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The Antiseptic

A Monthly Journal of Medicine & Surgery

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

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

Consulting Editor : U. KRISHNA RAU, M.B., B.S., M.L.A. *Editor* : U. VASUDHA RAU, M.B., B.S.

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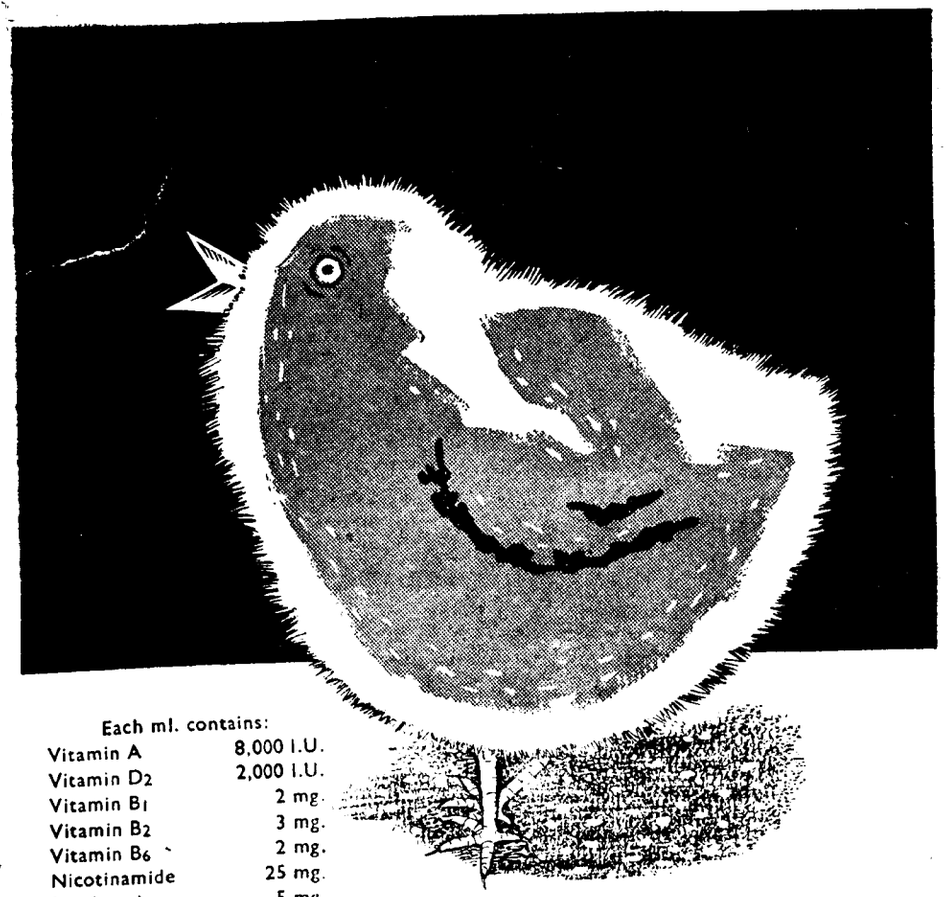

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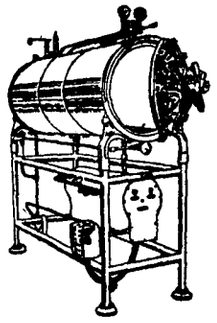

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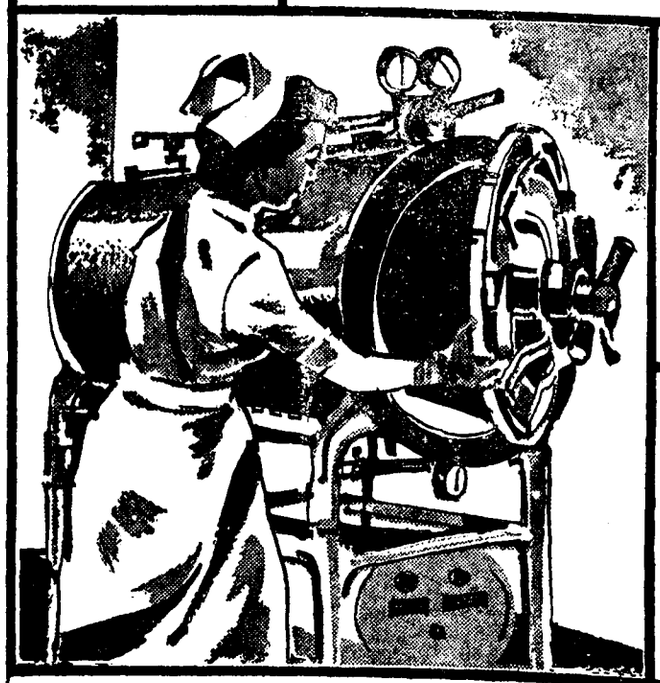

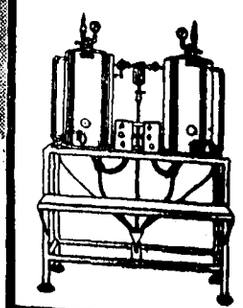

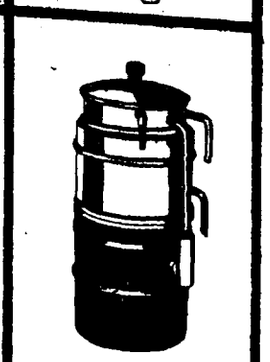

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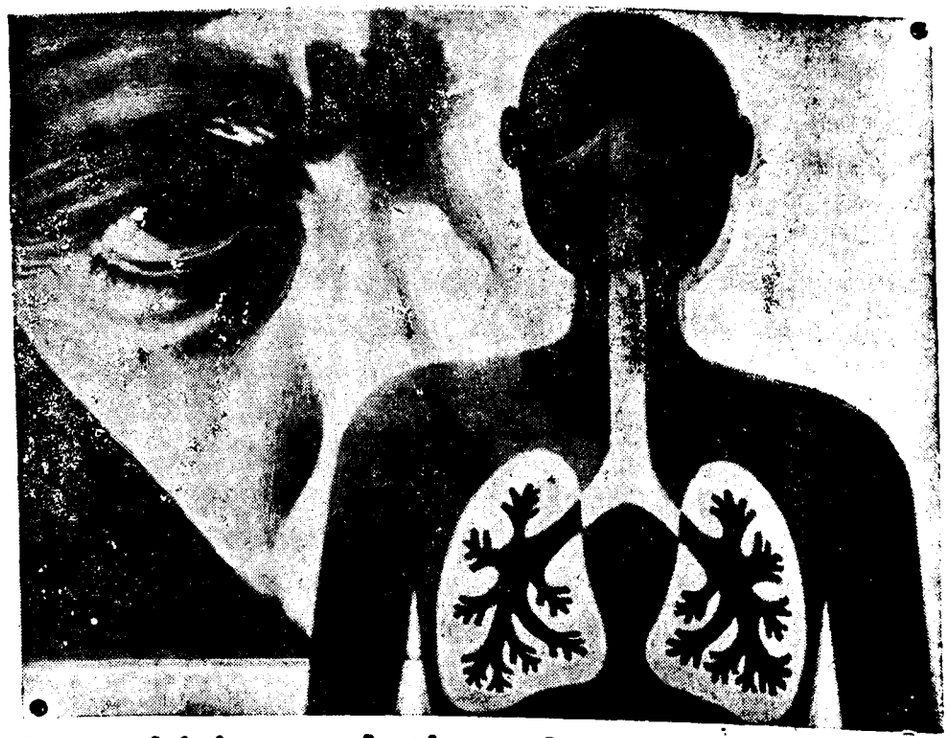

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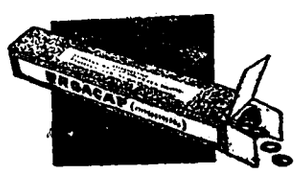

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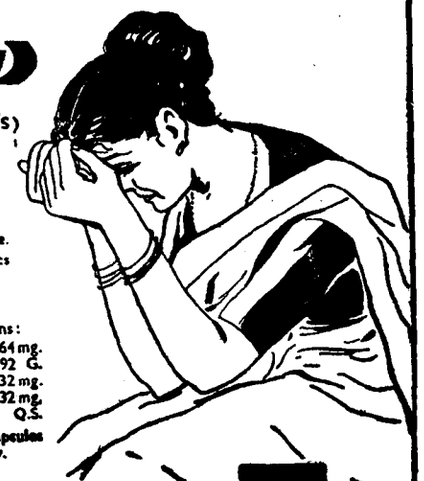

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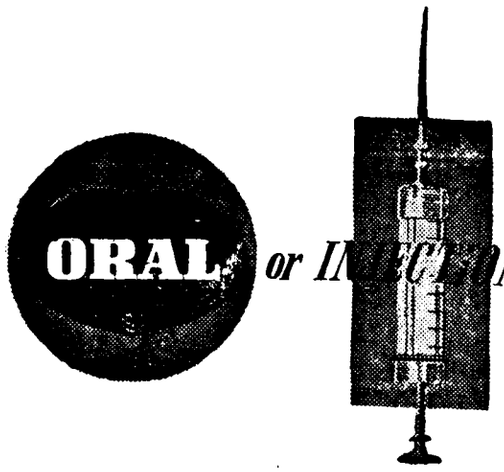

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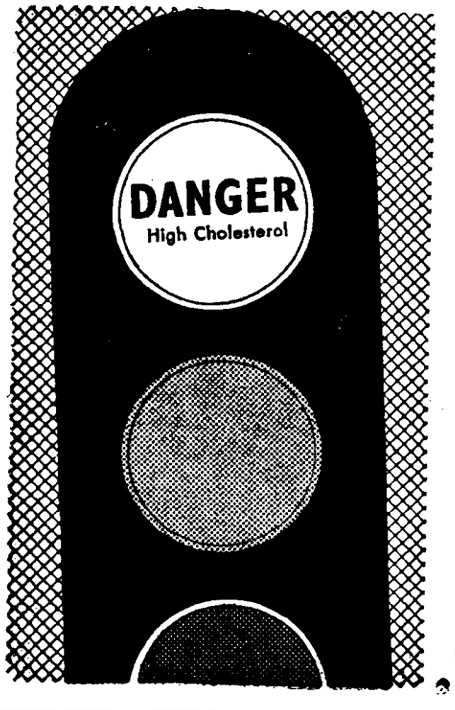

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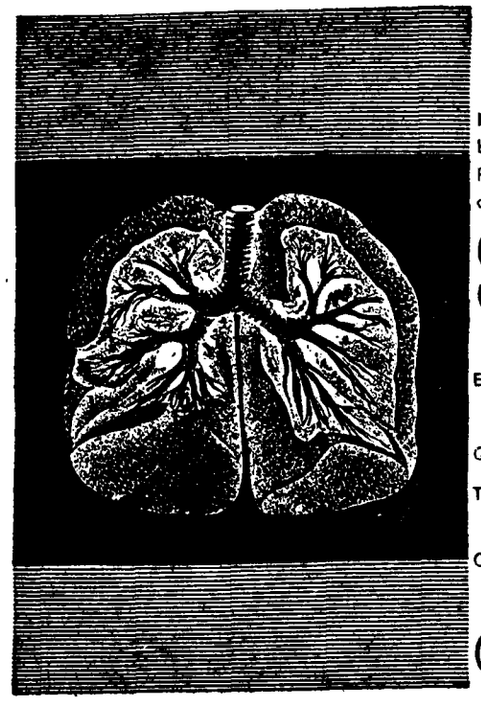

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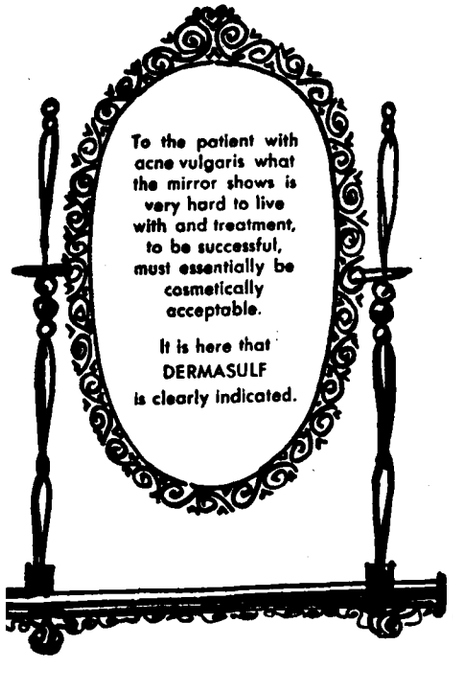

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Original Articles

HAND INJURIES*

(Report based on 500 Cases)

R. J. MANEKSHA, F.R.C.S. (Eng.),
Hon. Plastic Surgeon, Bombay Hospital,
Asstt. Hon. Surgeon, G.T. Hospital, Bombay

MAN has the supreme advantage of having his hand adapted for prehensile function for which his hand and fingers are delicately specialized and refined in their variegated functions. It is therefore, but natural that the hands and fingers which translate into action the various vital activities of man should be exposed to great hazards during such activities.

Incidence.—It is indeed important to note that 1 in every 3 cases of injury involves the hand in general factory accidents. Statistics published in the U.S. Department of Labour indicate that of approximately 2 million disabling work-injuries which occur in that country every year, three-quarters involve some permanent impairment of hand function. It is peculiar that of the industrial injuries only 40% are due to machinery, while 60% are due to personal factors—stepping or sticking against objects, falls, cuts or handling of materials without machinery. These "household type" accidents have been due to physical, mental and social conditions of the worker. Their incidence is related to the age, experience, responsibility and general health of the employee, also to the factory conditions of hours, fatigue, atmosphere and lighting. There are some who are "accident-prone" as they receive multiple and repeated injuries which are out of proportion to chance conditions. Married men are more prone to accidents than unmarried ones. The right hand is

*Specially contributed to the ANTISEPTIC.

slightly more often involved than the left as it is the one greatly used ; the incidence of the left hand becoming involved is due to its lack of efficiency and early onset of fatigue.

Lacerated wounds of the fingers stand first in the list of injuries—their percentage being 31% of all hand injuries. Fractures come second with 26%, contused fingers and burns of hands each form 10 per cent.

Simple fractures are also more common than compound ones. The terminal phalanx is the most common bone affected. Fractures of the ring, index and middle fingers occur in their order of frequency.

The economic loss to the country, the employer and the worker himself is great—it is greater still if cases are mismanaged as will be pointed out later. The total loss as calculated by Dr. Harbans Lall of Jamshedpur for hand injuries in one year came to Rs. 82,971, which is not a small figure. There is not only loss of man-hours in production but loss of skilled effectives —the loss of such a valued skilled worker cannot reasonably be estimated and cannot be easily replaced in our poor country where skilled labour is indeed rare.

The cause and prevention of accidents.—Heinrich has shown that for every accident there is either an unsafe personal act, or a special mechanical hazard or both. By establishing a fact-finding system, recording, analysing and card-coding every accident, the causes may be run down and correction carried through analysis of cards have shown that 88% of accidents are from unsafe acts.

The examination of the injured hand.—The assessment of the damage to an injured hand is the personal responsibility of the operating surgeon. It is not advisable to rely on the findings of the previous examiner for if *(sic)* these prove contrary to the operative findings.

The following considerations are necessary :—(1) The exact time, the nature and circumstances under which the injury was produced should be noted as such information will be helpful in further accident prevention.

(2) Details of any first-aid treatment given should be inquired into. Very often there has been an enthusiastic abuse of antiseptics.

(3) Clinical examination :–The hand is generally examined twice :—the *preliminary* preanæsthetic examination which concerns the whole hand and its function and the *second* is the examination under anæsthesia which is concerned with details of the wound itself. The preliminary examination is an easy exercise of applied anatomy as all the important functions of the hand are tested. It is advisable to demonstrate the function which

the patient is supposed to carry out, sometimes also telling the patient to do it on the normal side first. Tests for individual tendons should be carried out—the site of the wound often giving an indication of the likely tendon to be damaged. Nerve injuries are more frequently overlooked than tendon injuries but both the motor and sensory functions of the nerves must be tested before giving anæsthesia. Sensation should *not* be tested by the examiner's finger or the house-surgeon's question "Can you feel that ?" The usual answer is "yes" in spite of a nerve lesion.

The inconclusive evidence of any test must always be subordinated to that of seeing at operation the actual damage.

It is worth while discussing with the patient the likely outcome of the operative treatment and the prognosis. If amputation is the likely result, it is better to have the goodwill of the patient from the start.

Multiple examinations are to be deprecated.

PRELIMINARY TREATMENT :—It is somewhat unfortunate that injuries of the hand are often treated as minor injuries in the minor surgery department and without due regard to aseptic principles. The primary treatment of hand-injuries is the most important—an immediate closure of a soft tissue wound is far better than a secondary procedure after the onset of sepsis and long immobilization has caused scar-tissue and loss of function. Good results cannot be expected if hand injuries are allowed to be treated by junior men working in the ill-equipped Casualty Department. It is the continued responsibility of the surgeon who deals with the case first to treat him till he is cured. If a junior man is competent to undertake the primary treatment, it is but proper to expect that he should be competent to treat the case right through. The medical student and the houseman must be trained under expert guidance during all stages of the treatment. If work is well done in an institution, the students can be taught both by precept and by example. We have treated our 500 cases in the G. T. Hospital during the last 5 years. All serious hand injuries are admitted at once.

The primary treatment should be undertaken where there are proper operating facilities ; our registrars are fully trained in the proper principles of wound-care.

First aid instructions are important from the point of view of the general practitioner.

(1) Every hand injury occurring in a factory should be reported and every minor skin-cut or abrasion promptly and properly cleaned, and kept covered.

(2) It is the province of the supervisor, foreman or first-aid assistant in the factory and not of the injured worker himself to decide which injuries require medical attention.

(3) It is significant that most of the infective complications of hand-injuries arise from infection of minor and neglected lesions and not from gross injury which is treated in hospital.

(4) Where choice is permitted, the use of cotton wool as a direct first-aid dressing to raw areas should be avoided for it takes much time and patience to clear a recent wound of shreds of blood-sodden wool, etc.

(5) In the case of major injuries, first-aid care should follow an orderly sequence in a calm atmosphere and be directed to the control of hæmorrhage-by pressure or tourniquet, general anti-shock measures and reassurance, the covering of injured area and adequate splinting.

FIG. 1-a. Crushed pulp without exposure of tendon.

FIG. 1-b. Debrided and split-grafted. After 15 days.

FIG. 2-a. Amputations by the iron hook at the dockyard.

FIG. 2-b. Two pectoral flaps.

Treatment in the hospital :— Consists of :-(1) Early treatment. (2) Secondary treatment for residual defects.

There are certain guiding principles to be followed sequence with regard to the early or primary treatment.

(*a*) No open hand wound can be subjected to proper surgical management except under suitable anaesthesia. Unsatisfactory anaesthesia or any compromise in anaesthetic methods makes for mediocrity in the results obtained.

FIG. 2-c. Result, 7 days after healing.

(*b*) Local anaesthesia to block the finger should be given at the level of the distal palmar crease and not in the finger. Adrenalin should not be added.

(*c*) Cleansing—On the wound area no strong antiseptic is applied, while the surrounding area is first properly cleansed with soap and water.

(*d*) All non-viable tissue should be excised; closure with non-viable tissue means failure and closure over non-viable tissue may be disastrous. All raw areas should be promptly covered at once.

(*e*) In the theatre there must be an atmosphere of calm and efficiency, without any fuss or messing, each person doing the work allotted to him—this helps the patient to feel he is in competent hands. Practice of this routine is important. There should be no unnecssary personnel or equipment in the theatre.

(*f*) In the case of clear wounds of the hand Esmarch Bandage is applied by the surgeon after elevating the limb for some time to drain off the venous blood—a clear avascular field of operation is a "*must*" for delicate hand surgery. Even the minutest nerve terminal is thus identified and hence precluded from injury. There is no need for multiple artery forceps (sometimes blindly applied) which may only damage important structures. The judicious use of a tourniquet in hand-surgery has mainly contributed in improving hand-surgery.

(*g*) The special hand stand of Dr. Rank helps to fix the hand in the required position without the help of any assistant. The fingers are fixed into position by the rubber bands. Hence there is enough space for the surgeon to work unhampered in the very small area of the hand. In the absence of annoying bleeding and with clear visualization of all the parts, surgery is bound to be of a high standard.

The time of application of the tourniquet is noted and it should be released every hour to be on the safe side. There is no need to race against time in this type of work.

(*h*) Each structure is identified and the damage noted—if continuity can be restored it is done either by direct suture or by

grafting in tidy wounds. In untidy wounds the non-viable tissue is excised—tendons and nerves though widely exposed are rarely severed. The chief object of the primary operation is careful closure of all soft-tissue wounds. Fractures and dislocations are reduced but tendon and nerve injuries are better left for repair at a later date.

(*i*) Drainage is sometimes necessary when good hæmostasis is difficult or doubtful—a tension hæmatoma is the *beta-noire* of plastic surgery.

Important rules to be observed in the treatment of finger injuries are :—

(i) The injured finger must be immobilized whether it is a fracture dislocation or sprain of the joint. Stiffness of the finger is thus avoided. Movement recovers more rapidly if *torn structures* are immobilized and protected until traumatic exudate has subsided. The injured finger must be immobilized in flexion.

(ii) The injured finger alone should be immobilized leaving all the other fingers free and the temptation to cover everything with a bandage is to be resisted. The injured finger must be actively exercised to the full limits of flexion and extension.

(iii) Passive stretching of the finger is to be avoided as it adds to the stiffness.

(iv) The thumb must be preserved at all costs as its value to the worker is equal to the other 4 fingers put together. Any portion of the thumb may be later utilized by reconstruction from a small stump.

Rehabilitation.—It is better to rehabilitate these cases in the workshop than in a centre so that they feel they have become useful again—hence the employer must take back the injured person into work as early as he possibly can. (*See* Figs. 1-*a, b* and 2-*a, b, c*, p. 100 and 101 *as they are examples of typical cases treated*).

Conclusion.—It is the right of each patient with hand injury to receive continuous and integrated service of modern surgical facilities and every case is a single surgeon's sole and continued responsibility. It is the duty of the State to establish Hand-Injury-Centres in all industrial towns. Hand clubs are of value where orthopædic, plastic and neuro-surgeons could meet and discuss difficult hand-problems. Primary treatment in the factory itself is important as it lays the foundation for correct treatment. Early rehabilitation on the office or factory work-bench rather than in the hospital should be encouraged.

Acknowledgement.—I would like to thank, Mr. Rank, F.R.C.S., F.R.A.C.S., the famous Plastic Surgeon of Australia who taught me these principles, when his services were loaned to India under the Colombo Plan in 1955. My thanks are also due to the numerous Registrars and House Surgeons at the G. T. Hospital for the care they took in looking after the injured-hand-cases and especially to my ex-Surgical Registrar, Dr. S. S. Sethi, M.S., for his excellent work for 2 years at the G. T. Hospital.

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ABDOMINAL APOPLEXY IN SEMINOMA TESTIS*

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FOR all practical purposes neoplastic conditions of the testis may, by and large and rightly too, be considered malignant. The clinical condition of patients suffering from testicular malignancy who come to hospitals for treatment is found to vary widely. In some cases the growth has been stationary for a considerable time and with no apparent distal metastases; while in others the testis is red, hot and tender showing a 'pseudo-inflammatory' feature as the prominent clinical manifestation. Testicular tumour of the metastatic type is met with in a large number of cases. The usual sites of metastases are the abdominal, thoracic and supraclavicular groups of lymph nodes. Osseous metastasis in the maxilla has also been noted in some cases. An extremely run-down condition is usually found and is especially marked in the metastatic group of cases.

The prognosis of testicular malignancy is very grave. The general condition of the patients usually deteriorates rapidly and the ultimate catastrophe may be brought about in a variety of ways. Patients may die of malignant cachexia and intercurrent infection, or the end may be precipitated by cerebral metastases, pneumothorax or sudden massive hæmorrhage from the large blood vessels. The growth is comparatively more malignant in the old than in younger persons. Death usually occurs within 6 months to 2 years of the onset of the disease.

The phenomenon of sudden fatal hæmorrhage in seminoma of the testis is caused by the destruction of the larger blood vessels; more often the veins are involved, their walls being thinner and so weaker than those of the arteries. Chakrabarti (1957) reported massive fatal hæmorrhage from the iliac vessels in a case of seminoma of the testis.

The cases where such fatal hæmorrhage occurs due to vascular rupture have been separately grouped by me under a distinct sub-head :—the 'malignant hæmorrhagic' type of seminoma of the testis.

Seminoma of the testis is a columnar-celled carcinoma arising from the seminiferous tubules of the testis. The growth spreads as a rule by way of the lymphatics. In the 'malignant hæmorrhagic' type of seminoma of the testis the bleeding is in my opinion due to a destruction of the larger blood vessels from the spread of the metastatic lymph nodes, and the direct hæmatogenous spread from the testis could hardly account for the immediate pathogenesis of the condition. So it is

*Specially contributed to the ANTISEPTIC.

suggested that the 'malignant hæmorrhagic' type of seminoma of the testis is the result of a lymphatic spread and not a direct hæmatogenous one and the following report of a case is given in support of the above view.

Case report.—Mr. X., aged 32 years, was admitted into the hospital in an advanced condition of the disease. He was markedly anæmic, emaciated and prostrated ; he gave a history of rapid enlargement of the right testis during the last six months and subsequently he had swellings in the abdomen and neck ; and also suffered from occasional attacks of dyspnœa, which, in this particular case, were accompanied by gastro-intestinal upsets characterized by marked constipation, occasional vomiting and anorexia.

Both the testes were present in the scrotum ; the right one being enlarged, heavy and hard. Transillumination test was negative. The right spermatic cord was thickened. The left testis was not involved.

A large fairly hard lump with ill-defined margins was present in the abdomen near the umbilical region, fixed to the posterior abdominal wall.

FIG. 1. (1) Enlarged right testis. (2) Metastasis in the abdomen. (3) Gynæcomastia. (4) Metastasis in left supraclavicular lymph nodes.

FIG. 2. (1) Cut surface of seminoma testis.

The left supraclavicular lymph-nodes were enlarged, hard and fixed (*See* Fig. 1). The lymph nodes in the inguinal and the axillary regions were not enlarged.

The patient developed bilateral gynæcomastia during the last two months of his illness (*See* Fig. 1).

The progress of the disease was appreciably rapid and within a few days of admission he became profoundly asthenic and dyspnœic. Eventually he complained one day of excruciating

pain in the abdomen and this was followed by an irreversible shock.

Pathological reports.—RIGHT TESTIS :—The right testis was markedly enlarged and bossy in appearance. Its cut surface was pinkish in colour and in the midst of a homogeneous mass a few small cystic areas were seen. These spaces were filled with blood clots. The epididymis was compressed by the enlarged testicular mass (*See* Fig. 2, p. 104). A small secondary hydrocele with a straw-coloured fluid in its sac was present.

FIG. 3. Metastatic lymph nodes in abdomen forming an inseparable lump with structures in the vicinity.

ABDOMINAL CAVITY :—The peritoneal cavity was filled with a very large quantity of blood ; and large hard lump was present in the retroperitoneal region. The coils of the small intestine having been pressed upon by the growth, adhered together and along with the enlarged lymph nodes, the kidneys and the blood vessels of the posterior abdominal wall formed an inseparable mass. (*See* Fig. 3). The colour of the cut surface of the lump was pinkish in appearance. By careful dissection, a part of the inferior venacava was found to be replaced by malignant growth (*See* Fig. 4). This vascular destruction was responsible for the massive fatal hæmorrhage.

FIG. 4. Inferior venacava was invaded by the secondary growth in abdomen and a part of the vein was destroyed. The stick indicates the site of the hole in inferior vena cava.

FIG. 5. Enlarged mediastinal lymph nodes. Lymphatic spread is well demonstrated.

THORACIC CAVITY :—The mediastinal lymph nodes were enlarged, hard and fixed to the great vessels. Some of them were present both above and below the arch of the aorta and the right phrenic nerve was stretched by this secondary growth (*See* Fig. 5, p. 105). The cut surface of the enlarged lymph nodes was pinkish in colour and homogeneous in appearance. There was no fluid in the thoracic cavity. The lungs did not show any secondary growth.

SUPRACLAVICULAR LYMPH NODES :—The left supraclavicular lymph nodes were enlarged, hard and fixed. The cut surface was pinkish in colour and homogeneous in appearance.

Histology.—Histological examination revealed the presence of structures of seminoma of the testis both in the primary and secondary growths.

Summary.—A detailed report of a case of the metastatic type of seminoma of the testis is given. The secondary growth in the abdominal lymph nodes (aortic group) invaded the inferior vena cava. Ultimately a part of it was destroyed by the direct spread of the growth and consequently massive fatal hæmorrhage occurred. This type of fatal hæmorrhage from the destruction of the larger blood vessels like the inferior vena cava has been termed '*Abdominal apoplexy*,' and as mentioned above, is one of the causes of death in seminoma of the testis.

Ackwowledgement.—My grateful thanks are due to the Principal and the Superintendent of R. G. Kar Medical College and Hospitals, Calcutta for according permission to publish this paper.

REFERENCE :—Chakrabarti, A. K. (1957)—The Indian Medical Journal, *51* : 317.

ORAL TREATMENT OF DIABETES MELLITUS

Despite the undoubted value of a combination of the sulphonamides and biguanides in the oral treatment of some cases of diabetes, R. Deuil and his colleagues regard the use of these drugs, especially in young diabetics, with some misgiving. They consider that insulin is still the best treatment for patients under 40 years of age and of less than average weight, even if there is no family history of diabetes or any suggestion of previous ketonuria. On the other hand they find that oral treatment has a useful place in obese patients over the age of 40, but that the efficacy diminishes as the weight approaches the normal figure for the individual patient. With these reservations the authors conclude that oral treatment is appropriate in 'an immense number' of diabetics, a fact largely due to the discovery of the guanidines. They stress the importance of regular supervision of patients receiving oral treatment, the need for proper dietary restrictions, and the liability of those who are overweight to become refractory to this treatment should they lose weight sufficiently. Because sulphonamide-guanidine treatment is not always fully effective they consider that it cannot altogether replace insulin therapy which is the treatment of choice in young patients.—(*Practitioner*, p. 597, October, 1961).

HEART DISEASE AND PREGNANCY

The first significant point is ascertainment of the patient's exercise tolerance. A patient who can be considered a good risk is asymptomatic and has a heart of normal size. If mitral valve insufficiency is her only defect, the risk for her should not be great. Patients who have had symptoms of cardiac insufficiency before they became pregnant may be considered poor risks.—(*C.M.D.*, October, 1961).

CÆSAREAN SECTION IN MODERN MIDWIFERY*

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THOUGH not a specialist in midwifery and gynæcology, I have performed about 176 cæsarean sections in the course of my general surgical work in the Neyyoor hospital and its branches and also in my private practice. I wish to recount my experience and also give a brief review the relevant literature.

One of the most striking developments in modern obstetrics is the great increase in the number of women delivered by cæsarean section. Forty or fifty years ago, cæsarean operation was regarded as the last desperate resort when delivery was found to be totally impossible by every other means. The mortality rate was then very high ; in fact recovery from the effects of the operation was considered remarkable and even surprising.

Today the position has become so very different that in advanced countries eminent obstetricians have to warn their colleagues against the abuse of this life-saving operation. The present success of this operation is due to the advances in anæsthesia, aseptic and antiseptic techniques and to a less extent to chemotherapeutic agents. A classical cæsarean section needs no very high degree of operative skill ; wide obstetrical experience will alone give the judgement needed to decide upon cæsarean section for a particular case. When delivery by the natural passage is likely to involve risks to mother or child, operative delivery must be preferred.

In cases of severely contracted pelvis where natural delivery would be dangerous if not impossible, abdominal delivery offers a reasonably safe solution. It avoids the danger of delivery by the vagina in such difficult conditions, where it is inadvisable even to attempt such delivery ; in such cases the course of labour may be so unfavourable that it would be quite risky and unwise to allow it to proceed further ; cæsarean section offers a rapid method of terminating the pregnancy, and thus really offers a valuable alternative to induction of labour, wherever the conditions affecting the mother or child indicate the need for immediate termination of pregnancy. An important question here arises, as to what extent it would be proper to submit a mother to cæsarean section in the interests of her child ? In many cases the issue is in no doubt, the risk to the child being great, and in addition there is some risk also to the mother if spontaneous delivery is to be attempted. However in modern obstetric practice, the value of the child's life is assuming great importance even in relation to the safety of the mother. Several factors have conspired to bring about this change in popular

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outlook and attitude :—late marriages, postponement of child-bearing and the modern trend towards smaller families.

This changed attitude should not influence the judgement of the obstetrician ; but even so there are occasions when the loss of the child will mean great frustration to the parents and also when the chances of the mother bearing further children are slight, when it may be quite justifiable to submit the mother to some increased risk.

In my series of 176 cases of cæsarean section, there were only two deaths. The maternal mortality from cæsarean section compares favourably with that resulting from other methods of treatment.

Apart from any increase in maternal mortality, cæsarean section involves post-operative complications and the recovery of the mother is definitely delayed. The patient may have to be in bed for months ; she has to stand the strains of recovery and of looking after the baby as a routine.

Some think that cæsarean section may affect future child-bearing adversely. It is not likely that cæsarean section would lead to any decrease in fertility. Sometimes there may be rupture of an uterine scar. This risk would depend on the type of operation. It is stated that rupture is often greater in classical cæsarean section than after the lower segment operations. The risk of rupture is greater in contracted pelvis than in the normal one. "Once a cæsarean always a cæsarean" is a common saying. But this is not always true ; for normal deliveries do occur after one cæsarean section, such as due to placenta prævia or accidental hæmorrhage.

The fœtus is also liable to several risks, though theoretically there should be none ; in actual practice there is a certain amount of risk to the baby, depending upon the condition necessitating the section, on the skill of the operator and on the anæsthetic used. I have operated on all cases under local anæsthesia, and I have not had any difficulty. In the case of premature babies, the mortality is necessarily high.

The indications for cæsarean section may be *absolute* or *relative*. The *absolute* ones include :—a contracted pelvis—a true conjugate of less than three inches. The *relative* indications comprise of a variety of conditions and the decision for or against the section would depend on a several considerations including the age of the mother, her previous obstetrical history, the period of her sterility, and the severity of the condition for which cæsarean section is sought to be made. The primipara over 40 years of age needs special consideration, as she is liable to several kinds of complications and the incidence of toxæmia is high ; so operative delivery is indicated. The chances of such

patients bearing more children are very limited. It does not mean that all such women should undergo cæsarean section but those who have even a slight abnormality, such as a high head, and uterine inertia, would have to be considered for the operation instead of letting them run the risk of prolonged labour and difficult delivery, and with a possible still-born baby at the end of all the trouble.

Of the many *relative* indications for cæsarean section three groups merit special consideration *viz.* :—*(i)* contracted pelvis, *(ii)* anti-partum hæmorrhage and *(iii)* toxæmia of late pregnancy.

TABLE I

Showing the classification of the 176 cases

1.	Contracted pelvis ...	... 65
2.	Disproportion of head ...	... 47
3.	Malposition of head ...	... 12
4.	Flat pelvis ...	... 7
5.	Cicatrix and rigid cervix ...	... 15
6.	Anti-partum hæmorrhage including placenta prævia ...	... 20
7.	Eclampsia in contracted pelvis	... 5
8.	History of difficult labour ...	... 5
	Total	... 176

Contracted pelvis is a definite indication for cæsarean section. Most people agree that, it is the true conjugate is less than 3½ inches cæsarean section is indicated. Such cases should have cæsarean section before the pain has started, so that the uterine contractions do not lead to a rupture of the uterus. It is important to emphasize the use of X-ray and pelvimetry in cases where the size and shape of the pelvis are in doubt.

Anti-partum hæmorrhage however slight, should be regarded as one of the gravest of obstetrical emergencies. When even a slight hæmorrhage occurs after the 28th week of pregnancy the patient must be promptly hospitalized as cæsarean section is definitely indicated. Blood transfusion or saline glucose infusion may also have to be given before the section. The patient must be examined carefully with a sterile speculum to exclude extra-placental bleeding. If no cause is found, the patient is kept under observation ; if there *is* severe hæmorrhage cæsarean section must be done. If a central placenta-prævia is found, a cæsarean is immediately needed. If a marginal placenta-prævia causes the bleeding, it can be successfully treated by rupturing the membranes ; in some cases however, section offers the best chances for both mother and child.

Caesarean section for toxaemias of late pregnancy :—In severe pre-eclamptic toxæmia there are three main dangers :—(1) Eclampsia ; (2) death of child *in utero* and (3) accidental hæmorrhage. Most cases can be treated expectantly ; but when in spite of such treatment the patients have high blood-pressure and an increase in albuminuria, termination of the

pregnancy is desirable. In the case of elderly primigravidæ cæsarean section may have to be preferred to induction of labour. Operation is the rapid and sure way of terminating pregnancy, whereas induction of labour when the pregnancy is not in full term, does not avail. Similarly in the pre-eclamptic state, section may be performed after a preliminary brief period of medical treatment, including sedatives, starvation, and venesection. Eclampsia, occurring before labour starts is generally treated expectantly.

Cæsarean section may also be performed in two other varieties of toxæmia of late pregnancy. Hypertensive toxæmia (chronic nephritis in pregnancy) where there is a great chance of the fœtus dying *in utero* during the last months of pregnancy. Unless urgent symptoms appear, it is advisable to wait until the end of the 37th week; such mothers will usually have small babies.

Other indications are:—*(i)* the presence of fibroid in the pregnant uterus where the tumour obstructs the delivery of the child. Cases are on record of many patients with large fibroid uteri, delivering themselves without any difficulty. The fibroids impacted in the pelvis and obstructing labour should be dealt with by abdominal section. Fibroids often cause malpresentation and uterine inertia; many cases can therefore, be given a short trial labour, and can then be terminated by abdominal section; *(ii)* persistent malpresentation may indicate the need for a cæsarean section provided there is no evidence of fœtal abnormality in a slight degree of pelvic contraction; *(iii)* prolapse of the cord occurring early in labour may be yet another indication for cæsarean section, provided the fœtus is alive. The attempt to replace the cord and keep it in position are often unsuccessful, and manipulation may lead to uterine infection. This is indeed very difficult in our country where the patients go to the hospital only very late and often after considerable quack manipulations. In every one of my 176 cases I used the lower segment cæsarean. Modern obstetric opinion is in favour of the lower segment operation in most cases where abdominal section is indicated. This procedure has many advantages over the classical cæsarean section, among which may be mentioned:—

(1) There is generally less hæmorrhage due to the transverse incision on the uterus; (2) the uterine wall is thinner and less vascular; (3) better healing occurs after delivery and smoother convalescence follows; (4) the position of the wound and the ease with which it can be covered with the peritoneum minimizes the risk of subsequent adhesions; (5) the entire peritoneal cavity can be protected from possible infection; (6) there is practically no risk of rupture of the scar in subsequent pregnancies; (7) the child is usually born head-first which gives it a better chance of survival in emergency cases and (8) there is a much lower maternal mortality with the lower segment section, than with the classical operations.

All my cases had a very smooth convalescence and returned home quite well, except the two cases who came to the hospital very late with anxious looks and severe toxæmia.

The question of suitable anæsthesia for cæsarean section has been a controversial one. I did all my cases under local anæsthesia. Sometimes the patients began to struggle while closing the abdominal wound; then I used general anæsthesia after the baby was born. This has many advantages for both mother and child.

There are of course various other types and methods of anæsthesia, like inhalation anæsthesia spinal, caudal etc. each with its vehement supporters.

In conclusion, cæsarean section is becoming more and more important in modern obstetrics and the lower segment operation marks a real advance over the older method of classical section.

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INTRAMUSCULAR INJECTION

Errors in intramuscular injection into the buttock may arise from faulty teaching, lack of knowledge, or slipshod practice. Zelman, who questioned 108 nurses on the technique of gluteal injection, found that 8% of them reported the production of pain or numbness in the foot, presumably owing to injection in or near the sciatic nerve. Sometimes the patient has severe pain, occasionally after each injection, and this may be followed by foot-drop. Such cases are few in relation to the enormous number of gluteal injections, but they are serious as regards both morbidity and litigation. Less serious hazards include too superficial injection with leak-back of material into the subcutaneous tissue and consequent slow absorption, painful nodules, and sterile abscesses. The danger of accidental intravenous injection is well recognized. Needless damage can be prevented by careful attention to the site, depth, and speed of injection; the position of the patient and the state of muscular relaxation; and massage to disperse the material after injection.

Zelman's most important message concerns the site of injection. He points to the so-called "Swiss method" of von Hochstetter, by which the injection is made not in the upper outer quadrant of the posterior gluteal region *but* in the anterior or lateral site. The anterior gluteal injection site is located in the angle between two fingers placed in the position of a "V for victory" sign with the anterior finger tip on the anterior iliac spine and the posterior finger tip on the iliac crest, both fingers pointing upwards with the palm of the hand against the hip. This site provides thick muscle but relatively thin subcutaneous fat. There are no important nerves or blood-vessels, and deep protection is provided by the iliac bone. It can be used when the patient is lying on the back, and is claimed to be ***much less hazardous than the traditional posterior injection.***

Quite possibly this technique is already used in other countries besides Switzerland. Certainly it seems that another look at our methods of teaching and practising gluteal injection might not be untimely.—*(The Lancet, Editorial Annotations,* 14-10-1961*).*

TREATMENT OF CARDIAC ARREST IN ACUTE MYOCARDIAL ISCHÆMIA AND INFARCTION

In acute myocardial ischæmia and infarction sudden death is often due to cardiac arrest, which may be defined as "a sudden and unexpected failure of the heart to maintain the circulation" (Reid *et al*, 1958). Dr. Desmond describes the treatment of five such cases, three by cardiac massage through the open chest and two by the closed-chest technique of Kouwenhoven *et al* (1960).

Cardiac arrest due to ventricular fibrillation or asystole is a common mode of death in acute myocardial ischæmia and infarction and is responsible for several thousand deaths each year. Wood (1956) has estimated that about 10% of patients admitted to hospital with acute myocardial infarction die in this way.

Cardiac massage has been attempted comparatively seldom, because it is widely assumed that these patients have such severe heart-disease that resuscitation would be certain to fail; but pathological studies have shown that in fact the myocardial damage in many of them is comparatively slight.

Cardiac arrest due to ventricular fibrillation or asystole is common in patients with acute myocardial ischæmia with or without infarction.

Five patients appearing to die suddenly from this condition were treated by open or closed-chest cardiac massage. In four of these, normal sinus rhythm was restored with satisfactory blood-pressure levels.

One patient survives a year later, but the remaining three died 2 hours, 2 days, and 11 days after resuscitation. The complications that these patients developed could be attributed to delay in starting cardiac massage and errors in the technique employed.

The closed-chest technique is recommended for patients with coronary-artery disease.

Many cases of cardiac arrest associated with acute myocardial ischæmia could be treated successfully if all medical, nursing, and auxiliary staff were trained in closed-chest cardiac massage and if the cardiac rhythm of patients with acute myocardial infarction were monitored by an electrocardiogram linked to an alarm system.—*(The Lancet*, 14-10-1961).

CURRENT STATUS OF THERAPY IN THE NEPHROTIC SYNDROME IN ADULTS

Patients with the nephrotic syndrome should be hospitalized if steroid therapy is contemplated. The required functional and diagnostic studies (including renal biopsy) are carried out. If the decision is made to use steroids or corticotropin, treatment is instituted promptly with ancillary prophylactic measures appropriate to steroid therapy. A low-salt, moderate to high-protein, and high caloric diet is prescribed. Diuretics are administered to control the œdema. If the response to diuretics is unsatisfactory, a trial is made with concentrated salt-poor human serum albumin. Full steroid or corticotropin dosage is continued for 2 weeks after diuresis with disappearance of proteinuria has occurred. Maintenance dosage is then instituted and is continued for at least one year. The procedures available for the control of œdema in patients not responding to corticotropin or steroid administration are discussed and the associated hazards are pointed out.—*(J.A.M.A.*, 21-10-1961).

Nature helps doctors by repeating herself so often, almost nominating diseases; but she will not provide perfect symmetry for our convenience.—(James Parkinson in *C.M.D.*, Oct. 1961).

PSYCHOTROPIC DRUGS IN THE HANDS OF THE GENERAL PRACTITIONER*

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SINCE the "neuroplegics", first used in France in surgery, proved useful 8 or 9 years ago in the treatment of mental disorders, and at about the same time, the sedative virtues of the time-honoured Indian Rauwolfia serpentina were recognized in the West, the so-called "psychotropic drugs" have been developed in such great numbers and varieties, that they have penetrated far beyond the field of the psychiatric-specialist, right into the daily use of the general practitioner.

Our colleagues in general practice may rejoice at this enrichmet of their therapeutic resources and welcome the rapid succession of new drugs, which enable them in many cases to calm anxiety, create confidence, soothe mysterious symptoms in some of their most difficult patients; the psychiatrists, on the other hand, are likely to see some of the cases, in which the general practitioner has missed the timely use of a psychotropic drug or, on the other hand had applied it without strict indications or in inadequate doses.

Every new psychotropic drug which is placed on the market, provides new opportunities for helping some particular group of patients, but unfortunately also gives occasion for injudicious use, if one is confused by the great variety of chemical formulæ, proprietary names, indications and dosages. Even the specialist, is often unable to form a correct and proper assessment of values from his own experience, on more than a few of the many psychotropic drugs available. One has to choose, and select a few, observe their effects and side-effects carefully when used on a sufficient number of suitable patients, and thereby master the technique of administering them with a confidence that makes the patient feel that his doctor knows what he is doing. When a patient comes to the psychiatrist with a bundle of prescriptions given by one or several doctors, which include a whole range of tranquillizers, thymoleptics, ataractics etc., possibly even cocktails containing several of them that may antagonize each other, it shows not only poor discrimination on the practitioner's part, but may also bar the specialist from administering judiciously an essentially useful drug, which, by previous careless use has become discredited and which therefore, the patient will not readily accept. This experience has often made me wish that drug manufacturers will put out new psychotropic drugs in two

*Based on a talk given to the Lucknow Branch of the Indian Medical Association on 5th Aug. 1961.

Specially contributed to the ANTISEPTIC.

different colours, perhaps even under two different names : one for the general practitioner and another perhaps on a higher dosage, for the specialist. In a different guise, the same drug, when given in a suitable dose, with careful explanations about the expected effect, perhaps also with some warning about possible side-effects, and with an attitude that takes the patient's total needs also into account may prove effective, even though it had failed miserably when administered on previous occasions.

We should always remember that psychotropic drugs can fundamentally do very little to remove the cause of any mental or psychosomatic trouble ; but they may have a relatively greater effect in cases, in which the immediate cause of the trouble may have been more or less accidental or due merely to a temporary increase of stress. In such cases, some psychosomatic or neurotic symptoms may continue beyond the action of the initial cause, as some vicious circle may have been established between roused emotions, neurovegetative responses, additional anxiety created by the unusual physical sensations and so on. If we can successfully break this vicious circle, just when the irritating influence of the initial cause has died down or the problem has been in some way solved, we may hope to restore the patient to his full capacities, by the careful use of some psychotropic drug, accompanied of course by proper rest, exercise, diet and gradual resumption of work. Wherever the mental breakdown or the psychosomatic symptom has resulted from long-lasting stress, due to an internal disharmony rather than to unfavourable outward circumstances, the psychotropic drugs will only calm or veil the symptoms, without attacking the root-cause. Ultimately, the patient has to be helped to face his problems and shortcomings and, either to develop or mobilize new energies through cooperating in long-range psychotherapy, or to give up aspirations beyond his reach and to adjust his life to his limited strength.

Both these are tasks, for which usually the busy general practitioner, is not generally fitted because he has not got adequate time and interest nor the requisite training. In such cases, the general practitioner should take his cue from the lesson, which I learnt in an impressive manner under a somewhat embarrassing situation during my final examinations. In ophthalmology I was asked to examine a patient suffering from glaucoma. After giving the correct diagnosis, I started counting up the methods of treatment about which we had been taught. The professor gave his approval, but continued asking : "What else ?" I strained my memory and imagination to the utmost producing more and more possibilities of applying different remedies. The professor persisted with his : "What else ?" Finally, quite exasperated, I almost shouted at him : "Send him

to the specialist !" To our mental great relief the examiner said : "that is what I wanted to hear. You have no business to treat a case of that kind, unless you are a specialist !"

There is no doubt many of our esteemed colleagues in general practice will be very glad indeed, to refer a troublesome hysterical lady, a chronic hypochondriac bore or a violently excited young lad to a specialist. But, as the number of qualified psychiatrists in India is still very small, and further as many patients wish to avoid the stigma of attending a psychiatric's clinic, the general practitioner often has to go beyond his normal usual sphere of practice to treat patients with psychotic, neurotic or psychosomatic symptoms. In the context of the above facts, I would offer a few suggestions, for the practitioner, as to what he may do with the psychotropic drugs at his disposal :—

As I already stated, it is better to know a few drugs thoroughly than to try a whole lot of them, either simultaneously or in succession, following the "safe" rule—"if you spill enough ink, some of it is bound to soak." We may distinguish three main groups among the psychotrophic drugs. Those that came to be used *first*, are what we still call the "tranquillizers," the chief of which is '*Chlorpromazine*' and the old Indian '*Rauwolfia serpentina*' which has a slightly different action. In the *second* group, which perhaps we may call "ataractics" may be placed some of the newer drugs which, besides their tranquillizing and calming effects on upset emotions, have also a stimulating action, thus avoiding the lethargy and passivity which necessarily follow the administration of the first group. The *third* group comprises a few drugs with a specifically "thymoleptic" effect which are therefore, particularly useful in depressive states. I do not propose to describe them and their chemical formulæ, the different brands etc., but would only give a few broad hints relating to their use.

To start with the last mentioned group, the *thymoleptics :* I would warn the practitioner from treating depressive states that do not have any obvious external cause, *i.e.*, the so-called "endogenous depressions." The danger of suicide is always very great and the doctors' responsibility in treating a patient of this kind is therefore, very onerous. The new drugs are indeed a welcome addition to the psychiatrist's resources in treating such patients. But our experience here in India is, still somewhat limited and does not extend over a very long period. Further, such drugs may not all be equally active in every kind of depression. According as great agitation or dullness and lack of vitality is present in the patient, the doctor will have to choose a suitable but different drug ; the patient must also be carefully

watched for any sign of a transition into mania, when the drug may have to be rapidly changed for another. The drugs now used as antidepressants are known to have also certain unpleasant, though harmless side-effects. When a patient comes with persistent and intensive complaints about these, the practitioner may feel tempted to change the drug too soon, before it has had time to prove its value and usefulness. The psychiatrist, faced with the same situation, will know that the ultimate advantages of continuing the drug, (even if the patient feels no significant relief for 2 to 3 weeks) will outweigh the unpleasant side-effects. He may even rejoice that his patient, who could not previously imagine any reason for his depressed mood, has now found something outside himself to blame. This may indeed be first sign of improvement. The task of the psychiatrist will then be to put up with the patient's complaints and abuses and to encourage him to put up with the inconveniences. And this he can do only with persuasive confidence, provided he is himself sure, about the effect of the drug, and also the background of the patient's depression.

The *second* group of psychotropic drugs, the "*ataractics*," *i.e.*, drugs that make the patient unperturbed and courageous, are also relatively new to us in India. I am glad I have now the chance of sounding a note of warning about this group. I have found, in my experience at Lucknow, that our Indian patients in general need much smaller doses of these drugs than what is given in Western literature. I think this is due to the fundamental difference in attitudes between us and the Westerners towards action and contemplation. The Westerner is usually tuned to an ideal of activity and has also learned in early infancy to contain and control his urges and desires to put up with some frustration and resistance. If, therefore, in a state of exhaustion, anxiety or confusion, we try to mobilize in him, by means of the new drugs, additional energies and vital powers, he is more or less equipped to contain and channelize them. In our Indian patients, however, particularly in our adolescents, the cause of the breakdown often lies in the fact that by too much pampering in their upbringing, they have not been trained and accustomed to contain, but at best only to suppress totally, their energies, such as sexual urge, aggression, anger etc. A drug that mobilizes energies, though it may help in calming the patients' anxieties, may not be able to deal effectively with them. We have seen cases, in which, after an initial splendid success with ataractics, young patients appeared to exhaust themselves under the influence of such drugs, losing weight, getting restless and ill-tempered. It is, as if the drug, while persuading them into a more interested approach to the outside world, was actually leading them into new stress situations.

Some of these drugs are supposed to exert a wonderfully taming effect on animals. After administration, a shy or aggressive animal in a cage may become a friendly pet in a few hours or even in a few minutes. This may be pleasing to the experimenter or the guard who has to look after the animal. But from the animal's point of view, however, it may mean that the creature, which certainly was not created to be confined to a cage and to be petted by human hands, has lost some valuable inhibitions, some biological safeguards that usually prevent it from venturing into situations of danger while in its natural setting. Might it be that, in a similar manner, such drugs in human beings also remove useful inhibitions, a justified sense of danger? Do they perhaps merely make man accept more willingly his captivity in a world of technical rush and economic utility? Do they lead him into giving up his true nature, which may *have* to do with the prompt recognition of danger, and facing anxiety, in order to emerge into full growth and freedom?

There are some indications that by such drugs socially useful inhibitions may be broken down and that, by their stimulating effect, the patient may be drawn beyond the limits he can safely bear in his stage of development. In a middle-aged man, who had succeeded in keeping much of his vital energies tied down through his neurotic invalidism, we observed a violent spree of drinking and frequenting prostitutes at the moment when we tried to help him to overcome his anxieties by one of the ataractic drugs. For the psychiatrist, an experience of this kind may provide valuable material for psychotherapeutic work with the patient. The uncontrolled episode may demonstrate to the patient that he cannot afford yet "to get well", as he is not mature enough to channelize his energies, which therefore, he has to tie down by his "handicap." The same situation happening while a patient is in the hands of a general practitioner, may cause havoc before it can be successfully stopped or utilized for the patient's insight. In my opinion, most of these drugs should only be used in very small doses. Large doses and prolonged use should be reserved for chronic mental patients, in whom the force of lethargy, passivity and withdrawal from the world is so strong that it can only be lifted by powerful means. Even this should be attempted often only while the patient is under clinical observation.

Finally coming to the longest established group of the *tranquillizers* in the orginal sense, I should say that the mere length of experience makes them safer for the practitioner than the newer groups. But even as regards these long-established drugs, practitioners are often found to be too timid in their application: either they do not prescribe adequate doses, or they do not persist long enough with their use. In general, in

an acute case of psychotic excitement, where one more day of unleashed activity will only heap a greater load of guilt and embarrassment on the patient, driving him deeper and deeper into psychosis, hardly any harm will accrue by giving massive initial doses of tranquillizers, if necessary by injection. Of course the relatives have to be prepared for the possibility that the patient may be sleeping or dozing for 24 hours; they should be instructed to wake him up for food, toilet-needs and for the next dose of medicine. After a few days the patient usually becomes so co-operative that one can safely go over to oral doses. These should be continued over a long time, possibly for several months, and then only decreased gradually under constant control. In chronic cases, and in patients with minor symptoms, one can arrive at the optimal dose by gradual increases. The suitable drug and its proper dose should be assessed for each case, depending on whether the patient will remain under clinical control or will at least be accessible to daily visits, or whether, after a single consultation, he will get back to his village. In the latter case, we should only prescribe a drug which has been known for a long time to be safe and to produce no side-effects. New drugs should be reserved for well-known patients or for those who resent (if the doctor has not read a recent issue of the '*Reader's Digest*').

Unfortunately, this type of patient, who thinks he has to dictate what drug the doctor should use, is systematically trained through the popular treatises and literature on medical subjects, which are unfortunately becoming too numerous. It is becoming increasingly difficult these days for the doctor to keep his nimbus of magic wisdom, and if he triumphs over his patient in respect of a new drug which his "progressive" patient has not heard of till then, he will be able to establish his magic authority. Ultimately, however, one wonders, where this race between the new resources of the medical profession and the inquisitiveness and all-knowing attitudes of the patients will eventually lead to. The doctor must finally dispose of inward resources about which the patient cannot simply read the latest information in his magazine, thus building up his prejudices and defences before he has even tasted the medicine. These inward resources are the doctor's patience for listening, his powers of forbearance, his depth of understanding, and his concern for the patient's permanent benefit.

Illness, even if we accept the cooperation of outward factors relative to its origin, is always a human crisis and has ultimately to be overcome by living energies and not simply by some suitable chemical compound. If the patient's energies are not powerful enough to win in this crisis, he needs the help and efforts of those around him. In older days the doctor gave far

more of his personal effort and forbearance to his patient, whose relatives also were perhaps more ready to give their untiring care to the sick family-member. The ultimate truth may be contained in the old myths and fairy-tales, in which a relative, perhaps a friend, (for example, Hanuman on the occasion of Lakshman's being wounded and seemingly killed in the fight with Ravana), has to go on a long and difficult errand, braving all dangers, in order to find the potent herb, (*Sanjeevi*) the reviving drink or the magic jewel which will restore the beloved one to good health. Without the great human concern and effort invested in this search, the magic remedy would probably be useless. In his sarcastic manner, Voltaire the famous French philosopher and poet seems to have meant something similar, when he wrote: "The doctor amuses the patient, while nature cures him." It will fit in well if under present conditions we say: "The chemical industry amuses the doctor, while he waits for nature to cure the patient." We have every reason to be grateful for all the great good work that is being done by those who work in the pharmaceutical industry.

If we did not have drugs, which are being constantly discovered anew, doctors would have to provide all the human patience, endurance and effort to treat the patients. This is actually what in a few rare cases a psychotherapist can afford to do. But few of us are endowed with the requisite attributes, that would uniformly enable us to use this most human method of treatment on any large scale. Drugs, therefore, will retain their usefulness and value in the field of psychiatry.

LONG-TERM RESULTS OF "HIGH LIGATION" FOR VARICOSE VEINS

The term "high ligation" implies that the long saphenous vein has been ligated and divided flush at its junction with the femoral vein, and that all the tributaries converging on the femoral vein, and that all the tributaries converging on the long saphenous vein at that level have also been ligated and divided. This procedure, as employed by general surgeons in the treatment of varicosity of the long saphenous venous system, is alleged to give poor results. The authors made studies on 107 legs in which varicosities of the long saphenous venous system were treated by high ligation and retrograde injection 10 to 13 years previously. Ninety-three of 107 legs (87%) showed no reflux in the region of the groin after 10 years. This operation therefore has an important role in the treatment of varicosity of the long saphenous venous system. In 44 legs the results were clinically satisfactory. In 14 limbs recurrence of varicosity was due to inadequate high ligation, but there were 55 limbs with recurrence that was solely due to the development of incompetent communicating veins. The authors feel that better results might be obtained from juxta-femoral ligation combined with stripping than from ligation alone.—(D. B. Brown, R. W. Irvine, and H. Forrest, *Scot. Med. J.*, Vol. *6*: 322, July 1961, via *J.A.M.A.*, 30-9-1961).

PSYCHOPHARMACOLOGY OF PHENOTHIAZINE*

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THERE are three main groups of phenothiazine, *viz.*, the promazine, the perazine and the mepazine groups. Chlorpromazine (Largactil), promazine (Sparine) and trifluopromazine (Siquil) belonging to the promazine group; prochlorperazine (Stemetil) and trifluoperazine (Eskazine) of the perazine group; and mepazine (Pacatal) of the mepazine group are the drugs that are commonly used in the treatment of the psychiatric disorders. Besides these there are many newly introduced phenothiazine derivatives the therapeutic value of some of which has not yet been properly assessed. Thioridazine (melleril) belonging to this group has however, been found to be of great therapeutic value.

Chlorpromazine is the first phenothiazine drug that has been in extensive use all over the world for the treatment of psychiatric disorders. It has been claimed that this drug has got specific therapeutic effect in schizophrenia and manic depressive psychosis. Hammon *et al* (1952) and Dally and his colleagues (1952) used this drug in manic depressive psychosis and reported that mood variations in this disorder between elation and depression could be easily controlled with chlorpromazine. Deschamps (1952) used this drug in hallucinated schizophrenia and found that hallucinations responded to this drug very quickly. Sigwald Bouttier (1953) said that treatment with chlorpromazine always improves the mood of the patients. The appearance of the patient presents a striking change. The fear of death and the desire for it lose their importance and disappear. Phobia and obsessive ideas lose their arresting character and the patients can ignore them.

Very encouraging results were obtained by me in treating 364 cases of various mental disorders with chlorpromazine. It had a marked effect on patients suffering from schizophrenia, and among them it gave still better results in catatonia. In my experience a catatonic patient who refuses food when treated with this drug, does not need artificial feeding any more, and if a patient who is brought for treatment as showing total refusal of food, chlorpromazine for a few days induces sufficient urge in him for eating. Moreover, symptoms like mutism, catatonic stupor, flexibitus cerea respond very well to this drug. Among the hallucinated schizophrenics early cases showed better results than the chronic ones. In paranoid schizophrenics, chlorpromazine alone did not remove the delusional ideas but when Rauwolfia serpentina was added to it the results were favourable.

*Specially contributed to the ANTISEPTIC.

Chlorpromazine helps in the recovery of patients from schizophrenia and manic depressive psychosis mainly by controlling the emotions. It has been noticed that a patient showing persistent refusal of food due to his having delusion of poisoning would start eating after chlorpromazine had been administered, though delusional thoughts might still be present; this was possible because the fear of death had disappeared, though the delusion of poisoning had not. Similarly patients tortured by hallucinations while undergoing treatment admit that they still hear voices but they are not bothered any longer. The withdrawn, mute and emaciated catatonics suddenly get back their zest for life and make warm contact with the environment.

Results of treatment with chlorpromazine:—Of 48 catatonic schizophrenics, 20 were cured, 12 were much improved, 8 improved and the other 8 did not show any change. Of 32 paranoid schizophrenics, 12 were cured, 8 much improved, 2 improved and 10 did not show any change. Of 16 hebephrenic patients, 5 were cured, 1 much improved and 2 improved while in 8 there was no change. In 16 chronic unclassified schizophrenics 7 showed great improvement, 2 were improved, and 7 patients did not show any change. In 25 cases of paranoia with systematized delusions, 9 were cured, 4 much improved, 2 improved and 13 did not show any change. Of 65 manic depressives (39 manic and 26 depressive), 16 manics and 13 depressives were cured, 6 manic and 7 depressive cases showed much improvement, in 2 manic and 1 depressive cases there was some improvement, while in 15 manic and 5 depressive cases there was no improvement. In the psychoneurotic group, 32 hysteria cases were treated; of these 5 were cured, 3 much improved, 14 improved and 10 did not improve. Of 35 obsessional neurotics, 1 was cured, 12 much improved, 7 improved and 15 did not show any change. Of 8 patients in anxiety states 5 were cured, 1 was much improved, and 2 improved.

Promazine is similar to chlorpromazine so far its therapeutic action is concerned but it is less effective except when given in heavier doses. It has got high thymoleptic properties and consequently it gives better result in depression. In combination with mepobramate it is useful in controlling anxiety and depression.

A replacement of the chlorine atom with trifluor-methyl in chlorpromazine has produced trifluopromazine, a drug more effective than chlorpromazine. It is specially efficacious in removing delusions and hallucinations and manic excitement. Unfortunately due to a quick appearance of extrapyramidal symptoms this drug cannot be continued for a long time which is necessary for a cure in some cases.

Results of treatment with Trifluopromazine:—Sixty four cases of manic depressive and schizophrenia were treated with trifluo-

promazine. Of 40 schizophrenia cases, 20 were paranoid, 10 catatonic, 10 hebephrenic. Best results were obtained in the paranoid group and it was found to be efficacious in removing delusions and hallucinations. Of 20 paranoids, twelve were completely cured, 6 showed improvement, in 2 showed no improvement. Of 10 catatonics 2 were cured, 4 improved and 4 did not show any improvement. Of 10 hebephrenics 4 showed some improvement and six did not show any change.

In the perazine group, prochlorperazine was highly efficacious in chronic schizophrenia. Prochlorperazine is produced by replacing dimethylaminopropyl in chlorpromazine by methyl-piperazinyl Brousolle *et al* (1957). From a study of the results they found that states of excitement were the main indication for this drug in which it was more effective and acted sooner and in smaller doses than chlorpromazine. About 60% of cases showing delusions improved and 75% of the schizophrenics suffering for less than two years showed definite improvement. Excellent results were obtained in paranoid schizophrenia and the results in chronic hallucinatory patients were favourable. I treated 68 cases with prochlorperazine; of which 40 were chronic schizophrenics and the rest were in an acute manic state. Of the 8 catatonic schizophrenics, 2 were cured, 3 improved and three showed no change. In the hebephrenic group comprising 8 cases, 2 were cured, 4 much improved and 2 improved. In the paranoid group consisting of 18 cases, 6 were cured, 5 improved, and seven did not show any change. "In manic cases I gave 75 mg. to 125 mg. daily doses of prochlorperazine for controlling hyperactivity and pressure of talks. This drug was superior to chlorpromazine in allaying excitement. It was equally efficacious in controlling schizophrenic withdrawal from the world. In some paranoid schizophrenic cases I found after prochlorperazine administration a desire to mix with people who were considered persecutors by these very patients previously. On enquiry it was revealed that the delusion of persecution had not disappeared but it did not bother them any longer.

Replacement of the chlorine atom by trifluoromethyl in prochlorperazine yields trifluoperazine. This drug has been very effective in paranoid schizoprenia and catatonic stuporous states but its action in other types of psychosis is not at all encouraging. Walter Krase (1959) reported about the remarkable effect of this drug in arresting hallucinations in schizoprenia. It has been noticed that in some cases before the disappearance of auditory hallucinations a change occurred from without to within,—voices that appeared to have come from the outside would now come from the inside of the patients. This proves that projection of the voices of the punishing conscience was stopped first and then it disappeared finally from the mind also.

Krase further stated that movement is a necessary condition for perception and it is conceivable that the striking effect of trifluoperazine has something to do with the motor component of the perceptive process.

I treated 100 cases of schizophrenia with trifluoperazine. This group consisted of 50 paranoid, 30 catatonic and 20 hebephrenic patients. Of the 50 paranoid schizophrenics, 23 were completely cured, 10 much improved, 6 improved, while 11 cases did not show any improvement. Of the 30 catatonic patients, 11 were completely cured, 11 cases showed much improvement, 8 cases were improved. Among the 11 much improved cases 4 got serious relapses when the drug was withdrawn.

From the study of schizophrenic patients mentioned above I have come to the conclusion that this drug has a remarkable effect in controlling delusions and hallucinations and consequently best results could be expected in the paranoid variety of schizophrenia. It has got the power of producing arousal effect in withdrawn, mute and stuporous patients. Hence it brings about a quick improvement in some catatonic patients. But this effect was not uniformly noticed in all cases.

Freyhan (1959) from his study of the psychotic cases treated with mepazine concluded that it produced little or no clinical results. Braum (1959) said that mepazine alone was of no value in schizophrenia but when it was administered along with prochlorperazine the result was remarkable.

Thirty schizophrenic patients were treated by me with thioridazine (Melleril). The initial dose used was 75 mg. gradually raised to 400 mg. in most cases. The treatment period ranged from 3 to 4 months. Best result was obtained in paranoid schizophrenics and in cases where hallucinations were prominent. Of the 10 catatonics, 2 were cured, 4 showed improvement, 4 did not show any change; of the 10 paranoids, 4 were cured, 3 showed improvement, 3 did not show any change; of 10 hebephrenics, 3 were cured, 4 showed improvement, while 3 did not show any change.

The phenothiazine group of drugs is considered to be powerful tranquillisers and their introduction in psychiatry has created the hope that the day is not far off when we shall be in a position to cure all disorders of the mind solely with drugs. These drugs possibly interfere with the brain enzyme system. Hess attempted to explain the action of these drugs from the physiological point of view. He says that impulses arise from three entities of the body—consciousness, viscera, and other somatic supporting structures. Impulses from these three entities pass into either an ergotropic co-ordinating system or a trophotropic co-ordinating system. Stimulation of ergotropic system results in excitement, increase in muscular tone and sensations; also

increased respiration and heart beats. These are signs of activity of the sympathetic system. On the other hand, the activity of the trophotropic system results in lack of volition and muscular tone, decreased reaction to sensory stimuli, drowsiness and sleep. This shows that the parasympathetic system is dominant. The state of a person at any time is the result of balance that exists between these two systems. He found evidence that the location of these two opposing and normally balancing coordinating systems is in the hypothalamus. Brodie believes that two specific neurohormones must be concerned in the passage and accurate separation of impulses in two systems. There is evidence to suggest that neurohormone concerned with the ergotropic system is *nor*-adrenaline and one concerned with the trophotropic system is serotinin. Both the hormones are found in a bound-form in the hypothalamus and the phenothiazine group of drugs acting on this centre interferes with the concentration of hormones and bring about a change in the psyche of the patients.

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MANAGEMENT OF PULMONARY TUBERCULOSIS DURING PREGNANCY

The authors analyzed the records of 103 pregnancies occurring in 73 women with pulmonary tuberculosis, active within the previous 5 years, in an attempt to discover any relationship between chemotherapy, rest given during pregnancy, or breast-feeding on the one hand and subsequent relapse of the disease on the other. No relationship could be shown between relapse and rest or between relapse and breast-feeding. Of those patients who received chemotherapy during pregnancy, none relapsed, compared with 27% of those receiving no chemotherapy. It is concluded that the pregnant woman with pulmonary tuberculosis showing any signs of recent activity can safely undertake pregnancy and labour without relapse provided she receives adequate chemotherapy at this time. In these circumstances rest is unnecessary and the patient can be ambulant. Noninfectious patients thus treated can safely be allowed to breast-feed after delivery. Even patients found infectious early in pregnancy can often be rendered noninfectious in time to breast-feed their infants. The continued application of routine antenatal chest radiography is essential to discover tuberculosis early enough to ensure this adequate control of the disease by the time of delivery.—(R.B. Pridie and P. Stradling, *Brit. Med. J.*, Vol. *2* : 78, July 8, 1961, via *J.A.M.A.*, 23-9-1961).

MEDICAL PRACTICE IN INDIA AND ITS SOCIOLOGICAL IMPLICATIONS *

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THE background of medical practice in India.—When the Western system of medicine came to be introduced in India, late in the eighteenth century, the practice of the empirical indigenous systems of medicine was probably not inferior to that of the Western system. The surgeons of the East India Company learnt the art of rhinoplasty from Indian surgeons ; Rauwolfia preparations have been in use in Indian medicine for over thousand years (Basham, 1954). However, with the growing momentum of industrial progress in Europe, which had profound political, economic, social, cultural and technological repercussions at the same time on the Indian Empire, the more favoured allopathic system made spectacular progress while the indigenous systems of medicine generally declined due to neglect and scorn, and became more or less a cult for the quacks. The growth of the Western system in India is, therefore, to be visualized in the context of the political, economic, social and educational policies of the rulers of India, who were crystallized products of Victorian England with implicit faith in the doctrine of *'laissez-faire.'* Only a small fraction of the educated and rich Indians had a chance of acquiring a knowledge of Western medicine. So the services of these qualified medical personnel were available only to the few who could afford to pay for their services. During the century and a half of British rule in India, progress in the medical and public health fields corresponded roughly to the political, cultural, social and economic changes in the country. By 1947, India could boast of having relatively advanced medical institutions which produced eminent men (mostly British IMS officers) in the various fields of the medical sciences. But the presence of foreign-trained, world-famed medical officers who managed the prominent general hospitals or very expensive nursing homes in the capital cities of Bombay, Calcutta or Delhi was of little use to the millions of starving, half-naked Indian residents of thatched village huts or city slums all over the country (India, 1961). Even today, fourteen years after India attained political freedom, the importance of a liberal and social interpretation and application of the technical knowledge does not seem to have soaked into the minds of some responsible people. Foreign-trained technological crusaders have often succeeded in creating ultra-modern medical institutions for training doctors who are meant theoretically at least to serve the poverty-stricken villagers of India. Incessant demands are made for more sanatoria-beds when it is well-known

*Specially contributed to the ANTISEPTIC.

that for each of the existing 30,000 beds there are atleast 200 patients suffering from tuberculosis and that the TB patient can just as well be treated at home. For the recurring cost on each bed, twenty patients can be treated by the domiciliary method, and with a much smaller investment. Responsible persons are anxious to rehabilitate a few hundreds of crippled children in big cities, but are completely oblivious of the existence of hundreds and thousands of more needy and crippled children in the villages, of million others who are yearly dying of preventable diseases, that have long ago been eradicated in other western countries.

Medical knowledge, medical problems and medical practice in India.—Many of the advanced countries have brought about spectacular decline in the morbidity and mortality due to preventable diseases by a proper utilization of the knowledge of modern medical sciences; while in India, inspite of such knowledge, various health problems have not been satisfactorily tackled; thus even today, India continues to be the home of preventable epidemics like cholera and small-pox (WHO, 1961). In a health survey one need not be surprised to find a relatively high incidence of communicable diseases like amœbic and bacillary dysenteries, ankylostomiasis and other helminthic infestations, venereal diseases, diphtheria, puerperal infection, malnutrition etc.

The national estimate for the prevalence of (radiologically active) cases of pulmonary tuberculosis is between 6 and 8 million (Benjamin, 1959) and that of leprosy, about two million (Khooshoo, 1961). The situation was perhaps even worse during the period between the disintegration of Moghal Empire and the first few decades of early British rule in India. But, paradoxically, during the Asokan era, some three centuries before Christ, among the many achievements, India had a National Health Service with well-developed net work of health centres. There were veterinary hospitals also (Basham, 1954). The nature of the ailments and the available knowledge about them in those days were perhaps different, but the application of the available knowledge to the sick, was far better than what we see today.

Medical practice in a given society depends on the quantum of knowledge and also on the extent to which such knowledge is made available to society. In fact, in a Welfare State, the medical needs of society, accelerate the growth of knowledge in the medical sciences. If the medical sciences should be attuned to the aspirations of the Indian people as outlined in the Indian Constitution, the medical personnel should be oriented to practise the art and science of medicine, in relation to India's social structure. Control of disease must form part of the general alleviation of the social and economic ills caused by

the exploitation and deliberate neglect of the Indian villager through the last few centuries (Dutt, 1960).

Planning for the medical problems of society.—Social planning and its application form the first steps in attaining that social aim. Social planning in relation to any problem consists in ascertaining from the best available data, the means of securing maximal returns for the society for a given investment of effort in terms of personnel and equipment. A social plan for health should be drawn up in the context of the importance of health problems in relation to the other problems that people have to face. Priorities should then be fixed for allocating the resources to different health projects according to their respective social implications.

Extreme poverty is perhaps the most important factor responsible for the poor state of health of the people in India. A plan for having better nutrition, better water supply and housing and better education will certainly result in great improvement in national health. The more specific health problems are somewhat difficult to solve readily with available limited resources in terms of personnel and equipment. The morbidity and mortality rates in India are among the highest in the world; but there is, on an average, just one doctor for every 5,700 of the population. In villages, this ratio is 1 : 25,000 (Mahalanobis, 1960). The Planning Commission estimates that at the present rate, India will have, on an average, one doctor for every 2,000 of the population in 60 or 70 years (Mahalanobis, 1955). The position regarding para-medical personnel is even worse. It becomes therefore, very important that our limited resources should be carefully husbanded and made to serve the maximum needs for health promotion.

Social medicine and medical practice.—The data necessary for this purpose should be gathered from our knowledge of social medicine, which determines the pattern of medical research, medical education and medical practice in the context of the structure of society. It is not enough to acquire and imbibe volumes of theoretical knowledge of the different disciplines in medicine. Medical teaching and medical knowledge must conform to the needs of the doctor who has to work for the welfare of society. In the initial stage of social development, all efforts should be directed to provide the basic elementary medical and public health services to the entire population. This itself is a big challenge to the medical profession in India. The lone doctor going to work in an interior village in India must have a wide and varied knowledge of the preventive and curative aspects of medicine suited to the problems of the particular region. He will have to be the public health man, the physician, the surgeon, the anæsthetist, the obstetrician, the pædiatrician, the

pathologist and also the compounder, all rolled into one and often having to function all at the same time. It is not of immediate importance that he should be familiar with the latest developments in nutrition research carried out by large drug-combines; but it will be socially tragic if by failing to utilize all available preventive measures, his *clientele* is made to suffer from small-pox, cholera or ophthalmia neo-natorum. Similarly, his knowledge of the most recent techniques of arteriography will not avail if he is unable to diagnose a case of lobar pneumonia without the help of a blood count, a chest photofluorogram and a culture. Similarly the rural practitioner in a remote village, will be deemed anti-social if he insists on a poor cultivator getting a costly broad-spectrum antibiotic—to get cured of a severe cellulitis—for which he cannot afford to pay. This does not mean that the doctor should always limit his knowledge only to cheap, and somewhat less precise medical techniques. It is important to have a wide range of knowledge of the medical sciences and their practical application to the changing condition of our social structure. Where, however, it is not possible to do so the under graduate students, should be trained to utilize the limited social resources to afford benefit to the greatest number. Medical research institutes in India must be able to provide information which would be helpful in attaining this social objective. The finding that for a given sum of money, vegetable proteins will provide a high nutritional value is of immense importance to the poverty-stricken people of India. These institutions should also evolve the cheapest and most effective methods of controlling small-pox, cholera and pulmonary tuberculosis, which can be applied effectively with our limited resources.

The development of medical relief and public health promotion is the initial step in the creation of a Welfare State. It will be very unrealistic to visualise and seek to apply the pattern of medical practice as it exists in the advanced countries like the U.S.A. The State must provide free medical care to all, particularly to the poorest of people living in the numerous villages and in the city slums of India (Mahalanobis, 1960).

Medicine and Public Health have made vast progress during the last two decades. New and effective drugs for controlling diseases on a mass scale in rural and urban areas have come into use. There is no justification therefore, for relying on old medical concepts. A more rational approach to the medical and public health problems is urgently indicated. Large sums of money should not be wasted on carrying out very poor brands of the so-called fundamental research, when they can be better utilized for giving elementary medical care to thousands of poor sufferers. It is a mockery of the concept of socialized medicine

when, as in some regions where medical institutions have been started, the doctor does not have anything but a few bottles of obsolete mixtures; these mixtures can at best be used as placebos to satisfy the whims of a few neurotics. It will be deplorable that when a fully trained doctor has a case of snake bite, lobar pneumonia or puerperal sepsis to deal with in his rural practice, he has nothing more at hand than these useless mixtures. The entire administrative machinery, including the doctor, the District Medical Officer, the State Directors of Medical and Health Services and above all, the Medical Stores Depot should become alive to the above incongruity and arrange for a thorough reorientation of the policy governing medical relief.

What is urgently needed is a social transformation of the practice of public health and medicine in India.

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THE LOW INCIDENCE OF GASTRO-INTESTINAL SYMPTOMS ENCOUNTERED IN THE CLINICAL USE OF A CHELATED ORAL IRON COMPOUND

The desiderata for a preparation for the effective oral treatment of iron-deficiency anæmia are the maximum absorption of iron with the minimum of side-effects, always assuming that these can be achieved at reasonable cost.

Recently, several forms of iron chelate have been offered in an attempt to produce a substance that, while providing a reliable source of iron, has the least tendency to produce symptoms of intolerance. Chelated iron—that is, iron enclosed by organic molecules such as ferrous aminoacetosulphate has been shown by Jennison (1958) to be rapidly absorbed and utilized in the hæmopoietic cycle of iron-deficient pregnant women. Jacobi, Pfleger and Rummel (1956) have indicated that the absorption of iron is not a simple diffusion process and have shown that the ferrous aminoacetosulphate complex passes through the intestinal wall both rapidly and in high concentration.

The trial was partly carried out in hospital practice but mainly in general practice, the common participant being a patient requiring iron clinically and who, in general, could be considered to have a regular bowel habit. Initially, all the patients were asked by direct questioning about previous oral iron therapy and the occurrence of symptoms that inferred intolerance: *e.g.* nausea, vomiting, constipation, diarrhœa and abdominal pain specifically. They were then prescribed tablets of ferrous aminoacetosulphate containing 50 mg. of ferrous iron ('plesmet'), with advice to take one such tablet three times a day after meals. The patients were assured that, not only would 'these iron tablets' make them better, they would not adversely affect their bowels—unlike any previous forms of iron administered.

Of the 115 patients assessed in this trial, 22 were treated while in-patients of this hospital, the remaining 93 were seen in general practice. Women formed the major part of the trial, 86 being included, whereas only 29 were men.

In no less than 39 of the 87 patients who had previously received one or more previous courses of oral iron, symptoms of intolerance to such treatment were noted, an incidence of 44·8%.

On the other hand, only two out of the entire series of 115 patients developed symptoms of gastro-intestinal upset in the course of three weeks with regular doses of ferrous aminoacetosulphate: both had diarrhœa. This gives an incidence of 1·7%.

The low incidence of gastro-intestinal upset (1·7%) with ferrous aminoacetosulphate fulfils what the study of its structure and affinities would suggest and indicate. Not only is iron in the form of a chelate advantageous from the point of view of lack of side-effects, there is also much evidence that it is less toxic. The high toxicity of the non-chelated preparations was associated with a sudden and rapid rise in the serum iron levels over and above the iron-binding capacity of the plasma; this phenomenon, well marked in the gluconate and sulphate series, was never seen to the same extent with iron chelate. In fact, the toxicity of iron compounds appears to be related directly to the ability of the substance to be absorbed and cause this rapid elevation of serum iron above the binding capacity of the plasma.

In view of its minimal toxicity and relatively low cost, 1 *sh.* 9*d* for 100 tablets, it is suggested that this iron chelate preparation is a most effective preparation for the treatment of iron-deficiency anæmia by the oral route. —(*The Practitioner*, June 1960).

ORAL POLIOVIRUS VACCINE

One hundred and ninety-eight children who had completed a full course of DPT polio vaccine were tested for poliomyelitis neutralizing antibodies. Sixtythree were negative to Type 1, 3, or 1 and 3 on screen test at a 1 : 10 dilution. Average age at time of testing was 14 months. Fifty-four of the 63 children were fed the type of oral vaccine (Sabin) to which they had no antibodies at 1 : 10; 9 of the 63 were given Salk vaccine. All children who failed to respond to the DPT polio vaccine responded well to the booster of oral vaccine, except 2; these 2 also failed to excrete virus in feces. The Type 3 virus was more readily isolated from rectal swabs after feeding than Type 1. The children who received the second booster of Salk vaccine also responded well. The development of circulating antibodies to Poliovirus was associated with the development of a band in the beta-2 globulin region on zone and immunoelectrophoresis.—*(Canad. Med. Ass. J., 85:* 575, 2-9-1961, via *J.A.M.A.*, 30-9-1961).

ROENTGEN CHANGES IN REITER'S SYNDROME

The roentgenograms of 46 cases of Reiter's syndrome were reviewed to determine what roentgen features might suggest the diagnosis. The evidence indicates that this syndrome has a consistent roentgenologic pattern. The high incidence of involvement of the bones and joints of the lower extremity and sacroiliac is noted. Severe changes were found in patients who had been ill a long time or in those who had repeated attacks. The similarities and differences between Reiter's syndrome and rheumatoid arthritis are described. A characteristic fluffy prolific periosteal reaction on the plantar surface of the calcaneus is believed to be specific for Reiter's syndrome.—(*Amer. J. Roentgenol., 86:* 344, Aug. 1961, via *J.A.M.A.*, 14-10-1961).

THE EFFECT OF AN EXTRACT OF *MOMARDICA CHARANTIIA* ON BLOOD SUGAR IN ANIMALS*

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A NUMBER of indigenous drugs claim to exert a beneficial effect on diabetes mellitus, though their efficacy in reducing the blood-sugar levels in experimental diabetes has often been disappointing. Yet the screening of these drugs is steadily on the increase, perhaps due to the fact that a negative result is worth while and perhaps even more helpful than a positive one in such research work. Further, recent experimental work and clinical experience on the use of oral anti-diabetic drugs have opened up new channels of thought on possible modes of action of these drugs. It would therefore, be quite likely that some of the indigenous drugs may fit into the complicated pathophysiology of the disease and earn a place for itself in the therapy of diabetes.

A report on the beneficial effects of an extract of *Momardica charantiia* † (*Tamil : Pahalkoy*) in diabetes mellitus appeared in the ANTISEPTIC of August 1956. Subsequently another report of its usefulness appeared in the *Indian Express*, dated 16-10-1958. It therefore, appeared to me quite reasonable to find out the effects of the extract on normal and experimental diabetic animals, and so the present investigation was undertaken. Studies on the probable mode of action and clinical trials are receiving separate attention.

Material and methods.–Fresh extract of the whole fruit—the long variety (after removing the ridges and tubercles on the skin and the seeds) was prepared and filtered through fine muslin cloth. Doses of 5 ml/kg. and 10 ml/kg. were administered orally to the animals in all the experiments. Studies were thus carried out on (1) normal dogs ; (2) alloxanized dogs ; (3) pancreatectomized dogs ; (4) normal rabbits and (5) alloxanized rabbits. Controls using distilled water were concurrently run in all cases. Folin's method of blood-sugar estimation, using Klett's photoelectric calorimeter was adopted throughout.

I. *(a) Normal dogs :*—Fasting blood-sugar was estimated and the extract administered orally. The blood-sugar levels were estimated thereafter at hourly intervals for 3 hours. The effect on a total of 24 dogs was studied in this series. Depending upon the response noted, the results have been grouped :— as those showing fair reduction, small reduction or a rise in

*Specially contributed to the ANTISEPTIC.

†VERNACULAR NAMES :—*Sanskrit* :—Karavella ; *English* :—Bitter gourd ; *Hindi* :—Karela; *Bengali* :—Uchchhe, Karala ; *Gujerati* :—Karela ; *Mahr* :—Karla ; *Bom* :—Kurela-jangro ; *Telugu* :—Kakaracoy ; *Tamil* :—Pavalcoy ; Pahalcoy ; *Malayalam* :—Paval ; Kaipavalli ; *Canarese* :—Hagalacoy.

blood-sugar levels. In 13 dogs (*i.e.*, a little over 54%) and average reduction in blood-sugar ranging from 8·2 mg.% in the first hour to 17·2 mg.% in the 3rd hour was seen.

(*b*) In six dogs (or 25% of the animals) the reduction was neither significant nor constant, as some showed a little rise in the second hour. The reduction ranged from 3·8 to 7% (mg%) in the 1st and 3rd hours. The rise was 1·8% in the 3rd hour.

(*c*) In the third group of 5 dogs (21%) a rise ranging from 2·5% to 3·9% was seen throughout the period.

(*d*) *Rabbits :*—In all the three rabbits studied there was a reduction in blood sugar, which was highest in the second hour –12·7 mg%. (*See* Table I).

TABLE I

Showing the effect of the extract on blood-sugar level in normal dogs and rabbits

No. of animals used	Average fasting blood-sugar	Average reduction (–) or elevation (+) in blood-sugar level after giving the extract orally and plain water for controls. 5 ml./kg.					
		1 hour	%	2 hours	%	3 hours	%
Dogs Control 3	104·8 mg%	105·1 mg%	+ 0·3	103·4 mg%	– 1·3	101·7 mg%	– 2·9
Dogs 13	115·6 mg%	106·1 mg%	– 8·2	99·4 mg%	– 14·0	93·3 mg%	– 17·2
Dogs 6	116·8 mg%	115·9 mg%	– 0·8	118·9 mg%	+ 1·8	108·6 mg%	– 7·0
Dogs 5	83·2 mg%	85·4 mg%	+ 2·6	86·5 mg%	+ 3·9	86·1 mg%	+ 3·4
Rabbits Control 1	105 mg%	105·5 mg%	+ 0·47	106·0 mg%	+ 0·95	105·0 mg%	0
Rabbits 3	101·7 mg%	89·8 mg%	– 11·6	88·9 mg%	– 12·7	92·9 mg%	– 8·7

II. *Alloxanized dogs :*—After estimating the F.B.S., alloxan was administered I.V. to 8 dogs in a dose range of 50 to 75 mg/kg. The blood sugar was estimated after 24, 48 and 72 hours. An appreciable rise was usually found after 48 or 72 hours. The extract was then administered and hourly blood-sugar levels studied as before. In 5 animals an average reduction up to a maximum of 14·7% was seen. In 3 animals there was a rise. The controls showed a slight rise, throughout (*See* Table II, p. 133).

Alloxanized rabbits :—In all the three rabbits there was an average reduction varying from 22·6 to 27% (dose being 10 ml/kg. of the vegetable extract).

III. *Pancreatectomy* was performed on four dogs. The blood-sugar levels promptly rose to between 200 to 400 mg.%. One dog died of hyperglycæmia, inspite of attempts to resuscitate it. Another got loose during the night, injured itself, loosening the sutures, and died subsequently. The other two

dogs were alive throughout the period of observation, with an average blood sugar level of 210% (mg.) The extract was administered in doses of 10 ml/kg. twice daily. Random blood samples were taken for blood sugar estimations, both with fasting and post-prandial states. The hypoglycæmic effects were neither constant nor appreciable. Sometimes there used to be a reduction ranging from 7 to 10%. Invariably they used to be supplemented with Insulin. Further experimental studies are being carried out to clarify and substantiate the effects so far seen.

TABLE II

Showing the effect of the extract in alloxanized dogs and rabbits

Name of animals used	Average fasting blood-sugar	Average blood-sugar after giving Alloxan	Average increase in blood-sugar %	Average reduction (–) or elevation (+) in blood sugar level after giving the extract orally and plain water for controls 5 ml/kg. in dogs and 10 mg/kg in rabbits					
				1 hour	%	2 hours	%	3 hours	%
Dogs Control 1	100·8 mg%	140·0 mg%	40·0	148·7 mg%	+ 5.7	140·4 mg%	0	145·6 mg%	+ 4·0
5 dogs	88·7 mg%	144·3 mg%	62·7	126·6 mg%	– 12·3	127·3 mg%	– 11·8	123·1 mg%	– 14·7
3 dogs	94·5 mg%	130·5 mg%	27·6	146·8 mg%	+ 12·5	139·5 mg%	+ 6·8	146·8 mg%	+ 12·5
Rabbits Control 1	120 mg.	180 mg.	60·0	185 mg.	+ 2·7	175 mg.	– 2·7	180 mg.	0
Alloxanized 3	118·2 mg%	194·1 mg%	64·1	150·3 mg%	– 22·6	147·5 mg%	– 24	140·8 mg%	– 27

Summary.—The extract of the fruit of ***Momardica charantiia*** was observed to produce a reduction in the blood-sugar levels in 54% of normal dogs, and 62·5% of alloxanized dogs. The effects after pancreatectomy were not encouraging. The hypoglycæmic response was uniform and constant in normal and alloxanized rabbits. The findings so far reveal that the extract has a moderate hypoglycæmic action in normal and experimental diabetic animals, though the effects are not often constant, and predictable.

More experimental work and preliminary clinical trials are under way, in order to evaluate further the usefulness of the extract.

My thanks are due to the Madras State Research Committee for the liberal grant-in-aid sanctioned for this investigation.

I am grateful to Dr. Santa Ramachandran, Dr. Damodaran and Sri Balasubramanyam of this Department for their co-operation and help, particularly to Sri Balasubramanyam for his valuable assistance in the numerous blood-sugar estimations involved in this investigation. For taking care of animals etc., and general assistance, I am thankful to the other members of the department. My grateful thanks are also due to Dr. A. Ananthanarayana Iyer, Ex-Director of the Upgraded Institute of Anatomy, at whose suggestion this investigation was undertaken.

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TUBERCULOSIS IN SOHO (SUBURB OF LONDON)

Of the 3,105 catering establishments in the City of Westminster over 400 are concentrated in Soho. Tinker (1959) suggested that workers in the catering trade in this area have a particularly high incidence of pulmonary tuberculosis. The present survey was made to try to find out the true position.

2,611 workers in the catering trade in Soho have been X-rayed and at the same time interviewed and helped to complete a questionnaire. From the information obtained the following conclusions have been reached:—

Tuberculosis is more than four times as common in the catering trade in Soho as in the general population and almost certainly commoner than in the catering trade elsewhere in Great Britain. The disease is commonest among alcohol-servers, food-preparers, and other kitchen staff. The over-all incidence is 8·0 cases of active tuberculosis per 1,000 workers X-rayed. The disease is twice as common among the immigrants (9·6 per 1,000 X-rayed) as among those born in Great Britain (4·8 per 1,000 X-rayed). The Chinese, who come mainly from Hong Kong, have by far the highest incidence of active disease (53·8 per 1,000 X-rayed). They are responsible for the increased incidence in the immigrants as a whole. The incidence of active disease in immigrants, excluding the Chinese, was 4·4 per 1,000 workers, a lower incidence than in those workers, born in Great Britain.

There is evidence that rather more than half the tuberculous workers have the disease before joining the trade and the majority of these come from Hong Kong and to a less degree from Italy and Ireland, where there is a high national incidence of tuberculosis. Those tuberculous workers born in Great Britain and others from areas such as Cyprus, where the incidence of tuberculosis is low, usually join the trade healthy but develop the disease in the first five years after coming to this country and joining the trade.

It is considered that all new entrants to the catering trade in Soho should be X-rayed and tuberculin-tested, and where necessary B.C.G.-vaccinated, whether they come from abroad or were born in the United Kingdom. For the Chinese these precautions are especially necessary.—*(Brit. Med. Jour.*, 15-7-1961*)*.

PRE-ECLAMPSIA

M. K. K. Menon, *J. Obstet. Gynaec. India, 11 :* 249, March, (1961) used hydrochlorothiazide as a diuretic in a series of 76 patients, 69 with pre-eclampsia, and 7 with anæmia and œdema. After a control period of 24 hours of bed-rest and salt poor diet, 50 to 150 mg. of the drug was given per day, depending on the severity of the œdema. The duration of administration varied from 3 to 10 days. Of these patients, 5 showed an increase in weight during this period. Fifty had a good, 21 a fair, and 5 a poor response. There were no side-effects and no toxic effects such as hypokalæmia, agranulocytosis, or thrombocytopænia. The author concluded that hydrochlorothiazide is an effective diuretic in the dosage used for this type of toxæmia. The response was judged by clearance of œdema, reduction in weight, and increase in daily urinary output.—*(J.A.M.A., 177 :* 3, 22-7-1961*)*.

AMŒBIASIS — ITS DIFFERENT ASPECTS AND TREATMENT WITH SPECIAL REFERENCE TO NEOVIASEPT*

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THE incidence of amœbiasis is much more than what it is generally believed to be. Not being a notifiable disease authentic official statistics of its incidence, morbidity and mortality are lacking. In a recent paper published by Antia, Chaphekar and others[1], the incidence is reported to be 28·6%. According to Kasliwal and Gambhir[2] the incidence is about 40%. The number of cases examined in my out-patient department here gives an incidence of 31%. A well-planned systematic regular survey throughout the country, will alone give a correct idea of the true incidence of amœbiasis. The incidence of this disease would appear to be much more than of malaria, leprosy, tuberculosis, yaws and filariasis. Surprisingly enough there is no mention in the recently published report of the Ministry of Health for 1960-61 about amœbiasis which has such a high incidence and which probably takes a larger toll than many other diseases, nor are any plans under way for the control and eradication of this disease, such as are in operation against malaria filariasis, yaws, tuberculosis, etc.

Deaths directly due to amœbiasis may not be numerous, but deaths occurring secondarily to this disease, must be much more than many of the communicable diseases. Strictly, this disease should be classed as one of the communicable and notifiable diseases, as it is communicated from one person to another through food-handlers, cooks, flies, polluted water and milk etc. The problem is of national importance and unless control measures are adopted in the Third Five Year Plan, it may assume serious proportions.

I propose in this paper to record my observations and views relating to the unusual symptomatology of this disease, based on 848 cases treated by me during the last eight years. Stereotyped descriptions found in medical books intended for undergraduates and post-graduates furnish no detailed information about the signs and symptoms very often met with. There are many opportunities in the general hospitals and in private practice for studying these cases. It is a good augury that Kasliwal and Gambhir, Antia, Chaphekar and others, etc. have now been taking keen interest in studying the incidence and other aspects of this disease in India.

Mode of action.—We all know that amœbiasis is caused by *Entamœba histolytica* either in the trophozoite or the cystic

*Specially contributed to the ANTISEPTIC

forms and is conveyed through water, milk, and infected food. Sugar-cane juice plays a very important role in some areas, in spreading the infection. The main site of attack is from the cæcum to the pelvic colon. Very rarely it infects the lower part of the small intestine. It acts on the large intestine directly by causing multiple amœbic ulcerations. Also, there are some indirect modes of action :—(1) By entering the body, the amœbic cyst stimulates the production of antibodies, sometimes causing a state of hypersensitivity (Hopps)[3] ; (2) by production of exotoxins having a selective action on the nervous system (Hopps, Boyd)[3, 13] ; (3) the amœba may enter the portal venules and lie visibly within the lumen ; it can then readily pass into the liver.

Liver abscess is thus a common complication of amœbic dysentery; multiple abscesses in the liver may result. The lesions are really not true abscesses but are formed by the liquefaction of the liver cells by the digestive ferment of the amœbæ. Sometimes abscesses are formed in the brain and in some cases there is a hæmatogenous spread to the lungs, giving rise to a miliary-like mottling.

Diagnosis.—A diagnosis was made in all cases only after the examination of stools and detecting *Entamœba histolytica* as trophozoites or cysts. The trophozoites were usually found in acute dysentery and the cystic forms in chronic cases. The size of the cysts varied from 8 to 12μ, and the number of nuclei varied from 1 to 4. In the acute cases the trophozoites were easily detected. In the chronic cases it was not easy to find the cysts in a single examination of the fæces. The examination of specimens of fæces had to be repeated a number of times. In the clinically suspected cases, repeated examinations were made as often as 68 times. I could find a seasonal variation in the occurrence of the cysts in the stools. The details are given in the following table :—

TABLE I

Showing the number of stools positive for *E. histolytica*, in 100 examinations ; month-war

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
18	17	20	27	32	39	51	44	47	33	29	21

It would appear that mangoes have a provocative effect on the amœbic lesion in the intestine; because patients having latent lesions start passing amœbic cysts during the mango season, *i.e.*, May to July. Also prednisolone is reported to have a provocative effect (Mody) [5].

Symptoms.—The symptoms may be acute or chronic.

The *acute* ones are diarrhœa, (frequent watery motions with blood and mucus), tenesmus, high fever, dehydration, and acute

pain in the abdomen ; while the *chronic* ones range from vague discomfort to acute catastrophe. They may be divided systemwise :—(1) cardiovascular ; (2) ear (Meniere's disease) ; (3) eye ; (4) hair ; (5) hepatic involvement ; (6) intestinal ; (7) respiratory ; (8) brain and nervous system ; (9) skin ; (10) gums ; (11) blood ; (12) urinary and (13) joints.

1. *Cardiovascular* :—They vary ; and the patient may complain of palpitation, pressure on the heart, tachycardia, anginal pain, substernal pain simulating cardiac pain. Sometimes it presents a picture of right-sided heart-failure and coronary infarction and sometimes extra-systoles and low blood-pressure, or fainting attacks. Electro-cardiography shows however, normal cardiac functioning (Sarkar, Tulpule)[6].

The blood pressure shows a moderate rise ranging from 160 130 systolic to 110 90 diastolic, in about 40% of cases while the remaining 60% of cases show a lowering of the blood-pressure ranging from 100 70 systolic to 50 40 diastolic.

2. *Ear* :—Some patients complained to me of acute pain in the ears, one patient with Meniere's disease (?) passing cysts in the stools. The patient showed improvement and was completely cured in a short time with amœbicidal drugs.

3. *Eye* :—One case of iridocyclitis was referred to me for a check-up by the ophthalmologist as the patient had E. histolytica cysts in his stools. The ocular lesions improved very well with Neoviasept treatment (Elder)[7]

4. *Hair* : Falling of hair is very common in patients suffering from chronic amœbiasis. Some patients who even went to the stage of alopecia arcata responded well to treatment for chronic amœbiasis.

5. *Hepatic involvement* :—It is the commonest complication found in amœbiasis. Some patients complain of severe pain in the abdomen, in the region of the liver, and in the right shoulder joint. They may or may not have fever in the early stages but as the liver starts increasing in size due to abscess-formation a rise in temperature and leucocytosis occur. If not treated at the right time, these patients develop abscesses which may burst into the thoracic cavity giving rise to empyema or bronchopleural fistula, and anchovy-sauce-pus comes out with the spit. When there is moderate enlargement the patient shows right basal infiltration radiologically. Some patients in their early stages complain only of mild digestive troubles due to the sluggish liver. They soon develop anæmia which may lead to death if not treated suitably and in time.

6. *Intestinal* :—The largest group of patients come under this category. They complain of mere abdominal discomfort, chronic constipation, malaise, lassitude, lack of concentration,

flatulence, loss of appetite and a feeling of not being well. This patient may or may not remember the history of having had any acute attack in the past. He may not be aware of the existence of this disease in his intestine. He complains of having lost all interest in life and prefers to be left alone; he has no real appetite. Some of them have hæmorrhoids or complain of some ball-like thing moving within his abdomen. The pain may be vague and on physical examination the tenderness may be located on pressure in the descending colon (80%), transverse colon (8%) and ascending colon (12%). There may or may not be pain in the splenic flexure. Liver and spleen may or may not be palpable. On examination you can sometimes feel the ballooned colon simulating a tumour (amœboma). When very acute it may simulate acute appendicitis, perforating gastric ulcer, biliary colic, renal colic, etc.

7. *Respiratory :—(a) Asthmatic attack :*—The patient may seek aid for an asthmatic attack with dyspnœa and great difficulty in breathing. He may have a tightening sensation in the chest and wheezing. These are purely due to the allergy caused by the presence of *E. histolytica* cysts in his body [12]. Once the cause is removed, the patient gets dramatic relief.

The blood, often showed a high percentage of eosinophils (as high as 68), which decreased with specific treatment. In some cases Charcot-Leyden crystals were found either in the sputum and/or in the fæces (Boyd) [4].

(b) Empyema :—Some cases presented as cases of (?) tubercular empyema and were admitted as tubercular patients. Anchovy-sauce-pus was aspirated and trophozoites of *E. histolytica* were demonstrated in it; this was manifestly due to the bursting of the amœbic hepatic abscess into the lungs. Frequent aspirations along with antiamœbic treatment with Neoviasept and emetine cleared up the pus and the lungs expanded. An X-ray picture taken three months later, showed no trace of the disease.

(c) Pulmonary :—In some cases there is a hæmatogenous spread to the lungs and the patient complains of dry, unproductive cough. On X-ray examination, uniform miliary mottling can be seen resembling that in miliary tuberculosis. In those cases where I had doubt, the Mantoux test was carried out and the patients gave a negative result. Cysts were found in the stools and an X-ray picture taken six months after treatment for amœbiasis showed a complete clearance of the mottling. Sometimes patients with a moderate degree of cough showed (radiologically) infiltration at the right base of the lung. They responded well to the antiamœbic treatment, as evidenced by a clearance of the lesion.

8. *The brain and nervous system :*—We come across many complications some rare, and others quite frequent.

(a) Rare formation of brain-abscesses and brain-tumours :—I saw some cases with a history of fits of idiopathic origin. On finding cysts in the stools I treated them for amœbiasis; and four of them responded very well and the fits stopped. The fits were probably due to the formation of minute amœbic abscesses in the brain. In one case the disease was progressive and after referring the case to the neurosurgeon and after doing encephalography the patient was found to be having a big tumour in the brain. The patient was operated upon with good results, confirming our diagnosis. One case is still getting fits and encephalography is advised for him.

(b) Frequent nervous complications :—This forms a large group with complaints of multiple neuritis, neuralgia, neurasthenia and nervousness. The patient complains of neuralgic pain all over the body or of the pain restricted to some particular nerve like the sciatic, intercostal, auditory, trigeminal, etc. or even certain small peripheral nerves. This may indirectly give rise to myalgias, muscle cramps, etc. Some patients may complain of giddiness and instability. These sometimes are probably due to the neurotoxins produced by the E. histolytica cysts (Hopps)[3] which have got a selective action on the nerves. Tobacco in any form aggravates these nervous symptoms and better results are achieved by asking the patients to stop smoking or chewing tobacco. While treating these cases satisfactory results are achieved if the therapy is combined with massive doses of Vitamin B.

9. *Skin :*—The commonest allergic phenomenon noted by me was eczema. Eczema with amœbiasis responds very well to Neoviasept treatment together with Vitamin C. Another very interesting finding is that Vitiligo with a raised border which looks like leucoderma, in discoloured patches, disappears immediately the focus is removed from the intestinal gut (Shukla)[8]. Sometimes we also come across cases of amœbic ulceration of the skin (Gabriel)[9].

10. *Spongy gums :*—Chronic amœbic patients exhibit yet another common symptom *viz.*, spongy bleeding gums. Very, very resistant cases which did not respond even to massive doses of Vitamin C, calcium, Vitamin A and K, responded very well to antiamœbic treatment (Bey)[10].

11. *Blood :*—It has been my practice to obtain a complete blood picture and take the E.S.R. in each case where E. histolytica cysts or trophozoites are found.

A slight leucocytosis was found in about 40% of cases. The leucocytes ranged from 7000 to 10,000.

The eosinophilia ranged from 8 to 68%. Patients suffering from asthmatic attacks secondary to amœbiasis had an eosino-

philic count of 30 per cent and more. This was due to the allergy caused by the *E. histolytica*. The eosinophilia dropped down with the progress of the treatment. This eosinophilia is associated in many persons with tropical eosinophilia of the lungs idiopathic in origin ; my patients responded well to antiamœbic treatment. This eosinophilia gives a baffling appearance in the skiagrams of the chest:

E.S.R. :-There is a moderate rise in the E.S.R. ranging from 12 to 20 mm. in the 1st hour by Westergren's method.

Anaemia :—About 30% of the patients showed a moderate degree of anæmia ; about 60 to 80% showed a high percentage and 10% of the cases showed a severe degree of anæmia. The lowest I noted in 3 cases was 28 per cent.

12. *The genito-urinary system* :—From the urine of one patient who had a fistula between the bladder and the rectum I obtained vegetative forms of *E. histolytica*. Some similar cases were reported by Craig[11] but this condition is very rare.

I have not come across any male patient with amœbic ulceration of the urethra nor any female patient with ulceration of the cervix uteri as reported by Hsu in China.

13. *Joints* :—I treated eight patients with arthritis found after due investigations, to be due to amœbiasis. The pain is generally limited to one or two joints. There is slight swelling and the movements are painful. These patients treated with Neoviasept only responded well within two weeks. Cases with multiple joint-pains (large and small) are not uncommon. These cases simulated rheumatoid arthritis but did not respond to rheumatoid arthritis treatment, but responded very well to anti-amœbic treatment.

Differential diagnosis.—Much confusion in the treatment of amœbiasis has been due to a lack of proper investigation. The following diseases will have to be kept in mind in the differential diagnosis :—

(1) Acute and sub-acute appendicitis ; (2) enteric fever ; (3) tuberculous enteritis ; (4) tuberculous abdomen ; (5) gastric ulcer ; (6) pancreatitis ; (7) cholecystitis ; (8) asthma ; (9) pulmonary tuberculosis ; (10) miliary tuberculosis ; (11) tropical eosinophilia of the lungs ; (12) bacillary dysentery ; (13) dyspepsia ; (14) carcinoma of the cæcum ; (15) carcinoma of the liver ; (16) epilepsy ; (17) scurvy ; (18) rheumatism ; (19) osteoarthritis ; (20) cerebral tumours and (21) rheumatoid arthritis.

TREATMENT :—Treatment will have to be both prophylactic and curative.

PROPHYLACTIC :—The people must be educated and a knowledge of the infection and its effects should be made available to them so that they will take proper precautions against catching the infection. This must be undertaken by Government and public bodies interested in social welfare.

Improvement of sanitary conditions must be made by the Government by improving the water-supply, drainage, housing, and conservancy.

Personal hygiene :—The people shoul be educated about the value and need for personal hygiene. This has also to be undertaken at all levels by the Government as well as by the social welfare associations.

Screening of cooks and food-handlers in hotels and restaurants :—This could be achieved only by registration where there should be fixed rules for the cooks and food-handlers. They should be told about personal hygiene and their stools examined frequently, nails trimmed and cleaned properly and they should be given proper uniforms compulsorily while cooking or serving.

Water supply :—People should be provided with a liberal supply of pure drinking water. In the villages also they should be taught to use properly, filtered and chlorinated water and they should be educated to correct and improve their unhygienic habits.

Family screening :-There are many carriers who unknowingly spread the infection. So when we examine a dysentery case it is advisable to examine the stools of all the members of that family ; this will enable us to ascertain the source of origin and the means of spread. I do so usually, and find that in about 25% of cases some more members in the family are also suffering from amœbiasis.

Neoviasept :-When one has to be out in an amœbiasis-infected area, one dragee of Neoviasept is taken daily as a prophylactic measure. This may be done for 8 to 10 days at a time without any side- or after-effects and may be repeated after three months.

CURATIVE TREATMENT :—I have tried various amœbicidal preparations available in the market, but found Neoviasept to be most effective ; both in acute and chronic cases. The dosage in *acute cases* is 2 dragees of Neoviasept 3 times a day for 12 days ; emetine hydrochloride ½ grain intramuscularly for 6 injections and Vitamin B complex forte—1 tablet *t.d.s.* And in *chronic cases*, adult males and females are given 2 dragees of Neoviasept *t.d.s.*, for 12 days and Vitamin B complex forte 1 tab. *b.d.* ; while children under 12 years of age are given one dragee 3 times a day for 12 days with Vitamin B complex forte 1 tab. *b.d.*

In 216 of the 848 cases, I tried Neoviasept alone and made a comparative study. In acute cases, I have been using Neoviasept in combination with emetine and Vitamin B complex. In

chronic cases, whether intestinal or extra-intestinal, Neoviasept is effective when given with Vitamin B complex alone. There are no side- or after- or toxic effects. Some of the cases were followed up for more than four years and the relapse-rate with Neoviasept was the lowest. In a very few cases I had to repeat the treatment. No case required more than three courses ; this appears therefore, to be more satisfactory than other drugs.

Acknowledgement.—I am thankful to Messrs. Hœchst Pharmaceuticals Ltd., Bombay, for the supply of the Neoviasept dragees used in these trials.

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BLOODY TEARS

Details are given by P. G. Belau and C. Wilbur Rucker *(Proc. Mayo Clin.*, 1961, *36 :* 234) of what is claimed to be the first case to be reported of 'bloody tears due to the pubic louse.' The patient, a 2-year-old boy, with a history of 'blood in his tears' for three months, was 'an alert healthy child' and the only abnormality on physical examination was the presence of a dark powdery material on the lower eyelids. He was made to cry and the tears from the left eye were reddish brown and stained the cheek : examination of these revealed the presence of hæmoglobin but no red blood cells. On a return visit the mother produced a small insect she had seen crawling on the child's eyelashes and this proved to be *Phthirius pubis*. Examination of the eyes then disclosed the presence of numerous nits but there was no infestation of the eyebrows or scalp. Following removal of the nits and the local application of yellow oxide of mercury ointment there has been no recurrence of blood in the tears.

It is noted that in an American report of five cases of phthiriasis palpebrarum in children, all but one were doctors' children.—(*Practitioner*, Oct. 1961).

ANTITUSSIVE LIQUORICE

Fresh evidence that the traditional use of liquorice in cough mixtures has more justification than the pharmacologists have been prepared to admit of late is now forthcoming. According to D. M. Anderson and W. G. Smith *(J. Pharm. Pharmacol.*, 1961, *13 :* 396), derivatives of glycyrrhetinic acid have a central antitussive effect. Several derivatives had approximately the same potency as codeine when given subcutaneously to guinea-pigs, and one of them exhibited the same degree of activity after oral administration. The authors comment that if this orally active preparation 'has activity of this magnitude in man, the traditional use of liquorice for cough therapy can be considered to have some rational basis.' —(*Practitioner*, Oct. 1961).

RESPIRATORY-FUNCTION STUDIES IN PULMONARY TUBERCULOSIS*

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THE striking feature of modern medicine has been the steady invasion of clinical practices in pulmonary disorders by physiological thought. In most diseases which impair lung function it is difficult to assess the severity of the disease independently of function, especially so in pulmonary tuberculosis where an interplay of the forces of destruction and repair are constantly taking place. The variations of the disease are endless, hence one cannot solely rely on clinical, radiological and pathological evidences. It is therefore, very necessary to know the extent of functional abnormality in these cases.

The literature is full of reports regarding preoperative assessment of cases which, being very selected material, does not give the true nature of pulmonary insufficiency (Cournand, 1941 ; Cournand *et al*, 1942, 1950 ; Little, 1956 ; Mellroy and Bates, 1956 ; Bjork, 1956 ; and Gaensler *et al* 1955). There are few reports on the estimations of arterial O_2 and diffusional tests with little stress on the ventilatory function tests in a large group of unselected cases of pulmonary tuberculosis except that of Anno and Tomasefski (1955) who reported an increasing extent of pulmonary insufficiency with increasing extent of parenchymal damage.

Material and methods.—The material for this study was selected from cases admitted to K.T.B. Clinic and Hospital.

After a thorough study and investigation of the cases, the following pulmonary function tests were performed :—(1) Vital capacity (V.C.) ; (2) residual volume (R.V.) ; (3) total lung capacity (T.L.C.) ; (4) breathing reserve in percentage of M.B.C. B.R.%) and (5) maximum breathing capacity, (M.B.C.).

All the patients were given respiratory exercises and were acquainted with the use of spirometer several times prior to recording the values for different lung volumes.

The whole study has been divided into two parts :—

Part I deals with assessment of the extent of functional abnormality in different stages of pulmonary involvement. The radiological classification used in the present series is the one recommended by the National Tuberculosis Association (1950).

*Specially contributed to the ANTISEPTIC.

Part II deals with the assessment of lung functions on the basis of clinical findings only. In the present era, great stress is being laid on the domiciliary treatment of cases of pulmonary tuberculosis. All the tests mentioned above cannot be performed on a large scale in any domiciliary programme, hence the necessity of evolving some such criteria from which a reasonably accurate assessment of lung functions could be made on the basis of clinical findings alone.

In every case note was taken of the grade of dyspnœa, amount of expansion of chest, extent of upper border of liver dullness and whether the accessory muscles of respiration were working or not. To facilitate the study, the following gradations were used in the present study :—

(*a*) *Grade of dyspnoea* :—It was divided in the following grades :—(*i*) no dyspnœa ; (*ii*) + dyspnœa ; (*iii*) ++ dyspnœa and (*iv*) +++ dyspnœa.

The details concerning the above will be found in our article in the *Indian Journal of Tuberculosis*, Vol. 7 : page 25, 1960.

(*b*) *Expansion of chest* :—$1\frac{1}{2}$" to 2" : *grade I* ; 1" to $1\frac{1}{2}$" : *grade II* ; $\frac{1}{2}$" to 1" : *grade III.*

(*c*) *Accessory muscles of respiration* :–Not working : *grade I* ; Slightly working : *grade II* ; Working : *grade III.*

(*d*) *Liver dullness* :—5th space *normal* ; 6th space : *grade I* ; 7th space : *grade II* ; Below 7th space : *grade III.*

Then an attempt was made to correlate the above clinical data with B.R%.

Since the various prediction formulæ are based on European standards, we take the average values as standard normal and compare the finding of different lung volumes obtained in patients from these which in the present report has been mentioned as "of average predicted values." They are as follows :—

TABLE I

Average normal values for different lung volumes

Lung volumes	For males	For females
V.C.	4000 cc.	3598 cc.
R.V.	1510 cc.	1410 cc.
T.L.C.	1510 cc.	5008 cc.
$\frac{RV}{T.L.C.} \times 100$	27%	27%

These values have been obtained after examining 50 male and female healthy adults.

The different ranges of ratio R.V./T.L.C. x 100 has been taken as representing different grades of Emphysema by Motley (1955). Since our normal range of this ratio differs from those obtained by Motley we use a slightly different classification :—Normal 25% to 35% ; slight emphysema 36% to 40% ; moderate emphysema 41% to 50% ; advanced emphysema 51% to 60% and far advanced emphysema, over 60%.

Results and discussion.—The present study comprises 130 cases, of which 78 (60%) were males and 52 (40%) were females. The average age of the patients was 28·6 years, (the range being 25 to 40 years). 30 cases (23·1%) had minimal lesion, 40 cases (30·7%) had moderately advanced lesion and 60 cases (46·2%) had far advanced lesion.

PART I :—A study of the ventilatory functions revealed the following abnormalities :—

Minimal lesion :—No abnormality in the ventilatory functions was noticed.

Moderately advanced and far advanced lesion :—1. *Vital capacity* :—It was reduced to a great extent in all the cases.

TABLE II

Changes in vital capacity

Vital capacity in terms of average predicted value	Percentage of cases
50% to 60%	10%
40% to 50%	25·6%
30% to 40%	56·1%
Below 30%	8·3%

Thus most of the cases had an appreciably low vital capacity ranging between 30% to 50% of the average predicted values. (*See* Table II).

2. *Maximum breathing capacity* :—Side by side with vital capacity it was also found to be affected. (*See* Table III).

TABLE III

Changes in M.B.C.

M.B.C. in terms of average predicted values	Percentage of cases
40 to 50%	27%
30 to 40%	55%
Below 30%	18%

3. *Evidence of emphysema* :—As judged by the ratio R. V./T. L. C. × 100 the following results were achieved. (*See* Table IV).

TABLE IV

Range of ratio R.V./T.L.C. × 100	Extent of disease		
	Minimal	Moderate	Far advanced
25%–35% (normal)	100%	45%	5%
36%–40% (slight emphysema)	—	35%	20%
41%–50% (moderate emphysema)	—	20%	25%
51%60% (advanced emphysema)	—	—	45%
Over 60% (far advanced)	—	—	5%

Thus there is a greater incidence of emphysema in far advanced cases as compared to moderately advanced lesions, there is also a higher incidence of moderate to advanced emphysema in far advanced lesions.

Anno and Tomashefaski (1955) also reached the same conclusion and reported a higher incidence of emphysema in patients with far advanced tuberculosis than in those with moderately advanced tuberculosis. They went on further and added that emphysema is of a secondary nature in these cases. The present study also permits of such a conclusion as we have found an increasing

incidence of emphysema with increase in the extent of parenchymal involvement.

Patr II :—In an attempt to correlate the B.R.% with the clinical data, the following results were achieved :—(*See* Table V).

Table V

Grades of dyspnœa	% of cases	Range of B.R.	Chest expansion			Liver dullness			Accessory muscle of Re :		
			Gr. I	Gr. II	Gr. III	Gr. I	Gr. II	Gr. III	Gr. I	Gr. II	Gr. III
No	10%	80-85%	60%	20%	10%	10%	70%	20%	90%	10%	0%
+	30%	73-79%	0%	70%	30%	60%	30%	10%	20%	80%	0%
++	50%	67-72%	0%	10%	90%	0%	14%	86%	2%	90%	8%
+++	10%	Below 67%	0%	0%	100%	0%	10%	90%	0%	20%	80%

These observations permit us to categories the patients in the following four groups :—

Group I :—No dyspnœa ; chest expansion *Gr. I* ; accessory muscles of respiration. *Gr. I* ; liver dullness *Gr. I*—[B.R.% will be 80-85%].

Group II :—Dyspnœa + ; chest expansion *Gr. II* ; liver dullness *Gr. II*; accessory muscles of respiration *Gr. II*—[B.R.% will be 73-79%].

Group III :—Dyspnœa ++ ; chest expansion *Gr. III* ; liver dullness *Gr. II* ; accessory muscles of respiration *Gr. II*—[B.R.% will be 67-72%].

Group IV :—Dyspnœa +++ ; chest expansion *Gr. III* ; liver dullness *Gr. III* ; accessory muscles of respiration *Gr. III*—[B.R.% will be below 67%].

Summary.—130 cases in different stages of pulmonary tuberculosis were studied to determine the extent of ventilatory insufficiency in different stages of parenchymal damage and also to determine criteria from which to estimate the degree of pulmonary insufficiency from clinical examination alone.

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A GENERAL REVIEW OF OUR KNOWLEDGE OF VITAMINOLOGY*

(With particular reference to B-Complex-deficiency)

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I

VITAMINS, among the food constituents, are marked by the disproportion between their great qualitative importance and meagre quantitative requirements in the diet. This fact attracted the attention of the research workers in the latter part of the last century, and continues to be so even today. The science of nutrition gradually reached a stage, at which Funk finally presented his "Vitamine Theory" in 1912. As so often happens in the development of any science, the fundamentals have to wait for long before emerging as the basis of accepted knowledge. The fundamental idea of vitamins was appreciated long before the era of "Funk-Eijkmann-Hopkin", if only very vaguely, as being "some essential factor present in diet", a lack of which may cause disease! The earliest knowledge of vitamins is intimately related to the specific advances made in the field of beriberi in Asia and pellagra in the poor southern cotton states of North America.

The Chinese had the clinical concept of the disease, now known as beri-beri, as far back as 2600 B.C. Bontius described the same clinical picture 1642 A.D. under such terms as 'Kakhe' or 'Asjike'. Similarly, the clinical picture of pellagra was known to Barnino and Maffei (1600) in America and Italy (mal-de-la-rosa), though they had no proper ætiological conception or methods of treatment. The early history of pellagra goes back still further; more than 100 years after Barnino and Maffei, Casal gave a similar account of the malady from Spain, which however, was published only after his death in 1763; and the disease soon came to be recognized in Italy, France and North Africa. In 1828, Hamean described the disease before the Royal Society of Medicine (*Bordeaux*). It was Takaki, an young Naval Medical Officer in the Royal Japanese Navy, who in 1882 did the first 'big work' and clearly proved the nutritional-deficiency-basis of beri-beri.

He was struck by the pitiable condition of the sailors coming back from sea-voyage, and suffering from, what is now called beri-beri. He went to St. Thomas Hospital, London to gather knowledge, and returned in 1880 to take over as Director of the Tokyo Naval Hospital. He provided an improved diet and sent a ship on an identical voyage, as the one from which the earlier ships had returned with sick and dying soldiers; the new diet

*Specially contributed to the ANTISEPTIC.

included extra-proteins besides the earlier primarily carbohydrate-fat diet. Although he successfully prevented the incidence of disease, he had little idea at that time of its ætiology. Nevertheless, he had taken a bold step forward in ascertaining that a nutritional deficiency was the cause of beri-beri.

Further clear evidence of the existence of dietary factors, in the nature of our present vitamins, came from the pupils of Bunge of Basle. Lunin in 1881 fed mice on a purified synthetic diet, containing all the then known factors of milk (protein, fat, carbohydrate, salts) in a water medium. He found that they failed to survive on such a mixture; he concluded, that in addition to these principal ingredients, a natural food like milk should contain "*small* quantities of an unknown substance *essential* to life." The conception of vitamin is manifest in the words "small" and "essential to life." These experiments were continued in 1891 by Socin another pupil of Bunge, who found that the synthetic diet failed, because of an inadequacy in the quality of the protein therein. In the opinion of both Lunin and Socin the unknown essential factor was an inorganic one.

While the Bunge-school was engaged in experimenting with synthetic diets, a simultaneous investigation of far-reaching importance was being made in Java by Eijkmann (1890-97) and Grigns (1901) on *Polyneuritis gallinarium*.

In an investigation on synthetic food supplements to laboratory animals, the observations of Lunin and Socin were confirmed by Stepp in Germany. They were repeated and extended by Pakelharining in 1905 who stated "there is still an unknown substance in milk which even in very small quantities is of paramount importance to nutrition. If this substance is absent, the organism loses the power to assimilate properly the well-known principal parts of food, the appetite is lost, and with apparent *abundance*, the animals die of *want*. Undoubtedly the substance occurs not only in milk, but in all kinds of food-stuffs, both of vegetable and animal origin." This is a clear statement of the principle underlying the vitamin theory propounded even 10 years before Funk.

In continuation of and in addition to the work of Lunin and Socin, and of Pekelharing, Hopkins in England also emphasized the fact that the experimental animals failed to thrive on a synthetic diet, not because of any quantitative deficiency but of a qualitative one. He aptly remarked "the amount which seems sufficient to secure growth is so small that a catalytic or stimulative function seems more likely"; this took us another step forward, although still not announcing the vitamin theory." With this we come to a stage in the history of vitamins, when the presence of "some catalytic agents in nutrition, needed in very *small* quantities, absolutely *essential* for the growth and

functioning of the animal, and present only in natural foods," is established.

In addition to the researches which culminated in the findings of Hopkins, there were his Nobel-Prize (1929) partner Eijkmann and Grigns (1901), who investigated the occurrence of polyneuritis in hen and men in Java and its relationship to the use of milled rice. In U.S.A. Goldberger in 1913 tried to prevent pellagra by supplementing the maize-diet in the southern cotton growing states, with liberal quantities of milk and eggs.

The first major step forward in Vitamin investigation, after Takaki, was that of Eijkmann who was a military doctor working in a prison hospital in the Dutch territory of Java in 1890. He was struck by the identity of the clinical picture of the paralysing malady in the patients in the wards and in the hens in the yard. He soon found that the common basis was the use of milled rice. He continued the feeding experiments on the fowl and found that the use of unpolished rice cured the hen of the *Polyneuritis gallinarium*. The experiments were then continued on human beings. Eijkmann's view (1897-1906) as crystallized was that the substance present in rice polishings (*i*) was a pharmacological antidote to beri-beri; (*ii*) it was extractable with water and alcohol and (*iii*) was also dialysable. He remarked—"There is present in rice polishings, a substance (other than protein, fat or salt) indispensable to health, a lack of which causes nutritional polyneuritis."

The deficiency theory of beri-beri was further strengthened by Grigns (1901), who wrote of "the lack (in milled rice) of certain substances of importance to C.N.S."

Progress continued in determining the properties of anti-beri-beri (rice-bran) extract: (Eijkmann; Grigns; Breaudat; Fraser and Stanton; Schaumann; Hulshoff and Pol.; Shige and Kusama, Chamberlain and Vedder and others), till the final emergence of the "*Vitamine Theory*" of Funk in 1912.

Funk not only theorized on vitamin deficiency diseases, investigated on anti-beri-beri factor, and isolated the active principle from rice-polishings, but also gave it the name 'VITAMINE,' though he was alive to the fact that "these substances might later prove to be not of the nature of amines." Funk's work however, received world-wide attention by his paper published in June 1912, on "the ætiology of deficiency diseases."

In addition to "anti-beri-beri vitamin," which received most of his attention, Funk also mentioned the possibility of the existence of anti-scurvy, anti-pellagra and possibly also anti-rickets vitamins.

This brings us to Hopkins' famous experiments on "Synthetic diets" (1912). Sir Fredrick Hopkins of Cambridge

gave these unknown substances the name of "accessory food-factors." Funk provided an opportunity of bringing together the works of Eijkmann and Hopkins, and thus emerged the classical conception of "Vitamine" deficiencies. The final *e* in "*Vitamine*" was dropped by Drummond in 1920, and the term *Vitamin* came to be universally adopted thereafter.

It had yet to be clarified as to whether the unknown vital factor which rats needed for growth (in the synthetic diet experiments, consisted of only one or more than one specific portions in the "Vitamine." Investigations were henceforth to concentrate on this point. Stepp worked on fat-soluble (*cf.* water-soluble) indispensable factors in natural food (1912). Mc'Collum and Davis (1915) suggested the presence of two growth-factors necessary for the laboratory animal, one present in certain fats ("fat soluble-A factor") and the other obtained from watery food extract (water soluble-B factor); The B factor was found identical with Funk's "anti-beri-beri vitamine." The two factors were ultimately labelled Vitamin A and Vitamin B, the first classification of vitamins on the basis of fat and water solubility.

Attempt, at further classification were made by Goldberger in 1925. Renouncing his earlier belief about pellagra being due to a protein-deficiency, he accepted Funk's vitamin-concept about this disease. He divided Vitamin B factor into (*i*) Funk's Anti-neuritic (A.N.) factor, and (*ii*) his pellagra preventing (P.P.) factor. The A.N. and P.P. factors were also termed in America as Vitamins F and G respectively. These were however, termed by the British Medical Research Council's Committee on Accessory Food Factors in 1927 as, *Vitamins B_1 and B_2*. Sherman in 1927 proved the presence of a growth-promoting factor which did not cure polyneuritis and named it lactoflavin (present in milk). Warburg and Christian (1932) isolating it in a combined form from yeast as an yellow exudative enzyme reflected on its pigment nature. In view of the sugar Ribose occurring in its composition, this vitamin was named Riboflavin—a name confirmed by A. M. A. in 1937. Further work on Vitamin B_2 was done by Birch and Gyorgy in 1935.

Jansen and Donath, obtained the anti-beri-beri vitamin in crystalline form with a formula of C-12 H-13 N-4 O_8, and termed it "Aneurin"; its structural formula was however elucidated by Williams (1935-36) and it was synthesized by Williams and Clines in 1936.

The next notable advance was made by Lohman in 1937 who suggested the role of Aneurin as Cocarboxylase. At the same time Eivehgem demonstrated that nicotinic acid or its amide will cure pellagra even in advanced stages. Continuing his studies, he was able in 1938 to separate nicotinamide and obtain it in crystalline form.

There were some equally important landmarks being created at the same time in other fields of nutrition and vitamins. Besides Goldberger, pellagra was studied by Voegtlin, who before Goldberger's classification showed that pellagrins improved with a total Vitamin B extract and not merely with the anti-neuritic factor of Funk. Similarly, in another sphere, Leuche in 1947 studied the inter-relationship between nicotinic acid and tryptophan and therapeutic effects of large doses of tryptophan in nicotinic acid deficiency.

Evidence of experimental animals falling an easy prey to infections, through a deficiency of vitamin factors was produced by Kuczyniski with yellow fever by Lamb with leprosy and Pinkerton and Bessey with typhus, thereby raising the question of vitamin deficiency inducing a susceptibility to infections.

Definite large-sacle evidence of vitamin (nutritional) deficiency is not lacking even at the present time :—thus the incidence of severe disease in prisoners of war (II World War) returning from Japanese concentration camps, post-war outbreaks of beri-beri in the S.E. Asian countries, the nutritional disorders following the Bengal famine of 1942-43 and in the refugee camps following, India's independence, the incidence of beri-beri with polished rice among U. S. Army Corps-the Phillipine Scouts 1909–13, and the Nissen report of 1930 on the whaling expeditions in South Seas are only a few of the many occurrences reported.

It must however, be remembered that the results of these and other investigations on dietary (vitamin etc.) requirements do not necessarily apply to all the countries irrespective of their individual social and economic conditions. The field in this subcontinent is still unexplored and awaits an opportunity for nutritional investigations to be carried out.

II

The evolution of human dietary habits has greatly influenced man's development. Different races living on different diets have afforded opportunities to study the numerous problems relating to nutrition and health. Thus the diets of the Bengalis and the Pathans, vary widely in their composition and play a significant part in the development of the physical and mental characteristics of the two peoples, which also differ widely. Diet has a definite relation to the incidence of disease in our country. The main dietary defects are an excess of carbohydrates and low proteins particularly animal proteins, and low intake of fats, minerals and vitamins.

A large number of people do not consume food sufficient to meet their physiological requirements. The problem therefore, today is one of producing sufficient food of proper nutritive

quality to maintain the minimum nutritional status among the people. The nutritive value of rice should be improved by methods like undermilling, parboiling and artificial enrichment with thiamine, nicotinic acid and iron such as is being carried out in the Phillipines in order to reduce the incidence of beri-beri ; a project experiment of adding soya-beans to supplement a poor rice diet has produced definite economic advantages in the experimental subjects.

Foods vary in quality and nutritive value depending upon the particular soil and climate. The process of cooking the meal, makes a lot of difference and so matters a great deal to individual and communal health.

The consumption of an adequate and properly processed food must be able to furnish enough vitamins, to meet ordinary needs. Still, there are certain factors which affect the quality adversely :—(1) Factors stepping up the needs of nutrients : (*a*) Infection ; (*b*) pregnancy and lactation ; (*c*) increased metabolism ; (2) ignorance about suitable diets ; (3) people largely eat by force of habit and likes or dislikes ; (4) economic considerations ; (5) maternal mal-nutrition affecting the offspring producing deformities ; (6) special needs of an artificially fed infant ; (7) mild, degrees of malnutrition ; (8) adolescence, particularly of girls ; (9) obesity ; (10) old age ; (11) post-operative, and convalescent conditions requiring greater nutriments and (12) overt vitamin-deficiency states.

The main specific causes of nutritional deficiency disorders and malnutrition are :—

I. (1) Over - population combined with inadequacy of food ; (2) poverty combined with rise in prices since the beginning of this century as revealed in the adjoining statement.

TABLE I

Showing rise in prices of essential commodities

Article	1900	1925	1957	1960
	Cost per seer in annas			
Mutton	2	6	36	40
Beef	1	2	12	16
Milk	2	2	8	12
Ghee	12	–	80	96
Sugar	3	5	24	22
Rice	–	4	16	14
	Cost in rupees per maund			
Atta	1·3	3	15 (?)	2·5
Wood	0·2	–	3·5	
	Cost in annas per dozen			
Eggs	3	6	26	36

The other causes are :—Illiteracy and ignorance among the majority of people ; want of proper housing and cooking facilities ; religions and social practices and fads, fallacies and personal factors.

II. Insufficient intake causing anorexia ; vomiting ; special diets *e.g.*, P.U., diabetes and colitis ; alcoholism and ageing.

III. Defective absorption and digestion.

IV. Increased demands of the body in adolescence, pregnancy, lactation, fevers and Grave's disease.

V. Excessive losses from the body *e.g.*, hookworm disease etc.

Appraisal of nutritional status.—The value of vitamins and minerals as important essential factors in diet was appreciated late in 1900. Even then, only cases due to marked under-nutrition were recognized. Protective factors were found necessary for increased rate of growth and longer life. Dietary studies brought to light quantitative and qualitative deficiencies in the present food habits even in people living in the advanced countries. Although frank deficiency cases leading to death have decreased, the role of deficiency in causing deaths still remains to be determined *e.g.*, in conditions like : alcoholism (B, Niacin) ; deaths due to circulatory failures ; senility, (multiple-deficiencies) ; cirrhosis of the liver ; psychoses and alcoholic encephalopathy (Niacin). The prevalence of malnutrition is assessed from the evidence of morbidity rates, mortality statistics, dietary surveys and food supplements needed.

In America in 1938 pellagra accounted for 3,205 deaths and beri-beri for 42 deaths ; while indirect deficiency accounted in alcoholism for 2,569 deaths ; in cirrhosis of the liver for 10,808 ; in psychoses for 1,369 ; in senility for 9,242 deaths and in circulatory failures for 446,03 deaths.

Evidence from morbidity rates indicates that nutritional disease although rarely fatal (as in very acute conditions) accounts for a very high morbidity rate ; thus Goldberger stated in 1917 that there were atleast 33 cases of pellagra for every death reported.

Nutritional depression.—This causes anatomic stress and the non-fatal lesions, responsible for stunted and poor development, fatigue and for the many chronic illnesses met with. A survey of 100 million of the adult male population in U.S.A. in 1941 showed that 40% of them were unfit for general military service ; possibly a third of these had to be rejected on account of nutritional disorders. Mild deficiency-states continued over several years, seriously affect resistance, vigour and efficiency, leading to visible anatomic lesions. Surveys conducted in various countries have shown that Vitamin B deficiency is particularly important in this respect. Riboflavin deficiency *e.g.*, ocular changes like limbic vascular congestion and corneal vascularization, was found in about 39% of school children surveyed by Kruse in 1941. Riboflavin deficiency on biomicroscopic examination is still more prevalent.

A dietary survey carried out in Canada in 1939 showed that only 47% had diets adequate in calories, taking 3000 calories as

the satisfactory optimum daily intake. In this survey, most city families spent between 25 and 40% of their income on food (Stiebeling, 1939). Taking 225 *i.u.*, or 765 micrograms of vitamin B_1, as the requirement on a 3000 calories diet it was found that only 20 to 60 of 100 families received adequate amounts of it, in the different socio-economic groups. In the same survey, Riboflavin in the adequate 2·7 mg. daily intake was received only by a few of the city families and by only 36% of the well-to-do ones on the farms. Niacin-intake (18 mg. per head daily being taken as adequate) was mostly on the border-line in the diets studied. The above statistics relate to Canada which is high up in the socio-economic scale.

General factors contributing to nutritional failure.—1. Poor food habits including economic factors, ignorance of the rules relating to proper nutrition, popular tastes, fads, customs and racial antipathies.

2. Increasing use of vitamin-free or vitamin-poor calories, *e.g.*, flour poor in vitamin B_1, white sugar and highly milled cereals.

3. High prices and rationing, want of enough economic resources to have a nutritionally satisfactory diet.

4. Intercurrent illnesses, particularly in persons with a very little safety-margin of nutritional reserve left.

(*a*) Conditions interfering in food intake :—*e.g.*, (gastro-intestinal disease) :—food allergy, mental disorders, feeding disabilities, systemic diseases and vomiting states.

(*b*) Conditions interfering with *utilization* : *e.g.*, diarrhœa, gastrointestinal fistulæ, achlorhydria and diseases of the liver and gall bladder.

(*c*) Conditions interfering with metabolism *e.g.*, liver diseases; diabetes mellitus and chronic alcoholism.

(*d*) Conditions which act by increasing requirements :—Abnormal physical or mental activity, fever, hyperthyroidism, pregnancy and lactation.

(*e*) Conditions which increase the excretion of essential elements. Polyuria due to diabetes mellitus and diabetes insipidus and also lactation.

Vitamin nutrition and its importance.—The nourishment of the body-cells and their structural stability and functional efficiency depend upon the nutrition received by the human body through food. The food should be quantitatively and qualitatively adequately balanced in essential factors including the vitamins. Factors like fats, carbohydrates and proteins, on oxidation during metabolism, supply heat and make energy available, whereas others, like vitamins, play a more *subtle*, but vital role. These vitamins have a positive aspect, in that their

presence initiates and maintains certain metabolic processes; and a negative one in that their deficiency in the diet is sufficient to produce classical symptoms like beri-beri and pellagra or insidious conditions not so pronounced. There is unfortunately a substantial gap between the minimum and the optimum diets, required for human beings; this should cease to be so, as our knowledge regarding the role played by these essential factors increases and as the socio-economic status of the community improves.

Certain factors affect the content of vitamins in nutrition; these are related to the source, the methods of procurement and preservation, transport, cooking and serving etc. Also the needs of the person and the community are certainly not static, but very variable.

The role of Vitamin B in the human system.—*The relation of vitamins to the enzyme and coenzyme systems* :—There is increasing evidence that vitamins are able to form part of the enzyme systems, but, except in cellular oxidation systems, we have not yet been able to isolate the fraction that plays this role, or specify their mode of action. In the cellular oxidation system there is a proven place for thiamine, riboflavin, niacin and probably pyridoxine as structural elements of the respiratory enzyme system in metabolism.

Vitamins and infectious diseases.—It is an age-old conception and normal belief that nutrition is vital in offering resistance to infection; and so one can easily see that in nutrition, vitamins must play a leading role, vitamin B being one of the more important ones.

Animal experimentation and other studies by several researchers, have yielded encouraging results :—(1) Kuczynski tested the resistance of mice, to intercerebral inoculation of yellow fever virus, on various diets consisting of natural food-stuffs. B deficiency was found to be the most important in lowering their resistance. (2) Lamb experimented with inducing leprosy in rats and found that a diet low in vitamin B (and calcium, which is only indirectly related) reduced the time required for a resolution of the leprosy nodules. Also animals deficient in thiamine, transmitted increased susceptibility to succeeding generations. (3) Pinkerton and Besseyss have shown that B_2 deficiency is directly responsible for reducing the resistance of rats to typhus fever, presumably by changing the conditions of cellular metabolism to be favourable to rickettsial bodies.

Role of Vitamin B in antibody production.—The importance of dietary factors in affecting the resistance or/and susceptibilities of a host to infectious diseases has long been recognized. Antibodies, the important determinants of acquired immunity,

are obscure as regards their synthesis ; it is however, understood from experimental evidence that such a synthesis is markedly affected by the intake of certain vitamins :—(*i*) the favourable influence of vitamin B_1 and vitamin B_2 on antibody production noted in investigations on experimental animals by Watt (1944) ; (*ii*) folic acid deficiency in young chicks was found to inhibit agglutinin response by Little in 1950 ; (*iii*) pyridoxine-deficient rats developed very low antibody levels according to Stoerk (1946) ; (*iv*) impaired production of circulating complement-fixation factor was found in deficiencies of P. acid, F. acid, B_1, B_2, B_6 and B_{12} by Wertman in 1951.

Thus, each individual component of Vitamin B complex, plays a very important role in determining the antibody response in man, their deficiency causing a marked impairment in antibody production ; most consistently found in the case of B_6, P. acid and F. acid.

Vitamin B as growth factor.—(1) Thiamine is active in the metabolism of all flagellates, and there is a progressive decrease in the power of synthesis by the more fastidious species of these flagellates, leading to a stage at which the higher protozoa seem to be completely dependent on an external source for B_1. (Lwoff and Dusi, 1938). The whole question would however, appear to need further and closer investigation. Definite evidence that thiamine is essential for the growth of several species of the higher protozoa has been obtained in the case of ciliates and of several parasitic flagellates. (2) The effects of riboflavin in accelerating growth were found to be much less striking than B_1. Combinations of B_2 with B_1 and B_6 were more effective than B_1 alone ; the status of B_2 as a growth factor for protozoa is still uncertain. (3) The effects of pyridoxine on the growth of protozoa, alone or with B_1, remain to be established. (4) Evidence of other factors of the B complex group being growth-promoting to protozoa, is still more inconclusive than the above (regarding P. acid and N. acid and Biotin).

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PREGNANCY AND TUBERCULOSIS

Fifty-three pregnant women with active tuberculosis were compared with 53 non-pregnant patients of the same age-group and disease status. There was no significant difference between the groups as regards sputum conversion, roentgenographic improvement and stabilization, cavity closure or rate of relapse, either early or late. Their findings parallel other recent studies which show that pregnancy has no deleterious effect on tuberculosis when the infection is treated with adequate and prolonged chemotherapy and surgical procedures, when indicated.—(*Dis. Chest*, Vol. *39* : 505, May, 1961, via *J.A.M.A.*, 27-5-1961).

INDUSTRIAL PSYCHOLOGY*

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PSYCHOLOGY plays an important role in modern medical practice particularly with regard to industrial workers and the industrial Medical Officer has to apply more of psychology than modern medicines. Thus many industrial disputes and workers' problems have been solved by means of psychology, as many of their personal problems are due to psychic reasons. Inferiority complex in man gives rise to doubts and suspicions and finally leads on to hatred, and fear, anger and mental instability ultimately develop.

Mind is the kingpin which is influenced by all human transactions compatible or incompatible. Mind is measured or assessed by one's temperament, intelligence, character and educational attainments. Mind is adversely influenced by unpsychological approaches like harsh words spoken at random or by rude behaviour. This has been demonstrated by psychoanalysis. Mental upsets and mental disorders occurring especially among industrial workers are due to psychic causes which could be easily gathered at a patient hearing of the patient's statement regarding his family history and the relationship with his family and his employer, his mode of living and his habits and his occupational conditions. This requires tact and ability and a good knowledge of human psychology. Psychology has helped in making many workers improve in their turn-over and making them feel happier and efficient time at the same enabling the industry to increase its output and profits. On the other hand, unnecessary nagging and unsocial treatment would only breed contempt, hatred and hostility and also result in loss of production and industrial profit. Further, the worker feels unhappy and frustrated with an unbalanced mind and develops psychosis or psychoneurosis, which should not be mistaken for malingering or hysteria. The malingerer tries to pose in order to achieve some benefit by pretences and he may be of any age while hysteria occurs in young persons predominantly among young girls due to a psychic disturbance and for no other reason at all.

Harmony between master and servant will not be a problem, if only both of them have a sense of love and affinity for each other. This comes from practical experience and by a study of psychology. For instance, when a worker's ability is not duly appreciated or rewarded, it is natural that he becomes hostile and his turn-over drops.

In this democratic era man demands equality, higher standards and wages and cannot bear to see differential treatment.

* Specially contributed to the ANTISEPTIC

The modern industrial set-up provides several amenities for the employees' welfare to ensure co-operation, and loyal service, but some drawbacks are still there. Thus the workers' mental health depends on their surroundings, the nature of their job and the encouragement they get. Humiliation and teasing produce an unhealthy atmosphere. Mental imbalance can also be caused by excessive drinking, gambling and undesirable associations. Also over-work results in industrial fatigue leading to severe mental sickness. Loud noises produced in factories making motors, textiles, aeroplanes etc. may cause a nervous breakdown. It is also a fact that the workmen show a good turnover on the first working day following a holiday; because of the rest on the previous day he is able to do more and quicker work.

Preventive measures.—As all mental hazards can be overcome by psychology, psychiatrists are now appointed in all modern industries to assess the individual's merit and interest in the job. (1) Psychology-tests and psychoanalysis should be conducted on each worker on admission to any job to find out the suitability of the individual for a particular work, and periodical physical check-ups should then be routinely conducted. (2) Change of trade or job is necessary when a worker is found unsuitable for any job or is developing any occupational hazard. (3) Merit in the worker must be recognized and rewarded duly. (4) Over-work and over-time should be discouraged for the simple reason that they not only cause fatigue in the worker but also financial loss to the employer. (5) Workers should be protected from annoying noises by adopting sound-proof methods in construction and also providing them with ear deafners during working hours, besides other amenities. (6) Frequent transfers of workers from one department to another not only cause personal inefficiency but also result in mental upsets and should be avoided as far as possible.

All mental ill-health being due largely to psychic reasons, modern industries should sponsor the establishment of a Health Board consisting of a psychologist, a sociologist, a medical officer, a safety engineer and an industrial relations expert to deal with all mental problems. Such a Board will be an asset to industrial progress and also create harmony and confidence among workers and make for their better living and prosperity.

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Cases and Comments

PARAPLEGIA DUE TO AORTIC ANEURYSM

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AORTIC aneurysm causing paraplegia is a rare condition. In 1925 Laennec reported the first case. Paraplegia thus produced may be due either to direct pressure from the aneurysmal sac or to interference with the blood-supply of the cord or both. The latter is the more common factor. Thrombosis occurring in the walls of the aneurysmal sac may involve the mouths of a series of intercostal arteries and occlude them. This diminishes the blood-supply to the concerned segments of the spinal cord. Occasionally a dissecting aneurysm may produce a sudden diminution in or even the loss of blood-supply to the cord, resulting in rapid paraplegia.

Severe pressure-erosion of the vertebræ may be produced by the expanding pulsating aneurysmal sac. This is not however, very common. The intervertebral cartilages are not so much affected as the vertebræ.

Ramamurthi (1958) reported a case of aneurysm resulting in paraplegia, in a male, 28 years old. The duration of the illness was 3 years. Neither trauma nor venereal disease preceded the onset. The blood serology was negative. It was a case of 'dissecting aneurysm of the aorta.' Laminectomy was performed (dorsal vertebræ 3 to 6) and the spinal cord was found to be tape-like, thinned out antero-posteriorly. There was no clinical improvement. The patient died 9 months later. This was a case of paraplegia due to direct pressure and interference with blood-supply.

FIG. 1. Patient C. P.

Case report.—C. P., a male, aged 55 years, a mill worker, was admitted to the Government Erskine Hospital on 23-4-1961 for pain in the back and inability to walk of 4 months' duration. The onset of the illness was gradual and he did not give a history of any injury to the spine or exposure to venereal disease.

Neurological examination revealed the following :—Motor power was found to be lost in both the lower limbs, tone was

FIG. 2. X-ray chest. A.P. view.

FIG. 3. Barium-swallow picture.

slightly increased. There was sensory loss for various sensibility at different levels—light touch impaired over the dorsum of both feet, pain impaired below the sixth intercostal space, thermal completely lost below the 6th intercostal space, vibration also lost below the same level and joint-sense lost in the lower limbs. Plantars were bilateral, extensor, abdominals and epigastric reflexes were lost. Tendon reflexes in the arms were brisk and exaggerated in the legs. Ankle clonus was elicited. Visceral reflexes were normal. There was wasting of the right calf muscle. The spine showed kyphosis over the upper dorsal region.

There was no difference between the right and left radial pulse. The pupils were equal in size and reacting to light. In the mitral area there was a soft systolic murmur, not conducted. The aortic second sound was loud.

The blood-pressure readings differed slightly in the arms :—right 106/50 ; left 112/58 mm. of mercury. Blood Kahn and VDRL tests were negative. X-ray picture of the chest showed aortic aneurysm affecting the arch. X-ray picture of the spine revealed erosion of the mid-thoracic vertebral bodies. Lumbar puncture showed fluid under tension (104 drops/m.) and 4 cells/cmm. Analysis of the cerebrospinal fluid gave the following reuslts :—Globulin positive ; Pr. 90 ; Cl. 680 ; and S 42 mgm%.

Since an arteriosclerotic aorta does not erode the vertebræ, syphilis was thought of as the ætiological factor and a course of antisyphilitic treatment with P.A.N. and bi-weekly bismuth was given. The patient was discharged on 8-9-1961 and advised to be in strict bed-rest, with a view to preventing further trauma to the already destroyed spine.

Discussion.—The case is presented for its rarity. It is interesting to note that the subject developed well-marked, neurological findings within a short period of illness. Sensory loss affecting nearly all sensibilities at different levels, simulating tumour of the cord or a recovering transverse myelitis, is of significance. Radiological evidence of vertebral erosion is very obvious confirming the diagnosis of compression-paraplegia.

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TREATMENT OF DIABETES INSIPIDUS

Chlorothiazide and certain of its analogues have proved effective in the treatment of diabetes insipidus. Crawford *et al.* administered chlorothiazide 1 g. or hydrochlorothiazide 0·1 g. (doses for adults) daily by mouth in three or four divided doses to seven patients with this condition, and showed that these drugs increased urinary solute and decreased urinary flow. Within two hours of ingestion of the drugs excretion of sodium increased abruptly, and later that of potassium. Excretion of chloride increased and urinary *p*H rose. Although an increase of urinary flow was not a regular finding, in the first six hours excretion of water usually exceeded fluid intake, and up to about 1 kg. body-weight was lost in the first twenty-four hours. The excretion of sodium began to decline within eight hours after treatment was started, and of potassium within fifteen hours. Potassium deficiency invariably developed but was readily overcome by giving potassium chloride orally in a dosage of 3 g. daily throughout the period of treatment. Eventually an electrolyte-water equilibrium was established and the weight returned to the initial level.

The action of chlorothiazide in diabetes insipidus seems to be specific. It was compared with that of acetazolamide, dichlorphenamide, and mersalyl ; but none of these increased osmolar clearance without increasing water clearance proportionally. The action of chlorothiazide on osmolarity was independent of water clearance, and patients and healthy control

subjects to whom chlorothiazide was administered still responded to a waterload with rapid diuresis. Chlorothiazide, moreover, acted independently of vasopressin but enhanced its effect. It was also effective when resistance had developed to vasopressin, and in patients with diabetes insipidus of nephrogenic origin where there was no deficiency of vasopressin.

The chlorothiazide group of drugs are unlikely to find an important place in the treatment of patients with diabetes insipidus who are satisfactorily controlled with vasopressin. Besides causing depletion of potassium this group is said occasionally to cause thrombocytopænia and agranulocytosis, and possibly jaundice. These drugs may, however, find a useful place in the treatment of diabetes insipidus of nephrogenic origin, and perhaps also in cases of vasopressin deficiency which have become resistant to hormone treatment.—*(The Lancet,* June 11, 1960).

SILENT PROSTATISM—(UNRECOGNIZED BLADDER NECK OBSTRUCTION)

It is well known that quiet progression of bladder neck obstruction occasionally develops to an advanced degree.

Sixty-four men who had notably few urinary complaints progressed from bladder neck obstruction to uræmia. Contrary to popular belief, they were not neglected, feeble hermits whose senses were obtunded by past excesses or senility. Physicians, their fathers, and clergy comprised one-fifth of this series. Intelligent men often accepted bladder symptoms as "normal acquisitions" of age. The diagnosis was delayed when unsuspecting physicians were misled by the deceptive rectal finding of a "small prostate." Men undergoing abdominoperineal resection are particularly prone to development of silent prostatism. Liberal use of blood urea nitrogen determinations and intravenous pyelograms are advocated in men having even slight evidence of abnormality of the bladder neck. In retrospect, cautious bladder decompression in the hospital is still advised as an initial step in management. Thirty-two men (50%) remained uræmic.—*(J.A.M.A.,* 20-10-1961).

EFFECT OF ANTICOAGULANT THERAPY OF ASPIRIN-INDUCED GASTROINTESTINAL BLEEDING

To determine the influence of anticoagulant therapy upon aspirin-induced gastrointestinal bleeding, 20 patients who were receiving acenocoumarin were studied during aspirin and control periods. Results were compared with those obtained from a similarly studied volunteer-group with normal clotting mechanisms. Fæcal blood content was measured in quantitative four-day specimens using radioactive sodium chromate. Prothrombin time was measured daily, using Quick test. The aspirin dose used throughout the study was 600 mg. four times daily. The average daily blood loss in the anticoagulant group was 1·1 ml. during the control period, and 4·7 during the aspirin period. Corresponding figures for the control group were 0·5 and 4·7 ml. respectively. Most patients required a reduction in maintenance anticoagulant dosage while taking aspirin.—*(Circulation, 24:* 613, Sept. 1961, via *J.A.M.A.,* 30-9-1961).

COMPARISON OF MEDICAL AND SURGICAL TREATMENT OF MITRAL STENOSIS

The results of mitral valvotomy in a series of 598 patients have been compared with the reported follow-up states of patients with mitral stenosis treated by medical measures. The difficulties of such a comparison are noted. The comparison does, however, indicate that patients submitted to surgery have a much better outlook regarding both survival and restoration to reasonably normal health.—(*Brit. Heart J.,* Vol. *23:* 377, July 1961, via *J.A.M.A.,* 14-10-1961).

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Editorials

THE FIGHT AGAINST TUBERCULOSIS

THE four-day Annual Conference (Eighteenth) of Tuberculosis and Chest Disease Workers which opened on the 15th January 1962 at Bangalore, Dr. R. N. Tandon presiding, should serve as an eye-opener to all concerned, as it highlighted the difficulties experienced in the uphill battle against tuberculosis. The conference was attended by over 300 delegates from all over India. RAJKUMARI AMRIT KAUR, the President of the T.B. Association of India in relating the measures undertaken so far to root out tuberculosis in the country, regretted that the schemes included in the plans had not been implemented as satisfactorily as one would wish. She did not think that any plea of inadequate funds could be an excuse for the 'very slow progress' because the specific schemes were worked out, taking into consideration the resources available for execution.

In his presidential address Dr. TANDON pleaded for regional establishments for chest surgery; referring to the controversy about the efficacy of the B.C.G. vaccination he suggested the conduct of an experiment on the lines of the one conducted by the British Medical Research Council. He said that unless it was done, the acceptability of the vaccination would not increase. We are really glad that Dr. TANDON made this very practical and valuable suggestion particularly now when the enthusiasm for B.C.G. vaccination appeared to be on the wane and needed a shake-up. It is also a very important point that Dr. TANDON made out that at least one medical college in each State should have a centre for the study of *drug resistance of the tubercle-bacillus*. He also said that the time had come for setting up an expert body on a statutory basis in each State for the co-ordination of the activities of the various tuberculosis institutions.

A special difficulty besets the path of the anti-T.B. campaign. As Dr. TANDON the President, forcefully pointed out, while malaria and plague have been successfully controlled in India, because the vector carrying this disease could be destroyed by modern techniques, in the case of tuberculosis, the same weapon is not available as the vector is man himself. Another hurdle has been found to be the prevailing poverty in the country—and "tuberculosis *par excellence* is a disease which thrives on poverty."

But even in such conditions, rapid progress has been possible elsewhere in the reduction of the death-rate by the carrying out of adequate steps, preventive and curative. It is also an interesting finding made by Dr. TANDON that a close relationship between the general death-rate and literacy apparently exists in this country; Kerala which has the highest literacy having the lowest mortality rate and Madhya Pradesh which has the lowest literacy rate faring the worst. It may be a matter of mere coincidence, but there can be no disputing the fact that apathy and hostility amongst the people to preventive, prophylactic and curative measures, should greatly diminish with the speed of education, particularly on problems connected with health.

The Conference also heard Dr. P. V. BENJAMIN, Tuberculosis Adviser to the Government of India, on the developments in the anti-tuberculosis field during the last 15 years. He felt that they could not control the disease in the foreseeable future if they confined merely to methods used in the past. He spotlighted some of the investigations intended to find out how best the disease could be controlled in a comparatively short period by using the means available or could be made available in the near future. With modern discoveries, especially of potent drugs, and with vaccine for prevention, he said there was hope. It is justifiable to say we now have the tools and the task is to find out how best to use them for the job.

The VI All India B.C.G. Workers' Conference had its 2 day-session at Bangalore on 14th January 1962. Dr. P. V. BENJAMIN, who presided over the Conference, said that in spite of the handicaps faced by the campaign, there had been an all-round improvement in its achievement. He said that over 165 million persons had been tested up to the end of the Second Plan and over 65 million had been vaccinated. The coverage for the existing population as on March 31, 1961, was 9·8 per cent in the age-group 0 to 6, 48·2 per cent in the age group 7 to 14 and 65·3 per cent in the age group 14 to 24. Dr. BENJAMIN said that during the Third Five-Year Plan, nearly 100 million children in the age group 0 to 14 would have to be tested, and for that purpose, the machinery of the programme will have to be geared up in the coming years. He appealed to all the States to appoint the necessary staff to make the programme a success.

While one may hope for the elimination of many of these hurdles, with successive five-year plans, the task of combating the spread of tuberculosis is still mainly a problem of specific measures well-implemented, by the State primarily, with the invaluable help of voluntary agencies like the Tuberculosis Association of India. While the B.C.G. vaccination campaign, one of the main planks of the national plan to eradicate the disease, has made a significant advance as Dr. BENJAMIN has said, with about

165 million people tested and 65 million vaccinated by March last year, the record has been not so good on the curative front. The Bhore Committee estimated the requirement of hospital beds in this context at 1·5 million as against the 6,000 that existed in 1945. But even after 16 years, we have hardly 30,000 of them. Providing all the beds needed with adequate treatment facilities for all or most of the open cases may not be practicable, in the present circumstances, but 1,00,000 beds have been recommended as the barest minimum for this country in the Lakshmanaswami Mudaliar Committee Report, just released (which we will carefully study before editorially commenting in our next issue on its various other recommendations). This target should be reached without much delay.

As we have already pointed out in our previous issues, the T.B. chemotherapy centre at Egmore infused a new spirit and great enthusiasm in the anti-tuberculosis campaign, by opening a new vista of possibilities for effective domiciliary treatment of tuberculosis in the homes of the patients themselves without serious danger to the rest of the members of the family living in close association with the patient. But even this programme, so much less expensive, has not had a fair chance to prove its worth because of the slowness with which the clinics that form the base of the domiciliary treatment, have been set up. It should have been possible in the course of the last 5 to 10 years to set up at least one T.B. clinic in every district. Even this has not materialized, due mostly to the apathy of the authorities concerned to find even the buildings and the staff, though the expensive equipment and other items have been offered *free* by the UNICEF.

In this context, the recommendations of the VI B.C.G. Workers' Conference are of very great importance and should be implemented as quickly as possible :—(1) During the Third Five-Year Plan period, B.C.G. vaccination should be carried on as a house to house campaign, with special stress on the coverage of the susceptible population *i.e.*, all children up to 15 years.

(2) The vaccination of new-borns should also be taken up and municipalities and corporations in the country should take steps to have B.C.G. vaccination work as part of their normal public health activity.

(3) Particular stress should be laid on the training of doctors and technicians in the B.C.G. campaign at the National Tuberculosis Institute, so that they could become useful in the district-tuberculosis control programme also. Emphasis was also laid on the training of personnel in statistics, publicity and health education work.

In view of the large incidence of the disease in rural areas, the suggestion for the provision of mobile vans equipped with X-ray plant at each of the T.B. clinics, deserves implementation, but the establishment of the requisite number of clinics themselves should be hastened.

THE INDIAN SCIENCE CONGRESS: 1962

ADDRESSING the numerous scientists (Indian and foreign) who attended the 49th Session of the Indian Science Congress held at Cuttack early last month, Dr. B. MUKHERJI referred to the rapid advances in the sciences of life during this century and said that while physicists had revealed the secrets of the atom, and its nucleus, the biologists engaged in the magnificent work on the composition of the nucleus of the living cell, had found that any specified physiological function was the outcome of a well-defined arrangement of the component units in the spatial geometry of the cell. Alterations in these arrangements caused by injury, disease, drugs or radiation lead to disturbanee of the living body of which the cell is an unit. This kind of analysis has enabled the scientist to breed plants and animals of new types and attempt the cure of even mental diseases with certain kinds of drugs and tranquillizers. A great deal of work has still to be done on the nervous system and the brain before the psychologist and the sociologist (not to mention the politician) can benefit from the new science of neuro-biochemistry. Man has an inventive bent of mind but even his most highly complicated inventions cannot compare favourably with the organs of the simpler plants and lower animals. The modern scientist is thoroughly cognizant of this fact and so he approaches any problem in research with a sense of humility and modesty.

In the past, scientific advance was slow and its translation to practical technology was even slower. But a general understanding of the scientific method and the vast body of new knowledge that has been accumulated in the last few centuries have come to be felt as vital to societies for raising their standard of life. Our educational system will therefore, require to be remodelled so as to devote more attention to the sciences than it has done in the past. For example, it is obvious that unless the people as a whole, understand the germ theory of disease, it will be really impossible to ensure that the food we eat and the water we drink are safe and free from pollution by disease germs. Unlike the Western technicians, we in India have always had a respect for all living things which have enabled us to resist wholesale exploitation of our environment. We do not, by tradition and inherent nature think solely in terms of the money value of science.

The steadily increasing population and the limited resources of the country are becoming problems that have to be squarely faced, and so the theme of the presidential address by Dr. G. C. ESH to the Physiology Section of the Congress *"The widening frontiers of nutrition research,"* was quite in keeping with modern trends and the realistic approaches needed. He pointedly referred to the lacunæ in our official plans to raise food production. In his opinion, with which we are inclined to concur, an effective and realistic approach to this vital problem should consist not merely in providing the requisite quantity of food grains to ensure, say 3,000 calories per head per day but should definitely also take into account the nutritional needs of the population in question and the nutritional value of the food supplies actually or potentially available. World-wide dietary surveys have revealed that the greatest and most severe nutritional problems are found among people consuming diets primarily of plant origin, such as we in India have been eating for years. Extensive studies in various parts of our country have confirmed that there is a chronic protein deficiency both in quality and quantity, being associated with nearly every disease condition that is met with amongst our people. Vitamin and calcium deficiencies in general and other deficiencies on a regional pattern, like iodine deficiency producing goitre in the Sub-Himalayan region, and vitamin B deficiency causing beri-beri in the eastern coastal regions of India, call for further research and planned attempts to balance the diet of our people region-wise. Then alone would it be possible to ensure better health and functional efficiency of the population.

As regards the primary question of protein deficiency in the average Indian diet, it will not do merely to step up the out-put of pulses from the 12 million tons or so being used at present. As Dr. ESH explained at the conference, the main function of the dietary protein is to supply the various amino-acids for the synthesis of the constituents that sustain the body's economy of cellular growth and maintenance. Since proteins of vegetable origin are deficient in some one or other of the indispensable amino-acids, the higher-quality proteins of animal origin like milk, eggs and fish have to form part of the diet to meet all the needs.

The average yield of milk by the Indian cows and buffaloes is only about a twelfth or even less of the English and European milch-cattle. So an increased productivity and better breed of cattle require to be considered on a priority basis. Meanwhile a more effective use of available existing food-stuffs by a judicious combination, is also to be attempted.

The concluding session of the Science Congress was highlighted by a very important resolution moved by the President

which called upon all scientists of the world "to ensure that the tremendous power created by science is not used for man's self-annihilation and is employed exclusively for the good of the entire human family."

MEDICAL CONFERENCES GALORE

The Conferences-season is over and we have had a plethora of them on diverse disciplines of medicine.

1. Inaugurating the first All India Cancer Conference in Bombay on 8th December 1961, Sri Y. B. Chavan, Chief Minister of Maharashtra, was glad that the Cancer Society was planning to initiate a project to collect authentic figures and medical statistics on cancer, from which it may be possible to find some factors of causative importance and concentrate their research on those aspects of cancer. Two million people in India are believed to be suffering from this fell disease at one time and nearly a tenth of this number die every year. This is indeed a pity seeing that cancer is a disease which can be controlled if detected early.

Sri Dr. V. R. Khanolkar, an eminent authority on Cancer Research and also Vice-Chancellor, University of Bombay, inaugurating the scientific session, said that there were many misconceptions about cancer. One of them was a general belief that cancer was a disease prevalent among the civilized nations. The disease is as prevalent in the East as in the West. It is believed that half of the male population suffered from cancer of the mouth and upper part of the throat. In Japan, it was cancer of the stomach and in Egypt, it was the urinary bladder that was affected in most cases. He rightly stressed the fact that the conception that cancer was incurable was far from the truth. Most types of cancer were curable when treated at early stages and in some cases even when at later stages. In the case of womb cancer, statistics showed that in spite of late treatment, two out of every five patients were cured and were able to lead normal lives. Several important papers were read and discussed at this conference. Madras State was represented in the discussions by Dr. B. Ramamurthi, Dr. S. Krishnamurthi and Dr. M. G. Varadarajan.

2. At Ahmedabad on the 28th of December 1961, Dr. Jivaraj Mehta, the Chief Minister of Gujerat, an eminent physician himself, inaugurated the All India Malaria and Filaria Workers' Annual Meeting attended by over 150 delegates including representatives of the Central and State Governments and international organizations like the W.H.O. and T.C.M. Dr. Mehta said that due to various reasons the time schedule had already been delayed in all the States and the spraying operations could not be withdrawn according to plan. This had resulted in serious financial implications and any further inefficiency or delay now would spell disaster.

Lt. Col. V. Srinivasan, Director General of Health Services, Government of India, said that the Malaria Eradication programme in India was half-way through and the country had reached the point of no return. He expressed confidence that with a little more effort and vigilance it should be possible to achieve the desired results in the very near future. We would also stress the need for tightening the supervisory machinery at all levels as some States are reported to be lagging behind mainly due to lack of adequate supervision. From available reports, Lt. Col. Srinivasan believed that the surveillance inspectors were not only weakening the link in the programme but were also a source of indiscipline. If this is so, it certainly calls for urgent disciplinary action.

3. The XXIII Annual Conference of the Association of the Surgeons of India and the XIII Annual Conference of the Indian Society of Anæsthetists were jointly held at Baroda on the 27th of December 1961, which Sri Dr. A. Lakshmanaswami Mudaliar, Vice-Chancellor of the Madras University inaugurated. He emphatically declared that there was no longer any question about the capacity of the Indian surgeons to rise to the highest eminence in their respective fields. "Gone are the days", said Dr. Mudaliar, "when it was considered even by some of our own people that surgery was more a subject wherein Indians could not play their role worthily and well." He appealed that the younger generation should be given the opportunities for self-development in this country and regretted that medicine, like education had always received a stepmotherly treatment at the hands of the Government. It is well-known truism that a country's greatness is judged not by the material wealth, not by the great projects that it has been able to complete—these undoubtedly were very necessary and useful—but by the high standard that is reached by its nationals in every department of science and knowledge and in every field of intellectual activity. With this fact no one can quarrel.

After having worked in Universities for many years and having had intimate knowledge of the youth of this country as teacher for 40 years, Dr. Mudaliar was eminently qualified to assert as he did, and tell the authorities that the young men in India were as capable, as efficient and as productive in their intellectual output as the youth of any other country. Given the opportunity, the right guidance and encouragement, our students can certainly deliver the goods and so he appealed to the Union

and States Ministers of Health to realize the truth of this statement and give a lead to the country.

Dr. A.E. DEA, President of the Surgeons' Association, who presided over the conference, said that decentralization was just as important to medical development as it was to political development and added that if progress in surgery was to have a purpose and a meaning, it would not be synonymous with the building of bigger and better hospitals in large cities. It would be wiser to exploit more fully the talent and resources for utilitarian ends, rather than to pursue trends that a poor overpopulated country can ill-afford, if progress is to be equated with adequate medical service to the people.

4. The 16th Madras State Medical Conference was held at Vellore between the 22nd and 26th December 1961 which was inaugurated by the Madras State's Health Minister, Sri M. A. MANICKAVELU. In his presidential address Dr. C. NADHAMUNI NAIDU covered a very wide field and referred to every aspect of medical education and medical relief. Mr. MANICKAVELU is reported at this conference to have blamed the Press for "creating a red herring," whereas the Press has only echoed the considered judgement of medical associations. Even at the Vellore conference inaugurated by Mr. MANICKAVELU, criticism of the scheme found a place in Dr. NADHAMUNI NAIDU's presidential address when he characterised the scheme as "a retrograde step" and called upon the Government to devise other ways of providing "treatment to the common man by fully qualified and efficient doctors." The fact that there is a shortage of properly equipped personnel can be no reason why half-baked physicians and inadequately trained amateurs should be allowed to tinker with the health of the people. As one of our esteemed local contemporaries very properly stated, "either a man is a physician or he is not, and there cannot be a 'semi-doctor' in a hospital any more than there can be a 'semi-pilot' on an aircraft."

We very much doubt if Mr. MANICKAVELU's hope that with one more medical college in the State "we shall be able to reach self-sufficiency in medical personnel" will be shared by others. If with the present five colleges we have 5,600 trained allopathic physicians in the State, the addition of one college is not going to make much difference to the present shortage. The truth is that every State in the country, except perhaps West Bengal, is woefully short of qualified physicians, and the making good of this shortage is a long-term plan to be worked out carefully. It will in no way be derogatory if the Governments would recognize the fact that facile short cuts will only spell disaster.

The abolition of a multiplicity of courses in medicine, to which the Health Minister referred, is certainly a step in the

right direction as it will ensure a uniform standard of professional skill. The Government should also guard against the temptation to attach excessive importance to indigenous systems merely because they are indigenous. Dr. NADHAMUNI NAIDU's note of caution in this regard, which has been sounded by others as well, needs to be heeded. Ministers must keep an open mind and dispel from their minds the notion that they alone possess a monopoly of wisdom in matters of education and health on which unlike at present, professional association and experienced practitioners should be taken into confidence in the public interest. Dogmatism is totally unwarranted and the Governments will certainly stand to profit by taking professional associations into their confidence.

5. Dr. R. V. SATHE, the President of the Indian Medical Association, presiding over the 37th All India Medical Conference at Kanpur on 4-1-1962, advocated the study of Ayurveda by graduates of modern medicine at the post-graduate level. We certainly agree with him that the present programme of training in Ayurveda would lead to the ruin of the science and its students. He suggested a short course of one year for post-graduate diploma and a long course of three years for a degree in Ayurveda and added that Ayurveda would thus be studied by men with a good background of general and medical education and the best in Ayurveda could be assessed and preserved. The integrated course devised by Government "to give a new touch to Ayurveda had only led to a kind of doctors who practised modern medicine almost entirely and who were even ashamed of being called graduates in Ayurveda!" Dr. SATHE suggested the holding of refresher courses for the maintenance of up-to-date knowledge and efficiency among the general practitioners in the 'daily widening boundaries of progress in medical sciences'. The new College of Medical Practitioners at Hyderabad would we hope, meet this long-felt-want.

6. The XIV Annual Conference of Otolaryngologists which was held at Jaipur on the 8th January 1962 was inaugurated by Lt. Col. V. SRINIVASAN, Director General of Health Services. He said that since independence the country had made very remarkable strides in the progress of health activities and there had been unparalleled increase in the facilities for medical education. Such rapid increase had naturally brought about several problems in its wake and the compelling need of the hour was to increase the number of doctors for general purposes. Owing to preoccupation with very urgent needs it has not been possible to develop certain other fields to the extent desirable or even necessary, particularly the need for teachers. In spite of some measures taken in this direction, the total needs have been growing fast. A recent survey made of the need for specialists

with higher training estimated that there was a shortage of over 1,000 teachers alone. "One of the reasons for teaching hospitals being extremely overcrowded", said "he is that the facilities for medical treatment of an equal standard was not available in other institutions. A most urgent requirement, therefore, is to make available at reasonable cost specialists' services of adequate standard at as many centres as possible in places within easy reach of the vast rural population." It will be very necessary also to improve the district headquarters hospitals to a sufficiently high level so as to make them capable of rendering efficient medical aid for all types of diseases with the exception of perhaps some of the highest specialities like advanced neuro-surgery or advanced heart-surgery.

If all the 350 districts in India were to be brought up to the required level, we are told that approximately 5,000 specialists of various types would be needed. Not all of them can be sent abroad, and so we have to train them in the existing teaching institutions.

MATERNAL AND FOETAL MORTALITY

Thirty-two uterine ruptures from various causes out of 53,177 deliveries in the Maternity and Children's Hospital at Manila from January 1954 to December 1957 were studied.

The most common type of ruptures were those from previous cæsarean cases.

Between the two types of sections done the classical type was found to be more prone to rupture than the low cervical type.

Traumatic ruptures were closely linked to the previous obstetrical complications of the cases studied.

It has been definitely shown in this study that pregnancy within two years after a section is more predisposed to rupture than those after two years.

Prenatal care and supervision of potentially vulnerable cases have not been found satisfactory as a prophylactic measure in this series because of lack of co-operation on the part of the patients themselves.

Cæsarean sections are progressively on the increase. The advent of improved antibiotics and the introduction of modern advances in obstetric care and judgement have broadened the indications for cæsarean sections. To-day more and more sections are being done not only for maternal reasons but also for the safety and salvage of the fœtus.

Traumatic rupture causes higher maternal mortality than previous cæsarean ruptures but lower fœtal mortality than the former.

Vaginal delivery of previously cæsareanized cases gave a higher incidence of rupture (5·33%) than the overall incidence of rupture in sectioned cases.—*(Philippine Jour. Sur. and Surgical Specialties,* July-Aug. 1961).

MAJOR SURGERY IN PATIENTS, 75 YEARS AND OLDER

This was a 3-year study of major surgery in 369 patients with average age of81·12 years (75-98 years). Surgical mortality was 12·4%. Emergency surgical mortality was 33·33%. Leading causes of death were sepsis, cardiopulmonary failure, and pulmonary embolism. These patients remained in the hospital 50% longer than middle aged patients with identical surgery.—*(Arch. Surg., 83*: 634, Oct. 1961, via *J.A.M.A.*, 14-10-1961).

GLEANINGS

ADVANCES IN MEDICINE

Angina pectoris.–*(Practitioner,* London, October, 1961).

Glyceryl trinitrate is still the most valuable drug in angina and by its intelligent use the patient with chronic angina is helped to lead a reasonable life. Not only does it relieve pain but it has been shown to improve the efficiency of the left ventricle. Very few patients cannot tolerate it and its only disadvantage is the short duration of its action. The search for a long-acting nitrite is therefore understandable and are praiseworthy but so far no reliable drug has been found which has proved itself either in practice or clinical trials. Because of the claims that have been made for long-acting preparations it is not uncommon for patients to be denied the drug of proven value, and until a satisfactory long-acting preparation is found it is surely logical to use glyceryl trinitrate more freely for relief and prevention of pain.

With an electrocardiogram showing ischæmic changes, without conclusive evidence of an infarction electrocardiographically or clinically, the prophylactic use of anticoagulants is strongly indicated.

Chronic angina is sometimes due to inadequate treatment when fear is uncontrolled, general measures are forgotten, and drug therapy is not properly used, and some of these patients are included in reports on surgical treatment for 'intractable' angina. Surgery for relief of angina has a place, however, and bilateral upper dorsal sympathectomy may improve myocardial function quite apart from relief of pain (Hayward, 1961). The future of cardiac surgery would appear to lie in coronary endarterectomy in selected cases of angina. Crawford and his colleagues (*Lancet, i:* 181, 1961) demonstrated in careful pathological studies that in 9 of 75 cases coronary atheroma was remarkably localized. Coronary angiography is developing so that it is possible to demonstrate such localization. By careful correlation of pathological and radiological evidence with the clinical course and patterns of coronary artery disease it should be possible to discover in which patients the lesion is so localized that obstruction may be removed, for coronary endarterectomy has already been successful.

Diabetes mellitus.—*(Practitioner,* London, October, 1961).

Much recent research has centred on the determination of insulin activity in the blood in healthy people and in diabetic patients. This work has recently been fully reviewed by Vallance-Owen and Wright (1960) and Vallance-Owen (*Lancet, i,* 806, 1961). It is clear that an insulin antagonist bound to plasma albumin normally occurs in the blood but that in diabetes mellitus it is present in greater concentration (Vallance-Owen and Lilley, *Lancet,* 1961). Its presence prevents the true determination of the total amount of insulin in the blood by bio-assay techniques. Anti-insulin activity in diabetes mellitus is probably of fundamental importance but at present we are largely ignorant of the nature of the antagonist and its mechanism of action.

Sulphonylurea derivatives, such as tolbutamide and chlorpropamide are valueless, and indeed dangerous, in the severe young diabetic liable to ketosis. In this group of patients no insulin activity can be detected in the blood although the presence of insulin antagonists is readily demonstrated. In older aketotic diabetic patients the oral agents are often effective. Insulin activity can be demonstrated in their plasma before treatment and enhanced levels are found after the administration of tolbutamide. The sulphonylureas are inactive in the treatment of diabetes following total pancreatectomy. The sulphonylureas require the presence of some functioning islets for their action and the balance of evidence from acute experiments favours the view that their effect is largely due to an increased secretion of insulin from the surviving islet tissue.

The prospect of success with oral hypoglycæmic agents is greatest in the mild or moderate older diabetic who cannot be controlled by diet alone.

Tolbutamide is the drug most widely used. Considering the extent of its employment, toxic effects are remarkably rare. Occasionally digestive disturbances or skin rashes may occur. Bone marrow disturbances are uncommon but a few cases of leucopænia, agranulocytosis and thrombocytopænia have been reported. A diet of carbohydrate content in the range of 100 to 150 g. is usually prescribed and if glycosuria persists but no ketonuria is present tolbutamide, 1 g. morning and evening, is started. The full effect may not be apparent until treatment has been given for a few days. The dose may then be adjusted to the minimum necessary to ensure control as judged by blood and urine glucose estimations. In a few patients 3 g. a day may be required but this dose should not be exceeded.

Chlorpropamide is probably slightly more liable to give rise to toxic reactions and in particular it may occasionally cause liver damage and jaundice. It has a more persistent action so that only one daily dose is required. The usual starting dose is 250 mg. but again a week or so is required to assess the full effect and the dose may then be adjusted. The minimum necessary should be employed.

Interest recently has been directed to the biguanides of which the most widely used is *Phenformin*. This substance lowers the blood-sugar in most patients with diabetes and in normal animals but healthy humans are resistant to its action. Gastro-intestinal side-effects are common, particularly if the adult dose exceeds 200 mg. daily. The mechanism of action of phenformin is obscure but there is some evidence that it increases peripheral glucose utilization and decreases hepatic gluconeogenesis. It has an entirely different action from the sulphonylureas and may have some effect in all types of diabetes. It may be combined with insulin therapy and may make control easier with lower doses of insulin, but there is a wide variation in opinion regarding its place in the treatment of diabetes.

Anticoagulant therapy.—*(Practitioner,* London, October, 1961).

All are now agreed on the efficacy of anticoagulant therapy in prevention and treatment of venous thrombosis and consequent pulmonary embolism.

In coronary artery disease there are few who would withhold this therapy for acute myocardial infarction except possibly for 'milk-risk' cases, though these are not always predictable, or when there are definite contraindications, or advanced age. Most would agree that effective and safe control can rarely be achieved outside hospital, and the need for anticoagulant therapy should therefore be a major factor in deciding whether to treat the episode at home or in hospital. Prophylactic and long-term treatment is a more difficult problem. Two trials of long-term therapy after infarction have produced evidence on which some reasonable policy can for the present be adopted and both suggested that anticoagulants could be beneficial.

Owren (1961), acknowledged as an expert in anticoagulant control as well as a clinician of sound judgement, has reported favourably in his symposium on their prophylactic use in angina, and Wood (*B.M.J.*, 1961) has produced convincing evidence of their value in acute coronary insufficiency as manifested by exacerbations of angina, atypical angina, and angina at rest. In patients with peripheral vascular disease the high subsequent incidence of coronary and cerebral episodes (Boyd, *Angiology*, 1960) indicates a further group in whom prophylactic treatment should be considered.

In the difficult decision of anticoagulant treatment more evidence will certainly come and will be welcome, but it would seem reasonable on present evidence to consider it for males under 55 with a recent myocardial infarction, and to continue it for at least one year; as prophylactic treatment in acute or subacute coronary insufficiency; and in younger patients with angina and peripheral vascular disease. In preventive treatment it is clearly better to use it early rather than late in the disease and the individual decision to treat should embrace every factor and will undoubtedly be influenced by the philosophy of the doctor himself.

Long-continued inhibition of gastric secretion by poldine methosulphate in patients with peptic ulcer.—*(B.M.J.*, 3-6-1961).

Antacids are widely used to control pain and promote healing in patients with peptic ulcer; although antacids, provided they are taken often enough and in large quantities (Clark and Hunt, 1958), are unquestionably effective in maintaining a lowered acidity in the gastric contents during the day, they have no influence on the acidity of the gastric contents during sleep. Instead of neutralizing the acid after it is secreted, it would seem better to try to inhibit the secretion of acid continuously even when the patient is in remission. This paper is concerned with treatment of patients with peptic ulcer along these lines, using an anticholinergic substance, poldine methosulphate (*"nacton"*), which reduces by about one-half the gastric secretion of acid without producing noticeable side-effects. (The drugs were applied by Beecham Research Laboratory Ltd., London).

Fourteen men with duodenal ulcers and two with gastric ulcers have been studied for a mean period of three years.

During this time they have been under treatment with four daily doses of poldine methosulphate (*"nacton"*) just small enough to produce no side-effects. No tolerance developed.

The secretion of acid, as assessed at monthly intervals with test meals, was reduced by one-half by the drug as compared with the secretion with dummy tablets. There was no change in gastric emptying.

The patients were free of dyspepsia for four-fifths of the months of treatment. As compared with an average absence from work of four weeks per patient per annum before treatment, the mean loss of time from work was half a day per annum during the three years of the study. During this period the deformity of the duodenum was reduced in 6 out of 14 patients with duodenal ulcer. These six had less dyspepsia than the others.

The trial has established that poldine can reduce the secretion of acid by about one-half in out-patients with peptic ulcer. Simultaneously, dyspepsia and loss of time from work were much reduced. The trial does not establish that the reduction of secretion of acid and the clinical improvement are cause and effect, although the results are consistent with this view.

SURGERY

Surgical treatment of reflux œsophagitis.—*(Arch. Surg.*, Vol. *83*: 534, Oct. 1961, via *J.A.M.A.*, 14-10-1961).

Patients with reflux œsophagitis who do not respond to a strict medical and dietary regimen appear to fall into 2 groups. In the first group, satisfactory relief of spasm and pain was obtained in 48 of 56 patients by repair of the hiatus hernia. All but one of the patients similarly treated by hiatus hernia and in whom cicatricial stenosis had occurred, continued to have pain and ulceration. Twenty-seven patients known to have had severe cicatricial reflux œsophagitis were treated. Nine, because of intercurrent disease precluding major operations, were managed by dilatation and bougienage with indifferent results, only 3 being benefited. The 4 patients in whom the stomach was anastomosed directly to the œsophagus, after resection of the stenotic œsophageal, segment, developed recurrent reflux œsophagitis. In 8 patients a short segment of the colon was interpolated between the stomach and the œsophagus, after resection of the stenotic portion. There was no mortality in this group and all patients obtained relief of œsophageal symptoms.

Experiences with the open correction of acquired mitral valvular disease, with special reference to insufficiency.—(*Amer. J. Surg.*, Vol. *102:* 280, Aug. 1961, via *J.A.M.A.*, 14-10-1961).

The authors carried out open correction of acquired mitral valvular disease in 33 patients, 19 to 55 years of age, with mitral regurgitation and/or stenosis. Originally it was believed that recurrent mitral stenosis and one or more attacks of systemic embolization constituted firm indications for the open operation. At present, these are not considered adequate indications. The open approach is offered only to patients with subvalvular stenosis, which has been well documented at a previous operation, who might not respond with optimum results to transventricular dilatation and commissurotomy. All repeat operations for mitral stenosis are performed now by the closed transventricular route. In selecting patients for the open correction of predominant mitral regurgitation with or without stenosis, the situation is more complex. If one rejects surgical intervention for patients with associated aortic insufficiency as well as for those with mixed mitral stenosis and mitral insufficiency and X-ray evidence of valvular calcification, the remaining patients with predominant mitral regurgitation will constitute a select group in which posteromedial annuloplasty is applicable with a low risk. Patients re-evaluated 4 to 40 months after posteromedial annuloplasty have, in the main, been significantly improved both subjectively and objectively. It would appear that any procedure other than total prosthetic valvular substitution has little to offer this numerically important group of patients.

The role of anaesthesia in surgical mortality.—(*J.A.M.A.*, 21-10-1961).

When should an anæsthetic be regarded as having contributed to the death of a patient? This question involves consideration of the *degree* of contribution as well as the *nature* of the contribution. The role of anæsthesia in contributing to surgical mortality has been studied in 33,224 patients given either spinal anæsthesia or a general anæsthetic to which muscle relaxants were added. There were no deaths attributable to anæsthesia in the 16,000 physically fit patients anæsthetized by either technique. As the patients' physical condition worsened, deaths related to anæsthesia increased in incidence; in the moribund patients, 1 in 16 patients given spinal anæsthesia died of causes related to the anæsthetic, and in 1 in 10 patients, general anæsthesia could not be excluded as contributing to death. Of 6,000 physically fit patients who received a muscle relaxant, none died. No evidence of an inherent toxicity of muscle relaxants could be found. When deaths were related to the use of muscle relaxants, errors of omission or commission were always apparent.

Retroperitoneal abscess.—(*Arch. Surg.*, Vol. *83*: 512, Oct. 1961, via *J.A.M.A.*, 14-10-1961).

Abscesses developing within the retroperitoneal area are serious and obscure the surgical infections which are usually associated with disease of the adjacent retroperitoneal or intraperitoneal organs. These abscesses are seen relatively frequently despite the widespread use of antibiotics, and in many cases the diagnosis becomes more difficult because of the masking of symptoms during antibiotic therapy. This study of 189 cases emphasized the anatomical considerations of the retroperitoneal area and compartments, laboratory manifestations, the importance of roentgenographic studies in diagnosis and localization of these lesions, and the necessity of prompt and adequate therapy. The successful management of these problematical cases depends primarily on a high index of suspicion, a careful clinical investigation, and early surgical drainage with adjunctive antibiotic therapy.

OBSTETRICS AND GYNÆCOLOGY

The use of antihistamine drugs in threatened abortion.—(F. Caminiti, March, 1961, *Panminerva Medica*, 3, 122-123, via *Medical Digest*, *6:* 8, August, 1961).

Twenty-nine women (16 suffering from threatened abortion in the first trimester of pregnancy, and 13 in the second trimester) were studied.

Some patients gave a history of several abortions.

Patients were selected so as to exclude those who had exceeded the 'time-limit of useful therapy' and those whose condition was ascribed to factors other than functional changes (fibromas, retroversions, etc.)

The antihistamine (N-dimethyl-amino-ethyl-N-p-aminopondine) was given by intramuscular injection four times daily for the first few days and then 2 or 3 injections daily at regular intervals for a further 4–5 days. Treatment never continued for more than 11 days.

Results were considered satisfactory in 22 (76%) of the 29 patients. The percentage of recovery was 92% in cases of threatened abortion in the second trimester, and 65% in the first three months.

The study confirmed previous reports on the harmlessness of antihistamines to the fœtus. Favourable results were obtained in cases of threatened premature delivery, symptoms subsiding in as little as two days in some instances, and pregnancies followed their normal course.

The authors consider that when the picture of threatened abortion has lasted for more than 15 days it is unlikely to be changed by treatment.

They believe that serum incompatibility of the ABO system is not only mechanism influenced by antihistamines, and that there is a mechanism consisting of an imbalance in the histamine-histaminase system in the uretero-placental metabolism. This imbalance may induce the production and liberation of excessive quantities of histamine from its receptors, and cause histopathological changes in the seats of connection between mother and fœtus.

Synthetic antihistamine compounds have proved effective in the treatment of threatened abortion, but their limitations should be remembered when selecting patients for this method of treatment.

Prophylactic use of ergometrine and hyalase in obstetrics.—(*S. Afr. Med. Jour.*, 2-7-1960).

Drs. Villiers and Du Toit of Belville, South Africa, studied the results in 3 groups of cases and found that prophylactic ergometrine and hyalase given intramuscularly before the birth of the baby and preferably with the crowning of the head, reduces the duration of the third stage as well as the amount of hæmorrhage from 11·98% (where no ergometrine is given before delivery of the placenta) to 4·8%.

There is at the same time an increased incidence of retained placenta from 0·87% to 1·7% and an increased rate of manual removal of the placenta from 0·65% to 1·35%. This increase is so slight that in our opinion it is outweighed by the advantage of a significantly lessened incidence of postpartum hæmorrhage.

Abruptio placentæ, fibroids, prolonged labour, and twin pregnancy were found to predispose to postpartum hæmorrhage. In these cases it is therefore advisable to give prophylactic ergometrine intravenously with the crowning of the head. In twins this should obviously only be given with the birth of the second baby.

Total *versus* subtotal hysterectomy.—*Ugeskr Laeg*, Vol. *123:* 298 (March 3), 1961, via *J.A.M.A.*, 10-6-1961).

An analysis of 323 subtotal hysterectomies and of 100 total hysterectomies is presented. The surgical mortalities in the 2 groups were 1·55% and 0%, and the incidence of complications 16% and 11%, respectively. These figures favour total hysterectomy. An account is given for a follow-up investigation attended by 72% of the patients submitted to sub-

total hysterectomy and 85% of the patients in whom total hysterectomy had been undertaken. The result was considered to be unsatisfactory in 49 (21%) of the 232 patients in whom supravaginal amputation had been undertaken and in 14 (17%) of the 85 patients submitted to total hysterectomy. Total hysterectomy should be the routine operation for benign conditions of the uterus, unless the patient is a poor risk or the operation is rendered difficult on account of obesity or extensive pelvic disease.

RADIOLOGY

Post-irradiation changes in peripheral white blood cells observed with fluorescent microscopy.—*(Radiology,* Vol. *77*: 282, Aug. 1961, via *J.A.M.A.*, 9-9-1961).

Progressive alterations in the peripheral white blood-cell count after therapeutic radiation in man were observed with fluorescent microscopy. In general, there was a reduction in the percentage of mononuclear cells with cytoplasm fluorescing green and an increase in the percentage with cytoplasm fluorescing red. Although the number of patients in the study is small, it appears that alterations in circulating white blood cell counts observed after acridine-orange staining is a sensitive index of radiation exposure. Approximately one-half of the patients in this small series showed a marked increase in the percentage of mononuclears with red fluorescent cytoplasm. The full implications of these findings must await further clinicopathologic correlation.

'Nidoxital' in radiation sickness.—*(Practitioner,* London, October, 1961).

A clinical trial of 'nidoxital' a preparation containing a combination of drugs that exert both central and peripheral actions is reported by R. Finney *(Clinical Radiology,* July 1961, 12, 229). Each capsule of 'nidoxital' contains pyridoxine hydrochloride 50 mg., pentobarbitone sodium 15 mg., benzocaine 100 mg., and nicotinamide 25 mg., and the recommended dosage is 1 capsule taken half-an-hour before meals, up to a maximum of 10 during the day. Fifty-one patients who received standard X-ray treatment after mastectomy for carcinoma of the breast took part in a clinical trial, each having 'nidoxital', pyridoxine, or placebo capsules according to random selection. Concluding that "'nidoxital' reduces all symptoms arising from irradiation exposure by a significant degree as compared with pyridoxine," the author notes that two-thirds of the patients taking this preparation remained asymptomatic throughout the trial compared with one-third of the controls. This result is statistically significant at the 10% level. Nausea, headache and malaise were the most difficult symptoms to control, whilst anorexia appeared to be the easiest to abolish. No side-effects were noted.

New method of irradiation.—(*J.A.M.A.*, 2-9-1961).

At the meeting of the Society of Physicians in Vienna on April 21, 1961, Dr. A. Luger said that the development of radioactive isotopes increased the possibilities of irradiation therapy for diseases of the skin. The beta-ray emitters are especially suitable for surface therapy. Yttrium-90 has qualities of rays that are especially suitable for dermatologic purposes. Its half life is 2·5 days. The depth of its penetration in tissues is between that of grenz rays and that of radium. For this reason, this method is particularly suitable for the treatment of lesions of the most superficial layers of the skin, particularly, then, when the lesions are located near the epiphyses in children, the eyes, or the gonads.

Dr. Luger has treated a series of 234 patients with cutaneous hæmangiomas, warts, and superficial epitheliomas by this method. The efficacy of the treatment was corroborated clinically and histologically. The dosage used ranged from 2,000 to 6,000 *rep* at a tissue depth of 1 mm., and was nearly always applied in doses of 1,000 *rep* at 2-week intervals.

Symptoms and Signs in Clinical Medicine—An Introduction to Medical Diagnosis—By E. NOBLE CHAMBERLAIN, M.D., M.SC., F.R.C.P., Senior Lecturer in Medicine, University of Liverpool, Senior Physician Royal Southern Hospital, Liverpool, Seventh Edition, 1961, 569 pages with 383 illustrations of which 30 are in colour. Published by John Wright & Sons, Bristol. Price 45 sh.

Most students of Clinical Medicine are familiar with the author whose previous editions of the same widely read book have been extremely popular with the students entering the wards for the first time who require the fundamentals of medicine as practised in the wards, to be laid out before them in a methodical manner. The present edition of the book admirably fulfils these requirements and should help in having many problems solved with ease. Besides the early chapters on the methods of history taking and the importance of proper inspection of the patient for external manifestations of diseases, the methods of clinical examination of the various systems are also described. Special mention must be made of the chapter on the examination of the cardiovascular system where the methods of detection and classification of the abnormal rhythms are very well described. Similarly the chapter on the nervous system details the methods of examination in upper and lower motor neuron diseases. A vivid description of the methods of examination in intracranial diseases and cranial nerve palsies is given. There is a useful chapter on the examination of children which one feels is a *must* in all books dealing with clinical methods. There are separate sections on Radiology, Clinical Pathology and Biochemistry which will save the student the trouble of having to refer to separate books on these subjects.

It is now an accepted fact that the best way of impressing the student mind is by visual aids. This book more than fulfils this need and contains numerous clinical photographs and diagrams to illustrate the subject matter. Some of these photographs being in colour are very impressive. There is a very useful index at the end of the book. The book is very nicely got-up on fine art paper and it *must* find a place in the shelf of every medical student. U.V.R.

People in Hospital—By ELIZABETH BARNES. Published by Messrs. Macmillan & Co., Ltd., St. Martin's Street, London, W.C.2, 1961.
[Price : 12 sh. 6d. net.

The author is both a trained nurse and a journalist, and after general nursing training, had a specialized course in psychological nursing at the Cassel Hospital for Functional Nervous Disorders, in Richward Surrey. She was later connected with the *Nursing Times* first as reporter and later as assistant editor with a growing interest in the interaction of sick people, their medical attendants, nurses and other health workers in large general hospitals. She is therefore eminently fitted to write with authority on the subject of Hospital patients, their problems and needs. Being attached now to the Secretariat of the World Federation for Mental Health, she was naturally invited to co-sponsor a special study of psychological problems in general hospitals which was organized jointly by the World Federation for Mental Health, the International Council of Nurses and the International Hospital Federation.

In this really important and interesting project, senior experienced members of the staff in general hospitals and mental health workers in Europe and America met in small informed and voluntary groups and dispassionately discussed some of the many problems they came across in the day-to-day routine life of patients in hospitals. They finally had two international meetings, one of representatives from the groups themselves and the other of experts in psychology and of social medicine in the hospitals.

Miss Barnes has collated in a very orderly way, the findings of the study-groups who toiled hard enthusiastically to arrive at them. The report

presented is not really a research-report but deals in an impartial and unprejudiced manner with human problems like doctor-patient and patient-nurse relationships that are met with in all hospitals.

Besides the patients' problems, the book deals also with the hospitals' problems like, the difficult situations and the hindrance often created by visitors, particularly the children who come to see their sick parents to re-assure themselves that the parent is alive and safe, but often make the wards their playground to the consternation of other patients and the staff.

The death of a patient is the hospital's biggest disappointment, though it has to be faced as part of its work-a-day world. The relatives turn to the doctor for immediate assurance that the death was not their fault or the fault of the hospital and that both did their best. Even so the blame may be laid at the door of the hospital—which may damage the hospital's public image, when it is talked about outside. Though this is inevitable, special care needs to be taken in tackling with such situations.

The expert group considered how far and in what ways the relatives bringing food and flowers may be made safe and useful and atleast the more knowledgeable of them can become active members of the therapeutic team. These and many other relevant and useful points have been very exhaustively discussed in this highly instructive report. Every doctor and every hospital in our country will stand to profit by a careful study of this book. —T.N.S.R.

X-ray Bulletin, 1, 1961, **X-ray Bulletin**, 2, 1961.

[International Review of Medical Radiography].

We have received two X-ray Bulletins published by Messrs. Gevaert Ltd. The idea in bringing out these Bulletins is to give medical men engaged in radiographic work an illustrated idea of certain advances that are achieved from time to time in the field of radiography. There are two sections on colour photography in ophthalmology and a beautiful section on the results obtained with a new aortoarteriographic apparatus. There are photographs on recent X-ray apparatuses and the bulletins are *really very educative.* —U.V.R.

***The Merck Manual of Diagnosis and* Therapy**; published by Merck Sharp and Dohme Research Laboratories —Tenth edition 1961.

The Merck Manual which was first published 60 years ago as a service to the medical and allied professions has gained world-wide repute as a reference work providing doctors with the latest facts about advances in medicine. The latest edition is an improvement on the previous edition and contains contributions by eminent medical authors. There are interesting chapters on many subjects among which may be mentioned (*a*) the use of anti-neoplastic drugs like Nitrogen mustard in the treatment of Hodgkin's disease; (*b*) separate chapters on Dentistry, Gynæcology, Psychotic diseases and Eye diseases; and (*c*) a well written section on poisoning and its treatment. There is a descriptive section on Diseases of the Skin with an elaboration of the description of the Dermatitides; Venereal diseases are dealt with in an excellent chapter which is quite a welcome feature, since this group of diseases is not described in regular Text books of Medicine. There are separate sections on clinical procedures like infusions of various types, the various types of paracentesis and bed-side procedures like administration of enemata, catheterization and various types of irrigations. There is a new chapter on child-care where the feeding routine of babies and the every-day problems of child up-bringing are dealt with. There is a description of the various immunization procedures of children. As in the previous edition, there is a detailed description of the various types of diets.

This book is very well got up in strong bible paper and will be of great benefit to all doctors. —U.V.R.

PREPARATIONS AND INVENTIONS

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NEWS AND NOTES

Nineteenth International Congress of Ophthalmology, New Delhi 3-12-62 to 7-12-62

Subjects for Reports and Symposia

REPORTS:—1. *Tropical Parasitical Diseases of the Eye*:—By Profs. B. N. Bhaduri; Cyro de Rezende and A. Larmande; 2. *Corneal Degenerations*:—By Profs. G. B. Bietti; A. G. Leigh and A. Edward Maumenee.

SYMPOSIA:—1. *Complications of Cataract Operations*:—By Profs. L. Paufique; H. D. Dastoor and others. 2. *Eale's Disease*:—By Prof. L. P. Agarwal. 3. *Electronic Microscopy on Ophthalmology*:—By Prof. J. Francois. 4. *Ophthalmological problems caused by the Progress of Aviation*:—By Prof. Conrad Berens.

Further information may be had from Dr. Y. K. C. Pandit, Bombay Mutual Building, Sir P. M. Road, Bombay-1.

Triple Vaccines for Children

Govt. to Introduce Scheme

The Government of Madras have sanctioned a programme for triple immunisation of children of pre-school age (one to five years) against Tetanus, Whooping Cough and Diphtheria. Under the programme, triple vaccines will be used to give prophylactic protection to children against the three diseases.

Government hospitals, dispensaries run by local bodies, child welfare and maternity centres and primary health centres in the State will carry out the programme.

The implementation of the scheme, details of which have been worked out, will start shortly.

Medical Education in Madras State

2 Postgraduate Institutes Proposed

Twentythree departments in medical colleges all over the country will be upgraded into post-graduate institutes under a scheme of the Union Government for the development of post-graduate medical education. Of these, two will be in Madras State and they will be upgraded this year, Mr. D. P. Karmarkar, Union Health Minister told Pressmen on 7-1-1962.

The Union Government would also offer about 300 fellowships to medical graduates for post-graduate education.

The Government had proposed to arrange a few lectures for undergraduate and post-graduate students in medical institutions with a view to enabling them to have a brief acquaintance with the ancient system of medicine. But it is entirely for the State Governments and the colleges concerned to avail of this scheme, for which the Union Government will give the necessary aid.

Voluntary Blood Donations

Scheme for on-the-spot Transfusion

With a view to overcoming difficulties due to the absence of blood transfusion facilities here, the Hospital Advisory Committee, headed by Mr. D. Sridharan, Sub Collector, Tiruvallur (Chingleput Dt.) has drawn up a scheme, stated to be the first of its kind in the State, to enlist the co-operation of voluntary blood donors in getting the transfusion carried out on the spot to the patients. The scheme will be put into operation soon.

The Government Hospital at Tiruvallur, has no blood-bank at present and is expected to have one in its new building now under construction.

Under the scheme, the names and addresses of volunteers with their blood groupings indicated, will be maintained in a register to be kept in the Hospital. When an emergency

arises, the particular volunteer, whose blood may be required will be contacted by the hospital authorities and arrangements would be made to get the blood transfusion carried out on the spot to the patient.

Seventy residents have already enlisted themselves as volunteers, Mr. Sridharan being the first volunteer. The target, will be 150 volunteers to keep the scheme going until the blood bank of the local Hospital starts functioning.

Indian Systems of Medicine
College for Madras

The Committee of experts constituted by the Government of Madras to go into the question of starting a college of Indien Medicine in Madras has decided that a college to teach Indian systems of medicine be started. The institution is to be set up on the lines recommended by the Central Council of Ayurvedic Research in the Union Ministry of Health and is expected to start functioning from the next academic year.

The college will contain provision for the teaching of Indian systems of medicine along with necessary elements of modern medicine.

The Committee constituted a sub-committee for drawing up a definite scheme for the courses of instruction there in and also to work out details relating to the duration of the course, curricula, etc. It is expected that the scheme will be before the Government shortly.

Hospital Sewage Disposal
Use of Biological Treatment

A meeting held earlier last month, of the Water and Sewage Purification Committee appointed by the Government of Madras discussed the method of disposal of sewage, particularly of infective hospital wastes by biological treatment in stabilization ponds. The results of the initial experiments carried out on this method in respect of a hospital near Madras City were considered to be promising. It was decided that further tests should be continued on the same lines before the method was adopted.

The meeting also discussed the use of coagulant aids in water treatment to reduce the cost of the chemicals used in making raw water suitable for subsequent filtration through mechanical filters. The increasing cost of the chemicals used in water treatment have given added importance to experiments in this direction.

Misuse of Medicinal Preparations

The Government is considering steps to stop the misuse of medicinal, toilet and other preparations for potable purposes.

A sub-committee has been formed by the Central Prohibition Committee for this purpose and the States have also been requested to send their suggestions. A report on the subject will be submitted in December next.

Obituary

Dr. U. SRIPATHI RAU, M.B., B.S.

We regret to record the untimely death at the early age of 41, of Dr. U. Sripathi Rau, at Madras on the 20th of January 1962, after a brief illness. After graduating from the Madras Medical College in 1947, he took to private practice along with his father Dr. U. L. Narayana Rau ; after returning from America and England after post-graduate-studies he specialized in children's diseases and was a successful pædiatrician. He also contributed a series of interesting articles on the care of children to our journal HEALTH.

Of a genial and kind disposition and suave manners he was greatly liked by his patients and friends. He was connected with the Madras Branch of the Indian Medical Association as Treasurer and Secretary for a long-time. As member of the Board of Film Censors in Madras he did very useful work. He leaves behind his wife, five children and his aged father besides a host of friends and relatives to bemoan his loss.

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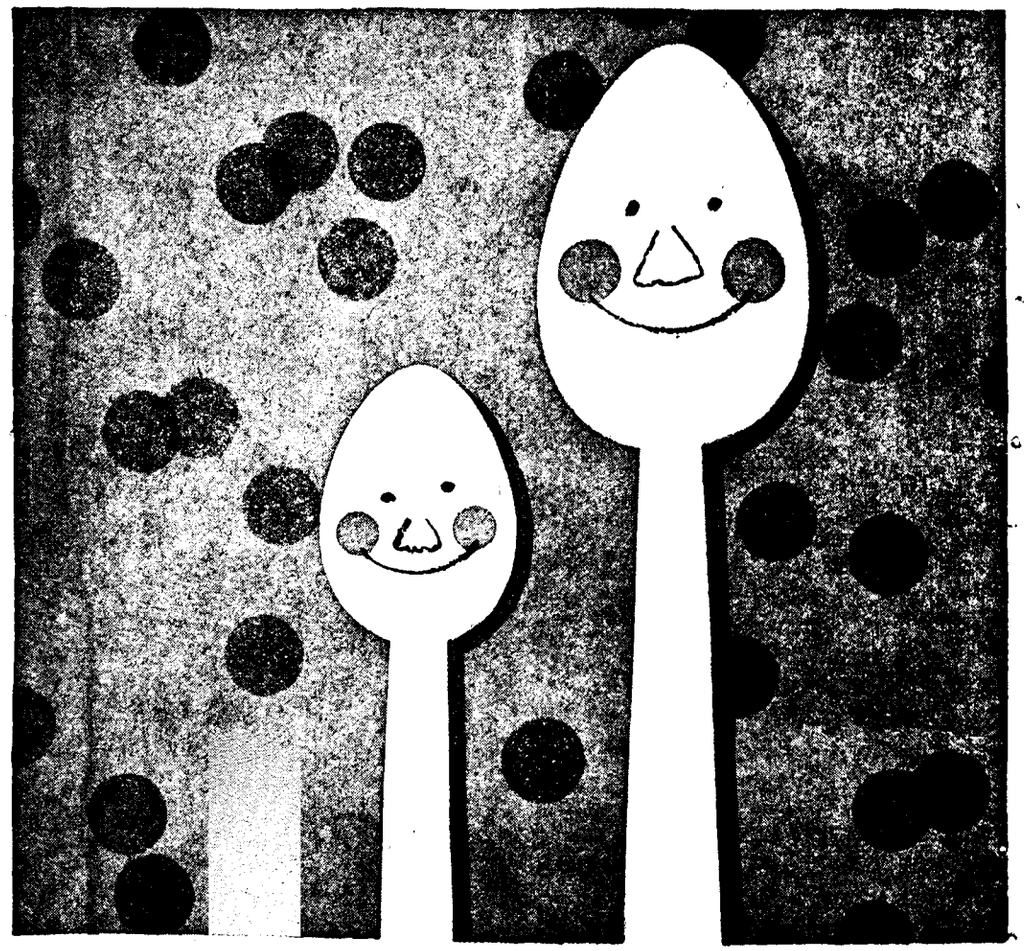

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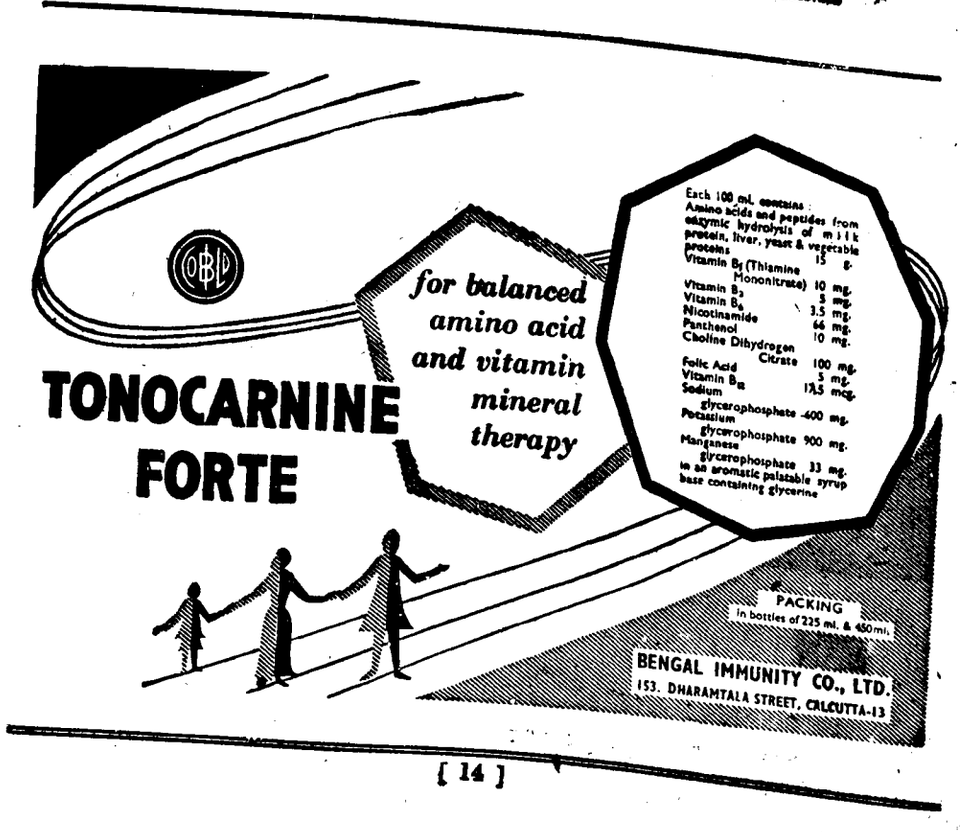
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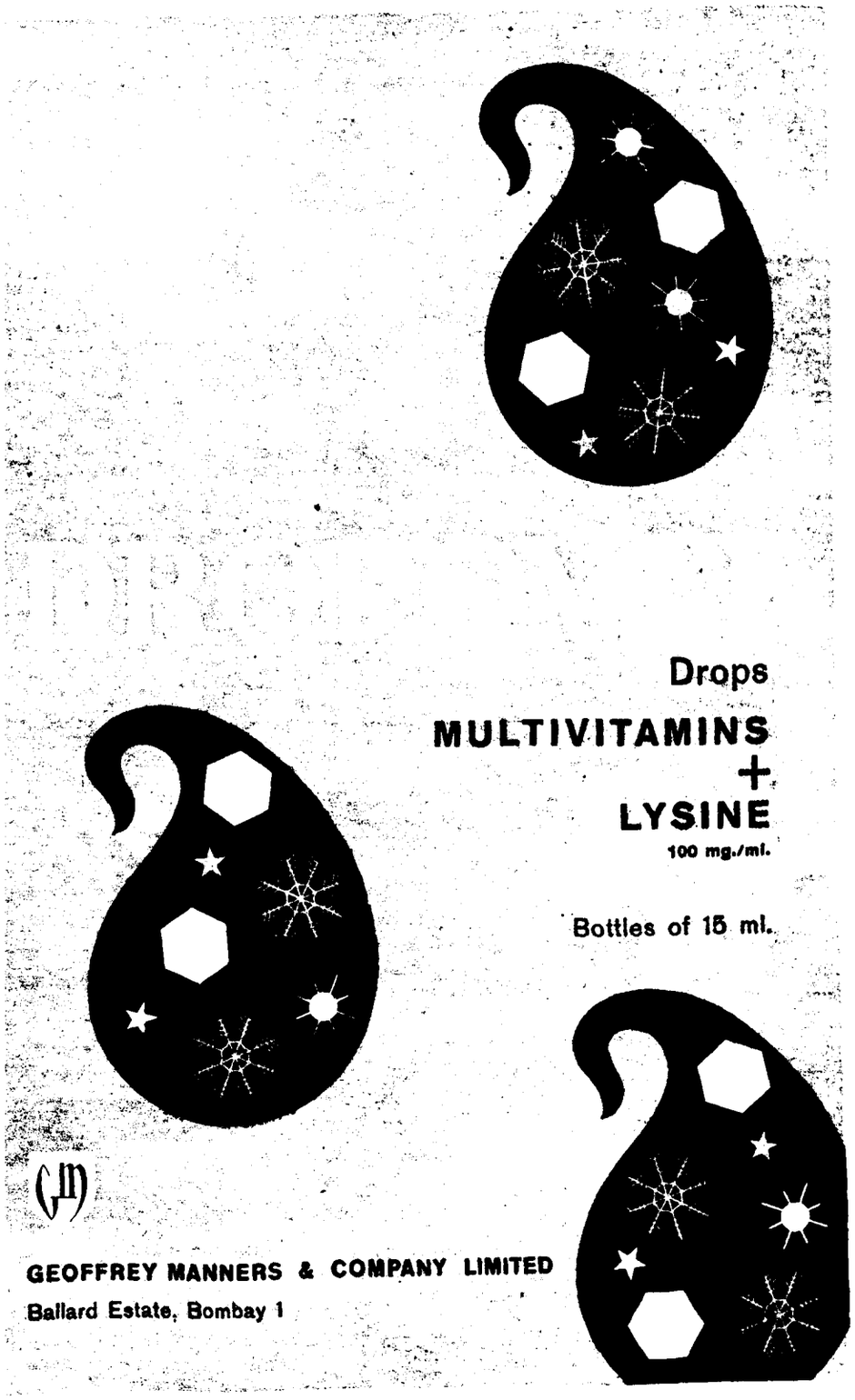
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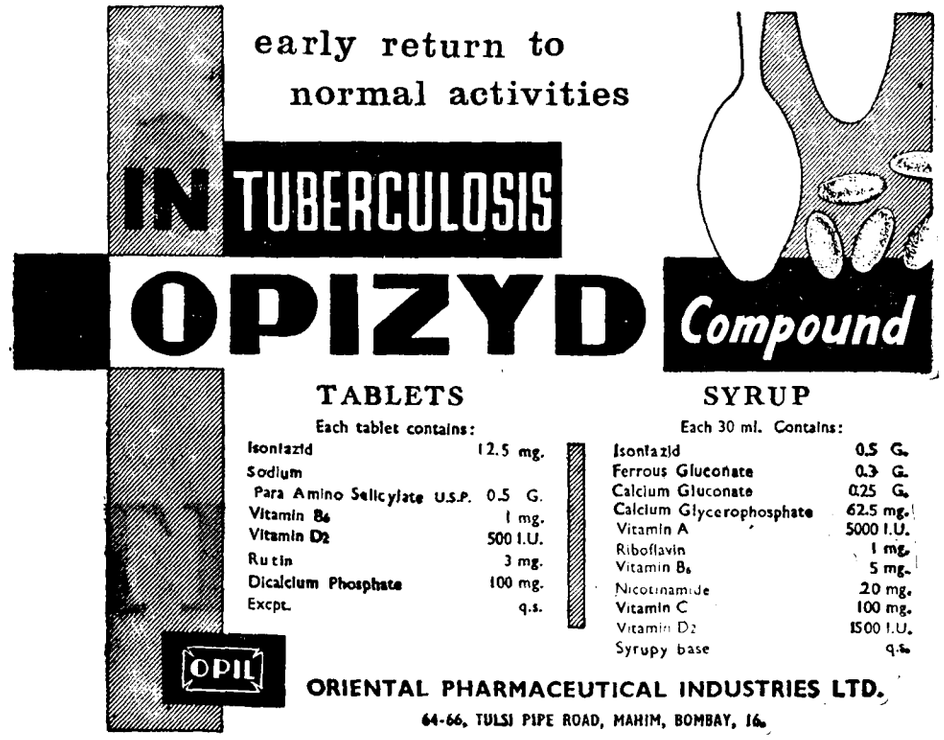
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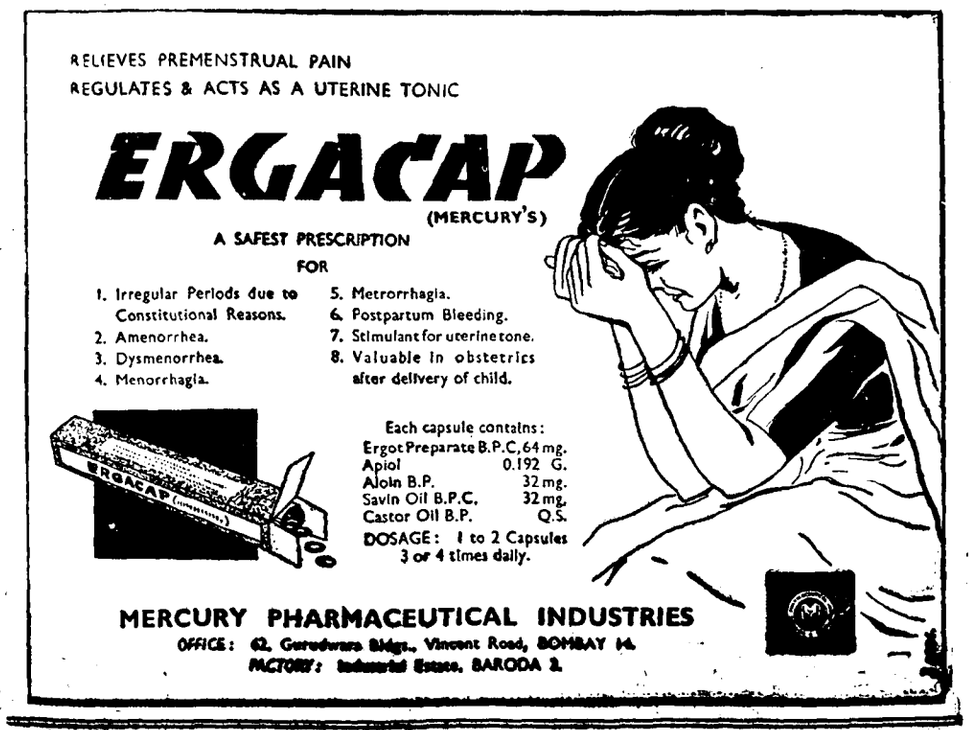
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Original Articles

CARDIAC EMERGENCIES IN GENERAL PRACTICE*

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COMMON situations comprising cardiovascular emergency may be classified as follows :—

(1) Sudden episode of præcordial pain ; (2) acute cardiac asthma ; (3) acute hypertensive crisis ; (4) paroxysmal hypotension or syncope and (5) sudden disturbance of cardiac-rate or its rhythm.

I. Episode of praecordial pain.—The common causes of prolonged præcordial pain are :—coronary thrombosis, acute pericarditis, pleurisy, pulmonary embolism, muscular 'catch' and the socalled 'gas-pains.' Coronary thrombosis may be strongly suspected on clinical grounds alone. The analysis of pain regarding situation, character and its behaviour often accompanied by nausea, sweating etc. together with a change in blood-pressure, pulse or heart sounds are sufficient to warrant a clinical impression of coronary thrombosis. The E. C. G. machine need not be commissioned in the middle of the night ; in fact it will be more reliable if taken 24 hours after the onset of pain. The treatment of coronary thrombosis should include :- rest ; relief of pain ; the use of coronary vasodilators ; anticoagulants ; general and nursing measures and the treatment of complications.

Management of a straightforward case :—(*a*) Give intramuscular pethidine 100 mg., to be repeated in half-an-hour, if there is no relief of pain ; (*b*) inject atropine 1/100 grain to cut down

*Specially contributed to the ANTISEPTIC.

harmful vagal reflexes; (*c*) of the vasodilators, there are several preparations containing aminophyllin:—papaverine, peritrate, pentanitrin. Any one of them is as good as another. In fact, a really effective long-acting vasodilator is yet to be found. With the use of a vasodilator drug, the risk of fall in blood-pressure is to be considered; (*d*) complete rest in bed; (*e*) for the first three days, give only liquids by mouth. Avoid cholesterol-containing foods like milk, cream, butter and yellow of egg. Salt should be used sparingly. The liquids that may be allowed are: fruit juice, soup, fresh lime juice, glucose water, weak tea, coffee, buttermilk, cocoanut water, barley water and *mung* water; (*f*) do not worry about bowel movements for 2 to 3 days and avoid giving enemas during the first week. Liquid paraffin (one ounce) together with one table-spoonful of Milk of magnesia, at bedtime should be started from the very first day; (*g*) anti-coagulants are not urgently required for treatment in the first instance, as a few hours without them will do no harm. In fact, the beneficial effect of anticoagulation, to my mind, is still not clear. Its main effect lies in the prevention of thrombo-embolism from the leg veins. In our warm country, leg vein thrombosis seems to be particularly uncommon. I very much doubt if anticoagulants are of any avail in reducing the mortality in our country. Unfortunately we have only foreign series to quote. Again, the administration of anticoagulants, without adequate Prothrombin-control is always to be condemned. One very often sees a prescription containing a homeopathic dose of an anticoagulant. For example, ¼ tablet of Tromexan does no good to anybody except the pharmaceutical firm. The dose must be varied according to prothrombin-time, so that neither too little nor dangerously too much drug is used; (*h*) oxygen is not required in an ordinary case, and is useful only when there is cyanosis, shock, breathlessness or severe persistent chest-pain, and (*i*) some recent drugs still in the experimental stage are:—intramuscular Magnesium sulphate and clot-dissolving agents like plasmin, fibrinolysin, etc.

Management of complications:—(*a*) *Vomiting* is often combated with atropine and antihistamines. Avoid Largactil and Stemetil as they may cause a precipitate fall in blood-pressure. If vomiting and sweating are severe, it is better to give infusions of glucose-saline to replenish the loss of water and chlorides.

(*b*) *Cardiac failure* is initially treated with rest, salt restriction and the use of diuretics. If there is no response, digitalis *must* be given without any fear even during the acute stage of infarction, using however, only moderate doses.

(*c*) *Arrhythmia*: the commonest is ventricular extrasystole; it is better to start with quinidine or pronestyl tablets,

because these extrasystoles, particularly if multiple may be a forerunner of dangerous ventricular tachycardia. One tablet, four times a day is usually sufficient. Heart-block is treated with atropine, belladonna, ephedrine, sublingual neo-epinine and even corticosteroids. In case of Stokes-Adam's syndrome, adrenaline and sodium molar lactate should be given immediately.

(*d*) *Shock* is a serious complication with a mortality around 80%. In short, shock is a clinical syndrome of tachycardia, cold and clammy skin with low blood-pressure. A situation with only low blood-pressure but with a normal pulse-rate and a fairly warm skin is not to be treated as shock. It is a common experience to see a patient of coronary thrombosis with a systolic blood-pressure of 90 to 100 mm. Hg. with near normal pulse-rate and without any other evidence of shock. This fall of blood-pressure occurs because of diminished stroke output by the infarcted left ventricle and the routine use of narcotic drugs like morphia or pethidine. This syndrome of low blood-pressure should be treated only mildly. For minor shock, intramuscular injections every one or two hours of vasopressor drugs like 'binodrinal,' 'Mephentine', 'methedrine,' 'veritol' would suffice. For severe shock, the treatment must be very energetic. Intravenous injections of 5% glucose containing one to four ampoules or *nor*-adrenaline should be started immediately. The speed of the drip has to be varied according to the blood-pressure recorded every 5 to 10 minutes. The rate of drip should be so adjusted as to maintain the systolic blood-pressure around 120 mm. Hg. Other measures are parenteral digitalis and the use of corticosteriods. A few European workers actually employ hypothermia in order to reduce the tissue-requirements of oxygen to a minimum.

Now finally as regards bed-rest, for the first three days, when the infarct is fresh and the incident of sudden cardiac death is highest, it is imperative to strictly immobilize the patient. No movement of the limbs and no active turning on the sides are permissible. From the fourth day onward, slight movements of the feet and legs may be allowed. Complete rest in bed with the use of the bedpan and urine bottle are to be enforced for 3 weeks. This period of strict bed-rest will of course have to be extended if complications set in. In an ordinary case, the patient is encouraged to sit in bed during the fourth week. By the fifth week he is asked to sit on a chair, kept a few feet away from the bed. At the end of the sixth week, he is gradually, allowed to move about within the house. This convalescent period at home lasts for six weeks more. At the end of three months, he is encouraged to get back slowly to his normal routine work or business. Except development of cardiac neurosis, nothing is gained by keeping the patient away

from his work for more than 3 months. "Off from bed and back to work soon" without cardiac neurosis is the ultimate aim.

II. Acute cardiac asthma.–This results from sudden aggravation of pulmonary congestion. Pulmonary congestion gets accentuated from two temporary reasons *viz.*, (*i*) failure of the left ventricle to pump blood forward resulting in back-pooling of pulmonary capillaries and (*ii*) simultaneously the right ventricle pumps blood normally so that pulmonary circuit receives more blood from the right ventricle. In fact, this simultaneous discrepancy between the output of the left ventricle and the right ventricle, though temporary, might lead to extreme flooding of the pulmonary circulation, giving rise to acute pulmonary œdema and ultimate death of the patient.

The common causes of acute cardiac asthma are :–Hypertensive heart; coronary thrombosis; mitral stenosis and aortic regurgitation or aortic stenosis.

The aim of treatment apart from sedation would be to tone up the left ventricle and at the same time to reduce the venous return so as to diminish the output of the right ventricle. Hence treatment should consist of :—(1) the injection of pethidine 75 to 100 mg. or of morphia gr. $\frac{1}{6}$ to gr. $\frac{1}{4}$; (2) injection of atropine gr. 1/100 to reduce the secretions and to cut down harmful vagal reflexes; (3) oxygen; (4) digitalis in heroic doses orally or even parenterally; (5) diuretic using the mercurial and chlorothiazide group of drugs; (6) intravenous aminophyllin with glucose, provided the blood-pressure is not low; (7) 50 ml. of 50 per cent sucrose *plus* one ampoule of papaverine; (8) tourniquettes consisting of ordinary towels, '*dhotis*,' napkins, blood-plessure cuff etc. on these limbs at a time and (9) blood-letting of about 500 to 600 cc., though a good procedure this is hardly applicable to our country. Some authorities prefer an intravenous cocktail solution containing 50 cc. of a 50 per cent glucose *plus* Cedilanid 4 cc. *plus* 0·25 g. of aminophyllin.

III. Acute hypertensive crisis.–A sudden elevation of blood-pressure to a dangerous level occurs always in a previously known patient with hypertension. The only exceptions are: acute nephritis, toxæmia of pregnancy and pheochromocytoma. The treatment should aim at bringing down the blood-pressure gradually to a safer level. (1) Inject Serpasil 1 mg. intramuscularly; (2) inject Largactil $\frac{1}{4}$ to $\frac{1}{2}$ cc. and avoid a large dose; (3) inject aminophyllin with glucose; (4) inject 'Derriphyllin,' 'neutraphyllin' etc. These intramuscular preparations are not of great value. They are often given only to have the satisfaction of having administered some drug; (5) give concentrated Magnesium sulphate per rectum and (6) inject Ansolysin $\frac{1}{2}$ cc. to start with and step up the dose by $\frac{1}{2}$ cc. every four hours.

With modern antihypertensive agents, it is nearly always possible to bring the blood-pressure down. However, it often happens that the blood-pressure unwittingly comes down to dangerously low levels, thus inducing shock. In order to prevent acute hypotension, it is better to keep at hand another bottle containing *nor*-adrenaline or mephentine.

IV. Paroxysmal hypotension or syncope.–When in a mild form, it is known as a fainting fit. Any condition causing severe hypotension to a systolic level below 80 mm. Hg. produces cerebral ischæmia and thereby loss of consciousness.

The common conditions that cause syncope are :—fear, and emotion leading to vasomotor failure; allergic collapse; and cardiogenic collapse.

Treatment consists in raising the foot end of the bed; applying manual compression to the abdominal aorta, and using vasopressor agents like coramine, veritol, mephentine, *nor*-adrenaline and the use of transfusions and infusions.

Management of arrhythmias :—The common problems met with in practice are :—Supraventricular tachycardia; auricular fibrillation; ventricular tachycardia and heart-block.

A. Paroxysmal supraventricular tachycardia :—Usually occurs in a patient with normal heart or with thyrotoxicosis. The cardiac rate is above 150/min. and is strictly regular. It is a self-limiting but repetitive disorder with onset and termination, both sudden, and which may last from a few minutes to a few hours. Uncommonly, it may last for several days and lead to cardiac failure. The aim of treatment apart from sedation, would be either to stimulate the vagus reflex or to quieten down the irritated ectopic focus. When one is confronted with such a case, the mangement may be as under :—

1. Start with vagal stimulating procedures *e.g.*, carotid pressure, eyeball pressure, drinking of ice-cold water, induction of vomiting etc. For carotid pressure, the right carotid artery is selected first. At the level of the upper border of the thyroid cartilage, the carotid bulb is located and is then smartly pressed and massaged for not more than 15 to 20 seconds. The stethoscope is kept at the apex during the time of applying carotid pressure as a precaution to detect any cardiac arrest from over-stimulation of the vagus. If cardiac slowing has not occurred within about 20 seconds of pressure and massage, it is not safe to continue it, further for it may induce cerebral arterial insufficiency. In fact, in elderly patients, this manoeuvre has its own risk. When right carotid pressure is not fruitful, it may be tried similarly on the left side.

2. The next choice would be a sedative like phenobarb, tranquillizers etc. In an apprehensive patient, $\frac{1}{6}$ gr. morphia

may be given once in a way. Most of the supraventricular tachycardias are self-limiting and short-lasting. Hence the judicious use of a sedative would save the patient and the relatives a few hours of anxiety.

3. If the tachycardia persists for more than four hours, try to stimulate the vagus reflexly by temporarily raising the arterial pressure. This is achieved by injecting "Mephentine" or "Binodrenal" in a normotensive and otherwise healthy individual. Some even give a small and short drip of *nor*-adrenaline.

The use of cholinergic drugs like prostigmine, mecholyl etc. is accompanied by many side-effects like profuse sweating, intestinal colic, and diarrhœa. Hence these drugs are not now usually given.

Intramuscular injection of 1 mg. "Serpasil" has been credited with achieving vagal stimulation without causing a fall in blood-pressure in a normotensive person. However, further confirmation is necessary before making a routine use of this method. In a limited series of patients with normal blood-pressure, I have found the injection of 'Serpasil' to be hypotensive.

4. When abnormal rhythm persists for more than eight hours, the use of either digitalis or quinidine should be considered. Whether digitalis is better or quinidine would depend on one's own experience.

Digitalis has the following advantages:—(*i*) It has a vagal-stimulating action. Carotid pressure trial may be given after digitalis; (*ii*) the average digitalizing dose for a particular time-situation can be worked out. With quinidine however, there is a wide individual variation in the dose and in its response; (*iii*) one is more familiar with the use of digitalis and its early toxic symptoms and (*iv*) digitalis would combat congestive cardiac failure in case the rhythm gets unduly prolonged.

The main advantage of quinidine is that a patient may respond to a small dose in a short time, if luck is in his way. The absorption of the drug is quick and complete and blood-levels can be rapidly achieved by oral administration. It is a convenient form of treatment which may be started in the patient's home.

B. Auricular fibrillation:—Commonly occurs in an abnormal heart, from rheumatic valve disease, hypertension, coronary artery disease, thyrotoxicosis etc. In auricular fibrillation with rapid ventricular rate with or without congestive cardiac failure, digitalis should be used first. If there is any danger of embolism anticoagulants may also be given. Once the patient is digitalized, quinidine may be given as a specific antifibrillatory agent, provided the auricular fibrillation is recent, the heart-size moderate, and there is no contraindication.

Antihistamines and *anti-malarials* have also been credited at times with anti-fibrillatory properties.

C. Paroxysmal ventricular tachycardia almost always occurs in a grossly diseased heart as from myocardial infarction. Treatment is urgently needed for ventricular tachycardia is a forerunner of ventricular flutter, fibrillation and death.

Injection of morphia or pethidine along with the oral administration of potassium salts will help only a few. Quinidine or pronestyl must be started as soon as possible. Both may be given orally or parenterally. And the choice between quinidine and pronestyl will depend on one's own experience with the drug.

Quinidine may be given orally as two tablets of 0·2 gr. each every two to three hours for a total of 6 to 8 doses. If there is no effect after 8 doses, it is useless to continue the same regime. In order to achieve higher therapeutic levels, either the dose of the drug must be increased or the interval between two doses shortened, constant check being kept on the pulse and blood-pressure.

When oral therapy is not feasible particularly when the patient has nausea and vomiting, intramuscular therapy with hydroquinidine in more or less similar doses and intervals should be tried. It should be remembered that quinidine by the intramuscular route does *not* achieve quicker blood-levels than when given orally and hence there is no particular advantage in the *i.m.* route for achieving rapid action.

If the situation is more urgent, quinidine should be given slowly intravenously after well diluting it with glucose. I like to give quinidine in glucose drip as it is safer. About 40 to 50 grains of quinidine or hydroquinidine is added to a bottle (about 500 cc.) of 5% glucose and the drip started at the rate of about 30 to 40 drops per minute. A repeated check is kept on the pulse and blood-pressure. If possible, E.C.G. tracings should be recorded at the same time.

Pronestyl may be given orally, instead of quinidine, more or less in a similar schedule. In very urgent cases 1 g. of pronestyl is diluted in 100 cc. of glucose and injected slowly intravenously at the rate of about 2 cc. per minute. A simultaneous watch is kept with a continuous record of E.C.G. tracing.

Heart-block.—Partial heart-block is usually asymptomatic and is better left alone. High grade heart-block shows a frequent tendency to Stokes-Adam's attacks. As a prophylactic measure, the drugs that may be used are ephedrine, "Neo-Epinine"—(Sub-lingual), small dose of thyroid, cortisone, and adrenaline in oil. During Stokes-Adam's attacks the following

procedure is adopted:—(1) Sharp and firm tapping on precordium; (2) injection of adrenaline 0·5 cc. subcutaneously; (3) plunging a needle into the præcordium; (4) injection of "Neo-Epinine" if available; (5) intravenous rapid injection of sodium molar lactate and (6) intracardiac injection of Adrenaline.

Summary.—Consciousness regarding cardiac ailment grows fast. Cardiovascular emergency, therefore, is accompanied by fear and alarm in the patient as well as in his relatives. The foremost duty of the attending doctor is not to get muddled in the panic-stricken atmosphere but to create in the patient an attitude of hope, confidence and courage. The first aim should be to dominate the situation and get it well under control. The treatment of an emergency episode no doubt requires prompt decision, judgement and adequate knowledge but all these without courage and confidence are not likely to enable the physician to deliver the goods. After having understood the principles of cardiac diagnosis and therapy, the practising physician must be able to administer suitable effective treatment in time. The usual therapeutic procedures will revolve round the use of following basic drugs *viz*,, (*a*) Narcotics and sedatives; (*b*) hypertensive drugs; (*c*) hypotensive drugs; (*d*) myocardial stimulant digitalis; (*e*) coronary dilators; (*f*) anti-arrhythmics; (*g*) reassuring agents like coramine drops, Synkaltone drops, Veritol drops, Carnigen drops, sips of brandy, tranquillizers, carminative mixtures, Vitamin B_{12}, derriphyllin, and lipotropic agents.

These are all meant to reassure and the patient and his relatives. They have hardly any rational basis.

OBSTRUCTIVE SYPHILITIC ŒSOPHAGITIS

Syphilis involving the œsophagus has been reported infrequently. Hudson and Head state that prior to 1950 there were but 75 listed cases. In the last decade there have been only 3 reports in the world literature. In view of the recent increase in venereal diseases, attention should be directed again to the clinical problems which might be anticipated.

Dysphagia is the most common symptom in tertiary luetic œsophagitis. Pain is nonexistent, and weight loss is marked. Other clinical findings of syphilis may be evident. Oesophageal X-rays may suggest a space-occupying lesion, a fine irregularity of the mucosa or rigidity of the œsophagus, or both. No constant pattern is reported. The serologic tests may be positive or negative.

Oesophagoscopy and biopsy studies are essential. Severe injection and mild ulceration of the mucosa with interspersed streaks of pale sodden epithelium are common. There is often obstructing granulation tissue in a rigid lumen. These findings may be present in nonspecific forms of œsophagitis. Differentiation from a neoplastic process may require repeated tissue studies.

In tertiary syphilis the upper one-third of the œsophagus is most commonly affected. The larynx and hypopharynx may be involved. The inflammation, ulceration, infiltration, and scarring are basically the result of tissue devitalization secondary to syphilitic arteritis. Different appearances may be simultaneously evident. The stricture formation which represents the end result of this process may resemble any benign stenosis of the œsophagus. Luetic œsophagitis may not be suspected until stricture formation has occurred. The response to specific therapy with penicillin in massive doses for 2 weeks is usually rapid. Frequent endoscopic study is necessary to follow the healing process and to maintain the necessary lumen calibre.—(*J.A.M.A.*, 9-9-1961).

STRANGULATED HERNIA*

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STRANGULATED hernia ranks foremost amongst the various causes of acute intestinal obstruction. This paper records the analysis of a series of 106 cases of strangulated hernia, seen by the author, during the period, 1954 to 1960 together with a review of the literature on the subject.

Incidence.—The cases reported here form 46·6% of a series of 225 cases of acute intestinal obstruction seen by the author, during the above period. In the series reported by Vick[9] and Mclever[7] the incidence was 48% and 44% respectively.

Types.—A comparative statement of the incidence of various types of hernia, as reported by me and by other workers is given below:

TABLE I

S. No.	Type	Sankaran (present series)	5 Hilton	5 Alexander	3 Frankau	5 Deaver and Ross
1.	Strangulated inguinal hernia	100	250	60	654	77
2.	Strangulated femoral hernia	1	250	25	680	50
3.	Strangulated umbilical hernia	2	—	20	153	21
4.	Other rare types	3	29	—	—	8

It will be seen that there is in my series a marked low incidence of femoral hernia in this part of India, which I cannot explain. The relatively high incidence of strangulated femoral hernia reported by the western authors (above) is attributed to the sharply defined aperture which is delimited by firm and unyielding margins. Although the incidence of strangulation in direct inguinal hernia is said to be rare. I came across four such cases, in this series.

Sex-incidence.—The condition was met with predominantly in males, the ratio being 101 : 5.

TABLE II

Showing the comparative age incidence in 3 different studies

Age	Present series (Sankaran)	Frankau[3]	Kirkman[4]
0—10	5	51	—
11—20	5	133	—
21—40	41	235	6
over 40	55	1172	69

*Specially contributed to the ANTISEPTIC.

Strangulation occurs most commonly after the age of forty and is probably due to the relative lack of tone of the abdominal muscles and relatively increased incidence of causes tending to increase the intra-abdominal tensions like chronic cough etc.

In 92% of our cases, strangulation occurred in a pre-existing hernia of variable duration, ranging from a few months to ten years. In the series, reported by [8]Morris and Johnson 82·8% occurred in hernias, two to twenty years old. This would appear to lay emphasis on the fact that the incidence can be brought down, if all hernias, were operated on early.

PATHOLOGY:—Strangulation occurs, when the pressure of the hernial ring interferes with the blood-supply to the contents of the sac. The exact mechanism that initiates the change is not known but may be any sudden trauma, or a sudden increase in intra-abdominal tension due to coughing, straining, etc., which results in an increase of pressure at the site of constriction. The closed-loop type of intestinal obstruction met with due to obstruction at both ends of the bowel, which is mostly mechanical, due to constriction by the narrow ring.

As a result of pressure at the site of constriction, there is congestion and œdema of the hernial contents, with a consequent increase in the volume of the hernial mass, and therefore there will be a further constriction resulting in occlusion of the blood vessels. Maingot[5] describes three stages, depending on the duration and severity of the constriction.

(1) The stage of viable gut; the intestines are congested, swollen, purple or intensely red in colour; shine, elasticity and shape are still present. The fluid in the sac is sterile and clear; (2) the stage when the gut is black or greenish brown in colour, with loss of shine and elasticity. The fluid in the sac is highly infective and foul-smelling; and (3) the stage when the gut is frankly gangrenous and perforation results, leading to fæcal fistula and diffuse peritonitis. Unrelieved, it terminates in death. In rare cases, the necrotic bowel forms a walled-off abscess, which bursts, forming a fæcal fistula, resulting in ultimate recovery. Eighty patients in this series, had viable gut *i.e.*, Stage I; four cases came in a badly dehydrated condition with fæcal fistulæ.

Site of constriction:—The site of constriction in an inguinal hernia, may be at the internal ring, external ring or at the site of the condensed fibrous tissue around the neck. In this series, 50% were constricted at the internal ring, 30% at the external ring, and the rest at the neck of the sac. In femoral hernias, the sharp edge of the lacunar ligament, and rarely the thickened neck of the sac were the constricting agents. In umbilical hernias, the constricting agent was the fibrous edge of the opening in the linea-alba.

Contents of the sac:—In 85% of the inguinal hernias, the sac contained omentum and ileum. In six cases of sliding hernias, the cæcum and appendix were the contents in five cases and sigmoid colon in one. The bladder formed part of the sac in two cases. In umbilical hernias, the usual contents were the transverse colon and omentum. Richter's type of hernia was met with in four cases, while Maydl's hernia or "W" loop strangulation was found in 8 cases.

Side affected:—In inguinal hernias, intense agonizing pain associated with an inguino-scrotal swelling, with reflex vomiting is seen in cases that occur *de novo*. In a pre-existing hernia, the occurrence of strangulation is indicated by intense pain, abdominal cramps and irreducibility of the swelling. In a few hours, signs of small intestinal obstruction occur. The swelling is tender, diffuse and tense, no cough impulse is present. Later, the ladder-pattern intestinal-peristalsis is seen with signs of dehydration.

In Maydl's hernia, the symptoms are comparatively more severe. In Richter's hernia, the signs of acute intestinal obstruction are absent in the early stages, which is often misleading.

In femoral hernias, a painful tense irreducible swelling in the groin with signs of acute intestinal obstruction is seen. The symptoms are minimal, if it is of the Richter's type.

In umbilical hernias, the person is usually obese and complains of constipation, abdominal distention and colicky pain, in the umbilical protrusion. As the symptoms are not clear-cut, diagnosis is not often made at once, leading to bad end-results. The presence of discoloration or œdema in the overlying skin is usually a late sign, indicating a gangrenous bowel.

Obturator hernia is a rare type, where the patient is seen with signs of acute intestinal obstruction and radiating pain along the inner aspect of the thigh. Rectal examination may reveal a swelling in the region of the obturator fossa. In our case, the typical history suggested the diagnosis.

DIFFERENTIAL DIAGNOSIS:—Strangulated inguinal hernia must be distinguished from irreducible hernia, acute epididymo-orchitis, inflamed lymph varices, torsion of the testis, acute inguinal lymphadenitis, and thrombophlebitis of the pampiniform plexus of veins. In cases of doubt, because of the extreme pain, exploration is mandatory, to clear the doubt.

Strangulated femoral hernia must be diagnosed from a Psoas-abscess, acute lymphadenitis, inguinal hernia, and thrombosis, of a saphenous varix.

In the rarer types, acute intestinal obstruction due to internal hernias must be excluded.

PROGNOSIS:—The mortality in our series was 10% and campares favourably with those of Mclaughlin[6] and Douglas[2], whose rates were 16·5% and 15% respectively. The high rate is due to cases with non-viable gut, seen in old patients whose reserve power is low.

TREATMENT:—Surgical relief of the condition must be given in every case. We are in an entire agreement with those authors[10] who condemn toxis or reduction by pressure. This procedure is likely to lead to rupture of the bowel or reduction *en masse* and must be given up.

Most surgeons would have experienced the fact, that about 25% of the strangulated hernias admitted, undergo spontaneous reduction, when the patient is rested in bed, after the administration of sedatives. This led us to try conservative measures in early cases, *namely*, rest in bed with the foot of the bed raised, morphia ¼ gr. to relieve the pain and spasm of the muscles, and a soap and water enema, while the patient was being prepared for surgery. About 25% of our cases that came in early, benefited by this treatment and were treated by elective surgery after a few days.

In the remaining cases and specially in those cases which came late, surgical relief of the strangulation was given. The anæsthesia may be either general, spinal or local depending on the patients' condition. After the sac is laid open by an inguino-scrotal incision, the highly infective fluid in the sac is aspirated, the constriction at the neck of the sac is cut under vision, and contents observed. If they are viable (*i.e.*) in stage I, they are reduced; if the intestines are plum-coloured with loss of shine, warm packs are applied for five to ten minutes; if the colour improves with evidence of return of pulsation in the mesenteric vessels, then the gut is reduced and a herniorrhaphy is done in the usual way.

But if the gut is frankly gangrenous it is resected: if only a small patch, as seen in a Richter's hernia, is gangrenous, it is invaginated with two layers of sutures. In a few cases, where the general condition of the patient was very low and resection was hazardous, the gangrenous loop was exteriorized by stitching the peritoneum all around the sac, and allowed to form a fæcal fistula. Later the fistula was closed. Paralytic ileus which is common post-operatively in these cases is dealt with suitably.

In strangulated femoral hernia, the ideal approach is the Lothiessen's incision, *i.e.*, through an inguinal approach, the external oblique is split, the transversalis fascia opened, the

neck of the sac entering the femoral canal made out, opened, and the incarcerated gut released and suitably dealt with. After ligating and excising the sac, opening in the femoral canal is obliterated by approximating the conjoint tendon and transversalis fascia to the reflected part of the inguinal ligament.

In strangulated umbilical hernia, the sac is opened by an elliptical incision, the adherent intestines are separated and suitably dealt with according to their conditisn. Mayo's method of repair *i.e.*, overlapping of the rectus sheath is adopted.

The various procedures adopted by me in this series will be given below:—

TABLE III

Showing the procedures adopted in dealing with the different types

Procedure adopted	Ing. hernia	Femoral hernia	Umbilical	Others
1. Reduction of viable gut and repair	76	—	—	—
2. Invagination of gangrenous patch and repair	6	1	—	—
3. Resection of gangrenous gut and anastomosis	16	—	1	3
4. Exteriorization of gangrenous gut	2	—	1	—
	100	1	2	3

Discussion.—Strangulated hernia still ranks first, as the cause of acute intestinal obstruction in our country, whereas in the West, it ranks third. With the higher standards of living and literacy resulting from our five-year plans, and consequent resort to elective repair of all hernias, the incidence will go down, steeply in the future.

Another interesting observation is the low incidence of femoral and umbilical hernias in our part of the country. As women form a significant proportion of the hospital-attending population, one cannot ascribe to non-attendance. I am therefore unable to explain this low incidence among women.

Strangulated direct inguinal hernias are stated to be rare Bailey[1]. In this series, they formed 4% of the total. Most of the strangulated inguinal hernias occurred on the right side. This predilection for the right side cannot be explained clearly, except perhaps, because most of the patients were right-handed and so the strain on that side was relatively greater and also probably due to the late descent of the right testis.

We give below some common errors in diagnosis and management, which can easily be rectified: (*i*) mistaking a strangulated hernia for an irreducible hernia. This error can be avoided if one remembers that irreducible hernias are *very rare*; (*ii*) mistaking a Richter's hernia for acute inguinal lymphadenitis with toxæmia. The dictum that it is better to explore in

doubtful cases is most useful when this confusion arises; (*iii*) never to try taxis, as surgery is relatively safer; (*iv*) always correct electrolyte imbalance like dehydration pre-operatively. The time spent on this procedure definitely contributes to a safe operative and post-operative period and (*v*) in old people to anticipate the supervening of uræmia, paralytic ileus and hypostatic pneumonia and deal with them suitably and promptly.

Summary.—A series of 106 cases is analysed and the literature on the subject is reviewed.

Acknowledgement.—My grateful thanks are due to the Deans, Govt. General Hospital, and Govt. Stanley Hospital, Madras for permission to utilize hospital records.

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BENZALKONIUM CHLORIDE—SOURCE OF HOSPITAL INFECTION WITH GRAM-NEGATIVE BACTERIA

Quaternary ammonium compounds (QAC) have been in common use for more than a decade because of their wetting and antibacterial properties. As disinfectants they have many useful attributes and have been recommended for cold sterilization of instruments which cannot be autoclaved. However, since 1957 several reports have stressed the risks of using QAC for skin disinfection. It has been shown that aqueous solutions of these compounds lose most of their antibacterial properties if stored with cotton fibres or protein.

An outbreak of infections due to an organism of the *Pseudomonas-achromobacteriaceae* groups (a single organism having cultural characteristics of both groups) occurred in a large general hospital. Contamination of an aqueous solution of benzalkonium chloride, in which cotton pledgets for skin disinfection were stored, was found to be the source. One patient with staphylococcal endocarditis developed septicæmia due to an organism of the *Pseudomonas-achromobacteriaceae* groups. Combined antibiotic therapy with chloramphenicol, novobiocin, and kanamycin apparently eradicated the infection.—(*J.A.M.A.*, 9-9-1961).

SMOKING HABITS AND CORONARY ATHEROSCLEROTIC HEART DISEASE

In a study by David M. Spain and Daniel J. Nathan of Brooklyn, N. Y, of 3,000 males the statistical association of coronary atherosclerotic heart disease (CAHD) and smoking habits was most striking under the age of 51. In this group 21 (11·7%) of 179 heavy cigarette smokers had CAHD, whereas 100 (6·5%) of 1,521 other individuals had CAHD. The ratio of myocardial infarcts to isolated angina pectoris was 1·3 : 1 in heavy smokers, and 0·5 : 1 in other categories. Heavy cigarette smoking was also associated with higher serum cholesterol levels. It was suggested not so much as a factor in atherogenesis, but as a factor in precipitating acute clinical events in individuals with advanced CAHD.—(*J.A.M.A.*, *177*: 10, 9-9-1961).

HÆMANGIOMAS WITH SPECIAL REFERENCE TO RADIOTHERAPY*

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A HAEMANGIOMA is the commonest tumour of childhood. It is a local vascular growth disorder rather than a genuine tumour. Congenital in origin, it often starts as a small red spot at birth. Most of them show a tendency for spontaneous regression by about the fourth year of life, (British authors); or they may show a tendency to regress during first dentition, puberty, or after an acute illness (Illingworth). Some of the red spots may continue to remain as insignificant red spots indefinitely while others rapidly enlarge in the course of a few months which may commence soon after birth or after a latent quiescent period, lasting from several months to several years. Hæmangiomas are usually situated in the skin and subcutaneous and submucous tissue but may involve the liver, lung, larynx, alimentary tract, bladder, renal pelvis and even the inside of the bones of the skull and vertebræ.

Hæmangiomas may bleed which may be sometimes very alarming, as in the case of a lesion in the tongue. They may get infected and ulcerate. Sometimes malignant change occurs and may give rise to distant metastasis.

Types of haemangiomas.—From the point of view of radiotherapy, hæmangiomas may be classified as sensitive and non-sensitive.

THE SENSITIVE TYPES:—(*a*) *Strawberry or Raspberry type*:—This is a raised, bright-red, lobulated. capillary hæmangioma. This often enlarges rapidly; separate tiny lesions may start a little away from the original lesion and later coalesce with it. It may become prominent while the child, cries or coughs; it often undergoes ulceration.

(*b*) *Cavernous haemangioma*.—Consists of dilated blood-spaces with thin walls and intercommunications; there are masses of dilated veins into which arteries open more or less directly.

The spongy net-work occupies not only the skin but also the subcutaneous or submucous tissue. It occurs as a bluish elevated compressible mass with irregular surface, commonly on the lips, buccal cavity, face and head. Rarely it may pulsate

*Specially contributed to the ANTISEPTIC.

due to acquired communication with a large artery. During the early months of life it may extend rapidly, ulcerate and give rise to severe hæmorrhage. The vast majority of these do not show spontaneous regression and require radiotherapy or surgical intervention.

THE NON-SENSITIVE TYPES :—(*a*) *Spider on stellate naevus* :—Appears as an aggregation of dilated and tortuous capillaries otherwise known as Telengiectasis on the face or hands radiating from the centre. This may be a dilatation of the cutaneous arterioles (Illingworth).

(*b*) *Portwine-stain* :—Occurs as a superficial flat, blue or pink staining of the skin. The affected area may be small or large and may even involve the entire face or part of a limb.

The port-wine stain on the face may follow the distribution of one or more of the branches of the trigeminal nerve or even the entire nerve. There may be an associated telengiectasis of the pia and archnoid membrane. There may be calcification in the underlying cortex with associated Jacksonian epilepsy (Stergeweber syndrome).

TREATMENT :—Though subcutaneous lesions can be treated by electro-coagulation "irradiation gives results more satisfactory usually than electro-coagulation" (Ian Aird). In the case of cutaneous lesions when small, good response may be obtained by treatment with carbon dioxide-snow but "irradiation in experienced hands may be even more effective particularly if the diameter of the lesion is more than 2 cm." (Ian Aird).

Radiotherapy of haemangiomas :—The following points must be considered while treating hæmangiomas with ionizing radiations :—

(1) Hæmangiomas show a tendency for spontaneous regression by about 4 years of age.

(2) The earlier the treatment is instituted, the greater will be the chance of success, while treating with Chaul's-therapy or Philip's contact-therapy, the treatment can be safely started when the child is first seen however young it may be. (Pendergrass, Katter John and Butchart).

(3) The skin of children shows a different degree of tolerance to X-rays as compared with adults. The skin of infants is very sensitive to X-rays. The doses of radiation necessary to produce erythema of the skin at different ages according to the British Practice of Radiotherapy are :—Adults, 100% ; children 3 to 7 years of age, 65% ; children aged 1 year, 35% and infants of 3 months, 25%.

(4) Treatment and especially over-treatment of port-wine stains and spidermarks should be avoided since they are insensitive to X-rays.

Strawberry marks :—Can be ideally treated with Philip's contact therapy (10 to 50 *kv*) or Chaul's therapy. For thicker lesions, higher *kv's* and thicker filters are used while thinner lesions are treated at lower *kv's* and with thinner filters. Suitable applicators are selected, suitable for the size of the lesion, so that the entire lesion may be covered by the applicator.

400*r* is administered at a single sitting and the response of the lesion is observed after a period of one month. If the lesion continues to regress, as observed during periodic monthly observations, further radiation is withheld. But when no further regression takes place, an additional 400*r* is given and repeated as often as necessary.

Cavernous haemangiomas :—Depending on the thickness and size, the lesions may be treated with 140 *kv*, with 25 cu filter or in 250 *kv*. DXRT machine with suitable filters the dose administered being the same as in the case of treatment with contact therapy. These lesions, if not very extensive as in the case of hæmangioma of the tongue can also be treated with radium implantation, the dose being about 2000 to 4000 *r* in about 4 days.

Port-wine stains respond rather poorly to X-ray therapy. This condition may therefore, be treated with Thorium solution in alcohol which is painted over the lesion once a week or once a month. This emits mostly alpha-particles and its penetration is less than 1/10th mm. This treatment may have to be continued for years.

Spider marks :—May be treated by diathermy of the central vessel. The results of radiation treatment of hæmangiomas in the X-ray department of the Government Stanley Hospital, between July 1959 and June 1961, show that the total number of cases treated was 40 ; eight of them stopped away in the middle of the treatment, 2 could not be followed-up,while in three it was too early to assess the value of the treatment.

So, the number of patients who received the full course of treatment and were also followed-up was 27.

TABLE I

Showing the extent of regression of the lesions

Extent of regression in per cent	No. of cases	Percentage to total
100	10	37
(Case not seen again but reported through letter as doing well)	1	3·5
90	4	15
75	4	15
60	1	3·5
50	5	19
20	1	3·5
Regression after 1 month no further follow up	1	3·5
Total No. of cases	27	

Case reports :—Case I :—G , female child, aged 5 months admitted on 4-1-1960.

History :—Child had a round red spot just behind her right ear since birth, and was gradually becoming thicker.

Clinical finding :—A raised lobulated compressible angiomatous reddish round lesion—3 cm. in diameter and 1 cm. thick just behind the right ear.

Diagnosed as strawberry type of capillary hæmangioma, the patient received contact therapy with Philip's apparatus

Case I. Before treatment.

Case I. After treatment.

the *factors* being 50 *kv.* 2 mm. al. filter 2 ma. 4 cm. distance. The *dose* was 1650 *r* in ten minutes. The lesion showed 100% regression one year after the commencement of the treatment (*See* photographs above).

Case II :—M., a female child, 3 months old was admitted on 21-11-1959 with a red birth-mark in the right lower eye-lid since birth which has been gradually increasing in size and thickness.

Clinical findings :—A raised, reddish, irregular compressible soft angiomatous lesion involving the lower right eye-lid, the inner canthus of the right eye, adjoining the face and bridge of the nose, about 5 x 3 x 1·5 cm.

Diagnosed as strawberry type of capillary angioma, the patient was given contact therapy with Philip's apparatus, the factors being 50 *kv.* 2 al. filter 2 ma. 4 and 2 cm. distance. The *dose* was 2000*r* in 10 minutes, 400*r* being administered at each sitting. The lesion showed a 100% regression one year after the commencement of treatment (*See* photographs, on p. 19).

The results of radiotherapy of hæmangiomas have been found to be satisfactory, the period between the commencement

of the treatment and complete regression of the lesion may take as long as two to three and a half years, as reported by Wilson and Wesley, in the *American Journal of Radiology* for July 1960 based on their experience of 500 cases during 15 years. It is expected that even patients who did not show complete regression initially, may do so in course of time, since it was only about one year since they were treated.

Case II. Before treatment.

Case II. After treatment.

Conclusion.—1. Contrary to the common belief among medical men that only capillary hæmangiomas respond to radiotherapy, and not the cavernous type, we have found that certain types of both capillary and cavernous hæmangiomas respond to radiotherapy.

2. Hæmangiomas which are limited in size and do not show a tendency to spread and enlarge may be kept under observation, since there is a possibility of spontaneous regression; but lesions that enlarge, bleed or get infected should be immediately treated, however young the child may be.

3. Superficial lesions should be treated with contact therapy or superficial therapy. If thicker and more deeply situated, they should be treated with medium or deep X-ray therapy.

4. Spider-marks and port-wine stains should not be given radiotherapy.

The above conclusions are based on 40 cases treated in the Radiotherapy-section of the Radiology Department of the Government Stanley Hospital, Madras.

Acknowledgement.—Our thanks are due Dr. Balasubramaniam, M.S., Dean, Stanley Hospital for permitting us to utilize the clinical material in our hospital. Our thanks are also due to the other members of the staff in our department for the willing co-operation they gave us.

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WHY DOES NOT THE STOMACH DIGEST ITSELF?

The question, "Why does not the stomach digest itself?" has intrigued physiologists and physicians alike ever since the discovery was made that the digestion of food in the stomach is brought about by the chemical action of the pepsin and hydrochloric acid of the gastric juice.

In 1887, Dr. Warren of Boston, wrote:—Why do organisms which manifest such power of digesting and assimilating the material they require, leave quite intact those organs or tissues where these processes go on so actively? Why does the stomach digest various albuminous substances so readily, and yet fail to attack its own walls containing substantially the same material? Why do the intestines with their much more varied power of digestive action remain undisturbed and uninjured by this activity? Why does the pancreas secrete at least three vigorous ferments, and yet work on unaffected by each and all of them?

The normal gastric content of man and experimental animals is not sufficiently corrosive to prevent the rapid healing of even extensive defects or lesions in the gastric or duodenal mucosa. In marked contrast, pure gastric juice is a very corrosive liquid and is able to destroy and digest living tissue such as spleen, pancreas, and the mucosa of the stomach and intestines if these tissues are exposed to its action for a sufficient period of time. Under normal conditions, digestion of the mucosa does not occur because the acid gastric juice is buffered and diluted by the food. The mechanism which regulates gastric secretion provides for an abundant flow of gastric juice when food is in the stomach and also checks further secretion before the gastric content becomes sufficiently corrosive to damage the mucosa. This inhibitory mechanism involves both the antrum and the duodenum. In ulcer patients the corrosive quality of the gastric content approaches that of pure gastric juice. This is due to a stimulation of gastric secretion by agencies other than food, by an abnormally prolonged or excessive secretion in response to the normal stimuli, or to both factors. A gastric content of this quality is quite able to destroy and digest the normal mucosa of the stomach, duodenum, or jejunum and can be considered a sufficient cause for peptic ulceration.—(*J.A.M.A.*, 16-9-1961).

HEARING LOSS OF SUDDEN ONSET

The purpose of this study was to explore several facets of auditory behaviour in hearing loss of sudden onset, in order to shed further light on the site of the lesion within the auditory mechanism. Twelve patients with unilateral hearing loss of sudden onset, without subsequent fluctuation, were compared with 12 patients with unilateral loss of gradual onset by means of a battery of auditory and vestibular tests. Results suggested cochlear lesion in 4 patients and 8th nerve lesion in the remaining 8 patients, with hearing loss of sudden onset. In the control group of patients with hearing loss of gradual onset, results suggested cochlear lesion in all 12.—(*Arch. Otolaryng.*, Vol. *73*: 350, March, via *J.A.M.A.*, 25-3-1961).

SURGICAL CONSIDERATIONS OF LYMPHŒDEMA OF THE EXTREMITIES*

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Introduction.—The term lymphœdema is commonly used to describe the solid non-pitting variety of œdema of the tissues. It is not always due to primary lymphatic obstruction. Undoubtedly, the œdema resulting from lymphatic obstruction tends to become solid relatively early though in very early cases of this type, pitting can be elicited on the œdematous tissue. Oedema resulting from venous stasis pits on pressure for a long time but ultimately a stage is reached when it also becomes solid.

Anatomical considerations.—The lymphatic system of the extremities consists of lymph capillaries which in turn join to form lymph channels and trunks which, in turn open in the lymph glands draining the area. The lymph vessels traverse one or several lymph glands. The lymph is carried to the sinuses of the cortex of the gland by several channels and then it leaves by vessels arising from the medulla. There are usually two sets of lymphatics, the superficial and deep, the former being more often involved in the disease. If due to any cause there is a localized lymphatic obstruction, collateral lymphatic channels open up. If, however, the lymphatic obstruction is widespread as would result from the clotting of lymph and lymphatic fibrosis, then there is retrograde lymphatic flow and lymph retention.

Mechanism of lymph-retention and lymphoedema.—In the ascending type of lymphangitis which, for instance, can result from streptococcal infection, permanent obstruction to lymph channels may occur. This is an ascending type of blockade. Conversely, lymphatic obstruction can follow extensive lymph-node involvement due to chronic infection or malignancy or due to extensive lymph-node excision, which in turn produces the descending type or retrograde lymphatic obstruction. On the extent of lymphatic involvement and nature of lymphatic obstruction, will depend the irreversibility of the œdema. Another important factor which has recently been disclosed is the congenital deficiency in the lymphatic system, such as incompetency of valvular mechanism, lymphangiectasis, or aplasia of lymph channels etc. which will largely determine the clinical course of each case. In addition to lymph stasis there may be a certain amount of increased production of lymph in some cases either due to trauma, inflammation or due to associated

*Specially contributed to the ANTISEPTIC

venous obstruction. Thus, the protein-rich interstitial fluid remains undrained. Primarily there is lymphocytic infiltration in the tissues. When the lymph clots, the fibrinous exudate acts as a scaffold for proliferation of fibroblasts in the deeper layers of subcutaneous tissue which results in fibrous tissue deposition. The superficial layers undergo thickening due to retention of clear fluid in the interstices. When the fibrosis in the subcutaneous tissue is advanced the œdema becomes solid and irreversible and pitting can no more be obtained.

Lymphœdema may be due to a variety of causes. Only the common varieties will be discussed by me.

Congenital lymphoedema.—Some of the cases belonging to this group are known by the term Milroy's disease which is characterized by frequent familial occurrence. The disease may be manifested at birth or around the age of puberty. The lower extremity is more commonly involved. The underlying pathology is congenital lymphatic obstruction with fibrous hyperplasia. In other varieties belonging to the same group there may be associated congenital vascular anomalies such as arteriovenous fistula or neuro-fibromatosis of the limbs.

Traumatic lymphoedema.—In this class the post-traumatic variety resulting after accidental injury and the post-operative variety have been included. In the former variety extensive soft tissue injury or a fracture of the extremities may interfere with lymph drainage; however, reflex vasomotor spasm may be the additional cause in some. This kind of lymphœdema usually subsides spontaneously. Post-operative lymphœdema follows excision of malignant lymph nodes. The œdema is usually temporary and gradual recovery occurs after the re-establishment of lymphatic channels but in some cases residual œdema of some degree may persist.

Inflammatory lymphoedema.—Bacterial and sometimes viral infection causes obliterative lymphangiitis. Attempts to find out the offending organism are frequently unsuccessful. The lymphœdematous tissue goes through stages of progressive fibrosis and dilatation of lymph channels to such an extent that lymph moves freely to and fro, in the large lymph spaces surrounded by fibrotic tissue which contains thickened arterioles and collapsed venules. By far the commonest variety seen in our country is the parasitic lymphœdema caused by blockage of lymphatics by *Filaria-Wuchereria bancrofti* or *malayi*. This disease occurs most commonly in the provinces of Kerala, Orissa and Bihar, Bombay and Gujarat States. The lower extremities are most commonly affected, the other common sites being the scrotum, labia, the upper extremity and the breast. The disease is transmitted from one filarial patient to another by the bite of the *Culex* mosquito. The immature filarial worms

reach the lymphnodes where they mature into adult worms which liberate microfilariæ into the circulation and which can be detected in these patients by blood examination, particularly during the resting hours at night. The clinical picture is characterized by fever with rigors associated with attacks of lymphangiitis caused either by the products of the dead filarial worms or by secondary streptococcal infection. With each attack of obliterative lymphangiitis the œdema progresses and ultimately results into a massive solid œdema.

Inflammatory lymphœdema can rarely result due to extensive involvement of lymph nodes draining a limb due to tuberculosis or lymphogranuloma. The post-phlebitic lymphœdema becomes solid when lymphangitic (periphlebitic) component supervenes.

Neoplastic lymphoedema.—In its most typical form, it is manifested in a brawny arm associated with cancer of the breast. It is due to a malignant invasion of the axillary lymph nodes. Lymphosarcoma or hæmangiosarcoma (Kaposi's hæmorrhagic sarcoma) are known to occur in these lymphœdematous limbs.

Miscellaneous types.—Under this group, will be discussed all the remaining varieties, the ætiological factors in some of which have not been definitely proved.

Lymphœdema precox, also known as spontaneous lymphœdema or idiopathic lymphœdema, occurs more often in the female at or around the age of puberty. Starting as a painless œdema around the ankle, it gradually progresses up the leg. Initially the œdema pits on pressure but later becomes solid.

Allergic lymphœdema is a variety recognized by some workers. Allergy to some types of fungi and bacteria has been shown to be the underlying cause in this type.

Metabolic lymphœdema, is a variety known to be associated with certain metabolic disturbances in the body. Lymphœdema associated with Bazin's disease is an example of this type.

Plan of study.—A detailed interrogation of the patient regarding the onset and progress of the disease is very essential and will help considerably in the determination of the underlying cause of the lymphœdema. Proper clinical examination is of equal importance. Another important aspect of the study is to determine how much of the œdema is solid and irreversible. It can be decided by noting down the residual œdema that persists after elevating the œdematous limb for a sufficient time and strapping it with elastic bandages. In order to determine the nature of lymphatic block–whether it is segmental or widespread, a specialized investigation called lymphangiography (injection of radiopaque material in the lymphatic channels) have been described but have thrown only very little light on this problem.

In some varieties of lymphœdema where the diagnosis regarding the ætiological factor cannot be determined clinically a large variety of investigations are carried out. They include examination of blood for microfilariæ, blood cultures and lymph culture for demonstration of the causative organism. The infecting fungi can be sometimes demonstrated on the skin of an œdematous foot. Lymph node biopsy will reveal chronic inflammatory or neoplastic involvement or a dead filarial worm may be found. The sensitivity to certain bacteria or fungi has been demonstrated by special studies. Examination of lymphœdematous tissue itself may throw some light on the ætiological factor and on the stage of irreversibility it has reached.

TREATMENT OF LYMPHŒDEMA:—The object of treatment of lymphœdema in the early stages is to mobilize the œdema fluid and to prevent its reaccumulation. In late cases however the attempts are directed towards re-establishment of lymphatic drainage and to remove the irreversible fibrous tissue along with the pools of stagnant lymph.

In the early stages of lymphœdema the following measures are advocated. Postural drainage by raising the œdematous limb considerably reduces the œdema in its early stages. Adequate elastic compression of the œdematous part is essential in order to maintain the reduction in the size of the limb achieved after postural drainage. Elastic compression can be accomplished by elastic bandages, adhesive tapes or glycerine gelatin boots etc. The use of diuretics has been found to be beneficial in some cases. In those cases of lymphœdema where there is associated vasospasm, sympathetic block may be useful. Heparin has been used by some workers and is believed to prevent thrombosis within the lymphatic system. In addition, its anti-inflammatory and antiphlogistic action may be beneficial during the lymphangitic stage. Deep X-ray therapy in small doses (50–80*r*) is believed to hasten the absorption of the inflammatory exudate. Some workers have used nonspecific protein therapy with gratifying results.

The object of treatment in the late stages of chronic lymphœdema is to arrest the progress of the disease, to remove as much œdematous tissue as possible without sacrificing the function of the limb and to re-establish the lymphatic drainage and whenever all methods fail these, amputation may be necessary.

Hospitalization a few days prior to surgery is advocated. The limb is kept elevated. Some workers even advocate diuretics. Salt intake is restricted. By this method, it is possible to decide roughly how much of the fluid can be mobilized. Then an elastic bandage is tied round the limb and the patient is ambulated. All sources of infection are treated. Anæmia and hypoproteinæmia, if present, are corrected. Antibiotic and chemotherapeutic drugs are exhibited to combat any infection in the lymphatic system. In milder cases it may be possible to keep the œdema under control by conservative measures alone.

Marked increase in the size of the œdematous limb producing disability and disfigurement with signs of breaking down of the skin and hyperkeratotic patches are the indications for surgical interference. The concept of draining lymph to the subfacial muscle spaces originated with Handley who placed silk threads in the subcutaneous tissues. Though some workers have reported encouraging results with these kinds of lymphangioplasties on the whole the results are far from satisfactory. Another approch to the problem of re-establishment of lymph drainage was made by Kondoleon who removed strips of deep fascia to establish communication between the deeper lymphatics and the superficial tissue. This operation was later extended by Sistrunk and Holman who removed large areas of deep fascia. Servelle removed the entire deep fascia of the œdematous limb in stages and replaced the skin flap directly on the deeper tissues. In those cases where the skin of the œdematous limb was excoriated, eczematous or obviously unhealthy and infected, it is removed with a dermatome prior to removing the subcutaneous tissue. Gillies Frazer used large pedicle grafts in order to bridge the lymphatics of the œdematous limb to the healthy part. There remain however, a few cases of lymphœdema where all the methods described above are not practicable and amputation becomes inevitable.

Summary.—(1) The ætiopathology of lymphœdema is outlined; (2) the plan of study for a case of lymphœdema is presented and (3) the treatment of lymphœdema is discussed.

INDUSTRY AND HEALTH

Over 190,000 accidents with 675 deaths occurred in factories in Great Britain in 1960 and were reported to the Factory Department of the Ministry of Labour. As the chief inspector stresses in his annual report, these figures represent a heavy toll of human and economic loss. For the second year in succession both the total number of accidents and the accident-rate rose. The total of 190,266 was 9% above that for 1959, and is the highest for ten years. The increase in the fatal-accident rate was much less than for accidents generally; but in certain industries, notably construction (60 fatal accidents in a total of 3650), the proportion of fatal accidents remains very serious.

An even more disturbing aspect of these figures is that accidents to women and young persons increased proportionately more than those to men. In manufacturing industries the accident-rate increased between 1959 and 1960 by 4% in males, 9% in femals, and 15% in young person (17% in boys and 10% in girls). Part of this increase can be attributed to the increase in the numbers of employed persons in these groups. The chief inspector emphasizes the need for careful and skilfully planned

training which takes account of individual needs and capacities, in order to ensure that the new entrant learns to work in the way that is safest for himself and his fellows.

The time taken to train skilled workers who enter as apprentices from school gives considerable opportunity to emphasise the importance of safety. But even in the more enlightened industrial organisations it is commonly left to chance whether an unskilled person on starting work receives any special training in safety precautions. A young person leaving school has been taught road-safety drill. If likewise the importance of industrial safety were instilled during the last year at school, the industrial safety officer would then have become a familiar figure to all before they start work.

As in the two preceding years a separate report on industrial health has been published at the same time. For the fourth year in succession no deaths were reported from lead poisoning. Of six cases of mercury poisoning, two (including one death) were reported from poisoning by organo-mercury compounds—the first such cases to be notified in Great Britain for some years.

Five more cases of beryllium poisoning came to the notice of the inspectorate during 1960; and five cases of cadmium poisoning (including one death) were discovered. These and a number of other diseases are prescribed under the National Insurance (Industrial Injuries) Act, 1946, and since 1959 details of claims accepted under this Act have been notified to the medical inspectors in whose division the cases occurred. This arrangement provides medical inspectors with a wider knowledge of the incidence of industrial diseases over and above the fourteen diseases notifiable under the Factories Act, 1937.—(*Lancet*, 14-10-1961).

PREVENTION OF OPHTHALMIA NEONATORUM

At present a 0·2% incidence of gonorrhœal ophthalmia neonatorum can be anticipated in the absence of prophylaxis. The incidence is about 0·02% when a 1% silver nitrate solution is used routinely. The effectiveness of silver nitrate is therefore obvious. The main disadvantage of using this drug is the frequent occurrence of chemical conjunctivitis. This usually is due to too high a concentration, a result of using a solution from a dropper bottle with the attending rise in concentration that occurs from evaporation. If one uses single-dose preparations in plastic containers, the incidence of chemical reaction will be markedly reduced. Bacitracin, various quaternary ammonium compounds (Desogen, Amisept, Quartamon), oxytetracycline, 30% sulphacetamide sodium solution, boric acid, penicillin, erythromycin, sulphanilamide, Sulmefrin (sulphathiazole, sulphadiazine, and *dl*-methamphetamine), streptomycin, and chlortetracycline are among the drugs highly recommended to replace silver nitrate in recent years.

The American Academy of Pædiatrics Committee on Fœtus and Newborn still recommends that a 1% silver nitrate solution be the routine prophylaxis; because prophylaxis is needed, the drug is effective, its side effects are relatively unimportant, and the dangers of causing drug resistance in organisms and producing hypersensitivities in patients are reduced.

VACCINATION AGAINST INFLUENZA

The maximum degree of protection given by influenza vaccines in the most favourable circumstances has been 75%.—(From *B.M.J. Editorial*, 7-10-1961).

A REVIEW OF 32 FATAL CASES OF POISONING BY ORTHO-PHOSPHORIC COMPOUNDS DURING A PERIOD OF SIX YEARS*

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ON an average about 500 medico-legal autopsies are being performed in the above department every year. A very large number of these (6 to 30%) are due to poisoning by insecticides.

The introduction of insecticides on a very large scale, in our country has created in its wake a new and serious problem, *namely*, suicides and accidental deaths due to these poisons.

About 70 different chemicals are used as pesticides, and these belong to one or other of the following series:—

(1) Chlorinated hydro-carbons—D.D.T.; (2) the hormone type of weed-killers; (3) organic fungicides and (4) the most important ones being the organic phosphorus compounds: (ortho-phosphates or alkyl-phosphates).

The Second World War was responsible for the discovery by the Germans of this orthophosphate which was primarily intended to be used as "Nerve-gases." These compounds were found to be capable in minute amounts of inhibiting sufficient cholinesterase enzyme of the animal body, to result in its death and hence these were termed as "Anti-cholinesterases."

For all practical purposes, we may assume that the living body of an organism contains two types of the enzyme cholinesterase, the true cholinesterase (CHE), and the pseudo-CHE found in the plasma. The true CHE is found (*i*) in the brain in large amounts; (*ii*) in the autonomic ganglia; (*iii*) at the terminal end-organs of the autonomic nerve; (*iv*) at the myoneural junctions of the skeletal muscles and (*v*) inside the red cells (known as R.B.C.—CHE).

It has been ascertained that the true CHE is primarily responsible for the rapid destruction of the acetylcholine formed at the nerve endings, when the nerve is stimulated. Acetylcholine is the chemical mediator, which results in the stimulation of the end-organ, skeletal muscle or the next nerve in line at the synapse. No sooner has it performed its function of stimulation than it is destroyed on the spot by the enzyme CHE. Minute traces of this biological catalyst (CHE) are capable of hydrolysing instantaneously large amounts of acetylcholine.

*Specially contributed to the ANTISEPTIC.

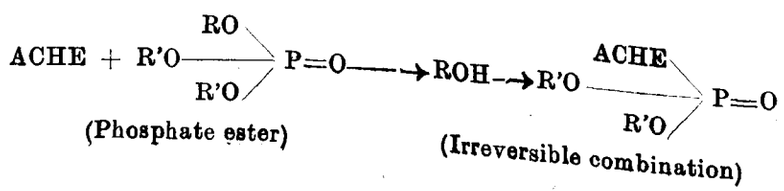
Failure to destroy acetylcholine will result in continued over-activity of the affected end-organs *namely*, the para-sympathetic, the central nervous system and the muscular system, with the production of the following symptoms :—

Table I

Site of action	Signs and symptoms
1 Central nervous system.	Anxiety, tension, restlessness and psychomotor disturbances.
2 Parasympathetic (end-organs)	
(*a*) Pupil.	Constricted.
(*b*) Ciliary body.	Blurred vision, defective focusing resulting in headache.
(*c*) Conjunctiva.	Congested.
(*d*) Nasal mucosa.	Rhinorrhœa.
(*e*) Bronchus.	Pain and tightness in the chest, cough, cyanosis and pulmonary œdema.
(*f*) Gastro-intestinal tract.	Nausea, vomiting, abdominal cramps, tenesmus and diarrhœa.
(*g*) Sweat, salivary and lachrimal glands.	Increased sweating, salivation and tears.
(*h*) Heart.	Bradycardia.
(*i*) Bladder.	Frequency of and involuntary micturition.
3 Sympathetic.	Pallor and high blood-pressure.
4 Skeletal muscles.	Weakness, muscular twitchings, cramps, fasciculations and fatigue.

The organic phosphates inhibit both the CHE's of the body. The level of the true CHE normally is constant but the pseudo CHE varies with various factors such as the state of nutrition of the individual, condition of the liver etc. Hence the estimation of the true CHE-activity forms a reliable index of the degree of poisoning by orthophosphates.

The mode of action of these insecticides.—The enzyme CHE hydrolyses the acetylcholine with the formation of choline and acetic acid. These orthophosphates inhibit the enzyme CHE irreversibly by phosphorylation.



The absorption of this chemical either by man or by insects at first inhibits the enzyme reserves of the body and then the vital traces of the enzymes present at the nerve-endings, thereby promoting the accumulation of acetylcholine. When compared, man shares with the insects the same metabolic pathways and hence both are similarly affected.

Of course there are other known drugs which have anti-CHE activity, like eserine, physostigmine and certain other carbamide derivatives, but none of these drugs bring down the level of the enzyme so quickly or so low. Even among orthophosphates certain groups like Diazinon and T.E.P.P. act directly as soon as contact with the organism is established. (This can be demonstrated by dropping a little of the drug into the eye of an animal and noting the prompt occurrence of midriasis) called direct inhibitors and the other group of indirect inhibitors which have to be activated in the animal's liver before it can produce any symptom (Parathion). These do not significantly lower the CHE level of the blood in some cases but still produce the symptoms.

There are various methods available for the estimation of the activity of the enzyme CHE. The method of Fleisher and Pope uses whole blood and the modification of Charles S. Petty requires red cells only. By these methods the CHE activity of not only live patients but also that of cadavers can be ascertained. A compact kit has been advised for rapid field-estimation of the CHE activity by Messrs Tintometer Ltd., Salisbury, England. This method consists in measuring the acidity produced when a drop of blood under standard conditions is allowed to react with the substrate acetylcholine. The resulting acidity changes the colour of the dye Bromthymol blue and is measured off as percentages with the help of a permanent colour standard in glass.

Fifty normal cases and 20 poisoning cases were examined by this method regarding their CHE activity. It was seen that the CHE activity was higher among the vegetarians. Further, even in mild cases of poisoning with orthophosphorus-compounds the activity came down to 8% and lower. The activity did not return soon to normal. In some cases discharged after two days of treatment, the activity recovered was only up to 20%; the full activity of the enzyme is said to be restored only after about three months. This method was however, of no use in estimating the CHE activity of cadaver blood.

Many chemical pesticides are marketed in this state under a variety of trade-names like, "Bug-tone", "Bug-killer", "Tick-20", "Tone-bug", "Kilozone", "Pakatol", etc. all of which are orthophosphates of one type or other. The following

table lists the LD-50 doses of some of the commonly used insecticides.

TABLE II

S. No.	Name of the Pesticide	Toxic dose	Stability	LD- 50 dose in mg/ kg. body-weight (Rats)
1	T. E. P. P.	20 mg.	6 hours	0·5–1·5
2	Parathion	100 mg.	1–3 wks.	3–5
3	Malathion	1 gram.	1 month	1,400

Note :—(Adapted from Dr. E. F. Edson)

It will be seen from the above table that certain groups like Parathion and T.E.P.P., have a very low LD-50 dose and so they have ceased to be marketed, especially when safer chemicals with a high LD-50 dose are available. It is only after rejecting thousands of chemicals that scientists and manufacturers have come upon a few likely drugs, even some of which had subsequently to be discarded because of their excessive toxicity. When we realize that an organism becomes a pest only when it does something inimical to the human being and when we also further realize that the metabolic pathways of the insects (beneficial and harmful) and man are similar, we can have a rough idea of the tricky problem facing the chemist. He has to do a tight-rope-walk in trying to discover one drug which could successfully eliminate 100% of the harmful insects and at the same time cause no harm to human beings.

In order to ensure the maximum safety, stringent restrictions have been imposed upon the manufacturers at every stages of the manufacture of the chemicals. It has become an axiom with them that any profitable product must be a safe one demanding not even one safety-precaution on the part of the user. It is to the credit of many firms that they go to great lengths in safeguarding the health of the user. Apart from the detailed instructions written on the packing, and supplied also with the package, they colour the drugs with vivid dyes and also impart a powerful smell so as to warn the unwary user in time.

These highly toxic materials, because of their vital role in food-production, are widely distributed and used. Many of the persons who use them never bother to read the instructions and warnings printed on the lable, and poisoning occurs chiefly among those who fail to appreciate this. But in this place at least it looks as if the people are well aware of its lethal potency considering the number of the suicides that occur even among the illiterates due to this poison.

It is clear from the statistics of the various medical institutions in the Madras State that this drug has been accepted as a

preferential killer, even by women-folk who had so far adopted such prosaic methods like hanging and drowning. This is so because of the following reasons :—

(*a*) *Quick action* :—In most of the above cases the symptoms started within a few minutes after the drug was ingested or inhaled and the patients lived from half to four hours. In only one case did the patient live for about 9 hours. This man had consumed a large amount of alcohol and in addition by mistake had taken a bottle of the insecticide. It is a matter for speculation if the stupor created by the alcohol had anything to do with the slow onset of the symptoms of poisoning.

(*b*) *Easy availability* :—This drug in liquid or powder form can be had for a nominal price anywhere. It is a common sight in the city to see street urchins with a placard round their necks extolling the virtues of the drug and selling them in fairly large quantities (*See* Fig. 1).

FIG. 1. A street advertisement extolling the virtues of Tone Bug.

FIG 1-A. A 22 year old girl who died of poisoning by "Bug Tone." The fine froth occurring at the nostrils is shown in this picture.

(*c*) *Small dosage* :—Even a small quantity is enough to cause the death of the victim, as these drugs are sold in a concentrated form, the minimum packing containing enough to kill an adult.

There are other ways in which man gets poisoned by this drug. Containers can get damaged during transit and may cause contamination of food materials stocked by their side. Due to such a mishap in a ship's hold and subsequent distribution of the contaminated food 1,031 cases of Parathion-poisoning were reported in Kerala, South India, during April and May 1958, among which there were 108 deaths. (*Enquiry commission's report, Ministry of Health, Government of India*). The agricultural or the Public health user may be splashed by or otherwise get exposed to the concentrated material. This

type of skin contamination is a serious problem in our country for the following reasons:—Because of the normally high temperature and humidity, the workers in the field and elsewhere in the tropical countries discard their protective clothing thereby allowing the drug to be deposited on their skin. Further, the same factors enhance the absorptive power of the skin. In one of the above cases the agricultural worker, entered the field at 8 A.M. started spraying and returned home feeling giddy four hours later. He then vomited and was dead before he reached the hospital. There was also the case of a worker who got a cumulative dose of the drug after repeated spraying for three days, who died on the third day possibly due to skin contamination as well as to inhalation.

The deposition of the drug on food-crops adds a further hazard:—Cases of poisoning have been reported when these contaminated foods have been consumed soon after. This entailed the further stipulation of time-intervals for various food-crops before they could be declared safe for human or animal consumption. Usually the deposited drug disappears within a fortnight, after which it is safe to harvest for use.

The strict disposal of the containers of the drug eliminates the danger of their being used again to store food-stuffs without prior adequate cleaning. One such case was that of a thrifty house-wife who stored edible oil in an improperly cleaned container, resulting in symptoms of poisoning in three inmates who partook of the food prepared therefrom, but luckily survived after suitable treatment.

Hazards can also occur to workers during the manufacture, formulation and distribution of the drug. In one of the city distributing centres, a worker was fatally poisoned due to inhalation of the drug. This also raises the question of the necessity of a periodical check-up of the workers, by estimating the CHE-activity of their blood. No worker should be employed permanently in a job which brings him into repeated contacts with the drug.

Very many cases of chronic poisoning with this drug have been reported recently, thereby dispelling the original notion, that given a sufficient time, the drug gets degraded and disappears, the presenting symptoms in these being abdominal colic or mental disturbances of the nature of schizophrenia.

Certain elementary precautions have been outlined by the U. K. Ministry of Agriculture, for the benefit of the workers who might come into contact with this drug:—

(*a*) Wear rubber gloves and face-shield when using the concentrate.

(*b*) If the skin is contaminated with the drug, wash immediately and thoroughly with plenty of soap and water.

This simple but essential facility is not available in most places in our country and what is more, even when available is not taken advantage of.

(*c*) Avoid contact with spray mist.

(*d*) Wash with soap and water the exposed parts of the body, before eating, drinking or smoking.

This type of poisoning holds no serious threat, when the case is seen early. Several new drugs of the Oxime series have now come to the aid of the physician. But in our place the physician is at a disadvantage because the relatives and the victim of a case of poisoning with the orthophosphorus compound do not realize the serious import of this poison. Very often the history given is that the patient swallowed some medicine, but immediately vomited the matter, and nothing further was wrong with him except for a slight giddiness attributable to exhaustion. Sometimes, the drug works so fast that death occurs within 15 minutes of ingestion.

Nearly 6000 cases were treated in Japan with the help of this drug with very low mortality rate. Before the advent of the oximes atropine was the sheet anchor and it is still the case here. The routine treatment advocated and adopted in the city hospitals is as follows:—

(*a*) Wash out the stomach thoroughly.

(*b*) Wash the contaminated areas with soap and water.

(*c*) Give 2 mg. of atropine sulphate diluted with glucose intravenously straightaway. It is imperative that this treatment with atropine should take precedence over others and should be begun in the casualty itself. Since we have to depend upon this physiological antidote to counter the effects of the rapidly accumulating acetylcholine, atropine in doses of 2 mg. should be given thereafter intramuscularly, every 15 to 30 minutes till symptoms of atropine poisoning occur: *i.e.*, dry skin, high skin temperature and flushing and dilated pupils. These patients tolerate large doses of atropine and there need be no hesitation, or fear that atropine-poisoning may ensue. This atropinization may be continued even for 12 to 36 hours. By then the causative drug would have been detoxified and a small but adequate amount of the regenerated enzyme CHE would be found in the tissues. Subsequent recovery will be uneventful, but as already stated the full complement of the enzyme may not be achieved till after three months have elapsed.

(*d*) *Supportive measures*:—As the least excitement causes the liberation and accumulation of more and more of acetylcholine, it is advisable that the patient is transferred to a quiet place. The air-ways must be kept free of secretions by repeated aspiration and drainage. Since the majority of the patients die of pulmonary œdema, this dreaded complication should be

watched for and oxygen therapy under pressure should be promptly instituted. When the patient exhibits twitchings and restlessness, a judicial use of hypnotics like Dial should be thought of.

Recently a number of Oximes have been found to be effective as specific reactivators of the enzyme CHE. Some of them are listed below :—

1. *P.A.M-2 hydroxy iminomethyl pyridinium iodide* :—This is usually administered intravenously in doses of 1 g. *stat* to be repeated if necessary after an interval of 30 minutes if there is no improvement. In most cases one injection will suffice. This drug has the added advantage over atropine in that the distressing muscular fasciculations are controlled by this drug. Further, it has no unpleasant side-effects as is the case with atropine. This drug has the effect of restoring to activity by dephosphorylation the true CHE enzyme. The effect on the pseudo-CHE is negligible. Since the nervous tissue contains only the true CHE, this drug acts remarkably in reversing the effects of poisoning by the orthophosphoric compounds.

2. *P. 2S* :—This is a methane-sulphonate equivalent of P.A.M. and is administered intramuscularly in doses of 20 mg. per kg. of body-weight. This is specially useful in the treatment of poisoning by phosphates in which a diamino-alkyl group is directly connected with the phosphorus atom as in the case of O.M.P.A.

3. *T. M. B. 4* :—Bis (Pyridine 4 aldoxime) tri-methylene bromide is more water-soluble and is superior to P.A.M.

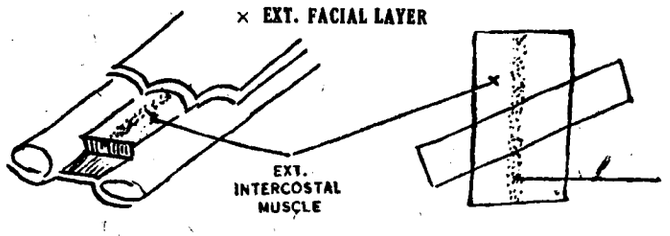
These oximes when used in combination with atropine act synergistically and the observed effects are far greater than when either of the drug is used alone. But as has been indicated elsewhere these drugs are not yet available in India.

Some interesting points resolve themselves during the autopsy. Most of the cases recorded by us were of young persons in their teens, who did away with their lives after a domestic quarrel real or imaginary. Most of them drank about an ounce of the fluid-drug in order to commit suicide and all of them vomited at least once before they were brought to the hospital. This is probably because of the pungent smell and bitter taste of the drug. In many of these cases we have smelt a strong odour like kerosene even as the body was put on the table. Invariably a fine froth, sometimes blood-stained was found in and around the mouth and nostrils of the victims. Since death is brought about by respiratory failure, the usual findings of asphyxia are seen, cyanosis is clearly seen even in dark victims, fulness of the right chambers of the heart, presence of petechial hæmorrhages over the serous membranes (Tardieu spots) and generalized congestion of the internal organs. The congestion of the liver

in some cases resulted in the formation of areas of sub-serosal hæmorrhages. Since it is the habit of intending suicides to mask the taste of whatever poison they are consuming, the majority of the cases revealed the stomach to contain bits of plantain fruit mixed with oily matter sometimes coloured green. The smell of the drug is so strong, that the persons who conducted the postmortem in several instances complained of giddiness and intense head-ache—symptoms of mild poisoning. This smell is akin to kerosene and we believe it is added as a diluent. Incidentally, the presence of froth is attributed to this. The mucosa of the stomach as in other irritant poisons show congestion and areas of hæmorrhage. The trachea and the bronchi were congested and fine froth was seen inside their lumen. The lungs were voluminous, congested, showed areas of hæmorrhage, and from the cut surface dripped frothy blood-stained fluid : picture of pulmonary œdema and even here the drug could be smelt. The ability of the drug to promote a violent contraction of the intestinal coils could be attested to by the finding of the drug in the lower reaches of the intestines even in those cases which survived only for a few minutes. None of our cases showed any intussusception, as reported by some-workers. The bladder was found empty. The histopathological study of the various organs were of no significance. In short the picture was that of any irritant poison which causes death by asphyxia.

Charles S. Petty has deviced a method of demonstrating the absence of CHE activity histochemically in the skeletal muscles of cadavers, that died of poisoning with this drug. This method is fool-proof, the whole process takes about an hour to perform and is reliable; more important is the fact this could be done even in highly decomposed bodies. The test was stated to be positive even after the lapse of 150 days in one of his cases.

For this purpose the intercostal muscles are selected because they possess a fairly constant number of myo-neural junctions at whose ends the CHE activity could be demonstrated. If any random sample of muscle is taken which may not contain enough of these end-organs, a false negative report might be obtained. Hence the external intercostal muscle was chosen where the myo-neural junctions are situated in the middle of the fibres.



After teasing, the selected tissue is incubated with acetylcholine thio-iodide solution so as to allow any CHE enzyme to

act and the tissue is subsequently carried over to solutions of copper sulphate and sodium sulphate. The sites of CHE activity are indicated in the section by black spots. Usually a number of such spots of activity are to be seen in a section under the low power of the microscope. In cases of poisoning by orthophosphoric compounds no such spots of activity are seen. (*See* Fig. 2).

Fig. 2. Low power view of a section of intercostal muscle showing absence of CHE activity. x 40.

This method can be reliably used to confirm the diagnosis of death due to poisoning by orthophosphates. Its importance as a diagnostic procedure will be evident when sporadically a negative report is got from the Chemical Examiner. The enzyme CHE is fairly resistant to putrefactive changes and hence this may succeed even in those cases where because of the advanced stage of decomposition the viscera yield no trace of the drug during chemical analysis.

In conclusion it may be said that the city is fortunate in recording comparatively few deaths from this poison when compared to the mofussil stations. As an instance Madura City alone has recordedthe menacing figure of 90 cases out of 250 autopsies during the year 1960.

A suggestion offered by the authors is to ban the sale of this drug for uses other than agricultural purposes.

Summary.—A review of cases of death due to poisoning by orthophosphoric compounds is presented. A brief survey of the literature concerning the Chemistry and toxicology of the drug is given. The proper treatment of these cases is outlined. The importance of laboratory examination for CHE activity of the blood in these cases is stressed. The availability of a proper histopathological method for the demonstration of the CHE activity in cadavers is discussed.

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Premature beats appearing from several chambers or from several areas within the same chamber indicate wide-spread myocardial irritability.—*(C.M.D.)*.

THE AETIOLOGY AND THE SOCIO-PSYCHOLOGICAL ASPECTS OF VENEREAL DISEASE IN INDIA*

(With special reference to its control)

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THE magnitude of the problem of venereal diseases in our country has not been so far ascertained with any degree of accuracy, but there are circumstantial and other rational reasons to believe that its incidence is really high and that it is also on the increase. A statement contained in the classical Bhore Committee's report, as having emanated from Sir John Megaw, a former Surgeon-General with the Government of Madras, gave the incidence of serologic syphilis in the entire population of India as 3·8%. This figure was later confirmed by the Serologist to the Government of India in one of his reports that followed the Bhore Committee's report.

The incidence in the Madras State can be estimated with some degree of precision on the basis of the results obtained in several special studies made during recent years, as for example, the collaborative study by the Superintendent of the Government Ophthalmic Hospital at Egmore and the Director of the Institute of Venereology, assisted by a team of research workers under the auspices of the Madras State Research Committee. This study of more than 6,000 ophthalmic patients over a period of 3 years revealed that approximately 16% of them gave some indications in evidence of serologic syphilis.

Another study of over 2,000 patients in the Government Mental Hospital by its Superintendent in collaboration with me, showed that 10% of the psychiatric patients screened during the study, showed evidence of serological syphilis.

The really valuable and most formidable clue to the correct incidence of insidious syphilis present in a veiled form in many cases, was obtained during a routine serological survey of numerous ante-natal patients attending the Government Hospital for Women and Children at Egmore, Madras, the Madras Corporation Maternity and Child Health Clinics in Madras City and also the Municipal Ante-natal Clinic in Madurai City. It was indeed a startling revelation when it was found that on an average about 5 per cent of the *enceinte* women examined at any time during the survey in every area, harboured the disease.

With these reliable statistical data before us, we are absolutely justified in sounding a note of alarm, with a view to

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Specially contributed to the ANTISEPTIC.

focusing public opinion and expert attention on the problem and in requesting the Social and Moral Hygiene and Welfare Association to leave no stone unturned in eradicating the sources of this menacing social evil.

Aetiology:—The five aetiological agents that are responsible for the five chief venereal diseases, *viz.*, Syphilis, Gonorrhœa, Chancroids, Granuloma venereum and Lymphogranuloma venereum, are respectively:—The *Treponema pallidum, Neisseriae gonorrhœae, Haemophilus ducreyii, Donovania granulomatis* and *Miyagawanella lymphogranulomatis.*

It may be safely stated without fear of contradiction that a systematic and close study of the microbiology of these organisms has not been made so far in our country; thus we have yet to find a suitable culture medium in improvement on Nelson's, that can confidently be used to cultivate the virulent *Treponema pallidum* under laboratory conditions obtaining in our country. We have yet to set up the Treponema pallidum Immobilization Test for syphilis in our country for conducting immunological studies such as have been and are being made in the advanced countries of the Western Hemisphere with considerable advantage.

The *Neisseriae gonorrhoeae* have to be grown in culture for diagnostic and immunological studies, especially now when we have to face the global problem of non-gonococcal discharges from the genito-urinary tract, which offer a challenge to clinicians all over the world. The grades of sensitivity of the gonococci to various antibiotics can be determined only if pure and authentic cultures of the organisms can be obtained in the laboratory. The correct dose of antibiotic for effective use against neisserian infection can only then be determined with sufficient accuracy and hope of certain cure. Already we hear reports from some European countries of many of these cocci developing resistance to certain antibiotics.

Chancroids require microbiologic investigations for accurate diagnosis and appropriate treatment. Smear examinations alone will afford only presumptive evidence; cultures of the offending organisms followed by cuti tests for confirmation, cannot be made now in India for lack of facilities; further the isolation of this ætiologic agent is indeed a difficult procedure and requires great skill and perseverance in the microbiologist.

Donovania granulomatis, discovered by Col. Donovan, in 1905 in the Havelock Ward of the Madras Government General Hospital, still remains an enigma to the bacteriologist; it has to be cultivated before latency of the disease in the human subject can be discovered by using an antigen prepared from the culture; this has been achieved elsewhere but here it is another problem for us needing solution from the practical point of view.

Finally, I wish to point out that venereologists today are all agreed on the fact that there is an unseen hidden reservoir in women, who harbour *Lymphogranuloma venereum* without exhibiting any outward signs or symptoms of the malady. As these women constitute a potential menace to the entire community in which they live and move, it is most important that this infective reservoir should be promptly detected and effectively sealed and closed to prospective users. The demonstration of the ætiologic agent in this disease in suitably stained smears is a difficult matter but will be necessary to bring home to the public the menace it forebodes. Tissue-cultures are more difficult and animal inoculation for final confirmation is the most difficult of all procedures. In the absence of direct evidence, indirect proofs of the existence of the viral infection can be adduced only by the cuti test and by complement fixation, for both of which viral antigen is essential. This is not available to us here in India even today. Biochemical abnormalities, quantitative or qualitative, in the proteins of the blood serum, and the specific histopathological changes in the anatomical structure of the affected parts of the body provide only presumptive clues to diagnosis; but these changes are liable to occur in several other diseases.

So long as venereal diseases are not declared by the States Governments to be notifiable under the Public Health Act; so long as prostitution continues to be rampant in one form or another in spite of the penal provisions in the Suppression of Immoral Traffic Act (1956); so long as promiscuous intercourse continues to be practised without fear of punishment and remains a problem not easy of resolution; so long as there is not that volume of public opinion in the matter of venereal disease control, which is found to be a deterrent to some extent in England and America; so long as the spread of education and consequent literacy amongst our people do not reach a sufficiently high level, to offer an effective measure of check against charlatanism and quackery in medical practice and so long as prophylaxis against the disease continues to be absent or neglected to a large extent amongst the civilian population in our country, venereal diseases will continue to thrive and thrive exceedingly well especially under the prevailing socio-economic conditions of our population which is mainly agricultural, and which is, exposed to the ravages of floods, earthquakes, and poverty and ignorance of hygienic living.

Concerted action by all concerned will alone be able to achieve a tangible measure of success in the fight against the spread of venereal diseases.

At the Conference of Experts held in Simla in April 1961 sponsored by the Union Health Ministry, certain important decisions were reached, chief among them were:—that top

priority should be given to the immediate establishment of an adequate number of V. D. Clinics throughout the country, equipped with up-to-date laboratories and facilities for carrying out all modern techniques and tests. Three hundred of such clinics were to form the initial start and they should be well-manned by the best and most up-to-date trained personnel, which must consist of specialists, serologists, technicians, nurses, social workers and other ancillary staff. Emphasis was placed on the need for providing minimum essential equipment to run the existing sero-bacteriological laboratories and clinics. A Central Stores to serve all of them with ample laboratory material and replacements as and when needed will have to be established at once.

The three most valuable and essential drugs used in treating V. D. *namely*, P.A.M., Streptomycin sulphate and the sulphonamides of the proper quality and standard should be made unfailingly available from a central depot to all the clinics in the country all through the year. The need for intensive educational propaganda about the evils and dangers of contracting V. D. was also stressed at this conference and I have no doubt that this is a really vital point in V. D. control; also prophylaxis, effective checks on promiscuity and the liquidation of prostitution should be diligently applied with great vigour and persistence. Post-graduate education with all facilities for conferring a Doctorate in V. D. should be organized in selected centres where teaching hospitals exist.

In the Madras State, periodic inspections of V.D. clinics started some time ago have been of commendable utility in the detection and treatment of patients attending the clinics—who are fairly numerous.

With regard to the social aspect, there is one very important point that has always been uppermost in my mind, and which, I am sure, will be in yours also, which has some relation to the ever-growing population in India consequent on the absence of a healthy moral restraint in mating, amongst our young men and women. Also when the woman becomes pregnant—which is fairly often—she leaves the husband alone for a few months when she goes to her parents for confinement. It is then, that the modern young man highly sexed and given to promiscuous unrestrained intercourse with the wife, seeks other sources, and catches the infection, only to pass it on to the wife when she returns with the baby. This is a potent means of spread. Education by means of special courses to young men on the danger of such extra-marital affairs will greatly help in minimizing this evil and the Moral and Social Hygiene Council of India and its branches will be, to my mind, the ideal agency for this much needed reform of the young husbands who should be continually kept warned of the grave risks they run by their indiscretion.

Finally and in passing I would refer to the psychological aspect of venereal disease; functional psychological abnormalities often predispose to the acquisition—if I may call it so and in no flattering sense—of venereal diseases, which in their turn predispose young men and women to the acquiring of organic abnormalities. A vicious cycle is thus set up, and both have to be overcome if either of the two is to be destroyed. I would reiterate here that preventing organic psychiatric abnormalities is much easier than trying to cure such of those as result from contracting venereal diseases. So it is again a case of "prevention is better than cure."

STUDIES OF GASTROINTESTINAL BLEEDING CAUSED BY CORTICOSTEROIDS, SALICYLATES, AND OTHER ANALGESICS

Fæcal loss of blood during oral administration of corticosteroids, salicylates, and other analgesics was detected and measured in 13 normal subjects, in 61 patients with rheumatoid arthritis, and in 22 patients with different diseases. The daily dosage was 2 to 6 gm. of salicylate preparations, 5 to 20 mg. of prednisolone, and 200 to 400 mg of phenylbutazone. Of 74 patients receiving aspirin, 52 lost an average of 4 to 9 ml. of blood a day; taking aspirin after meals did not necessarily diminish bleeding, but enteric-coated tablets did. Of 44 patients receiving corticosteroids, bleeding was observed in one who had previously received aspirin therapy and in another in whom peptic ulcer was found *post mortem*. Corticosteroid and aspirin combination did not produce greater bleeding than aspirin alone. Two of 22 patients receiving phenylbutazone and none of those receiving chloroquin had fæcal loss of blood. Iron deficiency anæmia found in 6 patients was attributed mainly to aspirin consumption. The mechanism of salicylate-bleeding may involve both direct action of acetic and salicylic acids on the mucosa and the hypoprothrombinæmia which follows large doses. It is suggested that the effect of corticosteroids is a "central" hormone effect, which does not produce frequent minor bleeding, but tends to form peptic ulcers vulnerable to hæmorrhage or perforation.—(J.T. Scott, *et al*, *Quart. J. Med.*, Vol. *30*: 167, April, 1961).

EFFECT OF RAUVOLFIA ALKALOIDS BY INTRAVENOUS ROUTE IN CORONARY INSUFFICIENCY

Ten patients with coronary insufficiency, anginal syndrome, and electrocardiographic alterations, were treated with intravenous injections of selected Rauvolfia alkaloids. The treatment consisted of one daily injection of 1 mg. of Rauvolfia during 10 to 12 days, except in 2 patients who received 0·5 mg. intravenously and 0·5 mg. orally. The anginal manifestations began to improve at the 6th injection and disappeared at the 36th. Nine patients showed favourable electrocardiographic changes, with better repolarization and positive T wave. Hypertension was lowered and there was evidence that the Rauvolfia alkaloids reinforced the effect of coronary vasodilators. Tolerance was perfect. The dose of 1 mg. proved to be more effective than the combination of 0·5 mg. intravenously and 0·5 mg. orally. It is recommended that the series of 12 to 20 injections be repeated every month or every other month, alternating with oral administration of the same drug.—(G. Galante, *Semana Med.*, Vol. *68*: 1530, June 15, 1961, via *J.A.M.A.*, *177*: 13).

TREATMENT OF SYSTEMIC LUPUS ERYTHEMATOSUS WITH STEROIDS

(Report to the Medical Research Council by the Collagen Diseases and Hypersensitivity Panel): The general conclusion of authors who have reported the results of treating many patients with systemic lupus erythematosus (S.L.E.) by steroid hormones and also of those who have described smaller groups or single cases is that these drugs have a beneficial suppressive effect on the disease. Improvement, however, is variable and unpredictable, and the incidence of dangerous complications is high, particularly in patients requiring large doses of prolonged treatment.

The uniformly bad prognosis of S.L.E. treated by other methods and the earlier reports on the value of steroids made a controlled trial ethically impossible, however desirable for scientific reasons.

The present study was designed to follow the progress of patients with S.L.E. treated with adequate doses of steroids. Patients, accepted into the series on satisfying specified diagnostic criteria, were drawn from teaching and non-teaching hospitals and from special units for the treatment of rheumatic diseases. Their progress was reported at three-monthly intervals on a standard form. In addition, a clinical summary covering the period was requested. Further information required when the results were obtained where necessary from a perusal of the original hospital case notes.

The results of treatment with steroid hormones cortisone or and to A.C.T.H. of 107 patients suffering from systemic lupus erythematosus over a minimum period of two years are described and compared with those reported by other authors.

The majority of symptoms are rapidly, though not permanently relieved, but the effect on the mortality rate is uncertain in the absence of a control group. There is no doubt, however, that in individual patients the drugs are temporarily life-saving.

The incidence of side-effects was felt to be remarkably low, and it is suggested that larger doses of steroid than those administered to this group of patients may be given for a longer time in patients not responding to treatment. There appeared to be no therapeutic advantages in using any one form of steroid hormone, but electrolytic disturbances will be less of a problem if the delta analogues are used.

The E.S.R. has not been found to reflect accurately the clinical state of the patient, and it is regarded as unwise to insist on maintaining a normal sedimentation rate using larger doses than are needed to keep the patient symptom-free.

At the present time, in the absence of a superior therapeutic agent, it seems imperative that patients ill with systemic lupus erythematosus should be treated vigorously with steroid hormones.–(*B.M.J.*, 7-10-1961).

GRAFT FROM EAR TO TRACHEA

In a paper read before the Fourth International Medical and Surgical Congress held at Turin in June 61, V. Consiglio and V. Caputo reported on the successful repair of partial loss of the wall of the trachea using cartilage taken from the patient's ear. The tissue of the donor site was considered to be particularly suitable for the purpose, being similar to that which it was to replace-plastic yet firm, and 'biologically suitable.' The only complication was the occurrence of emphysema which was 'easily controlled' within forty-eight hours and which was attributed to a 'slight imperfection' in joining the edge of the graft to the trachea. —(*Minerva Medica*, via *Practitioner*, October, 1961).

TREATMENT OF DIABETES MELLITUS*

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THE patient should preferably be admitted into a hospital for certain essential investigations, and for ascertaining his insulin requirement. Where this is not possible, he should attend a well-equipped diabetic clinic. The estimation of fasting blood-sugar level and daily examinations of urine preferably the morning sample, sample after lunch and the evening sample after dinner should be made carefully. In borderline cases several mild diabetics may remain undiagnosed for many years. In such cases, a post-brandial blood-sugar situation and, glucose-tolerance or cortisone-glucose-tolerance tests should be performed. The glucose-tolerance and the cortisone-glucose-tolerance tests should be performed. A skiagram of the chest should be taken in order to exclude pulmonary tuberculosis which is not an uncommon association. And any other infection present should also be suitably dealt with. The patient should be made to realize the importance of diet, exercise, insulin and other medications.

A. Dietetic treatment.—The first thing to be attended to in any type of diabetes, without immediate complications, is the regulation of the patient's diet. When seen for the first time, it is very difficult to decide at once if the diabetic would need insulin and if so, how much. This decision is best taken only after a period on diet of known carbohydrate and caloric composition. The total daily caloric requirement is calculated on the basis of the normal-weight for the particular age, sex, height etc.; 25 calories per kg. of body-weight are permitted as the basal requirement; protein is given at 1 g. per kg. of body-weight. The remaining calories are divided between carbohydrates and fat preferably in the ratio 2 : 1 or 1·5 : 1. The carbohydrate-intake must be restricted, in order to control the glycosuria but the restriction should not be so severe as to force the body to metabolize fat excessively and thereby develop ketosis.

Examples:—An adult with a body-weight of 60 kg. will require 25 x 60 or 1500 calories a day. He will thus obtain 60 g. of protein to provide 240 calories. The remaining 1260 calories will be divided between carbohydrate and fat in the proportion mentioned above. So carbohydrate 148 g. and fat 74 g. will be distributed in his diet. The calories will be uniformly distributed in 4 or more meals in the day.

B. Insulin.—An effective replacement therapy is imperative in those diabetics whose resources for the production of endo-

*Specially contributed to the ANTISEPTIC.

genous insulin are inadequate to maintain reasonable tissue glucose-thresholds when they are dieting or after an overnight fast. So insulin as a substitution therapy is particularly indicated in (*i*) juvenile diabetes; (*ii*) severe diabetes with marked hyperglycæmia and glycosuria; (*iii*) diabetic coma; (*iv*) elderly diet-controlled patients during intercurrent infections, illness, injuries, or operations and in pregnancy; (*v*) when dietetic treatment fails. Under-weight patients must be given insulin, since a diet of low caloric-value would lead to further loss of weight.

The aim of treatment should be:—(*i*) to keep the urine as free from sugar as possible; (*ii*) to enable the patient to live as normal a life as possible without any symptoms or complications of diabetes, and continue his normal routine avocations.

The treatment should start with: (1) soluble insulin or (2) one of the slow-acting insulins.

1. *Soluble insulin* is particularly indicated in severe diabetes, in diabetic coma, during infection, before and after operation, in the later months of pregnancy and in patients with active pulmonary tuberculosis and for the few patients who are difficult to control on a single dose of any slow-acting insulin and also for those requiring very large doses.

Soluble insulin is available in doses of 20, 40, 80 units per cc. When injected subcutaneously the action starts within half an hour and exerts its maximum effect in three to four hours and lasts for six to eight hours. A patient stabilized on soluble insulin usually needs at least two injections given half an hour before each principal meal of the day. In a typical case of moderate severity the dose necessary is 20 to 40 units per day given in two divided doses. Its main disadvantage is the need for a repetition of the injection in 24 hours as the effect of soluble insulin passes off quickly. In unsuitable doses hypoglycæmia may result quickly. When given by the intravenous route, action starts immediately and lasts for two to three hours; it is extremely urgent when a patient shows persistent acetonuria with marked glycosuria and hypoglycæmia in the presence of impending diabetic acidosis or coma with clinical manifestations of polyuria, polydypsia, dehydration and laboured breathing with the smell of acetone and clouded consciousness; the patient should immediately be hospitalized to get the benefit of laboratory facilities in order to ensure adequate replacement of lost water and electrolytes and also to control the blood-sugar. A heroic dose of soluble insulin must be given, as a patient in diabetic coma is extremely resistant to insulin and may require even 500 units of the drug during the first 24 hours. Insulin therapy should be started immediately with 100 units of soluble insulin subcutaneously and in severe case half of this dose may also be injected intravenously. If consciousness does not return in 3 hours, the same dose must be repeated. Thereafter, smaller doses at longer intervals should be given according to needs. The whole regime should be controlled by examination of urine every 3 hours and also blood-sugar estimations, if possible.

Water and electrolytic imbalance should be countered by normal saline (two pints) administered by intravenous drip during the first 3 hours. When the dehydration persists, more fluid should be given.

Gastric lavage and penicillin medication when required, will control or prevent complications.

Diet:—Small feeds of milk and glucose every 3 to 4 hours with fluids in between may be prescribed under cover of insulin-therapy. After 24 to 72 hours, the regular diabetic diet with insulin injections as required may be given at regular intervals.

In a typical case of moderate severity after the patient has been stabilized on soluble insulin, the question of giving zinc-protamine insulin will arise. The procedure should be to give him his morning dose of soluble insulin and in the evening 2/3rd of the dose as zinc-protamine insulin. The urine must be examined both in the morning and in the evening for sugar. If the evening specimen shows the presence of sugar, the soluble insulin dose is increased and if the next morning's specimen contains sugar the zinc-protamine insulin is increased. When soluble insulin can be mixed with the zinc-protamine insulin in suitable proportion to control diabetics on a single daily dose in the morning, it is better to avoid two injections separately in the morning and the evening. Sometimes it may be possible to control sugar even by one daily injection of zinc-protamine insulin or one of the slow-acting insulins.

2. *Slow-acting or depot insulins* include: (*a*) Zinc-protamine insulin (Z.P.I.) available in strengths of 40 and 80 units per cc. is a suspension of insulin prepared by adding zinc and protamine to the ordinary insulin. It must be well-shaken before use. It is slowly liberated and absorbed from the site of injection; its action begins 3 to 4 hours after subcutaneous injection. It is not suitable in emergencies through its effect lasts for 12 to 24 hours or more depending on the dose. Thus, one daily injection given in the morning may be adequate for keeping most cases under control.

Some patients with diabetes of moderate severity are satisfactorily controlled on a single dose of 20 to 40 units of zinc-protamine insulin injected before breakfast. Others require a mixture of zinc-protamine insulin and soluble insulin.

Inspite of its prolonged action, zinc-protamine insulin is not always capable of keeping the blood-sugar within reasonable

limits throughout the 24 hours. Excessive glycosuria is likely to occur in the forenoon before the morning injection has exerted its full effect, consequently a supporting dose of soluble insulin may be needed in the morning. The usual method is to start with zinc-protamine insulin and increase the dose until the morning specimen contains only a small amount of sugar but if the urine passed in morning or early in the afternoon contains a large amount of sugar, soluble insulin is added to the morning injection. During mixing, transferring of zinc-protamine insulin to the bottle of soluble insulin should be avoided. By varying the proportion of zinc-protamine insulin and soluble insulin it is possible to control many diabetics on a single dose in the morning but the great disadvantage of this regime is the danger of hypoglycæmia at night. Carbohydrates in the diet should be distributed proportionately. A single dose of insulin zinc-suspension (Lente) or a mixture of insulin zinc suspension has practically now replaced the mixture of zinc-protamine insulin and soluble insulin in most cases. The Lente-insulins are more advantageous in that they do not cause hypersensitive reactions and they can be mixed in suitable proportions to suit individual requirements.

Insulin-zinc-suspensions were first introduced in 1953. The slow release of these insulins from tissues is largely due to the size of the insulin particles suspended in the acetate-buffer without adding any protein or protamine. The length of action varies with the size and shape of the insulin particles.

Three preparations are available:—(*a*) Insulin-zinc suspension (*amorphous*) or "*Semilente*" available in a strength of 40 units per cc. consists solely of tiny amorphous particles of pure zinc insulin. Its effect does not last for more than about 16 hours and is roughly comparable with that of globin insulin and slightly shorter than that of zinc-protamine insulin. (*b*) Insulin-zinc-suspension (*Crystalline*) or "*Ultralente*" available in a strength of 40 units per cc. This is a suspension of crystalline material of pure zinc insulin without any added amorphous particles. Its effect is prolonged and lasts for 30 hours and more. (*c*) Insulin-zinc-suspension (*amorphous* + *crystalline*) or "*Lente*" available in strengths of 40 and 80 units per cc. is a mixture of three parts of amorphous with 7 parts of crystalline material of pure zinc insulin. Its effect lasts approximately for 24 hours.

Mixtures in any desired proportions can be made up from amorphous and crystalline preparations and will remain stable at ordinary temperature. It appears that the effect of "*Lente*" is similar to that of a mixture of zinc protamine insulin and soluble insulin except that hypoglycæmic reactions appear to be less common. The action of insulin zinc suspension "*Lente*" can be lengthened by adding insulin zinc-suspension (crystalline) "*ultralente*" or shortened by adding insulin zinc suspension (amorphous) "*semilente*" or a mixture of any proportion of insulin zinc suspension crystalline and insulin zinc suspension amorphous can be made up to suit individual patients and this is the great advantage over other slow-acting insulins. Insulin zinc suspension cannot be mixed with zinc-protamine insulin or globin insulin. It is the usual practice while using *Lente* insulin if sugar appears in the after-lunch specimen urine, to add more *semilente* to the dose; if the late dinner or early morning specimen contains sugar, more *ultralente* should be added to make the mixture.

C. Oral hypoglycaemic agents.—Since the discovery of insulin as an effective physiological substitution therapy in the treatment of diabetes mellitus, there has been a great demand for oral hypoglycæmic drugs which may save the patient (*a*) the unpleasantness and fear of pain in taking the one or more injections a day necessary for the while of his life, and (*b*) the necessity of having to calculate the dose of insulin accurately. Insulin itself is out of the question for this purpose since its protein nature makes it unsuitable for oral administration. The protein, if taken by mouth, is degraded to such an extent that its specific action on the blood-sugar level is destroyed.

Among various oral hypoglycæmic agents in the market:—*Sulphonylurea compounds*—carbutamide (Invenol—Hœchst; Nadisan—Neo-Pharma), tolbutamide (Rastinon—Hœchst; Artosin—Neo-Pharma), chlorpropamide (Diabinese—Pfizer), and more recently Metahexamide may be mentioned:—

Their mode of action:—Sulphonylureas act only in the presence of a sufficient number of functioning beta-cells of islets. To act as hypoglycæmic agents they must stimulate the endogenous production of insulin and a consequent glucose uptake and utilization by the peripheral tissues.

TABLE I

Showing particulars of the various sulphonylureas

Sulphonylureas	Initial daily dose	Maintenance daily dose	Tolerance	Complications
Tolbutamide	3 g. (0·5 g. each tab.) in 3 divided doses	1-1·5 gm. in 2 divided doses	Good	Nil
Chlorpropamide	0·5 g. (each 100 mg., 250 mg. tab.) in single dose	0·2-0·25 g. in single dose	,,	Skin sensitivity, jaundice
Carbutamide	3 g. (0·5 g. each tab.) in single dose	1-1·5 g. in single dose	,,	Skin sensitivity agranulocytosis hepatotoxic
Metahexamide	0·3 g. in single dose	0·05-0·1 g. in single dose	,,	Jaundice

So sulphonylurea compounds may be used successfully in elderly patients, preferably over the age of 40 suffering from diabetes for a period not exceeding 5 years and needing less than 30 units of insulin a day. The idea behind the second principle is that after prolonged hyperglycæmia the islets become exhausted. Tolbutamide and chlorpropamide are the well-tolerated and most widely used sulphonylureas. Carbutamide and metahexamide produce toxic effects and so have only a restricted use. (*vide* Table I, p. 47).

Mode of action.—Guanides (Table II) act by increasing anaerobic glycolysis; so they are active in the absence of endogenous insulin and have been used with success to juvenile diabetics but they are not well-tolerated and a few patients treated with phenformin complain of nausea, vomiting, diarrhœa. Acetonuria in the absence of hyperglycæmia may be observed in a few patients on phenformin which may lead to serious complications unless the drug is immediately stopped. More recently, Metformin has been found to be effective as large single doses of phenformin are daily required; this is however, less likely to upset the gastrointestinal tract.

TABLE II

Giving particulars of the Guanides

Guanides	Initial daily doses	Maintenance daily doses	Tolerance	Complications
Phenformin	0·05 g. (each 25 mg. tab.) in 2 divided doses	0·1 to 0 15 g. in 2 divided doses	Not well tolerated	Nil
Metformin	1 gm. in single dose	1-3 g. in single dose	,,	Nil

Summary.—The principles underlying the diagnosis and treatment of diabetes mellitus, by suitable dieting, exercises and insulin therapy are dealt with at length for the benefit of brother practitioners.

LEISHMANIASIS

In the Institute Oswaldo Cruz, Rio de Janeiro, Dr. J. L. Miranda and co-workers observed the effect of *Amphotericin B in 7* patients with American leishmaniasis. The active lesions were mucosal in 3 patients, mucocutaneous in 3, and cutaneous in 1. The duration of the disease varied from 5 months to 28 years. *Amphotericin B was given by intravenous* infusions, every other day, in dosages varying from 0·9 to 1·2 mg. per kilogram of body-weight daily. *In all the patients the lesions were healed.* The antibiotic caused side-effects of varying intensity, in all the patients, especially at the beginning of the treatment. These included anæmia, leukopænia, increase in blood urea nitrogen level, and cylindruria. All these complications were transitory. Relapse occurred in only one patient.—(*J.A.M.A.*, *177*: 11, 1961).

CARDIO-PULMONARY COMPLICATIONS IN THORACIC SCOLIOSIS*

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IT has long been recognized that thoracic deformities predispose to the development of hypoxia and respiratory insufficiency and finally cor pulmonale, but the mechanisms by which these are brought about, have not been yet fully explored.

Gray (1956) after studying 22 patients concluded that the pulmonary dysfunction in this condition was similar to emphysema. Schaub, *et al* (1954) investigated 16 patients and reported that the main factor was hypoventilation of the lungs. Fishman *et al* (1956) and Hanley *et al* (1958) were of opinion that thoracic deformities in under-ventilated lungs are due to restriction of chest-bellows. Bales *et al* (1956) suggested that the primary cause of hypoxia is uneven distribution of blood and air in the lungs. Shaw and Read (1960) in a study of 14 patients with severe scoliotic deformities, conducted pulmonary-function-tests and arterial-blood-gas-analysis and concluded that in all cases arterial oxygen saturation was lower than expected from alveolar hypoventilation alone. Patients both with and without a history of bronchitis showed abnormalities of distribution of gas and blood-flow, and ventilation: perfusion ratio throughout the lungs. Gross kyphoscoliosis accounts for 1·5% of cases of cor pulmonale (Wood, 1956) and 5% of chronic pulmonary heart disease (Wood, 1950). Fischer and Dolehide (1954) found 11 cases of cardiac failure due to chest deformities in 30,729 necropsies (0·036%) of kyphoscoliosis. Flint (1954) found 1 case of kyphoscoliotic cor pulmonale in 76 cases of cor pulmonale. Cor pulmonale has been reported as a sequel of thoracoplasty (Bruce, 1945).

Material and methods.—Ten cases of thoracic deformity associated with emphysema were studied between 1954 and 1956 in three British General Hospitals. Two of them had cor pulmonale in association with severe kyphoscoliosis. During this period 200 cases of cor pulmonale without kyphoscoliosis in association with emphysema were observed. One of the two cases of kyphoscoliotic cor pulmonale had clinical evidence of recent extensive posterior cardiac infarction and the other had tricuspid incompetence with recurrent ascites.

Eight cases of severe kyphoscoliosis had emphysema and a history of winter bronchitis without any evidence of congestive heart failure. All had cough and dyspnœa on exertion and

*Specially contributed to the ANTISEPTIC.

exacerbation of symptoms in winter months. There were no other evidences of cardiopulmonary disease, on clinical radiological and electrocardiographic investigations. Also they had no evidence of anæmia.

The ages of these patients varied from 30 to 50; 6 were males and 4 females; polio in two and osteoporosis in one. They were examined clinically and investigated also radiologically and electro-cardiographically. Routine blood-examinations were done but blood-gas analysis and pulmonary-function tests were not carried out.

Discussion.—Severe chest deformities lead to displacement of the heart, compression of the part of the lungs and restrictive chest expansion. Respiratory movements are usually abdominal due to deformity of the bony cage, and thus æration of the lungs is limited and inadequate, leading to reduced vital capacity. In winter months pulmonary infection is easily established.

Mechanism of pulmonary-insufficiency.—Compression of the lungs by a deformed chest, leads to patchy collapse and fibrosis of the lung parenchyma, a reduction of the vascular bed and compensatory emphysema of the unaffected lung-segments.

Chapman *et al* (1939) who investigated pulmonary function in such cases found that there was absolute reduction of lung-volume. Circulation time, cardiac output and venous pressure were normal in the absence of congestive cardiac-failure. Shaw and Read (1960) found that three types of disturbances of pulmonary functions other than hypoventilation, might be responsible for hypoxia in scoliotic patients:—defects in the diffusion of oxygen across the alveolar membrane; shunting of blood through non-ærated lung segments, and an uneven distribution of gas and blood throughout the lungs. The ability of oxygen to diffuse from the alveoli into the pulmonary capillaries, as usually inferred from studies on the behaviour of carbon monoxide. Kjerulf-Jensen and Kruhffer (1954) found that the diffusing capacity for C^{14} labelled carbon-monoxide was abnormally low in a patient with gross reduction of total lung capacity (TLC) due to kyphoscoliosis.

Necropsy reports on such patients with thoracic spinal deformities often stress the occurrence of collapsed and underdeveloped segments of the lung (Kerwin, 1942; Fischer and Dolehide, 1954) and it is suggested that these might allow unoxygenated blood to pass to the left side of the heart. Shaw and Read (1960) investigated 14 patients and found that oxygen-saturation in the blood was lower than would be expected by hypoventilation alone. The maximum breathing capacity was reduced in all cases. They concluded that scoliosis of the dorsal spine may be associated with abnormalities of ventilation: perfusion

ratio throughout the lungs even in the absence of bronchitis. This disturbance in addition to hypoventilation, predisposes the scoliotic patients to hypoxia.

Cor pulmonale in scoliosis.—Failure of the right ventricle is produced in patients with scoliosis after 10 to 20 years of bronchitis which is the end-result of long-standing kyphoscoliotic pulmonary disease. In an exhaustive study of kyphoscoliosis, Bachman, 1899 observed that of 154 carefully examined hearts, 56 per cent revealed dilation and hypertrophy of the right ventricle, 26 per cent of both ventricles and 17 per cent of the left ventricle.

Left ventricular hypertrophy without any obvious cause has also been observed in 2 cases on necropsy (Fischer and Dolehide, 1954). Left ventricular hypertrophy as detected radiologically and electro-cardiographically has, also, been seen in other cases of emphysema and chronic bronchitis *without* scoliosis, in which other causes of left ventricular hypertrophy were excluded. It might be due to previous hypertension in some cases (Kountz *et al*, 1936). Possibly anoxia may, also, play a contributory part. Gull and Sutton (1872) suggested that there is a frequency of granular contracted kidneys in pulmonary emphysema and there is a high incidence of hypertension which might be due to ischæmic kidneys consequent to arterial anoxia.

Mechanism of cor pulmonale.—In kyphoscoliosis development of the chest is stunted, the chest cavity is shortened, the diaphragm is elevated, the volumes of the chest and lungs are diminished. The lung on the side of the deformity is greatly compressed leading to patchy collapse and eventual fibrosis and compensatory emphysema in the unaffected lung segments. Increased pulmonary vascular resistance is produced due to a diminution of the pulmonary vascular bed, kinking of pulmonary vessels and loss of respiratory aid to circulation, because of an impaired movement of the diaphragm and chest-wall with eventual hypoxia. Pulmonary hypertension will eventually lead to cor pulmonale.

Clinical features:—Patients with kyphoscoliosis are subject to episodes of dyspnœa, asthma, cough, palpitation, arrhythmia, and syncopal attacks. Two patients who presented with cor pulmonale used to get supra-ventricular tachycardia.

Dyspnœa is produced as a result of a deficiency in pulmonary ventilation. The vital capacity is diminished and residual air is increased. All the patients presented had dyspnœa on exertion. Arterial anoxia produces cyanosis, polycythæmia, dizzy attacks, fainting, syncope due to cerebral anoxia. Chapman *et al* (1939) drew attention to a special form of syncopal

attack, not seen in other cases of cor pulmonale, possibly due to a sudden lowering of the right auricular pressure, consequent on inferior venacaval compression in certain postures. Two patients used to complain of such attacks, off and on.

Two patients in the present series had papillœdema in association with cor pulmonale, due to retention of carbon-dioxide and such patients may become drowsy due to the retention of carbon-dioxide and venous congestion of the brain. One of the patients who presented with cor pulmonale had cardiac infarction and congestive heart-failure.

Cardiac signs are difficult to evaluate due to chest deformity, displacement of the heart, and emphysema. The apex-beat may be impalpable, heart sounds are faint and it is difficult to assess the level of the jugular veins due to dyspnœa and the action of accessory muscles in the neck.

The diagnosis of kyphoscoliotic cor pulmonale is, usually, made by cyanosis, severe dyspnœa, gross spinal deformity, adventitious sounds in the chest, clubbing of fingers, parasternal pulsation due to large ventricle and protodiastolic triple rhythm, hepatic enlargement, ascites and œdema. One patient had ascites, hepatic enlargement in association with kyphoscoliotic cor pulmonale with tricuspid incompetence. The pulse is full and bounding with the warm extremities, if the patients were in "high output" phase.

Radiological examination.—They are mostly due to changes in the position of heart. In right kyphoscoliosis, A P.-view shows displacement of the heart to the left simulating enlargement. The pulmonary salient appears convex as in mitral stenosis. Rotation of the patient to the right, so to bring the spine in mid-line, causes cardiac silhouette to assume the normal appearance. The upper mediastinum-shadow appears enlarged and has been misinterpreted as aneurysm due to a displacement of aortic shadow from the spine and adds to the width of spinal shadow.

Treatment:—Kyphoscoliotic heart-failure is treated just like any other cor pulmonale by energetic chemotherapy, adequate air maintenance by detergent ærosols and bronchoscopic aspiration of the sticky secretion, antispasmodics, expectorants, digitalis and diuretics. Oxygen therapy is important but should be intermittent and not continuous in view of carbon-dioxide retention and consequent narcosis coma, neurological complications, respiratory failure and carbon-dioxide narcosis.

Morphia is fatal. All the patients in the series of Fischer and Dolehide died shortly after morphia administration. It is a good rule *not* to administer "morphia" at all but to administer only barbiturates with great care to patients with conspicuous

chest deformity, especially if they have cardiac or respiratory insufficiency. If "morphine" had been given its effects can be neutralised by Nalorphine, if administered *before* irreversible respiratory failure has occurred.

Summary.—1. Ten cases of kyphoscoliotic pulmonary heart-disease have been discussed. Two of them had cor pulmonale.

2. The relation of disturbances of pulmonary functions to scoliosis has been examined and the possible mechanisms of these disorders have been discussed.

3. The fatal results that may follow the use of morphine in patients with kyphoscoliotic cor pulmonale are stressed.

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EPINEPHRINE THERAPY: GLAUCOMA

The long-term effects of topical l-epinephrine were studied by application tonometry and tonography in 2 groups of patients with chronic open-angle glaucoma. In Group I, which was a retrospective study (72 patients, 121 eyes), 56% to 62% of eyes with established chronic simple glaucoma, after 6 to 24 months of topical epinephrine therapy, demonstrated 50% or more increase in facility of outflow. In Group II, the control study, 38 patients with early chronic open-angle glaucoma were treated in one eye with topical epinephrine twice daily for from 3 to 6 months and the opposite eye was used as a control. The epinephrine-treated eyes demonstrated mean increases in facility of 45% at 3 months and of 63% at 6 months which was statistically significant in both instances. The contralateral control eyes showed insignificant mean changes of —2% at 3 months and of + 6% at 6 months. Similar results were noted when the outflow defect was accentuated by a water-drinking provocative test. —(B. Becker, T. H. Pettit, and A. J. Gay, *Arch. Ophthal.*, Vol. *66*: 219, August, 1961, via *J.A.M.A.*).

MICROBIAL SENSITIVITY TESTS*

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THE present is the era of antibiotics and chemotherapeutics. It is well to take stock now of the development and progress achieved. The emergence of resistant strains and the frequency of toxic reactions arising from the misuse of antibiotics are really matters of moment to the specialist. But the inability to predict the outcome or the failure to obtain the desired results would properly be the concern of the general practitioner. This naturally raises the question of assessing the microbial sensitivity to chemotherapeutics and antibiotics before they are used in treatment. The sensitivity of microbes to antibiotics will be discussed in this paper :—

Firstly, the various species of bacteria differ widely in their susceptibility to different therapeutic agents; also different strains of the same species may show wide variations in their reaction to the drugs. Thus *Staphylococci* and *B. coli* are susceptible to different agents and again *Staphylococci* found in the hospital population offer considerably greater resistance than strains found elsewhere. *Secondly*, a judicious use of any drug demands that the susceptibility of the organisms to it be determined previously as it would result in economy in treatment, without being empirical. *Thirdly*, it will minimize the emergence of resistant strains after the administration of the drug and *finally*, with such control, the period of treatment to effect a cure is reduced as also the occurrence of untoward reactions. From the practical point of view, certain snags may have to be countered.

Thus (*i*) during an emergency, as in grave infections the results of microbial sensitivity cannot be awaited. Treatment must commence on clinical judgement alone, using any of the broad-spectrum antibiotics. Specimens taken early in the infection (before therapy is commenced would yield the desired information). Later on, the drug found most effective may be used instead. Such infections however, being few may be considered as exceptions to the rule ; (*ii*) the effective concentration reached in the fluids at the site of infection and also the lowest concentrations of the drug to which the organisms are susceptible must be determined. Such elaborate cross assessment will obviously be very expensive, and time-consuming in routine practice ; a quantitative estimation is therefore, indicated in cases which fail to respond to a known effective drug ; (*iii*) the tests available at present are done *in vitro*, and so their results

*Based on talk to the members of the Muzaffarnagar branch of the Ind. Med. Assoc. on 27-8-1960 by the author.

Specially contributed to the ARYABHATTA

may not be entirely applicable *in vivo*, the bacteria are grown in the laboratory under a handicap and come directly in contact with the antibiotics. In the human body however, the bacteria, flourishing under optimal conditions may have hide-outs and the drug may not act directly and promptly. This may lead to a wrong assessment that the drug, in general, will be more effective *in vitro*. Still, it is well to remember that the results *in vitro* are based on '*all or none*' phenomenon. We read the zone of inhibition in such tests. In the human body, on the other hand, even if the rate of multiplication is retarded, the defence mechanism would get an opportunity to deal with the infection. So the drug will be able to exert a better influence *in vivo* assisted by man's inherent defence mechanism.

The results of *in vitro* assessment, by methods in current use are therefore, not directly applicable to *in vivo* conditions but *in vitro* methods should continue till such time as more reliable methods giving reproducible results under natural conditions, become available.

The different methods available at present to assess microbial sensitivity are :—The material to be examined is sometimes plated directly on suitable media and the inhibition of growth in the presence of antibiotics is noted ; the effective drug is thereby ascertained without knowing, whether the infection is due to one or more organisms or what the precise nature of the offender is. This blind but rapid procedure, though helpful in an emergency, is unscientific and not therefore in common use. Usually the organisms are isolated from the site of infection, and the microbial sensitivity test, is carried out for each separate organism.

In principle, the offending organisms when isolated, are made to grow on a suitable medium in the presence of the drug. The failure to grow on the medium containing the antibiotic is known as the '*zone of inhibition.*' This indicates the susceptibility of the organisms. If the organisms grow in the presence of the drug, they are said to be insensitive or resistant to the drug under test.

Sensitivity is assessed on the basis of several important factors :—the age and the size of the inoculum ; the nature, depth and the *p*H of the media used for culture, the temperature and time allowed for incubation ; the area allocated for determining the action of the drug and, in cases where the solution or the discs prepared out of the drug are to be stored, the period for which they can be kept effective.

In order to obtain reproducible results, the methods are controlled in the laboratory as under :—

(1) *The inoculum* is usually from an 18-hour-old-culture of the organism in nutrient broth for cocci and in peptone water for

Into this gutter is poured nutrient agar medium (0·5 to 1%) containing a known amount of the antibiotic. Semisolid agar is poured so as to allow uniform setting in the gutter—flush with the adjoining surface.

Linear strokes of the organisms are made starting from the medium contained in the gutter, so as to ensure deposition of the organisms in the antibiotic-containing medium, and avoid the production of false zones of inhibition owing to non-inoculation. Later, the zones of inhibition are read off, which in turn depend upon the area of diffusion of the antibiotic into the surrounding medium. Partially resistant strains grow even over the medium contained in the gutter. To ensure the diffusion of the drug, at the top and bottom of the plate, a linear stroke is given of the known sensitive organisms.

This has the disadvantage of furnishing data of the relative sensitivity with regard to different strains or as compared with the standard. However, in laboratories with a regular output of atleast 6 to 8 organisms a day, it may be economical, because about eight organisms can be tested on a single plate containing a particular antibiotic.

Of the various methods described, the laboratory disc method is the most commonly used for routine use in the interest of the patients and of effecting economy. But from the practical side there are not many laboratories, in which the isolation of the organism is possible. Till such time as laboratories are better equipped for catering to all routine bacteriological needs, microbial sensitivity tests will remain in the specialist's domain. Facilities should therefore, be made available for the isolation of organisms by arranging for the distribution of suitable media from a central laboratory; and microbial sensitivity tests will then be possible with a similar supply of prepared discs.

DIABETES

Gelfand and Carr (*Cent. Afr. J. Med.*, *7*: 41, 1961) stated that most diabetic patients in Southern Rhodesia come from the groups who work in the European economy and whose diet has been altered to include more foods containing refined sugars and fats. There is also a group composed largely of elderly diabetics whose life appears to have been little affected by the introduction of new foods. An African diabetic appears to require more insulin for stabilization than the European diabetic, but this may be due to his lack of understanding of the necessity to follow a strict dietary regimen. Although the insulin requirements of the African appeared to be high, hypoglycemic coma developed if the requirements were exceeded. This symptoms of diabetes appear to be the same for the African and European, but complications showed certain differences, such as the infrequency of pulmonary tuberculosis, gangrene, and intercapillary glomerulosclerosis among the Africans.–(via *J.A.M.A.*, 30-9-1961).

bacilli; a loopful is smeared on the agar plate to yield a linear growth or else it may be swirled round the plate uniformly, the excess being thrown away. (2) *The media* should support the growth *e.g.* coliform organisms on MacConkey's agar and cocci on blood-agar; the depth of the agar in the plates should preferably be not less than 8 mm. The *p*H of the medium, is adjusted between 7·2 and 7·6 to be similar to what is found in human plasma. (3) *Incubation* is at ·37°C., for 24 hours for routine isolation of bacteria; but in the case of tubercle bacilli the incubation is for six weeks on Lowenstein-Jensen medium. (4) *The areas allotted* should be discrete so as not to produce zones of overlapping Linear streaks are made atleast a cm. apart and in discs or in the cup-method, they should be placed at an interval of at least 2 cm. from each other. This would permit the reading of the clear zones of inhibition without the modifying effects of the adjoining areas. (5) *Storage of the antibiotic solution or impregnated discs* is possible in a refrigerator at a temperature of 0° to 4°C. The period of potency varies with different antibiotics. Dried discs retain their activity in storage for 3 months after which a fresh batch may be prepared. Discs if contaminated or soiled as evidenced by the presence of the growth on and around the disc itself (usually uniform around such discs and different from the organisms tested) should be summarily rejected.

The methods used once the offending organism has been successfully isolated:—

(1) Tube-dilution method. (2) Disc and Heatley cup-methods and the (3) Gutter-plate method.

I. Tube dilution method.—Serial dilutions of the drug are made in a suitable fluid medium and a known amount of the inoculum is placed into each; the actual concentration of the drug which inhibits growth is determined; a similar procedure may be adopted for determining the antibiotic concentration in a particular fluid/exudate of the body. Two serial dilutions—one of the fluid in question and the other containing known amounts of the drug—are inoculated with the known susceptible organisms. The inhibition of growth is read as the end-point and calculations are made to determine the amount of drug in the fluid/exudate in relation to the standard series.

This method is more elaborate and expensive and provides for quantitative estimations to be made. It is not possible to use it as a routine in all investigations. However, in the event of failure with a known effective drug and in cases where an antibiotic assay is essential, this method is useful.

II. Discs or Heatley cup-method.—This method is based on the principle of diffusion of the drug into the media suitable for the growth of the organism. Filter-paper-discs, impregnated

with a known quantity of the drug, are placed on the surface of the media. Similarly, Heatley-cups, cylinders open at both ends made of porcelain or China-clay are heated and from a little height so as to get into burrows thereby formed in the media. A known amount of the drug is then poured into the cups. Of the two, the disc-method is the more commonly used as their storage will be easier.

They may be used in two different ways:–(*a*) in the centre of the plate the antibiotic (contained in the disc or the cup) is placed and radial streaks are then made of the organisms isolated. To obviate wrong interpretation from non-uniform diffusion, alternate radial streaks of the known susceptible ones are made between the test organisms. These would show uniform circular zones of inhibition. This *per se* is beset with the difficulty of giving the results relative to each other or to the standard. But from the point of view of treatment, the information required is the drug that is most effective against the strain isolated, the relative susceptibility of the organisms not being of much importance in the treatment proper.

Hence, most laboratories now inoculate plates containing the suitable media uniformly with the isolated strain and place on it the different antibiotic-discs. The results indicate the relative efficacy of the drugs against the isolated strain, the one showing the widest zone of inhibition being the most effective. The choice, however, will depend also on toxicity; of the two almost equally effective drugs the less toxic would naturally be the one to be selected for treatment.

The snags in interpreting the results are:—(*i*) non-inoculation at the site where the disc is placed. This often happens when the inoculations are made direct from a colony instead of from an 18 hour-broth culture; (*ii*) non-diffusion of the antibiotic is also possible, in which case, although the drug may be effective no zone of inhibition could be read, giving room for false negatives; (*iii*) during storage, sometimes: discs not properly handled, may get contaminated by resistant organisms on and around the discs. Such discs should be discarded.

The method is helpful in routine laboratory work as it gives us a qualitative idea of the sensitivity of the organism. Since the discs contain amounts less than the levels usually reached in different sites of the human body, the data obtained will help in planning proper treatment.

III. Gutter-plate method.—This again is based on the principle of diffusion with an added advantage *viz.*, the inoculum is made on a portion of the media which contains the antibiotic; with the help of a sterile scalpel, a gutter is made by scooping out material from the plate, containing the suitable medium.

Cases and Comments

A STUDY OF ENDEMIC BACILLARY DYSENTERY

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DYSENTERY, known and described since antiquity, has been one of the great scourges of mankind. It was however, only after 1875, when Loesch described the presence of parasitic amœbæ in the stools of patients suffering from dysentery and between 1898 and 1901, when Shiga, Flexner and Kruse produced evidence to show that another type of the disease was caused by bacilli resembling *Salm. typhi*, that two entirely unrelated conditions *viz.*, bacillary and amœbic dysentery, came to be clearly differentiated.

Dysentery being primarily an epidemic disease, most studies have been devoted to epidemic bacillary dysentery. Neglected for long, the endemic type has begun to attract attention only in the recent past and studies relating to various aspects of the disease have been made in various countries *e.g.* Denmark, U.S.A., Mexico, the United Kingdom and India (Wilson, G.S. and Miles, A.A.[3], 1955). In the present context of the rapidly decreasing incidence of epidemics, it is but right that endemic bacillary dysentery is coming to receive special attention as the most common manifestation of this infection.

An investigation was carried out by us to determine the relative frequency of the different species of dysentery bacilli occurring in sporadic cases in Baroda. In addition, an attempt was made to evaluate the incidence of severe, moderate and mild clinical pictures associated with the different organisms, and correlate them with the clinical findings.

Material and methods.—The patients selected for this study were all clinically diagnosed as suffering from bacillary dysentery.

The grading of the disease into severe, moderate and mild was done on the basis of the clinical picture including the frequency and nature of the stools and, on toxæmic symptoms when present. An acutely-ill patient with toxæmic symptoms, passing more than 20 stools a day, containing blood and mucus, was classed as severe ; a moderately-ill patient passing between 10 and 20 stools a day containing only mucus, was classed as moderate ; and one clinically mildly ill, passing less than 10 stools a day with no blood or mucus, was placed in the mild category.

The stools in each case were first examined microscopically to exclude amœbic dysentery and to obtain additional correlation with the severity of the disease. In severe cases the stools

contained a dense purulent exudate and many erythrocytes; a scanty exudate with occasional macrophages and no erythrocytes was present in the mild cases; while the moderate cases showed a picture intermediate between these two.

For further bacteriological studies, the mucus when present, otherwise a likely portion of the freshly passed stool was selected for the inoculum. In children, and in occasional cases of chronic dysentery, the material was obtained by rectal swabs. Isolation was attempted only once in each patient. Inoculations were done within half to one hour of collection of the material. This was plated out on either MacConkey's or D.E.C. media and incubated at 37°C. The plates were examined for the growth of non-lactose fermenting colonies, which were further studied for their morphology, motility and biochemical reactions; the final identification was done on the basis of agglutination by specific high-titre sera.

Results:– One hundred isolations were made from the stools of 300 cases clinically diagnosed as bacillary dysentery, over a period of 14 months from December 1959 to January 1961.

As regards the frequency distribution of the various types *Sh. shigae* were found in 11%; *Sh. flexneri* in 53%; *Sh. sonnei* in 19%; and *Sh. schmitz* in 17% of the cases.

When correlated with the clinical severity of the disease, the different organisms were classified as under :—

Table I

	Sh. shiga	*Sh. flexneri*	*Sh. sonnei*	*Sh. schmitz*
Severe, moderate	11 or 100%	26 or 49%	11 or 63%	9 or 53%
Mild	Nil	27 or 51%	8 or 37%	8 or 47%

Due partly to the different stages of the disease in which the patients were seen, there was considerable overlapping sufficient to vitiate the significance of the classification into severe and moderate cases. The figures for these two have therefore, been combined.

Of the 100 cases, 3 were clinically diagnosed as chronic and 3 as recurrent bacillary dysentery. Each of the three chronic cases had a history of frequency of stools of some months' duration. They were found to be due to *Sh. shigae*, *Sh. sonnei* and *Sh. schmitz* (one in each), respectively. The 3 recurrent cases had previously been treated for bacillary dysentery. *Sh. shigae* was isolated from one, while the other two were caused by *Sh. flexneri*. The case of *Sh. shigae* dysentery as well as one of the *Sh. flexneri* cases were classified as "moderate to severe", while the third, from which *Sh. flexneri* was isolated, was placed in

the "mild" group. The number of isolations was highest in June, August and September.

Discussion.—Isolation of the causative organism was possible only in 100 of the 300 cases taken up for study. Isolation was easy in the early, acute stage of the disease, and became increasingly difficult as the disease process abated and the organisms in the stools became progressively more and more scanty. Many of the cases in this series were past the acute stage and, as only one attempt at isolation was made; the not infrequent failure to isolate the causative organism is understandable, especially in view of the possibility that a number of these cases were not due to the *Shigella* group of organisms in the first place. In this connection, it would be relevant to refer to a large series comprising of 3,125 stool examinations, in which there were 60·2 per cent isolations from stools containing blood and mucus; 21·6 per cent from diarrhœal stools containing only mucus and only 3·9 per cent isolations from simple diarrhœal stools (Report[2], 1919). The comparatively recent culture-media, such as Leifson's (1935) desoxycholate citrate agar, and also the so-called S.S. medium, are much superior, to the MacConey's and Endo's media especially in the examination of stools from convalescents and contacts.

The frequency distribution of the various organisms in this series was similar to that found by Boyd[1] (1946) who studied 7,339 strains in India between 1932 and 1935. His figures, as modified by Wilson and Miles[3] (1955), show that 52·6 per cent of the strains isolated were of the classical *Flexner* type; 15 per cent were *Sh. shigae*; 13 per cent belonged to the newly recognized *Flexner* or *Boyd* types; while *Sonnei* and *Schmitz* accounted for 9 and 9 and 5 per cent of the cases respectively. It may be mentioned that though dysentery is world-wide in distribution, *Sh. shigae* is most common in South-East Asia, particularly in India, and comparatively rare in other parts of the World.

The division of cases into severe, moderate and mild showed a distribution of 16, 42 and 42 respectively. The clinical picture was, however, dependent to some extent on the stage of the disease at which the patients were seen. As this varied widely in different cases, the significance of this division particularly in the first two categories, is largely vitiated. The figures for these two have therefore, been combined for purposes of this study.

Dysentery is an unusual disease, in that large epidemics are usually due to mixed infecting organisms, while small epidemics and endemic cases may be caused by only one type of *Shigella*. In this survey, however, all the types of dysentery bacilli were well represented, the distribution being similar to that found during epidemics.

As this was not an inclusive survey, no valid conclusions can be drawn from the number of isolations obtained in different months. Actually, the increased frequency found in the months of July, August and September is in agreement with the generally accepted finding that these are the usual months of increased incidence of dysentery in the tropics, largely due to the excessive increase in the fly population especially during the rainy season.

Summary.—Out of 300 clinically diagnosed cases of bacillary dysentery, the single attempt at isolation of the causative organism from the stools or rectal swabs was successful in 100 cases.—(3·33%).

The frequency distribution of the various types of dysentery bacilli and their association with the different degrees of severity of the disease was found to be in general agreement with the accepted norm for endemic bacillary dysentery.

Acknowledgement.—We are grateful to Dr. J. D. Pathak, M.D., Dean, Medical College, Baroda, for permission to publish this report.

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BLINDNESS

C. M. Phillips (*Cent. Afr. J. Med., 7*: 153, 1961) made a survey of eye diseases and blindness in Northern Rhodesia. A simple standard for blindness was required, and this was defined as inability to move about in unfamiliar surroundings unaided. This is far more stringent than the standard accepted in the United Kingdom, where blindness is defined as a visual acuity of less than 20/400. The incidence of blindness was estimated to be 500 to 750 per 100,000. This is high in comparison with the figure for other parts of Africa. About 83·2% of the blind had lost their sight by the age of 10 and 90% by the age of 20.

The causes of blindness, in 2,701 patients were investigated. The most important was the group consisting of corneal leukomas, staphylomas, phthisis cornea, and phthisis bulbi (44·7% of the total). It was considered that native medicines and their harmful effects were the most important underlying cause. Senile cataract was responsible for 29·7% of the blindness. Nearly all these patients were suitable for operation. Trachoma accounted for 7·7% of the blindness and much of the damage here also was attributed to harmful local treatment. Primary glaucoma, optic atrophy, iridocyclitis, congenital and developmental cataracts, and injury accounted for most of the remainder. The author concluded that 80% of those who had lost their sight had done so from a cause that was either preventable or curable.—(via *J.A.M.A.*, 30-9-1961).

CHOLECYSTOPATHY AND NICOTINE

Since cholecystopathy is usually associated with spastic reactions and a neurotic component, the additional strain imposed by nicotine, particularly in the case of "nervous" or excessive smoking, is likely to aggravate the condition. It is therefore urgently recommended that such patients should be induced to give up smoking.—(*German Medical Monthly*, *85*: 40, via *Cur. Med. Dig.*, October 1961).

GRANULAR CELL MYOBLASTOMA OF THE SOFT PALATE

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Introduction.—Granular cell myoblastoma is a peculiar tumour of uncertain ætiology and pleomorphic histopathology. "It is probable that no tissue at the present time has aroused more interest and greater difference of opinion than the mysterious granular cell tumour" (Stout). In view of its rarity in the soft palate, its vague histogenesis and variable malignancy the following case is reported. Cappel (1937) in his review, remarks that these tumours are very rare and seldom seen by a nasal surgeon.

Case report.—G. G., male, aged 16 years was admitted in the General Hospital, Kurnool, on 20th December 1958 with difficulty in swallowing and in speaking due to an obstructive growth in the mouth. (*Fig.* 1). He had undergone varied treatments elsewhere with very little relief. The growth in the mouth started two years ago as a small nodule and had gradually increased to its present size. The growth was interfering with swallowing, speaking and nasal breathing; and so he snored heavily during sleep.

FIG. 1. Clinical photograph showing the diffuse involvement of the soft palate.

Growth.—An ulcerating growth of the size of a cut-orange involved the entire soft palate and the neighbouring area of the hard palate. It infiltrated the left pharyngeal wall and fauces but not the root of the nasopharynx. It did not extend below the level of the epiglottis and the larynx was free; the alveolar margin was also free. The submandibular and the upper cervical lymph glands though enlarged were neither tender nor fixed.

The growth was firm, and nodular, bleeding moderately. A purulent discharge was present from the left ear and on cleaning there was a bleeding mass of the size of a peanut. The right tympanic membrane was retracted and conductive deafness was present in both ears, more on the left side. The tumour was removed as much as possible to relieve the obstructive symptoms.

Pathology and pathological histology.—The irregular tumour mass roughly measuring 4 cm. x 3 cm. x 2½ cm, weighed 62 grammes. (*Figs. 2 and 3*). It was pale pink in colour and of a firm consistency. The surface mucosa was found to have been lost in patches. It was cut with resistance and the cut surface showed skeins of fibrous bands interspersing the tissue. Several pieces were taken from different parts of the tumour and the sections were stained by H and E., van Gieson, P. A. S. and for lipids. The surface epithelium showed marked acanthosis with pseudo-epitheliomatous proliferation. In some of the rete pegs, solid columns of cells arranged in alveolar fashion were present. Many of these cells were polyhedral with abundant granular cytoplasm and condensed nuclei. Fat stain did not reveal free lipids. A few cells had indistinct cell outline resembling syncytia. Around the solid columns of cells there was a well-marked collagenous fibrous tissue infiltrated by lymphocytes and plasma cells and a few foreign body giant cells. In certain sections the polyhedral cells were elongated resembling muscle cells. The appearance was suggestive of granular cell myoblastoma. The

FIG. 2. Photomicrograph—H. & E. x 100—showing acanthosis and nests of granular cells.

FIG. 3. Same in the high power—Nests seen. H. & E. x 450.

tissue removed from the ear had a similar histological picture suggesting an extension of the tumour from the soft palate. The regional lymph nodes showed sinus catarrh but no infiltration by the tumour cells.

Discussion.— *Myoblastic theory*:—Though sporadic cases have been recorded under various names since 1854, it was first described as an entity by Abrikossoff in 1926 and later in 1931 as myoblastoma on the ground that these neoplasms arise from striated muscle. Kaynes (1926) studying independently came to the conclusion that they were Rhabdomyoma. Crane and Tremlay (1948) reviewing 157 cases including five of theirs concluded that they were myoblastomas of local malignancy recurring after removal. Murray (1951) using tissue-culture-technique substantiated the myoblastic theory.

Neurogenic theory:—Howe *et al* (1944) reviewing the subject extensively, considered them to be neurogenic, probably arising from the carotid body. Smettana and Scott (1951) after studying the serial sections were of the opinion that they arose from chemoreceptors and were malignant non-chromoffin paraganglioma. Svejde Cambea (quoted from Eggleton and Wolf) reviewing 175 cases from the world literature including five of theirs, concluded that they were neuroblastomas. Fust and Custer (1949) adduced evidence in support of Schwannoma.

Fibroma and mesenchymal theory:—Grey and Guenfelt (1937) were the first to protest against the myoblastic theory on the ground that the embryonic myoblasts at no time resembled Abrikossoff's myoblasts and considered these tumours as one type of fibromas.

Non-committal terms:—Pearse (1950) after a careful histochemical study concluded that these tumour cells contained lipids but could not be demonstrated by the ordinary methods as the material was in combination with proteins, as lipoproteins. He designated these tumours as lipid-containing granular cell fibroblastomas. Christopherson *et al* (1952) called them 'alveolar soft part sarcomas' because of the alveolar arrangement of the tumour cells.

Traumatic theory:—Professor Willis threw his weight in favour of the traumatic theory on the ground that such a cell-picture could be caused by trauma and a chronic inflammatory condition. In his view, the syncytial and granular cells are but the histiocytes loaded with lipids and other products of degeneration. The fact that they are common in the tongue and that they are superficial further substantiates this view. The pseudo-epitheliomatous proliferations strengthen this argument.

There are thus two schools of thought:—one favouring the tumour theory and the other, the traumatic. Among the oncologists there is no unanimity, some claiming it as myoblastic,

others as fibroblastic and yet some others as neurogenic. This confusion of thought is worse confounded by the diversity of names given to the same condition. If the various conditions that simulate granular-cell-myoblastoma, are sorted out and excluded, there will still be a few, though small in number, that come under the group of tumours with the characteristic cell-picture. These tumours are indeed rare and occur in children or young adults and are locally malignant. From the literature reviewed no case of granular-cell-myoblastoma of the soft palate has been reported.

Summary.—A granular cell myoblastoma of the soft palate in an young man is reported. The relevant literature is reviewed stressing the view-point that it is a locally malignant tumour.

Acknowledgement.—We are grateful to Dr. K. Ramesh Pai, M.S., F.R.C.S., the then Superintendent of the General Hospital, Kurnool for permitting us to use the case notes. Our thanks are due to Sri Bh. Apparao and Sri Haricharana Pathi, photo artists of the Medical College and General Hospital, Kurnool respectively.

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HENNA FOR AMŒBIASIS

Hanke and Talaat (*Trans. Roy. Soc. Trop. Med. Hyg.*, *55*: 56, 1961) investigated the medicinal properties of the henna plant, *Lawsonia alba*. Feeding experiments in the dog, and man were made and colorimetric method devised for its detection and urine. Henna was fed in the form of total leaf powder in capsules of 1 gm. each. The optimum dose was found to be 3 gm. daily. This was maintained for 15 days after the stools and sigmoidoscopic examination had become negative. Each patient was followed up for 6 weeks after he was considered cured. Any longer period under the circumstances in Egypt where this work was undertaken would not have been practicable because of the frequency of reinfection.

A series of 100 patients (42 with and 58 without ulcers) was treated. A fortnight from the beginning of treatment, there were no amœbæ or cysts in the stools of 93 of the patients. The remaining 7 patients had negative stools after 21 days. Sensitivity to the henna was met in only one patient. This took the form of severe diarrhœa on the third day and the drug had to be stopped. Relapses occurred in 7 patients. These remained symptom-free, clinically and sigmoidoscopically, but cysts reappeared in the stool. A further course of treatment was effective. The authors concluded that henna is a relatively nontoxic herb and compares favourably with other drugs used to treat amœbiasis.—(via *J.A.M.A.*, 30-9-1961).

OBSTRUCTED LABOUR DUE TO FOETAL HYDROCEPHALUS (Report of a Case)

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WHEN labour is obstructed in a multiparous woman hydrocephalus of the foetus should be considered among the possibilities. Once this condition is thought of diagnosis is not very difficult. When the child is alive one has to be certain of the diagnosis before the child is destroyed. Intra-partum radiography is a great aid in diagnosis. Where there is doubt aspiration with a lumbar puncture helps to confirm the diagnosis before using a perf rator. Once the cerebro-spinal fluid escapes the head is greatly reduced in size and the further course of labour is generally uneventful. It is to illustrate these various aspects of the clinical management of obstructed labour due to hydrocephalus that this case report is presented.

Case report.—A 25 year-old patient, the wife of a poor fisherman was admitted to hospital with a history of prolonged labour with no progress. This was her fourth pregnancy the others having been uneventful. She had never aborted previously. Now she was at full term and her pains had begun in the afternoon. The membranes had ruptured almost two hours prior to admission but no progress had been made in spite of strong pains. General examination showed the patient to be slightly anæmic and she was exhausted. Examination of the abdomen showed the uterus to be full term and it was acting very well. The contour of the uterus was normal and although the lower portion of the uterus was a bit tender to touch it was not unduly stretched. The fœtus could be palpated inside. Its back was to the left side of the mother's abdomen and the breech was at the fundus. The head could not be clearly made out at the lower pole of the uterus because of tenderness but it seemed enlarged. The fœtal heart was audible and the rate and tone were both normal. With strict aseptic precautions a vaginal examination was made, after catheterizing the patient of four ounces of clear urine. The external genitalia were normal. On separating the labia a portion of the scalp could be seen covered with hair. Further examination showed the head to be enlarged and cystic. The suture lines were widely dilated, and the fontanelles were unduly large. The whole head was enlarged and could be made out as an abdomino-pelvic swelling. The head in addition to being cystic was rather tense and it had not engaged. The parietal bones in addition to being widely separated were of rather soft consistency which was abnormal for a

full term well developed fœtal head. There was no real caput. The cervix was fully dilated. The pelvis itself was quite normal. A diagnosis of fœtal hydrocephalus was made as being the cause for delay in childbirth and it was decided to overcome the obstruction by perforating the fœtal head. Unfortunately facilities for emergency intra-partum were not available; in this case the diagnosis could have been easily confirmed by taking an X-ray.

The patient was started on 5% glucose saline as an intravenous drip and given pethidine and atropine. She was also given an intramuscular injection of penicillin. Under general anæsthesia a vaginal examination was repeated and previous findings confirmed. As students were witnessing the performance of this operation it was considered that an opportunity might be had to demonstrate to them how, when one is dealing with a hydrocephalic head, forceps even when introduced will not lock. The forceps blades were gently inserted but the handles pointed in different directions and would not lock. The blades were taken out. The object of this little demonstration was to impress the students that when they meet with a case where the forceps cannot be locked, hydrocephalus of the fœtal head should be thought of as a possibility. Next a large-bore lumbar puncture needle was boldly inserted through the gap between the parietal bones and through this cerebrospinal fluid began to escape. Sometimes this is all that is necessary to overcome the obstruction and when the volume of the head becomes diminished spontaneous delivery occurs; but then often the baby survives for long periods and it is not pleasant either for the mother or the attendant to be faced with a grossly abnormal baby. In this case because there was no doubt whatever about the diagnosis the lumbar puncture needle was withdrawn and a Simpson's perforator was introduced instead, and its pointed ends opened out. This resulted in the escape of large quantities of cerebro-spinal fluid along with brain matter. Soon after this procedure the collapsed skull was expelled and there was no difficulty in the birth of the body. The third stage was normal. The mother made a very satisfactory recovery. The child on examination after birth showed evidence of a moderate degree of hydrocephalus but there were no other associated malformations such as spina bifida or talipes equino-varus. It weighed 5 pounds.

Commentary.—The various clinical aspects of hydrocephalus of the fœtus in obstetrics are innumerable and cannot all be discussed here. If the practitioner would only entertain the possibility of this condition in patients with prolonged or obstructed labour, particularly multiparous women, and in cases where the forceps having been introduced do not lock,

something would have been learnt from this case report. To overlook the diagnosis of hydrocephalus in a multiparous woman with obstructed labour may result in serious consequences. She may be unnecessarily subjected to an abdominal operation with the subsequent unexpected discovery of an abnormal baby, or delay in treatment may result in rupture of the uterus, an accident which carries an appreciable mortality with it, so that both child and mother will perish.

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VOLUME OF LIQUOR AMNII IN NORMAL AND ABNORMAL PREGNANCY

Various efforts have been made to measure placental function; for example, Morris *et al* (1956) compared the rate of clearance of sodium from the uterine muscle in normal and pre-eclamptic pregnancy, Johnson (1958) determined the rate of transplacental transfer of sodium to the fœtus, Dawkins *et al* (1959) assessed serumisocitric-dehydrogenase activity as a measure of placental function, and Russell *et al* (1960) made comparative estimations of pregnanediol excretion in these conditions; but as yet no satisfactory method of determining placental function has been developed.

It is commonly believed that prolongation of pregnancy beyond term is accompanied by a rise in the prenatal mortality-rate even in the absence of disproportion, and in these cases the postmortem appearances are simply those of anoxia. Similarly in pre-eclamptic toxæmia and essential hypertension the prenatal mortality-rate is raised, and again the postmortem appearances are primarily those of anoxia. It is reasonable to suppose, then, that the functional performance of the placenta is diminished to a degree incompatible with continuing intra-uterine life. Because of the known tendency to oligohydramnios in prolonged pregnancy it was considered that changes in the volume of the liquor might reflect similar changes in functional activity of the placenta, and it was decided to approach the problem from this point of view.

In view of uncertainty as to the possible harmful effects of radiation it was considered that the radioactive materials should be avoided, and a dye technique using 'Coomassie Blue' was employed in the investigations described here. The dye has been extensively used for the determination of cardiac output (Taylor and Shillingford, 1959) and appears to have no deleterious effects when administered intravenously.

The 129 subjects were drawn from many difference social groups and at least 14 nationalities. Their ages ranged from 17 to 43 years. 61 were primigravidæ and 68 multigravidæ. All were volunteers.

Of the 129 women, 59 (46%) had normal pregnancies, 35 (27%) were pre-eclamptic, and 35 (27%) had essential hypertension.

The criteria for defining normal pregnancy in this series were less than 125/80 mm. Hg. up to the 24th week, and was followed by a rise of at least 25 mm. Hg. systolic, or 15 mm. Hg. diastolic, recorded on at least two occasions not less than 6 hours apart. Many women had other signs of eclampsia such as œdema of the face or hands, albuminuria, or excessive weight gain.

Essential hypertension was diagnosed when the blood-pressure had exceeded 140/90 before the 24th week, or where the blood-pressure was known to have exceeded this figure before pregnancy began.

From the analysis of the figures, 6 factors, of many examined, appear to be most important:—(1) Effect of increasing gestation period, (2) effects of abnormal pregnancy, (3) effect of the placenta, (4) effect of age in pre-eclampsia, (5) effect of birth-weight in essential hypertension, and (6) effect of parity in essential hypertension.

A method of determining liquor volume by means of a dye-dilution technique using 'Coomassie Blue' is described and the use of coomassie blue for this purpose is compared with that of congo red.

In healthy women the liquor volume is maximal at 38 weeks; averaging then 1000 ml., and declines thereafter at a rate of 145 ml. per week until by 43 weeks it is about 250 ml. In pre-eclampsia and essential hypertension the peak volume is reached before 37 weeks, and is about half that in normal pregnancy. A similar decline in volume occurs in succeeding weeks, the lowest volumes being reached earlier than 43 weeks.

The placental weight influences the liquor volume in normal pregnancy, larger volumes occurring with very large or very small placentae. This effect is not clearly evident in pre-eclamptic or hypertensive women.

Birth-weight also has an effect on liquor volume in normal pregnancy. This effect is the reverse of that of placental weight and is not so distinct.

Increasing age and parity appear to diminish the liquor volume. Multiparity is especially associated with decrease in liquor volume in essential hypertension.

Placental insufficiency, often suggested clinically by maternal loss of weight and diminution in girth, might be confirmed by finding that the liquor volume is low.—(*The Lancet*, 14-10-1961).

KANAMYCIN

G. Dumon (*Rev. Tuberc.*, January 1961) treated 53 patients who had pulmonary tuberculosis with kanamycin inhalations. This treatment was well tolerated. In 4 of the patients, traces of albumin appeared in the urine. A few drops of mint was added to the drug if a patient complained about its odour. Of the 53 patients, 16 did not respond. Some of these had long-standing tuberculosis, and some were even in the terminal stage. The results were excellent in those whose infection was of recent origin. In those with bronchial tuberculous and bronchial stenosis, the results were fair. The author recommended that the kanamycin inhalations be given at the beginning of the classical antituberculosis treatment in order to increase the antibiotic concentration in the pulmonary parenchyma and to delay the appearance of drug resistance. It can also serve as an alternating treatment and as a therapeutic supplement in patients with severe tuberculosis.—(via *J.A.M.A.*, 30-9-1961).

The Antiseptic

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Editorials

RING OUT THE OLD AND RING IN THE NEW YEAR 1962

THE year that has passed has been one of great tumult, excitement and tension all over the world; intrigues and revolts against established authority have nearly paralysed the normal life of people in certain parts of the world and other parts have had to face their repercussions and sequelæ.

It would really now be a matter of where the cauldron of violence and indiscipline will boil next. African and Asian theatres have been witnessing unseemly bickerings and international frenzies. In the midst of all these exciting scenes, we have also been witnessing the rapid march of science and its momentous achievements in various directions. *Homo sapiens* has successfully been floating in space, and is out to test his strength through the radiation belt against cosmic rays. In this space-science race, America and the Soviet Union are running neck to neck "the U.S.S.R. being ahead in space-technology and the U.S. ahead in space-science" as Dr. RALPH E. LAPP of the American Association for the Advancement of Science and an authority on space flights has recently stated. He expects that in another ten years, "manned orbital forays into space will become more common and will be more extended in time and in excursion from our planet; in this decade men will circle the moon and given sufficient effort and financial aid man can land on the lunar surface and return in 10 years." He cannot obviously colonize there. Though the cost will be enormous the prestige value of the feat will be worth it.

But we, with many American and English scientists have a feeling that this colossal sum of money which runs into billions and trillions of dollars and roubles could be spent to better advantage on earth to relieve human suffering by eradicating the many infectious diseases that levy a very heavy toll of precious human lives every year.

In the fields of medicine and public health, great advances have been made, particularly in the developing and still underdeveloped countries, with liberal *ad hoc* aids given by international organizations like WHO, ECAFE, FAO, NATO,

Colombo Plan Organization, TCM etc.; but much more still remains to be achieved.

THE ANTISEPTIC has, in the face of these and other local tensions and handicaps, incidental to journalism, not flagged in its zeal in pursuing its allotted task and doing its duty by its readers by focusing attention on the scientific developments that have taken place from time to time and on the lines of future planning that would make for the advance of medical science and the betterment of its devoted practitioners. The emphasis at the present day being on preventive and social medicine, the Central and States Governments have been getting the Health Ministries to concentrate on the preventive and social aspects and in this great work we have also been giving our whole hearted co-operation and support.

THE ANTISEPTIC sustained a most tragic loss of the first magnitude during the year by the untimely death of its Consulting Editor, Sri Dr. U. KRISHNA RAU, who was connected with the journal since 1924 and who was largely responsible for the prominent position it has come to occupy in the field of medical journalism in India and elsewhere. The present Editor and his Advisory Board will, however, strive their best to uphold and maintain the high traditions of the journal in the years to come. We are also in hopes of increasing the usefulness of the Journal, in every possible direction.

Now that the New Year has dawned on us it is our pleasant duty to wish our constituents – subscribers, contributors and advertisers, as also our sympathisers a happy and prosperous New Year and to request them to continue to extend their hearty co-operation and help to us in our sacred work.

To the publishers of the many foreign and Indian medical journals and periodicals, which we receive in exchange and from some of which we glean important items of interest for the benefit of our readers, we offer our grateful thanks and wish them all a very happy New Year.

THE HOUSING PROBLEM IN INDIA

(Retrospect and Prospect)

THE basic factors in the maintenance of sound health among people are good food and proper housing. In our country both have been at a low level for several years and post-independence schemes in the First and Second Five Year Plans have no doubt sought to improve this unsatisfactory state of affairs; but much remains to be done to achieve the desired goal. The 1951 census estimated that there were about 55 million houses in

villages, and that as many as 50 million of these needed to be replaced or considerably improved. This estimate needs to be revised today. Despite the incessant influx of people into the towns, the 1961 census showed that, contrary to expectations, the number of people in the villages had remained stationary, if, in fact, it had not increased.

It is true that urban housing has fared no better. But far more attention is being devoted to it—to the neglect of the needs of the villages. While there are housing schemes for industrial labour, for slums which have been cleared, for "low income" and for "middle income" groups, all in towns, there is to our knowledge, only one project for the villages, which was introduced in October 1957. Moreover, the Planning Commission has found some defects in its working, partly based on inadequacy of funds. This deficiency must be repaired. Even so, only the fringe of the problem will have been touched.

In towns, scarcity of space and high costs stand in the way of promptly implementing house-building schemes; but in rural areas, the general desire to import urban amenities and concepts and also the high costs, in building houses, militate against rapid development. The 1957 project-housing-scheme was sanctioned for 5,000 villages in Community Development Blocks during the Second Five-Year Plan period. What was contemplated was that the entire village should be remodelled in about ten years. The financial assistance granted was two-thirds of the cost of the building or Rs. 2,000 whichever was less. Up to the end of last year, about 3,000 houses had been constructed and about 8,000 were being built. The cost of all this was Rs. 128 lakhs. This would indicate the real extent of the problem, and that much more money will be needed to build the very many houses under contemplation.

Speaking at the Sixth Conference of the State Housing Ministers held quite recently at Bhubhaneswar (the planned capital city of Orissa), Shri B. GOPALA REDDY, the Union Minister for Housing claimed that the Second Five-Year Plan targets have been largely realized in urban areas; and that this has been possible in spite of the shortage of materials and the phenomenal rise in the price of lands. The rate of growth of the bigger cities and towns in India has been so high that slums have also been growing space and overcrowding is worse than ever before. Town planning has obviously been neglected in the majority of cases, and some new industrial centres have been allowed to spring up promiscuously without reference to the housing needs of the people. There have however, been exceptions, as for instance the steel plant industrial centres, the Neyveli Lignite project and the Bhopal Electrical Factory etc.

As we had occasion to suggest in a previous issue, the solution to the housing problem in cities like Bombay and Madras lies in the formation of new neighbourhoods, and satellite towns, each self-contained with schools, hospitals, shopping centres and residential quarters on the plan followed by many of the industrial cities in Europe and America some 20 or 25 years ago. The response to this suggestion has not so far been as great as may be expected or as the plan deserves.

The low-income group housing scheme has proved successful according to Mr. GOPAL REDDI, but it was availed of largely by persons who had incomes of Rs. 1,800 to Rs. 6,000 per year. Those who earned below 150 a month found it difficult to pay the instalments. But if low-income group housing is to fulfil its promise, the State Governments and Municipalities must pay greater attention than they have done in the past to acquiring land for housing colonies in the new neighbourhoods and satellite towns. The cost of materials and the cost of building could also be greatly reduced if new materials and methods of work were adopted.

The Union Minister referred also to village housing or rather re-housing, where very little has been accomplished so far. Though land is not expensive in the villages, the deplorable habit of crowding houses or huts in narrow insanitary lanes continues. What is required here is the demonstration to the ordinary villager of the need for proper spacing of houses and for small gardens and open court-yards around each dwelling house.

The inadequacy of funds has been a serious handicap, in fact a stumbling block in the way of rapid progress and promotion of house-building schemes. It is here that the L.I.C. should be able to help, considering that more money than has been allotted in the State Plans will not be available. The Third Plan has provided 12·7 crores for village-housing. When the need is houses in every village, even the Third Plan contemplates changes in only 5,000 villages. There are many limiting factors, but money is undoubtedly the most serious of them.

All this would appear to pin-point the timeliness of the proposal now mooted to get the Life Insurance Corporation to subscribe to building-projects in villages. A few months ago the L.I.C. Chairman stated that the Corporation will be prepared to allot Rs. 50 crores to 60 crores for housing loans during the Third Plan period. There can be no objection to diverting a sizeable part to the villages, as the needs of rural areas are indeed much greater than those of the urban.

LEPROSY CONTROL AND TREATMENT

(Appraisal of the Wallajah Scheme)

PRESIDING over the annual meeting of the Madras State Branch of the Hind Kusht Nivaran Sangh (Indian Leprosy Relief Association) on the 28th of September 1961, at the Madras Medical College, Sri BISHNURAM MEDHI, Governor of Madras, stressed the need "for keeping away children from contact with persons suffering from leprosy, and for social workers to go into the remotest parts of the State and persuade leprosy patients to present themselves for medical treatment in the early stages of the disease."

The annual report for 1960 which was presented by Sri T. N. JAGADISAN, Secretary of the Sangh, stated that more leprosy institutions were beginning to institute programmes of prevention and correction of deformity. Most of the institutions were in close touch with the Orthopædic Department of the Christian Medical College Hospital, Vellore. The outlook for the rehabilitation of leprosy patients was brightening though there was no doubt that many individual patients were facing very real hardship. It is really heartening to find that a large volume of work had been achieved during the year but there is no room for complacency.

Sri M. A. MANICKAVELU, the Madras State's Health Minister, said that the incidence of leprosy in Madras State ranged from one to 5 or even 6 per cent in some of the districts. The detailed figures given by him are certainly a matter for grave concern. He suggested that a total of 5 to 7 lakhs of sufferers in a population of 34 millions may not be considered large; but if it is remembered that the estimate of the sufferers from this disease for the whole of India is about 20 lakhs in a population of 430 odd millions, the magnitude of the problem faced by this State, will be better understood and appreciated. The incidence is found to be very high in the districts of South Arcot, Salem and Chingleput, amounting to five to six per cent of the population. It is true that control centres have been established in suitable places and much work has been done in the conquest of this fell disease by Governmental agencies as well as voluntary bodies like the Hind Kusht Nivaran Sangh. The work of the latter has been particularly valuable in fighting social ignorance over a disease that has accumulated many prejudices and superstitions round it and its victims over the centuries and in harnessing public co-operation in this fight.

The Madras State, which includes some of the worst endemic belts, has fortunately also attracted some of the greatest leprologists to establish or work in centres of relief and treatment here. The Belgian Mission that has been recently handed

over to the State after successful working over a number of years as well as the pioneering "Tirumani Research and Treatment Centre" provide the nucleus for a large-scale expansion of the campaign, commensurate with the high incidence of the disease. Even the six-fold increase in the provision under this head in the State's Third Plan, referred to by the Health Minister, will still touch only the fringe of the problem.

In this context, it will be appropriate to make an appraisal of the Wallajah Scheme which was started in the Wallajah Taluk by Sri T. N. JAGADISAN two years ago and which is now reported to be a complete success. This scheme of Leprosy Relief and Control is the first of its kind in this State and one of the most important of leprosy schemes in the whole country and was started to determine whether we are at present in a position to integrate leprosy control work with general public health work, because in the ultimate analysis, all specialized services, such as those relating to malaria, leprosy, tuberculosis etc., will have to be integrated with the general public health work, the nucleus being the primary health centres. This pilot scheme, for such was it intended to be in the first instance, was worked with the co-ordination of the Scudder Memorial Hospital at Ranipet. Its approach to the problem and control of leprosy is something quite new. Instead of waiting for the integration of leprosy relief work in dispensaries and general medical practice to be realized later, it has the great merit of starting with integration from the beginning avoiding the difficulties inevitably arising with later integration. Leprosy is treated in every dispensary and hospital of the Wallajah Taluk by all the medical officers each covering a suitable radius of about three to five miles with an auxiliary worker attached for detection of new cases and home-visiting.

The whole of the Wallajah Taluk was divided into 16 centres with headquarters at the Scudder Memorial Hospital at Ranipet. Four sub-centres were located at places where there were no existing medical dispensaries. These sub-centres were attended to by the mobile unit (operating in a jeep) of the Scudder Memorial Hospital. To quote Dr. F. HEMERIJCKX of the Belgian Mission, "the whole object of the scheme is to make a venture in mass-treatment of all cases as early as possible combined with an early case-finding programme covering the area of 400 square miles with a population of about 3·25 lakhs, according to the possibilities in personnel, money and local circumstances."

The work at the clinics varies according to the location. At the regular medical centres, at Ranipet, Arcot, Visharam, Kalavai, Lalapet, Sholinghur, Ponnai and Thimiri, the clinics are conducted on a fixed day every week. The rest of the rural

sub-centres are served by mobile units operating from Ranipet and Lalapet. Kushta Nivaran Sevaks are the key-workers in bringing the patients to the centres by propaganda survey and in helping doctors in distribution of sulphone tablets, dressing cases, etc. D.D.S. tablets form the basic drug in the treatment of leprosy in this scheme.

As regards the progress made so far, we learn, that, out of a population of 3,18,907 in the Wallajah Taluk, 9,506 patients found to suffer from the disease have been dealt with up to 31st July 1961. The ratio of females to males among the sufferers was found to be 33·8 : 66·2 per cent. Another point of interest is the higher incidence in female children than among male children, when compared with their respective adults ; and the percentage of children to the total number of adults is 30·2. The percentage of lepromatous cases obtained in the scheme to the total number of patients registered is only 18·9, against the percentage of 25 in Madras State. It is claimed that nearly 75 to 80 per cent of leprosy cases have been detected and accounted for in Wallajah Taluk during the last two years. As a result of the treatment given to the 9,506 leprosy cases, 312 have been cured, most of them children, 1,849 have improved, 1,976 have not improved ; 1,439 have become free from active symptoms without any disability, 997 free from active symptoms with some disability, 1,595 remained stationary, 164 became worse, 138 died and 1,036 were long absentees.

The scheme has thus proved to be working fairly efficiently and successfully and the cost per patient including the cost of the survey made initially is stated to be only about Rs. 10 per year.

We learn that the State Health Minister who recently paid a visit to the Scudder Memorial Hospital at Ranipet, where there are now two wards of 18 beds each, set apart for sufferers from Hansen's disease, congratulated the Medical Superintendent of that hospital and said that the Madras State Government was contemplating the extension of this scheme to other areas in the Madras State. But the task is still uphill and the pace at which Study and Treatment Centres as well as Control Units are being established does not seem to be fast enough. The programme for leprosy-control during the Third Plan period envisages the setting up of a hundred more control units all over the country, as well as centres for survey, education and treatment. The average medical practitioner is averse to opt for anti-leprosy work ; an intensification of the fight against the scourge will necessarily therefore, depend to a great extent on the immediate grant of special inducements to such persons and also to other workers in the field. Also the message that the advent of modern drugs like the sulphones has made leprosy

actually curable should be carried to the rural people, victims among whom often hide their illness until it is too late. The excellent work being done in centres like Vellore has brought hope of near-normal life even to those who had lost the use of their limbs. Their rehabilitation can be complete *only* when society also willingly accepts them back as its normal members, fit to share in the available employment opportunities.

ADVANCES IN GASTRIC AND DUODENAL SURGERY

So far no concensus of opinion has been reached as to whether resection of *chronic gastric and duodenal ulcer* should include vagotomy. By diminishing gastric secretion this operation undoubtedly reduces the tendency to ulcer formation; but it must not be forgotten that it also interferes with intestinal peristalsis especially in elderly people. Symptoms of meteorism may trouble the patient severely and for quite a long time in some cases. It can however, be now definitely stated that *permanent* changes in secretion do *not* occur after radical vagotomy. Cases are on record now in which resection of the œsophagus, with the accompanying unavoidable high vagotomy (certainly with all branches and interconnexions of the vagi totally removed) was performed and in some of which anacidity changed to normal acidity in 2 or 3 years.—(*Practitioner*, Oct. 1961).

PEYRONIE'S DISEASE

J. Rovinesco (*J. Urol. Med. Chir.*, No. 10-11, 1960) reported a series of 66 patients with plastic induration of the corpora cavernosa of the penis. Of these, 28 had long-standing syphilis, 29 had metabolic disease (hypercholesterolæmia, diabetes, atheromatosis, or uric acid diathesis); and 9 had sequelæ of benign inguinal lymphogranulomatosis. The patients in the first group were subjected to intensive antisyphilitic treatment. Improvement was seen in 6 of these. The other 22 were subjected to ultrasonic treatment (2 to 3 series of 20 sessions each). Improvement was noted in 4. In 18 who did not improve, a local treatment with 25 mg. of hydrocortisone twice a week and 150 units of hyaluronidase once or twice weekly did no good. The patients with metabolic diseases were given a diet and thermal treatment. Subjective improvement was noted in 10 of them. Twelve were given delta cortisone by mouth and locally, and lasting improvement was seen in 7. The author concluded that in most patients one cannot expect complete cure with anatomic restitution.—(via *J.A.M.A.*, 30-9-1961).

SIGNIFICANCE OF PREMATURE BEATS

Premature beats are prognostically significant in 1 of 2 cases:

1. They are significant when they appear in a regular pattern—that is, every other beat, every 3rd beat, and so on (pulsus bigeminus, pulsus trigeminus, etc.). This is a common sign of digitalis or quinidine intoxication. In the absence of drug effect, such a pattern usually implies organic myocardial pathology.

2. They are significant when they arise in multiple foci. The appearance of premature beats from several chambers or from several areas within the same chamber indicates widespread myocardial irritability.—(*The Cardiac Arrhythmias* by Brendan Phibbs, M.D., via *Cur. Med. Dig.*, Oct. 1961).

Special Feature

NEWS-LETTER FROM THE UNITED STATES

THE concept that the emotions influence the health of the body is well known, and has been used to explain the persistence of symptoms in some patients who have had an acute infectious disease. The observations of J. B. Imboden and co-workers tend to add strength to this concept. They found that *depression-prone persons have a slower rate of recovery from sieges of influenza* than do persons with higher morale. Their observations are reported in the September issue of the *Archives of Internal Medicine* (*108*: 393, 1961). In August 1957, prior to an outbreak of influenza, 600 predominantly male employees were given psychological tests. During the following winter, 26 of the employees contracted influenza. Of these 26 patients, 14 recovered in 3 to 14 days, while 12 patients complained of such symptoms as persisting tiredness and weakness for 3 weeks or longer. Severity of illness among all 26 patients was similar and could not explain the difference in recovery rate, but there was a significantly higher number of persons with emotional disturbance in the slow recovery group. The significance of this study is that psychological testing was done prior to illness, thus eliminating the possibility that the illness itself could have caused the emotional disturbance.

Use of a broad-spectrum antibiotic is often valuable in general practice when it is not possible to test for causative pathogens and their sensitivity to drugs. W. Tils and A. Schuppius reporting in *Med. Welt*, No. 20, 1960, point out that Chloromycetin (Chloramphenicol) is useful in this connection. Their articles, as summarized in the July 29 issue of the *Journal of the American Medical Association* (*177*: 273, 1961) deal with *190 patients with a variety of infections to whom Chloromycetin was administered* in daily doses of 1 to 2 grams. Bacteriologic examination showed that practically all types of causative microorganisms were present. Only 13 patients failed to respond to the drug, and no allergic or hæmatopoietic side-reactions occurred.

A statistical association between heavy cigarette smoking and coronary heart disease has been reported by D. M. Spain and D. J. Nathan in the September 9 issue of the *Journal of the American Medical Association* (*177*: 683, 1961). Conclusions were based on a study of 3,000 men of similar cultural background who had been residing for a long time in the New York metropolitan area. The study took into account such factors as occupational physical activity, cholesterol level, blood-pressure, weight, and body type. The men were divided into five groups: those who never smoked, those who smoked less than 40 cigarettes a day, those who smoked more than 40 cigarettes per day, those who smoked cigars and/or pipes, and those who had stopped smoking cigarettes at least 6 months previously. Of those who smoked more than 40 cigarettes a day, 12·5 per cent had coronary atherosclerotic heart disease, as compared to between 8 and 9·5 per cent of the men in the other groups. The statistical association of smoking and coronary atherosclerotic heart disease was even more striking in men under the age of 51 years. In addition, a greater proportion of men of stout or athletic build were in the group smoking 40 or more cigarettes a day. Conclusion of the study is that there is "suggestive evidence" that *heavy cigarette smoking may help to precipitate a heart attack in persons with underlying advanced hardening of the coronary arteries.*

Although prickly heat has generally been thought to be caused by clogging of the pores through which sweat normally escapes, a different theory has been offered by L. J. A. Loewenthal reporting in the July issue of the *Archives of Dermatology* (*84*: 2, 1961). Dr. Loewenthal applied hypertonic saline compresses to the arms of healthy volunteers, as well as salt-free

compresses to serve as controls. After 3 to 5 days, 8 of the 12 areas that had been treated with salt compresses proved on biopsy to have histologic changes associated with early stages of prickly heat, while the control areas showed only softening of the skin. After 9 to 14 days, the early prickly heat developed into the classical picture of heat rash in 3 men. The theory based on this study is that the more a person perspires, the more salt is left on the skin, and *some persons apparently react to the presence of an excess of salt on their skin.*

DESTRUCTIVE LESIONS OF VERTEBRAL BODIES IN RHEUMATOID DISEASE

There have been occasional reports of destructive lesions of the vertebral bodies in patients with rheumatoid disease. After observing several patients with such lesions and after reviewing the literature, the authors reviewed the roentgenograms of 110 patients with Marie-Strumpell arthritis. This survey disclosed 11 patients with this type of process and, in addition they found such lesions in 2 patients with peripheral rheumatoid arthritis. In these spine lesions the destruction begins anteriorly and remains relatively stationary, or it may progressively involve the entire articular surface of the vertebræ. The disc is not always narrowed. All patients had evidence of disease of the sacroiliac joints. The roentgenographic appearance of the lesion simulates bacterial osteomyelitis of the vertebræ, but the clinical and roentgenographic course fails to show the progression usually seen in bacterial infection. The role of steroid therapy in the pathogenesis is difficult to assess. It is not the sole causative factor, since 5 patients in this series were not treated with this type of drug. The relationship to tuberculosis, pyogenic infections, and rheumatoid disease is discussed.—(*Amer. J. Roentgenol., 86 :* 241, Aug. 1961, via *J.A.M.A.*, 14-10-1961).

CIRRHOSIS AND URINARY OUTPUT

The ancient view that one of the most favourable signs in cirrhosis of the liver is the occurrence of a normal diuresis is challenged by N. Bariety and his colleagues who have observed several patients with hepatic ascites in whom this did not apply. In these cases the liver disorder was accompanied by a brisk polyuria which developed after a lengthy history of ascites when all the evidence, both clinical and biochemical, pointed to serious liver damage. Far from bringing about an expected improvement, the increase in urinary volume seemed to be the beginning of a rapid deterioration ending with the death of the patients. The authors emphasize that such polyuria should not be regarded as a hopeful prognostic sign in every case, for in cirrhotic ascites the rate of sodium excretion is more important than the volume of the urine produced.—(*Practitioner*, October 61, p. 597).

ANGINA PECTORIS

In true angina pectoris, one may be able to detect a marked focal downward displacement of the precordium in systole instead of the normal inward motion of ventricular ejection. This can be reversed or prevented by nitroglycerin. It is palpable as a localized expansile pulsation.

The true anginal patient tends to deny symptoms, while the neurotic dramatizes them. The former is depressed, the latter hypochondriacal.

Right-sided chest pain is rare in angina pectoris.—(*Pennsylvania Medical Journal, 64* : 500, 1961, via *Cur. Med. Dig.*, Oct. 1961).

GLEANINGS

ADVANCES IN MEDICINE (1961)

The new penicillins.—(*Practitioner*, London, October, 1961).

1. Methicillin, 2. Phenethicillin, 3. Benzylpenicillin, 4. Phenoxymethylpenicillin:—The prime importance of *Methicillin* is that it is not destroyed by staphylococcal penicillanase as are benzylpenicillin and phenoxymethylpenicillin, and thus the production of resistance to it by the usual mechanism of inactivation by penicillinase does not occur. Methicillin is destroyed by the acid in the stomach and has to be given by intramuscular injection every four to six hours. The frequency of the injections is determined by the rapidity with which it is absorbed and excreted, by the size of the dose which is a large one, and by the relative weakness of activity of methicillin, which is about 1/100th of that of benzylpenicillin.

Rolinson and his co-workers showed that methicillin was stable to staphylococcal penicillinase, and was active against penicillin resistant staphylococci. Brown and Acred (1960) found that the same preparation was highly effective against staphylococci which were resistant to benzylpenicillin, confirming *in vivo* the experiments done *in vitro*. They also showed that methicillin was remarkably free from toxic actions, and this appears to be true also in man as injections cause no more local pain than does benzylpenicillin, and apparently there is no greater tendency for hypersensitivity reactions to be produced.

Another preparation which has resulted from the isolation of 6-aminopenicillanic acid with the addition of a new side chain is *Phenethicillin*. It is not destroyed by the acid in the stomach and is well absorbed when given orally. Garrod (1960a) reported that it was more active than benzylpenicillin against penicillinase-producing strains of *Staphylococcus aureus*, and was also more active than phenoxymethylpenicillin, although here the difference was less than between phenethicillin and benzylpenicillin. Fairbrother and Taylor (1960) confirmed that it was rapidly absorbed and thought it should prove a useful oral product.

In an article, whose value is only rivalled by its brevity, Garrod (1960b) has compared *in vitro* the relative activity of the four different penicillins now in clinical use against various organisms, including the *Staphylococcus aureus*. *Methicillin* he put in a class apart in the treatment of serious infections with resistant staphylococci. If, however, the infection is less severe, he suggested that *Phenethicillin*, with its acid-resisting property enabling it to be given by mouth, is more slowly inactivated than *Phenoxymethylpenicillin*, the other oral penicillin, and much more slowly than *Benzylpenicillin*. For all organisms other than the staphylococcus, with the exception of two uncommon species of proteus, *Benzylpenicillin* exceeds all other penicillins in activity. He also found that phenoxymethylpenicillin is the nearest in activity to benzylpenicillin against hæmolytic streptococci and pneumococci, and therefore still the oral penicillin of choice in infections with these organisms. He once more emphasized the point that results obtained in *in vitro* experiments are not always accurately reflected in bedside therapeutics. They are, however, generally useful, and it seems from his work, as from others, that the penicillin of choice, for the treatment of infections with resistant staphylococci, whose resistance is the result of the production of penicillinase, is methicillin, whilst against other organisms benzylpenicillin far exceeds in activity all other penicillins. Fairbrother and Taylor (1961) also hold the opinion that *Methicillin* should be reserved for severe staphylococcal infections caused by organisms resistant to the usual antibiotics.

More recent still are reports about a new penicillin. This penicillin is bactericidal with very low toxicity and incidence of side-effects, and can be given by mouth as it is acid resistant. Its activity is somewhat less than that of benzylpenicillin against staphylococci, streptococci and pneumococci, and it is affected by penicillinase. Its really exciting properties are its effects against gram-negative bacteria such as *E. Coli*, the salmonellæ and the *Haemophilus* influenzæ.

The drug treatment of hypertension.—(*Practitioner*, London, October, 1961).

The drug treatment of hypertension is fraught with controversy which has not by any means disappeared with the introduction of drugs which solely block adrenergic fibres. There are still those who believe, with Kitchen and his colleagues (1961), that 'drugs with a selective action on the sympathetic nervous system are not yet established as the best method of lowering the blood pressure, and interest in new ganglion-blocking agents continues.' The advantage to patients, however, of drugs which do not block the autonomic ganglia and which produce their hypotensive effects solely by their action on adrenergic fibres is sufficiently great to justify a careful examination of the claims made for them.

Bretylium tosylate is being largely replaced by Guanethidine sulphate, as the action of the former is sometimes irregular, and tolerance to the drug rapidly develops in a high proportion of patients. Guanethidine, on the other hand, acts with reasonable regularity, and the development of tolerance does not seem to present a major problem.

When guanethidine is given by mouth or intravenously it is slowly excreted in the urine, not only as the unchanged drug, but also as three closely related metabolites; excretion in the fæces is also prolonged. In their rat experiments they showed that the concentration of the drug is largely intracellular, being highest in the kidney.

Their therapeutic results showed good control (*i.e.* a standing blood pressure of 160/100 mm. Hg. or under on most occasions) in 42·5 per cent and a fair control (*i.e.* at least 20 mm. Hg reduction in diastolic blood pressure) in another 42·5 per cent of patients. Thus, 85% of their 80 patients described as having very severe hypertensive disease had good or fair control over a period of nine months. These results, obtained by a single daily dose, are satisfactory, and were achieved without the addition of drugs of the chlorothiazide type, which are usually unnecessary, although, as would be expected, they do enhance the effect of guanethidine.

It is not suggested that guanethidine provides a complete or even a particularly good answer to the problem of the treatment of hypertension, but its introduction has been a real advance and the passage of time has so far enhanced rather than reduced its reputation. It could, however, be argued that Mecamylamine is still the drug of choice for patients with malignant hypertension, at any rate until satisfactory reduction in the blood-pressure has been achieved, as it has a greater flexibility in exercising its control. Guanethidine can be substituted at a later date when a satisfactory hypotensive effect has been achieved if the patient's life is rendered miserable by the results of ganglion blockade.

Standard drugs for pulmonary tuberculosis.—(*Practitioner*, London, October, 1961).

The triple aim of arresting disease, removing infectivity and forestalling relapse should be achieved in most cases with adequate chemotherapy for a sufficient period of time. Until recently it was thought that routine application of two standard drugs was sufficient, but the realization that there is a percentage—5·1% in Britain in one survey (Fox *et al*, 1957)—of previously untreated patients who have primary resistance to one or more of these drugs has led to the practice of using all three until

sensitivities are known. This would apply also when the patient had undergone previously a regime of chemotherapy now regarded as unsatisfactory. Starting doses are: streptomycin 1 g., para-aminosalicylic acid (*PAS*) 15 g., isoniazid 200 or 300 mg. daily; the last two in divided doses. Later, if sensitivity to at least two is present, change to one of the following combinations is satisfactory: streptomycin/PAS (15 g. PAS), isoniazid/PAS (12 g. PAS) or streptomycin/isoniazid. In patients over 40, the risk of vestibular damage from streptomycin, particularly if there is renal inadequacy, increases and it may be given in reduced dosage (1 g. thrice weekly, or 0·5 g. daily) if drug-resistance to one of the other two is present, with possibly a third drug from the non-standard series. The ideal is the selection of a pair of safe, effective drugs which the patient can continue with inconvenience at home. Streptomycin sulphate is commonly used, dihydrostreptomycin (with less tendency to vestibular but more to auditory damage) rarely. The use of a cartridge syringe minimizes the chance of development of streptomycin allergy in the administrator.

Trade preparations of PAS, which aim at greater patient aceeptability or reduced gastro-intestinal irritation do not all give adequate blood levels. Citron and Kuper (1959) found that sodium aminosalicylate liquid, cachets, granules and effervescent tablets and calcium aminosalicylate cachets gave similar levels, but enteric-coated sodium PAS tablets low, and calcium benzamidosalicylate very low, levels. The last of these is not now acceptable.

Isoniazid has been used in large doses (6 to 9 mg./kg.), but several trials have suggested that the clinical effect is no better than with standard doses and the side-effects (peripheral neuritis) more frequent, though reduced if pyridoxine is given as well. Acetylation of isoniazid is faster in some individuals than others, but clinical results with standard doses do not suggest that this is important in practice.

Hypersensitivity to these drugs (drug fever, drug rash) can be overcome by desensitization and this may be carried out more safely and quickly under an 'umbrella' of corticotrophin or prednisolone, of which the doses need not be large.

Here, perhaps, may be mentioned the place of corticosteroids in treatment. In an acutely ill patient with advanced disease, given with effective chemotherapy, they can act as a 'life-saver', expediting the control of the disease. The adrenals may take some time to recover, however, so that an infection or injury occurring within a year or so of treatment with steroids may require their exhibition again to meet current demand on the insufficiently recovered glands.

Advances in drug research.—(*Chemical News*, Feb. 1961, via *South Dakota Med. J.*, October, 1961).

For years the sea has been the raw material source for ingredients of such family stand-bys as milk of magnesia, iodine, Epsom salts and bromine drugs. But now comes evidence that the sea may be a nearly inexhaustible source of answers to many medical problems ranging from cancer and diabetes to heart and nerve disorders.

For marine vegetation, has proved valuable in offering promising new drugs. Clinical tests have revealed that *carrageenin*, derived from the seaweed popularly called Irish moss, is valuable in treating peptic ulcers. Commenting on the extract's achievements, Dr. J. C. Houck, who led the research that discovered the new application, pointed out recently: "The *carrageenin* probably coats the lining of the stomach and duodenum in such a way as to inhibit ulceration." A more common use is *carrageenin's* ability to keep cough medicine in suspension. The "shake-well-before-using" label is no longer needed on many medicine bottles.

Research studies also indicate that various other sea-plants have interes-

ting properties, possibly useful to man. Scottish doctors, have pointed out that an algae-derivative, lamarin sulphate, deserves additional study as anticoagulant.

Of even greater significance, perhaps, may be the discovery of a poison called *holothurin*, derived from sea cucumbers. The poison when applied as an extract under laboratory conditions lowers the growth potential of cells in mouse cancer.

Various fish are also providing interesting leads for researchers in cancer chemotherapy. A few years ago at the University of Pennsylvania, it was found that the entrails of puffer fish and certain other marine animals contain material that interferes with normal cell-division. Use of the substance in cancer therapy now is under investigation.

Such research may provide the clue to the structure of a chemical that will arrest cancer growth, or discover a cancer-arresting substance. Once the chemical structure of a drug has been determined, research chemists may be able to synthesize it, even introducing variations more effective than the molecule of the natural drug. ACTH, a hormone from the pituitary gland of animals, provided drug researchers with clues to the structure of steroid drugs. The drug manufacturers' products have proved more effective as medicine, have a more certain source of supply and uniformity is assured.

Less exotic a fish than the puffer is the *menhaden* whose yearly catch runs into billions of pounds. This fish provides a plentiful source of oil from which is derived the highly unsaturated fatty acids now being used for research in atherosclerosis, the incidence of which may bear some association to a high level of cholesterol in the blood. Current research suggests that a diet confined to unsaturated fatty acids can reduce high cholesterol levels. Such research may pave the way to a better understanding of this form of heart disease.

Even poisonous fish may prove human benefactors. From the deadly poison of sea snakes, Dr. B. W. Halstead, hopes to learn a good deal about the coagulation of blood, perhaps even develop a new or improved anticoagulant. Also under study by Dr. Halstead is the weever fish and the equally venomous stonefish. Both have hæmolytic properties.

Other poisons include that of the toadfish, as well as that of the sting ray which slows the heart and even arrests its beat. Intensive research may provide clues as to how to utilize these poisons in man's behalf. The toadfish venom burns up sugar in the blood, indicating possible beneficial use in diabetic treatment. Further research is expected to confirm or deny the possibility.

Medical researchers and scientists working with plant physiologists and marine biologists are finding that the sea may hold answers to a still healthier tomorrow.

Pernicious anæmia.—(*Practitioner*, London, October, 1961).

In the past few years there has been much interest in the treatment of patients with pernicious anæmia by oral preparations. The original therapy for pernicious anæmia introduced by Minot and Murphy was raw liver in massive oral doses, the efficacy of which depended upon their content of cyanocobalamin. It is possible to maintain patients for long periods, if not permanently, on daily oral doses of the pure vitamin; most patients so treated will remain in good health with no evidence of clinical or hæmatological relapse and without the development of signs or symptoms of neurological disease.

It is generally agreed that by far the most satisfactory and safe way of treating patients with pernicious anæmia, or with the neurological complications of cyanocobalamin deficiency, is by parenteral injection of the pure vitamin. The advantages of this are that known amounts of vitamin are administered and regular therapy is more likely to be ensured, for it is easy for a patient in complete remission to neglect his daily dose of an oral preparation. The monthly visit of a patient to his doctor or district nurse is an additional safeguard; the regular injection is not likely to be missed and the onset of any complications is likely to be noticed early.

ADVANCES IN THE CHEMOTHERAPY OF MALIGNANT DISEASE

Carcinoma of the prostate.—(*Practitioner*, London, October, 1961).

There is no doubt that surgical castration, œstrogen therapy or a combination of both, will cause remarkable remissions in 60 to 80 per cent of cases of prostatic cancer, which may last for a number of years. Evidence has accumulated to indicate a significant prolongation of life (Nesbit and Baum, 1950). Adrenal steroids, adrenalectomy and hypophysectomy, while producing symptomatic relief in a few patients resistant to castration or œstrogen therapy, have not altered the course of the disease.

Choriocarcinoma in women.—(*Practitioner*, London, October, 1961).

About 70 to 80 per cent of women with metastatic choriocarcinoma have responded to intensive and repeated courses of methotrexate (Li, *et al*, 1958) with tumour regression and decrease in chorionic hormone titre. Evidence of disease activity has not recurred thus far in about half of the patients who responded, and possibly some may be cured. Some of the patients in the other half of the group, who relapsed, have shown further responses to actinomycin D and a nitrogen mustard derivative (Li, 1961), and most recently to Vinblastine (Hertz, *et al*, 1960). Whilst adequate statistical studies are not complete, it seems reasonable to believe that methotrexate has prolonged life in choriocarcinoma in women. Since this tumour arises from the fœtal placenta, it is likely that immunological incompatibilities may exist between the cancer and the maternal tissues. This may explain the prolonged regressions in patients who respond to therapy, as well as the spontaneous regressions of the disease that have been observed (Bardawil and Toy, 1959).

Wilms' tumour in children.—(*Practitioner*, London, October, 1961).

This cancer of renal origin occurs principally in children. The metastatic disease was not highly responsive to drug therapy until the use of the actinomycins (Farber *et al*, 1956). Actinomycin D has been shown to produce temporary tomour regression in about 50 per cent of cases (Tan. *et al*, 1960), and the pulmonary metastases appear to be most sensitive to the drug. Remissions usually last for two to eight weeks, and further treatment may be effective in the responsive patient.

Hodgkin's disease and lymphosarcoma.—(*Practitioner*, London, October, 1961).

The clinical trial of a large number of polyfunctional alkylating agents and related compounds has continued in Hodgkin's disease and lymphosarcoma, but there is no convincing evidence that any derivative has shown an increased therapeutic index.

In the past year there has been considerable interest in Vinblastine, an alkaloid extracted from the periwinkle plant (*Vinca rosea*) (Hodes *et al*, 1960). This drug is generally given intravenously, and the usual dose is 0·1 to 0·15 mg./kg. (4 to 8 mg.) at weekly intervals; if there is no fall in the leucocyte or platelet count, the dose may be repeated. The drug may also be given by mouth, but the dosage is more difficult to control. Whilst there are occasional patients refractory to other forms of chemotherapy, who are temporarily benefited by Vinblastine (Warwick *et al*, 1960), sufficient clinical data are not yet available to recommend its use.

ADVANCES IN OBSTETRICS AND GYNÆCOLOGY

The vacuum extractor (Ventouse).—(*Practitioner*, London, October, 1961).

Dr. H. C. McLaren, Professor of Obstetrics and Gynaecology, University of Birmingham, writes:—The Malmstrom suction-cup technique (Malmstrom, 1954) has been under trial in the United Kingdom, especially by J. A. H. Chalmers (Chalmers and Fothergill, 1960; Fothergill and Chalmers, 1961), my colleague in Worcester. The principle of 'sucking out the head' is old, but the modern instrument has stimulated interest especially on the Continent. E W.L. Thompson, formerly Master of the Rotunda, also considers that the Ventouse is worthy of an extended trial (Thompson, 1960).

Full dilatation of the cervix although favourable is not a necessary prerequisite, for the small suction cup can be affixed and gentle pulls with a slight side-to-side action used to stimulate a better quality of uterine contraction and so full dilatation of the cervix. The danger of easing the head through a three-quarters dilated cervix is that above the cervix there may be a constriction ring requiring immediate deep general anæsthesia if the child's shoulders are to be delivered and stillbirth avoided. The manoeuvre of delivery through an incompletely dilated cervix is, of course, for the experienced obstetrician working next to a prepared cæsarean section theatre including the services of an expert anæsthetist. Used with these safeguards the Ventouse may occasionally save a cæsarean section with its risk of maternal morbidity and later obstetrical sequelae, especially a repeat section. The instrument is not difficult to use but, of course, preliminary instruction must be obtained from an expert.

At the moment the Ventouse is not used except in hospital practice, but for the future I believe that the instrument will on occasion be used in G. P. obstetric units in preference to low forceps. One must also envisage the use of the Ventouse by a skilled and well-instructed midwife, in, for example, the rural areas of Central Africa or the Sudan. It could well be life saving and used, *faute de mieux*, without medical supervision. In case of failure her patient would be in no great danger and the child little the worse apart from the usual temporary 'suction' caput or 'chignon.'

The indications for its use are:—(1) A mature child; (2) No foetal distress; (3) No bony disproportion; (4) Cephalic presentation: vertex low in pelvis; (5) Fully dilated cervix; (6) Occipito-anterior and (7) Occipito-transverse or Occipito-posterior: Rotation with suction pull and torsion.

The contraindications are:—A premature child; fœtal distress; high head, just in pelvis: breech unfavourable but not impossible; cervix not quite fully dilated and face: danger to eye.

Culdoscopy.—(*Practitioner*, London, October, 1961).

This instrument, which allows inspection of the pelvic organs, resembles a cystoscope. Intraperitoneal air and positioning to the patient allow a remarkable view of the pelvis.

Miss. B., aged 28 and unmarried, a nursing sister in a busy hospital, complained of increasing prostration from dysmenorrhoea. Physical findings amounted to some tenderness in the pouch of Douglas. The clinical findings suggested a diagnosis of endometriosis and the problem arose as to whether exploratory laparotomy was justified, or whether (expensive) progesterones should be prescribed without confirmation of the diagnosis.

The patient was anaesthetized and intubated. Following pelvic examination and exploration of the uterine cavity, she was turned over on her face and mounted on a crutch so that the knee-elbow position was easily maintained. The culdoscope was then pushed gently through the posterior fornix, applying the sharp nose of the trocar close to the posterior wall of the uterus. This revealed the presence of endometriosis; numerous small black dots were clearly seen studded over the utero-sacral ligaments. A clear view was obtained of the (normal) ovaries and Fallopian tubes, thus excluding gross chronic pelvic infection (tuberculosis). Carbon dioxide passed into the uterus was observed as it bubbled through the fimbriae.

The culdoscope was thus of value in this case in that (*a*) it helped to verify the clinical diagnosis without laparotomy; (*b*) it allowed us to spend a great deal of National Health Service money on norethisterone, providing the patient with eighteen months of relief (and incidentally providing her hospital with eighteen months of excellent service!). From the patient's point of view she was relieved to have the exact diagnosis, no doubt having suffered quite unjustly from: 'She's getting a bit neurotic for a nurse.....even fusses about her dysmenorrhœa!'

In the hands of an experienced gynæcologist the culdoscope is safe, but anæsthesia has to be in the hands of an expert. I have found the instrument of especial value when for various reasons I wanted to avoid laparotomy: for example, when I felt the patient was already introspective and anxious. Culdoscopy does not completely exclude pathological change in the pelvis, but it is of value to the clinician to have viewed the normal ovaries and tubes and explored visually as well as digitally the pouch of Douglas.

ADVANCES IN SURGERY

Mitral stenosis.—(*Practitioner*, London, October, 1961).

Mitral valvotomy is the most commonly performed of all cardiac operations and has become a routine procedure of proven value. It may seem surprising therefore, to mention it in connexion with advances in cardiac surgery. For a long time the approach to the valve was through an opening made in the left atrial appendage and the commissures were separated either by finger fracture or the use of instruments of various designs. In a high proportion of cases the results were beneficial and often dramatically successful, but in some patients symptoms reccurred after a few years. This was due to restenosis in a few cases and to an inadequate operation in others.

A new technique for dealing with mitral stenosis described by (Logan and Turner, 1959) enables a more complete valvotomy to be performed at no greater risk. The method consists of introducing an expanding dilator through a small incision in the apex of the left ventricle. The position of the instrument is checked by the index finger placed in the left atrium. When the head of the instrument expands, the dilating force within the contracted mitral orifice produces a split in the valve which in nearly every case follows the line of the commissures. This method has now been adopted by most cardiac centres in England and there is little doubt that it produces a more effective valvotomy with little greater increase in the incidence of incompetence compared with the previous atrial approach. The diastolic murmur is often completely abolished but is sometimes replaced by a systolic apical murmur, which in most cases is consistent with an excellent final outcome.

Hiatus hernia.—(*Practitioner*, London, October, 1961).

Symptoms of sliding hernia of the œsophageal hiatus are today considered to be due to reflux œsophagitis rather than to obstruction. Only reflux œsophagitis justifies surgical intervention. Methods to prevent regurgitation of the gastric juice seem to give far better results than those

involving narrowing of the hiatus (hernioplasty).

Gastric and duodenal surgery.—(*Practitioner*, October, 1961).

In some advanced cases of penetrating duodenal ulcer, especially when located on the posterior wall, resection was for a time regarded as technically too difficult and too hazardous. This attitude has changed. By leaving the ulcer crater *in situ* and by closing the stump in an atypical manner, using mainly the mobilized anterior duodenal wall, resection is practically always possible. This technique also guards against injuries of the bile duct and the hepatic artery. If stump closure without tension is made impossible by too extensive resection of the anterior wall, end-to-side anastomosis between the duodenal stump and the first jejunal loop solves the technical problem in a satisfactory way. The same procedure can be successfully applied to the closure of chronic duodenal fistulæ, following insufficiency of the stump closure.

In their enthusiastic praise of the Billroth I method, surgical reports of recent years do not take into consideration the fact that not a few surgeons have some thirty years' experience with this operation. In fact, long-term observation of a large number of cases has shown that Billroth I is difficult to perform from the point of view obtaining a sufficiently wide anastomosis in fat patients. Used in the surgical treatment of penetrating duodenal ulcers, for which it has also been recommended, the Billroth I technique is liable to be followed by a fair number of ulcers at the site of the anastomosis. Some British surgeons also blame the Billroth I method for the appearance of post-operative ulcer at the lesser curvature, but this complication seems rather to be caused by food retention, similar to the condition in those cases of vagotomy in which the post-vagotomy pylorospasm has not been circumvented by additional gastroenterostomy. Only a broad anastomosis is technically adequate, and the dumping syndrome need not be feared as a consequence, because eventually some kind of sphincter mechanism forms at the region of the anastomosis.

ADVANCES IN DERMATOLOGY

Acne vulgaris.—(*Practitioner*, London, October, 1961).

Really effective therapy has not yet been achieved for acne vulgaris. Endocrine treatment has on the whole been decidedly disappointing, although the acne of some girls responds reasonably well to the administration of œstrogens; most, however, do not. Some improve considerably with the application of an epiœstriol cream such as 'actriol,' but by no means all. Probably local applications which produce adequate desquamation are still as efficient as any. A modern abrasive cream such as 'Brasivol' can be used in varying strengths, as recommended by Saperstein (1960). I have used these creams since 1958 with good effect and Alexander and Vickers (1961) also recommend them. A highly effective ointment which has stood the test of time is the Vienna peeling paste:—

Betanaphthol B. P. 1948	... 10·0 g.
Sublimed sulphur	... 50·0 g.
Soft soap	... 25·0 g.
Soft paraffin	... 25·0 g.

This can either be applied as a spread removed after twelve hours, or rubbed in for three successive nights or until a brisk exfoliation occurs. The treatment is repeated when the skin has recovered: *i.e.* in approximately ten days.

For a number of years vitamin A in a dosage varying from 50,000 to 150,000 units daily has been advocated, and this treatment sometimes appears to be effective, especially in acne patients with a tendency to follicular hyperkeratosis. As with so many drugs, its value has not been assessed accurately by a controlled series of cases, but this may soon be forthcoming.

Diffuse hair loss in women.—(*Practitioner*, London, October, 1961).

In many countries during the past five years, dermatologists such as Sulzberger, Witten and Kopf (1960) have been consulted by an increasing number of women affected by a diffuse loss of scalp hair, apart from those with endocrine disturbances such as myxœdema. Various reasons for this have been suggested, two of these being locally applied chemical substances and the ingestion of certain drugs, 'Cold wave perms,' dyes, bleaches (which sometimes contain ammonium persulphate), shampoos and lacquer may all have a deleterious effect on the hair keratin, whilst nylon brushes, as Agnes Savill (1958) showed, may cause shredding of fine hair. It is little wonder that Nature at last revolts! Some years ago, in Sweden, England and the United States, it was observed that some cardiac patients on drugs such as heparin and dicoumarol developed a diffuse alopecia. In recent months I have seen two women who lost much of their hair while on the tranquillizer, trifluoperazine, and whose hair re-grew when the drug was stopped. The powerful cytostatic drugs prescribed for certain malignant diseases can have a similar action. For example, in a series of 25 patients treated with cyclophosphamide Falkson and Schulz (1960) noticed that ten of them developed an alopecia.

Vitiligo may occur in association with alopecia areata, and these leucodermatous patches are distressing to patients, especially if they appear on exposed parts. No effective therapy has yet been discovered for this disease, as treatment with the extract of the plant *Ammius majus* ('meladinine') has been disappointing. It is possible, however, to give a patient an artificial 'sun-tan' by means of dihydroxyacetone, which is a harmless three-carbon sugar. When it is applied to a depigmented area, a non-melanin pigmentation appears, and with care an intelligent individual can disguise his lack of pigment, as has been pointed out by Mumford (1960), Blau and his colleagues (1960) and Maibach and Kligman (1960). A warning must be given that this type of tan does not prevent the sunburn to which these people are particularly liable.

Antibiotics and antiseptics.—(*Practitioner*, London, October, 1961).

Antibiotics by mouth or by injection are seldom required for skin diseases, and the indications depend upon the type of disease and the relative resistance of the responsible organisms. If possible, they should be withheld in such conditions as recurrent furunculosis, in which drugs such as penicillin make the patient even more liable to further attacks, whilst resistant strains of staphylococci may be produced. The dermatologist regards streptomycin and penicillin as the two most apt to cause cutaneous reactions: penicillin is now the commonest cause of giant urticaria. In a series of 300 patients with urticaria, in 14 per cent the rash was precipitated by parenteral penicillin.

Penicillinase has been advocated in the treatment of penicillin urticaria. In a few cases my own experience has been decidedly disappointing, and does not confirm the results obtained by Becker (1958, 1960).

Griseofulvin has proved its worth in ringworm infections, but only too often it is prescribed for diseases not due to tinea: *e.g.*, perionychia caused by *Candida albicans*. It is therefore advisable to establish the diagnosis by microscopic and cultural examination before using the drug. In acute and mild fungus infections, griseofulvin is often effective when given in a short course for three or four weeks, but in chronic cases, especially with involvement of the nails, it must be continued for many months. Fingernails can often be cured in four or five months, but toe-nails may be still infected after a year's constant therapy, even combined with surgical removal.

Local antibiotic therapy is often used in pyogenic infections with a tendency to employ the tetracycline series less and less, and to prescribe instead antibiotics seldom given parenterally. Of the latter, neomycin is possibly the most popular, but in some ways it is not as effective as Framycetin, which rarely causes reactions and is speedily effective in diseases such as impetigo circinata. Many antibiotic ointments and lotions are now combined with one of the steroid drugs.

Local antiseptic therapy is tending to oust the antibiotic-steroid applications, and of these the most useful are the quinoline group such as 'compound quinolor ointment,' 'vioform cream' and 'steroxin ointment,' which may also be used combined with corticosteroids. They have the advantage that antibiotic-resistant strains of organisms are not produced, and that they are fungicides, so that yeast infections do not flourish in place of the pyogenic bacteria. Antiseptics which are particularly valuable in exudative flexural eczema and in pruritus ani are Domiphen bromide and Dequalinium chloride, applied in 3 per cent strength in a steroid ointment.

ADVANCES IN CARDIOLOGY

Treatment of acute myocardial infarction.—(*Practitioner*, London, October, 1961).

The rapid action of Heparin, as compared with the oral anticoagulants, determines its use in the first few hours of the acute attack of myocardial infarction. Although there is little evidence that it prevents extension of thrombosis, the prompt relief of severe and prolonged pain that sometimes occurs is suggestive and impressive. The rapid action is not without its dangers, however, particularly in the elderly with cerebral atheroma, and its use is best confined to those treated in hospital or who are being admitted to hospital. In profound shock a *nor*-adrenaline drip is of proved value but when this is not possible Metaraminol, 5 to 10 mg. intramuscularly, will raise the blood-pressure in a few minutes and the effect will last for up to forty minutes. The dangers of digitalis after infarction have been too much stressed and in the early stages it is indicated intravenously for shock or left ventricular failure, and later if congestive failure develops or atrial fibrillation persists.

Coronary artery disease.—(*Practitioner*, London, October, 1961).

Epidemiological studies have stressed the importance of two factors in the ætiology of coronary artery disease—too little activity and too much of too rich a diet—and both have influenced treatment. In a disease in which acute exacerbations are a characteristic feature periods of rest are clearly indicated, but it is now recognized that in the intervals reasonable physical activity is to be encouraged. In the treatment of acute infarction the strictness and the duration of bed rest have been lessened and tempered to the severity of the attack with no added danger and much improvement to the spirits of most patients. Obesity, particularly if we include all patients in whom the caloric intake is too high for the degree of physical activity, not only increases the incapacity caused by coronary artery disease but in addition few could now deny that it is an important factor in causation.

A high-fat intake, or alimentary lipæmia, may not only encourage thrombosis in susceptible individuals but the implication of animal fats and saturated fatty acids in the formation of atheroma has become increasingly convincing. The evidence is no longer confined to animal experiments or merely circumstantial. Unfortunately there is no close correlation between the level of cholesterol in the blood and clinical disease, and it is common to find patients with evidence of widespread atheroma with a normal blood cholesterol. This is relevant to cholesterol-lowering treatments with low-fat diets, unsaturated fatty acids, œstrogens, thyroid compounds, nicotinic acid, silbosterol, or the most recent agent, *Triparanol*, a sterol which interferes with the synthesis of cholesterol, for an alteration in cholesterol metabolism does not necessarily mean a reduction in deposits in the vessels. The laboratory and animal work on Triparanol is impressive and it has been shown to lower the blood cholesterol in man, but the clinical evidence that it has a beneficial effect on disease is not convincing.

When atheroma is severe it may well be too late, but it is reasonable to counsel restriction of animal fats for those who will appreciate every possible protection and will keep to it, and also with the early manifestation of disease, particularly when family history, constitution and way of life would indicate increased susceptibility. The use of vegetable fats makes for a more reasonable diet but it must be made clear that it is the replacement of animal fats that is likely to confer protection and a total fat intake of 25 per cent to 30 per cent of total calories with a ratio of 3 to 1 vegetable to animal fat should be the aim. The patient must not only be informed, but willing to submit to dietetic control. Some are not, as was well expressed by a fat and jolly man after a large dinner: 'They say that thin men live longer, but perhaps it may seem longer.'

REVIEWS OF BOOKS, REPORTS ETC.

The Vesico-Vaginal Fistula—By J. Chassar Moir, C.B.E., M.D., M.A., D.M., F.R.C.S., (Ed.), F.R.C.O.G., Nuffield, Professor of Obstetrics and Gynæcology, University of Oxford, 1961, Publishers: Bailliere, Tindall and Cox, 7 and 8, Henrietta Street, London, Price $ 40.

This monograph of 151 pages is illustrated by 61 figures including one colour plate showing inversion of the bladder through a fistula. Although vesicovaginal fistula is relatively rare in England it is certainly not so in India where the repair of this most distressing complaint in the female forms an important part of the gynæcological surgeons' work. There are 13 chapters in this beautifully got up book with its lavish illustrations and elegant print not to speak of the perfect style of English written by the author which makes for easy reading. This is followed by an index.

Chapter 1 deals with a historical review and pays a rich tribute to that pioneer of vesicovaginal surgery, J. Marion Sims. It is admirably written with clarity and force; Chapter 2 deals with types of fistulæ and the author's clarity and practical approach is shown by his anatomical classification of fistulæ and his avoidance of "cumbersome nomenclature." Less than one third of the total number of fistulæ were obstetrical. In our country the great majority of fistulae result from obstetric trauma. Chapter 3 is an excellent summary of principles and methods of treatment which cannot readily be learnt from less practical writings on fistulae. Chapter 4 is on preoperative care and Chapter 5 contains an account of instruments used for the vaginal operation. Chapter 6 deals with essentials of technique in the vaginal operation. The extremely important aspect of bladder drainage which may make for success or failure is dealt with in Chapter 7. Chapter 8 is on post-operative care and the last paragraph contains useful advice to patients. "Doubtless many repairs would stand up well to the strain of vaginal delivery (and I have known several such instances); but it is never possible to be certain on this point; and as these women are often in an extremely apprehensive state of mind it is best to advise them to have future pregnancies

terminated by cæsarean section a week or ten days before term. Married women should be warned to avoid coitus for at least six weeks after their return home, by which time the fistula repair ought to be well consolidated. There is little doubt that some early recurrences are brought about by neglect of this rule." Chapter 9 is on urethral reconstruction. Chapter 10 deals with difficulties, complications and alternative methods in the vaginal operation. This chapter is most up-to-date and puts into useful perspective the place of operations such as those devised by Martius, Ingleman-Sundberg and Bastiaanse. Chapter 11 deals with the suprapubic operations such as the transabdominal and transvesical operations. Chapter 12 is a brief account of various methods of diversion of the urinary flow. The author prefers the value forming operation (Stiles) for transplantation of the ureters into the bowel. Chapter 13 is the concluding one and is an analysis of the results obtained. The monograph is based on 250 cases of urinary or allied fistulæ which came under the author's care. Excluding some 20 cases due to active carcinomatous growth or because the case was essentially one of ureteric fistulæ, rectal fistulæ or other conditions outside the limit of the present subject there remained 230 cases. With 2 exceptions all these cases were operated upon. 190 cases were traumatic vesicovaginal or vesicocervical fistulæ and 40 cases were of complete urethral destruction or of radium necrosis. In 190 consecutive cases of traumatic vesicovaginal or vesicocervical fistulæ a successful anatomical closure was effected in each case.

This surely is a result which should make any surgeon proud. With great authority based on his wide experience the author concludes "vesicovaginal fistulæ far from being an unmanageable injury, is, with few exceptions, an eminently curable lesion."

One should make a special mention of the great care with which the photographs have been taken. The author himself states, "As this is an essentially practical book, I have omitted extensive references to other published work" and so references are very few which is unusual for books of this type. The author and publishers require to be congratulated on making this most worthwhile contribution to gynæcology available. The price is reasonable and no surgeon who ever operates on a fistula should be withont this book on his shelf for ready reference and guidance. —VISHNU SARMA.

Air Pollution—A World Health Organisation publication—Monograph Series No. 46.

Air Pollution is a problem of steadily increasing global importance. More and more countries are becoming industrialized. Industrial effluents discharged into the atmosphere are increasing in amount, diversity and complexity. The growing population of the world tends progressively to accumulate in cities. The problem of air pollution is difficult, because the identification of the pollutants is extremely difficult and the number of variable factors implicated is immense. The present monograph brings together up-to-date knowledge about the various aspects of air pollution ranging from its effects on man, animals and plants to the physical and chemical nature of air pollution, the role of meteorology, methods of identifying the various pollutants, and methods of control. It also contains a lengthy discussion on the most important form of air pollution, *i.e.* radio-active pollution. The authorities who have contributed to the various chapters are drawn from many countries, and each chapter is submitted to a panel of internationally well-known experts. The information presented is therefore, authoritative. We are sure this monograph will be of use to public health staff in the control of air pollution. We are also certain that this monograph will be a contribution towards solving the many complex problems.

A Radiographic Index—By MYER GOLDMAN, MS.CH.B., D.M.R.D.; RONALD, S. MILLER, M.R.C.S., L.R.C.P., D.M.R.D. and DAVID COPE, F.S.R. with a Foreword by P. H. WHITAKER, M.D., F.F.R., D.M.R.E., Published by John Wright & Sons, The Stonebridge Press, Bristol-4. Price 13/6d.

This book is intended mainly as a ready reckoner for radiographers and students of radiography. The various radiographic positions and procedures are described in alphabetical order. Complicated procedures like encephalography and lymphangiography are well described. There is an appendix which sets out all the various contrast media used in routine radiological practice. The names of the manufacturing concerns are also given. There is an useful appendix describing all the abbreviations used. A very useful table gives details of kilovoltage, milliamperage used together with the distance in inches as also the type of film, grid and screen used in the radiography of the different parts of the body. This is quite an unique feature of the book which enhances its value. This book should adorn the shelf of every radiographer.

BOOKS RECEIVED

Notes on Human Physiology—By An Experienced Teacher. M/s. S. Bhattacharya & Co., 49, Dharamatala Street, Calcutta-13.

Notes on Pathology, Bacteriology and Parasitology and Notes on Medical Jurisprudence and Toxicology—By An Experienced Teacher. M/s. S. Bhattacharya & Co., 49, Dharmatala Street, Calcutta-13.

Tidy's Massage and Remedial Exercises—By J. C. WALE, C.S.M.M.G., M.E., L.E.T., 10th Edition. M/s. John Wright & Sons Ltd., The Stonebridge Press, Bath Road, Bristol-4.

People in Hospital—By ELIZABETH BARNES. M/s. Macmillan & Co. Ltd., St. Martin's Street, London, W.C.2.

Stedman's Medical Dictionary, Twentieth Edition, M/s. Bailliere, Tindal & Cox Ltd., 7 and 8, Henrietta St., London, W.C.2.

Every-day Prescriptions With Hints on Treatment—By Dr. P. K. GUHA, 8-A, Pasupatinath Bose Lane, Calcutta-3.

Tropical Nutrition and Dietetics—By LUCIUS NICHOLLS, C.M.G., B.A.M.D. D.B.C. M/s. Bailliere, Tindall & Cox Ltd., 7 and 8, Henrietta Street, London, W.C.2.

Pharmaco-Therapeutics—By A. R. GOVINDA RAO, M.B., B.S., M.S., Professor of Pharmacology, Madras Medical College, Madras.

The Medical Annual, 1961—R. BODLEY SCOTT and R. MILNES WALKER, M/s. John Wright & Sons Ltd., The Stonebridge Press, Bath Road, Bristol-4.

PREPARATIONS AND INVENTIONS

Renese–A New Oral Diuretic (Pfizer : New York)—A new and clinically important agent to relieve patients suffering from excess water in the body tissues called Renese which is a new, oral nonmercurial diuretic has now been placed on the market. It is claimed that it does not have the toxic effects known to occur with mercurial compounds, and to be effective in very low dosage.

In a number of illnesses, such as congestive heart-failure, salts with excess water are retained in body tissues and causing œdema.

Also known as dropsy, œdema is a complicating factor in numerous ailments, particularly in diseases of the heart. Under modern treatment, diuretics like Renese are used to reduce the œdema while other drugs

like digitalis are given to correct the primary disease.

In addition to chronic congestive heart failure, Renese has been found to relieve the œdema associated with many other diseases, including cirrhosis of the liver, nephrosis, hypertension, premenstrual œdema and œdema in toxæmias of pregnancy.

Complex B Forte Glaxo Tablets—(Glaxo Laboratories).—These tablets are stated to contain high doses of vitamin B_{12} and other B complex vitamins:—10 mcg. of vitamin B_{12}; 50 mg. of vitamin B_1; 70 mg. of nicotinamide and 5 mg. of folic acid, and other B complex factors in each tablet.

Intensive B complex therapy when needed may be achieved by 1 or 2 tablets of Complex B Forte Glaxo, daily.

Available in foil packs of 30's from M/s. Glaxo Laboratories (India) Pvt., Ltd., Bombay.

NEWS AND NOTES

Steroid Plant for Bombay

The foundation stone was laid of the new Steroid Plant in Bombay, for Wyeth Laboratories Ltd., by Mr. Frederick J. Cavanaugh, Vice President, Wyeth International Ltd., U.S.A. assisted by Mr. K. G. Maheshwari, Managing Director, Geoffrey Manners and Co. Ltd. and Director of Wyeth Laboratories, Limited.

Wyeth Laboratories, Limited was registered last year under licence by the Union Ministry of Commerce and Industry, to produce from indigenously available basic material;-Steroidal hormones such as, Prednisolone, Prednisone, Hydrocortisone, Testosterone Propionate, Methyl Testosterone, Ethinyl Oestradiol and Progesterone which play an increasingly important part in modern therapeutics.

This Plant at Ghatkopar, Bombay, is estimated to cost nearly Rs. 2 crores and when complete next year, will not only save the country foreign exchange of about Rs. 30 lakhs annually, but it is also anticipated that there will be foreign exchange earnings to the extent of nearly Rs. 20 lakhs.

Amartara Industries

New Factory in India for Blankoplast Adhesive Plaster

Amartara Industries have started a factory for the manufacture of Blankoplast adhesive plaster in India, at Powai, Bombay with German expert collaboration. The new plant has been constructed on modern lines, with the latest equipment and machinery. For nearly two decades, imported Blankoplast has been very popular—Blankoplast is used as surgical dressings and is an effective medicated plaster for covering and healing wounds, etc.

International Seminar on Arteriosclerosis

The International Seminar on Arteriosclerosis will be held at the Birla Matushri Sabhagar, Bombay. on 3rd, 4th and 5th February, 1962.

The guest speakers from abroad include Dr. Paul B. White (U.S.A.), Dr. Kempson Maddox (Australia), Dr. Ancel Keys (U.S.A.), Dr. Lawson McDonald (U.K.), Dr. Takio Shimamoto (Japan), etc.

Further details can be had from Dr. Piloo E. Bharucha, Jt. Organising Secretary, International Seminar on Arteriosclerosis, K.E.M. Hospital, Bombay 12.

All India Dental Association, Madras

The following were elected office-bearers of the Madras State Branch of the All-India Dental Association for the year 1962, at its general body meeting held on December 20: Dr. C. S. Raman, (President); Drs. K. Azuma and G. R. Bhat (Vice-Presidents), Dr. C. A. Pillai (Hon. Secretary), Dr. P. N. V. Giri (Treasurer) and Drs. V. M. Chandrahas and R. Viswanathan (Committee Members).

Fourth All India Conference of Dermatologists and Venereologists 1962

The Fourth All India Conference of Dermatologists and Venereologists under the aegis of the Indian Association of Dermatologists and Venereologists is due to be held on February 23rd and 24th, 1962 in Bombay. Several distinguished foreign dermatologists from Germany, Switzerland, Israel, Japan, Egypt, South Africa and Pakistan are attending the session, as fraternal delegates. Members of the medical profession are welcome to participate in this open session.

Research in Medicine

Indian Academy Inaugurated

Prime Minister Nehru inaugurated the recently-formed Indian Academy of Medical Sciences on 19-12-'61 hoping it would play an important part in encouraging real research work and helping to maintain high standards.

The academy has been set up on the lines of the Royal Society of London and the National Institute of Sciences in India to promote researches and grant recognition to outstanding work of medical scientists.

Commending the idea behind the setting up of the academy as "excellent," Mr. Nehru said the country should undertake researches in a big way in different fields. Each university should become a centre of research in a particular scientific or technical subject. The votaries of medicine in India must develop a scientific and integrated outlook and not think as though they branched off from medicine in Europe and had no roots in India.

The Prime Minister announced a contribution by the Union Government of Rs. one lakh to the academy to which President Prasad and Mr. Nehru have agreed to become patron-in-chief and honorary fellow respectively. The academy's list of honorary fellows includes Dr. B. C. Roy, Chief Minister of West Bengal, who was present at the inaugural function, Dr. Jivaraj Mehta, Chief Minister of Gujarat, and Dr. A. Lakshmanaswami Mudaliar, Vice-chancellor of Madras University.

Mr. D. P. Karmarkar, Union Health Minister, said membership of the academy should automatically bring recognition for Indian medical men in foreign countries.

Dr. C. G. Pandit, Director of the Indian Council of Medical Research, in his presidential address, said there was need to bring about greater collaboration between universities, medical schools and research institutions.

Treatment of Cancer

Canadian Gift of Cobalt Bomb

The Canadian Government on December the 15th presented a "cobalt bomb" one of the latest means in the treatment of the cancer, to the Government of India.

The presentation was made by the Canadian High Commissioner, Mr. A. Ronning, at Safdarjung Hospital, where it is installed.

The Union Health Minister, Mr. Karmarkar, accepting the present, expressed the Government's "grateful thanks" to the Canadian Government for its assistance in helping India fight the dreaded disease of cancer.

The assistance is under the Colombo Plan.

Canada has already presented five such bombs which have been installed at hospitals and medical colleges at Ludhiana, Madras, Bombay, Vellore and Trivandrum. Three more bombs are expected, and will be installed at the Cancer Hospital, Hyderabad, the S.E.B. Medical College, Cuttack, and the G.S.V.M. Medical College, Kanpur.

Each "cobalt bomb" costs $40,000 (Rs. 1,90,400).

Dust Coagulation by Ultrasonic Device

Polish Scientists' New Device

Every day, in cities and industrial centres the world over, factory chimneys waft tons of dust into the atmosphere, creating a serious menace to health.

Polish scientists tackling this problem have invented an ingenious device which uses the properties of soundwaves, especially ultrasonic waves, to "coagulate" dust. The device consists of an ultrasonic siren, fitted to the factory chimney, whose vibrations would cause the solid particles in the smoke to amalgamate. The dust would then be trapped by conventional chimney filters instead of being carried into the air and deposited in the neighbourhood.

Details of the invention were described at the Third World Congress on Prevention of Occupational Risks by Mr. Maczewski, of the Central Council of Polish Trade Unions.

Child Welfare

UNICEF Allots $ 16 Million

The 30-nation Executive Board of the United Nations Children's Fund (UNICEF) approved aid allocations of 16,253,857 dollars for child welfare and protection in 68 countries on 21-12-1961.

Medical Service in Villages

Compulsory Scheme : States' Support

The Union Health Ministry's scheme for a one-year compulsory service in rural areas by medical graduates would entitle them to scales of pay prescribed for doctors in the respective States.

The scheme, which is awaiting approval by the Cabinet, is also understood to provide that this period would be counted for Government service in the case of medical graduates seeking employment later under Government. Exception from the compulsory service will be made only in respect of students going for post-graduate studies.

Prime Minister Nehru had indicated some time ago that Government was "on the verge" of accepting such a scheme. The details worked out by the Health Ministry would go before the Cabinet shortly.

Questions such as whether the medical graduates should be permitted to serve in any rural area, irrespective of the place of their graduation, would be settled after the main decision is taken.

Operation for Elephantiasis

A successful operation for elephantiasis was performed on an Indian scientist, Mr. Bhanumurti of Bangalore, by the Ukrainian surgeon Dr. Alexei Troshkov, at the clinic of the Lvov Medical Institute. The operation lasted six hours. Nineteen kilograms of degenerated tissue was removed from the right leg of the patient.

Mr. Murti is now freely walking feels fine and has left for the local health resort, Lyuben-Veliky.

[*Note* :—Thousands of such drastic major operations for elephantoid scrotum and legs have been performed in Madras City and mofussil stations of this State, both in hospitals and by private practitioners, for over 50 or 60 years. So it is nothing new to us.—Ed. Antiseptic].

Immunity to Trachoma

Successful Research by U.S. Doctors

Doctors of a United States naval medical research unit stationed in Formosa have reported that trachoma, a blinding disease of the eyes, can be effectively prevented by the use of a "properly prepared and administered adjuvant vaccine."

The finding came after a long series of experiments on trachoma vaccine studies on Taiwan monkeys.

A paper prepared by the research group said "definite" immunity to trachoma can now be demonstrated. The tests indicated that the monkeys which were first immunized with a friend-type adjuvant (booster type) vaccine" were either resistant to a large infection or showed a mild clinical reaction which disappeared in a few days."

Captain Kobert A. Philips, head of the medical unit, said that besides vaccine studies, the group was carrying out biological research in an unrelenting effort to find a sure cure for the eye disease which affects some four hundred million people in the world, most of them in Asia.

Penicillin Eye Oint.,	3·5 gms.	0-17½
,, Skin Oint..	14gms. 0-26	250 Tubes. 0-25
Chloramphenicol Eye oint.	1% 3·5 gms.	0-28
Hydrocortisone Acetate Skin Oint.	1% 3·5 gm.	1·00
Sulphathiazole 5% (Upzol) Ointment	20gms.	0-23
Vitamin B_1 100 mgm/ml.	10ml.	0 43
Vitamin C 500 mgm/ml.	10ml.	0-75
Vitamin B_{12} 50mcg/ml.	10ml.	0-45
,, 100mcg/ml.	10ml.	0 62
,, 200mcg/ml.	10ml.	1·10
,, 500mcg/ml. 5ml. 1-00	10ml.	1-80
,, 1000mcg/ml. 5ml. 1-75	10ml.	3-25
Vitamin B Comp. 10 ml.		0-44
Vit. B_1 10mg. 1000 4-40, 50mg	1000s	11·50
Vitamin B_1 100mg	500s	11-50
Vit. B_2 5mg. 1000s 4-30, 10mg	1000s	6-28
Vit. B_6 5mg. 1000s 9-30, 10mg	1000s	15-50
Vit. C 50mg. 1000 5-50, 100mg	1000s	8.75
,, 500 mg.	500s	19-00
Folic Acid 5 mg. 500s 4-70,	1000s	9·15
Nicotinamide 50 mg.	1000s	6-60
Nicotinic Acid 50 mg.	1000s	6-20
Vit. B-Complex	1000s	4-50
,, Forte	,,	7-50
,, Super/Forte	,,	9-00
Up-V-Malt (Vitaminised Malt)	450gms.	3-30
Chloramphenicol caps. 250 mg.	12's	1-70
100s 12-25, 500s 60-00,	1000s	116-50
Tetracycline Hydrochloride Cap 250mg	8's	4-00
,, ,, ,,	100's	42-50
'ABC' Gripe Water, 125ml. 0-63	50 bot.	0-60
'ABC' Vit. B-Complex with Glycerophospate : 100ml. 1·40,	200ml.	2-40
'ABC' Asthma Mixture 100ml.		1-20
Calc. Glu. Inj. 10% 10cc.	per 50amp.	4-25
Glucose Solution 25% 25cc.	,,	8-00
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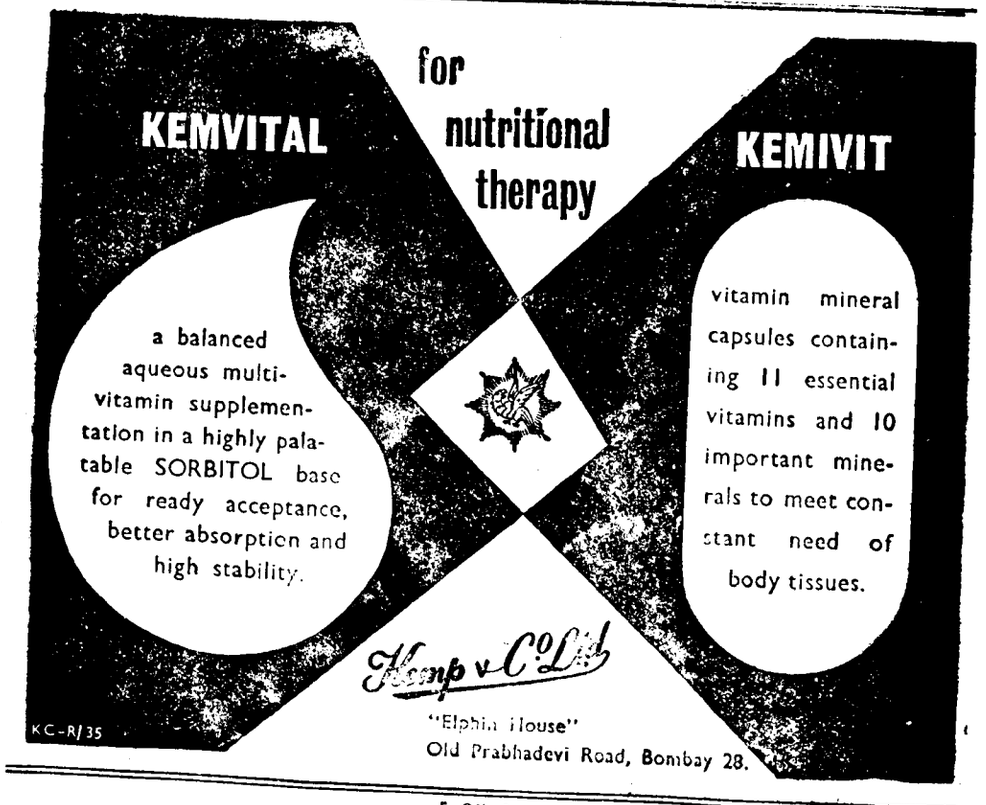

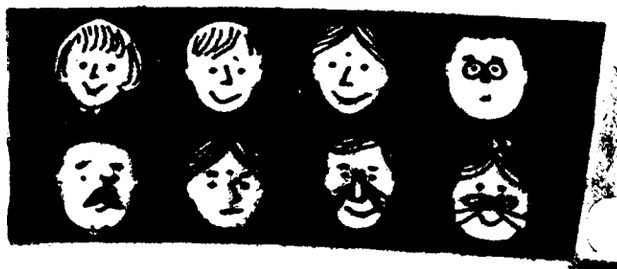

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