from the skin lesions, and even then a few may lurk in the nerves. Again there are some cases that improve on sulphones, only up to a certain point and then remain stationary without further subsidence. Yet another limitation to sulphone therapy is 'the tendency to relapse when the drug is stopped after the arrest of the disease'. "This tendency is just becoming apparent" says Dr. DHARMENDRA, the renowned leprologist at the School of Tropical Medicine, Calcutta, "and may be noticed to a greater extent in future years." In spite of all these limitations, the extensive use of sulphones is bound to have a far-reaching and beneficial effect in the arrest and control of the disease. The treatment with sulphones should include not only the hospitalized cases but also the very large out-patient population, who constitute the majority of sufferers and are liable to spread the infection. This is most essential in our country where, according to the Union Health Minister's estimate at least 12,00,000 people suffer from this dire disease. The incidence is greatest in South and North Eastern India. Sulphone treatment, which a few years ago was somewhat expensive and used to cost Rs. 30 per patient per annum is now quite cheap and the average annual cost per patient is only Rs. 5.

Another great advance that has been made during the last few years is in the field of rehabilitative surgery for relieving the

deformity and disfigurements and for restoring the functions of the limbs injured and disabled by leprosy.

The patients are thus enabled to become as active as others. The Christian Medical College at Vellore is the pioneer in this orthopaedic aspect of leprosy and has made valuable contributions to reconstructive surgery which is rightly considered to be an essential and integral part of any rehabilitation programme in leprosy. Cosmetic procedures ranging from simple ear-repair to subcutaneous amputation of the breasts for gynæcomastia have been adopted in a few cases with significant success at the Lady Willingdon Leprosy Sanatorium at Tirumani near Chingleput. These procedures of reconstructive plastic surgery for the rehabilitation of deformed patients, are the result of several years' research work and experience of Dr. COCHRANE, Dr. PAUL of Tirumani and Dr. PAUL BRAND of Vellore; more recent rehabilitation procedures, like arthrodesis of small joints and tendon transplantations of the hand have been planned and are being practised under the auspices of the Hand Research Clinics both at Tirumani and at Vellore, under the direction of Dr. PAUL BRAND of the Christian Medical College at Vellore.

The outlook in the field of leprosy is thus becoming brighter and more hopeful than ever and we ourselves feel that the disease will gradually get under effective control and ultimately disappear from our midst, as it did in Europe and America in the eighteenth and early nineteenth centuries.

THE CURRENT STATUS OF ISONICOTINIC ACID HYDRAZIDES

IN THE TREATMENT OF TUBERCULOSIS

ISONICOTINIC acid hydrazide also known as Iso-Niazid is a discovery for the treatment of tuberculosis, which comes in the wake of anti-tubercular drugs like Streptomycin and P.A.S. The name of the drug indicates the mother substance from which it is derived. It is closely related to nicotinic acid unlike which Iso-Niazid has remarkable anti-tubercular activity. Why nicotinic acid should be powerless against tuberculosis, while its derivative Iso-Niazid should be so potent has not been explained. Iso-Niazid is a white crystalline powder available in tablet form and when taken orally is almost completely absorbed from the intestinal tract. It is found in appreciable therapeutic concentrations in plasma, cerebrospinal fluid and pleural exudates. As in the case of many other new antibiotics discovered in the last decade the anti-tubercular activity of Iso-Niazid was demonstrated *in vitro* before it was tried on human subjects.

The results of extensive trials on human subjects by several independent observers, have been unanimously in favour of the beneficial effect of this drug against human tuberculosis. In every case

the patient became afebrile within the first two weeks. This was found to occur independently of the nature of the tubercular lesion and the duration of the fever. From the point of view of the patient this aspect alone is very heartening. Most cases with highly toxic manifestations, were found to shed their toxicity in about 10 days. The previously dry and flaky appearance of the skin gave place to normal smooth oiliness and the general condition of the patient was found to have remarkably improved. The appetite also improved and nearly all the patients ate more food than before. The weight increased appreciably in all cases and this was certainly a welcome sign. The cough improved and the expectoration decreased considerably. This effect on the cough was noticeable by about the 2nd week. Patients whose sleep was greatly disturbed by bouts of coughing prior to the administration of Iso-Niazid, were able to rest more comfortably after its use. For purposes of prognosis, the most important item is the examination of sputum for the presence of the tubercle bacillus. In advanced exudative lesions, as well as in lesions with cavity, the sputum is invariably strongly positive for the bacillus. Observations for periods ranging from 4 to 15 weeks after the use of Iso-Niazid showed that an appreciable number of patients were expectorating sputum which was negative for tubercle bacillus. The number of such negative patients was greater with Iso-Niazid than with streptomycin or PAS. X-ray photographs taken before and after the use of this drug naturally showed improvement in the condition, depending on the extent of spread of the lesions before treatment was started. It would not be possible in a short note like this, to give fuller details of the improvement in this direction.

The dramatic claims once put forward regarding the value and specificity of streptomycin in tuberculosis have now become somewhat dulled by the remarkably high percentage of resistant strains that were found to develop in the course of the therapy. This resistance was countered by the simultaneous use of PAS along with streptomycin. Claims are now being made that Iso-Niazid gives rise to fewer resistant strains than the other two drugs. The question of drug-resistance can be decided only after prolonged use and so it is too early to come to any definite conclusions of value. Clinical trials of Iso-Niazid in human tuberculosis have shown fewer toxic symptoms than streptomycin. The vestibular disturbances observed in patients during streptomycin therapy due to its effect on the auditory nerve and the gastro-intestinal upsets caused by PAS are now sufficiently well-known. It is claimed for Iso-Niazid that neither of these major complications will arise. The few side-reactions that have been noticed so far, are largely related to the autonomic nervous system and consist of sympathetic stimulation. The symptoms noticed were constipation, bladder-sphincter disturbance and dryness of the mouth. Occasional vertigo and transitory fall in blood-pressure were also observed. The other

systems were found to be free from any involvement. The benefit from Iso-Niazid is not restricted to pulmonary tuberculosis alone. Its effect in tuberculous laryngitis, gastro-enteritis, and tuberculous otitis media is reported to be remarkable. It is claimed to be effective also against bone-tuberculosis. But this will have to be substantiated by extended trials over a longer period and any attempt at evaluating its efficacy at this stage will be premature.

The dosage generally recommended for Iso-Niazid is 3 to 5 mg. per kilogram of body-weight per day. This will work out to 150 to 300 mg. per day for an average adult. *Children with tuberculous meningitis have been treated with 5 to 7 mg. per kilogram of body-weight daily for 4 weeks or longer, without any apparent toxic effects.

In conclusion a note of warning has to be sounded in order to prevent any undue optimism about the efficacy of this new drug. Every new chemo-therapeutic agent is usually ushered in by the scientists with great optimism. Extensive clinical use of streptomycin and later of PAS, both of which were once thought to have definitely halted tuberculosis in its onward march has now proved that these drugs also have their limitations and cannot be considered specifics for the disease. It has become necessary in certain types of pulmonary tuberculosis, especially those with cavities to resort to the time-honoured orthodox methods of treatment, like artificial pneumothorax, (AP) pneumo-peritoneum (PP) and to surgical measures like thoracoplasty. The percentage of cases for which these measures have to be adopted, has now been greatly reduced, but one has to remember that chemotherapy alone cannot be relied upon to cure a protracted disease like tuberculosis.

Iso-Niazid is a new chemotherapeutic agent about whose efficacy we have still to know more, and about whose toxic symptoms we do not know much yet. Whether resistant-strains of tubercle bacilli will develop as the use of this new drug becomes more extensive, remains to be seen. These factors should receive sober and careful consideration, before we can accept it as a specific for tuberculosis. Till then, the use of Iso-Niazid will only be on intensive clinical trial.

HONORARY MEDICAL OFFICERS

THE system of Honorary Medical Officers was first introduced in the State hospitals in the City of Madras in 1923, during the Panagal Ministry and was extended to the moffussil in 1929; it was reorganized in 1938. It took some time after its first introduction, before the public, the paid hospital-staff and even the patients in the hospitals could reconcile themselves to and appreciate the services of these honorary officers, who without remuneration of any kind gave of their best to the sick, for ameliorating their sufferings.

* C.J. Modi—Isonicotinic Acid Hydrazide (Iso-Niazid) in Tuberculosis, I.J.M.Sc., July '52

Acting on the recommendations of the Medical Education Committee of 1947, the Madras State Government favoured the expansion of the Scheme of Honorary Medical Officers and increased their number by sanctioning additional posts for 11 Honorary Physicians, 17 Honorary Surgeons, and 137 Honorary Assistant Medical Officers. Inaugurating what was virtually a rejuvenated conference of the Honorary Medical Officers on the 27th September '52, Mr. A. B. SHERRY the State Health Minister paid a tribute to the valuable services rendered by the Honorary Medical Officers and said that Government wanted to expand the honorary system. At present they were having 10 Honorary (consulting) Surgeons and Physicians, 45 Honorary Surgeons and Physicians, and 326 Honorary Assistant Medical Officers. One third of the total number of honorary officers were serving in the State hospitals of the City. Mr. SHERRY further stated that except in the city and in a few places like Madhurai, Tiruchirappalli, Malabar, Coimbatore and Tanjore it was difficult to get a sufficient number of qualified doctors to run the special departments in hospitals.

The honorary system is advantageous both to the Government and to the officers serving in an honorary capacity in the hospitals. The existence of cordial relations between the honorary and the paid staff would alone make for efficiency and smooth working. Such cordial and friendly relations prevailed in the State hospitals of the City of Madras; the same cannot however, be said of all the mofussil hospitals. The reason underlying such a state of affairs is in most cases, a lack of mutual understanding between the paid officer of Government at the head of affairs in the hospital and the Honorary Medical Officers. They should both realise that they are working for a humane and noble cause, *viz.*, alleviating human suffering. The Honorary Officer should feel that, though he is giving his services freely without any pecuniary benefit to himself, he should conform to the rules and discipline of the Institution to which he is attached and cooperate with the head of that Institution in maintaining order and discipline in the subordinate staff; otherwise there is bound to be slackness and inefficiency which would be detrimental to the health and well-being of the patients. The Honorary Officers should even set an example to the paid staff by being punctual in their attendance and by keeping to regular hours. The head of the institution, the District Medical Officer or the Senior Medical Officer in charge of the hospital, should on his part, realise the value of a kind and human approach in all his dealings with the Honorary Officers. He should not feel jealous of the popularity, success or opulence of the Honorary Medical Officer who may command a large and lucrative practice and live in high style. Mutual adjustments in this matter will alone enable the establishment of cordial relations between them and ensure the smooth working of the honorary system. Dr. PAUL referred in his Presidential address to the fact that several posts, listed in the civil medical list reserved for honorary medical officers,

remained unfilled, and also stressed the need for the maintenance of discipline at all costs, if any tangible good is to be achieved. Lt. Col. C.R. KRISHNASWAMI, the Chairman of the Reception Committee welcomed the Minister of Health and the delegates and pointed out that the Honorary Medical Officers were on a *par* in all respects with the paid Civil Surgeons of Government and so even the slightest discrimination as regards their duties, privileges or rights would constitute an insult to their self-respect. He also pleaded that their claims for the grant of scholarships and fellowships should not be ignored by Government.

We are in full sympathy with both of these claims and consider that the Honorary Physicians and Surgeons are in no way inferior to the paid Civil Surgeons in point of status, ability, experience and integrity and are therefore, entitled to be treated by Government in every respect on the same footing as their paid Civil Surgeons. In the matter of scholarships also, we feel that travelling fellowships of short duration should be secured or granted for the Honorary Physicians and Surgeons under fifty years of age, and also to exceptionally well-qualified senior members amongst the Honorary Assistant Medical Officers, who may well be expected in course of time to take up the posts of Honorary Physicians and Surgeons in Government Hospitals. Such fellowships would certainly be of great educational value to the officers concerned and of practical benefit and advantage to the State Hospitals. Those officers who avail themselves of this concession will have an additional sense of moral obligation to render continued and efficient service to the institutions in which they are employed.

Mr. A. B. SHERRY regretted that the financial stingency did not permit Government to consider the question of giving an honorarium to the honorary medical staff. We are not at all enamoured of the suggestion made by Dr. PAUL for the grant of an honorarium; it is common knowledge, that once an emolument of any kind is attached or sanctioned to any office it ceases to be essentially honorary and will not attract the right type of men with integrity, experience and selfless devotion to duty; it may even descend to the level of many other jobs, in which unseemly competition and nepotism enter insidiously and wreck superb edifices.

Aureomycin and the Intestinal Flora

The diarrhoea observed in patients treated with aureomycin for a period of three or more days may not be a toxic manifestation of the drug, but rather an expression of the profound effect this drug has on the intestinal flora. In this respect, it is similar to terramycin or for that matter, any combination of chemotherapeutic agents that are markedly active against both gram-negative and gram-positive aerobic and anaerobic bacteria of which the intestinal flora are composed. Very often, patients treated with these broad spectrum antibiotics for a period of three days or more show nothing but pure cultures of yeast in their stools. Not infrequently the stools become loose, lose their normal odour, and the patient complains of pruritus ani, which may in all probability be due to the abnormal shift of the bacterial flora to the acid-producing yeasts.—(Henry Welch in *Jour. Hist. Med. Allied Sci.*, Summer, 1951).

Gleanings From The Medical Press

MEDICINE AND THERAPEUTICS

Thiocyanates in hypertension.—The fact that thiocyanates, sympathectomy or other therapeutic measures are of value in some hypertensive patients imposes upon us the duty of trying to discover which patients may be expected to derive benefit from one or other method of treatment until such time as we discover a single method of treatment that is suitable for all. For this reason, Loyal Davis has recently (1952) provided a working hypothesis of such importance that his paper will probably rank as one of the major contributions of the year.

Davis supports the contention that hypertension arises as the result of an imbalance between the normally existing pressor mechanism supplied by adrenal function and the depressor mechanism supplied by hepatic function. He postulates that thiocyanates depress adrenal function, producing changes in the blood chemistry resembling those following adrenalectomy. The fact that thiocyanates have been observed to deplete certain granules in the adrenal cortex both in animals and humans supports this view. Furthermore, mild chronic insufficiency of the liver, induced by partial occlusion of the portal vein in dogs with experimental renal hypertension, also initiates a depletion of these adrenal granules, although the histological changes are a little different from those found after thiocyanate administration. By decreasing the function of the adrenal medulla, sympathectomy augments the action of the thiocyanates whose action is on the pressor mechanism of the cortex. This may account for the clinical observation that some hypertensives who are resistant to thiocyanate therapy respond to it after sympathectomy.

Six clinical groups of hypertension are defined by Davis, excluding the type in which primary unilateral renal diseases are causal:—

The *fluctuant* type occurs typically in the early twenties, is usually asymp-

tomatic and is often discovered at routine physical examination. Thiocyanates are effective but are usually not necessary.

The *plethoric* type, occurs typically in the energetic, overweight business man. Headaches, vertigo and angina of effort are common symptoms. Provided that irreversible renal damage has not occurred, thiocyanates reduce the erythrocyte count and the blood viscosity, and bring about symptomatic improvement.

Menopausal hypertension is analogous to the plethoric type seen in the male. If stilboestrol and sedation are insufficient alone, thiocyanates are usually beneficial. In fact these patients often do well so long as they are brought safely through the menopausal period, the hypertension often burning itself out subsequently.

The *high diastolic* type is a very grave condition occurring most usually in males between the ages of 35 and 50. It is rapidly progressive and malignant hypertension may supervene suddenly and without warning. Cardiac failure, renal failure or a cerebral vascular accident usually supervenes within 5 years. Thiocyanates alone are either of temporary value—resistance soon being acquired—or of no value at all. Sympathectomy alone, irrespective of the extent of the operation, has no permanent effect on either the blood-pressure or the clinical course in this type. Since, however, it has been found that some patients who have been resistant to thiocyanates become sensitive after sympathectomy, it may well be that sympathectomy followed by thiocyanate therapy is the treatment of choice in this type at the present time.

Arteriosclerotic hypertension is characterised by a relatively high systolic and a relatively low diastolic pressure, the onset usually being between the ages of 50 and 60. The disease is compatible with a long and useful life,

but small doses of thiocyanates are often valuable for controlling cerebral symptoms such as headaches, vertigo and tinnitus. It is important to avoid too rapid a fall in blood-pressure in this type.

Malignant hypertension shows no response to thiocyanates. The rapidly progressive necrotising arteriolar disease which underlies this type is responsible for the extreme gravity of the condition and the early onset of renal failure with intense hypertensive symptoms, including convulsions and coma. Although sympathectomy may be of prophylactic value in preventing a progressive type of hypertension from entering the malignant phase, no really effective treatment for established malignant hypertension is yet known.

It may be said in criticism of the views expressed by Davis that virtually nothing has been added to our *a priori* knowledge of those basic disturbances in normal physiology of which an abnormally high blood-pressure is nothing more than one outward manifestation. Those of a more practical turn of mind will, nevertheless, recognise in this contribution a major step towards a more rational assessment of the extreme disagreeable symptoms of which the hypertensive patient complains and their subsequent relief.—*Medical World*, Aug. 15, 1952.

Treatment of pin-worm infection with Egressin.—Goddard, R. F. and Brown, H. W., *Journal of Pediatrics*, 40, 467-473, April 1952.

When given for 2 days in a dosage of 1 gm. 3 times a day for adults, Egressin (Thymol isoamylcarbamate) is approximately 40% effective in thread-worm infestation.

Antibiotics and fungus infections—Lipnik, M. J., Kligman, A. M., and Strauss, R. J., *Investigative Dermatology*, 18, 247-260, March 1952.

Fungus *Candida albicans* was isolated from the mouth or rectum of 6 patients out of 42 who were treated with oral penicillin for at least four days. With aureomycin and chloromycetin, this

number was much higher 51 out of 63 developing moniliasis. Approximately 80% of the fungi isolated were *C. albicans*. Fungi could be isolated from only 7 out of 67 control cases. Thus, not only was there a much greater percentage of individuals given antibiotics harbouring the fungi, but in almost every case there were large numbers of organisms present, particularly in those given aureomycin and chloromycetin. In the test tube none of these antibiotics stimulate growth of *C. albicans*. Aureomycin capsules and dibasic calcium phosphate, one of the inert ingredients of the carrier present in aureomycin capsules for oral use, stimulated growth of *Candida albicans* in the test tube.

Treatment of tape-worm with quinacrine hydrochloride.—Sodeman, W. A. and Jung, R. C., *J. A.M.A.*, 148, 285-286, Jan. 26, 1952.

The authors gave 6 to 12 tablets (0.6-1.2 gms.) Atabrine to 11 patients suffering from tape-worm infestation. Cleansing enema was given one hour before starting the treatment. 0.2 gm. was given with a little water every 5 minutes until the entire dose (consistent with age and weight of patient) had been given. If nausea developed, soda bicarb was given with subsequent doses. 2 to 4 hours after the last dose saline or castor oil purge followed. 10 patients passed the entire worm. The 11th patient did not respond to purgation, but a 2nd course of atabrine two months later was successful.

Isonicotinic acid derivatives in the treatment of tuberculosis.—Robitzek, E. H., Chicago Tubercle Society—T. B. institution meeting on 3-5-1952 through *Lancet*, 262-557, March 15, 1952.

Probably the first man to use Isonicotinic Acid Hydrazide in the treatment of human tuberculosis, Dr. Robitzek has treated 143 patients with oral Isonicotinic Acid Hydrazide (2-10 mgm/kgm/day) or its isopropyl derivatives (8 mgm/kgm/day). 92 patients, all seriously ill, were selected for detailed study. All the cases had proved refractory to large doses of PAS and streptomycin and many had surgical treatment. Still

all the chest cases had positive sputa and bilateral cavities before the treatment was initiated. Improvement was rapid, dramatic in some cases and consisted of (1) normalization of temperature, (2) increase in weight and energy, and (3) decrease in the quantity of sputa and cough.

Persistent negative sputa and gastric washings were observed in 25 per cent of the patients and occasional negative sputa and gastric washings in 28 per cent of the patients with chest involvement. X-ray changes did not keep pace with this striking clinical improvement. However, there was complete closure of cavities in two patients and marked reduction in the size of the cavity in 33 patients. All the 10 cases with tuberculous laryngitis improved. The average weight gained was about 2 lbs. per week during a 12 week period.

Induction of artificial pneumothorax by lung puncture.—E. N. Moyes and J. K. Scott, *The Lancet*, p. 1278, June 28, 1952.

The authors describe the technique of induction of artificial pneumothorax by deliberately puncturing the lung with a fine-bore hypodermic needle size 14-18 and 2.5-3 cm. long, attached to a 2 ml. record syringe. The procedure leads to leakage of air from the alveoli into the intrapleural space. A chest X-ray is taken 24 hours later and an artificial pneumothorax is induced, the degree of this depending upon the collapse shown by radiography. When a collapse is seen 24 hours after deliberate lung puncture, artificial pneumothorax may be induced 24 hours later and if the intrapleural pressures are satisfactory 200 to 400 c.c. of air can usually be given.

The rationale of this procedure is based on the observations by Morgan in 1914, who declared that every initial induction of artificial pneumothorax damages the lung and it is only because of the leakage of alveolar air, that it is possible to obtain intrapleural manometric pressure readings. This view was supported by gas analysis results of Ornstein, 150 to 500 c.c. of air must be present in a free pleural space before a

pneumothorax is visible and the leakage from lung puncture continues from periods varying from 12 hours to several days. The first refill should not be given at a fixed time, but each case should be judged on its merits and particularly on the size of the pneumothorax at 24 hours. The authors consider this to be a simple, safe and effective procedure, less liable to complications than the orthodox method.

Effects of penicillin and broad-spectrum antibiotics on the emergence of a gram-negative bacillary flora in the upper respiratory tract of infants.—Mc. Curdy, Robert S. and Neter, Erwin, *Squibb Abstract Bulletin*, p. 669, June 11, 1952.

Penicillin was given alone and in combination with one of the broad-spectrum antibiotics, (aureomycin, chloromycetin and terramycin) to 107 infants to determine the emergence of a predominant gram-negative bacillary flora of the upper respiratory tract. Treated with penicillin alone, such a change of flora took place in 1/3 of the patients. When a broad-spectrum antibiotic was used together with penicillin, this occurred in 2/3 of the cases. If a broad-spectrum antibiotic was used exclusively the change in the flora occurred in 1/5 of the cases. The vast majority showed a change to *E. coli* and *A. aerogenes*. The change of flora took place in 18 out of 71 infants suffering from respiratory infections and in 14 out of 36 children suffering from other diseases. The change in flora may coincide with the reappearance of symptoms. From this it appears that the use in infants of penicillin in combination with broad-spectrum antibiotics is followed rather frequently by the emergence of predominant gram-negative bacteria in the upper respiratory tract.

The treatment of pre-eclamptic oedema with ion-exchange resins.—Preliminary report.—Carvey, H. M., *J. Obst. Gynaec., Brit. Empire*, 59: 67-76, February 1952.

Four pre-eclamptic patients with associated oedema not responding to bed-rest, sedation and a low sodium diet were

treated with carboxylic cation type of ion-exchange resin. A mixture of the potassium and the ammonium type was given in doses of about 15 to 17 gm. per day to the first three patients. The 4th received the ammonium type alone in doses 30 to 60 gm. per day. The treatment was stopped after a week due to nausea. The authors considered the reduction in oedema due to treatment to be more rapid than with other routine methods of treatment. The resin therapy helps to keep pre-eclampsia in check and enables the pregnancy to continue till the foetus is sufficiently developed to stand a reasonable chance of survival.

Clinical evaluation of certain bulk and irritant laxatives.—Cass, L. J. and Wolf, L. P., *Gastroenterology*, 20: 149-157, January 1952.

The authors have studied the purgative effect of psyllium seed coat preparations with or without carbohydrate or of methylcellulose in 101 patients with moderate to severe constipation. The patients had had previous treatments with cascara, milk of magnesia, mineral oil or Alophen. In the opinion of the authors the psyllium preparations were the most effective purgatives producing improvement in 75 to 83% of the patients with severe constipation. Methylcellulose given alone worsened most of the patients.

Stethoscope tubing (Letter to the Editor).—(*The Lancet*, page 1307, June 52, 1952).

The optimum diameter of the stethoscope tubing is independent of the nature of the material of which the tube is made. The smooth bore of the plastic tubes does not give it any advantage over rubber or metal tubing, because a layer of air always remains adherent to the surface of the tube and the eddy currents in this layer contribute to sound losses. The important thing about the tubing is that it should be thick enough to exclude extraneous noises. Metal is poor in this respect and consequently metal parts of the stethoscope should be as short as possible.

Death after chloromycetin.—(Annotation *Br. Med. Jour.*, 23rd Aug. '52).

Reviewing the case reports of three cases, two from Doncaster and one from Manchester, of fatal aplastic anaemia after chloramphenicol in children, the *British Medical Journal* makes the following comments. Three children whose whooping cough was treated with chloramphenicol subsequently died with symptoms of aplastic anaemia. These are the first British records to set alongside the American experience recorded in a recent leading article on the danger of chloramphenicol (*Br. Med. Jour.*, 19th July 1952) and there is little doubt that other cases will be discovered, now that the alert has been given. Once again prolonged dosage may have had something to do with the aplasia since daily chloramphenicol was given for at least 24 days in all the three cases. As we remarked before, *prolonged treatment must now be regarded as unwise*. The object of treatment should be "to eradicate the infection and if this has not been achieved within a week an explanation for failure should be sought and other measures adopted", and we suggested that where possible another antibiotic such as aureomycin should be used in place of the suspect drug. At the same time, it must be remembered that *the size of the risk is not yet known*. It is impossible to say how often or how rarely fatal complications may be expected to follow chloromycetin treatment until a large follow-up study has been carried out. The danger of agranulocytosis was certainly over-emphasized when the early sulphonamides and thiourea came in, and perhaps the risk of aplastic anaemia is perhaps similarly being over-emphasized now. Until we know definitely however, extreme caution must be the order of the day. (The italics above are ours).

[Special note:—According to a report in the *New York Times*, (14.9.1952) all packages of chloramphenicol distributed in the United States of America, must now bear a special warning label to the effect "Warning: blood dyscrasias may be associated with intermittent or prolonged use. It is essential that adequate blood

studies be made". This ruling by the Food and Drug Administration, Washington, follows a nation-wide survey of blood disorder cases. Out of 410 cases reviewed by a Committee of the National Research Council, 177

were found to have been associated with the use of chloramphenicol. About half of these cases were fatal. Death was attributed to failure of haemopoiesis in the bone marrow. — *Br. Med. Jour.*, p. 409, 30.8.1952].

SURGERY

Nutritional substitution therapy: A new method which prevents prostatic surgery in benign physiological hypertrophy.—B. F. Sieve (*American Journal of Digestive Diseases*, 18:369, Dec. 1951) describes a method for the treatment of benign prostatic hypertrophy by which surgery can be avoided if the treatment is begun sufficiently early. Before beginning such therapy a complete and detailed medical history must be obtained in each case; careful physical examination must be made including examination of the prostate, with special attention to degree of enlargement, and the presence of irregularities or nodules; a digital rectal examination should always be done followed by proctoscopic or sigmoidoscopic examination if indicated. The necessary laboratory tests to be made include complete and differential blood counts; urine analysis (preferably of a twelve-hour night specimen); determination of fasting blood sugar, nonprotein nitrogen and cholesterol of the blood. Basal metabolism determinations are also necessary. Prostatic smears are examined after each massage if possible. The treatment consists in a careful regulation of the diet to insure adequate intake of carbohydrate, protein and fat, and also the accessory food factors, vitamins, hormones, amino acids and essential minerals. All foci of infection should be treated, including any such focus in the prostate gland. On beginning treatment parenteral administration of certain vitamins and hormones is usually necessary, as indicated by the results of the preliminary examination in each case; and prostatic massage is employed as necessary; occasional "booster courses" of parenteral treatment are given as the patient is kept under observation. In 100 cases treated by this method, operation for prostatic hypertrophy was rendered unnecessary

and the gland was restored to normal in 90 per cent, although early prostatic symptoms had developed in 20 per cent; 7 per cent of the patients did not continue therapy; and in 3 per cent the condition was too far advanced for preventive therapy to be successful. The youngest patient was fifteen years of age; in young patients the prostatic symptoms are usually due to infection. Four cases are reported in detail, representing age groups from twenty to seventy-one years of age and describing the method of treatment in each case; in 2 of these cases hypertrophy of the prostate was prevented; in one, the prostatic hypertrophy was satisfactorily reduced and no operation was indicated. The oldest patient had refused replacement therapy "until too late" and operation was necessary. — *Medical Times*, Aug. '52.

Solitary cyst of the kidney and its relationship to renal tumour.—Anthony Walsh (*British Journal of Urology*, 23:377, Dec. 1951) in a review of over 500 cases of solitary cyst of the kidney reported in the literature found a malignant tumour of the kidney to be present in 7 per cent; the incidence of tumour was much higher in those cases in which the contents of the cyst were hemorrhagic (30 per cent). In 17 cases of solitary cyst of the kidney collected by the author in the past three years, there was an associated hypernephroma in 2 cases. In 1 of these cases a parapelvic cyst was surrounded by a hypernephroma, and in the other case the cyst was in the upper pole of the hypernephroma. Cases have been reported in which a benign tumour is found in one part of the kidney and a solitary cyst in another part of the kidney; in such cases there is probably no etiologic relation between the two. But where a malignant tumour is closely associated,

there may be an etiologic relationship; in nearly all such cases the neoplasm "impinges" on the base of the cyst. For this reason, the author is of the opinion that if a diagnosis of solitary cyst of the kidney is made, the kidney should be explored. If the contents of the cyst are hemorrhagic, nephrectomy is "probably indicated," because of the high incidence of malignant tumour with hemorrhagic cysts. If the contents of the cyst is only a serous fluid, the cyst should be opened and its base carefully inspected and palpated. In some cases of associated cyst and tumour, the growth of the tumour has been unusually slow which may be due to interference with its nutrition by the "expanding" cyst. — *Medical Times*, Aug. '52.

The management of staghorn renal calculi.—O. L. Prince and associates (*American Surgeon*, 17:1057, Nov. 1951) report 61 cases of staghorn renal calculi; the most common symptom was pain over the kidney involved; 23 patients, however, did not have any pain; 5 complained only of "backache"; and in 5 the calculus itself did not cause symptoms, but symptoms due to renal or ureteral disease on the opposite side led to a diagnostic study, which resulted in the discovery of the calculus. In 39 cases the staghorn calculus was unilateral, and the opposite kidney was normal; in 5 of these cases operation was not advised because of the age of the patient, or some other condition contra-indicating surgery; in 5 cases operation was advised but has not yet been done. In the 29 cases in which operation was done, nephrectomy was done in 21 cases and removal of the calculus by nephrolithotomy or pyelonephrolithotomy, or heminephrectomy in 8 cases; in 2 cases in which heminephrectomy was done the stone in one half of a horse-shoe kidney. There were no deaths in this series. In cases in which the opposite kidney is normal, nephrectomy is preferred in a large percentage of cases, because of the danger of recurrence of branched calculi or persistent infection after lithotomy, also because the immediate surgical mortality after nephrolithotomy or pyelonephrolithotomy is

usually higher than after nephrectomy. In 14 cases in the authors' series in which the calculus was unilateral, and the opposite kidney was diseased, surgery was not advised in one case, was advised in 13 cases and has so far been done in 11 cases. Sixteen operations have been done in these 14 cases, chiefly operations on the opposite kidney or ureter; operation was done on the kidney containing the staghorn calculus in only 4 cases; in 2 nephrolithotomy was done, and in 2 nephrectomy was done after operation had been done on the opposite side and when it was found the kidney containing the staghorn calculus had been completely destroyed. There was one death in this group, after ureterolithotomy on the opposite side. In 6 cases of bilateral staghorn calculi, one patient refused operation. Bilateral operation, nephrolithotomy or pyelonephrolithotomy has been done on both sides in 4 patients, and on one side in the fifth patient, who is now awaiting operation on the opposite kidney. There was no death in this group. As a rule operation was done first on the kidney showing the best function. Preoperative preparation, which is most important in these cases, included antibiotics, blood transfusions, intravenous fluids, vitamins, and restoration of acid-base balance. In 2 cases, a nephrectomy had been done many years previously, the staghorn calculus in the remaining kidney was successfully removed in each case. The results indicate that operation for removal of staghorn calculi should be done more frequently. — *Medical Times*, Aug. '52.

Neoplasms—expanding, infiltrating, metastasizing.—(Bela Halpert, *Surgery*, Vol 30, 2, pp. 401-402, 1951).

According to present knowledge, neoplasms are derived from cells of the individual, and the neoplastic cells are either of anlage or of body cell origin; the former arise from hitherto dormant cells left over in the process of evolution of the individual. Those of body cell origin arise from cells of the individual still capable of cell-division. There are however, neoplasms so undifferentiated that the cellular origin remains undetermined. In such cases, the cells multiply

and produce bizarre structures without showing any clues of their cellular origin.

Neoplasms may grow expansively like a toy-balloon pushing and compressing rather than invading the adjoining tissues. These differ from those growing *infiltratively*, extending with finger-like processes into surrounding tissues, invading and replacing them. The neoplasms whose cells become detached and are carried by the blood stream or lymph to distant parts of the body where they set up foci similar to the cancer at the site of origin are metastasizing neoplasms. These terms *expanding*, *infiltrating* and *metastasizing* neoplasms, express more exactly the behaviour of the neoplasm than do the terms benign and malignant and are therefore, to be preferred.

Whether a neoplasm is expanding, infiltrating or metastasizing is of immediate concern to those dealing with patients who have a neoplastic disease. The handling of an expanding neoplasm is quite uncomplicated, as complete surgical removal will cure the condition. Infiltrating neoplasms, are also capable of being cured by surgical removal, particularly in their incipient stages when they are still *in situ*, that is, in or near the site where they originated. These may be destroyed by irradiation. If treated by either method, cure may be obtained only if all cancer-cells are completely removed or killed; when irradiation is used, an adequate killing dose must be applied over the whole area of involvement, within an orbit of uninvolved tissue. When treated surgically, the operator must keep outside the cancer field and remove the involved area within a zone of uninvolved tissue. Entering the cancer field and touring it or removing it by "controlled excision" with frozen section, is of questionable value to the patient. Transplantation of cancer cells inadvertently or experimentally has proved again and again that the rule of not entering the cancer field cannot be violated without very serious consequences to the patient.

Infiltrating neoplasms, after they have metastasized to regional lymph nodes can be cured only if the entire area of involvement is removed. In the case of a carcinoma, the site of involvement, the lymph nodes, and the path between the

two must be removed in contiguity. Often this may not be possible; following operation, irradiation of the area that may still contain cancer cells aims at the destruction of residual cancer cells.

At present infiltrating neoplasms which have metastasized very widely and to distant organs are not curable by any surgical procedure, nor can they be cured by direct methods of irradiation. The hope for improved treatment lies perhaps in chemotherapy combined with isotopes.

Gelfoam in surgery. Gelfoam is a sterile, pliable, non-antigenic, surgical sponge capable of absorbing and holding within its meshes many times its weight of whole blood. When implanted in tissues it is completely absorbed in from four to six weeks without inducing excessive scar tissue formation. It is prepared from specially treated and purified gelatin solution which is beaten to the desired porosity, dried, sectioned, packaged, sealed, and sterilized by dry heat.

Indications:—Gelfoam saturated with thrombin is an aid in providing hemostasis in many fields of surgery, since capillary oozing or bleeding from veins may be controlled instantly. In case of arterial bleeding, the pressure of the flow prevents the sponge from remaining securely anchored and bleeding is likely to continue.

In *neurosurgery* gelfoam saturated with a solution of thrombin has been found effective in (a) halting oozing from the dura under the edges of the bone flap, (b) repairing torn dural venous sinuses to which ligatures cannot or should not be applied, (c) controlling troublesome epidural bleeders in laminectomy or herniated disk operations, and (d) controlling osseous bleeding.

In *otolaryngology*: For eliminating post-operative bleeding in submucous resections, the sponge may be moistened with thrombin solution, or lightly coated with petrolatum. For prevention of bleeding following the removal of nasal polyps, gelfoam saturated with thrombin solution may be placed in the nose and the patient instructed to blow it out several hours later. Following mastoidectomy, the sponge moistened with

thrombin solution may be used to line the mastoid cavity and allowed to remain in place. As gelfoam will disintegrate, its removal is not required.

In *bone surgery*: Gelfoam wetted with thrombin solution may be employed for controlling bleeding from bone tissue. Unlike bone wax, gelfoam is readily absorbed and does not interfere with the healing process.

In *malignancy*: Bleeding is often difficult to stop by the usual type of packing. This is easily managed with gelfoam saturated with thrombin solution, which should not be disturbed but allowed to remain in place. It is fully absorbed.

In *abdominal surgery*: Gelfoam sponge saturated with thrombin solution is usually effective in stopping bleeding of denuded visceral surfaces, particularly of the gall bladder bed, spleen and kidney.

Storage and handling: Gelfoam may be stored indefinitely. Once the container is opened, the contents are liable to contamination. Gelfoam should be used on the day the container is opened and the unused contents discarded. Unused portions could be resterilized by dry-air heating for two hours at 290 F. (143 C). Sterilization by autoclaving cannot be employed.

Directions for using: Pieces of gelfoam, cut to the desired thickness, length and width, are placed in and moistened on all sides with a solution of thrombin of appropriate concentration. The material is then withdrawn, squeezed between gloved fingers to remove the air bubbles present in the meshes, replaced in the thrombin solution, and left there until needed.

(The sponge should immediately swell to its original size and shape. If it does not swell when dropped into the solution the second time, it should be removed and kneaded vigorously until all air is expelled and the sponge expands to its original shape when dropped in the solution. This is the most important point to remember in preparing the sponge for use).

The pieces of sponge are then left wet or blotted to dampness on gauze and applied to the bleeding point. It

should be held in place with a pledget of cotton or a small gauze-sponge which may be removed in from ten to fifteen seconds. Removal of the pledget of cotton or gauze is made easier by wetting it with a few drops of water to prevent pulling up the gelatin sponge which now encloses a firm clot. Suction may be applied advantageously over the pledget of cotton or gauze to draw blood into the gelfoam, where it mixes with the thrombin, promptly clots, and causes the sponge to adhere rapidly.

(While suction hastens clotting, it is not essential, since the gelfoam will draw up blood by capillary attraction and cause clotting satisfactorily. Usually the gelatin sponge with thrombin will stop bleeding at the first attempt; but if not, additional application should be made, using fresh pieces of sponge prepared as described above.)

When bleeding is controlled, the pieces of gelfoam should be left in place; otherwise bleeding may start again. Since the gelatin sponge causes but little more cellular infiltration than the blood clot, the wound may be closed over it.—*International Medical Abstract and Reviews*, May 1952.

Chloroform anaesthesia—the latest word.—(Annotation, *Lancet*, 29.9.51).

For nearly 50 years chloroform has been viewed with the gravest suspicion by anaesthetists, who have had their opinion continually reinforced and sustained by papers based on laboratory work giving clear evidence of the toxicity of this substance. The feeling is widespread that to use chloroform when any other method is available borders on negligence. This clinical view has been supported by frequent statements both from the post-mortem room and—more probably—in the Coroner's Court. In spite of all this, many general practitioners find in chloroform sufficient good to make it their standby. They will obtain some but not much encouragement from what Ralph Waters and his coworkers have stated in their recent book "Chloroform—A Study after 100 Years." The pharmacology and anaesthetic properties of

chloroform have been investigated afresh under modern conditions and with modern methods of study. The effect of chloroform on each of the main body systems—the liver, the kidneys, the cardiovascular and the respiratory systems are reviewed, and the authors discuss the place of chloroform in anaesthesia, using statistics gathered in the anaesthetic department at Madison. Their conclusions are not on the whole startling; they call attention to the great potency of chloroform, to the difficulty of controlling the vapour strength accurately with the apparatus available, and the unavailability of physical signs in estimating depth of anaesthesia clinically when these are checked against blood-levels of chloroform. The action of chloroform in depressing respiration, lowering blood pressure, and causing cardiac arrest are confirmed. In suggesting that the hypotensive effect of chloroform be used deliberately to control bleeding, Waters and his colleagues seem unaware that in England it has been used for that purpose for years in operations like mastectomy. But they make it perfectly clear that chloroform can only be administered safely when the administrator is "keenly aware of what he is doing". It does not alter the fact that Chloroform is a highly potent agent full of troubles and dangers for the unwary. Until there are accurate means of controlling the vapour strength, it will carry inherent hazards, even in the hands of a skilled anaesthetist.

Traumatic periostitis in young children (*Jour. Paediat.*, 38, 184-190, 1951).

Barmeyer, Alderson and Cox describe the "acute limping leg" in young children—a common occurrence of early childhood. After an apparently trivial injury, an X-ray picture taken say 3 to 4 weeks later, often shows some ossification of the periosteum at the site of the injury; in an X-ray picture taken during the acute pain, nothing abnormal is usually found. But if X-rayed after the acute symptoms have passed off, the evidence of ossification becomes apparent. They consider this condition to be the result of mechanical separation of the periosteum by injury.

Pethidine in anaesthesia.—(Johnson, P. D., pp. 705-707, *Butler, E. B.*, pp. 715-716, both in *B. M. J.*, 22-9-51, also annotations by editor, *B. M. J.*, 22-9-51.)

Dr. W. B. Neff of San Francisco first introduced pethidine into anaesthetic practice in 1947, and Mushin and Rendell Baker published in 1949 their results on the use of this drug in British surgical practice. The drug has since become as common in the anaesthetic room as in the obstetrical wards, being used as a substitute for morphine in pre- and post-operative medication, when vomiting is expected or has to be carefully avoided. It is administered intravenously during operation instead of the usual adjuvants to nitrous-oxide anaesthesia. Repeated small doses of thiopentone are often administered for this purpose. Both these are respiratory depressants but pethidine has a shorter action and does not produce the troublesome post-operative narcosis so common after larger doses of thiopentone. It does not produce a laryngeal spasm or restlessness etc. Dunbar Johnson adopted the use of pethidine in a series of more than 200 unselected cases, covering a variety of planned and emergency operations. Many of these were poor-risk cases of a high average age; the oldest was 98 and the youngest 12. After establishing anaesthesia with pethidine he maintained it with nitrous-oxide in a circle absorber, giving gallamine tri-chloride to achieve muscular relaxation if and when necessary. The average patient needed an initial dose of pethidine 50 mg. and a further 20 mg. every 20 minutes after that; a more uniform level of anaesthesia was obtained and less pethidine had to be injected when it was given by intravenous infusion at the rate of 1 mg. per minute. He found that a solution diluted to 5-10 mg. per cc. for intermittent intravenous injection or to 0.2 mg. per cc. for continuous administration by intravenous transfusion had no significant effect on the respiration. He describes his results as very good as compared to other forms of anaesthesia and he praises the rapid return to consciousness, the absence of respiratory depression, the bronchial relaxation and the

prolonged post-operative analgesia afforded by this technique.

Dr. E. Blanche Butler records, in the same issue of the *British Medical Journal*, a case of hypersensitivity to pethidine in a woman aged 28, in labour. The drug was given by intramuscular injection (100 mg.) at once. She suffered a fall in blood-pressure and oedema of the face; the maximum fall in B. P. of 20 mm. Hg. systolic and 15 mm. Hg. diastolic occurred 4 hours after the injection.

Cotton thread as suture material.

—(Steele, J. D., and Glasson, L.G.G., *Surgery*, Vol. 30, 3, pp. 516-522).

Steele and Glasson, Surgeons of the Muirdale Sanatorium, Columbia Hospital, carried out a study of cotton threads, in order to ascertain whether certain inexpensive cotton threads could be used safely and satisfactorily as suture material.

Expensive and inexpensive cotton threads were used, (after testing all of them for their breaking points) in suturing separate halves of the wounds of 18 patients having first stage extrapleural thoracoplasties for pulmonary tuberculosis. When the second stage of the thoracoplasty was performed 20 days later, a sample of each thread embedded in muscle was removed. Tissue sections for microscopic examination were made and the reactions of the tissues of the same patient to different cotton sutures were compared. Inexpensive cotton suture materials were used in a series of 73 consecutive patients having 296 thoracoplasty stages. One brand of silk suture material was tested for comparison with cotton, as regards breaking points and diameters of various sizes.

A tremendous difference in price exists between the inexpensive threads and the one brand of expensive thread studied. One inexpensive (J and P Coates) regular sewing thread was sold at 5 cents for a 50 yard spool, while the expensive brand of different sizes was to be had at prices varying from 4 to 8 dollars per spool of 100 yards, that is nearly 40 to 80 times the cost of the inexpensive sewing thread.

Although the latter expensive thread was found to be slightly stronger in

relation to its diameter than the inexpensive threads tested, the authors feel that this advantage is so small that it is insignificant from a practical standpoint. There was no more tissue reaction to the inexpensive cotton threads than to the very highly expensive cotton thread. The authors conclude that (1) some brands of cotton thread of the inexpensive varieties, are as satisfactory for use as surgical suture material as expensive thread manufactured specifically for surgical use.

(2) Some of these inexpensive threads compare favourably with the more expensive threads as far as diameter, cotton content, breaking points and tissue reactions are concerned.

(3) Since the tensile strength of cotton thread is definitely greater when wet, it is recommended that sutures always be used wet in order to take advantage of this added strength.

(4) Cotton sutures may be sterilized by either autoclaving or boiling well if used wet.

(5) There is a tremendous difference in price between the expensive and inexpensive thread.

The co-existence of goitre and deaf-mutism. (Friedlier, O.P., *Surgery*, (St. Louis) Sept. 1951; pp. 496-500).

In the course of the last 20 years, it has become increasingly obvious that, just as diabetes is not a primary disease of the pancreas, goitre is not merely a primary affection of the thyroid gland. The role of the hypophyseal, hyper- or hypoactivity has come to the foreground, so that a number of symptoms formerly ascribed to thyroid malfunction, we now know, to be of pituitary origin. There remain however a number of symptoms associated with evidence of thyroid disease whose mechanism of development is unknown. One of these is deaf-mutism, which, though not commonly present, does show a definitely higher incidence in goitre patients than in the general population. In Switzerland, with a notoriously large number of goitre patients, the incidence of deaf-mutism ranged between 24 and 250 per 10,000. In India, Stott and Gupta reported in 1934 (*Ind. Jour.*

Med. Res.), on the incidence of endo-mic goitre and cretinism in one of the provinces; they found that the incidence of deaf-mutism was 23 per 10,000. Of these deaf-mutes, 90 per cent had also an enlarged thyroid gland. Mc. Carrison, stated that "87 per cent of all cretins are deaf-mutes to a greater or lesser degree," and his work was in the Chithral and Gilgit valleys in India (*Lancet*, 2, 1908).

After reviewing the literature, Dr. Friedlied, Surgeon in the American University Hospital in Beirut, Lebanon records in detail the histories, of 5 cases of deaf-mutism in a series of 85 patients admitted to his hospital with a diagnosis of non-toxic goitre over a period of 5 years. This meant that 6 per cent of his goitre patients were also deaf-mutes. None of his patients showed evidence of cretinism or myxoedema. There are thus two different groups of patients (1) one in which goitre and cretinism are associated with deaf-mutism and (2) another in which the goitre and deaf-mutism are not associa-

ted with any mental changes or low basal metabolism rate.

The picture throughout in the 5 cases was characteristic of iodine deficiency; yet all the patients live in an area of Beirut—a sea coast town, where there is presumably an adequate supply of iodine in the food and water. The underlying mechanism of the condition is obviously therefore, an abnormally high iodine requirement.

The treatment for these cases was both medical and surgical. As in all other adolescent goitres, iodine therapy should be given a fair trial first and surgery resorted to if that fails. The relatively large incidence of carcinoma in the so-called nodular goitre of young patients, makes surgery imperative in every case which does not respond to iodine therapy.

As regards deaf-mutism much can be done if their mental level is normal. Special courses of lip-reading to enable patients to talk have been devised by Swiss specialists.

OBSTETRICS AND GYNÆCOLOGY

Cardiac disease in pregnancy.—(*Br. Med. Jour.*, 26 July 1952).

Dr. A. P. Barry of Dublin speaking at the joint session of the British and Irish Medical Associations held on 11th July 1952, at Dublin, said that 90 per cent of pregnant cardiac patients were rheumatic in origin. During pregnancy the characteristic murmur might not be apparent on many occasions even with the closest scrutiny. A careful examination of the heart should therefore, be made at each antenatal visit in all cases, but specially in those with a history of rheumatic carditis. He graded his patients according to the classification of the New York Heart Association. Of 266 cases of cardiac disease associated with pregnancy, admitted into the National Maternity Hospital, Dublin, since 1949, mitral stenosis with or without other lesions accounted for 247 cases. The maternal mortality was only 0.75%. He advised restriction of salt and fluid intake in all cases. Increased vigilance was suggested for

Grade I patients; Grade II patients should have 10 hours' rest at night and 2 hours' in the afternoon. Both these grades should be hospitalized 2 to 3 weeks before delivery. Every patient in Grades III and IV must be at absolute rest in hospital until some weeks after delivery. Should cardiac failure occur at any stage during pregnancy it should be treated medically; there was no need to destroy the normal foetus under these circumstances. Induction of labour during the last three weeks was foolish.

As for methods of delivery, Dr. Barry found that the worse the grading the easier was the delivery. In the management of the cardiac condition itself, there was no place for caesarean section. Morphine and pethidine should be used in the first stage, but inhalation analgesics should be avoided because of the dangers of hyperventilation. If there were failure in the first stage, the patient should be assisted by venesection.

aminophylline: if response was poor labour should be terminated. Lower segment caesarean section under local analgesia might be used; but Dr. Barry had found that, since the head is usually low and the cervix soft and dilated, the latter could be incised and a forceps delivery performed. During the second stage, oxygen could be administered and forceps delivery carried out under local analgesia as soon as possible. The incidence of forceps delivery in his 266 cardiac cases was 12.7%, only about 5% higher than the general rate for the hospital. The caesarean section rate was 1.5%. The total foetal loss excluding abortions was 6.3%.

Post-partum hæmorrhage was not discouraged, but breast-feeding was inadvisable. Valvotomy could be carried out at any stage of pregnancy, if the cardiologist considered it necessary. Drs. W. Somerville and P. Phillips took part in the discussion that followed.

Oestrogen therapy of functional dysmenorrhœa: analysis of clinical results.—W. J. Dignam, J. T. Wortham and E. C. Hamblen (*American Journal of Obstetrics and Gynecology*, 59: 1124, May 1950) report a study of 8 patients treated with oestrogens for the relief of functional dysmenorrhœa. Two of these patients had had dysmenorrhœa since the menarche; 5 had had dysmenorrhœa for two to six years, averaging 3.6 years; one had had dysmenorrhœa for two years, since the birth of her second child. The age of the patients at the time of their first visit to the clinic ranged from eighteen to thirty years, with an average of 21.8 years. Four of the patients were married, but only one had had children. In the treatment of these patients Premarin (conjugated oestrogens) was given from the fifth through the twenty-fourth day of the menstrual cycle; the plan of treatment was to determine the dosage which would relieve pain and suppress ovulation; later it was attempted to reduce the dosage until ovulation occurred but pain was relieved. The time of ovulation was determined by means of basal body temperature charts. The daily dosage of Premarin varied from the equivalent of 0.0125 to 0.75 mg. of sodium oestrone

sulphate. The 8 patients in this series were treated through a total of 29 menstrual cycles; 2 patients became pregnant during treatment, and the effect on pain was not reported in one cycle, so that the effect of treatment on pain was determined in 26 cycles. All patients given 3.75 mg. of conjugated oestrogens daily from the 5th to the 24th day of the menstrual cycle were entirely relieved of pain during the following menstrual period; the lower doses employed relieved pain approximately half the time. The effect of the oestrogens on ovulation was not so definite, doses of 0.625 mg. and 0.3125 mg. never suppressed ovulation; each of the doses above 0.625 mg. daily suppressed ovulation about half of the time; a dose that suppressed ovulation one month permitted it to take place another month. The 2 patients who became pregnant during treatment were taking the same dosage of oestrogen that had suppressed ovulation in previous months. With one possible exception (in a patient with anxiety hysteria) pain was completely relieved when ovulation was definitely suppressed.—*Medical Times*, October, 1950.

Maternal obstetrical paralysis.—**Report of two cases.**—Jeffery C. Spry Leverton Bristol. England. *J. Obst. & Gynaec., Brit. Emp.* 58:1019-24, Dec. 1951.

Two cases of maternal obstetrical paralysis are reported. The first patient was a primigravida of 21 years. On the day following a prolonged labour with forceps delivery, she complained of pain in her left calf muscles and was unable to dorsiflex or evert her left foot. A back splint brought relief from pain in three days, but there remained a palsy of the anterior tibial and perineal branches of the external popliteal nerve, although there was no objective loss of sensation in the limb. The use of the back splint was continued following discharge, except for a few hours daily. Intensive physiotherapy was administered, and after eight weeks she could walk without too great difficulty. After eight months the residual wasting of the muscles of the thigh and calf was only slight, eversion was normal but

the power of dorsiflexion was not wholly restored. An X-ray of the pelvis revealed a shallow sacroiliac fossa, especially on the left side. There was a lateral tilt of L_1 and L_2 with compensatory lumbosacral lordosis. Also the second patient complained of residual numbness in her right leg, two days after a forceps delivery under spinal anaesthesia. A paralysis of the anterior tibial nerve with foot drop had developed. With the same treatment, recovery proceeded slowly at first but was later satisfactory. In this case, the pelvic X-ray revealed considerable flattening and relative exposure of the sacroiliac joint region.

Obstetrical paralysis may develop antepartum, following normal delivery or breech presentation, and may be bilateral. Some cases showed involvement of the femoral nerve or the whole sciatic nerve. Etiologic theories include: (1) lumbosacral cord compression; (2) rotation of the sacrum; (3) intervertebral disk protrusion; (4) other conditions such as a maladjusted leg stirrup, or spinal anaesthesia with an especially high concentration in a particular portion of the cauda equina.

In the first case mentioned, the cause of the paralysis was probably a compression of the lumbosacral cord by the large head of the infant. In the second case, the cause might have been pressure on the lumbosacral cord, injury to the cord by the forceps, or backward rotation of the sacrum accentuated by a difficult forceps delivery through a contracted mid pelvic-strait. Insufficient attention is often given to the weight of infants in previous apparently normal deliveries. Obstetrical paralysis is very rare in comparison with the incidence of the suggested causative conditions. (*Quar. Rev. of Obst. and Gynaec.*, July 1952).

A new view of the use of dicumarol in the pregnant patient.—D. L. Adamson and associates (*Amer. Jour. of Obst. and Gynec.*, 59:498, March 1950) report the use of Dicumarol at the onset of labour or prior to labour in 15 pregnant women who gave a history of or showed evidence of venous disease. Previously Dicumarol had been given in the puerperium for the

prevention of thrombophlebitis and pulmonary emboli. In all cases the method of dicumarolization outlined by Allen and associates was strictly followed. On the basis of the results obtained in the 15 patients given Dicumarol before or at the onset of labour, the authors conclude that any patient who develops acute phlebothrombosis or thrombophlebitis should be hospitalized and given Dicumarol. Such patients, if not adequately dicumarolized at the onset of labour, and can safely be given 300 mg. Dicumarol immediately after the onset of labour, and should be kept dicumarolized for at least ten days after labour. Any pregnant patient who has not developed acute phlebothrombosis or thrombophlebitis during pregnancy, but who has venous disease or a history of venous disease should also be given dicumarol (300 mg.) at the onset of labour and also be kept dicumarolized for ten days after delivery. No increase in immediate or delayed postpartum bleeding has been observed in any patient given Dicumarol prior to or at the onset of labour. Such use of dicumarol, it has been found, markedly decreases the incidence of painful, swollen legs after delivery in women with venous complications of pregnancy, and "will probably decrease" the incidence of pulmonary emboli in pregnancy and the puerperium in women with venous disease. (*Medical Times*, Oct. 1950).

Adrenocorticotrophic hormone (ACTH) in the aetiology of eclampsia.—S. S. Garret (*W. Jour. of Sur. Obs. and Gynaec.*, 58: 229, May 1950) presents a study of the "striking parallel" between the effects of the administration of ACTH and the changes seen in eclamptic toxæmia. In the first place it is noted that the renal damage characteristic of eclampsia is identical with that produced by the administration of ACTH or 11 desoxycorticosterone: the lesions in the heart, brain and liver are also closely similar. The effect of high sodium chloride intake on the kidneys is the same in eclamptic toxæmia as with the administration of ACTH or adrenocortical steroids. The blood chemistry in

toxæmia and in ACTH poisoning is also characterized by hemodilution and slight lowering of the albumin-globulin ratio, with a rise in the blood uric acid. In severe cases of toxæmia, the differential blood count is similar to that induced by ACTH. Women with toxæmia show an increased urinary excretion of corticosteroids such as follows the administration of ACTH. On the basis of these findings, the author concludes that "the primary

etiological factor" in a large percentage of cases of eclamptic toxæmia is the increased secretion of adrenocorticotrophic hormone (ACTH) due to hyper-activity of the pituitary. The author suggests that the use of testosterone and its conjugates should be the most effective treatment for eclampsia due to hyper-secretion of ACTH; other drugs of value would be NH_4Cl , chlorine and ascorbic acid.—(*Medical Times*, Oct. 1950).

REVIEWS OF BOOKS

Clinical Therapeutics By PRAN KUMAR GUHA, M.B., Major, I.M.S. (Retd.) Late Medical Specialist in the I.A.M.C., Assistant Visiting Physician, B.I. Therapeutic Ward, Sir Nalrathan Sircar Research Institute, R. G. Kar Medical College Hospitals, Calcutta. 462 pages. Published by Messrs. S. C. Sircar & Sons, 1-C, College Square, Calcutta. Price Rs. 12/.

It is a good plan to combine pharmacology and therapeutics in any book dealing with the treatment of diseases. This has been followed, by Dr. Guha in this book. For convenience of study, the book has been divided into a number of chapters, each chapter dealing at length with a particular drug. The latest drugs like streptomycin, PAS, aureomycin and Chloramphenicol as also Terramycin have also been dealt with. The newer additions like folic acid, Androgens etc. have also been included. A separate chapter has been devoted for anthelmintic treatment and the drugs used therefor. An addendum at the end of the book deals with a variety of useful therapeutic measures as for example, Antabuse in chronic alcoholism, sulphones in leprosy, and cortisone and ACTH in several joint-diseases. Methods of immunisation against whooping cough and measles, the use of aureomycin in intestinal amebiasis and ulcerative colitis, have also received attention.

The book has been neatly indexed and printed in clear, bold type and will be very useful to the general practitioner for ready reference.

U.V.R.

Wounds of the Extremities in Military Surgery.—By OSCAR P. HAMPTON (Jr.) M.D., F.A.C.S., Instructor in Clinical Orthopaedic Surgery, Washington University, School of Medicine; Colonel U.S. Army Reserve; Civilian Consultant to the Surgeon-General Department of the Army; Chief, Orthopaedic Section, 21st General Hospital, 1942-43; Consultant in Orthopaedic Surgery, Mediterranean Theatre of Operations 1943-45, Chief, Orthopaedic Branch, Surgical Consultants' Division, Office of the Surgeon-General, U.S. Army 1946. (1951) with 131 illustrations, 434 pages. Published by the C. V. Mosby Company, St. Louis.

The author has presented in this book the various measures adopted in the management of surgical emergencies in modern warfare. For convenience of study the subject matter has been arranged in a number of chapters. The first chapter deals with an outline of the general measures followed in military surgery. This includes a general plan of the outlay of medical facilities extending from the actual battle front to the base hospital. The second chapter deals with First Aid and the methods of emergency splinting. The third and the fourth chapters deal with minor surgery at the front-line hospitals, and include methods for counteracting shock, resuscitation, blood transfusion, application of tourniquets, post-operative management etc. as well as reparative wound-surgery. The next 4 chapters deal with the surgical measures usually

adopted in medical camps, situated farther away from the battle-front and include special types of war injury, like vascular nerve injuries, compound fractures, wounds of the joints, amputations etc. The chapters on compound fractures and joint wounds are very well written and suitably illustrated with excellent photographs. Burns and trench-foot and the treatment for these conditions are detailed in two chapters. Wounds of the hand and anaerobic wound infections are dealt with in two

separate chapters. The latter is very well written and accords with the importance of the subject since contamination of wounds is of very common occurrence on the field of battle.

Printed in clear bold type on beautiful art paper and illustrated profusely by excellent photographs, and provided also with a clear index at the end, this book will be of great help to the orthopaedic surgeon.

U.V.R.

NEWS AND NOTES

Association of Military Surgeons of the United States

59th Annual Meeting at the Statler Hotel in Washington, D.C., on 17th, 18th and 19th, November 1952

The President of the above association has kindly extended an invitation to us to attend their 59th annual meeting. He has also desired us to announce the meeting in our columns so that a large number of representatives from our country may attend and participate in the momentous meeting. We do so with pleasure. We are also informed that the Chiefs of the Medical Services of our Army, Navy and Air Force have been specially invited through the Minister of Defence of our country, the invitation having been delivered by a courier to the Indian Ambassador in Washington.

The Association of Military Surgeons was founded in 1891 and includes many of the world's eminent military physicians amongst its members.

An outstanding scientific programme has been arranged for this year's meeting and the organisers look forward to a large number of representatives

from all the principal nations of the world.

It is expected that in addition to a large number of scientific papers, there will be a grand display of technical exhibits illustrating the latest medical advances in military medical science. Further a special convocation will be held on November 18th during which every delegate present from our country will be decorated with the medal and ribbon of the Society and will have conferred upon him the Honorary Membership of the Association. On November 20th and 21st an International Clinical Symposium has been arranged for the visitors from abroad in the various government hospitals and medical centres in the Washington area under the auspices of the Surgeons-General of the United States Army, Navy, Air Force and Public Health Services and the Medical Director of the Veterans Administration. We hope and trust that several members of the profession from our country will attend the meeting; and we wish the meeting every success. We hope to be able to publish a report of the proceedings in due course.

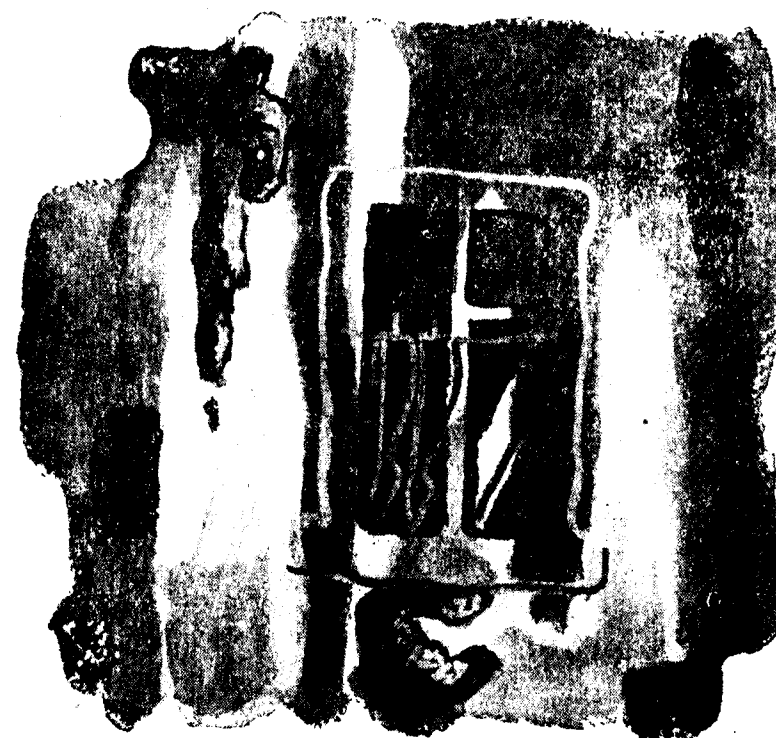
CORRIGENDA

The two news items published in our September issue of the ANTISEPTIC at page 743, headed respectively "Powerful New Drug Fights Malaria" and "Mepa-Information Services. The omission to mention the source in the last issue is regretted.—(ED. ANTISEPTIC).

The word "liviron" in the note on British Schering's gift to India Government—appearing at page 743 of our last issue (September '52) is a misprint for "iviron". The error is regretted.—(ED. ANTISEPTIC).

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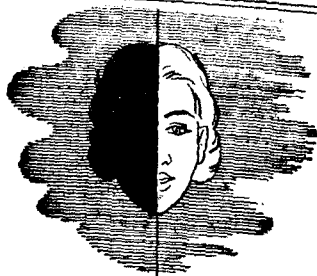
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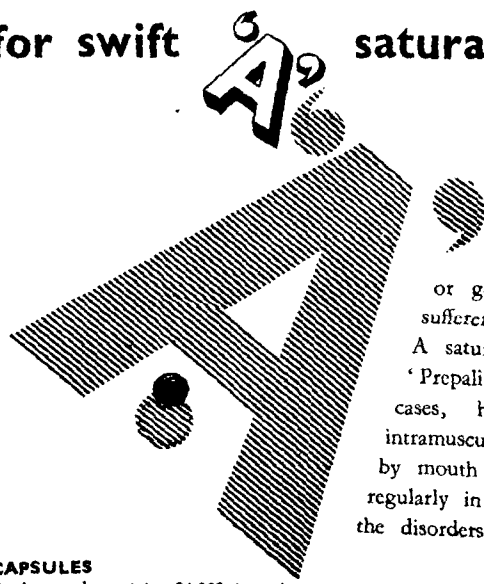
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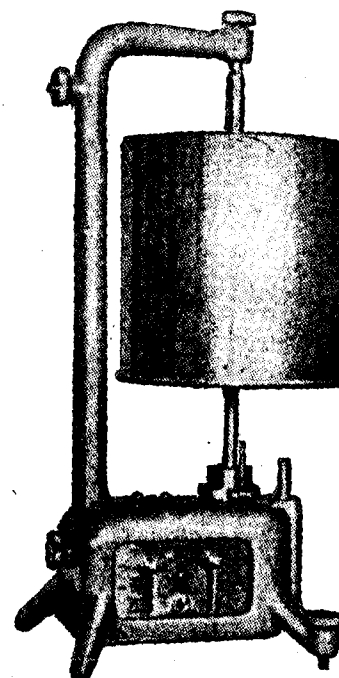
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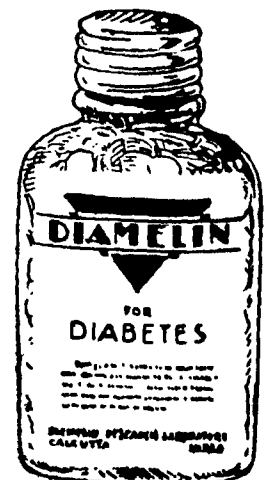
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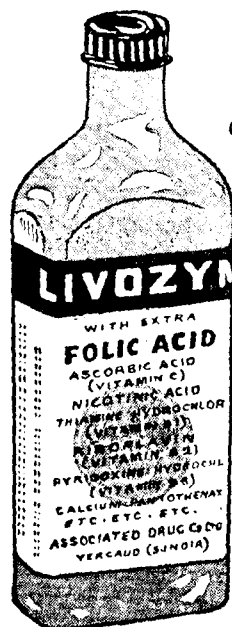
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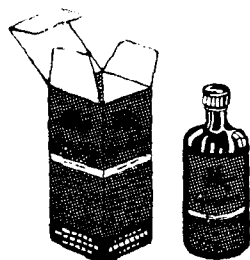
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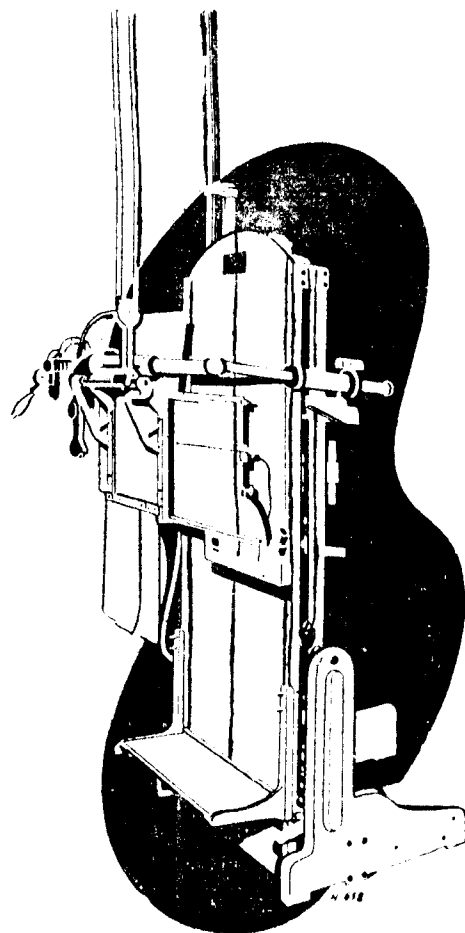
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Age: 26, 3rd. para. No secretion every time. Pt. diabetic. Soft breast and hardly any secretion.

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Care Dr.

M.D.

Age: 32, 6th para. No secretion every time. No discharge nor tender and full breast.

Treatment with LEPTADEN: 2 T.D.S. responded after 4 days.

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0-9 0-11 1-3 2-2 Glaxo	[10 3-0	Bakelite 1-8 2-8 3-0
Streptomycin 1 gm. Pfizer 2-5	„ B ₁₂ 10 cc. 50M 5-8; 100M 8-8	Hypo. Needles, S.S. doz. in box
Morck Rhodco Glaxo	„ C 100mg. 2cc. 100 17-8; 10 3-0	Record M Eng. 3-12; Down 4-8 doz.
2-4 2-3 2-3	„ „ 500mg. 5 cc. 100 35-0; 10	All glass „ 4-8; „ 5-8 „
Chloromycetin 12 cap. 19-15	[5-12	„ Japan 2-8; USA Sup. 8-0 „
Aureomycin 8 cap. 18-8;	Micrabain 6 amp. 20 M 3-6	Cotton Wool 1-12 lb.; Lint lb. 3-14
Terramycin 8 cap 17-0; 16 22-0	„ 50M 5 cc. 3-12 [6-4	Bandages 1" 0-13; 2" 1-10 3" 2-7
Procain Penicillin (Distaquin)	Liver Extract 10 cc. 3-2 TCF	Gauze 18 yd. pkt. 5-0 [doz
3 lac 1-0; 4 lac 1-4; Pfizer 1-12	„ with Vit. B&C 4-6	First Aid Box Sup. 15-0
30 lac 10 cc. oily Pfizer 9-8	„ P.D. 2 USP 10 cc. 3-12	Diagnostic set Cowland
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„ Eye Oint 8-0; doz.	Entodon Bayer 10 amp. 8-4	Erkameter 70-0; Baumanometer 120-0
„ Lozenges 20 1-2	Atebrin Bayer 150-10; 300 7-10	Weighing Machine USA Sup. 40-0
„ Tab. 1/2 lac 12 4-0; 1 lac 7-12	„ „ 1000 17-0; 3000 50-0	Pneumothorax app. L & P
P.A.S. 100G. DMX 10-4; Italy 4-4	Aspirin tab. 1000 5-0	model Comp. in wooden box
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„ „ 1000 3-14; 500 16-0	Praquine 500 1-4	Acriflavin 25gm. 2-8; 500 gm. 26-0
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„ „ 1000 3-14; 500 16-0	„ Guinadine 500 12-4	[Lactus 3-4
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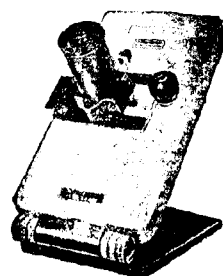
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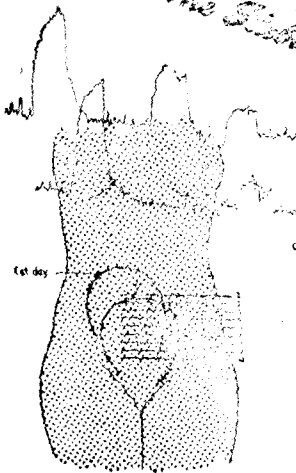
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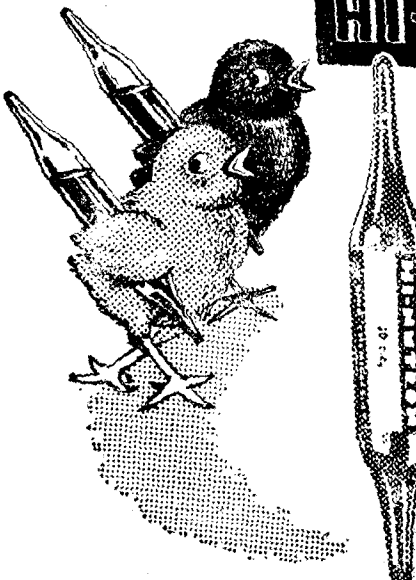
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Dihydro Strep. 1grm. Glaxo 2-3	Milk with Iodine 100 x 5 cc. 16-0	Wall Thermometer Japan 2-8
Rhodin 2 2-8; Pfizer 2-5; Merck 2-3	" Crude Liver 3 USP 100x2cc	Sandoz. Cal. Gluco c Vit C
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" USA. 5000 52-8; tin 1000 12-8	" 5 USP P.D. 8-0	Jap. Ger. D.B. B.D.
Ephedrin 1/2 Gr. 1000 6-8; Ind. 5-12	" Eng. 5 USP 10cc. 4-6 20cc. 7-8	2-8 3-4 5-8 9-8 doz.
Yeast Tab. Eng. 6-12; 7 1/2 gr. 7-8	Campolan 5x2cc. 5-8 25x2cc. 26-8	Atebrin Amp 3 grm x 2 2-8 25 16-8
Soda Mint " 2-8; 100 0-12	Cal. Glu. 10% x 10 cc. 100 13-8	" 0.1 grm. 63-6 [Teath; Forcep 4-8
Paludrin 1000 x 1 gr. x 24-8	lucose Sol. 25% x 25cc. x 100 21-0	Camphor-in-Oil 3 gr. x 1cc. x 100
" 3 grm x 500 25-0; Strap.	" Thilo Germ. 50 amp. 20-0	N. Saline 100 x 5cc. 7-0 [Cipla 3-0
Aminophyllin Tab. 25 2-0 100 5-0	Cytotropine I.V. I.M. 5-8 [4-10	Omnopon Amps with Needle
" Amps. 6x200 5-0; 6x100cc. 5-10	Atophanyl I.V. or I.M. 5-8	Nivaquin 10 1-12 [Tube 0-8
Ext. Ergot. 4 oz 7-0 lb 18-8 Ind	Beris 25 mg. x 10cc. 2-0 50mg. 3-2	F.L. Durex Tin. 3-0 doz. Pkt. 2-0
7 Sea's Codliver oil 16 7-0 1/2 lb 4-4	Calci Ostein 15cc. 3-3 [100mg. 4-6	Ear. Metal Syringe 2oz. 5-8;
Saridon tab. 10 1-7; 250 25-4	NAB. 15's 0-10; 3 0-11; 45 0-13;	Waterbury Co. 5-0 bot. [4 oz. 6-12
Petas Chlorus 1lb. 3-0; tab. 500 3-8	Nicotinic Acid 500 3-0 [6 0-16	Vit. B12 Glaxo 20 mic. 6x1cc. 3-4
Ind. Morph. Sulph 1/2 gr x 20 2-8	Neosalversan 0-15 30 45 60grm,	" 50 mic. x 6 lcc. 5-8; 5cc. 3-12
B.W. " 6 Atro. 1/2 gr x 20 5-0	(75gm. 1-12) 1-1 1-2 1-4 1-8	Oil Chiapeidiam ex. 6-0 [10cc. 9-12
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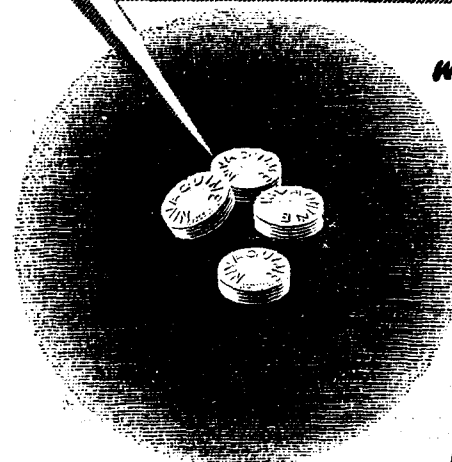
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