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The Antiseptic

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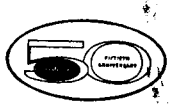

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Vol. 53, No. 12 CONTENTS DECEMBER 1956

(Continued on Advt. page 4)

CONTENTS—DEC. '56—*Continued from Advt. Page 2*

THE ANTISEPTIC

Vol. 53, No. 12 — INDEX TO ADVERTISERS — DECEMBER 1956

vaginal moniliasis: an increasingly common complication of antibiotic therapy

"... wide use of penicillin and broad spectrum antibiotics, with resultant disturbance of vaginal bacteriology has increased markedly the incidence of yeast and fungus infections of the vagina.... Before advent of the wonder drugs, relationship of trichomonas to monilia was roughly four to one in the usual office practice. Within the past eight years the ratio has been reversed with three monilia problems to one of trichomonas."

Lee, A. F. and Keifer, W. S.: Northwest Med. 53:1227 (Dec.) 1954.

"Vaginal moniliasis ... is quite common and the incidence may well have been increased following the extensive use of the broad-spectrum drugs or prolonged oral use of penicillin."

Welch, H.: Editorial, Antibiotic Med. 2:74 (Feb.) 1956.

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Dysentery, Bacillary	Scarlet Fever
Empyema	Scrub Typhus
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Epididymitis	Septic Sore Throat
Furunculosis	Septicemia
Gastroenteritis	Sinusitis
Gonorrhea	Skin Graft Infections
Granuloma Inguinale	Surgical Prophylaxis
Klebsiella Pneumonia	Tonsillitis
Laryngitis	*Tracheobronchitis*
Lymphadenitis	*Tularemia*
Lymphangitis	Typhus
Lymphogranuloma Venereum	Urethritis
Mastoiditis	Vesiculitis
Meningitis	Wounds, Infected

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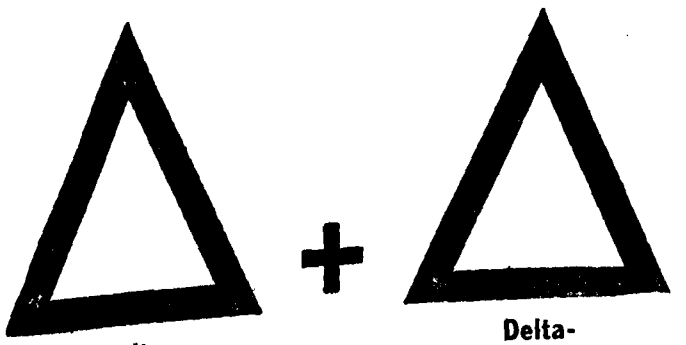

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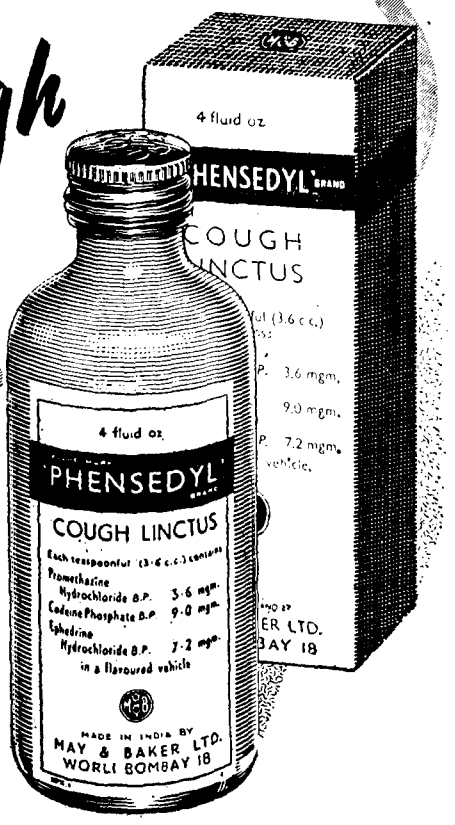

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Original Articles

VIRAL HEPATITIS (ACUTE INFECTIVE HEPATITIS)*

K. N. GOUR, M.D., M.R.C.P. (Ed.), F.R.F.P.S.G., D.C.H. (Eng.), D.P.H.,

Professor of Medicine, Medical College, Agra

ACUTE infective hepatitis is a very widespread disease and has been reported from practically all parts of the world. It may occur sporadically or in epidemic form or may become pandemic when it would become a global problem. We know that gamma globulin prepared from pooled sera prevents the occurrence of the disease; it shows that the infection is certainly very widespread.

It is a disease of human beings; neither animals nor insects suffer from the disease. Hence it has not been possible so far to transmit the virus experimentally to animals.

Mode of spread.—The virus of infective hepatitis is present in the stools and also in the blood. Hence its mode of spread is from the stools to man and for this reason the 'intestinal-oral circuit' becomes most important and flies also stand to be incriminated in the transmission.

Kauffman[10] reported a small outbreak—which was probably food-borne and transmitted by a cook—in which 50 cases occurred among 90 people. Broodrible reported an outbreak which occurred in a small boarding school through the use of common cups and cutlery[3]; the domestic staff who used different utensils and had a separate mess, did not suffer from the disease.

The water from a well, which was contaminated by a leaking sewer was the cause of an outbreak in a sanatorium at Halbmass, as reported by Neefe and Stokes[4]. Polluted water can thus be a source of infection.

* Paper read at XXXII All-India Medical Conference, Jaipur, 1955.
Specially contributed to the ANTISEPTIC.

Mode of onset.—The disease is a generalized systemic infection with a predilection for causing liver injury. Probably the liver suffers even from the very beginning and most of the prodromal symptoms might be due to the resulting liver injury.

In the majority of our cases, the onset was insidious and the prodromal symptoms were mostly gastrointestinal, anorexia, abdominal discomfort, slight pyrexia (99°F to 100°F) and a mild icterus appearing after 4 or 5 days. In a few cases the onset was ushered in by severe abdominal pain, resembling intestinal colic. In some cases, in which it started with a high temperature of 102°F to 103°F, jaundice appeared much earlier *i.e.*, in 2 or 3 days. Some patients showed practically no prodromal symptoms and were carrying on their routine work till some one drew their attention to the coloration of the conjunctivæ or till they themselves happened to look into a mirror and observe an icteric tinge in the eyes. In a few, there were symptoms attributable to hepatitis but no jaundice. Thus we see that the mode of onset was not uniform but very variable.

Symptoms and signs.—In mild cases, the patient complains of malaise, headache, lassitude, anorexia, nausea or vomiting, discomfort or pain in the abdomen specially noticeable in the epigastric and right hypochondriac regions, aches and pains in the body, a temperature of from 99°F to 102°F or even 103°F and there may also be a feeling of chilliness or mild rigor.

In some cases the severe abdominal pain may simulate an attack of biliary colic. These symptoms may be present for a few days before any icteric tinge is seen in the conjunctiva. This is the pre-icteric stage.

Then bilirubin appears in the urine, the colour of which deepens and the conjunctiva and the skin show an yellowish tinge when the icteric stage is reached. The symptoms present in the prodromal stage may increase, as also vomiting and pain; the pain may become more localized in the right hypochondriac region. Jaundice gradually deepens and the liver may become palpable and tender. Constipation or diarrhœa may be present. The stools may be clay-coloured.

In very severe cases, the jaundice may become more profound. Hæmorrhages may occur in the skin and gums or in some internal organ—pulmonary or gastrointestinal; the patient becomes apathetic, listless and comatose.

Course of the disease.—This varies in different individuals. Some may have a mild uneventful course, and recover in about 5 to 6 weeks' time. In others, the disease takes a prolonged course and if not handled properly may take several months to subside, and in some the patient is left with a palpable firm liver with anorexia abdominal discomfort, slight anæmia, fatigue on sustained physical or mental effort and slight jaundice—a state of chronic ill-health.

Diagnosis.—In the early stages of the disease when there is fever, abdominal discomfort etc., without any jaundice it has to be differentiated from:—(*a*) malaria; (*b*) enteric fever; (*c*) sandfly fever; (*d*) dengue; (*e*) gastro intestinal disease *e.g.*, gastro-enteritis, appendicitis, dysenteries etc; and (*f*) influenza.

When jaundice has appeared, it has to be differentiated from jaundice caused by other causes.

The blood count may be normal or may show leucocytosis. In some cases there may be leucopænia. Icteric index is increased and in severe cases may reach 100 units or even more. The urine shows the presence of bile-pigments and bile-salts.

Liver function tests—In the early stage the bromsulphalein test becomes abnormal and later on the cephalin-cholesterol flocculation test and thymol-turbidity test show abnormality.

Treatment.—*General*:—Rest and diet are sheet anchors in treatment. *Rest*—The patient should have absolute rest both physical and mental; symptoms then subside rapidly, and recovery is hastened and is complete. He should not be allowed to get up till the symptoms have completely subsided *i.e.*, till the temperature has become normal, his appetite has returned, his abdominal discomfort has disappeared, there is no longer any pain or tenderness in the hepatic region, the liver is no longer palpable, the urine is quite clear and free from bile-salts and bile-pigments and the serum bilirubin has returned to normal. In only such cases where the patients are very insistent and are fit to go to the lavatory, they may be so allowed; otherwise bed-pans and urinals should be provided on the bed or a commode provided by the bedside.

It should be realized that when the patient lies in the recumbent position, circulation in the liver is greatly helped and hepatic discomfort is very much diminished because there will be no dragging down such as may be caused in the erect position or to a less extent in the sitting position.

Though clinical improvement is noticed early the pathological changes take a long time to disappear; as will be seen from the presence of cellular infiltration for quite a long time after the patient has shown clinical improvement and the liver function has corrected itself.

No definite, hard and fast rule can be laid down about the period of rest which should be observed, and each case must be judged on its own merits. The period of rest cannot be measured in days or weeks, at least 3 months being necessary in the average case. He should not be allowed to do any heavy work, before this period is over. We must also realize that the liver has suffered by an acute inflammatory disease and a diseased organ requires sufficient rest till the activity of the disease has completely subsided and the

functional activity of the liver has been restored and the pathological change has corrected itself. By following this regime relapses can be prevented, the duration of the disease shortened, and the disease made to run an uneventful course without complications or sequelæ. In all cases, where complete rest was observed, the duration of the disease was shortened and no complications occurred. On the other hand, those patients who were up and about, doing heavy work during the prodromal stage suffered from a severe form of the disease, the course of which was a stormy and more prolonged one.

Diet:—Darmandy observed that though a high protein and low-fat diet (proteins 200 g., carbohydrates 400 g., fat 40 g.) had been advised as more suitable and beneficial, no difference was noticed as compared with controls.

In our country, protein-deficiency already exists and so it is essential that we should have sufficient proteins in the diet. A high protein-diet may not act as a restorative but it would certainly act as a preventive in the causation of hepatic injury.

All the 24 cases in our series of infective hepatitis recovered. Beattie reported that on dietetic measures alone the patient's stay in the hospital was reduced by as much as 37%.

Further, a suitable diet should contain not only enough proteins but must also provide enough calories such as would be derived from a high carbohydrate diet.

It has been customary from very ancient times to prescribe a fat-free diet, but though fat-metabolism is disturbed in this condition it is not necessary that the diet should be entirely free from fat. A little fat is not harmful, rather will it be an advantage as providing a large number of calories.

Hence, the diet to be recommended to these patients should have a high-protein, high-carbohydrate and low-fat content.

At the beginning of the disease and in mild or moderately severe cases, a light diet supplemented with fruit juice and glucose drinks may be advised for a few days. In cases where the appetite is poor, glucose can be given freely by the mouth. For the rural population and for those who cannot afford, *gur*, sugar, sugar-candy, or sugar-cane juice by the mouth may be advised instead of glucose. A few days later, a diet consisting of 400 to 500 g. of carbohydrates, 80 to 100 g. of proteins and 30 to 40 g. of fat may be given. A low fat diet can be obtained from skimmed milk and milk from which cream has been removed, *matha* and curds from which the cream has been taken off. Curds can be given freely as these are rich in casein, which contains lipotropic factors.

Many patients do not relish and so refuse skimmed milk; such cases may be given boiled milk from which the top layer of cream has been removed. A little fat will do no harm.

Patients in a weak state of health prefer liquids and semi-solids to solids because they can be taken more easily; this aspect should therefore, be kept in mind.

Feeding by the intravenous route.—In severe cases where there is complete loss of appetite and severe gastrointestinal upsets like vomiting, the intravenous administration of 100 or 150 cc. of a 25% solution of glucose once or twice a day, is to be recommended.

Glucose in normal saline 1½ to 2 pints may be administered by slow drip once a day to patients who do not take in adequate quantities of water by the mouth. If there is much dehydration, this may be given twice a day. A few days' admininistration of glucose and normal saline may help the patient to such an extent that they would then, be able to take some nourishment by the mouth. Patients who cannot take anything by mouth for several days, may be given protein hydrolysates along with glucose by the intravenous route.

Alcohol should be forbidden. Hartfall has mentioned the deleterious effects of alcohol in all stages of the disease; in the incubating stage, it might provoke an attack; and in mild cases, it might worsen or prolong the attack or might cause a relapse.

Lipotropic factors.—There is ample evidence from the results of animal experiments to suggest that diets deficient in the lipotropic factors, predispose to liver damage and that when these are supplied, damage does not occur and can be prevented.

Opinions differ on their value in the treatment of infectious hepatitis. Some workers observed that they had no effect, on the severity and duration of the disease, nor on the incidence of relapses.

We gave methionine to six patients–2 tablets twice a day and no change was observed in the decline of icteric index from that of the controls, though there was a comparatively better sense of well-being than those who did not get these vitamins and liver extract etc.

Vitamins are helpful, especially the Vitamin B complex which can be given by mouth in the form of tablets–2 tablets twice a day or in the form of Elixir, 2 tea-spoonfuls twice a day. In those who are unable to take by mouth, it can be administered parenterally by the intravenous or by the intramuscular route.

When the patients have severe anorexia or when they are taking nourishment poorly or when they are not convalescing satisfactorily, liver extract 2 cc. may be given I.M. on alternate days, with or without Vitamin B complex.

Vitamin C may be given orally or may be given intravenously when glucose or saline is being administered by this route.

Drugs:—It is difficult to assess the value of drugs in a disease which has a tendency to cure by itself, and which *per se*, causes very few deaths.

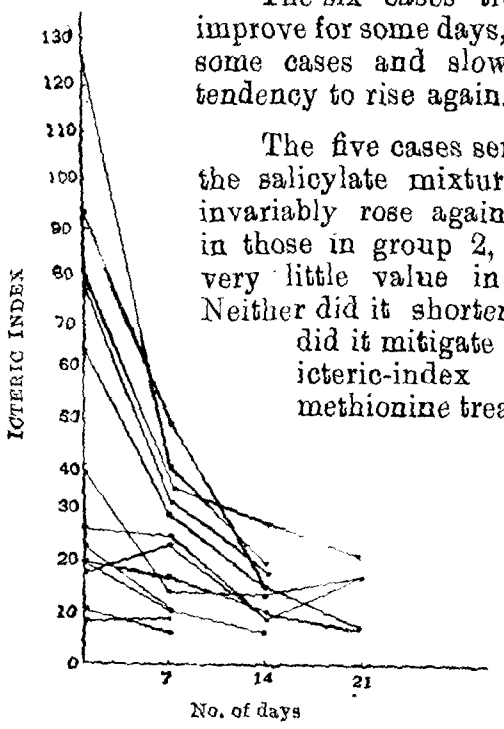
Twenty-four cases with suitable controls were studied to assess the value of Achromycin. These were divided into 3 groups:—(*i*) 13 cases were given achromycin capsules, one capsule 4 times a day for 8 days; (*ii*) six received methionine tablets, 2 tablets 3 times a day; and (*iii*) five served as control, by getting only the ordinary salicylate mixture.

The diets in all these cases were the same:—a high carbohydrate, high protein and low fat diet.

The duration of the illness, the severity of the disease, and the icteric index were taken as the criteria (*i.e.* clinical and biochemical) in assessing the value of the antibiotic.

In the 13 cases on Achromycin therapy, the temperature came down rapidly, and the symptoms of anorexia and gastrointestinal upsets improved (in 12 cases). The improvement was noticed within 4 to 5 days of the administration of the drug. The icteric index fell rapidly and in only one case there was a tendency to rise again. (See *Chart 1*, below).

CHART 1



Level of icteric index in relation to the days on treatment with achromycin.

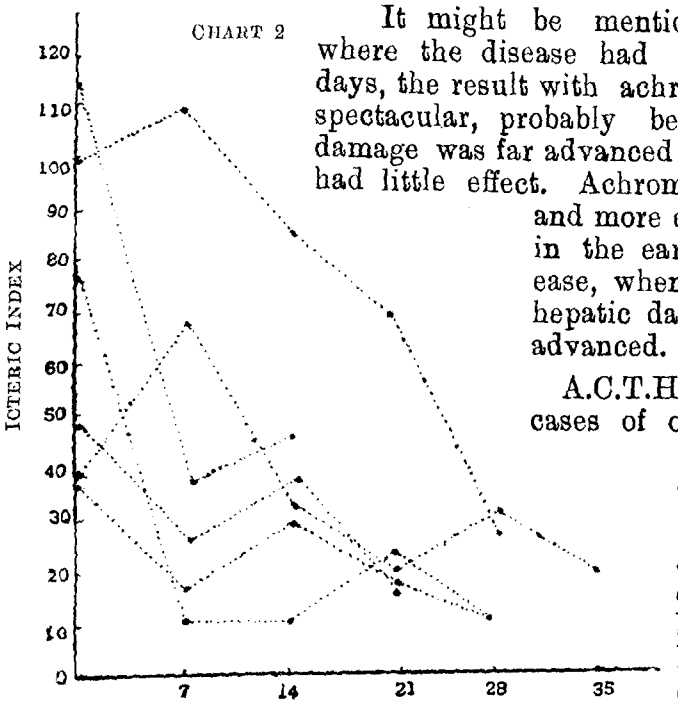
The six cases treated with methionine did not improve for some days, the icteric index fell rapidly in some cases and slowly in others with an invariable tendency to rise again. (See *Chart 2*, p. 891).

The five cases serving as control were given only the salicylate mixture. The icteric index fell but invariably rose again. (See *Chart 3*, p. 892). just as in those in group 2, showing that methionine is of very little value in the treatment of this disease. Neither did it shorten the duration of the illness nor did it mitigate the severity of the disease. The icteric-index decline was the same in the methionine treated and in the control groups.

The duration of the illness was considerably reduced in the cases treated with Achromycin, 2 to 3 weeks being the average duration, while cases treated with methionine took 3 to 5 weeks for recovery (See *Chart 4*, p. 893). The control cases took 3 to 4 weeks for the icteric index to fall to normal values (See *Chart 3*, p. 892). The number of cases treated is no doubt too small to admit of definite conclusions being drawn but it is certainly suggestive that Achromycin had definitely greater beneficial effect in alleviating the symptoms, in shortening the length of illness and in lowering the icteric index rapidly.

Complications were not encountered and the convalescence was uneventful in all our cases.

CHART 2



Level of icteric index in relation to the days on treatment without achromycin.

It might be mentioned that in cases where the disease had persisted for some days, the result with achromycin was not so spectacular, probably because the hepatic damage was far advanced and the antibiotic had little effect. Achromycin yielded better and more encouraging results in the early stage of the disease, when the viraemia and hepatic damage had not far advanced.

A.C.T.H. was used in only 2 cases of our series and was found to be practically of no value.

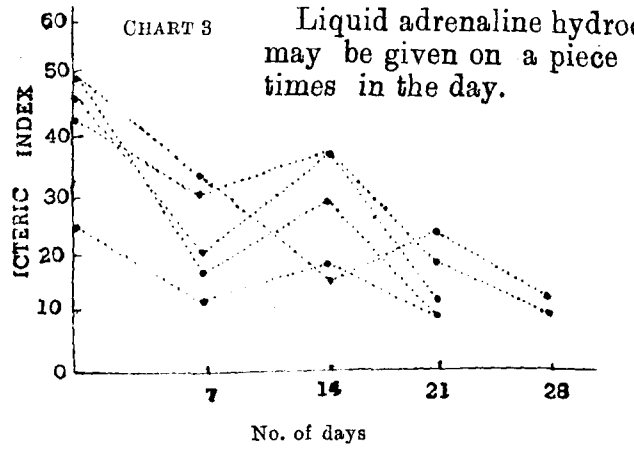
Administration of saline:—In a few cases, non-surgical biliary drainage was helpful. 2 drachms of Mag sulph, dissolved in ½ to 1 oz. of water was given on empty stomach, and the patients asked to lie on their right side for half an hour. The concentrated saline on reaching the duodenum draws the bile from the biliary passages. One patient stated that about half an hour after taking the saline purgative he felt a sensation in the right hypochondriac region as if something was being withdrawn by a syringe. The biliary passages are relieved of the stagnated bile by this method and the whole biliary tree is thus cleared up.

Symptomatic treatment:—*For pain*:—Pethidine may be given by mouth. Trasentin one tablet twice a day; pethidine one tablet twice a day; Spasmindon one tablet twice a day; and in very severe cases pethidine may be administered subcutaneously. If this fails to relieve the pain, morphine gr. ¼ may be administered subcutaneously.

For constipation:—Mag sulph and Soda sulph, two drachms of each in an ounce of water may be given.

For nausea and vomiting:—Fractional doses of calomel may be given. A grain of calomel with gr. xv of Sodi bicarb must be divided in 6 parts and one part given every ½ hr. till six such doses

have been given. Hydrargyri *cum* creta gr. iii with Sodi bicarb gr. xx is divided into six parts and one part given 3 times a day for an adult. The dose should be proportionately reduced in the case of children.



Level of icteric index in relation to the days in control cases.

Liquid adrenaline hydrochloride (1 in 100) ♏ iii may be given on a piece of ice to suck, several times in the day.

It should be noted that, as the function of the liver is at a low ebb, morphine and barbiturates, which are detoxicated in the liver should not be used in large doses nor very frequently. They should, only be used, in exceptional cases.

TREATMENT OF CHOLÆMIA :—This complication usually starts when the treatment has been unsatisfactory and the patient has been ambulant and working during the active stages of the disease. The hepatitis is not checked but proceeds to acute necrosis of the liver.

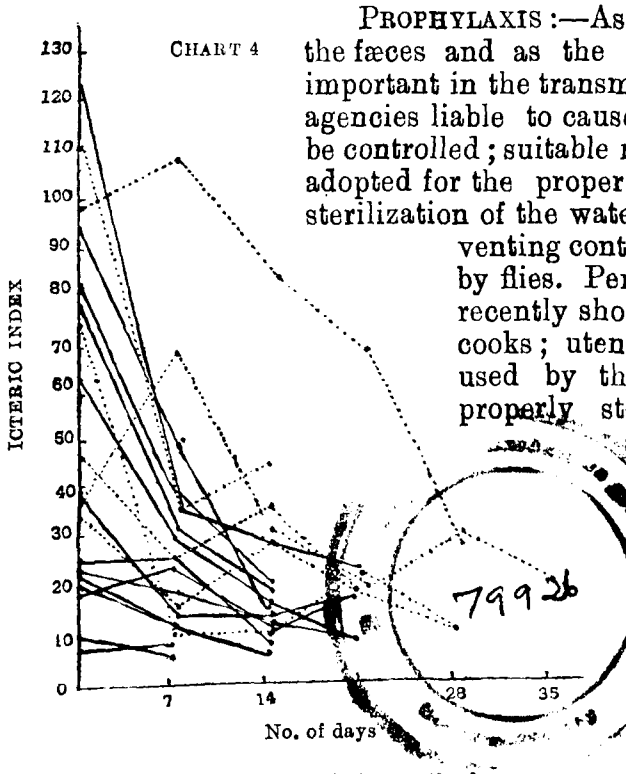
When this occurs the patient becomes drowsy and comatose, jaundice deepens, hæmorrhages start from the mucous membranes, anæmia increases and fluid may appear in the peritoneal cavity. Such cases demand emergency therapy. Intravenous glucose 5% with normal saline 3 or 4 pints a day should be given by the slow drip method. At the same time 10 to 15 units of insulin may be given subcutaneously to help the rapid assimilation of glucose. Achromycin may be given I.V. or I.M. 100 mg. 3 or 4 times a day, as it appears to be of help in this condition.

When the blood-pressure is low—Veritol 15 minims by mouth may be given 3 times or Veritol injections twice or thrice in the day. D.O.C.A. 5 mg. administered every 8 hours has also been found to be very useful. A.C.T.H. 10 units I.M. twice a day or cortisone 25 mg. tablets orally may be given 3 times a day. Blood-transfusion may help to raise the blood-pressure or plasma transfusion may be given.

For hiccup :—Morphine gr. ½ and atropine gr. 1/60 subcutaneously ; cocaine gr. 1/8 subcutaneously may be given.

For haemorrhages :—Vitamin K by I.M. injection 5 mg. daily or Kapalin is injected I.M. twice a day. In very severe cases of hæmorrhage blood transfusion may be required.

For marked anaemia :—Injection of liver extract and vitamin B-complex and blood-transfusion may have to be resorted to.



Level of icteric index in relation to the days on treatment with and without achromycin

PROPHYLAXIS :—As the virus is present in the fæces and as the intestinal oral route is important in the transmission of the disease all agencies liable to cause such infection should be controlled ; suitable measures should also be adopted for the proper disposal of excreta, for sterilization of the water supply and for preventing contamination of food-stuffs by flies. Persons who have suffered recently should not be employed as cooks ; utensils, cups, cutlery etc. used by the patients should be properly sterilized. The patients should sleep separately and not with other healthy individuals.

All syringes which have been used for giving injections to patients of infectious hepatitis should be carefully and efficiently sterilized before they are used for other patients.

Use of pooled plasma :—As a prophylaxis this may be tried. Gamma globulin prepared from pooled sera has been used to protect against the disease. The injection to be useful is given in the incubation period, as the antibodies present in the gamma globulin, serve to neutralize the viral infection.

Isolation :—Isolation is *not* necessary. From our experience we found that none of the nurses, doctors, students, bearers or sweepers who were in constant contact with the patients contracted the disease.

Conclusion.—(1) Twentyfour cases of infective hepatitis were studied ; (2) thirteen of them were put on achromycin therapy. The temperature came to normal rapidly and symptoms of anorexia and gastro-intestinal upsets improved ; (3) the icteric index fell rapidly and excepting in one case, it showed no tendency to rise again ; (4) the duration of the illness was considerably reduced, 2 to 3 weeks being the average duration for recovery in Achromycin-treated cases ; (5) six patients treated with lipotropic factors took a longer time for recovery (3 to 5 weeks) and in

practically all the cases there was an increase in the icteric index and in the symptoms a few days after starting the treatment; (6) five control cases took 3 to 4 weeks for recovery and periods of exacerbations were frequent; (7) methionine is of very little value in the treatment of this disease, as it neither shortens the length of the illness nor lessens the severity of the disease; (8) A.C.T.H. was found to be of no avail in this disease; and (9) Achromycin was more effective in the early stages of the disease *i.e.*, in the stage of viræmia and before hepatic damage had progressed.

In this series of cases Achromycin was decidedly better as evidenced by the symptomatic improvements in the fever, loss of appetite and rapid decline of previously raised icteric-index and also by the shorter course of the disease as compared with the control cases or where only methionine was used.

It is not possible to say yet how Achromycin produces the beneficial effect; probably it has anti-viral properties, acting directly on the virus or it might be exerting its beneficial effect by acting on the superimposed secondary bacterial infection in the upper gastrointestinal tract (the duodenum etc.).

This group of antibiotics is certainly superior to sulphonamides or penicillin which have been found to be of little or no value in infective hepatitis.

Acknowledgement.—My grateful thanks are due to Dr. H. N. Bhatt, M.B., F.R.C.S. (Ed.), D.M.R. & E., Principal and Superintendent, Medical College, Agra for according permission for this investigation and to publish the results.

I am thankful to my House Physician Dr. Zia-ul-Islam who helped me in the investigation and I am also very grateful to the Lederle Laboratories for supplies of the Achromycin used in these cases.

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VALUE OF ANTENATAL EXERCISE

C. W. F. Burnett, West Middlesex Hospital, Isleworth, England, recommends individual tuition of the patient by the physician before delivery rather than impersonal instruction of large classes of expectant mothers.

Analysis of 2,475 deliveries showed no significant difference in length of labour, complications of pregnancy or incidence of lacerations, forceps extractions, or premature delivery between exercised and unexercised women. Exercises may somewhat influence amount of pain during labour; however, objective confirmation is lacking.

Either purely physical or purely psychologic preparation for labour is likely to be unsatisfactory. Results are probably best when the patient trusts the attendant.—(*Modern Medicine*, July 15, 1956).

PIPERAZINE ADIPATE IN THE TREATMENT OF ANKYLOSTOMIASIS AND ITS EFFECTS ON THE LIVER, BONEMARROW AND KIDNEYS *

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Introduction.—The use of Piperazine as an anthelmintic against round-worm and thread-worm has been dealt with in several communications in recent years, (Fayard 1949, Mouriguard *et al* 1951, Turpin *et al* 1952 quoted by White 1954 and Dunn 1955), but we find very few communications on its value in hookworm infections. Dunn (1955) found that Piperazine hydrate (Anteper) and Piperazine adipate (Entacyl) were useless against hookworm; medical literature on "Antepar" admits this view; but "Entacyl" has been claimed to be effective against hookworm. A large number of inpatients in the hospital attached to the Assam Medical College, Dibrugarh suffer from hookworm disease associated with profound anæmia and since the liver is likely to be at a disadvantage in an anæmic patient with a possibility of fatty changes, one is always on the lookout for an effective anthelmintic against hookworm, which will be nontoxic to the liver at the same time. No hepatotoxic effect of Piperazine is known to have been reported; White and Stenden (1953) and Sime (1953) observed transitory neurological symptoms In this context an attempt was made by us to assess the value of Piperazine adipate (Entacyl) as an anthelmintic against hoookworm and judge its effects if any on the liver, bone-marrow and kidneys.

Material.—Patients suffering from hookworm anæmia were admitted into the M.W.II of the Assam Medical College Hospital; some of them had pitting œdema also on the lower extremities. Those patients whose ætiological factor for anæmia was found to be hookworm infestation, were included in the study. During this period of therapeutic trial, the patients were given an iron tonic mixture containing 20 grains of *Ferri et ammon citras* per ounce or iron tablets with Vitamin B_1 (T.C.F.) one tablet thrice daily each tablet containing 195 mg. of Ferrous sulph exsic., ·05 mg. of copper, ·05 mg. of Manganese citrate and 1 mg of Vit B_1, along with one multivitamin tablet thrice daily. The patients had the ordinary hospital diet reinforced with ½ seer of milk and one egg daily. The œdematous patients received the drug and diet without salt and a diuretic mixture containing Pot. citras, Pot. acetas 15 gr. each, with Extr. Punarnava liq. ℿ 60 per ounce thrice daily along with other drugs. No restriction on their activity was imposed. Since the action of the drug against hookworm in the above dosage schedule was found

* Specially contributed to the ANTISEPTIC.

to be far below expectation in 9 out of 10 consecutive cases further trial with the drug was abandoned.

Method.—The patients were not subjected to any previous preparation for anthelmintic treatment *e.g.* no restriction of diet and no purgation. Estimation of hookworm ova in the stool was done by Stell's method modified by Napier (1946) before treatment and on the 4th, 8th and 11th days after starting treatment. Piperazine adipate (Entacyl) was administered 2 tablets (300 mg. each) thrice daily for for seven days. Hæmogram, estimation of blood protein, vanden Bergh reaction, hippuric acid test, and Takata-Ara reaction were done before and after the course of treatment.

Findings.—During the course of medication, no untoward signs and symptoms were noted. The observations, recorded with regard to egg count, liver function, hæmogram and urine examination, are furnished in statements 1, 2 and 3, on pages 897 to 899.

Discussion.—*Egg count*:—It was found that the number of eggs in the stool continued to decline even after the cessation of the medication. In this series, though the course of treatment was for 7 days, the egg-count on the 11th day was lower than that on the 8th day. Except in 2 cases, in one of which there was a reduction of 100% and in the other a 71·4%reduction on the 8th day, the differences in egg-count, 3 days and 7 days after medication was not appreciable. Examination of stool on the 11th day showed the complete absence of hookworm ova only in one case; there was more than 50% reduction in 5 cases and less than 50% reduction in 4 others. Piperazine adipate is therefore, not an effective anthelmintic against hookworm —an observation which is in conformity with that of Dunn (1955). There was no difference in the results of treatment after 3 and after 7 days' continuous medication.

Liver function:—A reduction in total plasma-protein with a reduced albumin and a relatively increased globulin may occur in liver diseases, as well as in certain other conditions including many nutritional deficiencies, (Stewart and Dunlop 1949). Increased amount of blood bilirubin with a positive vanden Bergh reaction may occur in hepatitis and some extra hepatic diseases. To use the hippuric acid test for the detection of liver diseases necessitated the vindication of healthy kidneys and when Sodium benzoate is used orally its absorption from the gut must also be ensured. Takata-Ara reaction alone may not reveal any signs of liver damage even when some may be present. In view of the great reserve power of the liver, it is necessary to do at least three types of tests for the detection of hepatic dysfunction *viz.*, one based on the excretory function, one on detoxicating function, and another on protein metabolism (Stewart and Dunlop 1949). We have assessed the values of all the tests before and after medication *viz.*, blood bilirubin estimation vanden-Bergh reaction (excretory function), hippuric acid test

('detoxicating' function), and blood protein and also Takata-Ara reaction and in some protein metabolism function. We did not find any hepatic damage consequent on the administration of piperazine adipate.

Haemogram.—*Anæmia*:—Hæmoglobin estimation and R.B.C. count did not show any deterioration; on the other hand some improvement was noticed in all but three cases. Two cases showed a rise in hæmoglobin by less than 50% and 5 by 100% or more. The degree of anæmia in cases of ankylostomiasis is not proportionate to the hookworm load (Bhattacharyya 1955, Hynes, Ishaq, Marris and Varma 1946 quoted by Patwardhan 1952); the quality and quantity of the diet play a greater role in precipitating hookworm disease. Hookworm becomes an important deciding factor in the production of anæmia only in people living on a marginal or submarginal diet. "It has been repeatedly shown that anthelmintic treatment without iron administration will effect little if any immediate improvement in the anæmia; in many cases it is possible to bring the blood level up to normal by iron administration alone" (Napier 1946). The rise of hæmoglobin in 7 out of 10 cases is due to the improved dietary in

TABLE I
Egg Count

Case No.	Patient's name, age, sex, and date of admission	Egg-count per gram of stool			
		Before treatment	After treatment		
			4th day	8th day	11th day
1	P, 6, m, 5-2-'55	1,000	600	600	400
2	D, 13, f, 19-3-'55	9,000	5,000	4,600	3,400
3	B, 10, f, 3-5-'55	3,600	3,600	3,400	3,400
4	S, 32, m, 3-5-'55	3,400	3,200	3,200	2,400
5	E, 18, m, 12 5-'55	33,000	32,000	20,600	10,200
6	D, 34, m, 10-6-'55	3,600	3,200	2,600	2,400
7	G, 45, m, 8-8 '55	38,800	38,400	38,400	38,200
8	B, 30, m, 7-7-'55	3,800	2,200	2,000	1,400
9	K, 10, f, 8-11-'55	4,600	4,400	nil	nil
10	B, 18, m, 5-1-'56	15,600	11,200	3,200	2,200

TABLE II
Liver Function : A—Blood protein

Case No.	Total protein per cent.		Albumin per cent		Globulin per cent.	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
1	6·5 gm.	6 gm.	4 gm.	3·8 gm.	2·5 gm.	2·2 gm.
2	5 gm.	6 gm.	2·8 gm.	4 gm.	2·2 gm.	2 gm.
3	6 gm.	6 gm.	4 gm.	4 gm.	2 gm.	2 gm.
4	5 gm.	5 gm.	2·8 gm.	2·8 gm.	2·2 gm.	2·2 gm.
5	5 gm.	6 gm.	2·8 gm.	3·2 gm.	2·2 gm.	2 8 gm.
6	5·5 gm.	6 gm.	3·2 gm.	4 gm.	2·3 gm.	2 gm.
7	5·5 gm.	5·5 gm.	3 gm.	3 gm.	2·5 gm.	2·5 gm.
8	5 gm.	5·5 gm.	2·8 gm.	3 gm.	2·2 gm.	2·5 gm.
9	6·5 gm.	6 gm.	3·5 gm.	3·4 gm.	3 gm.	2·6 gm.
10	6 gm.	6·5 gm.	3·8 gm.	4 gm.	2·2 gm.	2·5 gm.

TABLE II

B—Liver Function Tests

Case No.	Excretory function: Blood bilirubin Before treatment	Blood bilirubin After treatment	Icteric index Before treatment	Icteric index After treatment	vanden Bergh test Before treatment	vanden Bergh test After treatment	Detoxicating function Hippuric acid test After giving 6 gm. of Sodi benzoas Before treatment	Detoxicating function Hippuric acid test After giving 6 gm. of Sodi benzoas After treatment	Flocculation test Takata-Ara test Before treatment	Flocculation test Takata-Ara test After treatment
1	·1 mgm %	·20 mgm %	6	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	1·02 gm of Sodi benzoas as benzoic acid	0·99 gm of Sodi benzoas as benzoic acid		
2	0·3 mgm %	0·3 mgm %	5	3	Direct -ve Ind. Wkly Positive	Di ..ct -ve Ind. Wkly Positive	2·5 gm of Sodi benzoas as benzoic acid	2·4 gm of Sodi benzoas as benzoic acid		
3	·15 mgm %	·15 mgm %	6	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	1·9 gm of Sodi benzoas as benzoic acid	2 gm of Sodi benzoas as benzoic acid		
4	·1 mgm %	·15 mgm %	6	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	2·5 gm of Sodi benzoas as benzoic acid	2·8 gm of Sodi benzoas as benzoic acid		
5	·15 mgm %	·12 mgm %	6	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	2·5 gm of Sodi benzoas as benzoic acid	2·7 gm of Sodi benzoas as benzoic acid	Mode-rately positive (+ +)	Mode-rately positive (+ +)
6	·5 mgm %	·20 mgm %	10	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	2·2 gm of Sodi benzoas as benzoic acid	3·6 gm of Sodi benzoic as bezoic acid	Wkly posi-tive (+)	Wkly Posi-tive (+)
7	·20 mgm %	·25 mgm %	6	12	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	2·2 gm of Sodi benzoas as benzoic acid	1·9 gm of Sodi benzoas as benzoic acid		
8	·15 mgm %	·2 mgm %	5	6	Direct -ve Imd. Wkly Positive	Direct -ve Ind. Wkly Positive	1·85 gm of Sodi benzoas as benzoic acid	2·1 gm of Sodi benzoas as benzoic acid		
9	·15 mgm %	·1 mgm %	6	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	·7 gm of Sodi benzoas as benzoic acid	1·9 gm of Sodi benzoas as benzoic acid		
10	·10 mgm %	·12 mgm %	5	6	Direct -ve Ind. Wkly Positive	Direct -ve Ind. Wkly Positive	2·3 gm of Sodi benzoas as benzoic acid	2·2 gm of Sodi benzoas as benzoic acid		

that an extra seer of milk, and one egg a day were given to each patient, and to the iron therapy, it may not have anything to do with the reduction in egg-count, which is not very great.

TABLE III—Haemogram

Case No.	Hæmoglobin % Gram % Before treatment	Hæmoglobin % Gram % After treatment	R.B.C. Before treatment	R.B.C. After treatment	M.C.V. Before treatment	M.C.V. After treatment	M.C.H. Before treatment	M.C.H. After treatment	M.C.H.C. Before treatment	M.C.H.C. After treatment	C.I. Before treatment	C.I. After treatment	W.B.C. (Differential Count) W.B.C. T. Count Before treatment	W.B.C. (Differential Count) W.B.C. T. Count After treatment	Poly. Before treatment	Poly. After treatment	Lympho. Before treatment	Lympho. After treatment	Mono. Before treatment	Mono. After treatment	Eosino. Before treatment	Eosino. After treatment
1	50% 7·25 gm	70% 10·15 gm	3·1 mil cmm	3·9 mil cmm	72 cuμ	92 cuμ	23 $\gamma\gamma$	26 $\gamma\gamma$	32%	27%	·8	·8	5,500 cmm	7,500 cmm	65%	40%	24%	33%	5%	6%	6%	16%
2	15% 2·17 gm	75% 10·87 gm	1·2 mil cmm	4 mil cmm	77 cuμ	95 cuμ	18 $\gamma\gamma$	27 $\gamma\gamma$	27 $\gamma\gamma$	29 $\gamma\gamma$	·6	·9	5,700 cmm	6,200 cmm	60%	52 $\gamma\gamma$	22 $\gamma\gamma$	24 $\gamma\gamma$	5 $\gamma\gamma$	6 $\gamma\gamma$	13 $\gamma\gamma$	18 $\gamma\gamma$
3	10% 1·45 gm	65% 9·45 gm	·8 mil cmm	3·8 mil cmm	74 cuμ	86 cuμ	18 $\gamma\gamma$	24 $\gamma\gamma$	24 $\gamma\gamma$	29 $\gamma\gamma$	·6	·8	7,400 cmm	5,700 cmm	42%	52 $\gamma\gamma$	45 $\gamma\gamma$	35 $\gamma\gamma$	7 $\gamma\gamma$	6 $\gamma\gamma$	6 $\gamma\gamma$	7 $\gamma\gamma$
4	25% 3·625 gm	60% 8·75 gm	1·6 mil cmm	3·5 mil cmm	80 cuμ	88 cuμ	22 $\gamma\gamma$	25 $\gamma\gamma$	27 $\gamma\gamma$	27 $\gamma\gamma$	·7	·8	5,550 cmm	6,500 cmm	52%	57 $\gamma\gamma$	32 $\gamma\gamma$	32 $\gamma\gamma$	10 $\gamma\gamma$	5 $\gamma\gamma$	6 $\gamma\gamma$	6 $\gamma\gamma$
5	40% 5·8 gm	40% 4·5 gm	2·5 mil cmm	2·5 mil cmm	82 cuμ	80 cuμ	23 $\gamma\gamma$	23 $\gamma\gamma$	26 $\gamma\gamma$	29 $\gamma\gamma$	·8	·8	7,200 cmm	5,200 cmm	40%	51 $\gamma\gamma$	28 $\gamma\gamma$	31 $\gamma\gamma$	6 $\gamma\gamma$	6 $\gamma\gamma$	26 $\gamma\gamma$	12 $\gamma\gamma$
6	85% 12·325 gm	85% 12 325 gm	4·5 mil cmm	4·5 mil cmm	90 cuμ	9$\frac{1}{4}$ cuμ	28 $\gamma\gamma$	27 $\gamma\gamma$	28 $\gamma\gamma$	29 $\gamma\gamma$	·9	·9	6,700 cmm	6,200 cmm	56%	64 $\gamma\gamma$	31 $\gamma\gamma$	27 $\gamma\gamma$	5 $\gamma\gamma$	6 $\gamma\gamma$	8 $\gamma\gamma$	3 $\gamma\gamma$
7	15% 2·17 gm	20% 2·9 gm	1·2 mil cmm	1·5 mil cmm	75 cuμ	86 cuμ	18 $\gamma\gamma$	19 $\gamma\gamma$	24 $\gamma\gamma$	22 $\gamma\gamma$	·6	·6	5,200 cmm	4,200 cmm	53%	47 $\gamma\gamma$	32 $\gamma\gamma$	40 $\gamma\gamma$	7 $\gamma\gamma$	8 $\gamma\gamma$	8 $\gamma\gamma$	5 $\gamma\gamma$
8	30% 4·36 gm	70% 10·15 gm	2 mil cmm	3·8 mil cmm	85 cuμ	86 cuμ	21 $\gamma\gamma$	26 $\gamma\gamma$	25 $\gamma\gamma$	29 $\gamma\gamma$	·8	·9	6,500 cmm	5,700 cmm	56%	56 $\gamma\gamma$	31 $\gamma\gamma$	32 $\gamma\gamma$	6 $\gamma\gamma$	7 $\gamma\gamma$	7 $\gamma\gamma$	5 $\gamma\gamma$
9	75% 10·875 gm	75% 10 875 gm	4·1 mil cmm	3·7 mil cmm	88 cuμ	86 cuμ	27 $\gamma\gamma$	26 $\gamma\gamma$	30 $\gamma\gamma$	29 $\gamma\gamma$	·9	·9	7,200 cmm	6,200 cmm	56%	47 $\gamma\gamma$	31 $\gamma\gamma$	33 $\gamma\gamma$	7 $\gamma\gamma$	5 $\gamma\gamma$	6 $\gamma\gamma$	15 $\gamma\gamma$
10	30% 4·35 gm	40% 5·80 gm	2 mil cmm	2·5 mil cmm	75 cuμ	84 cuμ	21 $\gamma\gamma$	25 $\gamma\gamma$	29 $\gamma\gamma$	27 $\gamma\gamma$	·7	·8	6,500 cmm	7,200 cmm	64%	53 $\gamma\gamma$	20 $\gamma\gamma$	35 $\gamma\gamma$	6 $\gamma\gamma$	6 $\gamma\gamma$	10 $\gamma\gamma$	6 $\gamma\gamma$

Leucocytes:—The total and differential count of W.B.C. before and after treatment did not show any change to indicate leucotoxic effect.

Piperazine adipate is hence non-toxic to the bone-marrow when given as in the above dosage schedule.

Kidney function:—None of the cases showed albuminuria after medication; there was therefore, no renal damage due to piperazine administration.

Summary.—1. Piperazine adipate (Entacyl) as an anthelmintic was tried against hook-worm in a dosage of 2 tablets three times a day for patients above six years of age administered for a period of 7 days; it is of doubtful value and cannot be recommended for routine specific treatment.

2. There is no significant advantage noticed in the administration of the drug for 7 days over that for three days.

3. For a few days after the cessation of medication the egg count in the stool continued to show a decline.

4. No signs and symptoms of toxicity referable to the liver, bone-marrow, kidneys were encountered.

Our thanks are due to the Superintendent, Assam Medical College Hospital, Dibrugarh for permission to report on these cases.

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ERYTHROMYCIN IN COMBINATION WITH TRIPLE SULFONAMIDES IN THE TREATMENT OF ACUTE GONORRHŒA IN THE MALE

At the Harlem Hospital, New York, 140 males with acute gonorrhœa were treated with erythromycin combined with three sulphonamides, sulphadiazine, sulphamerazine, and sulphadimidine (sulphamethazine). The drugs were given in tablet form, and in the four treatment schedules used the total dose of erythromycin ranged from 0·6 to 2 g, and that of the combined sulphonamides from 1·5 to 3 g., this total dose being administered in equal amounts of 6-hourly intervals. Of the 140 patients, only 93 returned for follow-up examination. The best results were obtained with a dosage of 2 g. erythromycin and 3 g. of the sulphonamides, 24 out of 26 patients being cured. It is suggested that the sulphonamides increase the activity of the antibiotic because the cure rate with 1·2 g. erythromycin and 3 g. of the sulphonamides was the same as that obtained in a previous investigation with 2 g. erythromycin alone. Only three patients in the series experienced minor toxic reactions—one had nausea and two had loose stools.—(*Antibiot. Med. 1*: 450, via *British Journal of Venereal Diseases*).

INVESTIGATION AND TREATMENT OF HETEROPHORIA *

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HETEROPHORIA is the tendency of the extraocular muscles to deviate from their normal relative position. Thus there is a tendency for the visual axes of the two eyes to deviate from the normal, but in the interest of binocular single vision, the axes of the two eyes are not allowed to deviate from the normal by the excessive action of the extraocular muscles. This excessive action depends upon two factors *viz.*, the neuromuscular power of various ocular movements and the strength of the fusion faculty.

If both the factors are sufficiently strong and active, the presence of heterophoria causes no symptoms. On the contrary, if one or both are weak, then symptoms arise. In symptomatology, it has been found that symptoms, like difficulty in judging the position of objects, difficulty in changing focus, and blurring of print, in addition to headache, are pointers to the presence of heterophoria. In a series of 75 cases of heterophoria with symptoms, headache was found to be present in every case. Next came blurring of print and difficulty of judging the position of objects.

If a routine examination of muscle balance is made in every case of refraction, quite a few cases turn out to be having heterophoria with symptoms. In such cases, the mere prescription of lenses will not result in an amelioration of the symptoms. In such cases the following routine examination is carried out at our centre, in addition to correction of the error of refraction :—

1. Grade of fusion.—It is found out on synoptophore. In our series of 75 cases, all but three had stereopsis. If this is not present, it must be developed first and then alone orthoptic exercises should be started.

2. Range of fusion.—This is also tested on synoptophore. It was invariably found to be of low degree. A very common range was +12 to —2.

3. Cover test.—Though very simple, this test is of very great help. Each eye is to be covered in turn. Not only deviation of the covered eye is to be noted, but also the quickness or slowness of its return back on removal of the cover. A quick recovery carries with it a good prognostic value.

4. The Maddox hand frame has been used for recording the amount of heterophoria for distance. It is a very convenient bit of apparatus. Not only the degree of heterophoria could be noted but also any suppression if present. The patient may have difficulty or even inability to see the red line.

* Specially contributed to the ANTISEPTIC.

5. The Maddox Wing is used to measure the amount of heterophoria for near. At the first test, the patient invariably has difficulty in locating the arrow, which, in the horizontal direction, is found by him to be changing in position. After a little practice, the patient is able to give correct answers.

6. Livingstone's binocular gauge has been used for measurement of both convergence and accommodation. Any figure higher than 10 cm. (*e.g* 14 cm.) in an young adult is taken to mean that convergence is less.

Before starting the treatment, it should be carefully assessed if the patient would derive benefit by orthoptic treatment. Proper lenses should be prescribed, if required. Lenses have been known to reduce the amount of heterophoria, but it is rare that they alone can eradicate the symptoms. General bodily health of the patient must be normal. It is useless to give orthoptic treatment to a person, who has a chronic infection like chronic sinusitis. It is also useless to try this treatment in neurotic and highly emotional persons.

Suppression or lower grade of fusion, when present, must be treated first; the patient should not be above the presbyopic age.

Treatment:—It appears reasonable that when a patient has exophoria, the only treatment required is to improve the power of convergence, so that the tendency to deviation outwards may pass off. But it has been found that the best results are obtained if fusional reserves are increased in all directions. The patient should be taught effortless convergence and divergence in cases of both exophoria and esophoria. Vertical vergence may also be exercised in hyperphoria, but the results have not been very encouraging.

It has been found that six to twelve exercises per patient on the synoptophore were required to make him symptom-free. Each exercise consists of gradually increasing ductions, so that ultimately we could get the patient to about 35 degrees of adduction and 6 to 9 degrees of abduction. These exercises last for about 20 minutes at each sitting and are carried out twice or thrice weekly. In carrying out adduction, it has been noted that at the first exercise the inducing of accommodation by putting concave lenses in the lens holder of the synoptophore goes a long way in producing the necessary convergence. The patient learns to converge and further use of concave lenses is hardly required.

I have never felt the necessity of prescribing prisms except in cases of hyperphoria or presbyopic age.

In hyperphoria, even of low grade, exercises have seldom given satisfactory results. Fortunately, cases of hyperphoria are very few. Prescription of prisms is productive of good results. The only home exercises that have been prescribed are the production of physiological diplopia for distance and near work.

Three illustrative cases are given below:—

Case reports.—(1) *Case of exophoria*:—K.A., 21 years; female; teacher. *Symptoms*:—Headache and blurred vision on near work—2 years' duration. R 6/6, L 6/6. No error of refraction. Maddox Rod: Exo 10; Maddox Wing: Exo. 14; Grade of Fusion: Stereopsis; Range of Fusion +13 to −10.

Treatment:—12 orthoptic exercises on alternate days resulted in:—Maddox Rod: Exo. 2. Maddox Wing: Exo. 4. Range of Fusion +36 to −6. *Symptoms*:—Relieved as reported two months after the close of treatment.

(2) *Case of esophoria*:–M.S., 32 years; male; clerk. *Symptoms*:—Headache, blurred print and difficulty in focusing of six months' duration. R 6/6, L 6/9. No error of refraction; Maddox Rod: Eso. 5; Maddox Wing: Eso. 8; Grade of Fusion: Stereopsis. Range of Fusion +16 to −1.

Treatment:—Ten exercises given on alternate days resulted in:—Maddox Rod: 0; Maddox Wing: 0; Range of Fusion + 30 to −6. *Symptoms*:—Relieved as reported two months after the close of treatment.

(3) *Case of hyperphoria*:—R.D., 27 years; male; businessman. *Symptoms*:—Intense headache and lines of print do not appear straight. R. 6/18, L 6/18, R 6/6, L 6/6 with glasses. Glasses: R-1·5 D cyl axis: 30; L-1·5 D cyl axis 150; Maddox Rod: Hyper 3; Maddox Wing: Hyper 3.

Treatment:—Prescription of prisms. 3° prism base up in L.E. incorporated in glasses.

Result:—Symptoms relieved as reported one month after incorporation of prisms in glasses.

Acknowledgement.—I am grateful to Principal B. C. Bose and Professor Wagle, who encouraged me to write this article.

THE REHABILITATION OF HEMIPLEGIC PATIENTS

Little attention has so far been paid to rehabilitation of hemiplegic patients on account of their often advanced age, the deterioration of their mental capacities, and the recurrence of hemiplegic attacks. In 10 patients the stellate ganglion was blocked with procaine, and chlorpromazine was given. The results were good. The patients felt partially relieved of the weight of the paralyzed extremities, and movements were more articulated. In patients with cerebral thrombosis intravenous injection of heparin rather than of chlorpromazine should be given. The patients were shown how to move their extremities while lying or sitting on the bed. The patients were able to move the affected extremity by pulling on wires connected with pulleys. The author experimented with a "walking frame" similar to the ones used to teach children how to walk. The patients were introduced into the frame and with some help or by themselves were able to move around. These simple devices can make the œdema disappear. They can prevent decubitus ulcers and prolonged hospitalization. One patient, who had been bedridden for a long time, was able, through this treatment, to walk again. The effect is psychologically as well as physically beneficial. The patients were able to return to some activities as integral parts of society.—(R. Berto. *Minerva Med.*, *47*: 494 496, Feb. 21, 1956, Italy., via *J. of Am. Medical Assoc*).

TREATMENT OF RECURRENT UROLITHIASIS WITH ASPIRIN

The rate of recurrence of urinary calculi is high, and it is only in a minority of patients that the cause can be found and treated—by, for example, removal of a parathyroid adenoma or relief of obstruction. In the majority, when no such cause is discovered, prophylactic treatment can be given to prevent supersaturation of the urine with stone-forming substances. The excretion of such substances in the urine can be reduced by restricting their intake or by impairing their absorption, by giving, for example, aluminium hydroxide gels to take up phosphorus before it can be absorbed from the gut. Their concentration in the urine can be kept low by drinking more. Finally, the solubility of stone-forming substances may be increased by various methods, the most familiar being by alteration of the *p*H of the urine—calcium phosphate and magnesium ammonium phosphate being more soluble in acid urines, and cystine and uric acid in alkaline ones. I. Mandl, A. Grauer, and C. Neuberg showed that calcium phosphate was more soluble in aqueous solutions when glucuronides were present. Substances of metabolic origin as well as certain drugs are excreted in the urine conjugated to glucuronides, of which small amounts are normally present in the urine, and E.L. Prien and B.S. Walker have recently reported on the treatment of patients with recurrent calcium-containing stones by utilizing the increased urinary excretion of glucuronides which follows the administration of aspirin. They gave 2 g. of powdered aspirin daily to 19 patients who had recurrent stones composed of calcium phosphate or mixtures of calcium phosphate with calcium oxalate or magnesium ammonium phosphate. Urinary infection was present in 16 of these patients, and chronic pathological changes in the upper urinary tract in 6. In addition to the salicylate therapy the patients were urged to drink large quantities of fluid, though not milk, and a simple low-calcium diet was prescribed. Pyelographic studies were carried out on all the patients before treatment, and investigations to exclude such causes as hyper-parathyroidism were carried out. The output of urinary glucuronides before treatment ranged from 0·2 to 0·9 g. per 24 hours, and during treatment from 0·6 to 2·2 g. per 24 hours. Later, salicylamide in the same dose was used, and was found to produce a greater increase in the excretion of glucuronides than aspirin.

This treatment seldom had ill effects, but several patients reported gastric discomfort or heartburn with aspirin, though salicylamide was better tolerated. Activation of a duodenal ulcer occurred in one patient. No new calculi appeared, nor was there any increase in density or size of existing stones, in 17 of the 19 patients who were observed for at least eighteen months. In 2 patients treatment failed, but in 1 of these the increase in urinary glucuronides was small. In addition Prien and Walker report that encrustation of indwelling catheters with phosphatic deposits was reduced by this therapy. They are careful to make only modest claims for the effectiveness of this form of treatment, for the assessment of different methods of treating recurrent calculi is notoriously difficult, not only because of the uncertainty inherent in the appraisal of any prophylactic therapy, but also because the natural course of calculus disease is unpredictable and treatment has to be continued for relatively long periods before any expected benefits can become apparent. Indeed, none of the therapeutic measures so far advocated has gained universal acceptance, though few have been completely rejected.

Treatment with aspirin or salicylamide has certain advantages. It avoids dietary deprivations, is simple to apply, and should be well tolerated by the majority of patients provided that it is not given to those with peptic ulcer and the recommended dosage is not exceeded. Even so, this form of prophylactic treatment is still in the experimental stage and further carefully controlled studies will have to be carried but before its wide adoption can be recommended.—(Edit.: *B. M. J.*, Sep. 15th 1956).

OCCLUSIVE ARTERIAL DISEASES OF THE LEG*

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THE basic cause of occlusive diseases of the leg is not well known, even though many suffer from chronic pain in the leg as a result of arterial diseases. Most of the arterial diseases we come across fall into two main groups : (1) senile arterial degeneration (2) thrombo angiitis obliterans or Buerger's disease. There are of course also other causes which cause obliteration of the arterial lumen.

A. Senile obliterative arteritis.—Most patients belong to this group. The lesion is certainly degenerative, affecting the medial and internal wall which causes narrowing of the lumen. This may amount to complete occlusion, and the peripheral circulation may be interfered with to a greater or less extent. These changes are seen mostly in old people. Sometimes calcified rings are formed in the middle coat producing a beaded appearance of the large branches. Fortunately collateral circulation is good in these cases. In rare cases the main vessel changes are not well marked, but muscular branches seem to end abruptly ; in these cases collateral circulation is poor and muscular wasting is prominent.

B. Secondary thrombosis of the popliteal vessel.—It is common complication of senile arteritis ; trauma may be a precipitating factor. Constant extension and flexion of the knee joint may be a probable cause. Usually the upper limit of the thrombus formation is the level of the condyles of the femur.

C. Secondary femoral thrombosis.—Usually the thrombosis begins at the region of the adductor opening and traverses proximally up to the opening of the profunda femoris. The ætiology of this is the same as for secondary popliteal thrombosis.

Primary thrombosis of the popliteal artery.—This is a very rare condition seen in athletes, the cause for which is not known ; trauma may probably be the ætiological factor. This condition is sometimes met with in cases of posterior dislocation of the knee joint.

Juvenile obliterative arteritis.—The lesion starts in the small arteries of the foot generally and extends proximally. There is usually a fungus infection of the foot associated with it. Fungal toxin producing endothelial changes may be a factor in causing the disease. The lesion is usually bilateral and periods of remission and exacerbation are seen. This has a great resemblance to Buerger's disease.

Thrombo angiitis obliterans.—This is an inflammatory lesion affecting the vessels and is never degenerative. Young males are the victims. Females are usually exempt possibly due to the high œstrogen content of their blood. This disease is seen commonly among Russians and Polish Jews.

*Specially contributed to the ANTISEPTIC.

The actual ætiology is not known; excessive smoking is stated to be one of the exciting factors. These patients are allergic to tobacco proteins. There is progressive affection of both arteries and veins. There is inflammation of the venous wall; subseqeuntly it becomes thick and cord-like. The lesion of the artery starts simultaneously with the vein. The lesion of the artery is not continuous but segmental. The tunica intima shows proliferation of the endothelium and occlusion of the lumen. There is atrophy of the tunica media and the elastic lamina shows reduplication. The inflammation affects the tunica adventitia, and later on leads to periarterial fibrosis, entangling the veins, arteries and nerves. The pain is usually due to pressure on the nerve.

Clinical investigation.—*History*:—The age, sex, nationality, tobacco-habits should all be ascertained.

Intermittent claudication:—John Homans says, "If you take the trouble to ask any patient with gangrene of the leg, you will always obtain a history of intermittent claudication". Claudication is a peculiar discomfort the patient experiences when he walks and should not be confused with the feeling of tiredness. The pain is characteristically felt over the calf muscles, or sometimes over the anterior tibial group.

During walking metabolites are built up in the muscle, and act as stimulus for vasodilatation. If the blood supply to the part is adequate the metabolites are removed at the same rate as they are produced. But if the blood-supply is inadequate the metabolites accumulate and exceed the pain threshold, causing claudication.

Claudication may be of 3 grades:—

Grade I:—After walking some distance the patient complains of the onset of pain, but on continuing to walk, the pain gradually disappears. In this group of cases the power of the vessels to dilate is good.

Grade II:—The intensity of pain becomes steady as the patient continues to walk, but with effort, he can still continue the walking.

Grade III:—The blood supply to the part is poor, the patient develops pain after walking a short distance and is compelled to halt absolutely. Coldness and numbness may be complained of.

Physical examination.—Inspection:—The lower limbs should be fully exposed; pallor of the limb is usually seen in threatened gangrene. If there is any gangrenous area, its site, extent and colour should be noted. The limb above the gangrenous area should be inspected for colour, congestion, œdema, or muscular wasting. Wasting of the fatty pads and toes and roughening of the nail suggest popliteal thrombosis.

Palpation:—*Local change in temperature*:—The part is cold over the gangrenous area.

Examination of blood vessel:—Palpate the dorsalis pedis, posterior tibial, popliteal and femoral. When examining the condition of the arterial wall should be noted.

General examination.—The cardio-vascular system should be thoroughly examined. In senile arterial degenerative cases the heart may be enlarged and arteries may be thickened.

Special examination.—The patient lying on the examining couch, has his leg raised above the heart level. Immediate blanching of foot is diagnostic of main-vessel-block. If the skin turns pale slowly, there is no main-vessel-block.

Oscillometry:—Readings are taken above and below the knee and above the ankle. Oscillations are diminished in an arterio-sclerotic limb and are very much reduced below the main-vessel block.

X-ray examination.—In arterio-sclerosis when there is calcification a straight film may be useful to locate the site of the lesion. Some cases may require angiography.

Treatment:—The choice of treatment depends on various factors:—(1) *Age*:—The younger the patient the greater are his chances of deferring amputation while in old subjects with arterio-sclerosis, and hypertension, the prognosis is bad. (2) *Nutritional state of the limb*:—Depending on the blood supply of the limb, prognosis varies. If the nutrition to the limb is very poor, it will be difficult to bring back the circulation by any means, and in such cases amputation will be required (3) *Causative arterial condition*:—Patients with diffuse obliterative arteritis are usually hypertensive; danger to life as a result of hypertension, in the form of coronary thrombosis, cerebral accidents etc., is more common, and in such cases sympathectomy is contraindicated.

Secondary thrombosis of the main vessels increases risk to the limb. At first there is a phase of ischæmia; afterwards collateral circulation develops. The thrombus may advance and block the opening of the collateral vessels. In these cases an attempt should be made to increase the blood supply to the limb.

Juvenile thromboangiitis carries a bad prognosis; fungus infection should be eradicated. Lumbar sympathectomy should be carried out.

Associated diseases:—Diabetes mellitus, mild or moderate, worsens the prognosis, persistent hyperglycæmia is a source of constant irritation of the endothelium of the blood vessels which leads to proliferation of the endothelium causing gradual obstruction. Hypertension also complicates the picture.

Methods of treatment:—Improvement of the blood-supply and relief of pain are aimed at.

Lumbar ganglionectomy:—The object of this procedure is to improve the blood supply to the part. But unfortunately all cases are not suitable for this treatment. Usually good results are obtained if the vasomotor index $\left(\frac{\text{Rise of skin temperature—Rise of mouth temperature}}{\text{Rise of mouth temperature}}\right)$ is more than three. But if vasomotor index is less than 1·5 sympathectomy is useless.

The approach to the lumbar ganglion is extraperitoneal. The first, 2nd and 3rd ganglia are removed. It is important to remove the 1st because unless it is removed complete denervation of the whole limb cannot be effected. But some surgeons do not agree to this as the removal of the 1st ganglion may lead to sterility. Results of this operation are good in 60% of cases and the mortality is very low (0·1%).

Para-vertebral block with phenol:—In those cases where sympathectomy cannot be done owing to the poor general condition, injection of 10% solution of phenol may be tried.

Vasodilator drugs:—Recently many drugs have been tried with the idea of obtaining peripheral vaso-dilatation. Drugs which block the higher centres and Rauwolfia and ganglion blocking drugs like hexamethonium should *not* be used. The lowering of blood-pressure increases the risk of thrombosis. Imidozoline derivatives (Priscol), Ergot derivative (Hydergine) and mandelic acid esters (Cyclo-spasmol) are used. For short term treatment, priscol and hydergine are useful but for long term treatment Cyclospasmol is used.

Good results are obtained by the use of vitamin E. It has to be used for a long time. Improvement in the nutritional state of the limb is striking.

Arterial grafting:—The idea is good but the results are not very good. Anyhow we may expect better results with the further developments in the technique of arterial grafts.

Relief of pain.—*External popliteal neurectomy*:—In grade III patients where some pain-relieving measures may be adopted; popliteal neurectomy is found to be good. In those cases where claudication is limited to the anterior-tibial group of muscles, popliteal neurectomy gives good results.

Tenotomy:—This is done in cases where the pain is restricted to the calf muscles. The tendo-achilles is cut 2" above its insertion. The operation is easy, and can be done under local anæsthesia; the patient can get up on the following day and walk about without pain. Now-a-days tenotomy is done in a slightly modified form. Only the tendon of the gastrocnemius muscle is cut sparing the soleus and plantaris. In these cases the patient can walk about without any difficulty which usually results from complete tenotomy.

THE TREATMENT OF TYPHOID FEVER
BY A COMBINATION OF ANTIBIOTICS*

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INTRODUCTION.—By way of introduction, it may be stated that many diseases are now treated not by a single drug, but by a combination of drugs; *e.g.*, the treatment of syphilis with penicillin and bismuth, of malaria with quinine and mepacrine and of amœbiasis with emetine and chloro-and/or iodo-quinolines. Even antibiotics may be combined as in the case of streptomycin and dihydrostreptomycin, in the treatment of tuberculosis. Working on a similar analogy a combination of chloramphenicol and tetracyclin was tried in the treatment of typhoid fever. Preliminary trials were conducted, subsequent to the trials with chloramphenicol alone[1] and later tetracyclin[2] alone in the treatment of typhoid fever (already reported).

Material and methods.—The combination of chloramphenicol and tetracyclin was tried in the treatment of 13 unselected cases of typhoid fever admitted into a medical unit of the Government General Hospital, Madras during the period, 25-11-'55 to 21-2-'56. In every case S. typhosum was isolated from the blood, and all cases were followed up for a period of 4 months after discharge from the hospital.

Of these, 11 were men and 2 were women; ten were in the 11 to 20 and three in the 21 to 26 age groups.

They were admitted with some of the following complications: *viz.*, tachycardia; tachypnœa; bed-sore; lobar consolidation, and low blood-pressure.

Seven of these thirteen cases were of the mild variety while the other six were hypertoxic.

General treatment.—The general treatment consisted of bed-rest, fluid diet, maintenance of fluid-balance, by the oral or parenteral routes, administration of vitamins and relief of symptoms as outlined previously.

Antibiotic treatment consisted of a combination of 750 mg. each of chloramphenicol and tetracyclin per day and 250 mg. of oral chloramphenicol alternated with 250 mg. of oral tetracyclin at intervals of 4 hours till the temperature came down to normal.

*Specially contributed to the ANTISEPTIC.

S. No.	Age in years	Sex	Blood culture for S. typhosum	Widal reaction	WBC/cmm	Clinical condition on admission	Type	Day of fever when specific therapy was started	Time taken to become afebrile	Total tetracyclin	Total chloramphenicol
1	17	M	+	1 in 400	4600	Tympanitis abscess heel	Mild	9th	4 days	6 G	6 G
2	23	M	+	1 in 200	4000	—	Mild	10th	3 days	8 G	8 G
3 (i)	13	M	+	1 in 400	6400	Tympanitis	Mild	13th	4 days	6 G	6 G
3 (ii) Relapse I	13	M	+	1 in 100	9400	Tympanitis	Mild	5th	5 days	7 G	7 G
3 (iii) Relapse II	13	M	+	1 in 400	8600	Tympanitis	Mild	4th	4 days	8 G	8 G
4	15	F	+	1 in 400	5800	Delirium ++ Tympanitis	Hyper toxic	9th	8 days	11 G	11 G
5	26	M	+	1 in 100	11800	Delirium, hurried respiration, tachycardia, tympanitis, +++ bed sores, bronchitis	Hyper toxic	9th	14 days	19 G	21 G
6	22	M	+	1 in 400	10600	Tympanitis	Mild	11th	4 days	7 G	7 G
7	12	M	+	1 in 400	5800	—	Mild	7th	3 days	5 G	5 G
8	10	F	+	1 in 400	11200	Delirium tympanitis	Hyper toxic	10th	9 days	10 G	10 G
9	19	M	+	1 in 400	15400	Pneumonic consolidation of right upper lobe;delirium; tympanitis ; dehydration	Hyper toxic	15th	10 days	11 G	11 G

Complication	Weight		R.B.C.		H.B.		Response	Remarks
	On admission lbs	On discharge lbs	On admission million 3/mm	On discharge million 3/mm	On admission %	On discharge %		
Nil	92	86	4·2	4·4	80	86	Good	—
Had slight temperature for 5 days during convalescence	116	112	5·2	4·8	94	88	Good	—
Nil	56	62	4·1	4·0	80	76	Good	Relapsed on the 13th day of stopping the antibiotics. *Refer serial* 3 (ii)
Nil	70	62	4·2	3·5	78	72	Good	Relapsed for the second time on the 16th day of stopping the antibiotics. *Refer serial* 3 (iii)
Nil	—	—	—	—	—	—	Good	1 g. each of the two antibiotics was given during pyrexial period
Nil	70	75	3·8	4·1	76	84	Good	On the 2nd day of therapy the delirium ceased; but tympanitis continued for 10 days. 2 pints of 5% glucose saline given during delirium for 2 days
Diarrhœa; arthritis of right knee	—*	104	4·2	3·7	78	64	Satisfactory	Tympanitis was troublesome throughout the febrile period. Diarrhœa controlled in 2 days. Arthritis cleared up in a week's time. Given i.m: chloramphenicol for 3 days. 2 pints of 5% glucose saline for 6 days as the pt. was highly toxic and delirious
Nil	78	76	4·2	4·0	82	71	Good	—
Nil	52	50	3·8	3·2	62	54	Good	—
Nil	54	58	3·6	3·2	56	50	Satisfactory	2 pints of 5% i.v for 1st 2 days
Hydropneumothorax of right side	—*	72	3·2	3·0	58	48	Satisfactory	2 pints of 5% glucose daily for 2 days

*** Too ill to be weighed on admission**

S. No.	Age in years	Sex	Blood culture for S. typhosum	Widal reaction	WBC/cmm	Clinical condition on admission	Type	Day of fever when specific therapy was started	Time taken to become afebrile	Total tetracyclin Total chloramphenicol
10	20	M	+	1 in	5600	B.P. 80/50; delirium; hurried breathing	Hyper toxic	9th	4 days	8 G 8 G
11	12	M	+	1 in 400	6200	Delirium tympanitis;	Hyper toxic	12th	9 days	10 G 10 G
12	15	M	+	1 in 400	7400	—	Mild	12th	4 days	5 G 10 G
13	17	M	+	1 in 400	6000	—	Mild	9th	4 days	6 G 12 G

On the first day of convalescence the dosage was reduced to 500 mg. of each of the two antibiotics per day, 250 mg. of chloramphenicol alternated with 250 mg. of tetracyclin 6th hourly. From the 2nd to the 10th convalescent day, the antibiotic cover was maintained with 250 mg. each of chloramphenicol and tetracyclin per day.

Response of mild cases.—To this combined antibiotic therapy was uniformly good. The temperature settled down to normal in 3 to 5 days. After the institution of combined antibiotic therapy no further complication was observed except relapse in a single case (*serial No. 3*). The total quantity of antibiotics varied from 6 to 8 g. except in the last two cases where a modified dosage scheme was followed on account of relapse in case No. 3.

Response of toxic cases.—Was also satisfactory inspite of delirium and one or more complications. In this group one patient had infective arthritis as a complication and another pneumonitis. These complications did not call for additional treatment but resolved on the combined antibiotic therapy. The time taken by this group to become afebrile was from 4 to 14 days and the total quantity of antibiotics administered varied from 8 to 19 grams.

There was no mortality in this series.

One case (*serial No. 3*) relapsed on the 13th day after stopping the antibiotics and B. typhosum was isolated during the relapse. The relapse was very mild and the same course of combined antibiotic therapy was repeated. The convalescent cover of combined antibiotics, 250 mg. b.d. was continued until the 10th convalescent day with a view to preventing relapse. This patient relapsed for the second time on the 16th day of stopping the combined antibiotics (*serial No. 3*). During the second relapse, B. typhosum was again

Complication	Weight On admission lbs	Weight On discharge lbs	R.B.C. On admission million 3/mm	R.B.C. On discharge million 3/mm	H.B. On admission %	H.B. On discharge %	Response	Remarks
Nil	90	83	4·8	4·2	65	55	Good	2 pints of 5% glucose saline for 5 days
Nil	48	46	4·1	3·8	68	60	Satisfactory	2 pints of 5% glucose saline on the day of admission
Nil	74	76	4·8	4·0	90	75	Good	In these two cases, the dosage of chloramphenicol and tetracyclin was modified in the ratio of 2 : 1
Nil	73	75	4·8	4·2	80	70	Good	

isolated in blood-culture. The course continued to be very mild and the case responded to a repetition of the same dosage schedule.

In view of two relapses occurring in the same case, it was inferred that the dosage of chloramphenicol was inadequate and therefore, the proportion of the antibiotic was altered by increasing the chloramphenicol content and the combination of 2: 1 (chloramphenicol: tetracyclin) was tried in 2 other cases (*serial No. 12 and 13*). The response was satisfactory. No relapses occurred in these cases, in a follow-up for 4 months.

Comments.—It has been established that chloramphenicol is the antibiotic of choice in the treatment of typhoid and its bacteriostatic, bactericidal and antipyretic actions are superior to those of any other antibiotic. But it has no effect on the nutritional status of the patient who lost weight and became emaciated during the course of typhoid fever treated on chloramphenicol alone.

Comparative and controlled studies of the effects of chloramphenicol[1] and tetracyclin[2] separately on typhoid fever had shown that tetracyclin-treated patients were less toxic more cheerful, showed general clinical improvement, maintained their weight and there was no emaciation although the duration of pyrexia was not cut short. They were easier to feed, not requiring tube feeding and the nutritional status continued to be good during the course of fever. These beneficial effects of tetracyclin were sought to be combined with the bacteriostatic, bactericidal and antipyretic actions of chloramphenicol in this study.

Blood-studies did not show any evidence of aplastic anæmia in any case receiving the combined antibiotic therapy. It has been noted by doctors in the West[3,4,5,6] that prolonged treatment

with massive doses of chloramphenicol could lead to aplastic anæmia, presumably due to the nitro-benzene radical in the chloramphenicol molecule.

No case of aplastic anæmia however, occurred in our chloramphenicol-treated cases, in the lighter dosage we employed.

The combination with tetracyclin further reduced the total chloramphenicol requirements in a case of typhoid fever and hence the possibility of aplastic anæmia developing is more remote. It is suggested that further clinical trials should be conducted with a combination of chloramphenicol and tetracyclin in the revised proportion 2 : 1, in order to confirm these results.

Follow-up.—All the cases were followed up for a period of 4 months after discharge from the hospital. Only one case had relapsed as mentioned above, hence the altered proportion of the 2 antibiotics was proposed.

Summary and conclusions.—Eleven cases of proved typhoid fever have been treated by a combination in equal proportions of chloramphenicol and tetracyclin. After the institution of combined antibiotic therapy no further complications were observed.

Clinically, the results were excellent, only one case relapsed twice, and the proportion of chloramphenicol was therefore, inferred to be inadequate. The proportion was modified, increasing the chloramphenicol content in 2 cases, which received the enhanced chloramphenicol dosage in the proportion of 2 chloramphenicol : 1 tetracyclin, though the daily total antibiotic was kept the same. The results were excellent.

These 2 cases have not relapsed during a follow-up of 4 months.

The results of the combined antibiotic therapy was found to be superior to those obtained with either antibiotic employed alone.

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FAVOURABLE EFFECT OF ASPIRIN IN HEAT STROKE

Aspirin was used for the treatment of about 300 cases of heat stroke (men, women and children). The body-temperature of many of the patients was 42·2°C. (108°F.) and they showed other symptoms such as exhaustion, dry reddened skin, dry tongue, moderate tachycardia and tachypnœa. With the exception of those patients who were in a shock state, perspiration had ceased in all cases when body control of the temperature failed. When aspirin was given, perspiration recurred and a general improvement set in. In addition to the aspirin treatment the patients were wrapped in a wet cloth covered with pieces of ice. Aspirin acted on the temperature regulation centre and at the same time as a peripheral vasodilator.—(*J. Kansas Med. Soc.*, *56* : 426, 1955).

CARDIAC MASSAGE*

C. V. SHEVADE, M.B., B.S., D.T.M.,
District Medical Officer, Chhatarpur, V.P.

CASES have been reported in the lay press from time to time where a person came back to life as his dead body was being carried to the cremation ground or when it had already been placed on the pyre for being cremated. These cases have not however, been investigated on scientific lines.

Death may be classified as somatic or systemic and molecular; somatic death is that state of the body in which there is a complete cessation of the functions of the heart, lungs and brain which sustain life and health. Molecular death means the death of the tissue and cells individually, which takes place some time after the stoppage of the vital functions and is accompanied by a cooling of the body, the temperature of which is reduced to an equilibrium with the external world. The rate of fall of temperature is one degree per hour.

If the breathing and pumping of the heart can be restarted before molecular death has occurred, the individual can be brought to life again.

Hibernation simulates systemic death. Here there is no breathing. Circulation is at such a low ebb that it is practically non-existent. Breathing is going on through the skin only.

Death, when not caused by loss of vitality or hæmorrhage, but caused by a sudden stoppage of the heart's action due to some shock, electric, emotional or reflex (touching pleura with a needle while performing an artificial pneumothorax) comes under the category of somatic death and as such the individual may be brought to life again by heart massage provided it is undertaken soon after the shock.

Heart massage is generally connected with operations either on the heart itself or on other parts of the body. "She was dead for 50 minutes" an article which appeared in the *Reader's Digest* in June 1955 contained a very good account of the stoppage and revival of the heart during an operation on the valves of the heart. In other cases where the patient is not on the operation table, the lapse of time limits the usefulness and applicability of the massage therapy.

Cardiac massage may be called for during:—

I. White asphyxia (primarily cardiac) where the heart stops and the patient becomes white because of the anæmia caused by the stoppage of blood supply to the body; or

*Specially contributed to the ANTISEPTIC.

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I. White asphyxia (primarily cardiac) where the heart stops and the patient becomes white because of the anæmia caused by the stoppage of blood supply to the body ; or

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II. Blue asphyxia (primarily respiratory) where there is want of proper oxygenation of the blood as the patient has stopped breathing and the lungs fail to work. Here the heart will be working but the blood supplied will be deficient in oxygen and the heart will ultimately stop pumping.

The following account relates to a case which came under my notice last year.

Babu Lal, aged 24, employed as a driver in the Collectorate of Chhatarpur District (Vindhya Pradesh) was stabbed by some one on 7th December, 1955, and was brought to hospital immediately. The stab had pierced his body through and through and the wound was bleeding profusely. A slightly oblique incised wound at the level of the insertion of the deltoid muscle 2"x1¼", penetrating through and through, 6½" below the shoulder point of the right side—on the upper and outer part of right arm was the wound of entrance, and the wound of exit was slightly oblique, incised penetrating wound 1¾" x ¾" about 2" below the axillary fold and 6" below the shoulder point on the upper and inner part of the right arm—posteriorly. By the position of the wound it was thought that the axillary artery was not injured and that the bleeding would stop by simple packing. Sulphonamide powder was put into the wound and the wound was packed and bandaged. The patient was however, admitted into the ward for observation A.T. serum was given, prophylactically. On the following morning it was detected that inspite of the tight bandage and the coagulants administered, there was still bleeding. He was therefore, taken to the operation room for ligature of the bleeding vessel.

The part was prepared. The patient was placed on the table and chloroform anæsthesia was started as the patient would not allow investigation of the wound without it. The patient took a breath, after which breathing stopped. Artificial respiration was immediately started but to no avail. On examination the pulse could not be felt and the heart had stopped beating. Intracardial injection of coramine was promptly given at the upper border of the fourth rib by the side of the sternum. This did not work. The patient was practically dead. The pupils were dilated. The cornea became lustreless, and there was no reflex. The body had become flaccid. Every one in the theatre became anxious, and the situation was tense.

At this stage, thanks to the article in the June 1956 issue of the *Reader's Digest* and to Pyes' "Technique of Heart Massage," which we had read, the idea of opening the abdomen and massaging the heart dawned on us.

Artificial respiration was being continued and calcium and coramine intracardially had been tried. It was decided to open the abdomen and do cardiac massage, as the worst had already happened and there was nothing else that could be tried.

The technique.—The abdomen was stripped, cleaned with a little spirit and entered into with one sweep of the knife immediately beneath the xiphisternum up to four inches or so in the mid-line. The right hand was put into the abdominal cavity, the heart was reached from below the diaphragm. The heart was compressed and released alternately between the right hand and the base of the left palm, which was compressing the sternum (see *Fig.* 1). This was done in quick succession for the first half minute and then less quickly. There was no response. We then tried the Nicholson method.

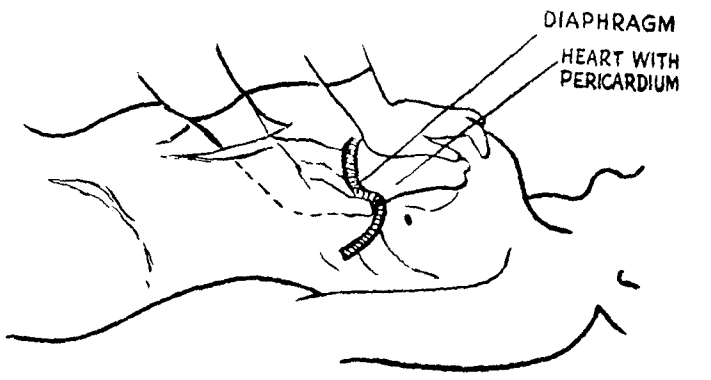

Fig. 1
Standard method of performing heart massage.

The Nicholson method.—A button-hole incision was then made immediately behind the xiphisternum between the attachment of the two sides of the diaphragm. The thumb of the right hand was thrust through the opening. The heart within the pericardium was then compressed between the thumb above and the fingers below the diaphragm (see *Fig.* 2). This was done for about a minute or so. The heart gave at first one or two beats, and then started beating continuously.

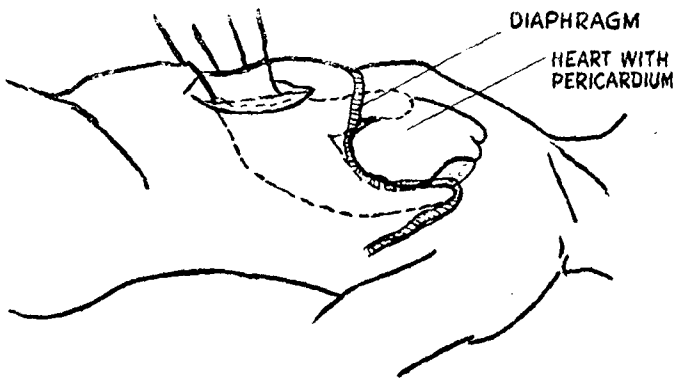

Fig 2
Nicholson's method. A button-hole is made in the diaphragm through which the thumb is inserted.

Colour slowly returned to the face of the patient. Massage of the heart was successful and the patient had come back to life. The abdomen was then closed by suitable sutures. The incision in the diaphragm was not repaired.

The current procedure :—We do not claim to have followed any systematic or organized plan. We did things in a haphazard fashion, as suited the circumstances and as ideas flashed across our minds. It would certainly be better if a clear-cut plan is followed in such emergencies. The following is the scheme advocated by Hamilton Bailey when the anæsthetist reports that he cannot feel the pulse :—

Is the heart beating ? :—If the surgeon has access to the large arteries in an abdominal operation he will himself confirm or deny that the heart has ceased to beat. If the surgeon has no access to the larger arteries the anæsthetist, will settle the point by feeling the carotid pulse, as being the best indicator. Three quarters of a minute may be allowed to gather this information, during which the anæsthetist verifies that the patient has an unobstructed airway and breaks a capsule of amyl nitrate under the patient's nostrils.

The surgeon and the theatre sister are in the meantime sterilizing the precardial area and arranging towels.

Pricking the auricle :—As soon as the area is sterilized, the right auricle should be pricked with a needle. The needle is thrust into the third right interspace at the upper rim of the fourth rib close to the sternal border (see *Fig. 3).* The needle should be directed backward and slightly upwards to penetrate the right auricle.

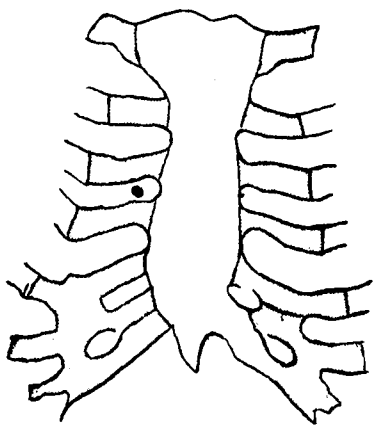

Fig 3.
Showing point for pricking right auricle.

Cardiac massage :—Unless the response to the above stimulus is obvious and immediate, cardiac massage must be undertaken forthwith (as described above).

Posture :—The head of the patient should be kept low by tilting the operation table—thus the cortex can be kept from death by the merest trickle of blood. The anæsthetist can attend to it while the heart massage is in progress.

Artificial respiration :—Automatic respiration is highly desirable for should the heart's action be re-established not a second is to be lost in oxygenating the stagnant blood in the lungs.

Repairing the incision :—It is inadvisable to close the mid-line incision until it is certain that the patient is breathing without artificial aid. Through and through sutures are inserted by the surgeon but not tied. Sulphonamide powder is placed into the wound and the sutures are then tied.

Immediate after-care :—As soon as convenient, the blood-pressure is taken. If it is below 100 mm Hg. pr....infusion is given and nuephedrine administered.

Later after-care :—The lungs should be kept well ventilated by intermittent administration of Co_2. Penicillin therapy should be started within the first few hours.

The cases recorded in literature provide detailed information about the time, sterilization, respiration and anæsthesia.

Time :—How long one should persevere with cardiac massage is well-illustrated by a case reported by Adams and Hand where cardiac massage was continued for no less than twenty minutes before response was obtained, and the patient recovered.

Sterilization :—An unsterilized scalpel was used by Easton who had to perform cardiac massage with his hands unwashed. The patient recovered uneventfully.

Respiration :—Macleod's patient collapsed under spinal anæsthesia. The heart responded to cardiac massage performed for two minutes but the respiration did not become automatic till forty five minutes later.

Anæsthesia :—The heart of Grimshaw's patient stopped during the administration of Pentothal. Cardiac massage performed three minutes later led to recovery.

Cardiac massage in blue asphyxia :—In blue asphyxia the blood, though not oxygenated, is engorged in the tissues and organs and thus the cerebral mechanism is not deprived of blood and because of this the cerebral cells survive longer. The time limit for successful cardiac massage in blue asphyxia is therefore, lengthened tremendously.

Conclusion.—Somatic and molecular deaths are discussed. The technique and current plan of cardiac massage are detailed. The peculiar circumstances under which cardiac massage can be successfully performed are detailed and a case of cardiac massage performed in our operation theatre is narrated.

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NON-SPECIFIC URETHRITIS

Auckland and Preston (Manchester) consider that a mycotic element is responsible for more cases of non-specific urethritis than has hitherto been thought. In one year the number of new male attendances at their clinic was 722 of whom 120 were suffering from gonorrhœa. The corresponding figures for females were 475 and 81. Of the cases not suffering from gonorrhœa, 30 males and 55 females showed microscopic evidence of fungous elements in urethral, prostatic or cervical secretions or in the urine. Thus 1 in 20 of all female attendances exhibited some evidence of genito-urinary fungous infection....In a four year study of over 1600 cases of non-gonococcal urethritis, Durel *et al* found Trichomonas vaginalis in 12 to 15%, chlamydozoons in 4% and 'L' forms in 7·4%.—(*Br. J. Ven. Dis., 30 :* 69 and 81, via *Med. Ann.*, 1955).

TOXIC URETHRITIS

The idea that urethritis in the male can be caused by a toxin having its origin in the glands of Cowper, prostate or seminal vesicles and often associated with foci of infection in other parts of the body is not new.

Many writers have shown that urethritis can be associated with infection in other parts of the body. Pelouze showed that in the male associated sites of focal infection are the tonsils, the teeth and the prostate gland, and pointed out that non-specific urethritis rarely had any relation to gonorrhœa.

In an editorial on non-specific genital infection in the *British Journal of Venereal Diseases, 29 :* 121, 1953, it was stated that there can be no doubt that non-specific urethritis is a venereal disease. But Ambrose and Taylor (*Am. J. Syph., 37* : 1953) when studying the aetiology, epidemiology and therapeusis of non-gonococcal urethritis among the United States forces in Korea, found that though it is a disease of sexually active people it has not been proved to be venereal in origin and should not be so classified ; that known forms of the gonococcus play no ætiologic role in the disease ; that associated prostatic inflammation is probably the most important component of the syndrome ; that a possible source of infection in the upper respiratory tract was found in 66% of the cases ; that although organisms were hard to find in many cases no abacterial cases were encountered, the commonest organisms being gram-positive cocci, corynebacteria, and gram-negative bacilli and that terramycin was the most effective form of therapy available, the effect being cessation of the pyurea, but with no marked effect on the prostatic infection.

Purcell considers that these writers get nearer the truth than most, though none suggest that a toxin is the principal causative agent of urethritis. It is suggested that toxins can be produced by many different organisms, the most virulent by hæmolytic streptococci and staphylococci, the least virulent by some gram-negative bacilli.

Purcell associates local tenderness with the presence of toxins. Pressure on the infected glands of Cowper can produce the most intense pain. Again, tenderness of the seminal vesicles or portions of the prostate on rectal examination suggest the presence of toxins in these sites. The degrees of infection and the amount of toxin present do not always run parallel. Coliform organisms may produce prostatitis in which numerous leucocytes are found in the secretion, yet the glands are hardly tender on pressure and symptoms are minimal. On the other hand, in infection with hæmolytic organisms there may only be a moderate degree of prostatitis as shown by the pus count of the secretion, yet the glands are extremely tender on pressure and clinical symptoms are prominent.

Treatment :—If the urethritis is confined to the anterior urethra sulphonamides and penicillin are *not* indicated. Cowperitis is treated by massaging the glands 2 to 3 times a week. This rapidly brings about a cessation of the urethral discharge and a clearing of the urine. If the prostate is involved, bi-weekly prostatic massage is advised though here cure takes longer. The treatment may have to be supplemented by dilation of the urethra and urethral irrigations.

The location and treatment of distant foci of infection is essential to cure the condition, and is always necessary if relapse is to be avoided though the difficulties of locating these foci are sometimes considerable.

The condition is almost always non-venereal, and is associated with infection in the upper respiratory tract (teeth, tonsils, sinuses) and the production of a toxin from these sites. The condition is associated with other symptoms of toxic infection–arthritis, conjunctivitis, iritis and many other symptoms. The treatment that has given the best results is local treatment of the urogenital foci concerned combined with the elimination of foci in the upper respiratory tract and bowel. Antibiotics should be used in the presence of active bloodstream infection and when foci are being dealt with surgically.—(*S. A. Journal of Laboratory and Clinical Medicine*, June 1956).

Cases and Comments

ARSENIC ENCEPHALOPATHY

(Report of a Case)

S. CHATTERJEE, M.B., B.S., D.T.M. (Cal.), *Major Ex.-I.M.S.*
AND
C. M. GUPTA, M.B., B.S. (Lucknow), *Meerut*

Toxic manifestations during the administration of organic arsenical compounds in the treatment of various diseases, have often been reported in medical literature ; so great caution is generally exercised by physicians in giving this therapy. It is not over-dosage and bad technique that always cause the toxicity ; for some times hypersensitiveness of the patient to the drugs may cause alarming toxic symptoms.

Recently, we had to deal with such a case of toxicity during administration of arsenic in standard dosage, in which serious symptoms of encephalopathy unfortunately developed, and which at one stage appeared to have the gravest prognosis. As our efforts in the case were eventually rewarded with complete recovery of the patient, we report the case for the information of the readers

Case report.—D. K. J., a businessman, aged 29 years, felt suddenly ill on the morning of the 17th November, 1955, with a feeling of chill, bad frontal headache and generalized malaise but no fever. He came to one of us that morning and was diagnosed as a case of simple influenza, for which the usual salicylate mixture and Pulv. A.P.C. were prescribed. By evening, the headache increased in intensity, and by 11 in the night became almost unbearable. He was then prescribed one Cafergot tablet *stat* and *s.o.s.* 4 hourly till the headache was relieved. Next morning (18th November '55) one of us visited the patient as he felt more ill with slight fever (Temp. 99·4°F) and intense frontal headache. A thorough examination revealed nothing serious. His blood-pressure was quite normal (122/82). He was given an injection of 4 lakhs units of Duracillin *forte* and was advised to take steam inhalation with Tr. Benzoin Co. morning and evening to relieve the headache, as it might be due to frontal sinusitis. He was not relieved till next morning (19th Nov. '55) when he was again seen by one of us at his residence. He vomited once on that day. Nothing serious could be found to explain the intense headache. The patient was quite conscious. He was given an injection of one ampoule Dicrysticin (with ½ gm. dihydrostreptomycin) and advised to take Pulv. A.P.C. *t.i.d.* The patient was not still relieved. On the following day (20th November) both of us called to see him at about 1 p.m. The relatives reported that at about 12 noon, while the patient was about to drink a glass of orange juice, the glass suddenly fell from his hand

and he went into a violent fit of convulsions and became unconscious thereafter.

On examination, the patient was totally unconscious, with dilated pupils, reacting to light but not briskly. The temperature was 99·4°F and the pulse/respiration was 120/30. The knee, ankle, and elbow jerks were somewhat exaggerated on both sides with plantar flexor response. Abdominal reflex was present. Heart and lungs were normal except for a few basal crepitations in both the lungs. The liver and spleen were normal. Even while we were sitting at the patient's bedside we witnessed the patient having a series of violent epileptiform convulsions, with successive clonic spasms one after the other, at hardly 15 to 20 minutes' intervals. Ophthalmoscopic examination of the fundus revealed pin-point hæmorrhages.

History of the present illness:—The patient was suffering from attacks of cough and cold, the cough attacks almost simulating those of bronchial asthma; he was under the treatment of one of us from the 1st November, 1955. His blood on examination, revealed eosinophilia of 19% and as such he was being given injections of Acetylarsan intramuscularly twice weekly. He had 1 cc. on 1-11-'55; 2 cc. on 6-11-'55; 3 cc. on 11-11-'55; and 3 cc. on 16-11-'55. The urine examined before the start of the therapy was normal.

Diagnosis.—With the above history of recent arsenic administration, and witnessing personally the encephalopathic symptoms described above, we diagnosed his present condition to be arsenic encephalopathy. The patient's condition being very serious he was removed to the Agarwala Surgical Nursing Home for efficient and energetic nursing and proper treatment under our direct supervision.

Investigations.—1. Blood examined on 20th November 1955 showed:—Total W.B.C. 7200 per cmm.; neutrophilis 69%; lymphocytes 26%; eosinophils 4%; and basophils 1%. No malarial parasites were found.

Blood examined on 21st November showed, total W.B.C. 13,700 per cmm.; neutrophils 82%; lymphocytes 17%; monocytes 1%; and eosinophils nil. No malarial parasites seen.

Blood sugar on 22nd November was 107 mg. per 100 cc. of blood (Leitz Photocolorimeter).

On 23rd November—Blood urea was 32 mg. per 100 cc. Serum bilirubin 0·15 mg. per 100 cc. of serum (indirect). Serum protein 6·2 g. per 100 cc. of serum; albumin 4·2 g.; globulin 2·0 g.; and albumin/globulin ratio 2·1 : 1 (by Leitz Photocolorimeter).

2. *Urine*:—On 22nd November. The reaction was alkaline; sp. gravity 1022; sugar, albumin, acetone, bile acids and bile pigments absent; calcium sulphate—present; Urobilinogen (Ehrlich's test) negative, and chlorides—present. The reaction was alkaline on the following day; sp. gravity 1020; sugar, albumin, acetone, bile acids, bile pigments absent. Urobilinogen test negative; and chlorides (calculated as sodium chloride) 8 g. per litre.

3. *C.S.F.*—On 21st November 1955:—Volume was 20 cc. clear; coagulum—nil; sediment—nil; sugar—present; albumin—no excess; globulin—nil; total W.B.C. 112 per cmm.; pus cells and R.B.C.—nil and a preponderance of lymphocytes.

4. *Stools*:—On 23rd November:—The reaction was alkaline; it had an offensive odour: mucus was present; E. coli cysts were present but no other abnormality.

Treatment.—(1) Inj. Coramine 1 ampoule 4 hourly on 20th November '55 given one at 11-20 p.m. and one at 3-20 a.m. and at 7-20 a.m. on 21st.

(2) B.A.L., B.P.—1½ ampoules (0·150 g.) I.M. 4 hourly from 6 p.m. on 20th November to 6 a.m. on 23rd November.

B.A.L., B.P.—1½ ampoules I.M. 6 hourly from 12 noon of 23rd November to 6 a.m. of 24th November.

B.A.L., B.P.—1 ampoule I.M. *b.d.* from 24th to 26th November.

B.A.L, B.P.—1 ampoule daily I.M. from 27th to 29th November.

(3) Achromycin Inj. 100 mg. I.M. at 12 midnight on 20th November.

Achromycin capsules 2 capsules (500 mg.) hourly from 21st to 26th November, and 6 hourly from 27th to 29th November.

Achromycin capsules, 1 capsule 6 hourly on 30th November and 1st December.

(4) Glucose 50% 50 cc. *plus* Redoxon *forte* 500 mg. inj. I.V. on 20th November. Glucose 50% 50 cc. *plus* Redoxon *forte* 500 mg. and Polybion 2 amp. *plus* Betabion (Vitamin B_1 Merck) 50 mg. Injection I.V. on 21st November morning.

Calcium gluconate 10% 10 cc. *plus* Redoxon *forte* 500 mg. and Polybion 2 ampoules *plus* Betabion 50 mg. inj. I.V. on 21st evening.

(5) Calcium gluconate 10% 10 cc. *plus* Betabion 100 mg. inj. I.V. every morning from 22nd to 29th November.

(6) Tablet Anthisan 100 mg.—One 8 hourly from 21st to 26th November. 100 mg.—One B.D. from 27th to 29th November. 100 mg.—One daily from 30th November to 6th December.

(7) Tablet Polybion *forte*—One *b.d.* from 22nd to 30th Nov.

(8) Tablet Redoxon 500 mg.—One *b.d.* from 22nd to 30th November.

(9) Paraldehyde injection 5 cc. I.M. once on 20th November at 6 p.m. and again on 22nd November at 2 a.m.

(10) Luminal injection 1 ampoule I.M. on 20th November at 2 p.m. Luminal pulv. gr. 1 on 22nd November at 11 a.m. Luminal

pulv. gr. ½ eight hourly on 22nd and 23rd November. Luminal pulv. gr. ½ *b.d.* on 24th November. Luminal pulv. gr. ½ at bed-time on 25th November.

(11) Lumbar puncture—Done on 21st November at 11-30 a.m. clear fluid, 20 cc. under slightly raised tension, at the rate of 68 drops per minute drawn out.

NOTE:—On discharge from the Nursing Home, the patient was advised to continue Polybion *forte* tablets one twice daily and Redoxon 200 mg. twice daily for 10 days and thereafter Polybion *forte* tablet one *plus* Redoxon 100 mg. twice daily for 10 days and then to stop all medicines.

Diet:—A Ryle's tube was passed through the nose of the patient at 11 p.m. on 20th November, and all feeds and oral medicines were administered through it till the morning of the 24th November.

Fluids:—About 4 pints of fluids, in 24 hours, made up of fruit juice, barley water, and glucose water were given. ¼ oz. of glucose or sugar was added to each feed. 3 to 4 oz. of feed was administered every time through the Ryle's tube at hourly intervals.

A chart was maintained for the total intake and total output in 24 hours.

On 24th November, a cup of thin Horlicks milk and 2 thin pieces of toast without butter and ½ banana were added morning and evening to the above fluid diet, as the patient regained consciousness.

On the 25th November, one egg and custard pudding were added to the above diet. On 26th and 27th November, 2 biscuits and a cup of light tea were allowed morning and evening.

From the 28th November, 2 *phulkas* with vegetable soup, mashed potato, a cup of milk, biscuits, toast with thin application of butter, Horlicks milk and fruit juice were given. The number of *phulkas* and quantity of other food was slowly increased as the patient felt fit enough to be discharged from the Nursing Home.

Progress of the patient.—The patient was admitted into the Nursing Home in an extremely grave condition and at one time we had little hope of the patient surviving the attack. However, we prescribed the above treatment and the diet schedule hoping that our efforts may be rewarded with success. The day to day progress has been tabluated for convenience. A 4-hourly temperature, pulse and respiration chart was maintained in the Nursing Home, but for convenience we have recorded only the figures for morning and evening (see *Table*, page 925). No jaundice was noticed in the patient throughout the illness.

Discussion.—The drug, Acetylarsan, used for the eosinophilic condition of the patient, which apparently caused the toxic encephalopathic condition is diethylamine 3 acetylamino-4-hydroxyphenyl-arsenate. It is a pentavalent arsenical compound, supplied in colourless solution in ampoules ready for use. It is supplied as a 23·6% solution for adults in ampoules of 3 cc.

Tabular Statement referred to in the penultimate para on p. 924

Date	Temperature 8 AM	Temperature 8 PM	Pulse 8 AM	Pulse 8 PM	Respiration 8 AM	Respiration 8 PM	Convulsions, epileptiform clonic spasms	Reflexes—knee, ankle, elbow jerks slightly brisk with plantar flexor	Pupils dilated, reacting to light not briskly	Ophthalmoscopic examination of fundus	Blood pressure	Liver	Lungs	Vomiting	Perspiration	Stool	Urine	General response and remarks
20th Nov.	99·4	101 at 10 pm.	—	130	—	56	Many from 12 noon to 6 p.m. at 15/20 mins. interval	Yes	Yes	Blurring of the fundus, scattered haemorrhage	120/80	No enlargement	Basal crepitations both sides	Yes once	Profuse	Once	passed	Unconscious since 12 noon grave condition
21st Nov.	101	101·8	120	140	46	50	Nil	,,	,,	Same	118/70	Same	Same but increase	,,	,,	Black stool bowel wash given	,,	Same
22nd Nov.	100·8	98·4	134	90	42	28	Violent one lasting about 15 mins. at 10 a.m.	,,	,,	Same	126/80	Same	Slight improvement	,,	,,	,,	,,	Same
23rd Nov	97·6	99	90	100	26	30	Nil	,,	,,	Same	130/85 140/85	Same	Same	,,	,,	once	Not passed catheterized 20 oz.	Semi-conscious evening
24th Nov.	98·2	99·4	96	98	26	28	,,	,,	Yes less dilated	Slight improvement	132/84	Tenderness	Much less congestion	,,	,,	no	passed	Conscious from *morning*
25th Nov.	98·4	99·3	94	100	24	28	,,	,,	Yes less dilated	Same	138/80	Same	Same	,,	Less	3 loose motions	,,	Conscious but weak
26th Nov.	98·4	98	96	94	20	20	,,	,,	Yes less dilated	Same	130/82	Less tenderness	Much better	,,	No	No	yes	Same
27th Nov.	98·4	98·8	100	100	22	24	,,	,,	Yes less dilated	Further clearing	128/82	Very little tenderness	Same	,,	,,	once	,,	Feels better
28th Nov.	98·2	98·4	96	90	20	20	,,	,,	Normal	Normal	126/82	No	No congestion	,,	,,	,,	,,	Same
29th Nov.	98	97·6	90	88	20	20	,,	,,	Normal	No haemorrhages	128/80	No tenderness	No congestion	,,	,,	twice	,,	Much better
30th Nov.	98	98·4	84	90	20	20	,,	,,	Normal	Clear	126/80	No	Normal	,,	,,	once	,,	Feels well discharge from N. home

Two groups of organic arsenic preparations are generally used in therapeutics. In both, the arsenic exists in a non-ionizable form and therefore, can be given in large doses. They are less toxic than the inorganic salts of arsenic but, do not produce the desired action immediately. The pentavalent compounds differ markedly from the trivalent in their excretion. Only a small proportion (about 15%) remains in the body after 24 hours, the greater part (about 85%) being rapidly excreted in the urine unaltered. Presumably the tissues are not capable of fixing the pentavalent compounds until they have been reduced to trivalent compounds, and this process is a slow one, slow enough to allow the kidneys, to excrete the greater part of the drug before it is reduced. The rate of excretion shows wide variation which accounts for the difference in toxicity and therapeutic activity.

According to individual variation, cases have been observed where symptoms of poisoning appeared and these effects varied from simple disturbance to grave and even fatal results.

The following factors influence the toxicity:—(*i*) abnormal toxicity of the drug; (*ii*) errors in technique; and (*iii*) susceptibility of the patient.

The particular case reported by us here seems to be due to special susceptibility of the patient to the drug or a sort of allergy to arsenic for the following reasons:—

(*i*) The patient showed toxic reactions only on the day after the fourth injection; actually two injections of full doses of 3 cc., at the two previous injections were given as reported, in 1 cc. and 2 cc. doses, and as such over-dosage of the drug can be ruled out.

(*ii*) The theory of cumulative poisoning due to the pentavalent arsenic preparation will not hold good, as the compound, is usually excreted rapidly.

(*iii*) A report was received of similar toxicity occurring at about the same time in the eldest brother of the patient, who was being treated for bronchial asthma with acetylarsan in Calcutta. He too showed a high eosinophil count in his blood. He was successfully treated in the P. G. Hospital, Calcutta. This brother developed the toxic signs and symptoms after the 5th injection. Our patient is the fifth brother in a family of 11 brothers and a sister. This coincidence of toxicity occurring almost at the same time in two brothers, in 2 different places at a distance of over 900 miles, is indeed peculiar and lends greater weight to our suggestion that both the brothers were allergic or hypersensitive to arsenic. A few other brothers and their only sister also suffer from allergic manifestations frequently. The sister was treated by one of us some time back for bronchial asthma with acetylarsan, as she too showed a high eosinophilia, but she did not exhibit any toxic symptoms.

The toxic symptoms of arsenic may be grouped into:—(*i*) immediate and early reactions, and (*ii*) severe late reactions.

Early reactions:—Prominent among these are flushing of the face, injection of the conjunctiva, œdema of the tongue and eyelids nausea, vomiting, profuse perspiration, cough, dyspnœa and precordial pain. These symptoms are known as nitritoid reaction or crisis. Herxheimer reaction also may occur as well as a febrile reaction with chill, nausea and vomiting within a few hours of administration of the drug. There may also be severe pain all over the body. The kidneys may show evidence of damage with albumin and casts.

Severe late reactions:—In addition to the above symptoms, the cerebrum and the liver may be involved. The cerebral symptoms, *i e.* the symptoms of arsenic encephalopathy appear suddenly. There is severe headache, vomiting, dyspnœa, epileptiform convulsions with clonic spasms followed by unconsciousness, suppression of urine, dilated pupils, coma and death. Three types of jaundice may also appear as toxic signs:—(*a*) early jaundice, (*b*) late jaundice, and (*c*) acute yellow atrophy of the liver.

For the treatment of the toxic effects in the case reported B.A.L. (B.P.) was used by us as the main antidote, supplemented by other drugs. The toxic action of arsenic is probably due to its reaction with dithiol-containing tissue proteins. B.A.L. or Dimercaprol is a dithiol compound, which is effective by competing for arsenic and thus protecting these tissue-proteins. The B.A.L. used (Boots) contained in each ampoule of two cc. 0·10 gm. of dimercaprol.

The patient was given only fluid and carbohydrate diet at the beginning of the treatment in order to protect the liver. Proteins and fats were completely withheld to start with. Betabion, the trade name of aneurine was given as it is an essential link in the utilization of carbohydrate. The oxidation of carbohydrate to carbon dioxide and water takes place normally as follows:—Carbohydrate→Lactic acid→Pyruvic acid→Carbon dioxide and water. Aneurine is essential for the breaking down of the pyruvic acid.

The possibility of the allergic factor playing a part was met by the administration of the anti-histaminic Anthisan. The hæmorrhagic factor was countered by the administration of calcium gluconate and Redoxon. The possibility of a virus infection or some other infective process causing high fever and leucocytosis was combated by the administration of the broad spectrum antibiotic, Achromycin and also by large doses of Vitamin C. The nutritional demands of B. complex group of vitamins in the case was tackled by the administration of Polybion from the beginning of the treatment. For controlling the convulsions and the irritability of the patient Paraldehyde and Luminal were used. To protect the liver, enough glucose was being given all the time.

The day to day sequence recorded here of symptoms before the case was diagnosed as arsenic encephalopathy will show how one can possibly miss such a grave diagnosis at the beginning.

Summary.—A case of arsenic encephalopathy following the administration of Acetylarsan, successfully treated with B.A.L. and other supporting drugs is reported. The rationale of administering the different drugs has been discussed. The possibility of allergy playing the main part in causing the toxicity is mentioned.

Acknowledgement.—Our thanks are due to Dr. P. C. Gupta, M.R.C.P., Civil Surgeon, Meerut, for confirming the diagnosis and for his valuable advice. We thank Dr. Susanta Sen, M.D., M.R.C.P., F.R.C.S., F.C.C.P. (U.S.A.), Physician of New Delhi for taking the trouble of coming to see our case and offering his valuable advice on treatment. Our special thanks are due to Lt. Col. B. C. Roy, A.M.C., President, Army Medical Selection Board, Meerut, for his valuable advice, and day to day guidance throughout the whole period of treatment. Our thanks are also due to Dr. M. Prakash, M.B., B.S., D.T.M, for the laboratory investigations. We thank Dr. O. P. Agarwala, M.B., B.S., and all the members of the Nursing Staff of his Nursing Home for the care they bestowed on our patient.

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THE TREATMENT OF TUBERCULOUS LUNG CAVITIES BY CONTINUOUS INTRAPULMONARY DRIP: A PRELIMINARY REPORT

Eight patients with cavitary pulmonary tuberculosis were treated by insertion of a rubber catheter of suitable size into the cavity to be treated and by running antibiotics in solution into the cavity, combined with cavity drainage. The solution used consisted of 1·5 to 3 gm. of isoniazid in 60 or 120 cc., respectively, which was used to dissolve 5 gm. of streptomycin, 1,000,000 units of penicillin, and 1 gm. of oxytetracycline. The total instillation was so regulated as to require eight hours, including occasional periods when the drip was shut off to give the patient a rest. Depending on the condition of the patient and response to the drip, the procedure was repeated at weekly or biweekly intervals. Sputum output increased greatly. The patients became febrile, usually by the end of the first day. This was caused by liquefaction of material within the cavity and dissemination and absorption of toxic products. Adequate amounts of antibiotics were given parenterally or by mouth, the antibiotic of choice being selected by means of preliminary sensitivity tests on secondary invaders previously obtained from the cavity. One gram of streptomycin was given daily together with maximum doses of isoniazid in the earlier weeks of treatment by intrapulmonary drip, and between each treatment water-sealed drainage of the cavity was maintained. Complete cavity closure was obtained in three patients. The remaining five were still undergoing treatment, but in each of these successful results were anticipated because great reduction in cavity size and sputum output had already occurred. In every patient there remained a second or third cavity yet to be treated; therefore, at this stage sputum conversion had not occurred to enhance the results of treatment. Following this form of "medical curettage" of a tuberculous cavity, slight blood-staining of the sputum was to be expected and, apart from the necessity for reassuring the patient, was ignored.—(*Brit. J. Tuberc.*, *50*: 181-186, April 1956 via *J.A.M.A.*).

THE STRANGULATION OF THE SIGMOID COLON IN A MESENTERIC HOLE

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INTERNAL strangulation of the bowels due to developmental anomalies of the mesentery and the rotation of the gut has often been reported in literature. The common anomalies are: retromesocolic hernia, diaphragmatic hernias and congenital bands leading to such a complication. The retromesocolic may be sub-divided into: paraduodenal; paracæcal, perimesenteric and retrosigmoid varieties, according to the site of development of the hernia. Herniation and strangulation of the bowels in the lesser sac and other natural peritoneal spaces are well recognized conditions, but few authors have reported about the mesenteric rents causing internal strangulation. Hamilton Bailey mentions a case in which he found a rent in the falciform ligament of the liver and mentions the transverse mesocolon and broad ligament as possible sites of rents. In our case, we found a rent in the mesentery at the level of the duodeno-jejunal flexure causing strangulation of the sigmoid colon, which is a rare condition. Gangrene of the whole of the small intestines except the first few inches and of the large intestines up to the right half of the transverse colon was imminent due to the compression of the superior mesenteric artery by the strangulated loop. It is very unusual for the sigmoid colon to have such a loose mesentery that could be drawn up so high as to enter the mesenteric rent at the level of the duodeno-jejunal flexure.

The operative mortality in cases of internal strangulation is usually very high and Lahey says that it is more than 50%, in cases of strangulation at the level of the duodeno-jejunal flexure. In view of the abnormal features noted, a detailed report of a case which was operated by us and which had an uneventful recovery is given below :—

Case report.—B. C., a Hindu male, washerman, aged 50, was admitted to the surgical department of the S. S. Hospital, B. H. U. at 9 a.m. on 12-3-'56 with acute abdominal pain of sudden onset at 2 a.m. He had three or four vomits and had not passed any flatus, stool or urine till the time of admission. He was in great agony; on examination, the tongue was coated and dry, pulse was 96 p.m., of low volume and tension and the respiration was 22 p.m. The examination of the abdomen revealed a moderate distention limited to the central area and the right flank, moving with respiration. No

rigidity of the abdominal wall was felt but it was tender all over on deep palpation and moderately tympanitic. All the sites of the hernial orifices were normal. Peristaltic sounds were almost absent. Rectal examination revealed nothing abnormal except a few distended loops of the intestines in the pouch of Douglas.

A provisional diagnosis of intestinal obstruction was made with a potential possibility of internal strangulation. Enema gave no result. Supportive treatment by infusion of glucose-saline was instituted and the patient watched. After some time the condition of the patient showed deterioration. His blood pressure was low, 90/70 m.m. Hg. and the pulse rate had risen to 130 p.m. Distention of the abdomen had increased with complete cessation of peristaltic sounds. Immediate operation was decided upon and pre-operatively an injection of morphine gr. 1/6 and an infusion of one pint of plasmosan were given.

Operation notes.—Under local anæsthesia supplemented with light ether, the abdomen was opened by median incision. On opening the peritoneum a small amount of serosanguinous fluid escaped. Next appeared the distended loops of the small intestine which had become almost tarry black. On exploration it was found that the whole of the small intestines except the first few inches were distended and grossly discoloured. The cæcum, appendix, ascending colon and the right half of the transverse colon were also discoloured. The presence of extensive vascular changes led us to suspect embolism of the superior mesenteric artery. Therefore, the root of the mesentery was explored, where a loop of the small intestines with its mesentery was forming a tight band and a portion of the large intestines was seen passing under it. The colon on the right and left side of the band was enormously distended and hence it was difficult to determine the exact portion of the large intestine which was strangulated. A finger could be passed under the band from left to right and could be seen without any covering. An attempt made to decompress the strangulated loop by pressure proved unsuccessful. The flatus tube was passed into the rectum and with only about 10" of the tube inside, its tip could be felt in the loop at the site of the strangulation which confirmed the strangulated loop to be that of the sigmoid. The flatus tube was manœuvred to the right side of the band and decompression done easily; the strangulated loop of sigmoid was thereby reduced and the colour of the intestines started to show improvement. After reduction, the loop was found to have a long mesentery, which further confirmed that it was the sigmoid colon. After testing the viability of the intestines and confirming the pulsation in the main braches of the superior mesenteric artery, the intestines were returned to the abdomen. At this stage the condition of the patient was reported bad by the anæsthetist so the repair of the rent was abandoned and the abdomen closed quickly by through and through sutures. Veritol and an

increase in the rate of infusion brought the patient round and he was transferred to the ward.

Postoperative period.—Except for the distention of the abdomen and a few bilious vomitings during first 48 hours and blood-stained stools on the second post-operative day the convalescene was uneventful. The stitches were removed on the 10th day. The patient was discharged on the 24th day of the operation. A follow-up after 2 months showed a slight nutritional œdema for which suitable treatment was advised.

Discussion.—The following points are of interest in this case:–

1. The distended colon which was strangulated was in the general peritoneal cavity and did not have any mesenteric covering as would usually be expected in paraduodenal hernias.

2. The rent of the mesentery was clearly demonstrated by the finger passed under the constricting band over which no covering was demonstrated.

3. The rent was bounded anteriorly by the duodeno-jejunal flexure and superior mesenteric artery and posteriorly by the vertebral column and adjoining structures.

4. A loop of intestines anterior to the rent was tightly drawn over the strangulated loop.

5. The strangulated mass produced a compression of the superior mesenteric artery which threatened gangrene in the whole length of the bowel supplied by it.

Strangulations at this level which produce the compression of the superior mesenteric artery are mainly due to herniation in the paraduodenal spaces as in the fossa of Waldeyer, which itself is rare amongst the periduodenal hernias, (12% of all periduodenal hernias). It is worth noting that the boundaries of the rent in our case corresponded with the boundaries of the opening of fossa of Waldeyer. Paraduodenal hernias constitute 58% of all internal strangulations.

The other condition at this level which has the possibility of producing the compression of the superior mesenteric artery is the internal strangulation due to the presence of mesocolico-jejunal membrane which is a band of various length extending from the under surface of the mesocolon to the antimesenteric border of the proximal part of the jejunum. In this condition the strangulated loop will always be anterior to the duodenum. In our case no such membrane was demonstrated and herniation was posterior to the duodeno-jejunal flexure

Summary.—1. A case of intestinal obstruction due to internal strangulation is described.

2. The strangulation was found to have occurred due to a rent in the mesentery, at the level of duodeno-jejunal flexures.

3. The strangulated loop was in the sigmoid colon.

4. The mass of the strangulated loop led to the compression of the sup. mesenteric artrey which threatened gangrene of the gut supplied by it.

5. The case had an uneventful post-operative recovery. Very few cases of this kind have come to our notice in the available literature. We shall be glad if other readers will throw further light on this type of strangulation, from their own experience.

Acknowledgement.—Our special thanks are due to Col. J. B. Vaidya, Hon. Physician and Surgeon, S. S. Hospital, B. H. U. for his valuable help during the operation and for the subsequent follow-up of the case and to Dr. L. M. Singh, Emergency Medical Officer for conducting the case.

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CLINICAL TRIALS ON A LAXATIVE PREPARATION OF PURE SENNA GLYCOSIDES*

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ALTHOUGH constipation is not a major malady, the general practitioner has to face it in his day-to-day practice. Many causes may be reponsible for constipation. However, one important group is caused by atony of the colon. It may be due to gradual loss of the gastro-colic reflex, either due to old age, or temporarily during the post-operative period and in pregnancy. The more common types are those caused by a progressive neglect to respond to the defæcation reflex ; this is due to a variety of reasons, *viz.*, laziness, insanitary and unsuitable conditions of the privy, etc., the conditioned reflex being lost, resulting in constipation.

There is no dearth of laxatives offered in the market for the treatment of constipation. Unfortunately many of them act on the whole gastro-intestinal tract and frequently cause diarrhœa which sometimes persists after a dose of laxative is taken, as such drugs hustle the half-digested contents of the small intestine into the cæcum. The half-digested materials undergo fermentation and putrefaction and release toxins which irritate the colon.[1] Senna as a galenical preparation, has been known for ages to be a laxative agent free from the untoward reactions because it acts specifically on the colon without disturbing the upper gastro-intestinal tract. The galenical preparations of senna suffer however, from a disadvantage in that they vary considerably in their potency, and contain saponins, resins, etc. which irritate the gastro-intestinal tract. Consequently their action is unpredictable and frequently give rise to unpleasant side-effects such as griping, pains, etc.[2]

* *Pursennid :* manufactured by Messrs. Sandoz Ltd., Basle, Switzerland.

Stoll and his co-workers[3,4] isolated sennosides A and B in a pure form from senna and found that these two glycosides are responsible for the laxative action of senna. These two glycosides have subsequently been marketed as their calcium salts in equal proportions in the preparation Pursennid

Pharmacology.—Straub and Triendl[5] and Valette[6] have shown that the sennosides A and B have little or no action on the small intestine ; they are however absorbed from there into the blood stream and then again excreted in the colon where they exert a specific effect on the propulsive motility. It is further stated that the aglycones of the sennosides are responsible for this action. According to Henderson,[7] senna decreases the normal anti-peristaltic waves in the cæcum and the ascending colon, thus leading to a decreased water absorption and greater bulk.

Material and methods.—Pursennid was tried in several cases of constipation met with routinely in medical wards, after excludiug organic causes, faulty habits and dietetic errors, which may cause constipation. In most cases, two tablets were usually given by mouth at bed time the dose being adjusted according to the needs of the patient. Routine investigations were carried out in all cases and recorded. The time taken by the drug to act, and any side-reaction complained of, by the patient were noted.

Past history of constipation and any laxative habit were also noted. The results obtained with this preparation in 26 cases of atonic constipation, are given below :—

TABLE I

No.	Age, sex	Main ailment for which treated	Previous laxative habit if any	Onset of action	Stool and consistency	Remarks
1.	68, Male	Congestive cardiac failure, secondary to high B.P.		8 hrs.	2 semi-solid stools	Good
2.	34, Male	Mitral stenosis		7 hrs.	1 to 2 stools	Good
3.	35, Male	Constipated for 2 months, syphilitic arthritis		8 hrs.	1 to 2 stools	Good
4.	50, Male	Distention of abdomen	Mag. Sulph on and off	8 hrs.	2 to 3 stools	Good
5.	40, Male	Cirrhosis of the liver		8 to 9 hrs.	1 to 2 semi-solid stools	Good
6.	40, Male	Congestive cardiac failure due to chronic bronchitis		10 hrs.	2 stools	Good
7.	60, Male			7 hrs.	1 or 2 loose motions	Good
8.	68, Male	General debility, constipation. Stools every 3rd day		8 hrs.	1 semi-solid stool	Good

TABLE I—(*Contd.*)

No.	Age, sex	Main ailment for which treated	Previous laxative habit if any	Onset of action	Stool and consistency	Remarks
9.	35, Male	Cirrhosis of the liver		8 hrs.	2 stools	Good
10.	20, Female	Heaviness in abdomen	Brooklax Tabs. on and off	9 hrs.	2 stools	Good
11.	17, Female	Chronic amœbiasis, alternative constipation and diarrhœa	Mag. Sulph on and off	6 hrs.	2 loose stools	Good
12.	60, Male	Anæmia		5 hrs.	3 to 4 loose stools	Fair
13.	40, Male	Congestive cardiac failure		6 hrs.	2 stools	Good
14.	40, Male	Constipation	Senna-pod infusion	7 hrs.	2 loose motions	Good
15.	40, Male	Operated for hernia		7 hrs.	2 loose motions	Good Tablets given on 8th day of operation
16.	40, Male	Congestive cardiac failure	Brooklax Tabs.	8 hrs.	1 stool	Good
17.	45, Female	Amœbiasis, constipation and pain in abdomen		6 hrs.	2 stools	Fair
18.	70, Male	Constipation	Castor oil	8 hrs.	2 to 3 stools	Good
19.	26, Male	Pain in abdomen and constipation		10 hrs.	1 stool	Fair
20.	68, Male	Constipation		8 hrs.	2 semi-solid [stools	Good

Persons who were predisposed to spastic constipation and complained of griping after Pursennid, were relieved by the administration of a belladonna mixture or by reducing the dose. The results observed in this group are given below :—

TABLE II

21.	60, Male	Congestive cardiac failure		8 hrs.	2 semi-solid stools	Good
22.	32, Male	Amœbiasis alternating diarrhœa and constipation		7 hrs.	2 stools	Fair
23.	95, Male	Constipation	Mag. Sulph	6 hrs.	1 to 2 stools	Fair
24.	30, Male	Amœbiasis alternating constipation and diarrhœa	Mag. Sulph	8 hrs.	1 to 2 stools	Good
25.	25, Male	Constipation	Mag. Sulph	8 hrs.	1 to 2 stools	Fair
26.	30, Male	Constipation	Mag. Sulph Castor oil Liquid paraffin	10 hrs.	2 to 3 stools	Fair

Discussion.—Out of 26 cases treated with Pursennid the results were good in 19 cases while the rest showed fair response. Excellent results were seen in elderly, debilitated and bed-ridden patients. In cardiac patients the drug proved to be particularly valuable because it prevented unnecessary exertion to them. Evacuation in most cases occurred within 8 hours of the administration of the drug. The majority of the patients had two stools of semi-solid consistency. The patients did not show any signs of excessive water loss. Some patients who were predisposed to spastic constipation (about 25%), complained of griping after taking the drug, which was relieved either by the administration of a belladonna mixture or by reducing the dose of the drug.

Summary.—(1) A laxative preparation (Pursennid) containing pure glycosides of senna have been tried in 26 cases. The results have been very favourable in most of them.

(2) The only side-effect noticed was griping, which occurred only in a few cases predisposed to spastic constipation. The griping was relieved either by reducing the dose of Pursennid or by the administration of a belladonna mixture following the glycosides.

Acknowledgement.—My thanks are due to Dr. N. J. Modi, Hony. Physician, G, T. Hospital for his encouragement and guidance and to Dr. M. V. Modi, Superintendent, G, T. Hospital for affording facilities in the hospital and according permission to publish this paper. My thanks are also due to Messrs Sandoz Products (Private) Ltd., Bombay, for a liberal supply of Pursennid for trial.

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IS PREMATURE BIRTH PREVENTABLE

The birth weights of 1,683 consecutive, single, live-born infants delivered after spontaneous onset of labour were determined. These birthweights produced a normal distribution curve with an incidence of prematurity of 8.26%, 137 of the infants being premature by the criterion of a birth-weight of 5½ lb. or less. The three most commonly listed causes of premature birth, (premature rupture of the membranes, toxæmia, and bleeding complications of pregnancy) were determined for both premature and full-term infants in this series. Of the 137 premature infants, premature rupture of the membranes may have caused 15 of the premature births, toxæmia 3, and placenta prævia and abruptio placentæ 10, a total of 28 premature births (20%). These complications of pregnancy do not necessarily cause premature labour. In most cases premature birth is probably not preventable. If this assumption is correct, the best hope for obstetric salvage of premature infants depends on postponement of delivery as long as it is maternally and fœtally feasible in obstetric complication and, probably more important, once labour becomes established, the determination of the obstetric techniques that will deliver the premature infant with minimal damage to its vital systems.—(*Obst. & Gynæc., 7 :* 496-502, May 1956, via *J. of Am. Med. Assoc.*).

SEDATION WITH ANALGESIA IN OCULAR SURGERY

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PERFECT sedation with analgesia has been obtained by the combination of two drugs, *viz.*, Chlorpromazine* and Pethidine*. Chlorpromazine intensifies and prolongs the analgesic effect of pethidine and effectively suppresses the nausea and vomiting frequently caused by the administration of pethidine alone. Chlorpromazine has also the unique property of removing from the mind of the patient all the apprehension and fear of an operation. The combination abolishes the reflexes of pain, cough, and sneezing, and there is no retention of urine.

Both the drugs are combined and given intramuscularly with most satisfactory results. The dose of pethidine is kept constant at 100 mg. and is combined with chlorpromazine from 12 to 20 mg. up to a maximum of 25 mg given intramuscularly. Since large doses of chlorpromazine produce a fall in blood-pressure, it should be administered cautiously as per above mentioned dosage, consistent with the physique of the patient. The lower limit of 12 mg. is used for thinly-built, old patients with low blood-pressure and the maximum dose of 25 mg. for heavily-built and plethoric patients especially when such patients have a high blood-pressure. These two drugs can be combined in the same syringe and injected intramuscularly half an hour before the operation and the patient is then kept in a recumbent position. If an over-dose of chlorpromazine causes a great fall in blood-pressure, there need be no alarm as the same can be readily corrected by immediate parenteral administration of drugs like Methedrine, which raise the blood-pressure by producing peripheral vaso-constriction. Hence the usual average dose intramuscularly of 100 mg. of pethidine combined with 12 to 20 mg. of chlorpromazine gives the most satisfactory results by effecting perfect sedation and generalized analgesia. Excepting for some sedative on the previous night, no other sedation should be administered before the operation. The intravenous use of this drug has some drawbacks and no added advantage.

During and after the operation the patient remains in a relaxed condition often going into a slumber from which he can readily be aroused. The usual duration of the effect is from 3 to 6 hours and if required the same dose can be repeated every 6 to 8 hours for post-operative sedation. Such a condition during an operation is of great advantage in dealing with nervous, unruly and highly-strung patients as well as in painful diseases ; this eliminates in many cases the necessity for administering general anæsthesia. Besides cataract

*The drugs used were Chlorpromazine hydrochloride (*Largactil*) 50 mg. in 2 cc. ampoules of May and Baker (India) Ltd. and Pethidine (*Uni-pethidine*) of the Unichem Laboratories, Bombay.

extractions, this mode of sedation with analgesia has been found to be of great advantage in painful eye-conditions like acute glaucoma enucleation and evisceration, etc. It is also of advantage in cough and in patients with hypertension where, with a slightly higher dose of chlorpromazine, the blood-pressure can be brought down to a safe level. In extra-ocular operations, after resting for about an hour or two the patients may be sent home without any untoward symptom. It is hardly necessary to mention that the usual anæsthesia with surface instillation, infiltration, retro-bulbar ciliary and facial nerve-block wherever necessary in different eye operations are essential requisites, as per routine practice. This technique was not used on children since general anæsthesia is necessary for surgery of the eye in children.

During the operation the patients have a feeling of getting the operation done as under general anæsthesia and the surgeon has a quiet and relaxed patient as under "Pentothal anæsthesia" with the added advantage of being able to secure the patient's co-operation whenever required. This technique has produced effective analgesia and sedation with perfect safety in ophthalmic surgery ; *it must prove useful in other branches of surgery as well.*

This method of sedation has been tried in over 350 cases of various eye operations performed at the Sir C. J. Ophthalmic Hospital, (J. J. Group of Hospitals) Bombay.

TREATMENT OF ENTERIC FEVER

A Survey of 44 Cases

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IN September last 44 patients suffering from enteric fever were admitted and treated by me in the Civil Hospital, Hamirpur, District Kangra, Pb. Twelve of them were adult males, 23 adult females and nine children above 10 years of age. Thirtynine cases were treated with Chloromycetin, and 12 had relapses.

Five were treated with other drugs and there was one relapse. Of the 13 cases of relapses the first relapse occurred in 7 cases, a second in 4, a third in 1 and a fourth in another.

Four cases relapsed with no interval of actual apyrexia and so were continuous with the primary fever ; in nine cases relapses occurred after the termination of the original fever. All cases were cured.

SYMPTOMS.—1. Headache was present in nearly all especially during the early part of the disease ; constipation was extremely common and diarrhœa was observed in one case. The spleen was enlarged, in 4 cases ; fever was remittent ; the tongue was dry with a band of dry white fur on each side, the sides, tip and middle of the tongue being clean and red.

INTESTINAL SYMPTOMS:—The abdomen was full and distended, a little tender but no pain was observed and no hæmorrhage. Temporary deafness was observed in 80% of the cases. The urine was scanty and dark. There were no nervous or cardiac symptoms; the complications included parotitis in 1, acute nephritis 1, periostitis of the metatarsal bones in 1, bronchitis 2, and delirium in 2.

RELEVANT OBSERVATIONS:—(1) Relapses were more common in cases treated with Chloromycetin than in those treated with other drugs. (2) It was almost a routine practice to give quinine bihydrochlor gr. 10 in 2 cc. *i.m.*, to every patient in order to exclude malaria, laboratory diagnosis not being possible. (3) Cases having remittent fever for 5 to 6 days and cases where the temperature dropped down to normal with the quinine injection were labelled as malarial fever. (4) Chloromycetin one Kapseal twice daily was continued in cases treated with the drug for two days after the termination of the original fever. (5) Relapses were observed, continuous with the primary fever as well as some days after the termination of the original fever. (6) Relapses were marked generally after taking any food other than milk also in a few cases where the patients got out of bed and walked a few paces. (7) Two cases were admitted, of meningitis (*a*) with coma (*b*) with coma and convulsions. They were given glucose saline (drip method) 1 pint per day for two days and Chloromycetin. Both cases recovered.

Treatment.—1. Chloromycetin one Kapseal was given every 6 hours in moderate cases and every four hours in severe cases till the temperature came down to normal; then one Kapseal twice a day for two days after the temperature became normal and Vitamin B complex (tablet or elixir) was given throughout the course of the disease to combat vitamin deficiency. The patients were given glucose water and milk diet.

My grateful thanks are due to Dr. H. S. Bawa, Civil Surgeon, for kindly allowing me to publish this case report.

THE PHYSICIAN'S AIM

The physician of today, better realizing the limitations of bacteriological and other technical aids, is experiencing the need of returning to the patient's bedside, from which medicine should never have separated itself. With the extreme swing of the pendulum too much faith has sometimes been placed on the pronouncements of the laboratory when, forgetting the importance of the clinical picture, physicians have based their activities too exclusively on laboratory criteria. For some years now physicians have tended, through ignorance of the possibilities and limitations of laboratory methods, either to place too much reliance on what came out of the four walls of the laboratory, or not to take advantage of the information that it should properly give They tended to pay more attention to the evidence of the microscope and chemical reagents than to information obtained by their own senses from examination of the patients in the wards of the hospitals.—(A History of Medicine: from *The Annals of Allergy*, July-August, 1956).

ANAEMIA AND ANXIETY NEUROSIS

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THE normal hæmoglobin value of blood in healthy young adults has been studied by several workers, but such work has mostly been on young students in different medical colleges; they are usually very well-fed and we cannot therefore infer that our average population has 100% hæmoglobin. Also it has recently been suggested that a few nervous symptoms can be produced by iron deficiency; so we decided to investigate and confirm this finding and undertook a survey of the hæmoglobin percentage among all the people attending our out-patients' department Only those were selected who apparently looked normal without being anæmic. The first group included 100 female patients from families with an income of Rs. 100/- per month; we are continuing our study with various other groups. The results of the study of the first group are given below:—

Signs of anaemia.—Ten % of cases showed paleness of nails in contrast with normal pink face and conjunctivæ and the hæmoglobin was below 74%. One case had 80% hæmoglobin but showed a soft systolic murmur which disappeared with the treatment for anæmia; 2% had a pale face as the only sign of anæmia. Six% of cases had opaque nails but this had no constant relation with the presence or degree of anæmia.

Symptoms of anxiety.—22% cases complained of symptoms resembling those of anxiety-neurosis and their hæmoglobin was between 60 and 80%. In 50% of these cases the symptoms disappeared with the administration of hæmatinics while others required treatment for anxiety neurosis.

Findings.—(*Haemoglobin 100% = 15·5 g.%*)

Hb. value.	No. of persons	Hb. value.	No. of persons
100 p.c.	none	70 p.c.	36 p.c.
90 p.c.	4 p.c.	60 p.c.	33 p.c.
80 p.c.	7 p.c.	50 p.c.	20 p.c.

Conclusion.—It was confirmed that a severe degree of anæmia can exist without any physical signs and so examination for hæmoglobin should form a part of the general examination of patients A case of mild anæmia may very often show symptoms of anxiety neurosis with no physical signs. The low hæmoglobin percentage is the ætiological factor in these cases. White and opaque nails are no index of anæmia.

The average hæmoglobin in this class of people was between 60% to 70% of normal which shows a state of nutritional deficiency; anæmia exists among members in families with an income of one hundred rupees a month; it *is a potent cause of chronic ill-health and may also predispose to various other disorders.*

My grateful thanks are due to Dr. Nisar Ahmad and other house physicians for their useful help.

MEDICAL ASPECT OF MITRAL COMMISSUROTOMY

In view of the surprising figures that 500 to 800 out of every 100,000 persons are affected with mitral stenosis, the importance of surgical treatment of this lesion is obvious. Mitral commissurotomy has now been performed in more than 6,000 patients in many parts of the world and is thus past the experimental stage. The over-all mortality rate is about 10%. Under very favourable conditions it is as low as 1 to 2%, but rises to about 33%, if the operation is performed during the last stages of the disease when right heart failure is present. Early results are satisfactory in about 75% of the cases, and late results seem to be equally favourable. But consistent medical treatment prior to operation and psychological factors also account for the results, in addition to surgical aspects. Although statistical evaluation of late results is still outstanding, it may be assumed that that the condition existing during the first post-operative year is maintained. If mitral commissurotomy is carried out properly, recurrence is comparatively rare. The ultimate fate of the operated patient depends to a great extent on the treatment and prophylaxis of the causative rheumatic infection. Antibiotics play an important role. Although indications for the operation are not yet clearly defined, surgery should not be resorted to during the first stages of the disease, while symptoms are still uncharacteristic. On the other hand there should not be excessive delay in operating. Additional valvular defects constitute a contra-indication, if the resulting cardiovascular impairment is of the same severity as that caused by the mitral stenosis. Operation during an acute rheumatic attack should also be retained from, except in cases where circulatory failure is so pronounced as to constitute danger to life (pulmonary œdema). Whereas purely mechanical failure of the right heart does not entirely rule out operation, indications are more doubtful as regards cases with cardiac dilatation and failure due to previous or acute myocarditis. It should, however, be mentioned that commissurotomy has favourable effects on the myocardium. Cardiac catheterization and angiocardiography can generally be dispensed with for both the diagnosis and the decision whether to operate: the usual clinical, radiological and electrocardiographic methods are adequate. Early diagnosis of mitral stenosis by the general practitioner still remains the most important factor, as this gives the cardiac surgeon a chance to operate before the right heart has failed.—(Halhuber, M. J. in *Wien. Med Wschr, 106:* 1956 via *Germ. Med. Monthly*).

PRACTICE OF MEDICINE

The application of the principles of science to the diagnosis and treatment of disease is only one limited aspect of medical practice. The practice of medicine in its broadest sense includes the whole relationship of the physician with his patient. It is an art, based to an increasing extent on the medical sciences, but comprising much that still remains outside the realm of any science. The art of medicine and the science of medicine are not antagonistic but supplementary to each other. There is no more contraindication between the science of medicine and the art of medicine than between the science of æronautics and the art of flying.—(The Care of the Patient: from *Annals of Allergy*, July-August, 1956).

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Editorials

MEDICAL RESEARCH IN INDIA

(PROSPEROUS DAYS AHEAD)

MEDICAL RESEARCH is coming into greater prominence now, and this is as it should be. At the seventh annual session of the Indian Association of Pathologists held at Mysore on the 14th November last, Mr. MANJAPPA, the State Minister for Education, emphasized the important role of pathologists in the reduction of human suffering, and pleaded for a psychological and scientific study of the popular belief among people concerning the value of prayer in curing diseases. This was the subject of a detailed study by means of questionnaires and other scientific methods by leading doctors both of medicine and of divinity in England and their conclusions were published in a lengthy report, a few months ago in the *British Medical Journal*. The report did not give unqualified support to the belief but certainly favoured resorting to prayers as a psycho-therapeutic aid to medical therapy.

Shri Dr. C. G. PANDIT, Director of the Indian Council of Medical Research who presided pleaded strongly for cohesion both within the medical science and the world at large in the study of diseases. He said, in science there were no frontiers. Science had to violate them, for it was there that the advance of knowledge took place. Diseases did not respect national boundaries and linguistic divisions. The tempo of modern transport had heightened the need for more wide-spread recognition of the truth that all mankind should face the problem of health as one unit, no matter where they were. He considered that there could be only one world, one future, and one destiny for man. Sri A. B. SHETTY, the new Mysore State Health Minister stressed the need to provide greater facilities for research in medical colleges, as such facilities alone decided the quality of the medical graduates and their medical acumen.

Inaugurating a session of the Scientific Advisory Board and the Advisory Committees of the Indian Council of Medical Research, in the absence of the Union Health Minister, Mr. PILLAI, Secretary of the Union Health Ministry and Vice-President of the Council, revealed the intentions of the Union Government to establish a permanent cadre of medical research workers. Said he, "we have been feeling for some time that the terms of service and the emoluments offered to medical research workers are unsatisfactory, and we are quite convinced that research should be entrusted to full-time workers, who are adequately paid, and are assured of a reasonable security of service.....We have proposed to meet the situation by establishing a research cadre, and it is my hope that before long we shall have a permanent cadre of research workers on an equal footing with the teaching cadre, enjoying the same status in the Universities as the teachers do."

Mr. PILLAI announced that the Rockefeller Foundation had granted Rs 4,50,000 for the expansion of the neuropathological unit in Bombay to conduct clinical studies of nervous diseases and that arrangements had been completed to establish a Blood Group Research Centre in Bombay. He reviewed the progress made in the Council's schemes of research on various branches of medicine, nutrition, environmental sanitation, etc., during the first five-year plan period and than outlined the fresh plans and schemes laid out for the Second Five-Year period.*

The current year marked an important milestone in the evolution of the Council. During the First Plan period the Council received Rs. 12,00,000 as grant, in addition to the annual standing grant of Rs. 12,00,000.

Under the Second Plan, a provision of Rs. 4,12,00,000 has been made for medical research, and we fervently hope that in the preparation of new plans the guiding principle would be that medical research shall be concerned not merely with the study of diseases of man, but also with the study of factors that promote his mental and physical well-being.

It is indeed a matter of sincere gratification that the Council has been laying foundations silently and unostentatiously for the promotion of health and for the growth of the spirit of scientific research. We are glad to know, in evidence of this, that this year, the Council received the largest number of research proposals ever, —nearly 300—and that therefore, Medical Research in India is well on its way to find fields yet unexplored and will eventually add to the progress of science and to the sum total of human happiness.

* A summary of these was given in a review, we published in the ANTISEPTIC for October 1956. of the Council's programme of researches during the II Five-Year period.

OPHTHALMOLOGISTS IN CONFERENCE AT COIMBATORE

THE Fourth Madras State Ophthalmic Conference was held at Coimbatore on the 20th of October 1956 and was attended by many delegates from various parts of the State. Dr. S. N. COOPER who presided over the conference regretted that ophthalmologists had not been *persona grata* with the health authorities and even with the lay people in general; conditions were however improving and their importance in the preventive and curative fields is being increasingly appreciated by the public. They are now considered as primary physicians. "Unfortunately the Governments holding the reins of the Health Department did not distinguish," said Dr. COOPER, "between ophthalmic science and ophthalmic relief. What each of them would like to see would be a district eye hospital manned by trained personnel in every district. The yardstick of the Government was the number of eye operations performed by one or the other unit, without paying any attention to the prevention of blindness which was caused by many other conditions, besides cataract. For this reason, Health Ministers have sponsored more readily eye-camps run by irresponsible individuals than helping the establishment of district eye hospitals."

In India two types of ophthalmic surgeons are required—District Surgeons who could give expert ophthalmic help to the district population (not only remove cataracts), and teachers. The functions of these two are manifestly quite different. At present the former need is being served mostly by general practitioners who also do some ophthalmic work. They know how to prescribe glasses, do minor operations and remove cataracts, etc. For lack of sufficient trained ophthalmologists this make-shift arrangement is still needed in many parts of India.

With the establishment of post-graduate diplomas, it is to be hoped that within the next few years every general practitioner who now practises ophthalmology as a side-issue will have to take a recognised diploma, however well he might be able to operate.

With regard to the second of the two issues raised by Dr. COOPER regarding highly qualified teachers, it is indeed a happy augury that some of the Indian Universities have started the M.S. degree course in ophthalmology. In most Universities this degree is insisted on as essential for teaching the subject.

After stating that the services of all doctors are necessary in treating certain types of cases, Dr. COOPER added: "In a socialist State where disparity of incomes is fast dwindling, an institution, where a collective approach to disease is encouraged, will not be difficult to create. Full-time professorships, with well-chosen personnel, will remove the disparity of importance, and so of income, between the different branches of medicine, for one is as important as the other, and can not survive without the other."

We are fully in agreement with these observations of Dr. Cooper, which are manifestly the outcome of his ripe experience and wide knowledge of men and things.

He was however, using strong language even to the point of being needlessly bitter, when he said, "The mere need for cataract operators should not be an excuse to allow half-trained people unlimited scope for operative work; in South India not only such latitude was given, but even their work was glorified!"

While we do not wish to appear to accord unqualified support or approval to the ophthalmic procedures referred to by Dr. Cooper, we have no hesitation in saying that such organized relief in various centres under some sort of control, must have resulted in suppressing or weeding out to a large extent the charlatan, quack and gouger whose unwarranted surgery and medications have been playing havoc with the eyes of the illiterate and semi-literate rural population. The need for scientific ophthalmic procedures to afford relief to those requiring the same is unquestionably great, but several hundred qualified eye doctors will be required for the purpose and till such time as we are in a position to produce this large number of medical men with the requisite qualifications, we cannot afford to cavil at organized and systematic team-work, by qualified medical men, who may lack specialized ophthalmological training.

LEPROSY CONTROL IN INDIA

Addressing a Press Conference at the Hind Kusht Nivarana Sangh at Mylapore on the 23rd October 1956, Mr. Raoul Follereau, visiting expert on leprosy, stated that India can become completely free from leprosy in 15 years if the fight against the disease continues on right lines and is launched more vigorously and effectively. Mr. Follereau who is the Founder of the Order of Charity and an international worker in the cause of Leprosy was accompanied by Dr. Hemerijicks, leprosy expert who had served in Belgian Congo and who has been working in this State during the past 15 months, having established in the Polambakkam area a mobile treatment service. Mr. Roger London, French Vice-Consul in the Madras City, was also present.

"India is the first country in Asia," said he, "to take the lead in the fight against leprosy as the Union Government has, under its Second Five-Year Plan, provided for the treatment and care of people suffering from leprosy which was both a medical and social problem." Dr. Hemerijicks has during his 15 months' stay, rendered help to over 13,000 patients. He and other French experts who had served in Africa, have made it possible for the people of that country to envisage the elimination of the disease within 10 years. India can also do likewise if an effective and vigorous fight is launched against the disease.

Leprosy is of low infectivity; it is of the utmost importance that people suffering from leprosy should be treated from the initial stage, isolation during that infective stage being of course, necessary. But leprosy patients must not be condemned for life.

A large volume of fresh knowledge has accumulated during recent years concerning this disease which has created a firm belief that it can be mastered and has also induced greater confidence in the claims of experts, that it is not really so dangerous as was earlier supposed: this should fortify us in our endeavour to pursue a vigorous campaign to its logical conclusion. But alongside the active work of curing those afflicted and preventing contagion amongst others, there must be an educative campaign to instil into the minds of people the confidence of the experts, and to get the public to recognize that leprosy is not a misfortune which calls for the ostracizing of those afflicted, but that they also have a place in society, and deserve every help and sympathy.

It is certainly very difficult to change the habits of a lifetime and to eradicate the prejudices of several hundred years against leprosy and its victims who are loathed by all. Even to-day in the public mind the leper is seen as one clothed in foul rags, with dirty bandages on his hands and feet grovelling in the dust with fingerless hands outstretched soliciting alms from a not too sympathetic public.

We come across many such unfortunates in the streets, bazaars, bus-stands, railway station approaches, and in nearly all crowded localities in every town and no organized efforts have so far been made by the Government or civic bodies to segregate and house them with a view to treatment, rehabilitation or reclamation from their begging activities.

If any campaign to control the spread of the disease, to eradicate it from the country and more than anything to change the social attitude of the people towards these hapless victims, is to succeed the first duty of the authorities should be to remove these poor unfortunates from their present scenes of activity and place them under proper supervision and medical care in special camps with the requisite amenities for rehabilitation. The absence of many lepers in our streets will alone produce a change of outlook in people and create in them a new frame of mind towards the disease and its sufferers. Needless to add that this will be a very necessary and important step in the campaign to rid India of leprosy in the next ten or fifteen years.

In this context, we would like to add our tribute of praise and gratefulness to Dr. Robert Cochrane who was Head of the Lady Willingdon Leprosy Sanatorium at Tirumani, near Chingleput, for over 25 years to whom the Government of India has awarded a citation in recognition of his devoted work in the field of leprosy in India. This citation was presented to the veteran by Mr. Gopala

MENON, India's Consul General in New York the other day, under the auspices of the American Leprosy Association.

"There is no branch of leprology in which the impact of Dr. COCHRANE's work is not felt His interest in leprosy relief has taken him to many lands for work among many races, but the contribution he has made during his stay in India is perhaps the most outstanding. The doctor has attained a unique position in the history of the fight against leprosy. His work in South India has contributed in no small measure to the development of a practical leprosy control programme on a national basis throughout India."

SIMPLIFIED HEPARIN THERAPY OF IMPENDING AND ACUTE MYOCARDIAL INFARCTION

It is now recognized that premonitory symptoms occur in a substantial proportion of all attacks of acute myocardial infarction. There is a definite change in the clinical picture, with increasingly severe angina and rapidly decreasing effort tolerance.

The efficacy of anticoagulant therapy in the prevention of impending myocardial infarction has been reported using oral anticoagulants alone, or after the initial use of heparin for several days. Nichol has noted the clinical impression of his group that the longer heparin is continued in the therapy of impending myocardial infarction before oral anticoagulants are given, the better are the results obtained.

The administration of heparin by Engelberg has varied somewhat as to dosage and duration of therapy. Aqueous heparin, either 100 or 200 mg. per cc. was used, although the more concentrated material is preferable when doses above 200 mg. are given. With a small needle, the drug was injected *subcutaneously* in the relatively insensitive areolar tissue just above or below the posterior iliac crest. Intramuscular injections are to be avoided, as the duration of effect is decreased thereby. Whenever possible, doses of 150 to 200 mg. were administered every 12 hours; otherwise, 300 to 400 mg. doses were given every 24 hours. It has been found that this method of administration usually affords well maintained anticoagulation. It is as efficient as the use of heparin in retarding menstruum, and is less painful and less difficult to administer. In several patients an initial dose of 100 mg. was given intravenously. Therapy was continued with heparin alone for one to two weeks (nine and a half days on the average). In all, 19 patients have been treated this manner. There were 15 men and four women, varying in age from 38 to 74 years. Five had hypertension, and three had diabetes mellitus.

The results in this series were good; two patients developed an acute transmural infarction, a diagnosis of subendocardial infarction was made in four, and in the other 13 apparently no infarction took place during therapy. Four of these 13 discontinued therapy prematurely, and in three, acute infarction or death occurred within several months. Many other actions of heparin have been reviewed which indicate its superiority over other anticoagulants in the therapy of impending and acute myocardial infarction. In 15 patients with an acute myocardial infarction, continuous anticoagulation has been maintained for the first three weeks, with concentrated aqueous heparin administered *subcutaneously* every 12 or every 24 hours. This method is simple and economically feasible, and requires few laboratory tests for control. Engelberg has given reasons why the arguments against the routine use of anticoagulants in all cases of myocardial infarction *do not apply to heparin.*—(Condensed from *Annals of Internal Medicine*, March 1956).

Gleanings from the Medical Press

VENEREOLOGY

Causes of decreased syphilis incidence.–(*Modern Medicine*, July 15, '56).

Schamberg, of the University of Pennsylvania, Philadelphia, reports that the rate of new syphilitic infections in the United States decreased by 93% between 1947 and 1954. Factors which have brought about this reduction, however, do not assure continued decline; periodic epidemics will remain a possibility until a method of immunization is developed.

Generally, syphilis is most prevalent in wartime. Increased stability and prosperity of the population since the war is partially responsible for the observed reduction in incidence.

Widespread use of penicillin in recent years has probably also contributed to the decline. Syphilis may be cured by the amount of penicillin commonly given for other diseases; use of repository penicillin preparations, which maintain high blood levels of the antibiotic for days or weeks, increases the probability of coincidental cure. Since the incubation period of syphilis is long, such medication may, in many instances, eradicate treponemes before any symptoms appear.

A third factor in the decreased attack rate is the public health campaign against the disease. Education, contact investigation, mass blood testing, and provision of free treatment have resulted in discovery and cure of many infected persons.

Public health measures must be continued and increased in order to keep the incidence low. The number of susceptible persons rises when the attack rate is low over a prolonged period of time, and physicians are less likely to suspect syphilis. Under such conditions, future epidemics of syphilis may be started by seemingly minor factors. Reduction in the use of penicillin may lead to an increase in attack rate; broad-spectrum antibiotics replacing penicillin are less effective against syphilis.

Hypertherm treatment of neurosyphilis. Methods of evaluation and prognostically important factors.—(*Acta psychiat. neurol. scand., 30*: 529, 1955, via *British Jour. of Venereal Diseases*).

In an attempt to evaluate the results of hyperthermia in the treatment of neurosyphilis and to assess the value of its combination with penicillin therapy, the authors have reviewed 369 cases treated between 1943 and 1953 at the University Psychiatric Clinic, Rigshospitalet, Copenhagen. They do not claim that these cases were fully representative of neurosyphilis as it occurs in Denmark, as patients with severe psychic symptoms would usually be referred direct to a mental hospital. Furthermore, the authors find it extremely difficult to compare their results with those of other authors as the criteria of diagnosis, examination, treatment, and ultimate evaluation of results vary widely. To ensure a uniform standard of assessment they selected only those cases in which a psychiatric and neurological examination, an evaluation of the patient's working capacity, and an examination of the cerebrospinal fluid had been made before and at least 6 months after treatment, only 194 cases (five of which were of congenital syphilis) being retained out of the 369. Of these, only one-third had fairly severe symptoms, and only one-half were wholly or partly disabled. An assessment of each patient's condition on clinical, social, and humoral grounds was made at least 6 months after the first course of treatment (after an average period of observation of 15 months) and again after completion of treatment (after a period of observation ranging from less than 2 years to more than 10 years and averaging 4 to 5 years).

The first course of treatment consisted in hyperthermia alone in 101 cases, hyperthermia with penicillin in 73, and penicillin alone in twenty. Each course of hyperthermia consisted of about ten treatments at a body temperature of 40°C. (104°F.) for a total of 30 hrs. Each course of penicillin lasted 18 to 21 days, the total dose being at least 6,

usually 10, and in a few cases more than 48 mega units. Further courses of treatment were given as indicated by the results of the first assessment, with the result that on completion of treatment 58 patients had received hyperthermia alone, 119 combined treatment, and seventeen penicillin alone.

The conclusion arrived at is that combined treatment of neurosyphilis with hyperthermia and penicillin is in no way superior to hyperthermia alone. On clinical, social, and humoral grounds the results were fairly uniform within each diagnostic category of neurosyphilis and were generally better when treatment was started early. The authors also conclude that the prognosis can usually be determined after the first course of treatment and that further courses do not materially improve the patient's fate.

PAEDIATRICS

Rehabilitation of poliomyelitis-stricken children.—(G. Poli and M. Valle, *Minerva Pediat.*, *8*: 325-329, March 17, 1956, via *J.A.M.A.*).

In Italy, 80% of the polio cases occur in infants under 2 years of age. On admission the authors advise vaccinating the infants against diphtheria and whooping cough whether or not they have been vaccinated before. Smallpox is the only infectious disease that has occurred among the infants the authors have treated for poliomyelitis. In Italy, poliomyelitis has so far been a sporadic disease. Most of these patients are brought to a physician only after they have already been stricken with paralysis. This limits the physician's task to preventing the spreading of the paralysis. The infant is kept in bed as long as possible. When necessary, barbital or other sedatives are used. A device is used in each case to keep the blankets from weighing on the stricken joints. A slow and gentle change of position performed with the help of a nurse is allowed every three or four hours. If poliomyelitis has affected the lower joints, the knees are kept slightly flexed and the feet are kept at a right angle. Splints are never used during the first part of therapy. The treatment changes radically after two or three weeks when there is no more danger of incurring lesions in the spinal cord. The child is taught to perform some segmental active exercises with progressive frequency. Heat is used to decrease the neurovegetative disturbances, to maintain the muscle in good condition of nutrition and of trophism, and to eliminate the pains. The age of the patient requires that a highly trained staff take the place of the mother during the infant's stay in the hospital; these patients must never be left alone. Contractures are corrected by performing passive movements in warm water. Gradual improvements are fixed with a removable splint. After final results have been achieved, a fixed plaster cast is used. Surgery is employed when contractures cannot be reduced otherwise. Surgical treatment is confined only to tenotomy or tenoplasty. Any other operation should be used only after the skeleton of the infant offers sufficient resistance.

Chronic otitis in children.—(*Modern Medicine*, July 15, 1956).

Bourdial, and Debain of Paris recommend atticotomy for chronic otitis in children. Swelling of the epitympanic mucosa is the chief factor in the condition.

With *atticotympanic mucopurulent otorrhœa*, which is most common among children under 5 years of age, perforation is located in the paracentral region or in the posterosuperior quadrant. The condition follows incompletely cured tubotympanic infections. The perforation closes if the ear does not run, but the epitympanic mucosa remains hyperplastic and polypoid, blocking the communication between the tympanic and mastoid cavities. Reactivation of infection causes pus to collect, and a second perforation often ensues. Cholesteatoma and meningitis may develop. Atticotomy by the endaural route, removing the external wall of the epitympanic cavity but preserving the ossicles, is advisable even for young children.

With *mucous or tubal otorrhœa*, a non-marginal perforation is located in the inferior quadrants of the pars tensa. A ropy or serous discharge, consisting of the secretions of the tubal, nasal, pharyngeal, tympanic, and mastoid mucosa, may persist for months despite medical treatment. Atticotomy should be done.

The perforation of *antroatticotympanic suppuration* is localized high in the subligamental area and is always marginal. Again, mucosal hyperplasia is an important ætiologic factor. Treatment consists of removal of polyps; antroatticotomy is performed if cholesteatoma is suspected. *Suppuration of the attic* is associated with perforation at the level of Shrapnell's membrane. Treatment is antro-atticotomy with removal of the incus and the head of the malleus. With *subtotal destruction of the pars tensa*, a large perforation is surrounded by a thin strip of tympanic membrane. Hearing is impaired, Cholesteatoma is common. Medical treatment suffices if the otorrhœa is mucosal or if the fundus tympani shows a tendency to epidermidalization. If the otorrhœa is mucopurulent and profuse, atticotomy is required.

The psyche as an aetiologic agent in infantile eczema.—(*B. J. Psychotherapy*, Aug. 1956).

In his very exhaustive review of the available literature, Dr. Parsons has shown quite conclusively that emotional factors can and do have a very definite effect on the course of the disease and the effect of therapy in infantile eczema. The most important factor in producing this emotional trauma is an attitude of rejection of the infant on the part of the mother. Factors important in the production of the attitude are the nature of the disease itself, producing a very unsightly infant, and conflicts within the family group, such as unintentional conception, divorce and others, causing the mother to feel that the child is just an added burden.

In my opinion there has been no conclusive evidence that the psyche is an aetiologic agent in infantile eczema.

In the past it seems that the psychiatrist has tended to place too much emphasis on emotional factors as an aetiologic agent, while others in the medical profession have had a tendency to completely overlook these factors. Perhaps if more pædiatricians and allergists will recognize the true importance of this emotional factor, much more will be gained by combining this with the present accepted methods of treatment.

In most cases I believe that this work can be done by the pædiatrician or allergist, but there may be some cases in which the mother will require more intensive psychotherapy in order to understand better and solve this attitude of rejection she has for her infant.

Lamb recently outlined five rules which I think will serve as a useful guide to physicians treating these infants and other dermatological problems. These rules are: (1) take adequate time to listen, (2) confine therapy to simple and superficial methods, (3) build up the patient's self-respect and self-confidence, (4) relieve environmental hazards, and (5) point out more mature approaches to life's problems whenever possible. In the case of infantile eczema, these rules will apply more to the mother of the patient than to the patient himself.

OBSTETRICS & GYNAECOLOGY

The influence of hormone therapy on metastatic mammary carcinoma.—(*Surgery, Gynaecology and Obstetrics*, May 1956).

In Toronto General Hospital, Canada, 330 patients have received an adequate trial of either androgen or œstrogen, or both, since 1940: 282 patients were treated with androgen, 83 with œstrogen, and 35 received a trial of both hormones. The androgen most commonly employed was testosterone propionate in oil, giving 150 milligrams intramuscularly twice weekly over a period of 10 weeks, dropping the dosage to 100 milligrams weekly if the treatment was continued longer. As an alternative, testosterone linguets, 10 milligrams three times daily were prescribed in the minority of the entire

group so treated. Those receiving œstrogen therapy were given 3 to 5 milligrams three times daily, stilbœstrol, or a synthetic substitute of comparable dosage for varying periods of time, depending on the patient's tolerance.

In this survey, 35 of the 330 patients received a trial of both androgen and œstrogen, making a total of 365 responses to hormone for study.

Included in this series are 4 cases for which hormone therapy was the only method of treatment for primary or secondary disease, and 60 patients who received this treatment alone for recurrences, the primary having previously been treated by surgery.

The percentage improved by hormone treatment in the latter group is higher than in any other selection of cases in this series and the average survival is slightly longer. Thus, previous radiotherapy may prove to be a factor which helps to preclude a good response.

In summarizing, the following conclusions may be drawn from this survey and in the main are supported by the results of similar studies:—

1. The introduction of hormone therapy appears to have appreciably prolonged the survival of cases developing metastatic mammary carcinoma, as compared with untreated carcinoma of the breast.

2. A more successful response to hormone therapy for metastatic disease was noted when no previous treatment had been undertaken.

3. The pathologic type of mammary carcinoma has not appreciably influenced the response to steroid therapy in this series.

4. The response to œstrogen in this series has been more satisfactory than the response to androgen, both in percentage responses and in length of remissions.

5. In the older age group only, the response to testosterone therapy is equally as satisfactory as the response to œstrogen. Only 2 of every 5 patients in the premenopause and menopause age-group respond to testosterone.

6. Previously induced menopause does not seem to have altered the response to testosterone therapy, but a castration by irradiation concurrent with testosterone therapy was successful in only a small minority so treated.

7. It is suggested that the response to testosterone should be tested before advising a permanent castration.

8. For osseous metastases testosterone is equally as effective as stilbœstrol, but the response to œstrogen is more prolonged.

9. Oestrogen is shown to effect a better palliation than androgen for lung metastases.

10. For soft tissue metastases, œstrogen effects a higher percentage response, but the response to testosterone, when effective, is more lasting.

11. For generalized disease, œstrogen showed a higher percentage response rate, but there was no appreciable difference iu the length of remissions from either hormone.

12. In this series the mean survival following testosterone therapy was ten months, and subsequent to œstrogen therapy was 11½ months.

13. A better response to hormone treatment can be anticipated if the interval between the initial control of the primary and onset of recurrence is over 2 and under 5 years.

14. A poor response to hormone therapy is expected in the presence of primary inoperable breast cancer as well as metastatic disease.

15. A study of the patients receiving a trial of the antagonistic hormones reveals the possibility that approximately 77 per cent would respond to either of the hormones.

There is sufficient evidence to suggest that œstrogen therapy should be attempted in the younger age-groups if a short trial of testosterone therapy produces an exacerbation of the disease.

Factors affecting premature neonatal mortality.—(*Jr. Am. J. Obst. and Gynæc.*, *71*: 1069-1079, May 1956 via *J.A.M.A.*).

Neonatal premature death was defined as the death during the first 30 days of life of any infant born alive and weighing between 400 and 2,500 gm. A study of the factors that might influence the mortality rate of liveborn premature infants was carried out in 600 white infants, 354 of whom were delivered on a private service and 246 on a clinical service. The uncorrected neonatal mortality rate for premature infants on the private service was 14·68%, with an incidence of 5·6% of live-born premature infants. The uncorrected neonatal mortality rate of premature infants on the clinical service was 19·91%, with an incidence of 7% of liveborn premature infants, Sex, parity, and the length of gestation had no effect on premature neonatal mortality rates. The length of labour had no effect on the survival of premature infants unless it was 31 hours or longer. Episiotomy, used in the greatest number of deliveries on the private service but not in those on the clinical service, had a beneficial result on the survival of premature infants. Breech delivery with episiotomy is much more hazardous for premature infants than spontaneous cephalic delivery with episiotomy. This supports the rationale of external version when dealing with the delivery of premature infants presenting by the breech. Cæsarean section had no deleterious effect on the survival of prematures. As far as sedation and anæsthesia were concerned, it appeared that some type of sedation combined with a conduction anæsthetic had the most beneficial effects on maintaining life in the premature. Premature rupture of the membranes, toxæmia, and abruptio-placentæ caused no fœtal risk *per se*. On the private service the chief causes of death were as follows: prematurity combined with hyaline membrane (48·9%), congenital anomalies (21·9 per cent), and birth injuries (12·1 per cent). On the clinical service the order was prematurity combined with hyaline membrane (41·8 per cent), birth injuries (19·3 per cent), and congenital anomalies (12·9 per cent). On the private service about 88 per cent of the deaths occurred within the first 72 hours of life as compared with 73 per cent on the clinical service. On the private service, 40 per cent of the deaths of premature infants after 72 hours were caused by an infectious lesion. This was true of 44 per cent on the clinical service.

Diabetic coma and diabetes in pregnancy.—(*The Bulletin, Georgetown University Medical Centre*, July 1956).

After several case presentations Doctor Duncan of the department of medicine, Pennsylvania Hospital gave a wonderful discussion on the subject of diabetes.

Only 5% of diabetics are children. Most diabetics are diagnosed after age 40.

Diabetic females who become pregnant develop more œdema than usual and also more polyhydramnios.

Seventy per cent of mothers who had babies weighing over 10 lbs, and who were studied carefully developed diabetes. A large child, therefore, means that the mother is a diabetic or that she stands a good chance of becoming one.

Babies of diabetic mothers may have hypoglycæmia after delivery. At postmortem examinations they are found to have hypertrophied islands of Langerhans. Some authorities on the subject do not believe in giving nourishment to these babies after birth. Doctor Duncan stated he always has.

Diabetic mothers become extremely sensitive to insulin after delivery and usually require reduction of the dose.

Doctor Duncan particularly emphasized that it is extremely rare for diabetic patients to go into diabetic coma without some acute complication, usually an infection.

In order to make the diagnosis of diabetic coma one must be alert to the possibility, do a urine sugar, and a plasma acetone test. A 4 *plus* plasma acetone test means coma. The urine acetone test may be 4+, but the plasma acetone level may be zero. It takes time for the acetone to pile up in the blood, but that is what is necessary for acidosis or coma to develop.

Dr. Duncan stressed that there are degrees of acidosis or coma. A trace of acetone in a 25% dilution of the plasma would mean mild coma, whereas a 4+ acetone in a 25% dilution would mean profound coma. Dr. Duncan used the

following routine for treatment which he arrived at through experience. He gives 100 units of regular insulin for each 4+ acetone test found as one dilutes the patient's plasma. For example, if a 4+ acetone test was still present at the 25% dilution then the dose would be 300 units of regular insulin. This would mean that the acetone test was 4+ with 100% dilution, 50% dilution, and 25% dilution. Dr. Duncan gives one-third of the dose intravenously, and two-thirds subcutaneously. He then gives 50 units of regular insulin subcutaneously every half hour until the plasma acetone reveals only a trace in the 25% dilution. Dr. Duncan stated that in his experience a 2+ acetone in the 100 per cent dilution meant that the patient was becoming sensitive to insulin, and that at this point one should stop the insulin and observe the patient.

Coma patients should receive 18 grams of saline in the first 12 hours of treatment to replace the lost sodium and chloride.

Abdominal pain is common in the young diabetic coma. The pain is due either to sodium depletion or stomach distention. If the pain does not disappear after saline administration or stomach lavage, one should suspect an acute abdomen. If the abdomen is not distended, there is no need for gastric lavage routinely.

Patients do not get into coma because of a lack of insulin and overeating, but rather that some acute precipitating cause is present, such as infection.

Obese diabetics should not be given insulin unless acute complications are present. Rather they should be reduced and in many instances the glycosuria will disappear. The glucose tolerance curve will also become normal. These patients are not cured but controlled. They have enough insulin to take care of the carbohydrate demands of a lean body, but not enough for the fat body. Doctors who use insulin but do not reduce their patients are encouraging obesity and diabetes.

Keep pregnant females free of ketosis for this is bad for the babies. There is an increased need for insulin in the first trimester which gradually levels off. During the last trimester there is also an increased need for insulin. If the insulin requirement goes down, be on guard, for it means that the baby is producing insulin, and after delivery, such babies run the risk of hypoglycæmia. If these babies are given glucose, usually they are out of danger by the third day.

There is a need for frequent blood sugars in pregnant females, because they usually have a low renal threshold for glucose, and urine sugars may be falsely high.

Cæsarean sections should not be routine in pregnant diabetics. Usually labour can be precipitated easily. If there has been difficulty with previous deliveries, section is indicated since diabetics cannot stand a long labour.

Treatment for toxaemias of pregnancy.—(*Schw. Und. Wich. Gynaec.*, *141* : 255, 1956).

Daily doses of 1–1·5 mg. Serpasil were given to 70 patients with toxæmia of pregnancy, this treatment being administered not only during pregnancy but to a large extent during the confinement as well. 21 of the patients were suffering from ordinary hypertension of pregnancy, 36 from renal disease of pregnancy, 8 from pre-eclampsia, and five from eclampsia, none of them had responded satisfactorily to rest in bed.

With Serpasil it was found possible to reduce the excessive blood pressure in all four groups; the average fall in pressure was 30–50 mm. Hg. (*systolic*) and 20–40 mm. Hg. (diastolic). The blood pressure of the patients in confinement was brought down to normal levels within 8 days. In most cases an improvement took place at the same time in the other symptoms of toxæmia, including especially albuminuria and œdema. 11% of the patients failed to respond to Serpasil or showed only an inadequate response. In agitated patients, the sedative effect of Serpasil on the psyche proved most beneficial. No side reactions affecting either the mother or the child were observed.

SURGERY

On the treatment of acute generalized peritonitis.—(*Vyestnik khir, 77 :* 17-26, Jan. 1956, via *J.A.M.A.*).

In addition to the standard operative and supportive measures for the treatment of acute generalized peritonitis, Propov and Filin recommend the abundant administration of a solution (developed by Popov) containing 75 parts glucose, 50 parts alcohol, 7·5 parts sodium chloride, 2 parts sodium bicarbonate, and 500 parts distilled water, to combat the shock and collapse of the severe forms. A number of other blood-replacing solutions have proved valuable, together with cervical vagosympathetic block. Pre-operative and post-operative intramuscular injections of a mixture of analgesic and ganglioplegic drugs and vitamin B_1 markedly improve the general condition of these patients. Intratracheal ether-oxygen anæsthesia including the use of curare-like agents is excellent for the operative treatment of generalized or purulent peritonitis.

Experimental studies showed that the combined use of streptomycin and penicillin gives the best results in antibiotic therapy of the condition. Given separately, these drugs are not always capable of destroying all the pathogenic bacteria in the peritoneal exudate. The least satisfactory results were obtained from administration of gramicidin. Local applications of solutions of this antibiotic are undesirable because it has toxic effects when used in massive doses and poor bactericidal activity when used in moderate doses. Repeated injections of streptomycin and penicillin *via* the general and intraperitoneal routes simultaneously is a satisfactory method of administration, but the authors prefer continuous drip infusion of large doses of these antibiotics dissolved in large amounts of procaine solution through one or, in the majority of patients with peritonitis, several resin tubes spaced out in various portions of the peritoneum.

The management of acute gastroduodenal haemorrhage.–(*Am. J. Surg., 91 :* 786-790, May 1956 via *J.A.M.A.*).

The problem of differential diagnosis of gastrointestinal bleeding resolves itself for the most part about the management of peptic ulcers, which cause at least 65% of gastroduodenal bleeding. An aggressive therapeutic programme is instituted as soon as the diagnosis is reached after complete history and physical examination. Acute blood loss is compensated for by the immediate administration of plasma, a plasma expander, or isotonic sodium chloride solution. These measures are essentially stop-gap in character until compatible whole blood is available for transfusion. Sedation plays a vital role in the treatment of these patients who tend to be nervous and anxious. Small subcutaneous doses of barbiturates are preferred for this purpose. They may be combined with atropine. Nothing is given by mouth because of the possibility of early operation. Vitamin K (20 mg.) is given immediately and continued routinely every 24 hours. During the phase of active bleeding the nurses should be instructed to note every 15 minutes any evidence of syncope, pallor, or apprehension. If control of bleeding has been attained after 18 to 24 hours, a feeding programme may be started similar to that described by Rossett and Stephenson. Emergency operation should be offered only to those patients who cannot be controlled by transfusion after their initial recovery from shock or to those who have had previous attacks of bleeding. If a patient requires over 1,500 cc. of whole blood daily or more than 500 cc. every eight hours, spontaneous cessation of hæmorrhage is unlikely and operation is mandatory. Repeated syncope should indicate that spontaneous cessation of bleeding probably will not occur. This is the single most important symptom relative to early operation. High resection is the most desirable operation to control bleeding and minimize recurrence. The exclusion principle with secondary resection of the distal segment should be considered if the duodenum is involved in an acute inflammatory mass. The teamwork approach, utilizing the internist, roentgenologist, surgeon, and anæsthetist concurrently, should reduce the hospital mortality for this serious condition.

The treatment of fractures by transfixing.—(*Helvet Chir acta, 23 :* 1-22, 1956 via *German Med. Monthly*).

The healing of fractures is decisively influenced by such factors as interaction between bone and the soft tissues surrounding it, the nutritional state of the connective tissue, and by the position of the fragments. Even a minor degree of displacement may have "destructive influence on the trabeculæ and the endosteum and its capillaries." Secure fixation of the fragments is, therefore, important. Since optimal conditions for consolidation are present in compression fractures, treatment of fractures should aim at creating the same favourable conditions This cannot be fully achieved with either Kuntscher's nail or Lane's plate, but Hoffmann's "osteotaxis" ensures absolute immobility of the fragments. This technique uses a bar and transfixing screws for holding the fragments together and for adjusting the position according to requirements. The method has been successfully used for treating not only fresh fractures, but also 6 cases of diaphyseal pseudo-arthrosis in which healing was considerably delayed. If there is loss of bony tissue or impairment of circulation, new growth of bone can be stimulated by grafting of bone splinters. Since a graft taken from solid bone means addition of yet another bony fragment devoid of blood supply, it is advisable to use either autoplastic or homoioplastic spongy bone, because the Haversian canals will promote vascularization. Such grafts, however, are incapable of supporting any weight. Complete fixation combined with grafting of highly active, *i.e.*, osteogenic, bony tissue creates the best conditions for callus formation, which is further helped by judicious physiotherapy.

Complications of treatment of severe burns.—(*Plastic and Reconst. Surg., 16* : 31-36, 1955 via *Mod. Med*, 15-7-1956).

Steiss, Moloney and Harper, of St. Mary's Hospital, San Francisco, note that side-effects of otherwise beneficial drugs may complicate long-term management of severe burns.

Convulsions and hypertension may result from administration of cortisone to combat shock associated with surgery. Withdrawal of the drug and sedation may be necessary. Cortisone may also mask sodium deficits in patients with extensive burns. Regular determinations of urinary sodium should be made during cortisone therapy. The sodium intake of the patient should be sufficient not only to maintain normal serum sodium levels but also to permit the excretion of 30 to 50 mEq. of sodium per twenty-four hours.

The prophylactic use of antibiotics may also cause complications. Infection, cross contamination, and superinfection with antibiotic-resistant bacteria may result from the widespread use of broad-spectrum antibiotics. Natural antagonists in the bacterial population are eliminated, encouraging resistant strains to flourish with increased virulence. Overwhelming sepsis may cause agranulocytosis after injudicious use of antibiotics. Therefore, antibiotics are best used for specific therapy rather than for prophylaxis.

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MEDICINE & THERAPEUTICS

Venous angioma as the cause of cerebellar apoplexy.—(*Bulletin of the School of Medicine, Univ. of MD., 41* : 2, April 1956).

While being far from common, primary intracerebellar hæmorrhages have been reported with some frequency. The factors responsible for cerebellar hæmorrhage differ in no major degree from those causing cerebral apoplexy.

The clinical aspects of cerebellar hæmorrhage vary with the degree of tissue destruction and the extension of the hæmorrhage, which is more likely to be ventricular rather than into the subarachnoid space.

The signs and symptoms then depend upon meningeal irritation, increased pressure within the fourth ventricle and destruction of the cerebellum itself. So headache, stiffness of the neck, vomiting, irregularities of the pulse and respiratory rates, localizing neurologic signs

and coma may be seen. When the area of hæmorrhage is small, and the pressure within the fourth ventricle is little altered, a clinical diagnosis may be made. However, coma is the overshadowing symptom, often being present at the onset, appearing as though the patient were struck down by a blow. Death, as a result of rupture into the fourth ventricle and compression of the medullary centres, occurs shortly, usually within a few hours, rarely more than 24 hours after the onset.

The role of vascular anomalies in intracranial hæmorrhage has been stressed by many writers, and a careful search for angiomatous malformations or tumours should be made when an otherwise unexplained intracranial hæmorrhage occurs. These are, on occasion, not easy to demonstrate, and the lesion itself may be lost in the area of hæmorrhage.

The classic venous angioma is a cone-shaped lesion, the base in contact with the leptomeninges, and the apex extending toward the ventricle. Within the brain there is a tangled mass of large vessels resembling veins, separated by thin layers of nervous tissue; less often, the vessels are more sparsely distributed through the involved area. Most of the vessels structurally resemble veins. The vessels are usually irregular and bizarre in shape. The walls are relatively thin, but may show prominent variation. Scattered vessels may present thick walls, and others may reveal marked irregularity within the circumference of a single vessel. The vessels themselves consist of a single layer of endothelium occasionally associated with a delicate elastic membrane, resting on connective tissue which forms the principal mural element. A few muscle fibres may appear, but a prominent muscular layer does not occur in vessels regarded as venous in nature.

The criteria for distinguishing between arteries and veins are not easy to apply; indeed, within a single vessel, the wall may look like that of a vein in one area, and resemble that of an artery in another. It may be impossible, on occasion to ascertain whether the vessels are veins or arteries.

Albuminuria in congestive heart failure.—(*Circulation, 13*: 329- 333, March 1956, New York, via *J.A.M.A.*).

The question whether albuminuria in a patient with congestive heart failure is a reflection of independent renal disease or simply one aspect of the heart failure was investigated in the light of the clinical records and autospy findings of all the patients at the Mayo Clinic for whom a diagnosis of congestive heart failure had been made during their final illness in the period from 1948 through 1953 and in whom autopsy had been permitted. Four sets of data were obtained covering (1) the various types of heart disease as determined at autopsy; (2) the histological renal findings, which revealed either a renal disorder or normal kidneys; (3) the presence and grades of albuminuria; and (4) gradations of heart failure. These data were derived independently, and then, after all the data had been accumulated, the comparisons were made. Four grades of heart failure were recognized in each of the following disease classification: (1) mitral-valve disease, with or without aortic stenosis; (2) coronary arterial disease, with or without hypertensions; (3) isolated aortic valve disease; (4) hypertensive heart disease; (5) myocardial hypertrophy of unknown cause; and (6) miscellaneous. Albuminuria was graded according to the standards established by the section of clinical pathology of the Mayo Clinic, which define grade 1 as representing from 5 to 20 mg. of albumin per 100 cc. of urine; grade 2, 30 to 50 mg.; grade 3, 60 to 90 mg.; and grade 4, over 100 mg. The cases (212 in all) were divided into two groups on the basis of the histological findings in the kidneys of each patient; clinically obvious causes of albuminuria had, of course, been eliminated in each case. Group 1 consisted of 161 cases in which the kidneys were either normal or contained lesions of such a nature as not to be responsible in themselves for albuminuria, and group 2 consisted of 51 cases in which the renal lesions might have been responsible for albuminuria. Only the cases in group 1 were used in making the major comparisons in this study.

Albuminuria may be an integral part of the syndrome of congestive heart failure; it was found in 141 (88%) of the group 1 patients. Analysis of the figures showed that the distribution of albuminuria was about equal in the various types of heart disease when heart failure existed and that the degree of albuminuria tended to parallel the degree of heart failure. A fairly close correlation was also found between the degree of albuminuria and the degree of hypertension as revealed by study of the eyegrounds in 21 hypertensive patients. No correlation, however, could be discerned between the degree of albuminuria and either (1) the systolic or diastolic blood pressure values, (2) the known duration of elevated blood pressure, (3) the grades of hæmaturia, or (4) the blood urea values. No one type of renal lesion was predominantly associated with any one type of cardiac lesion. The severity of the albuminuria discussed in this study is shown by the fact that, although albuminuria associated with cardiac insufficiency is usually said to have a protein content of less than 5 mg. per 100 cc. of urine, the two grades found most often in this series were grade 1, with from 5 to 20 mg. per 100 cc., and grade 2, with from 30 to 50 mg. per 100 cc.

The treatment of allergic diseases with the steroid hormones.—(*Annals of Allergy*, July-August, 1956).

A survey was made of 417 patients with various allergic disturbances who received as primary treatment, parenteral, oral, and local steroid hormones. The series of cases treated over a period of three years included 102 cases of bronchial asthma, 113 cases of contact dermatitis, seventy-three cases of atopic eczema, forty-seven cases of inhalant allergies (or allergic rhinitis), seventy-two cases of acute and chronic urticaria and drug reactions, and ten cases of poison ivy.

The results of treatment in each of several categories are detailed. Parenteral ACTH was the drug of choice in 95% of these cases, both the aqueous and the gelatin solutions being used. Hydrocortone ointment in 2·5 per cent strength was used topically in the dermatologic cases.

Methods of treatment:—In the several cases of status asthmaticus, the patients were hospitalized and given aqueous ACTH in doses of 20 units per 500 cc of 5% glucose in water. The dose varied from 20 to 80 units in twenty-four hours, depending upon the age and the condition of the patient and the response to treatment. This was given at the rate of twenty-five to forty drops a minute. Following initial favourable response to the intravenous medication, ACTH was given intramuscularly in from 80 to 160 units daily for another twenty-four to forty-eight hours. Then, the parenteral use of the drug was greatly reduced or discontinued, and the patient was placed on the oral medication of steroids.

In the treatment of those patients with acute urticaria, drug reactions, and poison ivy dermatitis who were hospitalized, aqueous ACTH in 20 to 40 unit doses by intravenous drip was used for the first twenty-four hours in the manner previously described in the treatment of those with asthma. Within a period of some hours, most of these patients were so much improved that intramuscular treatment was instituted for the remainder of the hospital stay, followed by oral steroids where necessary. The dosage again varied according to the severity of the condition and the rapidity of the response to intravenous medication. In addition to the parenteral ACTH and oral steroids (20 to 60 units a day), hydrocortone ointment, 2½ per cent, was prescribed for local application.

The treatment of ambulatory patients with contact dermatitis and acute and chronic urticarias consisted of initial injections of 80 to 160 units of aqueous ACTH for the first twenty-four to seventy-two hours, followed by gradually reduced amounts of the ACTH, in gel, until improvement warranted change to oral medication.

Thus various allergic disturbances were treated over a period of three years with the steroid hormones by parenteral, oral, and local means. All were on ambulatory treatment, except seventy-eight of this group who required hospitalization for intervals of one to seventeen days. Thereafter, these were placed on ambulatory treatment except for several periods of relapses each (for the patients with status asthmaticus).

Of the total number, 283 (67·6 per cent) had good response to treatment; seventy-nine (18·9 per cent) had fair response; and 45 (13·5 per cent) had poor or unsatisfactory results. In other words, 362 (86·5 per cent) obtained a considerable degree of relief.

Side reactions occurred in thirty-six (8 per cent) of the patients, with recovery in all following cessation of parenteral treatment.

The following conclusions appear justifiable:—

1. After careful allergic management itself, the steroid hormones have proved to be a primary adjunct in the relief of a certain percentage of allergic diseases

2. The steroids have given symptomatic relief in certain patients who have failed to respond to allergic management alone or to allergic treatment *plus* conventional drug therapy.

3. The steroids have given symptomatic relief to patients prior to and in preparation for allergic management.

4. In our hands, parenteral hormone therapy has given more rapid relief of symptoms in status asthmaticus, acute urticaria, drug reactions, poison ivy dermatitis, acute atopic and contact dermatitis, than any other conventional drug therapy to date.

5. Oral steroid hormones have not proved as efficient as the parenteral therapy in the initial treatment of symptoms, but have been valuable maintenance therapy until allergic management alone or allergic management plus conventional drug therapy could be instituted.

6. Side reactions and sequelæ have been sufficiently frequent and severe as to limit the use of steroids to those patients which need immediate relief from acute and severe symptoms not controlled by allergic management alone or plus conventional drug.

7. Careful observations of all patients under steroid therapy should be maintained at all times.

8. There have been no deaths in our series of patients while under treatment with the steroids, and all side reactions and sequelæ ceased with withdrawal of the hormone.

9. Steroid therapy treats symptoms only and should not be substituted for good allergic management.

Herpes zoster.—(*The Bulletin, Georgetown University Medical Centre*, July 1956).

Herpes zoster is a common systemic disorder with predominant dermal and neurologic manifestations caused by a virus closely related if not identical with the virus causing varicella (chickenpox). The predominant pathologic lesion is in one or more posterior spinal ganglia or cranial sensory ganglia and their corresponding sensory dermatomes. This explains the characteristic skin lesion and pain always present. Pathologic features of lesser and variable nature involves the anterior and posterior horn cells, the leptomeninges, and peripheral nerves. These latter findings explain the occasional occurrence of muscle weakness or palsy, pleocytosis of the spinal fluid, and sensory loss. Rarely a myelitis, meningitis, or encephalitis may occur.

Herpes zoster begins with a systemic response: fever, anorexia, lassitude, moderate or so slight as to be overlooked. Then from 1 to 4 days (rarely as long as ten days) there are sensory phenomena of one or more skin dermatomes.

1. *Herpes zoster ophthalmicus*:—From involvement of Gasserian ganglion the lesions of the ophthalmic division of the V cranial nerve are five times as common as over the maxillary or mandibular branches. If the naso-ciliary branch is involved, lesions *go down the nose* and in the eye. *Eye lesions are rare without nose lesions. Always call an opthalmologist to treat the eye* complications because of the danger to the sight. Oedema of orbital tissues, iritis and iridocylitis, and corneal ulcerations may occur. Palsy of the 3rd cranial nerve and occasionally of the 4th and 6th may occur.

2. *Glosso-pharyngeal and vagal zoster*:—This type involves the jugular and

petrossal ganglia. Because these two ganglia are adjacent. they are often involved in some combination together but may be afflicted separately. The vesicular rash is likely to be on the palate, back of tongue, epiglottis or faucial tonsils, and occasionally in the external ear.

Palatal weakness, dysphonia, difficulty in swallowing, loss of gag reflex, etc., may occur. Occasionally 9th and 10th nerve lesions may accompany lesions in other cranial nerves. There is usually ear or deep pharyngeal and/or laryngeal pain. Hiccoughs, nausea, vomiting, and bradycardia may occur. The diagnosis depends on the recognition of the total picture and the vesicular rash in the distribution of the 9th or 10th cranial nerves. Examination by laryngeal mirror is necessary at times.

3. *Syndrome of herpes zoster of urinary bladder*:—Rarely herpes zoster with dermal involvement in the buttocks area may be associated with vesicular lesions in the bladder. The latter involment may cause severe dysuria and urinary frequency with hæmaturia, etc., if the vesicles rupture. There are reports on record of transient bladder paralysis with herpes zoster in the gluteal and sacral region. It has been suggested that bladder vesicles may occur alone.

4. *Bilateral herpes zoster*.—The rarity of bilateral cases is indicated by individual case reports in the literature. Contrary to general superstition, bilaterality does not necessarily indicate a fatal prognosis.

5. *Motor complications (paralyses) with herpes zoster*. Although not too common, both upper and lower motor neuron paralysis may occur, facial palsy being the commonest of the latter group. This may be due to either anterior horn cell or peripheral motor nerve involvement. There has been discussion whether forme fruste of herpes zoster without a rash occur. If so, they would look like polio or peripheral neuritis.

Bronchial asthma.—(*G.P.*, February 1956).

The term "bronchial asthma" applies to any condition characterized by paroxysmal bronchospasm in which the sputum contains eosinophils. Two types are recognized ; extrinsic asthma, which occurs in younger individuals, usually with either a family history or other stigmas of the allergic state ; and intrinsic asthma, which begins in middle or later life and is not preceded by other allergic manifestations. In the first type, circulating antibodies or positive skin reactions to one or more antigens can be demonstrated. In the second type such a connection cannot usually be established. The therapy of the acute attack is little affected by the type of asthma ; the long term management differs somewhat from one type to the other.

The principal agents in the relief of an acute asthmatic attack are bronchodilators. To the list of those discussed above should be added the subcutaneous administration of epinephrine 1 : 1000, and the intramuscular injection of epinephrine in oil 1 : 1500

A word of caution is in order. A nocturnal attack of bronchial asthma may be distinguished only with the greatest difficulty, if at all, from an attack of cardiac asthma before the development of intra-alveolar œdema in the latter gives rise to to the tell-tale moist rales. Even if rales are present, they may be due to bronchiectasis. If there is any possibility of confusion, the use of aminophylline intravenously avoids the hazards of giving epinephrine to a patient with left ventricular failure or morphine to a patient with bronchial asthma as a result of a mistake in diagnosis.

When the attack fails to respoud rapidly to broncho-dilators but persists for hours or days, additional measures include the use of expectorants, including detergent mists, such as Alevaire, and large doses of potassium iodide, since much of the bronchial obstruction, particularly in intrinsic asthma, is provided by the extremely tenacious, rubbery sputum. Substitution of helium for nitrogen in the inspired gas makes ventilation easier. Infection, if present, is treated with adequate doses of an appropriate antibiotic. Sedation is provided by paraldehyde, or by rectal ether in oil (but *never by morphine*). In desperate cases it is said that general anæsthesia with ether will interrupt status asthmaticus. When the status has been cleared by means other than epinephrine, it will usually be found that the latter drug is again effective in treating acute attacks.

The use of cortisone, hydrocortisone, corticotrophin, prednisone and prednisolone in severe refractory bronchial asthma has been reported successful. The last two, according to recent reports, have the largest therapeutic margin between relief of bronchospasm and production of œdema. The danger of masking the spread of infection with these agents must be borne constantly in mind by those who use them.

Long-term management.–In the extrinsic form, meticulous attention must be paid to the identification of allergens by means of the history, skin tests, food elimination tests and so on. The allergens, when identified, should be removed from the environment if possible. If this is not possible, desensitization is necessary. Even if not specifically incriminated by skin test, exposure to common allergenic substances such as house dust should be minimized by keeping the house as free as possible of dust, damp-induced molds, pets, feather or Kapok pillows, and so on.

More than the usual care should be taken to avoid respiratory infections, which often precipitate attacks. If colds are found to produce asthma in a given patient with considerable frequency, the routine administration of 0·5 cc. of epinephrine in oil intramuscularly at the beginning of each infection may abort many asthmatic attacks.

The incidence of bronchiectasis in bronchial asthma may be greater than is often suspected. If bronchiectasis is sufficiently localized to be resectable, and the associated emphysema is not so far advanced as to preclude operation, pulmonary resection may on occasion greatly reduce the severity and frequency of asthmatic attacks.

Diet for the older patient.—(*Bulletin New York Academy Medicine*, April 1956, via *Current Medical Digest*, July 1956).

Sound nutrition for the elderly differs only slightly from that of the younger adult. The principal differences are :—

1. Fewer calories, and, because of the need for fewer calories, activity somewhat above the maintenance level should be encouraged. Such activity will also stimulate the peripheral circulation, strengthen bones, and improve gastrointestinal activity.

2. A smaller porportion of calories should be contributed by fat and a larger proportion by protein, though current and future researches may indicate that it is the saturated fats which should be consumed in smaller amounts as distinguished from unsaturated fats.

3. Dietary modifications, necessitated by poor dentures, low income, inadequate cooking facilities and poor appetite are often required.

4. Lastly, and probably most important, physicians and others respond best to disability, disease, deficiency, and distress. We must learn to respond equally well to prevention, protection, preservation, and the improvement of health, both personal and public. For these are the principles which, if applied *prior* to advancing age, will make that period healthier and happier. And here proper nutrition is of greatest importance.

Books Received

A Concise Book of Medicine—By AKHIL BOSE, M.B., B.S., 95 E. Dharmatolla Street, Calcutta 13. Price Rs. 14/-

"Bhojan and Swasthya" (Hindi)—By Dr. B. B. RAI, M.B., B.S., Bareilly, U.P.

"Injection" (Hindi)—Medical Pusthak Bhavan, Asok Bhavan, Gola Dina Nath, Banaras.

Peaceful Uses of Atomic Energy. Vol. 11—By United Nations. M/s. Orient Longmans Private Ltd., Calcutta 13.

New Pathways in Cellular Pathology—By CAMERON, Pp. 90. M/s. Orient Longmans Private Ltd., 36a, Mount Road, Madras 2. Price 16 sh.

Correspondence

1

To The Editor, The ANTISEPTIC, Madras

Dr. S. G. Desai, M.B., B S., Jamkhandi wants to know a sure remedy for the toxic symptoms due to antibiotics such as penicillin, omnamycin, terramycin etc. He himself had left sided vestibular pain, ataxic gait, sleeplessness, digestive trouble and partial retention of urine. His blood pressure was 140/85 ; urine was normal ; no albumin.

Answer :—Penicillin may cause allergic manifestations. Streptomycin may produce vestibular disturbance and Terramycin may produce a deficiency of B-Vitamins. It is difficult to explain the ataxic gait and the retention of urine on the basis of toxic reactions to antibiotics. The letter does not say why the antibiotics were employed and what the clinical diagnosis was at the commencement of the treatment. A thorough neurological examination and investigations should be carried out to exclude any organic disease in the nervous system.

[The above answer is from a specialist in Madras].

2

Dr. Sohan Lal Maniktala, of Bahl in the Punjab wants to know the therapeutic difference between the Liver Extract (parenteral) prepared from proteolysed liver and that prepared by extraction and fractionation method.

Answer :—Proteolyzed liver extract is more often used orally than parenterally. Any brand of liver injection is effective in megaloblastic anæmia by virtue of its cyanocobalamin content. The crude extract where the process of extraction is stopped at a particular stage usually contains only 1 to 2 micograms of cyanocobalamin.

It should be stressed that liver extract is used quite unnecessarily for iron deficiency anæmias.

[The above answer is from a specialist in Madras].

News and Notes

Employees' State Insurance

Medical Care for Families

The Government of India have decided to extend the medical care under the *Employees' State Insurance scheme* to families of insured persons.

The co-operation of the State Governments is being sought to implement the decision as early as possible in the next financial year.

Another 30 lakhs are likely to benefit when the medical care is extended to the family. The scheme now covers over ten lakhs of employees in 39 centres in the country. It will ultimately cover over 90 lakhs including families when implemented all over India.

The Employees' State Insurance Act passed in 1948 applies to all employees earning not more than Rs. 400 per month and working in factories using power and employing 20 or more persons. The scheme is being implemented all over the country in phases.

Insured persons under the scheme are already paying the full contribution of about two and a half per cent of their wages under the Act, while employers have been paying less. Though under the Act the employers' contribution can be fixed up to five per cent of the total wage bill they have been required to pay only 1¼ per cent in the implemented areas. The rate of employers' contribution in the non-implemented areas has, however, been only three-fourth per cent.

With the proposed extension of the medical care to the families of the insured employees the rates of contribution from employers are now to be raised to two and a half per cent and one and three-fourth per cent in the implemented and non-implemented areas respectively. The increased rate of employers' contribution will, however, still be below the ceiling permissible under the Act.

The valuer, appointed by the Corporation to make a valuation of its assets and liabilities in 1954, estimated that these rates would provide enough funds for the Corporation to meet its share of the cost of medical care for insured persons and their families.

Development Plans of the Madras State Government Medical Department

The progress of development schemes relating to the Medical Department was among the subjects reviewed by the State Development Committee, in its second day session held on October 9, states a Government Press Note.

The scheme for upgrading the training school for nurses in the Stanley Hospital, Madras, in accordance with the scheme formulated by the Trained Nurses Association of India has been put into operation. Fifty students have been admitted for the Pharmacy course in Madras Medical College, Madras, from July 1. The Unified Technicians' Course is also to be implemented in the King Institute, Guindy. The course is of two years' duration and 12 candidates are to be admitted each year. During the year 1956-57, five officers are to be deputed abroad on a study tour to United Kingdom and the continent.

The opening of three leprosy subsidiary centres at Ponnani in Malabar District, Vriddachalam in South Arcot District and Paramankurichi in Tirunelveli District has been sanctioned. Twenty-eight Primary Health Centres in National Extension Service Blocks are to be opened during the year 1956-57. Out of this, the opening of 20 centres has already been sanctioned. The first batch of 66 additional pupil Maternity Assistants sanctioned for undergoing training has been admitted in various training centres in the mofussil with effect from July 1, 1956, and they are at present undergoing training in Midwifery. The construction of a new hostel for men students of the Madras Medical College has been sanctioned by the Government. It is expected that the students could be admitted in the hostel from early 1957.

Control of malaria :—In respect of the Public Health Schemes, the National Malaria Control Programme, which was started during the First Five-Year Plan, is being continued during the Second-Five-Year Plan period also. The control of Malaria had nearly been achieved during the First Five-Year Plan period itself except in a small pocket in Salem District, where control operations were started comparatively later. During the Second Plan period, it is programmed to undertake the *eradication* of Malaria as distinct from *'control'* of Malaria. One hundred and twenty Maternity and Child Health Centres are to be opened in 1956-57. Out of this, 90 centres have already been opened.

Nobel Prize for Medicine

Joint Award to 3 Heart Specialists

This year's Nobel Prize in Medicine has been awarded to a West German and two Americans. They are :—Dr. Werner Forssmann, of Badkrueznach, and Prof. Andre Cournand, and Prof. Dickinson W. Richards (Junior), both of New York.

The joint award marks their discoveries in the fields of heart catheterization and pathological changes in the circulatory system.

Dr. Forssmann pioneered a technique of getting inside information of the heart by an extraordinary operation which he performed on himself in 1929.

He opened an artery in his own arm and inserted a catheter. When he had pushed it as far as the shoulder, his colleagues stopped him for fear that he would kill himself. He waited till he was alone, then repeated the experiment, pushing the tube until it entered the right chamber of the heart. Then he walked into the X-ray department, and had it photographed.

Dr. Forssmann, 52, repeated the operation on himself using a fluoroscope.

Prof. Cournand, in New York, began to search for means of using the catheter to ascertain the oxygen content and pressure changes taking place inside the heart. He and his helper and colleague Prof. Dickinson Richards then began to work out what these observations meant in terms of diagnosis and treatment.

During the war they used the method widely in treating wounded soldiers suffering from shock.

More Medical Colleges for Madras State

Mr. A. B. Shetty, Health Minister told Pressmen on 14-10-'56 that

another Medical College in Madras State might be located at Coimbatore.

The citizens of that place had promised monetary contributions, and the Government Arts College buildings also had been offered for housing the Medical College there.

Regarding the location of a Medical College at Tanjore, the idea had been given up as there had been a lack of initiative, and also no offer of financial contribution. However, under the Second Five-Year Plan the Union Government proposed to establish five or six more Medical Colleges in India, and Tanjore might have one.

Registration of Patient and proprietary Medicines

Last Date Extend to December 31, 1956

With the coming into force of the Drugs (Amendment) Act 1955, labels of patent and proprietary medicines should display in the prescribed form and in a manner readily intelligible to the medical profession, the true formula and the list of ingredients contained in them.

The Central Drugs Laboratory has accordingly stopped the registration of patent and proprietary medicines with undisclosed formulæ. Registration certificates in respect of patent and proprietary medicines with undisclosed formulæ issued by the Central Drugs Laboratory prior to the coming into force of the Drugs (Amendment) Act, 1956, became inoperative after the Act came into force.

Manufacturers and importers are accordingly advised that the labels of patent and proprietary medicines should be changed to comply with the provisions of the Drugs Act, 1940 as amended by the Drugs (Amendment) Act, 1955.

Originally, time was allowed for the purpose upto September 30, 1956 after which date the provisions of the Drugs Act, 1940, as indicated above, were to be strictly enforced. The trade have since represented to the Government of India requesting for some more time. On a consideration of this representation the Government of India have decided to allow time upto December 31, 1956 to the trade to get ready for conforming to rules. No further extension of time will be given thereafter.

Post-graduate Training in Public Health Fellowships Offered Under Colombo Plan

Fellowships have been offered for Post-graduate training in various Commonwealth Countries in Public Health, Medical and allied subjects under the Colombo Plan. The facilities offered are for practical training as distinct from purely academic training.

Candidates should be at least graduates in the particular field and they should have sufficient experience to enable them to receive training. They should be below 45 years of age. The age limit is relaxable up to 48 years in exceptional cases. They should be employed under State Governments, Local bodies or non-governmental voluntary organisations.

Applications should be submitted through the State Governments in all cases, on the prescribed forms, obtainable from the Secretary to the Government of India, Ministry of Health, North Block, Central Secretariat, New Delhi. The last date for the submission of applications to the State Governments is December 20, 1956.

Preparations and Inventions

Distaquaine V Tablets

There are many oral Penicillin preparations available; any new addition to their number should therefore possess a definite advantage over its predecessors. The Distillers Company (Biochemicals) Limited now offer what is virtually a new antibiotic, 'Distaquaine' V tablets (Penicillin V Crystalline, Free Acid; Phenoxymethyl Penicillin). 'Distaquaine' V tablets are stable in gastric acid and provide consistent blood levels considerably higher than those obtainable with other oral forms of Penicillin. In many cases they are a satisfactory alternative to parenteral therapy. Bottles of 30 tablets each containing 60 mg. of Penicillin V Crystalline Free Acid are available from the Sole Distributors—Imperial Chemical Industries (India) Private Limited.

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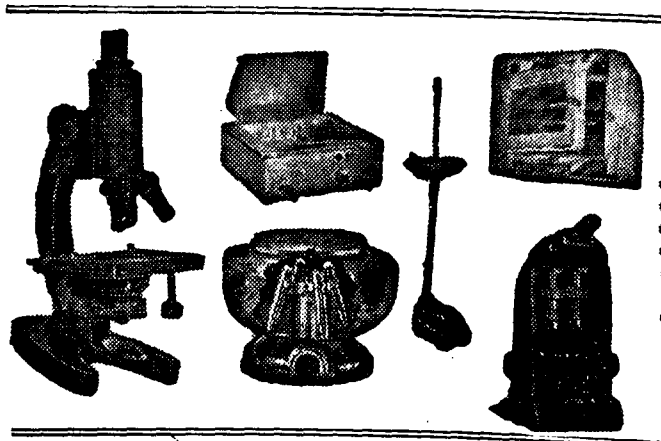

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References :-

1. "The Role of Ayurvedic Medicines in the Treatment of Diabetes Mellitus"—Indian Journal of Medical Sciences-Vol. 6, No. 2, Feb, 1953, pp-117-136.
2. "Review of Diabetic Cases Treated with Ayurvedic Medicine" "Special Therapeutic Number" of the Indian Medical Review
3. Journal of the Indian Medical Profession, "Recent Advances in Diabetes Mellitus" Vol. 2, No. 8, pp. 870-879, November, 1955

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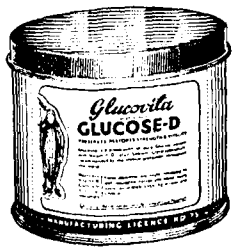

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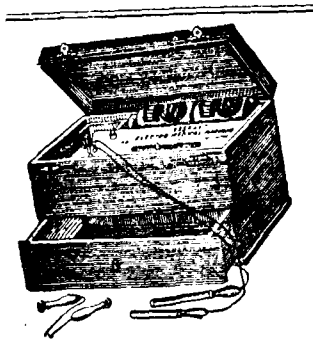

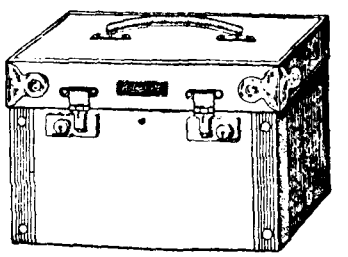

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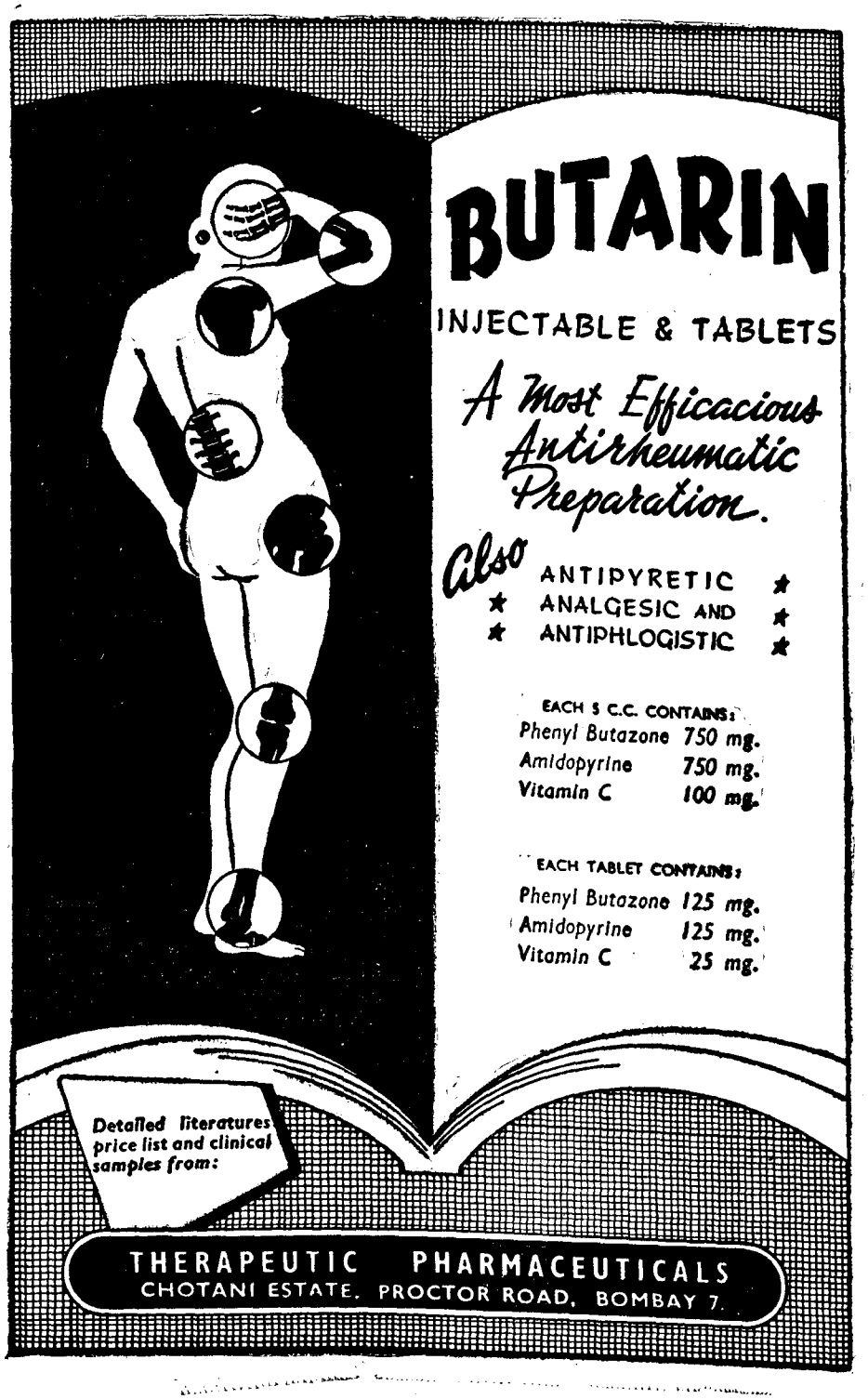

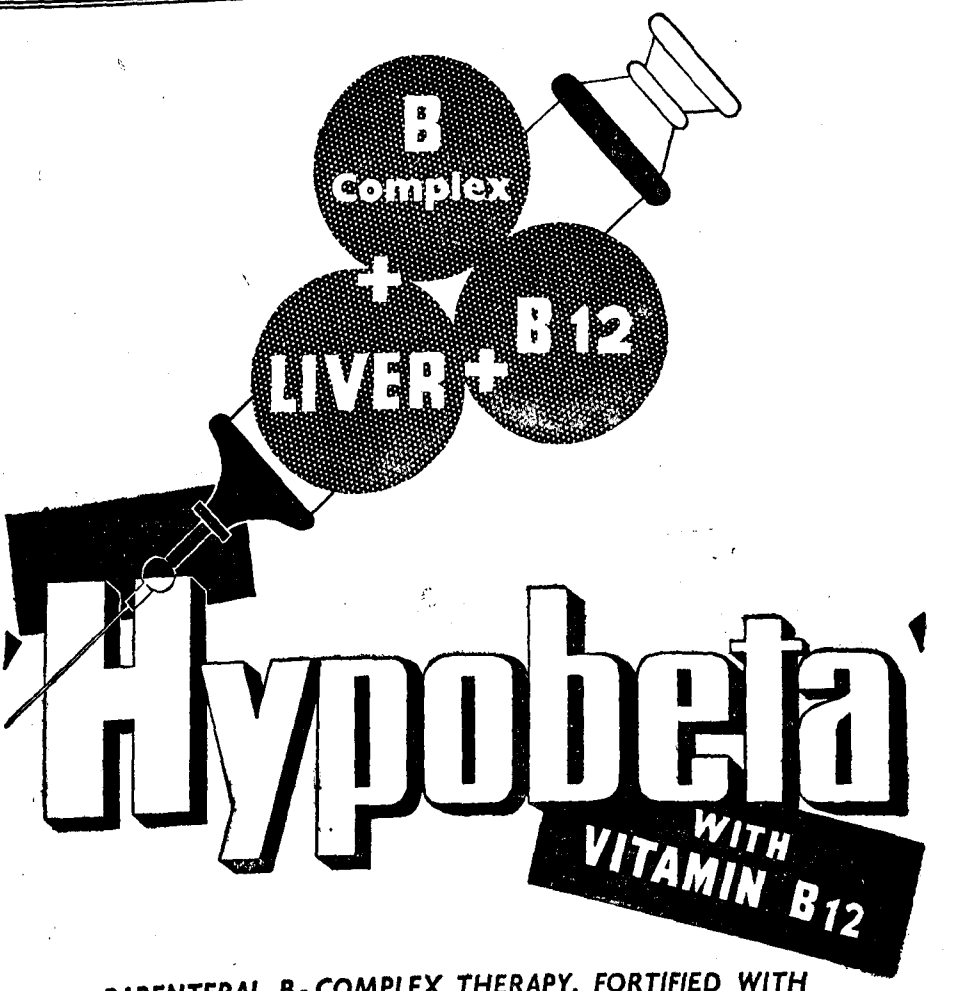

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AUTHOR and SUBJECT INDEX

Vol. 53 | JANUARY TO DECEMBER, 1956 | Nos. 1 to 12

AUTHOR INDEX

THE ANTISEPTIC 1956—SUBJECT INDEX

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