

SURGICAL
AND
MEDICAL NEWS

Vol. 63

1960

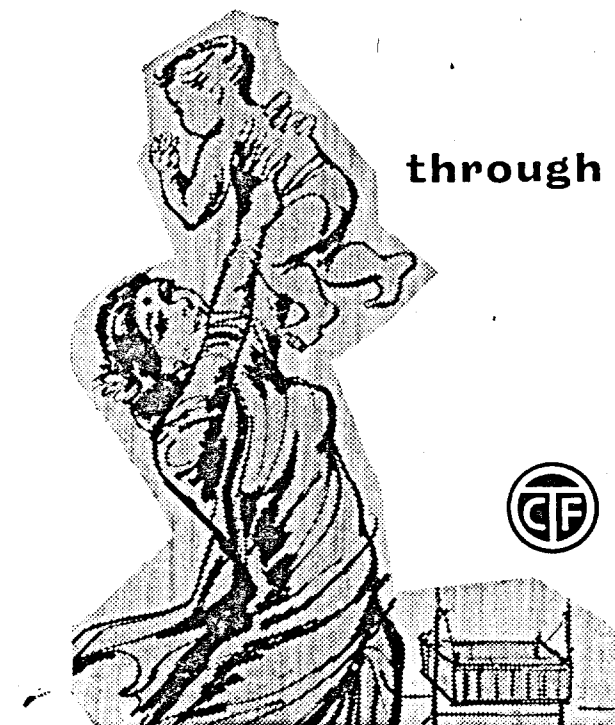
[No. 4]

JULY

JL
Lm2, N4 SM.
N60. 3. 4.
171759.

SURGICAL & MEDICAL NEWS

FOR THE USE OF REGISTERED MEDICAL PRACTITIONERS, HOSPITALS AND LABORATORIES ONLY.



Healthy Children

through good nutrition

T.C.F. VITAMIN B-COMPLEX

Available as capsules, liquid,
tablets and injections.

Specially indicated in pregnancy
and lactation, vomiting
of pregnancy and growth.



Products of
**TEDDINGTON CHEMICAL
FACTORY PRIVATE LIMITED**

Sole Distributors:
RALLIS INDIA LIMITED,
Pharmaceutical Division,
P.O. Box 229, Bombay-1

SURGICAL & MEDICAL NEWS

Telegrams: "Pulsewave"—"Goregaon"

Telephone: 84311

Volume 6 No. 4

Price Rs. 2.50

July 1966

EDITORIAL BOARD

Chairman:

Dr. G. S. Melkote

Honorary Members:

Dr. P. K. Ghosh, M.B., D.T.M.(Cal.), T.D.D.(Wales),
M.R.C.P.(London), F.R.C.P.(Edin.), F.C.C.P.(U.S.A.)

Colonel T. C. Ramchandani, F.R.C.S.(Eng.)

Dr. B. N. Balakrishna Rao, B.Sc., M.B., B.S.,
F.A.S.C., F.I.C.S., F.R.C.S.(Eng.)

Major A. H. Vatsyayan, M.B., B.S., B.Sc., L.O. (London)

Dr. Birendra Chandra Dutta, M.B., B.S.

Dr. C. A. Agashe, M.B., B.S.

Dr. A. Basu, B.Sc.(Hons.), M.B.

Dr. Vishnu Sarma, M.A.(Cantab.), M.D.(Cantab.),
B.Chir., M.R.C.S.(Eng.), L.R.C.P.(Lond.), D.G.O.(Madras)

Managing Editor:

Dr. S. N. Dhananjay, M.B., B.S., C.I.H.,
Medical Officer, Mysore Kirloskar Limited, Harihar.

Advertisement Manager:

Padma Vyas, B. A.

All communications regarding advertisements, editorial
business, subscriptions etc. should be addressed to:

"SURGICAL & MEDICAL NEWS"

'DILIP SADAN'

JAYPRAKASHNAGAR, GOREGAON

BOMBAY

CONTENTS

	PAGE
Clinical Acumen Versus Diagnostic Aids	3
Diagnosis of Brain Diseases— Dr. E. Doskach	6
Further Experience with Viomycin, Pyrazinamide and Cycloserine in the treatment of Pulmonary Tuberculosis— K. Banerjee & A. G. Fletcher, Wanlesswadi	8
The Genito Urinary Tract in Obstetrics and Gynaecology— Dr. Vishnu Sarma, M.A.(Cantab.), M.D.(Cantab.), B.Chir., M.R.C.S.(Eng.), L.R.C.P.(Lond.), D.G.O.(Madras), Madras.	18
International Work in Leprosy, 1948—1959— Dr. Gay Prieto, W.H.O.	31
Public Health Services in USSR— Prof. V. M. Zhdanov	47
Marvels of Soviet Medicine— Dr. E. Tikhanov	50
Syphilitic Juxta-Articular Nodes— Dr. Li Hung-Chiung, Dr. Ma Hai-Teh, Dr. Fan Lien- Chieh and Dr. Liu Chi-Ho, Peking Dr. Wang Shuang-Yuan, Peking, Dr. Sun Mu-Yung, Yunnan and Dr. Teng Kuei, Inner Mongolia	53
Plastics as a Healing Substance— Dr. R. Gordin, Moscow	59
Heart Disease Answer Sought in Odd Animal	60
Book-Reviews	61

SURGICAL & MEDICAL NEWS

JULY 1960

CLINICAL ACUMEN VERSUS DIAGNOSTIC AIDS

THE story of Lakshmi is worth telling because this small girl was submitted to a needless major abdominal operation for the simple reason that she was not examined properly.

Lakshmi was 14 years old and her parents were worried because she had not attained puberty. They took her to a mofussil hospital. Here the doctor noted that she had a swelling of the lower abdomen. So he advised that she should be given Penicillin for ten days. This she had. Her abdominal pain became better. The doctor thought that the swelling had become reduced in size. So he reassured her and sent her away.

A fortnight later she had great difficulty in passing urine. Her parents now decided that something may really be wrong with their daughter and it would be best to take her to a big hospital in the city. At the big hospital her abdominal swelling was recognized and she was admitted for further investigations. She was subjected to a great many investigations, some of them of quite a specialized and dangerous nature. The Haemoglobin was 70% and the total white cell count was 7200. The urine contained no albumin or sugar. There was nothing abnormal in the centrifuge deposit. There were no ova or cysts in the motions. No acid fast bacilli were discovered in her sputum. A plain x-ray of the abdomen showed no calcification. A chest x-ray showed the lungs to be normal. A blood urea was estimated and a special test of renal function was also done; all these showed Lakshmi to be quite normal. Urographic studies were carried out. These showed no abnormality whatever. Barium meal studies were undertaken and the gastro-intestinal tract was found to be quite healthy.

Fortunately Lakshmi's parents did not have to pay for all these expensive tests. Lakshmi was given antibiotics. The surgeon decided that the only method to get to the root of the problem would be to open her abdomen and have a look inside. Poor Lakshmi had to be submitted to a major abdominal operation. Fortunately for her the Surgeon recognized what he found. The vagina was grossly distended and on that swelling a uterus with its tubes was perched. Now the diagnosis was apparent. The girl had haematocolpos, the result of an imperforate hymen. He made a small opening into the distended swelling and a lot of dark tarry blood-stained material escaped. The wound was closed and then the abdomen was carefully explored for other lesions and there were none. The operation was over. After the operation it occurred to the surgeon that the vulva might be inspected and when the external genitalia was inspected there was a bluish membrane of an imperforate hymen. In due course the patient made an uneventful recovery and at discharge the parents were advised to consult a gynaecologist.

For some reason Lakshmi's parents took their own time in bringing her for a gynaecological consultation. And when they did some months later the tumour had

reappeared. To the gynaecologist the diagnosis was obvious. In due course he performed a small operation, a small cut in the obstructing membrane and allowed the accumulated contents to escape. The vagina was subsequently dilated to prevent closure of the orifice and the patient made a very satisfactory and permanent recovery and had no further recurrence of her trouble.

This case is most instructive because the diagnosis had not been made for want of very simple procedure. Although innumerable complicated and dangerous investigations had been made, a proper physical examination had not been performed. Fortunately for the patient the general surgeon recognized the true nature of the condition at laparotomy. Although he was not certain of the correct line of treatment, he restrained himself from destroying the internal genital organs preventing Lakshmi from having a proper married life or having any babies ever.

Cases have nevertheless been reported in the literature in which by mistake the internal genitalia have been totally excised making it impossible for the patient ever to conceive.

This reluctance to perform a simple gynaecological examination is most deplorable. We have considered a simple condition which does not usually kill but there are so many other lethal conditions notably pelvic cancer which is overlooked for want of a proper examination.

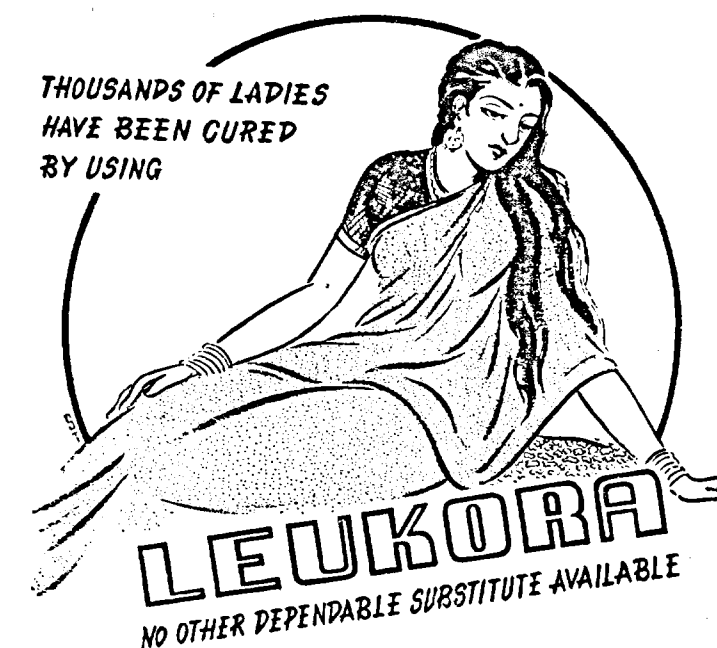
Way in his book "Malignant disease of the female genital tract" discussing ovarian cancer quotes the case of 52 year old woman who was referred to hospital on account of post menopausal hæmorrhage of 3 weeks duration. On examination, bilateral ovarian carcinomas with a secondary deposit at the lower end of the vagina were found. The condition was quite hopeless and she died two months after a laparotomy. The history revealed, however, that two years previously she had been investigated in a London teaching hospital for vague abdominal pain thought to be due to pyelitis, and six months after this she had been investigated in the medical department of a large provincial hospital for "indigestion" thought to be due to a gastric ulcer. Way remarks "how many early carcinomas of the ovary have been nurtured in a sea of bicarbonate of soda and potassium citrate by the practitioners of the world cannot be even guessed and it is sad, but probably true to say that if the bicarbonate of soda were reserved for the obvious case with abdominal swelling and pain and the case with vague symptoms was investigated at once, the results would probably be much better."

For some curious reason the general surgeon seems to discard whatever gynaecological knowledge he may possess and this results in serious mistakes. It is of course true that from time to time the gynaecologist also could do with some knowledge of the principles of general surgery. In an excellent and thoughtful article on "Errors in gynaecological diagnosis due to misplaced organs" Paterson writes: "Progress in obstetrics and gynaecology is denoted among other things by greater accuracy of diagnosis. When mere

opening of the peritoneal cavity more often than not, meant death from general peritonitis much thought and time was spent on pre-operative diagnosis. When it was demonstrated beyond doubt that by proper precautions the peritoneal cavity could be invaded with immunity, preoperative diagnosis of gynaecological pelvic and abdominal conditions because less accurate and often were not made at all. It has been so easy to excuse our intellectual laziness in diagnosis by saying that it makes no difference since the correct diagnosis will be made after the abdomen is opened. To look in and see may be dangerous, even fatal and is crude surgery with modern diagnostic aid."

Is it not very remarkable that Lakshmi whose complaint could have been readily diagnosed by inspection of vulva remained a diagnostic puzzle in spite of so many investigations. She was subjected to a needless abdominal operation when a small vaginal incision would have cured her. We would urge all who practice medicine and surgery not to forget the fundamental principles of the medical art even if it does happen to trespass on the ground of one of the specialties like gynaecology.

In all cases it would be worthwhile to perform a complete physical examination which should include pelvic evaluation by vaginal and rectal examination. If this percept is not followed we will inevitably come across cases which end in needless tragedy.



FOR PARTICULARS WRITE TO- **ADCCO LIMITED**
29/3A, CHETLA CENTRAL ROAD • CALCUTTA-27

DIAGNOSIS OF BRAIN DISEASES

By Dr. E. DOSKACH

Encephaloscope Opens Up Great Possibilities

THE Soviet-made electro-encephaloscope was awarded a gold medal at Brussels World Fair. This extremely interesting device developed by Prof. M. N. Livanov, a Soviet scientist, in co-operation with V. M. Ananyev, an engineer, a few years ago, opens up a vast prospect for research into higher nervous activity. But its importance outruns the bounds of research. It has already been put into practical use in diagnosing diseases at the Polenov Institute of Neurosurgery, the Mental Hospital of the Central Advanced Medical Training Institute and some other medical establishments of Moscow and Leningrad.

In its general outward appearance an electro-encephaloscope is just the same as the widely known encephalograph which has long been in use all over the world. Yet to the uninitiated eye can quickly find out that in the former a small television screen has replaced the wide-tape recorder of the expotential curves of the bio-electric activity of individual sections of the brain fitted to the encephalograph. The expert eye, however, notices that the new device enables direct observation of the spatial variations of the electrical activity of the cortex. The TV screen shows the brain's bio-electric activity more graphically and, one may say, dynamically.

Bluish vertical dashes with rows of glowing dots above them which appear on the television screen make it possible for doctors to follow the processes going on in the cerebral cortex without any additional deciphering.

RANGE OF OBSERVATION

While the encephalograph can record bio-electric activity only at 16 to 20 separate points of the brain, the encephaloscope has a far larger range of observation. The unit exhibited at the Brussels World Fair could take in fifty points of the cerebral cortex, while its improved version, now available at the Higher Nervous-Activity Research Institute of the Soviet Academy of Sciences, has a 100-point observation range.

The prospects for its further development in this respect are practically unlimited, for the encephaloscope is based on the principle of electronic commutation. This means that, subsequently, it will be possible to use it for studying in detail simultaneously the state of the bio-electric activity of the entire cortex.

The pattern of lights flaring up on the screen is simple. The fifty glowing dots correspond to the fifty electrodes inserted in a special holed helmet put on the patient's head. Each electrode bears a certain number which corresponds to a certain point of cortex.

The dots are never at rest. They glimmer as they flare up or grow faint. The examiner, aware of their location, will see in what regions of his patient's cerebral cortex bio-electric activity is normal, excited or depressed. There are some vertical lines glowing like tiny tongues of bluish flame beneath the dotted rows. They are divided into five neat groups strictly in accordance with the five rows of the numbered dots. When the person being examined is asleep, his brain is in the somnolent, inhibitory phase and the flames on the screen will be very faint. But this is a normal case.

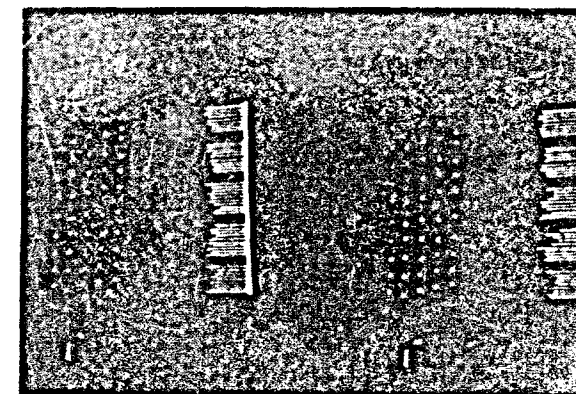
BRAIN DISEASES

What about a pathologic one? For, it is the pathologic, the sick, rather than the healthy that are usually examined at mental hospitals. One of the cases of the pathologic inhibition of the brain is schizophrenia which, in a certain phase, results in the patient appearing to be half asleep, as it were, while actually being awake. He is practically motionless and appears not to react to anything, nor to be doing any thinking to speak of.

Another interesting case is epilepsy. Once you put the encephaloscope helmet on an epileptic patient you see an altogether different picture: The short glowing touches will become astir, looking like long-tongued agitated flame. In the third group the touches will

leap up to the dots. And the dots of the third row (the motor analyzers zone) will flare up, too. This, indeed, is a disturbing picture. It shows our epileptic patient to be in a state of acute excitement—a sign of an attack coming on.

Up till now it was believed that there was no way of predicting an impending epileptic seizure, for it seemed unavoidably sudden. But the encephaloscope does make the prediction possible. This is of great practical significance. If you do know that a fit is coming on in a matter of days, you can do something to prevent it or, at least, to reduce its intensity. Nor is this the full merit of the encephaloscope in dealing



Bio-electric pattern of the cortex. This electric pattern shows the human brain in a calm state.

with epilepsy. For, once in a position to watch the activity of the entire cortex without too much deciphering, you cannot only locate the morbid spots, but have them surgically removed as well. In this way encephaloscopes make surgical treatment of

epilepsy more dependable. Such delicate operations have already been performed in the Soviet Union and have produced spectacular results.

BRAIN TUMOURS

There is one more class of ailments—tumours of the brain—in which the encephaloscope proves to be of inestimable value to the surgeons and the patients alike. These have always been extremely difficult and, what is more, terribly painful, to diagnose. Now, with encephaloscopes it can be located with great accuracy and quite painlessly. On the screen the tumour will stand out like a dark spot—the silence zone—fringed by the glowing dots.

A TV screen will show a picture of the bio-electric activity of the cerebral cortex dynamically. Now, what will happen when the unit is switched off? Will the picture be lost for ever? Or can one rely on one's "first sight" conclusions alone? And this, above all, when the question at issue is one of surgical intervention, or the boundaries of the tumour or the location of the epileptogenic zones which are to be removed? The incessant glimmering of the dots and lines quickly tires the eye. Yet, this has been taken into account. The screen is placed in front of a cine-camera and everything shown on it is thus filmed.

What is the future of the encephaloscope? Before long its observation range will be increased to a few hundred dots to reach any point of the cortex. This will enable a comprehensive examination of the processes involved, without leaving any "blanks" on the map of the cerebral hemispheres, as was the case until now.

EARLY DETECTION

Malignant tumours never appear in absolutely healthy tissues—they develop against a background of the so-called precancerous processes. The latter do not always change into cancer, but serve as a basis on which it may develop. Therefore, the most effective means of prophylaxis is to detect the precancerous disease as early as possible and to begin its efficacious treatment. With this end in view, mass prophylactic oncological examinations of the population are systematically being carried out by the network of medical institutions of the Soviet Union. These examinations enable physicians to detect precancerous conditions, and to apply the necessary therapeutic measures. Needless to say, the detection of malignant tumours, at the early stages when it is still possible to cure them completely, is of fundamental importance to cancer prophylaxis. Prophylactic examinations are all the more important as many tumours often develop with only slight symptoms the result of which is that many patients seek medical aid too late, when there is not much chance of curing them.

Further Experience with Viomycin, Pyrazinamide and Cycloserine in the treatment of Pulmonary Tuberculosis*

By

K. BANERJEE & A. G. FLETCHER
(Wanless Tuberculosis Sanatorium, Wanlesswadi)

AT the XIV Tuberculosis Workers' Conference at Madras in January, 1958, we reported our preliminary studies on 24 patients who had received treatment with one of the three new anti-tuberculosis drugs: viomycin, pyrazinamide or cycloserine. (Banerjee and Fletcher, 1958). At that time we expressed our opinion that these drugs had a definite place in the treatment of pulmonary tuberculosis, especially for re-treatment of patients with drug resistance and for surgical coverage for such patients. The object of the present paper is to evaluate our total experience with 115 patients who have been treated with one or the other of these drugs during the last 3 years, including the 24 patients previously reported. Most of these patients were suffering from far-advanced pulmonary tuberculosis and had been treated for prolonged periods with the usual anti-tubercular drugs without success. In 45 cases the new drugs were used to provide anti-microbial drug coverage for surgical intervention when there was evidence of drug resistance to conventional therapy.

Further experience has generally confirmed our previous conclusions, particularly as to the value of these agents for surgical coverage. There have also been some examples of serious toxic reaction, which had not been noted at the time of these preliminary reports.

MATERIAL AND METHODS

One hundred and fifteen patients with chronic and advanced pulmonary tuberculosis were selected for the study. With the exception of 13 patients, all had sputum positive on smear before these drugs were started. All had been previously treated with SM, INH and PAS for an average of 3-4 years and there was clinical evidence of resistance to these drugs, although actual sensitivity determination could not be done.

* Presented at the Warker's Conference, Poona, 1960

The division of these patients into various groups for purposes of treatment and analysis is indicated in Table I. It will be noted that 18 patients were treated with viomycin, 38 with pyrazinamide and 59 with cycloserine. Seventy patients were in the "Non-Surgical Group" and 45 were in the "Surgical Group".

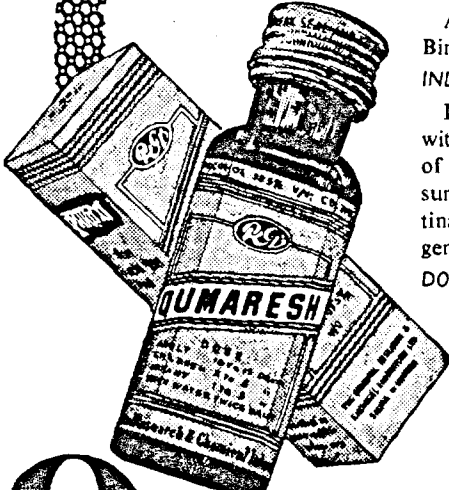
TABLE I
Division of Patients in Treatment Groups

Drug	Non-Surgical Group	Surgical Group	Total
Viomycin	14	4	18
Pyrazinamide	20	18	38
Cycloserine	36	23	59
Total	70	45	115

The Non-Surgical Group consisted of 70 patients who were beyond the scope of surgical treatment because of the extent and distribution of pulmonary lesions, limited pulmonary function or poor general condition. The average duration of previous treatment with SM, INH and PAS was 50 months, or just over 4 years. All had far advanced, bilateral, active pulmonary tuberculosis with a down-hill course of the disease before starting the new drugs. In all except 10 cases the sputum was positive on smear, and all were considered to show clinical evidence of bacterial resistance to the conventional drugs. Fourteen of these patients were treated with viomycin, 20 with pyrazinamide and 36 with cycloserine, for average periods of 16 weeks, 10 weeks and 12 weeks (Table II). Such relatively short treatment periods of 3-4 months were dictated partly by the short supply of the drugs and partly by the fact that further improvement was not usually noted after about three months of treatment.

TABLE II
Non-Surgical Group

Drug	Number of patients	Average previous Treatment in months	Average period of Treatment in weeks	Toxicity	RESULT	
					Good	Failure
Viomycin	14	35	16	Albumin-urea-2 Sensitivity -2	3 (21%)	11
Pyrazinamide	20	61	10	Jaundice -1 Menorrhagia-2 Hemoptysis-1 Severe Psychosis	3 (15.0%)	17
Cycloserine	36	54	12	Mild Mental Symptoms -2	7 (19.4%)	29
Total	70				13 (18.6%)	57



COMPOSITION:
Aurographis Paniculata, Hygrophila Spinosa, Luffa Bindal, Ptychotis and other cholagogues and carminatives.

INDICATIONS:
Infantile liver with constipation; biliary obstruction with dropsy; tropical congestion of liver; early stages of cirrhosis of liver; intestinal troubles during dentition; summer diarrhoea; postnatal anorexia with gastro intestinal irritation and diarrhoea; anasarca; jaundice, and general atonic condition of the liver and stomach.

DOSES:

Adults	10 to 15 drops
Children	2 to 5 "
Infants	1 to 3 "

with water twice daily, before or after meals or as directed by physician.

Qumaresh

THE ORIENTAL RESEARCH & CHEMICAL LABORATORY LTD

The *Surgical Group* consisted of 45 patients who had had prolonged previous treatment with the usual anti-tuberculosis drugs and had developed resistance to them. The average period of previous treatment was 40 months or nearly 3 years. All had positive sputum on smear except for 3 patients who, on serial roentgenograms and clinical examination, showed active disease.

Surgery was the only hope for these patients but

the attending risk was considered high because of the infectiousness of the sputum, the extent of the lesions and the evidence of drug-resistance. For these reasons, the newer drugs were employed for surgical coverage for these patients. Viomycin was used for four patients, pyrazinamide for 18 patients and cycloserine for 23 patients (Table III). Therapy was usually commenced 2-4 weeks before operation and continued for 4-12 weeks (1-3 months) after operation.

TABLE III

Surgical Group. Type of operation

	Pleuro— Pneumo- nectomy	Pneumo- nectomy	Lobecto- my	Segmental Resection	Thoraco- tomy	Thoraco- plasty	Total
VIOMYCIN	—	1	2	—	—	1	4
PYRAZINAMIDE	1	10	6	—	1	—	18
CYCLOSERINE	1	13	4	—	3	2	23
TOTAL	2	24	12	—	1	3	45

The types of operation performed are also indicated in Table III. It will be noted that pneumonectomy or pleuro-pneumonectomy was required in 26 of the 45 cases (61.9 per cent). Of the 15 patients who had lobectomy or segmental resection, 3 had bilateral resections and one had a thoracoplasty on the contralateral side. Three patients were treated by thoracoplasty alone and one patient had only a thoracotomy. Pleuropneumonectomy was contemplated for this patient but was abandoned when pathological bleeding developed after mobilization of the lung. The above figures will confirm the fact that this was a group of patients with far-advanced disease for whom salvage by surgery was attempted with the aid of the new drugs.

Dosage Schedule: Viomycin, pyrazinamide and cycloserine were each used in combination with the usual dosage of isoniazide (150-300 mgm. daily). The larger doses of isoniazide which had been tried by some investigators (Wolinsky and Kapur, 1959) were not used. Viomycin was given in a dosage of 2Gms. twice weekly in divided dose, 1 Gm. in the morning and 1 Gm. in the evening. For pyrazinamide the dosage was 1.5 to 2.0 Gms. daily, depending upon body weight. This is similar to that employed by other workers (Small, 1959; Kaida and Sugiyama,

1959). Cycloserine was given in a dosage of 250 mgm. twice daily, or 500 mgm. per day, except for the first few patients, who received 1 Gm. daily. This is the usual recommended dosage, though some workers have given 750 mgm. daily. (Ryder, 1959; Wolinsky and Kapur, 1959).

As already indicated, the usual period of treatment was not more than 3-4 months although a few patients were treated continuously for as long as six months with one of these drugs. The longer treatment period of 6 to 24 months used by some investigators (Wolinsky and Kapur, 1959; Small, 1959) were not practicable in this series.

RESULTS IN THE NON-SURGICAL GROUP

The data are summarized in Table II. It will be seen that out of a total of 70 patients who had treatment with one of the three drugs, the result in 13, or 18.6 per cent, was considered "Good" and in 57 as "Failure". A good result means that the patient is clinically well, the x-ray is stable (though cavities may still be apparent), the sputum is negative on concentrated smear or culture for at least six months, and the patient is considered fit for discharge from the sanatorium. The follow-up period in these cases

is variable and is not sufficient for us to state that the disease actually is arrested. No doubt some of these patients would suffer relapse within a few years. The patients classified as "Failure" had persistently positive sputum and progressive disease after treatment, though many of these patients had a temporary period of clinical improvement, weight gain, x-ray improvement and even temporary conversion of sputum, during the treatment period. Thus, the actual rate of salvage in cases of this type, using any one of these three drugs, is not more than 15-20 per cent. The results with each of the three drugs will now be discussed in further detail.

Viomycin: Out of 14 patients treated with viomycin for an average period of 16 weeks, only 3 patients (21.4 per cent) had real benefit. One of them showed marked clinical improvement, sputum conversion and cavity closure. Another patient showed moderate clinical improvement and sputum conversion, and 11 lbs. weight gain, though there was not much radiological change. She had a thoracoplasty later on. In a third patient, with bilateral far advanced lesions, the down-hill course of the disease was checked by viomycin and apparently he was salvaged by pulmonary resection. All these three patients were finally discharged as arrested cases.

Toxicity was noted in two patients who had persistent albuminuria after prolonged treatment with viomycin for 20 to 24 weeks. In two cases treatment had to be stopped because of toxic symptoms. One patient developed a severe sensitivity reaction after 4 weeks of treatment and the other developed jaundice and dermatitis after one week treatment. It is difficult to say whether viomycin actually caused the jaundice and dermatitis or not.

PYRAZINAMIDE: Twenty patients were treated with pyrazinamide for an average period of 10 weeks. Three patients (15 per cent) had a good result. Two of them had sputum conversion and showed radiological improvement. One of these has already been discharged as an arrested case and the other is still under sanatorium treatment, but should be discharged soon. The third patient had a right pneumonectomy under coverage of pyrazinamide about one year previously and was re-admitted with a fresh lesion in the remaining lung, but with negative sputum. She showed marked and rapid regression of her lesion with a second course of pyrazinamide and was discharged as an improved case.

LIVOZYME 12

A Non-Alcoholic Haemopoietic and Lipotropic Tonic and Tissue Repairing Agent

RICH IN

Natural and Synthetic Haematinic principles, and B Complex Vitamins and Digestive Enzymes of the freshly Proteolysed Liver Yeast Extracts fortified by Synthetic Vitamin B Complex factors Folic Acid, Vitamin B₁₂ and Lipotropic factors Choline and Methionine.

COMPOSITION

Each 100 mls. contains

Proteolysed Liver Extract from	100 G. Fresh Liver
Stomach Extract from	1 G. Fresh Stomach
Yeast Extract from	6 G. Dried Yeast B.P.C.
Folic Acid B. P.	10 mg.
Vitamin B ₁₂ B. P.	40 mcg.
Vitamin B ₁ B. P.	140 mg.
Riboflavin B. P.	10 mg.
Vitamin B ₆ B. P. C.	7 mg.
Calcium Pantothenate U. S. P.	18 mg.
Nicotinic Acid amide B. P.	200 mg.
Choline Chloride N. N. R.	1 G.
Methionine N. F.	1 G.
PABA N. F.	35 mg.
Calc. Glycerophosph. B. P. C.	680 mg.
Liq. Pot. Glycerophosph. B.P.C.	560 mg.
Manganese	
Glycerophosphate N. F.	56 mg.

ASSOCIATED DRUG CO., PRIVATE LTD.
YERCAUD (S. INDIA)

One patient showed signs of severe liver damage. He had pyrazinamide treatment for three months and soon after the drug was stopped, developed jaundice and ascites from which he ultimately recovered. This case was reported in detail in our previous communication (Banerjee & Fletcher, 1958). One patient, who was treated for 14 weeks with pyrazinamide, died of massive hæmoptysis two months after the discontinuation of the drug. Another patient had hæmoptysis during treatment with pyrazinamide and became worse. Some increased menstrual flow was noted by most of the female patients treated with pyrazinamide, and two patients experienced menorrhagia of moderately severe degree. It seems clear that pyrazinamide, especially when administered over a prolonged period has some definite effect on the clotting mechanism.

Cycloserine: Thirty-six patients were treated with cycloserine for an average period of 12 weeks. A favourable result was obtained in 7 cases (19.4 per cent). In five cases the arrest of the disease was due to cycloserine therapy alone. Two patients improved and stabilized under cycloserine and the control of the disease was later completed by surgery under cover of pyrazinamide. One patient, who had cycloserine for 20 weeks, first improved both clinically and radiologically and gained 13 lbs. in weight. She then became worse, lost 25 lbs., cavities re-opened and she died while still under treatment. This was a very chronic case in which there was obvious clinical evidence of the development of resistance to cycloserine and isoniazid. A similar case was reported in our previous communication (Banerjee & Fletcher, 1958).

There were three patients who developed severe psychoses after one or two weeks of treatment with cycloserine. Two more patients developed mild mental symptoms, one after the first week of treatment and the other after the fourth week. These mild symptoms cleared up promptly after treatment was stopped. However, in the case of the patients with psychoses, abnormal behaviour persisted for 2 to 3 months, inspite of the fact that cycloserine was discontinued immediately and treatment with tranquilizers and electric shock therapy was instituted. None of these patients had any neurological symptoms. After recovery from the psychosis, two of these patients were later salvaged by pulmonary resection under cover of pyrazinamide. One of them is still under treatment and is scheduled for excisional surgery in the near future. Because of the importance

of toxic manifestations, a case report of one of these patients is presented herewith.

CASE REPORT

Ramchandra (Hospital No. 7782), a 22 year old male, was admitted in January 1957 with far-advanced bilateral pulmonary tuberculosis and positive sputum. Chest X-ray showed a larger cavity in the right upper zone and scattered infiltrations on both sides. Initially he was treated with SM, INH and pneumoperitoneum, and PAS was added after 3 months because of reactivation on the left side. After one year of treatment, there was evidence of resistance to these drugs and the sputum remained positive without much radiological improvement. In January 1958, cycloserine was started to provide anti-microbial coverage for a contemplated right pneumonectomy. After 2 weeks the patient suddenly developed a severe psychosis and cycloserine was immediately discontinued. The patient was completely disoriented and was at times quite boisterous. He talked incoherently and at times showed a paranoid tendency. He responded slowly to treatment with tranquilizers and E. C. T., which was administered in 8 sittings. Within 3 months his mental condition had returned to normal. His general condition, which had deteriorated during the psychosis, gradually improved, although sputum remained positive. In November 1958, right pneumonectomy was successfully performed under pyrazinamide-INH coverage and the patient was discharged in July, 1959 in good condition with tuberculosis apparently arrested.

RESULTS IN THE SURGICAL GROUP

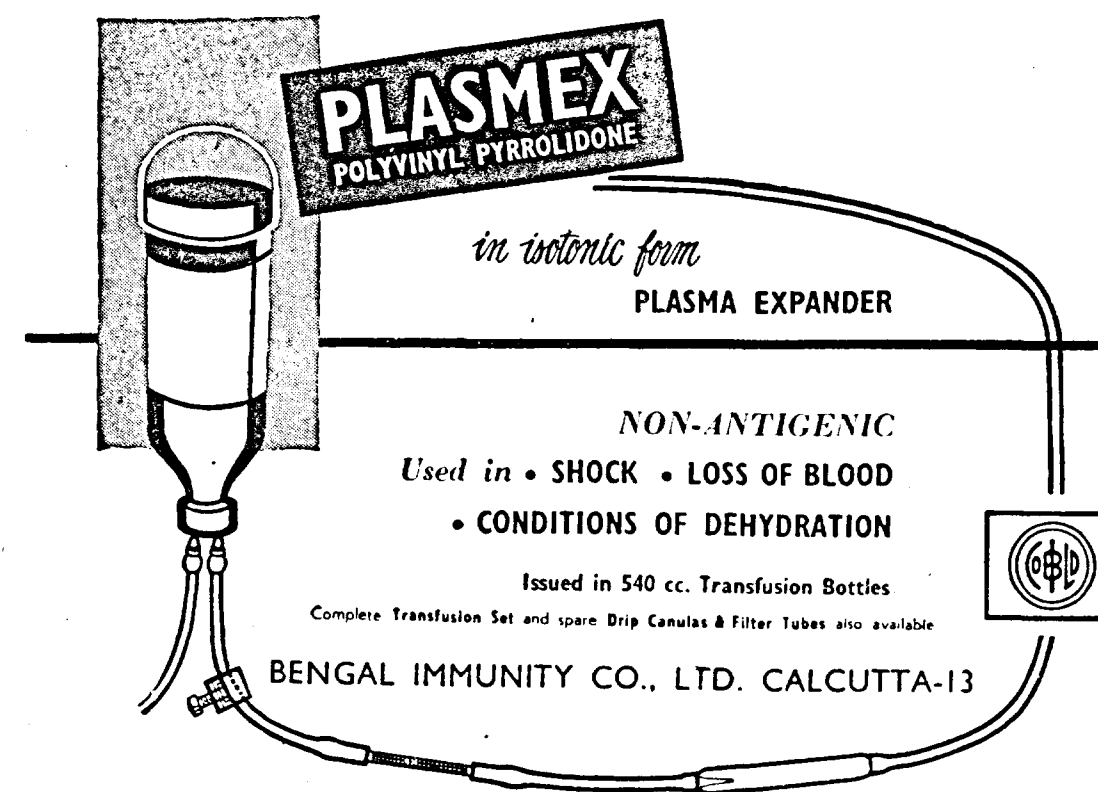
The results in the Surgical Group are indicated in Table VI. It will be noted that surgical coverage was provided by viomycin for 4 patients, pyrazinamide for 18 patients and by cycloserine for 23 patients. It is our impression that the results do not vary significantly among the 3 drugs, although it should be noted that there were no complications in the viomycin group and all four patients had good results. This is probably not statistically significant due to the small size of the group. Therefore, it seems more useful to consider the over-all results in the entire group, rather than to consider separately the result with each of the drugs.

The Complications of Surgery were remarkably few, when one considers that this is a group of

"Salvage Cases", with far-advanced disease, positive sputum and resistant organisms. Broncho-pleural fistula did not occur in this series, although there was one case of an asymptomatic residual air space after upper lobectomy, which was controlled by post resection thoracoplasty. The absence of fistula is the more remarkable in view of the fact that 26 of the patients had pneumonectomy. There was only one case of post-operative empyema, in a patient who had pneumonectomy under cover of cycloserine. The complication was successfully managed by drainage and total thorocoplasty. Six patients (13.3 per cent) had a spread, or reactivation of disease post-operatively. Three of these patients were in the pyrazinamide group and three in the cycloserine group. Three patients had contralateral spread, that is, fresh lesions appearing on the opposite side at intervals of 1-7 months after operation. In 2 cases the operation was a right pneumonectomy and in one it was a resection of the right upper and middle lobes. All three of these spreads were controlled by further periods of drug therapy. Two of the patients were discharged in good condition and one is still under treatment in the sanatorium with sputum negative and x-ray clearing.

One patient had a spread on the same side one year after resection of the left apicoposterior segment under cycloserine coverage. This was controlled by a further course of drug therapy and post-resection thoracoplasty. The patient is still in the sanatorium with sputum negative, general condition good and x-ray clearing. Two patients had a reactivation of pre-existing contralateral disease following operation—a right upper lobectomy under cycloserine in one case and a left pneumonectomy under pyrazinamide in the other. The first patient was managed by resection of the left upper lobe under pyrazinamide, with a good result. The other patient has not responded to treatment and still has active disease in the remaining lung, with positive sputum. He represents the one treatment failure in this group of 45 surgical cases.

There were two *Post-Operative Deaths* in this series of 45 operations, a mortality rate of 4.4 per cent. As far as could be ascertained, neither of these deaths was due to drug toxicity or to failure of the drugs to control the infectious process. One patient, a 45 year old female, died suddenly on the third post-operative day after an uneventful pneumonectomy



under cover of pyrazinamide. There was no evidence of broncho-pleural fistula, hæmorrhage, atelectasis or pneumonia. The death was attributed to coronary occlusion or pulmonary embolus, but permission for post-mortem examination was not obtained. The other patient, a 36 year old male, had a thoracotomy and mobilization of the lung with a view to performing pleuropneumectomy under cover of pyrazinamide. Blood loss was quite severe and was replaced by multiple blood transfusions. When mobilization was complete, pathological bleeding from all the raw surfaces suddenly began and the patient went into shock. The operation was terminated without resecting the lung. Eventually, bleeding and shock were controlled, but the patient expired 24 hours later, apparently due to pulmonary edema resulting from over-transfusion. Urine examination and post-mortem examination confirmed the diagnosis of transfusion reaction and this seemed to be the cause of the pathological bleeding, rather than any toxic effect of pyrazinamide. The mortality rate of 4.4 per cent compares favourably with the rate of 5 per cent

noted in a series of pulmonary resections of all types performed in this institution during the 3 years 1957 to 1959.

The Final Results in the surgical group are also encouraging (Table IV). Of the 45 patients, 32, or 71.1 per cent, were classified as having a good result. This means that the patient was discharged from the sanatorium in good condition, with sputum negative and without evidence of active disease by chest x-ray. Most patients were not discharged until 4 to 6 months after operation, so there was ample opportunity to observe any early complications, spread or relapse. Some patients have had further follow-up examinations a year or more after operation, but others have not been seen since discharge. Obviously, some of these might have had a relapse later on unknown to us. Ten patients, or 22.2 per cent, are still under treatment in the sanatorium, having been operated upon 3 to 12 months previously, but in good condition, with sputum negative and prognosis favourable. There is only

TABLE IV

Surgical Group—Complications and Results

Drug	Number of Patients	Complication of Surgery				Results		
		Broncho-Pleural-Fistula	Empyema	Spread or Reactivation	Surgical Mortality	Good	Still Under Treatment Sputum Negative. Prognosis Good	Failure Disease Uncontrolled
Viomycin	4	—	—	—	—	4	—	—
Pyrazinamide	18	—	—	3	2	9	6	1
Cycloserine	23	—	1	3	—	19	4	—
Total	45	—	1	6	2	32	10	1
			(2.2%)	(13.3%)	(4.4%)	(71.1%)	(22.2%)	(2.2%)

one patient (2.2 per cent) who has to be classed as a failure, due to persistent, uncontrolled disease. He is a 35 year old male who had a left pleuropneumectomy under cover of pyrazinamide. Within 2 months after operation, sputum again became positive, due to reactivation of lesions in the contralateral lung. Post-resection thoracoplasty on the side of pneumectomy and drug therapy have been ineffective in controlling the disease.

DISCUSSION

Toxicity

All three of these drugs are potentially toxic. According to our experience, Viomycin is perhaps the least toxic. In two cases we had a sensitivity reaction necessitating the stoppage of the drug, and there were 3 cases of mild albuminuria which cleared up after completion of the treatment.

Hepato-Toxicity of pyrazinamide is a serious problem, the more so since it develops without warning and may be serious or even fatal. This problem has been reviewed in detail by Small (1949), who collected reports on 1629 patients treated with pyrazinamide. Thirty-nine of these patients (2.4 per cent) developed jaundice and there were 3 deaths. In 88 additional cases the treatment was discontinued because of the detection of abnormal liver-function tests. Ideally, liver-function tests, preferably the B. S. P. or Brom-sulphonphthalein test should be carried out at intervals of 1 to 2 weeks, to detect impending liver damage. In practice, this is difficult and was not done in our series. We had one case of jaundice among 38 patients treated with pyrazinamide, or an incidence of 2.9 per cent, which is similar to that quoted above.

Pyrazinamide may produce a bleeding tendency in some patients. Most of our female patients noted mild to moderate menorrhagia under pyrazinamide. Severe hæmoptysis occurred in two patients and one patient exhibited pathological bleeding during operation, though this was probably due to a transfusion reaction. Since such a bleeding tendency seems to appear after prolonged treatment, possibly due to impairment of liver function, we feel that it is advisable to institute pyrazinamide therapy not more than 2 to 3 weeks, before contemplated surgical intervention, and to further protect the patient by administration of Vitamin K.

Neurotoxicity, manifested by mild to severe mental symptoms, psychosis or convulsions, may present a serious problem in connection with cycloserine therapy. This complication had not been experienced at the time of our previous report (Banerjee & Fletcher, 1958), though it has been described in most of the literature on cycloserine. In this present group of 59 patients, 3 developed a severe psychosis. A distressing feature was the fact that the psychosis in each case persisted for 2 to 3 months after discontinuing cycloserine, in spite of treatment with tranquilizers and electro-convulsive therapy. However, all patients eventually made a complete recovery. Wolinsky & Kapur, (1959) observed that the neurotoxicity of cycloserine is potentiated by isoniazid, particularly if the latter is given in high doses. It has been suggested by Barclay (1957) that the combination of the drug with phenobarbitone or dilantin will appreciably reduce the incidence of neurotoxicity. We have not had experience with this combination. It is obvious that patients with a history of epilepsy, neurological

Introducing

SALIPYRENE

Tablets

For the quick and efficacious relief from Nasal stuffiness, bronchial congestion associated with common cold, sinusitis, hay-fever, vasomotor rhinitis and the after-effects of respiratory infections.

Each tablet contains:

Phenylephrine Hydrochloride U. S. P.	..	5 mg.
Methapyrilene Fumarate	..	25 mg.
Salicylamide	..	0.4 g.
Caffeine B. P.	...	25 mg.

Available in the packings of 20, 100, 500 and 1000 tablets.

LYMISOL

Liquid

Each 5 ml. contains:

L-Lysine Monohydrochloride	..	0.3 g.
Pyridoxine Hydrochloride U. S. P.	..	5 mg.

In a flavoured non-syrupy base

Indicated in:

Stunted growth, protein malnutrition, for undernourished children, anorexia, listlessness and geriatric convalescent patients etc.

STREMBIN

Injection

An ideal combination of Emetine, Strychnine and Vitamin B₁ in the treatment of:

Intestinal Amœbiasis, Amœbic Hepatitis and Amœbic Liver Abscesses.

also available Emetine $\frac{1}{2}$ and 1 gr.

Detailed particulars on request from:

USAN LABORATORIES PRIVATE LTD.

AMIN VILLA

13, Dattatray Road,

Santacruz West, Bombay-54.

disorders, psychosis or marked emotional instability, are unsuitable for cycloserine therapy.

In summary, toxic potentiality of each of these drugs is sufficient to justify the conclusion that they should not be used in place of safer drugs for the routine primary treatment of pulmonary tuberculosis. When they are used in selected cases, it should be on an institutional basis, with the patient under close and continuous observation.

Indications for Treatment: The effect of these newer drugs in the treatment-failure group of patients, who are unsuitable for surgery, are not very encouraging, though any favourable result in such a group is welcome. It has been claimed (Small, 1959) that pyrazinamide-isoniazid has a qualitative superiority over other drug regimes because of the eradicated action of this combination, which brings about a higher percentage of open healing and sputum conversion, provided the patient is still sensitive to isoniazid. But in patients with far-advanced, chronic tuberculosis, who have developed resistance to all the usual drugs, the results of other workers are similar to our own. In a series of 35 such patients treated with cycloserine and isoniazid for periods of 9 to 13 months, Wolinsky and Kapur (1959) found that only 8 were substantially improved and none was arrested or rendered sputum-negative. In our series of 70 patients, improvement was maintained in only 13 or 18.6 per cent, and these were the patients whose disease was less extensive at the start of treatment. We have therefore concluded that the indications for treatment with the new drugs in this type of case are based on the extent and activity of the disease and the general condition of the patient. The patient with far-advanced, progressive, cavitary tuberculosis, who is going down-hill in spite of treatment, will very rarely respond to the introduction of one of the new drugs. On the other hand, the patient with chronic disease, resistant organisms and positive sputum, but without much toxicity or progression of the disease, may show a gratifying response to treatment with viomycin, pyrazinamide or cycloserine.

In contrast to the non-surgical group, there is no doubt as to the value of these drugs in the Surgical Group. The low incidence of bronchopleural fistula and empyema, and the relatively low mortality rate, in a group of far-advanced salvage cases, with positive sputum and drug-resistant organism, is convincing

evidence of the effectiveness of these agents in providing surgical coverage. It is a great advantage to the surgeon to have at his disposal one or more of such drugs which can be brought into play when there is evidence of resistance to the usual drugs and surgery must be undertaken. Furthermore, by judicious pre-operative use of these drugs, it may be possible to prepare for successful operation some patient who would otherwise be beyond the scope of surgery. In short, coverage with viomycin, pyrazinamide or cycloserine is indicated for any patient with positive sputum and/or organisms resistant to the usual drugs, upon whom major thoracic surgery is undertaken.

CHOICE OF DRUGS

The choice of the three new drugs to employ in a given case is likely to be governed partly by availability and expense. Viomycin is at present the only one of the 3 drugs available in India and it is also the most costly. It has the advantage of less dangerous toxicity than the other two, and it has been our impression that there is less tendency for the early emergence of resistance. Thus, it may be better-suited to the long-term treatment of non-surgical cases, if expense does not stand in the way.

Pyrazinamide is contra-indicated in any patient with cirrhosis, chronic alcoholism or evidence of liver damage. Cycloserine is contra-indicated for patients with a history of epilepsy, mental abnormality or neurological disorder. Otherwise, there seems to be little to choose between the two. Generally, we have preferred cycloserine for longer-term treatment, because of the threat of liver damage with pyrazinamide. Mental symptoms due to cycloserine will usually appear early if they are going to appear at all, while the possibility of liver damage increases with prolonged treatment. Under cycloserine treatment, the feeling of well-being and gain in weight, at least for a period of a few months, are striking features which are not noted to the same extent with other drugs. For surgical coverage, we have generally preferred pyrazinamide or cycloserine, although our results with viomycin in a small group of 4 patients were very good. In the series, the results with cycloserine were somewhat better than those with pyrazinamide, but most reports indicate that pyrazinamide is the more powerful drug and it is generally favoured for surgical coverage.

SUMMARY AND CONCLUSIONS

A treatment-failure group of 115 patients were re-treated with either viomycin, pyrazinamide or cycloserine in combination with isoniazid. In 45 cases, these drugs were used to provide anti-microbial coverage for surgical intervention, with excellent results and a low incidence of operative complications. Among 70 patients who were not suitable for surgical intervention, only 13 had good results. There was one case of hepato-toxicity in the pyrazinamide group, 5 cases of mild or severe psychosis in the cycloserine group, and one case of severe drug sensitivity reaction in the viomycin group.

As a result of our own experience and that reported in the literature, the following conclusions seem warranted. (1) Viomycin, pyrazinamide and cycloserine are effective agents in the treatment of pulmonary tuberculosis. For best results, they should be used in combination with isoniazid. (2) All three drugs exhibit definite and sometimes serious toxicity in a small proportion of cases. (3) None of these

3 drugs should be employed for the primary, or long-term treatment of pulmonary tuberculosis. (4) These drugs have a place, though a limited one, in the re-treatment of patients with advanced, chronic tuberculosis, who are resistant to conventional therapy. However, where surgery is not possible, not more than 20 per cent of such patients are likely to be salvaged. Viomycin is perhaps more effective in this group than pyrazinamide or cycloserine. Such patients should be carefully selected and treated under institutional care. (5) All 3 drugs, and especially pyrazinamide and cycloserine, are extremely valuable to provide effective anti-microbial coverage for patients with positive sputum and resistant organisms undergoing major thoracic surgery. Their use will result in a significant decrease in morbidity and mortality. (6) The Tuberculosis Association should use its influence to make these valuable anti-tuberculosis drugs available in India, where their use should be restricted to tuberculosis specialists, sanatoria and thoracic surgery centres.

(Courtesy: Tuberculosis Association of India)

A new Era in Iron Therapy

FERROCHELATE

(ALBERT DAVID)

IRON CHOLINE CITRATE IN CHELATED FORM

- **NEW, BETTER, SAFE, Oral Iron.**
- **No side reaction, well tolerated even in Peptic Ulcer cases.**
- **Chelated Iron Salt is highly soluble, with efficient absorption (Ref.)**
Lancet, 31st May 1958. II63.
- **Added advantage in administration with every medium such as**
Antacids, Milk and high Protein diets.

AVAILABLE IN THREE FORMS:

- (1) **COATED TABLETS.** Each tablet contains: 300 mg. Iron Choline Citrate.
- (2) **SYRUP WITH IRON CHOLINE CITRATE.** Vitamin B12, Folic Acid, L-Lysine Monohydrochloride, D-Sorbitol.
- (3) **PEDIATRIC DROPS:** Iron Choline Citrate, Vitamin B12, Folic Acid, L-Lysine Monohydrochloride, D-Sorbitol.

ALBERT DAVID LIMITED

15, Chittaranjan Avenue, Calcutta-13

Branches:

ALLAHABAD - BOMBAY - DELHI - GAUHATI - MADRAS - NAGPUR - SRINAGAR - VIJAYAWADA

The Genito Urinary Tract in Obstetrics and Gynaecology

By DR. VISHNU SARMA

M.A. (Cantab), M.D. (Cantab), B.Chir., M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.G.O. (Madras)
Fellow, The Royal Society of Medicine, London.
From The Govt. Women and Children's Hospital, Egmore, Madras.

UROLOGY comprises the study of diseases of the uro-genital tract.

No specialist in Obstetrics and Gynaecology can expect to maintain a high standard of practice without a sound knowledge of diseases which affect the urinary tract. So important is an understanding of this inter-relationship that gynaecological urology has almost become a sub-specialty. The relationship is intimate anatomically embryologically and from the point of view of disturbances in function as well as by alteration in structure by disease. Alterations in structure and disturbances of urinary function may occur and both these seriously affect the management of the patient.

The urinary tract is made up of the following structures—the kidneys, the ureters, the bladder and the urethra. Each structure may be affected by a great variety of diseases of gynaecological or obstetric origin. Certain of these diseases may be secondary to gynaecological disorders or may be the result of changes resulting from pregnancy, labour or the puerperium.

Disease is rarely localised to one organ or a part of it. Yet for convenience we usually take each of these organs which comprise the urinary system separately and describe all diseases with special emphasis or those that are common and of importance to the practitioner. It must be remembered that always the urinary tract should be considered as a whole and anatomical divisions are arbitrary and exist only for convenience.

METHODS OF INVESTIGATION IN UROLOGY

Before any investigations are undertaken it is very important to take a detailed history and to perform an abdominal examination with special reference to the genito urinary organs. The urinary system may be conveniently divided into four parts.

- (1) Kidney
- (2) Ureter
- (3) Bladder
- (4) Urethra

In order to help in taking a detailed history the following points are included in the private case sheet which the author has had printed for his personal use.

HISTORY

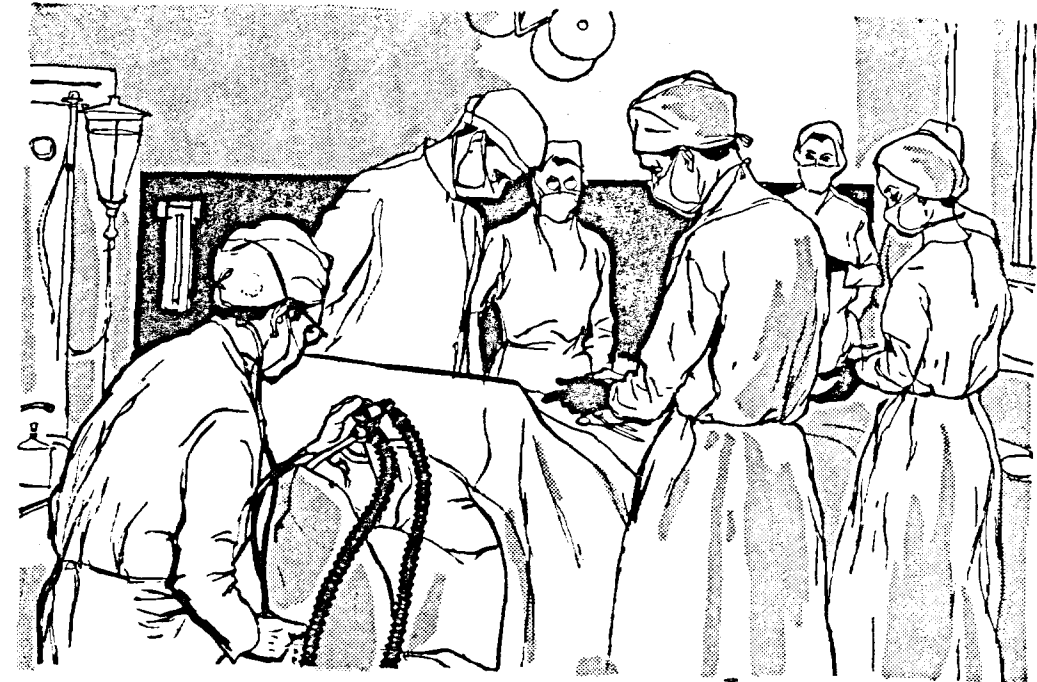
Renal pain/dull ache in costo-vertebral angle/renal colic/ureteral colic/frequency of micturition—diurnal, nocturnal/polyuria/oliguria/anuria/pyuria/hæmaturia/hæmoglobinuria/chyluria/glycosuria/suprapubic ache/vesical pain/urethral pain (dysuria)/stranguria acute or chronic retention/retention with overflow/incontinence—true, tonic, false/stress incontinence/total incontinence/stream—continuous, hesitancy, impaired, interrupted, force of prejection/post urinary dribbling/dribbling in addition to normal micturition/details of the act of micturition/character of urine/other.

ABDOMINAL EXAMINATION

The examination should be with special reference to the kidneys, ureters and bladders of which only two structures are readily palpable when diseased.

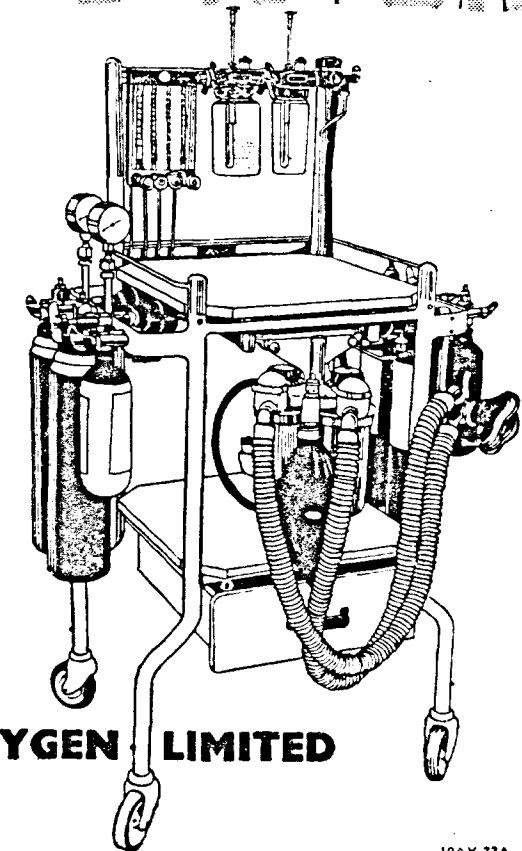
Modern methods of investigation of the urinary tract has enabled one to acquire a high degree of precision in diagnosis. The most important method of diagnosis is of course the examination of the urine.

The urine may be collected by asking the patient to pass it into a receptacle but there is the possibility of contamination by vaginal discharges. During the period of menstrual bleeding urine may appear to be blood-stained. It is important therefore that a clean sample of urine is obtained. One method of doing so is to get a mid-stream specimen. Provided the patient is co-operative and intelligent and the nurse



Anaesthetists' Choice

The science of Anaesthesia today has at its command a wealth of specialised apparatus, undreamt of by the early pioneers of surgery. Indian Oxygen is proud of its services to the medical profession in India, in making available a comprehensive range of modern anaesthetic apparatus and medical gases. The Boyle apparatus illustrated, for hospital use, is conveniently mounted on a table with ball-bearing castors for easy mobility; now assembled in India to the same high standards as in the United Kingdom, this apparatus is normally available from stock.



INDIAN OXYGEN LIMITED

19AX-73A

resourceful, this may readily be obtained. The external parts should be cleansed and the urethra should be wiped with a clean moist cotton swab. The patient may then be encouraged to void. As she does so, a mid-stream sample may be collected into a clean glass test-tube. When this is not possible it may be necessary to catheterise a patient. This should be done with precautions against sepsis. The utmost cleanliness should be enjoined in this procedure. Catheterisation of the female is not difficult. Either a short metal catheter may be used or a rubber one. The difficulty arises only when there is disease of urethra such as a stricture or when the urethra has been displaced or distorted by tumours or other disease in the pelvis.

The urine may be examined in the usual way. Sometimes it may be necessary to examine it under the microscope. The centrifuge deposit of urine should be examined for red-cells, pus cells, casts, organisms or other material. When infection is suspected bacteriological studies may be required and the urine may be cultured for a pathogenic organisms. In special cases when tuberculosis is suspected special methods for the detection of that organism may be required.

EXAMINATION OF THE URINE AND THE URINARY TRACT (REPRODUCED FROM THE AUTHOR'S PRIVATE CASE RECORD FOR PERSONAL USE)

Urine

Quantity	
Colour and transparency	
Consistency/dilute/concentrated	Specific gravity
Reaction/acid/alkaline	Albumin Sugar (Benadicts)
Naked eye characters of the deposit—phosphates/urates/uric acid	
Blood and its derivatives	Bile pigments urobilinogen/urobilin
Ketone bodies	
Urinary chlorides (Fantus' test)	
Estimation of albumin (Esbach)	
Centrifuge deposit of urine	uric acid/urates/phosphates/calcium oxalate/cystine/other Red blood cells/leucocytes/epithelium/casts/foreign bodies.

Culture of urine for pathogens
Renal function and other tests
Plain X-ray of the abdomen and pelvis
Intravenous pyelogram
Cystogram/pneumo-cystogram
Cystoscopy
Other special investigations (Aortography, Retro-peritoneal air insufflation etc).

An important special method of investigation is a plain x-ray. This helps to reveal the presence of urinary diseases such as calculus or calcified areas in a tuberculous kidney.

A modification of this procedure is the use of intravenous dye to study the urinary tract. Some radio-opaque substance is injected into the vein. This is taken up and excreted by the kidney. As this substance is being excreted, serial x-rays may be taken. This will reveal the outline and position of the urinary tract.

Urographic studies are of great importance in many gynæcological and obstetric conditions. In certain cases it may be necessary to inject a radio-opaque dye into the ureter. This can be done only through a cystoscope and therefore cystoscopy is an essential pre-requisite.

Cystoscopy and urethroscopy are important methods of studying the lower reaches of the urinary tract under direct vision.

The manner in which cystoscopy came into prominence in gynæcology is of some historical interest. Howard Kelly had been working for some time at visualising the female bladder through a simple speculum with a glass-window with the patient in the knee-chest position. The nurse on one occasion handed him a speculum in which the window had been accidentally broken. When he passed it into the bladder of the female in the knee-chest position, air was sucked in and the bladder was ballooned out. Kelly thus visualized the interior of the bladder through a cystoscope and through the medium of air for the first time and passed a catheter into the ureter under direct vision. For this account we are indebted to Richard Te Linde. The purpose of visualizing the bladder is to exclude disease in this organ.

A hitherto neglected procedure although equally important in the study of disease of the urethra is urethroscopy. Urethroscopy has proved useful and as

a method of investigation has received considerable prominence. There are other methods of studying the function of the urinary tract as well as its structural derangements.

Cromo-cystography consists in injecting a coloured dye such as Methylene blue into the blood stream and determining how long it takes before the dye appears from the ureteral orifices into the bladder. This gives an indication of the state of urinary function and helps to localize the ureteral orifices if they are not readily seen at cystoscopy.

Cystography consists in injecting radio-opaque dye into the bladder. Sometimes instead of injecting dye air may be injected. Then this procedure is called Pneumo-cystography. These procedures are of use in the localisation of the placenta in case of ante-partum bleeding where a placenta prævia is suspected.

Another method of studying the bladder is by means of cystometry. This is widely employed in the study of stress incontinence in the female as well as other diseases of the bladder which affect its function.

While the various methods of studying the urinary tract has been outlined the importance of a careful clinical examination of the patient cannot be overstressed. The general examination of the patient, the examination of the abdomen, the inspection of the urethral meatus, the procedure of milking the urethra for evidence of purulent discharge, routine palpation of the urethra, the bladder and the lower parts of ureter during a gynæcological examination—all this should not be forgotten. In all gynæcological examinations of the pelvis the urinary tract which is so intimately related to the genital tract should not be overlooked.

THE KIDNEY AND ITS PELVIS

Congenital anomalies of the kidney are sometimes encountered. The kidney may be absent on one side. Damage to the other kidney either by way of the burden of pregnancy or the result of operative injury may end in disaster. A rare condition is the pelvic kidney which may be mistakenly removed for a pelvic tumour (Figure 1).

Acquired disease may interfere with the functions of the kidney. When function is gravely impaired the amount of urine secreted is diminished (oliguria), or

sometimes completely suppressed (anuria). There are many causes for this but these fall under three groups—pre-renal, renal and post-renal.

Hæmorrhage, shock, severe dehydration, anæmia, and heart failure are all pre-renal cause. Any of these may be encountered in the practice of Obstetrics and Gynæcology.

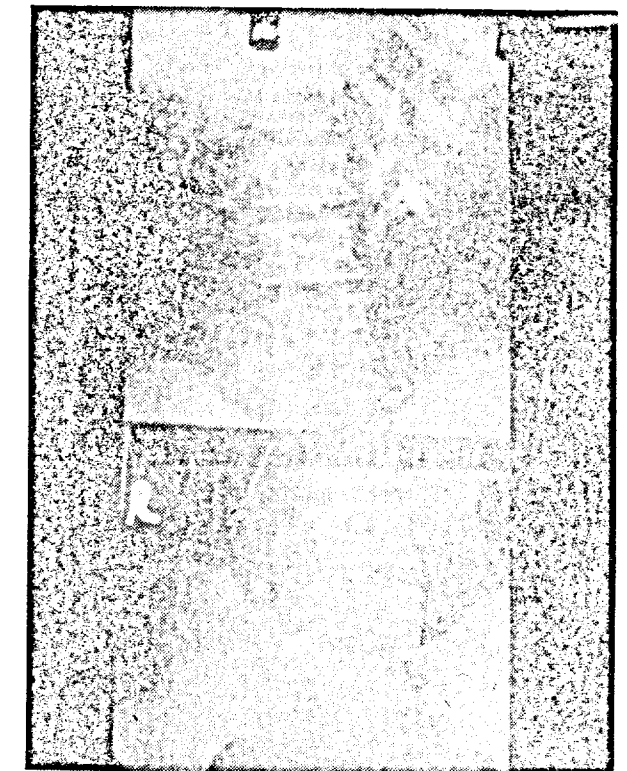


Fig. 1.

(Courtesy: The Government R.S.R.M. Lying-in Hospital, Madras.)

The picture at the top demonstrates a double kidney on the left side in a forty-year old patient whose presenting complaint was genital prolapse. The right kidney is not seen in its normal location. The picture below demonstrates that the kidney on the right side was almost pelvic in situation and is clearly visualized over the right sacroiliac joint. Such abnormally situated kidneys may be inadvertently removed as pelvic neoplasms.

The renal causes comprise cortical necrosis of the kidney, acute tubular nephrosis and a variety of other conditions. Symmetrical cortical necrosis is a lethal condition except when the damage to the renal cortex is patchy. Septic abortion especially with a *Clostridium welchii* infection, hæmorrhage and

prolonged obstructed labour are some conditions of obstetric and gynaecological interest which cause cortical necrosis.

Lower nephron nephrosis is not so serious because the lesion is reversible, the tubules of the kidney regenerate after some time and the patient recovers. The problem is, therefore, one of keeping the patient alive during this interval of time which may be as long as seven days. Septic abortion, puerperal sepsis, concealed accidental haemorrhage and eclampsia are some lesions which give rise to lower nephron nephrosis. It is desirable to include the reaction which follows the transfusion of incompatible blood as well as the toxic effects of therapy with the easily precipitated group of sulphonamide drugs.

Post-renal causes for anuria include obstruction to the passage of urine along the ureter, bladder or urethra. There are many causes of obstruction. Precipitation of sulphonamides, deposits of calculi and other pathological lesions may occlude the lumen. So too may fibrosis which follows operative injury or inflammation. Compression and distortion by a pelvic malignant tumour, notably cervical cancer, is another important cause.

When obstruction to the urinary tract is gradual and progressive, the result is dilatation above the site of the lesion and the ureter and kidney become dilated (Hydro-nephrosis). Urine stagnates. Infection supervenes. A pyo-nephrosis may then result.

Haematuria is a symptom of a number of renal tract diseases. The importance of this is that blood stained urine may be confused by the patient for a bloody vaginal discharge, and a serious renal cause (infection, calculus or new growth) may be overlooked.

Sterile pyuria is a typical symptom of renal tuberculosis.

Renal pain (colic) may simulate the pain of various gynaecological disorders.

The kidneys function at a disadvantage during pregnancy. It is imperative that when renal disease is already present, the risks of embarking on a pregnancy have to be seriously evaluated.

URETER

Of the many congenital malformations of the ureter, the condition in which an accessory ureter opens into the vagina and offers a rare cause for urinary incontinence is a very interesting one although rare (Figure 2).

Certain congenital abnormalities of the genital tract may cause obstruction to the flow of discharges from the uterus and vagina. Before menstruation is established the secretions collect and give rise to hydro-metro-colpos. Once menstruation has become established menstrual bleeding is added to the normal

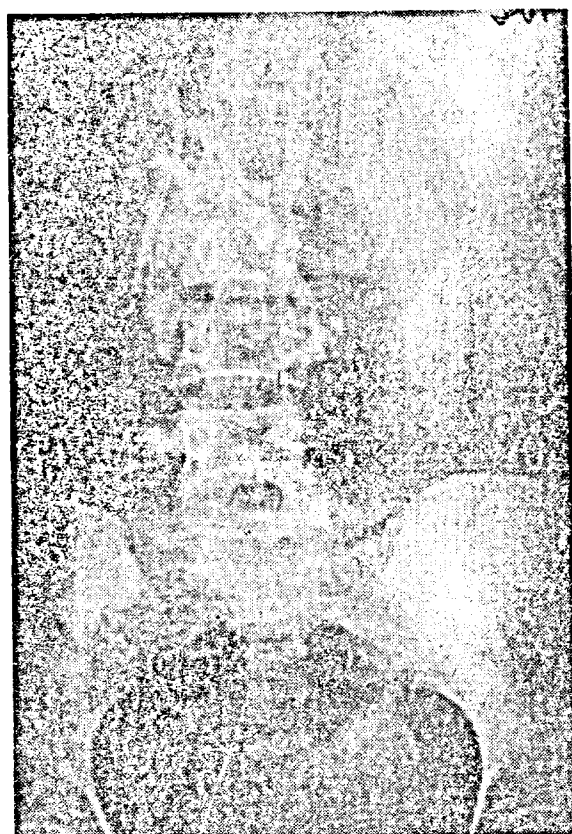


Fig. 2.

(Courtesy: The Government Women and Children's Hospital, Egmore, Madras)

This remarkable intravenous urogram of a 20 year old patient demonstrates double ureters on the left side. Both are the seat of gross dilatation due to disease in the pelvis causing urinary obstruction. Adequate preoperative urographic studies give useful information to the gynaecologist who may otherwise inadvertently sever an accessory ureter taking an abnormal course in the pelvis.

secretions of the uterine mucosa. This collects in the vagina and causes considerable distension. The distended vagina may reach such a large size that it may present as a abdomino-pelvic tumour. The tumour may rise above the level of the symphysis pubis and may even cause a visible abnormality in the abdominal contour. The uterus may be palpable as a flattened ovoid structure, surmounting the swelling. The extreme bulging of the vagina may cause it to protrude into the rectum. It may also give rise to considerable distortion of the urethra predisposing to attacks of acute retention of urine. In rare cases the tumour may press on the ureter of one side or the other and obstruct the free discharge of urine. This leads to a hydroureter and hydro-nephrosis. It is important in the investigation of all

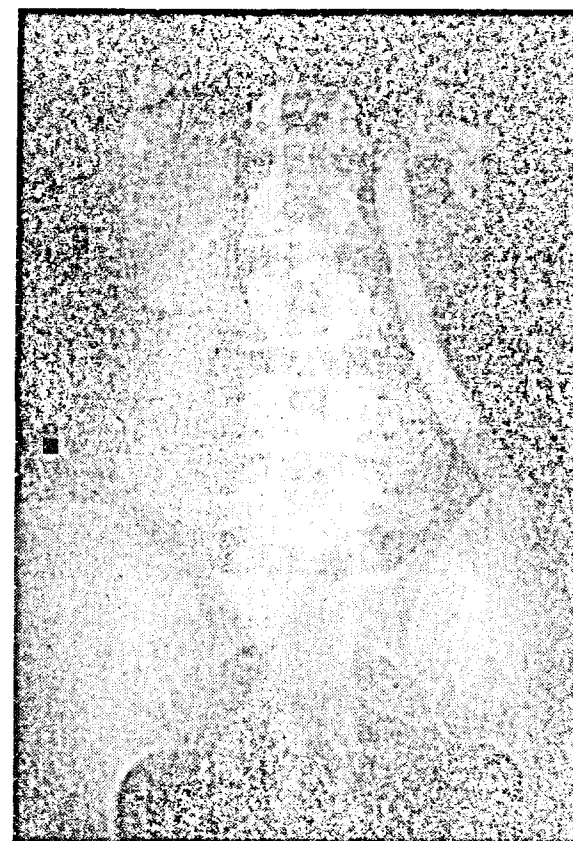


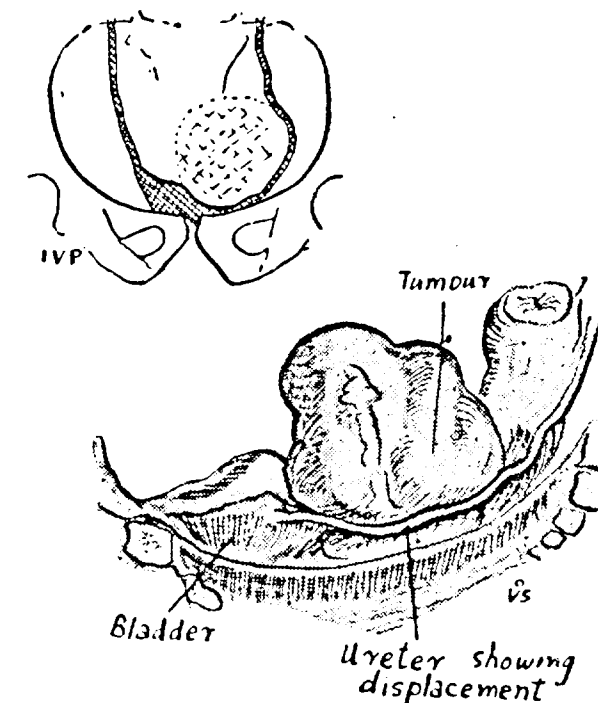
Fig. 3.

(Courtesy: The Government Women and Children's Hospital, Egmore, Madras)

The kidneys and the ureters on both sides are enormously dilated. The lower part of both ureters but notably the left is displaced by a pelvic growth. Such deviations of the ureters are generally caused by retro-peritoneal growths. The origin of the growth may be in the pelvis.

congenital malformations of the lower genital tract to perform urographic studies to determine whether or not associated malformations of the urinary tract are present.

In pregnancy the renal pelves and calyces dilate and the ureteral musculature becomes atonic. There is a variable degree of kinking and lateral displacement of the ureters, which is more marked on the right side. Two factors operate. The important factor is the hormonal influence of pregnancy. The relevant hormone is believed to be progesterone. The physical compression by the enlarging uterus does not seem to be an important factor although this may operate in the case of the right ureter. Dilatation of the renal pelvis and ureter favours stasis. Stagnant urine is an excellent breeding ground for infection. That is why pyelo-nephritis is so common during pregnancy. The renal tract returns to normal within a fortnight after delivery but infection delays this process. In difficult labour a concentrated urine is secreted.



Pelvic tumours may displace, compress and obstruct the ureter. The inset diagram shows lateral displacement of the ureter in a case of uterine fibromyoma as seen on a pre-operative intravenous pyelogram.

The ureters may become displaced by pelvic tumours. Because they lie behind the peritoneum, retro-peritoneal tumours are the ones which are most likely to displace them (Figure 3). In addition to

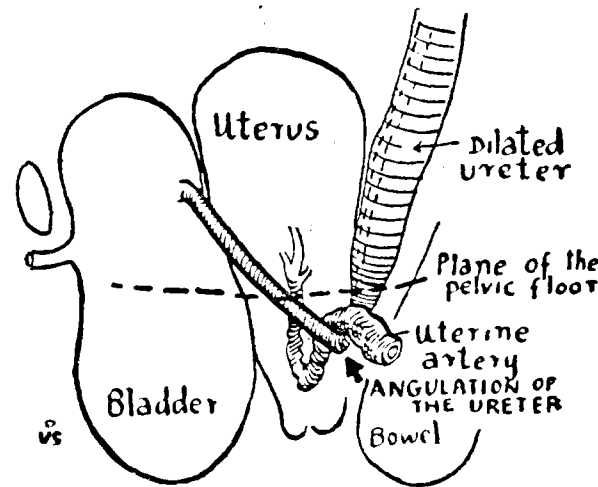


Fig. 4.

(Courtesy: The Government R.S.R.M. Lying-in Hospital, Madras)

This elderly patient has a complete procidentia (Fig. 4a,b). Her presenting complaint was pruritus. She had in addition difficulty in initiating micturition. To perform the act she had to push the prolapse into the vagina with her fingers (Fig. 4c). Useful information can be had by enquiring in great detail in history taking about difficulties in micturition. Fig. 4d is an intravenous pyelogram showing bilateral hydro-ureters in a case of prolapse. Fig. 4e is a diagram to show how these changes are produced.

cervical fibromyomas, broad-ligament cysts and tumours, the ureter may become displaced in conditions such as pelvic infections, endometriosis and neoplasms of the ovary.



The stretching of Mackenrodt's ligament in procidentia of the uterus draws down a loop of ureter which comes to lie outside the vaginal orifice. The ureter is acutely angulated and a hydro-ureter and hydro-nephrosis results.

The lower part of the ureters may become pulled down and distorted in serious degrees of prolapse (Figure 4). Occasionally the ureter of one side becomes kinked by the uterine artery or pressed on by the levatores and muscles. The occlusion of the lumen of an ureter may then result in hydro-ureter and hydro-nephrosis.

When a malignant tumour of the cervix extends laterally it displaces the ureter and occludes its lumen. Actual infiltration is rare. Unilateral hydronephrosis especially in a female should invariably lead the gynaecologist to exclude cervical cancer even if there

are no gynaecological symptoms. The urinary tract has been studied in cases of cancer of the cervix. In advanced cervix cancer there is invariably urinary tract involvement. There is obstruction or occlusion of the ureter. There is also some degree of œdema, inflammation and direct invasion of the ureteral wall by tumour cells.

Whenever carcinoma of the cervix extends into the parametrial tissues the urinary tract is involved and gets obstructed. Radiation can also give rise to scarring of the parametrial tissues and lead to partial obstruction of the lumen of the ureter and subsequent hydro-ureter or hydronephrosis of that side. "The natural termination of most cases of uterine cancer is through uræmia by the occlusion of the ureters" (Ewing).

It is very important that in all cases of carcinoma of the cervix, both before starting surgical or irradiation treatment as well as during the post operative period, should be followed up by urographic studies.

In the practice of gynaecological surgery pre-operative urography is of great value to outline deviated or dilated ureters. Urography reflects on renal function also and knowledge about this is very necessary. During operations such as hysterectomy varying in its extent from a simple removal to a Wertheim's or even of pelvic exenteration it is important to have the ureter constantly in mind and to avoid injury to it. The pelvic portion of the ureter runs close to the cervix and is very prone to injury. It may be divided, clamped or wounded. If it does become inadvertently injured it is imperative that this should be recognized immediately and repaired.

THE BLADDER

Gross anomalies of the bladder do not offer a problem in obstetrics and gynaecology although they are encountered on very rare occasions. Developmental defects such as the presence of a cloaca without the development of a separate bladder and vagina need only be mentioned because of its interest. Minor degrees of malformation such as a congenital diverticulum, an aberrant ureteric opening in the bladder or deficiency of the bladder trigone are of importance in as far as they lead the gynaecologist to suspect abnormalities elsewhere in the urinary tract,

and prompts him to undertake further investigation before submitting the patient to an operation. A diverticulum of the bladder forms a reservoir where urine stagnates and become infected. Until a diverticulum is recognized and removed recurrent attacks of cystitis occur, and antibiotics and chemotherapy merely alleviate symptoms.

Cystitis is a very common complication of pregnancy and sometimes of the puerperium. Transient 'stress incontinence' following childbirth is by no means rare.

Distortion of the bladder and the urethra by a retroverted gravid uterus is an occasional complication of pregnancy. It gives rise to acute retention at about the 14th week. Neglect of this condition can be serious, because if spontaneous correction of the uterus does not take place, an acute exfoliative gangrenous cystitis may result with its serious sequelæ.

Obstetric trauma is the commonest cause for genital fistulæ of which vesico-vaginal fistula is the commonest type in our country.

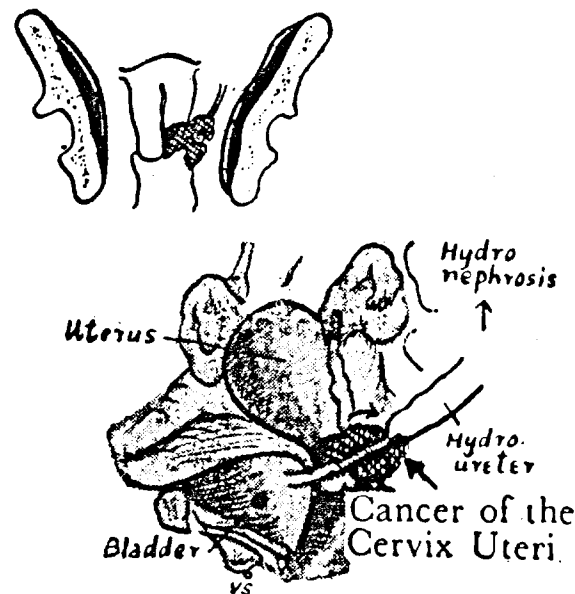
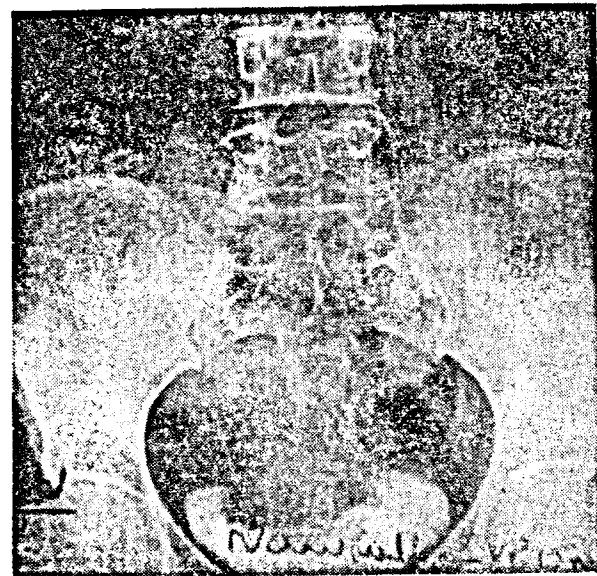
The danger of mistaking a full bladder for an ovarian or other pelvic or abdominal tumour in gynaecological practice is often quoted. This mistake need never occur provided the precaution of getting the bladder emptied before a pelvic examination is invariably taken.

Ovarian tumours and fibroids impacted in the pelvis may present with acute retention.

The bladder may be pulled down and distorted in a prolapse (cystocoele) and difficulty in micturition is a common symptom.

Rarely pelvic endometriosis involves the bladder and gives rise to intermittent attacks of hæmaturia. Chronic cervicitis may give rise to a trigonitis and sometimes to dysuria.

Advanced cervical cancer invades the bladder giving rise to frequency of micturition in the early stages (Figure 5). It causes hæmaturia when it has ulcerated through. Complete destruction creates a vesico-vaginal fistula.



Lateral malignant infiltration by cancer of the cervix narrows the ureter by compression. Preliminary urographic study must invariably precede treatment.

There are a number of diseases of the bladder which give rise to disturbances of micturition (Figure 6) but reflex disturbance may occur in certain female ailments also. Early pregnancy, prolapse (Figure 7) and painful vaginal or introital lesions, all cause frequency.

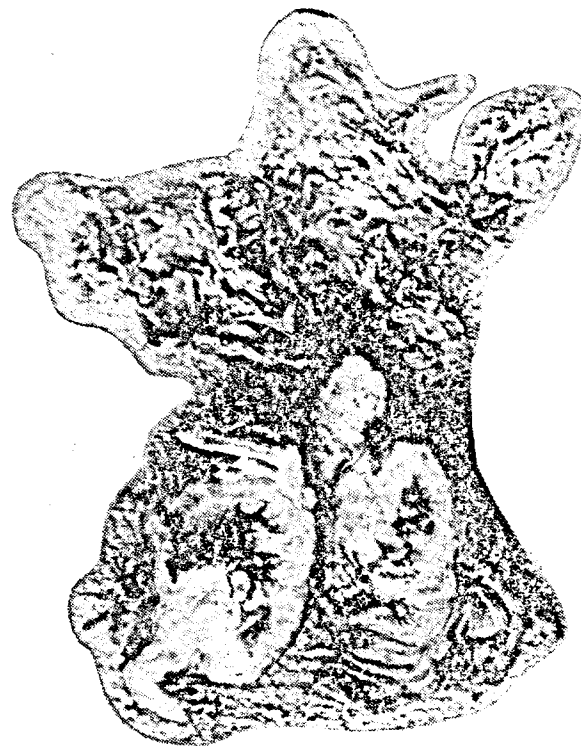


Fig. 5.

(Courtesy: The Government Women and Children's Hospital, Egmore, Madras)

The filling defect in the bladder seen on the intravenous pyelogram on the left side represents a bladder grossly infiltrated by cervical carcinoma. On the right is shown the cut section of the bladder. The sketch below and to the left shows how cervical cancer spreads laterally to strangle the ureters to give rise finally to an uræmic death. The histophotograph demonstrates infiltration of the bladder by the growth.

It is important to look at the bladder (cystoscopy) before deciding upon the correct line of treatment, let alone before operating. This applies most emphatically to cases of genital endometriosis, tuberculosis and cancer of the uterine cervix.

The bladder is prone to injury at gynaecological operations.

There is an alteration in the relation of the bladder to the uterus in labour, and when operations such as lower segment Cæsarean sections are done, special care should be taken to avoid injury to the bladder.

Cystography is a useful procedure in the diagnosis of placenta prævia.

THE URETHRA

Congenital malformations of the female urethra are very rare and do not offer a problem in gynaecological practice. Congenital prolapse of the urethra is known and it may be associated with an angiomatous

state of its mucosa. It causes frequency and intermittent attacks of dysuria and sometimes of hæmaturia as well.

A diverticulum of the urethra when it occurs has to be differentiated from a cystocœle. The importance of it is that it permits a stagnant reservoir of urine to collect and hence predisposes to recurrent attacks of cystitis.

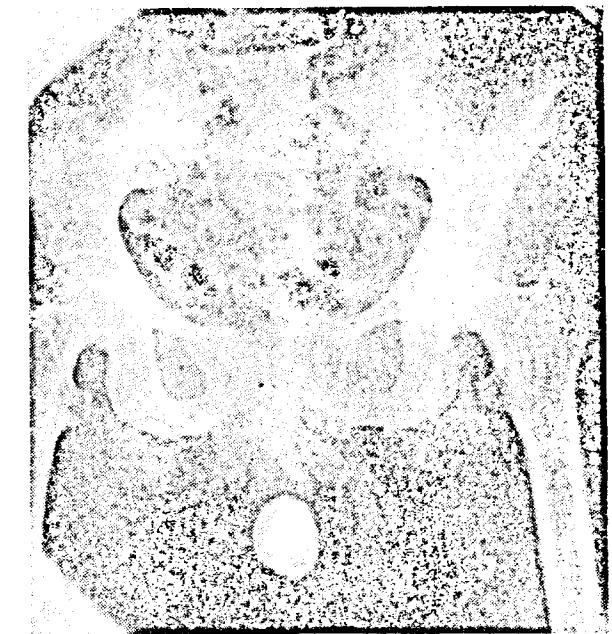


Fig. 7.

(Courtesy: The Government Women and Children's Hospital, Egmore, Madras)

This rare picture demonstrates a large laminated calculus within the procidentia of a 35 year old patient. Urographic studies showed good function but the presence of bilateral hydroureter and hydronephrosis was evident. In procidentia the bladder is pulled down and residual urine always collects. This favours stone formation, a complication which although rare should be recognized. Diagnosis by palpation should not prove very difficult!

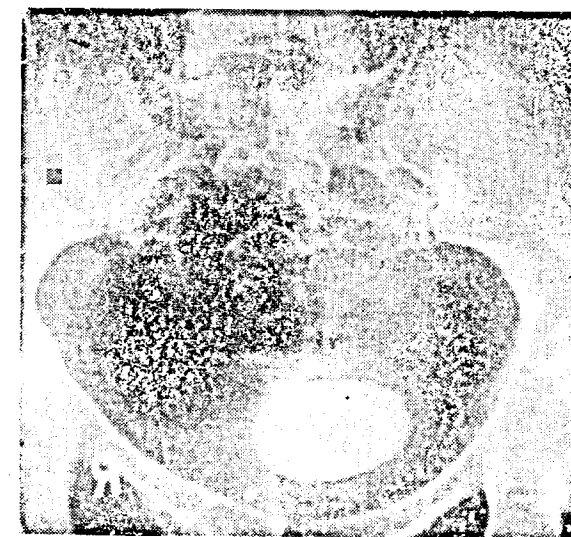


Fig. 6.

(Courtesy: The Government R.S.R.M. Lying-in Hospital, Madras)

The gynaecologist might remember that the cause of urinary complaints may lie in the urinary tract itself and sometimes a vesical calculus, although rare in the female may be a cause. An accurate urological history helps in evaluation. A vesical calculus of moderate size can be readily diagnosed by vaginal examination and its presence confirmed by radiography.

Urethritis may be due to a variety of infections. The gonococcus is notorious and causes an intensely painful dysuria. Occasionally a periurethral abscess develops as a result of infection of one of the gland ducts in the urethral mucosa. Urethritis may cause dyspareunia. A polypoid appearance may be seen on urethroscopy in cases of chronic long standing urethritis. Congenital strictures of the urethra are very rare. When present they may be associated with congenital malformations elsewhere in the

urinary tract. Stricture may follow injury or infection. Post-traumatic and post-inflammatory fibrosis of the urethra is very rare. Prolapse of the urethral mucosa sometimes occurs usually in elderly women and is a cause for post-menopausal bleeding or a bloody discharge.

The discharge of sugar-laden urine through the urethra as in Diabetes mellitus gives rise to an irritant vaginal discharge in which monilia organisms thrive. When pruritis vulvæ is present as well as a monilial vulvo-vaginitis, diabetes mellitus should be excluded.

Women and young girls with auto-erotic tendencies sometimes insert foreign bodies into the urethra or vagina. The presence of small objects such as these, or occasionally of a calculus in the urethra, may be felt through the anterior wall of the vagina.

Caruncles of the urethra are usually very painful and tend to bleed. It must be remembered that typical caruncles exist which are not painful. Unless the patient is examined in the lithotomy position and the urethral orifice is inspected as a part of every gynecological examination, this condition may not be recognized and the patient sent away to the urologist as a case of "hæmaturia of unknown origin" for investigation.

Simple tumours like papillomata, angiomas, and fibromyomata of the urethra are uncommon. Of the malignant neoplasms, cancer of the urethra is extremely rare but is important because, unless diagnosed early it soon becomes inoperable. Scalding and frequency of micturition and a blood stained discharge are some of the symptoms, while the friable nature of the growth and its readiness to bleed are characters which demand urgent biopsy and histological study to establish its true nature.

THE SUB-URETHRAL MASS

Several types of pathological lesions may be encountered in gynecological practice in a site close to the urethra. These swellings may arise either in relation to the urethra such as an urethrocele, Skene's duct cyst, abscess or diverticulum of the urethra, and thus be of great interest to the gynecological urologist. On the other hand the swelling may arise from vaginal tissues and take the form of inclusion cysts, fibromas, lipomas, carcinoma or

sarcomas. In this connection should also be remembered a mass which is secondary to tumours in distant areas. Of special urological interest are vaginal metastasis from a renal hypernephroma (Bowes 1935). Such a tumour was first recorded by Heinkel in 1906 in a patient 60 years of age. There were multiple vaginal tumours in addition to skin tumours. The primary was though at first to be from a cancer of the uterus but subsequent autopsy studies showed that the origin of the growth was from a hypernephroma of the left kidney. Often symptoms due to vaginal metastasis manifest themselves before the presence of a primary malignant tumour of the kidney is discovered. The swelling is usually situated on the anterior wall of the vagina close to the external urethral meatus. Another malignant mass which is characteristically sub-urethral in its position is a secondary deposit from a primary chorion-epithelioma of the uterus. These present as purplish nodules on the anterior vaginal wall close to the urethral meatus and resemble varicose veins. A swelling may arise from ectopic tissues also such as an extension of Gartner's duct cyst, anomalous ureter, or a diverticulum of the bladder.

CONCLUSION

An obstetrician who cannot see beyond the confines of his speciality is indeed a poor physician. A gynecologist who cannot envisage or diagnose disease in organs other than those which strictly concern the female genital tract, and is not equipped to deal with them suitably when he encounters them is an untrained surgeon.

The proximity of the urinary tract to the genital tract and the way in which disease in one affects the other makes it imperative that a sound knowledge of the principles of urological medicine and surgery is indispensable to the practising obstetrician and gynecologist.

ACKNOWLEDGEMENT

I wish to acknowledge my gratitude to Dr. Mrs. S. Abraham, M. D., Professor of Obstetrics and Gynecology, Madras University and Superintendent, The Government Women and children's Hospital, Egmore Madras not only for her unfailing encouragement but, to her generosity in permitting me to make use of clinical material from the Hospital.

REFERENCES

- Bhatt, R. V. (1959) Vesical stones associated with genital prolapse *J. Obstet. and Gynec. India* X, 2 : 209.
- Braasch, W. F. and Emmett, J. L. (1951) Reprint 1955. *Clinical Urography*, W. B. Saunders Co., Philadelphia U. S. A., and London.
- Brewer, J. I. (1958) *Textbook of Gynecology*, William Wilkins Co., Baltimore.
- Brown, P. T. and Pennington, J. W. (1941) Pelvic symptoms of Urinary Tract origin, *Am. J. Obstet. and Gynec.* 42 : 313.
- Colby, F. H. (1956) *Essential Urology*, 3rd edition. The William and Wilkins Co., Baltimore.
- Counsellor, V. S. (1953) Gynecological symptoms of major importance to the physician in general practice, *Chicago Medical Society Bulletin* 56 : 50 (Collected papers of the Mayo Clinic and Foundation 1953, 15 : 230).
- Creevey, C. D. (1954) Urologic symptoms and their significance. *Post-graduate Medicine* : 242.
- Dannreuther, W. T. (1924) The incidence and significance of uro-genital symptoms in gynecologic patients. 8 : 103.
- Dilworth, E. E., Mays C. R., and Locke C. C. (1951) Urologic conditions related to gynecology, 104 : 228 (*Obstet. and Gynec. Survey* 1952 : 434)
- Everett, H. S. (1944) *Gynecological and Obstetrical Urology*, The William and Wilkins Co., Baltimore.
- Everett, H. S. (1952) Symptoms arising from the urinary tract misdiagnosed as gynecologic in origin. *J. Internat. Coll. Surg.* 17 : 802.
- Folsom, A. I. and O'Brien, H. A. (1945) The female urethra, the connecting link between the urologist and the gynecologist *J. Am. Med. Association.* 128, 408.
- Handley, J. M. and Diehl, W. K. (1945) The influence of gynecologic disorders on the urinary system, 127, 10 : 572.
- Howkins J. (1956) *Shaw's textbook of Gynecology*, 7th Edition, J. & A. Churchill Ltd. London.
- Kahn, I. W. and Walker R. B. (1930) The importance of urologic investigations in gynecologic patients. *Am. J. Obstet. Gynec.* XX : 783.
- Keene, F. E. (1921) The interpretation of vesical symptoms in gynecologic diagnosis. *Am. J. Obstet. Gynec.* 2 : 375.
- Klempner, E. (1952) Gynecological lesions and uretero-hydronephrosis *Am. J. Obstet. Gynec.* 64 : 1232.
- Kolischer, G. (1933) Some urologic complications in the female, *Am. J. Obstet. Gynec.* 25 : 128.
- Kretschmer, H. A. (1950) Hydro-nephrosis, *Surg. Chir. N. America*, 3 : 43.
- Kretschmer, H. L. (1939) Problems in differential diagnosis between urologic and abdominal lesions, *Surg. Gynec. and Obstetrics.* 2:671.
- Kretschmer, H. L. and Kanter, A. E. (1945) Effect of certain gynecologic lesions on the upper urinary tract, *J. Am. M. A.* 128 : 407.
- Lewis, E. C. (1936) *Urology in Women*, 2nd Edition, Bailliere Tindall and Cox. London.
- Lewis, T. L. T. (1956) *Progress in Clinical Obstetrics and Gynecology*, J & A Churchill Ltd., London.
- Lowsley, O. S. and Kirwin, T. J. (1956) *Urology*, The William and Wilkins Co., Baltimore.
- Long, J. P. and Montgomery J. B. (1950) The incidence of ureteral obstruction in benign and malignant lesions, *Am. J. Obstet. & Gynec.* 59 : 552 (*Obstet. and Gynec. survey* Feb. 1951, 6. 1 : 137)
- Mann, R. M. and Hepp, J. A. (1958) Procidencia with vesical calculi *Am. J. Obstet. Gynec.* 75, 5 : 1066.

- Nicholas and Bray (1939) Urological problems as seen by the gynaecologist, Urol. and Cutan. Rev. 43 : 583. Abstract, Am. J. Obstet. Gynec. 1940, 39 : 1037.
- Peterson, R. (1921) Errors in gynecological diagnosis due to misplaced organs, Am. J. Obstet. Gynec. 1 : 170.
- Riches, E. W. (1953) Discussion on lesions of the intestine and of the urinary tract resembling disease of the female genital tract. Proc. Roy. Soc. Med. 46, 2 : 950. (Sect. Obstet & Gynec. 52)
- Rubin, I. C. (1931) Symptoms in Gynecology, Etiology and interpretation with notes on diagnosis. Gynecological and Obstetric monographs Vol. 3, D. Appleton Co. New York and London.
- Rubin I. C. and Novak J. (1956) Integrated Gynecology. The Relationship between the Urinary Organs and the Female Genital System. Vol. 3, The Blakiston Division, McGraw Hill Book Co. Inc., New York.
- Rusche, C. (1956) Diagnosis of urologic complications in gynaecology. The J. Urol. 75, 3 : 433.
- Sarma, Vishnu (1956) Genital fistulae, Surgical and Medical News, 2, 3 : 42.
- Sarma, Vishnu (1956) Urological problems in Obstetrics and Gynaecology, Medical Digest. 24, 8 : 626.
- Sarma, Vishnu (1957) Retroperitoneal tumours and the gynaecologist, J. Ind. Med. Profession. 3, 2 : 1487.
- Snow, William (1952) Roentgenology in Obstetrics and Gynecology, Charles C Thomas, Springfield, Illinois.
- Stein, A. and Rodgers, M. (1932) The influence of gynecological conditions on the genito-urinary tract as shown by simultaneous injections of Skiodan or Uroselectan

(intravenously) and Lipiodol, A preliminary report, Surg. Gynec. and Obstet. 15, 4 : 490.

TeLinde, R. W. (1957) Urological aspects of gynaecology, Amer. J. Obstet. Gynec. 74, 6 : 1305.

Thompson, G. J. (1951) Female urologic disorders which cause abdominal pain, Collected papers from Mayo clinic and Foundation. XLVIII : 141.

Waters, E. G. (1934) Vesical symptoms in the female. Am. J. Obstet. and Gynec. 27 : 281.

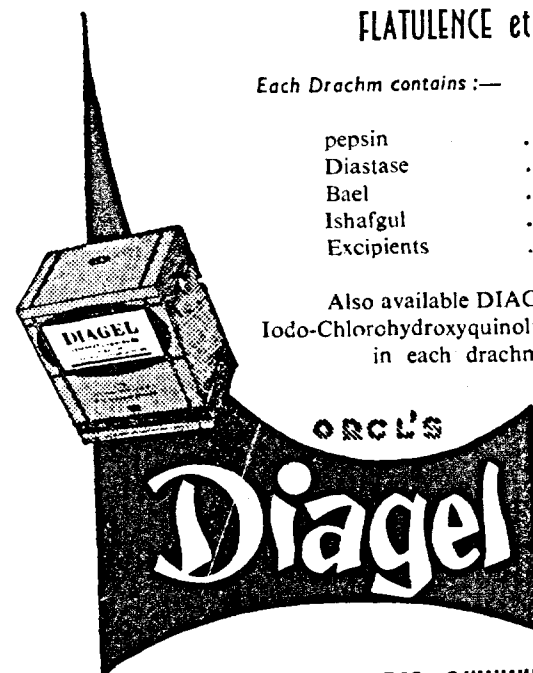
Wharton, L. R. (1957) Urology in the Female, Campbell's Urology, Vol. 2 Section 2 : 1385.

AMOEBIASIS FOR CHRONIC CONSTIPATION FLATULENCE etc.

Each Drachm contains :—

pepsin	..	3 grs.
Diastase	..	4 "
Bael	..	20 "
Ishafgul	..	32 "
Excipients	..	1 gr.

Also available DIAGEL with
Iodo-Chlorohydroxyquinoline — 4 grs.
in each drachm.



THE ORIENTAL RESEARCH &
CHEMICAL LABORATORY LTD.
QUMARESH HOUSE SALKIA HOWRAH

INTERNATIONAL WORK IN LEPROSY, 1948—1959

By DR. GAY PRIETO, W.H.O.

INTRODUCTION

LEPROSY, which may affect between 10 and 12 million people throughout the world, is a disease of many as yet unsolved problems. It is accepted that the causative organism is *Mycobacterium leprae*, but this organism has never been cultivated outside the human tissues, and there is no satisfactory evidence that the disease can be transmitted experimentally to animals or to man, in spite of many attempts at transmission. The structure of *Myco. leprae* in the treated and in the untreated case raises many unanswered questions in the realm of bacteriology. Although leprosy is a communicable disease of bacterial origin, the host-parasite relationship is not well understood. Thus, in endemic areas most adults appear to be resistant. Before puberty susceptibility seems to be higher than it is in later life, although even this is contested. No laboratory procedures exist to measure specific immunity to the disease. A specific antigen is lacking, a situation which is complicated by the fact that *Myco. leprae* bears an antigenic relationship to other acid-fast organisms, especially *Myco. tuberculosis*. Indeed, tuberculosis is the most frequent concurrent infection, and is often the cause of death of the leprosy patient. The demonstrable existence of antibodies is no index of effective defence against the disease; in fact, the greater their amount, the less the resistance of the tissues.

The degree of infectivity of the disease is another much debated point. Prolonged intimate contact is postulated for infection to be transferred, but some leprologists doubt whether it need be prolonged, and hold the view that repeated contact is enough, perhaps even a single contact in suitable circumstances. The duration of the incubation period is not exactly known, but it is very long. It cannot be measured accurately until a reliable diagnostic test is devised that will show when a person is infected. Nor are these the only controversial questions. It is not known whether infection occurs through the skin or through the upper respiratory tract; it may be through both. Males are affected more frequently than females, but whether this is because of some

inborn characteristic or because of increased opportunities of contact has not been determined. The influence of race, diet and climate is unknown; no-one is now prepared to assert roundly, as Jonathan Hutchinson did in the last century, that leprosy is caused by eating fish, especially bad fish. Finally, the disease is so protean in its manifestations that the classification of the various forms is still the subject of much confusion and controversy.

In the realm of prophylaxis, although happily not in that of treatment, there is one major subject of controversy: the role of BCG vaccination. The use of BCG is based on the observation that the tuberculous form of leprosy is often self-healing and is characterized by a strong lepromin reaction; the argument in favour of BCG is that it makes the lepromin test positive and therefore stimulates a tissue defence mechanism which, if it does not prevent a person from contracting leprosy, will at least prevent him from contracting the more dangerous form of the disease. Many leprologists regard this argument as fallacious.

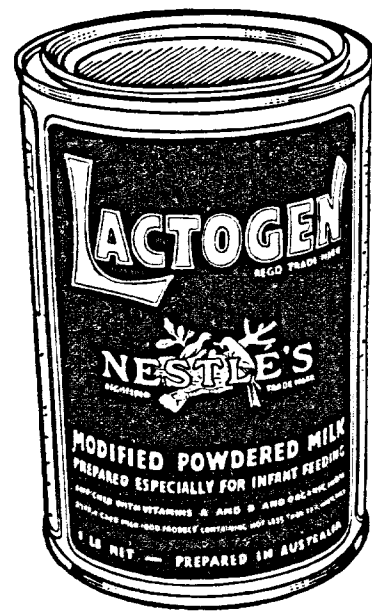
With so many problems unsolved, it is not surprising that in the Christian Medical College, Vellore, South India, it is quite usual for students when they arrive to be shown leprosy cases as an introduction to all branches of medical science. The study of leprosy does indeed require the co-operation of anatomist, physiologist, bacteriologist, radiologist, physician and surgeon. Happily an attack, and a successful attack, on the disease can be made without waiting for solutions to all its problems.

The following pages describe the work of WHO in the field of leprosy.

LEPROSY IN THE PAST

It was long believed that the disease "zaraath" described in Leviticus XIII and XIV is leprosy. Since the beginning of this century, however, opinions have differed about the interpretation of this word; certain authors hold that zaraath does represent leprosy as it is known today; others think it is a

*Second only
to
mother's
milk*



LACTOGEN

A spray dried full cream milk modified so that on reconstitution with water it closely resembles human milk in percentage composition. Fortified by the addition of Vitamins A and D and organic iron, entirely free of pathogens and of excellent digestibility.

NESTLÉ'S PRODUCTS (INDIA) LTD.

P.O. BOX 396, CALCUTTA, P.O. BOX 315, BOMBAY, P.O. BOX 180, MADRAS

LG/P/23

group of skin diseases totally different from leprosy. Whichever the correct interpretation, the disease mentioned in Leviticus is not just an ordinary disease, it is a divine chastisement; the leper is an impure person and has to be segregated from society. The horror and loathing inspired by the leper are partly derived from this biblical view of him as a person who has incurred divine disfavour, partly also derived from the mutilations and deformities that may occur in this disease and are often repellant in aspect.

During the Middle Ages leprosy increased considerably in Europe; in 1244 there were more than 19 000 leprosaria in Christendom—in France alone more than 2000. The biblical attitude to the disease was a marked feature of the Middle Ages, and led to the indiscriminate and compulsory segregation of all lepers. Priests were charged with the execution of the sentence of segregation. When someone was pronounced to be a leper, a decree was published in the parish church, and the following Sunday the parish priest met the leper, who now had to dress in black, at a place outside the town, conducted him to the church and there, in a place set apart, administered the last mass. Afterwards, the leper was conducted to a neighbouring leprosarium in which a temporary hut had been built. The priest then took a handful of sand from the roof of the hut and pronounced the terrible sentence: "*Sis mortuus mundo, vivas iterum Deo*" ("Henceforth be dead to the world, and live in God").

Then the prohibitions to lepers were read out. They could not enter churches, mills, markets, or any public meeting-place; wash their hands or personal property in rivers used by healthy persons; touch anything for sale with their hands, only with a stick; or walk barefoot. They had to dress only in the black leper's habit, carry a rattle to warn people of their approach, and avoid narrow roads to prevent dangerous contact. They were required not to answer the questions of healthy persons if the latter were against the wind, so that infection should not be carried down wind. The civil laws prohibited them from buying property, making wills, and inheriting property.

Little by little, owing possibly to the severe segregation measures, but also possibly just as much to the improvement in living conditions in Europe, leprosy began to decrease, and in France in 1644 Louis XIV suppressed all leprosy institutions.

THE LEGEND OF LEPROSY

The long series of religious stories about leprosy, the popular belief that leprosy inevitably gives rise to deformities and mutilations, the great number of unknown factors in the etiology and pathology of the disease, and the fact that for many years its study has been isolated from the general stream of medical progress have all contributed to create and perpetuate the legend of leprosy, with support also from literature and painting.

This legend is based on three false assumptions: that leprosy is a very contagious disease, perhaps the most contagious of all diseases; that it is incurable; and that leprosy patients are people apart, accursed, and possessed of a special psychology.

This legend is deeply rooted in the minds of most people, at all levels of society; it makes for considerable difficulty in advancing knowledge of the disease, and is a serious drawback in most of the countries for which leprosy control campaigns are being planned. The first objective of the leprosy education of the public should be to counteract and destroy the legend, and convince people that leprosy is a disease like other diseases, and less contagious than others, than tuberculosis, for example. It is a very curious phenomenon that the people who are the first to protest indignantly at the idea of indiscriminate segregation of tuberculosis patients accept and even demand the indiscriminate segregation of leprosy patients, who are much less contagious.

CLASSIFICATION AND SPREAD

In the first scientific publications on leprosy in this century two different clinical forms were distinguished, with transitional stages between: cutaneous or tuberculous leprosy, and neural or anæsthetic leprosy, there being also mixed cases having symptoms in both the skin and nerves. These classifications were approved by the Leonard Wood Memorial Round Table Conference at Manila in 1931.

At the Fourth International Congress on Leprology in Cairo in 1938 the malignant (lepromatous) type was defined as being characterized clinically by the presence of skin lesions (generally lepromata), bacteriologically by the numerous bacilli in globi in the nasal mucosa and skin lesions, histologically by the existence of lepra cells, and immunologically by the negativity of

the Mitsuda lepromin reaction. This classification remained unchanged at the Sixth International Congress.

The neural form was held to include all non-lepromatous clinical types of leprosy: the polyneuritic, maculo-anæsthetic, and tuberculoid. Many leprologists have remained more or less attached to this classification into lepromatous and neural forms. The leprologists of South America have never accepted it, however, and in the following years, first at regional meetings and then at the Second Pan American Conference on leprosy in Rio de Janeiro in 1946, they adopted a system of classification suggested by Rabello, which was afterwards approved by the Fifth International Congress on Leprology, Havana, 1948.

At this Congress, two polar types of leprosy were admitted, defined by their clinical, bacteriological, histopathological and immunological characteristics: the lepromatous type of the Cairo Congress, and a tuberculoid polar type in which there are arciform skin lesions with a tendency to peripheral spread and central healing, without bacilli (or, exceptionally, with very few bacilli), with a strong reaction to lepromin, and presenting a tuberculoid histopathological picture. In addition to these polar types of stable form, there exists an unstable indeterminate group which after a certain time evolves towards one or other of the polar types, or undergoes regression. In this type the cutaneous lesions are macular; cases may be bacteriologically positive but are more frequently negative; the Mitsuda reaction is negative or sometimes positive, but if positive is less intense than in the polar tuberculoid form; and the histological picture shows an uncharacteristic inflammatory reaction.

This classification was adopted in spite of protests by a great number of leprologists. Professor Gay Prieto, in the face of the dogmatic insistence of South American authors on two opposed polar forms, expressed the view that "Nature ignores the rigid moulds into which we attempt to fit the observed clinical facts, and consequently there must necessarily exist intermediate forms which constitute the links of an unbroken chain which connects the polar forms".

In the report of a WHO Expert Committee on Leprosy which met in Rio de Janeiro in 1952 the over-rigid conclusions of the Havana Congress were

mitigated. The Committee recognized the existence of the two polar types, lepromatous and tuberculoid, subdividing the latter into major, minor, and reactional forms, but gave a more comprehensive definition of the indeterminate group as:

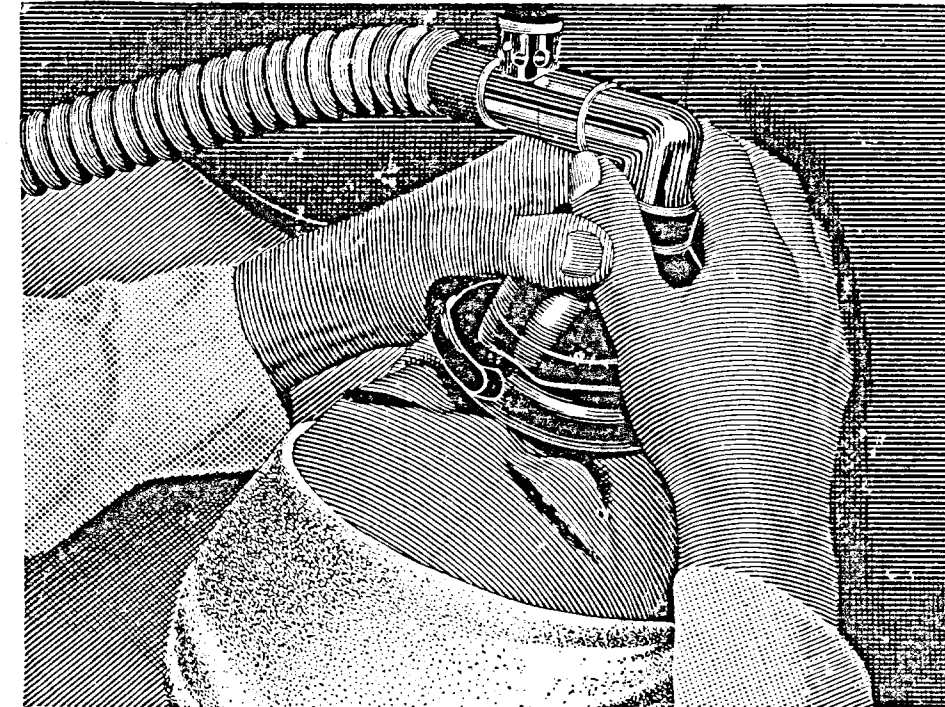
"A benign form, relatively unstable, seldom positive on bacteriological examination, presenting flat skin lesions which may be hypopigmented, erythematous, or hyperpigmented, with a reaction to lepromin variable from case to case. Polyneuritic manifestations may develop in cases which have persisted in this form for long periods. The indeterminate form consists essentially of the 'simple macular' cases and comprises those cases previously known as 'maculo-anæsthetic'. Cases of this form may evolve toward the lepromatous form or the tuberculoid form, or may remain unchanged indefinitely."

A fourth group, "borderline leprosy" was also defined as: "A malign form, very unstable, almost always strongly positive on bacteriological examination, generally negative to lepromin. This form frequently arises from the tuberculoid form as a result of repeated reactions, and sometimes evolves to the lepromatous form."

The Sixth International Congress on Leprology, held in Madrid in 1953, made only one change in the classification formulated by the Expert Committee on Leprosy, adding a new category, macular tuberculoid leprosy, characterized by flat skin lesions with very well-defined edges and a tendency to central healing.

H. W. Wade, in a special note, proposed to add two further groups to the four groups adopted by the Madrid Congress: a maculo-anæsthetic group, and a polyneuritic group without skin lesions, on the ground that it would not be possible to classify more exactly the cases without skin symptoms. It was held, however, that the suggested maculo-anæsthetic group had been included partly in the indeterminate group, partly in the tuberculoid polar type, as macular tuberculoid.

A comparison of the classification of the WHO Expert Committee and of the Madrid Congress appears in Table I, together with a simple classification of the population for the purposes of mass leprosy campaigns.



'Fluothane', the new inhalation anaesthetic, has 8 important advantages

The important advantages of 'Fluothane' over other inhalation anaesthetics have been demonstrated in two ways: first by experiment; then in clinical trials covering many thousands of cases, involving patients of all ages undergoing all types of surgical operation.

The special characteristics of 'Fluothane' merit the attention of every practising anaesthetist. They show that this new drug is a most valuable contribution to the greater efficiency and greater safety of modern anaesthesia.

- 1 *Non-explosive and non-inflammable when mixed in any proportion with oxygen.*
- 2 *Therapeutic ratio twice that of ether.*
- 3 *Four times as potent as ether and twice as potent as chloroform.*
- 4 *Easily administered, with pleasant and rapid induction.*
- 5 *Suppression of salivary, bronchial and gastric secretions.*
- 6 *Bloodless field, facilitating surgery.*
- 7 *Absence of shock syndrome.*
- 8 *Rapid and comparatively uneventful recovery.*

IMPERIAL CHEMICAL INDUSTRIES (INDIA) PRIVATE LIMITED

Calcutta Bombay Madras New Delhi

Sole Distributors in India for

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PHARMACEUTICALS DIVISION
Wilmslow, Cheshire, England



ICP 863

TABLE 1
CLASSIFICATIONS OF LEPROSY

Classification of WHO Expert Committee on Leprosy, 1952	Classification of Sixth International Congress on Leprology, Madrid, 1953	Classification of the population for the mass campaign
Type L	Type L	
Lepromatous polar type	Lepromatous polar type	Multi-bacillary forms
Group B	Group B	
Borderline group	Borderline or dimorphous group	Open forms
Group I	Group I	
Indeterminate or maculo-anaesthetic group	Indeterminate group	
Type T	Tuberculoid polar type { Type T	
		Macular tuberculoid Sometimes open forms
		Reactional tuberculoid Forms with few bacilli
		Minor tuberculoid Closed forms
Tuberculoid polar type	Major tuberculoid	
		Latent cases, arrested or burnt-out cases for surveillance
		Contacts of multi-bacillary forms for prophylactic treatment
		Contacts of forms with few bacilli for surveillance
		Rest of the population including contacts of closed forms

The differences of opinion among leprologists on the classification of manifestations of the disease are rooted in the diversity of these manifestations. It is argued that the classification adopted at the suggestion of the South American leprologists is not really a classification at all but the expression of physiopathological doctrine, for it is impossible to classify a disease according to four different criteria. In any case, the pattern of leprosy, the dominance of one or other of the clinical forms, changes considerably from one country to another. There are very few leprologists with a wide knowledge of all the regional

variations of the disease, and individual leprologists in discussions about classification tend to speak only of their own experience, which may be very different from that of the other speakers. The majority of leprologists have in mind one static and immutable disease, but leprosy, like other diseases, and indeed like the manifestations of life itself, is constantly changing and subject to transformation. It is not only the indeterminate groups, it is held, which are unstable and changeable; the polar types at the beginning of their evolution are subject to mutation, and the transition from tuberculoid to lepromatous

type has been observed by all experienced leprologists. In exceptional cases, indeed, some leprologist claim to have observed the evolution of the lepromatous type first towards the borderline group and then towards the tuberculoid polar type. From the point of view of public health, however, especially in the organization of mass campaigns against leprosy, it is more important to classify the population in which the disease appears, than it is to classify the disease itself into categories meeting the approval of all leprologists.

The WHO Expert Committee on Leprosy which met in 1952 proposed an "administrative classification" of leprosy into two forms: "open" and "closed" (infectious and non-infectious), depending on whether the cases are bacteriologically positive or negative when assessed by standard methods of examination of the skin lesions or nasal mucosa. There are also arrested or burnt-out cases, in which a relapse is possible. The contacts of these cases, who are particularly exposed to infection, should be kept under surveillance, and sometimes given prophylactic treatment. As for the rest of the

population, if the prevalence rate is very high practically all persons should be considered as contacts and placed under periodical surveillance.

A WHO Expert Committee on Leprosy, which met in August 1959, agreed that radical changes in classification from leprosy congress to leprosy congress should be avoided, as they would inevitably lead to confusion and neutralize all efforts to arrive at the universal use of the same terminology. It felt, however, that the classification adopted at the Madrid Congress and endorsed at the Tokyo Congress is capable of improvement in detail, and that the number of categories of leprosy might perhaps be increased to provide a complete picture of the disease in all its manifestations.

The request made at Tokyo that two subordinate groups, the maculo-anaesthetic and the pure polyneuritic, be recognized had met with opposition, probably based on a misunderstanding of what exactly the groups would consist of and how their recognition would affect the basic principles of classification. The advocates of these new groups

CORTO-QUINOL

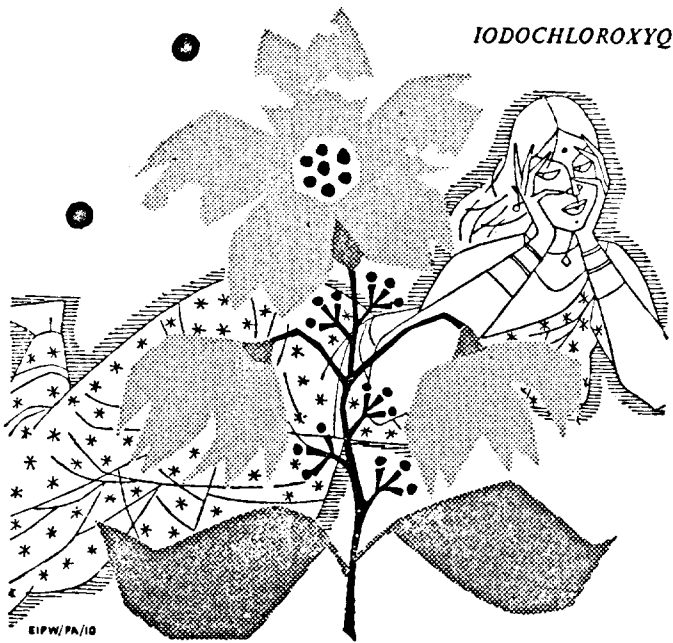
IDOCHLOROXYQUINOLINE 4%

HYDROCORTISONE 1%

- anti-inflammatory
- anti-pruritic
- anti-bacterial
- anti-fungal
- anti-allergic



EAST INDIA
PHARMACEUTICAL
WORKS LTD., CAL-26.



should, the Committee thought, publish the reasons for their views, giving their opponents time to express their objections, so that full consideration could be given to the question at the next international congress in 1963. In the meantime, to avoid confusion in the use of the terms "dimorphous" and "borderline", the decision of the Tokyo Congress should be respected.

Generally, the main factor in the spread of leprosy has been considered to be the infectiousness or non-infectiousness of the leprosy cases, but two other important factors should be considered. One is individual susceptibility, which determines that not all the individuals in (often intimate and prolonged) contact with open (lepromatous) cases develop the disease. Susceptibility is greater in childhood, but in some individuals does not diminish with age; certain adults are so susceptible that occasional contact, e.g., a visit to an endemic area, is sufficient for them to become infected. The other factor is resistance to the disease, which can be absolute. The fact of resistance explains the low rate of conjugal leprosy, and the very few cases appearing in the personnel of leprosaria. It is illustrated by the exceptional clinical observations made by Gay Prieto and Contreras on a young man of 26 years, who for 14 months was inoculated with the blood of patients with strong lepra reactions, with the mucus from lepromatous patients laden with bacilli, and with biopsy fragments. After 8 years of observation he had not developed the slightest suspicion of leprosy.

Relative resistance, shown by a positive Mitsuda reaction, has as a result that subjects, when they become infected with leprosy, get only the tuberculoid type. The combination of high susceptibility and high resistance, very frequent in children, explains why about 60% of infected children show the tuberculoid forms, which can heal spontaneously, and may also explain the patterns found in certain endemic areas, as in Africa, in which a high prevalence rate coincides with a very low lepromatous rate.

EXTENT OF THE PROBLEM

The registration of leprosy cases is notoriously difficult, since the disease is prevalent in under-developed countries, which often cover vast areas, and there is no way of telling how many cases remain undiscovered in remote villages that are difficult or

even impossible to reach. The fear of the stigma attaching to leprosy and of confinement in a leprosarium encourages sufferers to hide the disease as long as possible. Diagnosis, although generally not very difficult, presents pitfalls for certain types of leprosy. There are some individuals who spend most of their lives in leprosaria without actually having the disease, and there are no doubt even more, who, though suffering from leprosy, have been and are still being wrongly diagnosed as cases of yaws, ringworm, or nutritional or parasite diseases. But by far the greatest obstacle to the compilation of adequate statistics on leprosy is the fact that the largest numbers of leprosy cases are to be found precisely in those countries where statistical services, if they exist at all, are only in embryonic form.

In these circumstances, the only information on the extent of the problem consists of the estimates provided by experts or institutions dealing with the disease, and the official figures of registered cases in each country supplied by governments to WHO. The unreliability of the first type of information is shown by the fact that it usually varies according to the individual or institution supplying it, so that there is a choice of several figures which may differ widely. The official government figures, though in some cases reasonably accurate, do not as a rule reflect a true picture of the prevalence of the disease, but merely indicate the degree of development of the country's statistical services. In a large country, one or several districts, provinces or other administrative entities may supply fairly accurate figures, while others may supply none at all, so that the total figures for the country remain unsatisfactory.

Again, statistics for peoples living in countries where social and economic conditions are rapidly changing may be little more than guesswork. For example, one country in the Western Pacific Region reported 15000 cases of leprosy as being under treatment in 1950, 22000 in 1951, 15000 in 1952, 22000 in 1953, 16000 in 1954, 18000 in 1955 and 24000 in 1956. It is obvious that the variations are not entirely explained either by the number of cases cured or by new cases appearing from year to year. They largely reflect the erratic nature of the reporting, understandable in a new nation struggling to solve social and economic problems of enormous size. The inadequacy of such figures for an evaluation of the extent of the problem is shown by the fact that, according to figures submitted to the WHO Inter-

Regional Leprosy Conference at Tokyo in 1958, the estimated number of cases for the country was 100000.

It is one of WHO's tasks to make available, in its monthly *Epidemiological and Vital Statistics Report* and its *Annual Epidemiological and Vital Statistics*, the vital statistics, whether complete or incomplete, supplied by governments. For the reasons given above, any attempt to analyse the figures on leprosy given in these publications might produce misleading results. However, incomplete as they are, the figures do at least give an idea of which countries are most affected.

In addition to the figures supplied by governments for inclusion in WHO's statistical publications, the Organization obtained in 1958 and 1959 some further information on the number of registered leprosy cases through a questionnaire to governments interested in leprosy control. Other quantitative data are obtained from the leprosy control programmes undertaken with WHO help and from WHO experts who visit from time to time the regions where the disease is most highly prevalent.

From all these data, it is clear that at least 2 million cases of leprosy are at present registered throughout the world, three-quarters of them being under treatment. The actual number of cases is of course higher, some authorities putting it at between 10 and 12 million. *The figures given below therefore refer to the estimated number of cases, unless otherwise indicated.*

Asia is considered to be the world's most important focus of leprosy, no part of the continent being free from the disease. The countries and territories most affected include: India (about 1500000 cases); Burma (about 200000 cases); Thailand (about 200000 cases); Indonesia (about 100000 cases); Japan (about 15000 cases); China (Taiwan) (about 8000 cases); Hong Kong (about 7000 cases); Ceylon (about 3500 cases). Endemicity is thought to be low in western Asia and Siberia. There are about 20000 cases in the Philippines.

The whole of Africa is infected with leprosy, the prevalence being particularly high in Nigeria (Northern Region) and in the territories formerly known as French West Africa and French Equatorial Africa. Estimates of the total number of leprosy sufferers in the continent range between 1½ and 2 million.

Estimates for individual countries and territories include: Nigeria (more than 500000 cases); French West Africa (about 500000 cases); French Equatorial Africa (about 150000 cases); Sierra Leone (about 100000 cases); Tanganyika (about 100000 cases); Mozambique (about 80000 cases); Uganda (about 70000 cases); Madagascar (about 35000 cases); Togo (about 22000 cases).

South America constitutes another major focus of the disease, the prevalence being high in Brazil, Colombia and Venezuela, though nowhere in the Americas do the prevalence rates approach those of the Asian countries. The number of *known* cases in South America is about 158000. In North America, the number of *known* cases is about 11000, and in Central America less than a thousand. They are some 11000 *known* cases in the Caribbean area.

Europe is on the whole free from leprosy, but endemic foci still exist in the Mediterranean area, notably in Spain (about 4000 *known* cases), Italy (about 400 *known* cases) and Malta (about 200 *known* cases). A few isolated cases exist in Finland, Iceland and other European countries.

Leprosy is endemic in many of the islands of Oceania, particularly in Fiji (more than 500 *known* cases), Papua and New Guinea (about 8000 cases), the Solomon Islands (about 1000 *known* cases), and the Hawaiian archipelago. Australia was said to have had more than 1000 cases in 1958.

The picture of leprosy that will ultimately emerge when all cases of leprosy are identified and put under treatment remains a matter for speculation, but it is clear that more epidemiological information on the disease is badly needed and that this can only be obtained through an effort of international collaboration.

LEPROSY CONTROL

For many years, antileprosy therapy was limited to the use of chaulmoogra oil and its ethyl ester. The only possibility of organizing an efficient fight against leprosy lay in the isolation of leprosy patients, and the existing facilities for such isolation, which was generally compulsory and indiscriminate and very inadequate in countries with high prevalence, made leprosy control impossible. The number of patients isolated in leprosy institutions is only about 211900. The lack of accommodation is the reason why many

public health administrations, even in countries where the prevalence is high, avoid the problem, the only care for leprosy patients being provided by non-governmental organizations such as missions.

The discovery of sulfone in 1908 and the demonstration in 1937 by Fourneau et al. of its effectiveness in bacterial infections radically changed the picture of leprosy control. In 1943, Faget and co-workers demonstrated the efficacy of a derivative of sulfone, Promin, in leprosy therapy. From all parts of the world leprologists confirmed the efficacy of the new sulfone drugs, and in 1948 Cochrane and Molesworth and others demonstrated the possibility of substituting DDS (4:4'-diaminodiphenyl-sulfone), injected intramuscularly in suspensions of peanut oil, for the very expensive Promin. A few months afterwards Floch began to administer the same drug orally. The efficacy, good tolerance, ease of administration and low price of DDS, which is able to arrest clinical lesions in a relatively short time, bring about bacteriological negativity, and diminish the infectiousness of open cases, has opened the way for effective leprosy control. Other drugs have followed

in the wake of the sulfones, but their value is as yet largely unproven; they may turn out to be equally effective, alone or in combination with the sulfones.

THE ROLE OF WHO

In July 1948, the first World Health Assembly decided that the subject of leprosy should be given number six priority. The Executive Board in January 1951 "noted with satisfaction that an Expert Advisory Panel on Leprosy had been set up from which an Expert Committee was to be convened in 1952 on the status of sulfone therapy, the effectiveness of the different preparations in use, their dosage, side effects and method of administration, especially as regards undernourished patients, which are the first topics to be discussed by this Committee".

Subsequent Health Assemblies discussed the promotion of leprosy control in different countries, and it was decided to send short-term consultants to advise the governments concerned on the more useful public health measures against leprosy. Finally, in 1952, a WHO Expert Committee on Leprosy

formulated the general principles that should govern leprosy campaigns. The Committee divided leprosy, into "open" and "closed" cases, according to whether leprosy bacilli are detectable by routine bacteriological examination or not. "Open" cases include all lepromatous and borderline cases, many of the reactional tuberculoid cases, and a small but varying percentage of others. "Closed" cases do not play any large part in the spread of the disease. This distinction between the two classes is the basis of the widely practised policy of confining segregation to "open" cases, and the Committee could find no adequate evidence to justify a departure from this policy.

Leprosy is not—the Committee insisted—a disease apart, but a general public health problem in the countries where it is endemic. Any measures which raise standards of public health are therefore likely to help in the control of leprosy, whether directed against specific infections or aimed at improving nutrition, sanitation or housing. Specific leprosy control work must be undertaken by personnel within the general framework of the health administration of a country, and the policy should be determined, not by public fears and prejudices, but by public health principles.

Treatment is most effective when given early; for this reason a dispensary system aimed at the early detection and treatment of cases is a primary and essential element in the organization of leprosy control. The type of dispensary, whether specialized or general, fixed or mobile, will depend on local circumstances. Whichever form it takes, it should not only detect and treat cases, it should also arrange for the placing of patients in suitable institutions, if the regulations in force require that they be isolated; select cases for domiciliary isolation where this is permissible and keep them under surveillance; arrange prophylactic measures for children born of leprosy patients; carry out welfare work; and promote education regarding leprosy. It should have a few beds for patients being kept for observation or treatment, or pending transfer to an institution.

Institutional isolation has failed as a control measure even when applied rigorously and on an adequate scale, but, if applied with discrimination and in combination with education and effective treatment of all the cases, it retains an important place in the fight against leprosy. Only open cases need be

subjected to it. The degree of isolation, the methods of securing it, and the amount of compulsion required will naturally vary from area to area. In some countries compulsion may be impossible; in others, where leprosy is not endemic and the disease shows no tendency to spread, it may be unnecessary: notification with whatever surveillance is deemed necessary may be a sufficient addition to treatment. Nor should isolation be thought of solely in terms of leprosaria. Domiciliary isolation is suitable where the patient can be kept in separate quarters and treated locally; an asylum may be indicated for the permanently crippled patient in whom disease has died out and for whom there is no means of support outside; and segregation villages or hamlets have been built and function successfully in some countries for infectious cases from several villages, or to ensure regular treatment in countries with scattered populations. Hospitals or special hospital wards may be of value for the temporary treatment of cases needing special medical or surgical measures.

The Committee discussed methods of treatment, the possibility of prophylaxis by BCG vaccination, and the immunology of leprosy. Mass campaigns, it felt, should be organized in limited areas.

Following the recommendations of the Expert Committee on Leprosy, WHO has continued and intensified its policy of helping countries in which leprosy is endemic. It encourages the study of local patterns of leprosy with the help of short-term consultants, whom it sends out to help advise the government concerned. Consultants have up to now visited the following countries and territories:

Africa: Belgian Congo, French Cameroons, the former French Equatorial and French West Africa, Gambia, Ghana, Kenya, Madagascar, Nigeria (Eastern, Northern and Western), the Portuguese territories of Angola, New Guinea and Mozambique, Tanganyika and Uganda.

Americas: Bolivia, Colombia, Ecuador, Grenada, Guadeloupe, Guatemala, Guiana, Martinique, Paraguay, Peru, St. Lucia, Trinidad.

Eastern Mediterranean: Ethiopia, Iran, Iraq, Pakistan and the Sudan.

Europe: Turkey.

Improves Appetite & General Well-being

COLLOIDAL CALCIUM
WITH D & B₁₂

Also highly useful in Allergic Conditions

Composition
Each ml. contains: Colloidal Calcium as oleate 0.66 mg.,
Vitamin D₂ B.P. 0.125 mg., Vitamin B₁₂ 50 mcg., 0.5% phenol
B.P. as preservative
Packing: 10 ml. Vial

ZANDU PHARMACEUTICAL WORKS LTD.
Gokhale Road South, Bombay 28

Graphic Z 38

South-East Asia: Burma, Ceylon, Indonesia, Thailand.

Western Pacific: Cambodia, China (Taiwan), Korea, Philippines, Solomon Islands.

TABLE 2
WHO FELLOWSHIPS IN LEPROSY

Region	1950	1951	1952	1953	1954	1955	1956	1957	1958	Total
<i>Africa</i>										
Belgian Congo	—	—	—	—	1	—	1	—	—	2
French Equatorial Africa	—	—	—	—	—	—	—	1	—	1
French West Africa	—	—	—	—	—	—	—	1	2	3
Gambia	—	—	—	—	—	—	1	—	—	1
Nigeria	—	—	—	—	—	—	1	—	—	1
Portuguese territories	—	—	—	—	—	—	1	2	—	3
Rhodesia and Nyasaland	—	—	—	—	1	—	—	—	—	1
<i>Americas</i>										
Brazil	—	1	—	—	—	—	—	—	—	1
Ecuador	—	—	1	—	—	—	—	—	—	1
Jamaica	—	—	—	—	—	—	—	—	—	4
Mexico	—	—	1	—	—	—	—	—	—	1
Paraguay	—	—	—	—	—	—	3	5	—	8
Trinidad	—	—	—	—	—	—	1	—	—	1
<i>South-East Asia</i>										
Burma	—	—	—	1	—	1	—	1	1	4
Ceylon	—	—	—	—	—	—	1	1	1	3
India	1	—	—	—	—	—	—	2	1	4
Indonesia	—	—	—	1	—	—	—	—	—	1
Thailand	—	—	—	1	—	1	—	—	—	2
<i>Europe</i>										
Portugal	—	—	—	—	—	—	—	2	—	2
Turkey	—	—	—	—	—	—	—	1	—	1
<i>Eastern Mediterranean</i>										
Iran	—	—	—	—	—	—	—	—	1	1
Lebanon	—	—	—	—	1	—	—	—	—	1
<i>Western Pacific</i>										
Korea	—	—	—	—	—	1	—	1	1	3
Papua	—	—	—	—	—	—	—	—	1	1
Philippines	—	—	—	—	—	—	—	—	1	1
Total	1	1	2	3	3	3	9	17	15	54

WHO seeks to improve local staff engaged in the leprosy campaigns by means of fellowships (see Table 2). It promotes the development of local campaigns with the economic support of UNICEF, WHO giving technical advice, or, in certain countries, e.g., Burma, Ceylon, Indonesia and Thailand, collaborating directly by means of a WHO Senior Leprologist.

WHO re-examined its policy on leprosy control in December 1957, when an informal study group met in Geneva to review the recommendations in the first report of the WHO Expert Committee on Leprosy in the light of advances in leprology and the experience gained in five years of widespread mass leprosy campaigns.

In 1958, WHO policy in regard to leprosy control was laid down in a guide for those working in antileprosy campaigns. The fundamental purpose of any leprosy control campaign, according to the guide, is to render open cases non-infectious, thus preventing the development of new cases and bringing about a progressive reduction in endemicity. The most important steps in the campaign are the early detection of all leprosy cases, regular treatment of all registered patients, protection of contacts against contagion, and rehabilitation of cured persons.

The case-finding control programme, the different measures to be adopted in countries of high, medium, and low endemicity, the various schedules for treatment, the criteria of arrest, the follow-up of cured cases, and the criteria for discharge are carefully described in the guide.

In many countries, experience has shown that a pilot project in a limited area is the best way to start a campaign. The teaching and training of campaign personnel can be begun in such a project, and extension of the campaign to an increasingly wider area can be undertaken when funds and personnel permit.

The administration of the leprosy campaign, the teaching and training of personnel, and the assessment of results of leprosy control are also carefully described. Special emphasis is laid on health education, not only of the general public, but also of doctors, health personnel, and patients. It is necessary in all such education to emphasize that leprosy is a curable disease, that deformity can be avoided by prompt treatment in the early stages of

the disease, and that there are certain irreversible sequelae of some forms of leprosy which should not be interpreted to mean that the disease is not arrested or cured.

1958 was a very important year for WHO in the development of leprosy control. Following its policy to give help and advice to countries with high endemicity and limited resources, WHO established a leprosy unit at Headquarters to co-ordinate its work on leprosy throughout the world.

Regional and inter-regional meetings were organized to unify policy on leprosy control and to spread knowledge among the local staff of the countries interested in this problem. A leprosy advisory team, composed of a leprologist (the team leader) and a statistician, was established to assess the results of the leprosy campaigns in progress.

A UNICEF/WHO Joint Committee on Health Policy met in October 1958 to review leprosy control activities. Very satisfactory progress, it noted, had been made in 13 leprosy control projects jointly assisted by UNICEF and WHO: thereby confirming not only the effectiveness of the methods used (methods based essentially on medication with DDS) but also the possibility of organizing on a large scale both the detection and systematic recording of new cases and the mass treatment of known cases, so as to ensure regularity, and consequently effectiveness, of treatment, even in the most remote territories.

For the successful future development of projects receiving international assistance certain conditions must be fulfilled. The legislation of the country must be in accordance with the principles of WHO, international aid being given only to countries ready to use large-scale modern methods in the fight against leprosy. Every project should be preceded by a survey of local conditions made by a WHO expert so as to enable him to draw up a plan of operations in agreement with the government health authorities. Projects should be long-term, and the period during which international assistance is given not less than five years. In many countries, it is necessary for a WHO expert to assist for at least two years in establishing the project, and he may possibly have to continue his collaboration during its expansion. If there is no resident WHO expert, a visit lasting a few weeks should be made at least every two years by a WHO consultant in order to follow up operations

and make any modifications necessary in the plan. In countries with insufficiently developed health services, pilot projects or demonstration areas are the most suitable way of beginning the campaign.

SEMINAR ON LEPROSY CONTROL

A seminar on leprosy control in the Americas had been held in Belo Horizonte, Brazil, a little earlier, in June and July 1958, under the auspices of the Government of Brazil, PASB, and WHO. Its purpose was to enable the participants to exchange views on leprosy control and to discuss ways and means of attacking the problem in the Americas. Data—the participants agreed—are essential in any plan of control; for the countries concerned, however, not only are they scanty, but they also lack uniformity and system. Consequently it is difficult, if not impossible, to compare the situation in different countries, or even the situation in the same country at different times. There is an obvious need for an overhaul of statistical services and methods, and in particular for the adoption of the grouping by age used in WHO statistics.

Leprosy control services are to be found at all stages of development in the Americas. On the whole, they are poorly balanced, and few of them are aware of the magnitude of the problem with which they are faced; nor are they properly integrated with the general public health services, or staffed with specially trained men. As a result, control programmes are as a rule inadequately carried out. Nearly everywhere too much stress is laid on the isolation of patients; indeed, in some areas this is the sole measure of control employed. The legislation too in general dates back to before modern ideas on leprosy, and is too restrictive in character; in some areas, by contrast, however, there is no legislation at all.

Isolation in special leprosaria—the participants in the seminar were agreed—as a method of leprosy control suffers from serious disadvantages. It leads to the concealment of cases because of the fear of compulsory confinement it engenders. It involves heavy expenditure on the leprosaria that could better be devoted to more rational methods. It casts a stigma upon, and leads to the disintegration of, the patient's family, making social readjustment more difficult. It discriminates unjustly and inhumanly against one class of hill persons, with the effect of

making them appear to be outcasts and rendering their rehabilitation into society impossible or next to impossible. And it perpetuates popular prejudices against leprosy. It should therefore be abolished, hospitalization in special institution being restricted to cases where there is some special social or medical indication. In its stead there should be effective control of foci of infection through treatment of all sufferers from the disease and close surveillance of contacts.

Mass treatment is only feasible where the whole population or thereabouts can be regarded as contacts, and is consequently not a method of control that is applicable in the Americas. The seminar preferred what it called extensive ambulatory treatment, meaning thereby out-patient treatment of all known patients with the aim of rendering them bacteriologically negative in the minimum time, so progressively reducing the opportunities for spread of the disease. This treatment depends on the existence of drugs of known action and tolerance, and requires for its success that all available resources be employed, especially in the rural areas, to ensure that no focus of infection is left and no patient untreated. Such a programme will need the full support of the authorities, as it must, given the characteristics of leprosy, be a long-term one; and it must be flexible and adapted to the country in which it is carried out.

Direct contacts should be subject to constant surveillance, and placed under treatment the moment they are found to have contracted the disease. The new-born should be kept away from foci of infection, in children's homes or the like. There is no need for special institutions for the care of dependants of those found to be infected, as isolation should be abolished. On the question of chemoprophylaxis for contacts the seminar was divided, there being in its view insufficient evidence for a definitive opinion: some participants thought chemoprophylaxis necessary for those persons who had been in contact with open cases; others felt that proper trials should precede the introduction of any such measure.

The seminar recognized the importance of increasing resistance to leprosy, although there was no unanimity of opinion about the value of the methods used, such as BCG vaccination and lepromin. One view about BCG was that it should be employed, although years would be required before any definitive opinion could be expressed on its merits or demerits, because

of its value in tuberculosis and its possible stimulating powers on the body's defences against leprosy. Another view was that there was no justification for using BCG until its value was demonstrated. All were agreed that its use deserved, and should be given, further study.

Should the staff engaged on leprosy control form part of the public health services or be a separate body? The seminar agreed that the former was the better solution: amalgamation increased the scope and vigour of the programme, reduced costs, and facilitated co-ordination with other public health activities. Those who were in charge of the leprosy campaign should be properly trained; special training courses should be launched for the subordinate staff; and the very important psychological aspect should be given due emphasis. Leprology should receive increased attention in the medical schools, closer contact being desirable between the leprosy services and the departments of skin diseases, preventive medicine and neurology. Institutions, both public and private, should support and encourage research into leprosy. Health education is an integral part of any programme for the control of disease; its importance in leprosy needs no stressing. Legislation on leprosy should be included in the general legislation on communicable diseases, not enacted separately and given undue prominence. All co-operation by private organizations in the task of control would be welcome.

INTER-REGIONAL LEPROSY CONFERENCE AT TOKYO

A WHO Inter-Regional Leprosy Conference was held in Tokyo in November 1958. It was attended by participants from the South-East Asia, Eastern Mediterranean, and Western Pacific Regions, as well as by representatives of eleven non-governmental organizations.

In any country with a leprosy problem, the Conference agreed, a preliminary investigation and a pilot case-finding and treatment programme are necessary, the latter normally being started in a demarcated area. An epidemiological survey requires adequate expert staff and other facilities, and it was suggested that countries might wish WHO to assist in conducting such a survey. Bacteriological examination should be carried out on every leprosy case where practicable. Doubtful cases should be examined further by qualified

personnel, but treatment should not be withheld pending confirmation of the diagnosis. Each country should revise its classification of leprosy in accordance with the principles laid down at the Seventh International Congress on Leprology, held in Tokyo just before the Conference.

The Conference agreed with most of the views of the South American seminar on leprosy control about the organization of leprosy control services, but felt that, while progressive and complete integration into the general public health services was desirable as an ultimate aim, a special service was needed in the early stages, attached to the directorate of health services. A minority also expressed the opinion that, in certain stages of leprosy control and in special circumstances, some form of specific legislation might be found necessary.

The Conference discussed principles of treatment. In mass leprosy control campaigns an inexpensive form of therapy must be used which can be administered safely by auxiliary personnel. At present, the only drug which fulfils these requirements is DDS, given orally or by repository injection. The choice of the mode of administration will depend on local circumstances, either mode having its advantages and disadvantages but both being equally effective. Treatment must be taken to the patient, mobile teams being useful for this purpose. Only if patients prove to be intolerant of, or resistant to, DDS is there any justification for special drugs, and then they should be administered under close medical supervision, preferably in an institution. The Conference recognized the need for research directed towards finding more effective drugs, of better tolerance and longer repository effect.

The length of treatment depends on a decision as to when an active and therefore dangerous case becomes inactive. The Conference agreed on certain criteria by which inactivity might be judged. No bacilli should be found over a period of at least six months by routine methods of examination in smears from the skin and nasal mucosa. There should be no visible infiltration of the lesions, i. e., all lesions should have become flat for at least six months. No alteration of texture or colour should have occurred in the lesions and no erythema should have appeared for the same period. No fresh lesions or extension of existing lesions should have taken place. Anaesthesia should similarly have remained stationary, and there

should have been no nerve tenderness or pain for a period of six months. The Conference recommended that treatment of indeterminate or tuberculoid (including maculo-anæsthetic and neuritic) cases should go on for two years, or until all signs of activity have ceased for eighteen months, whichever is longer. Treatment of lepromatous and border-line (dimorphous) cases should go on for at least two years after all signs of activity have ceased.

The Conference endorsed the conclusions of the seminar on the undesirability of isolating leprosy patients. Institutions can play an important part in control programmes by providing facilities for treatment of patients in reaction and infectious patients admitted on a voluntary basis, and they may be centres of research, education, special surgery, and vocational training. Patients with acute complications or incidental illnesses should otherwise be treated in general hospitals.

On other aspects of prevention, too, the Conference was in accord with the seminar. The role of BCG is as yet not established, and chemoprophylaxis for contacts has still to be proved to be of value; further research is therefore advisable. One point in prevention cannot be over-emphasized in any leprosy campaign: the danger of open cases coming into intimate contact with healthy members of the community, particularly children.

Shortage of specialized medical staff should not deter health administrations from carrying out leprosy control work, which is usually largely done by trained auxiliary personnel. The director of a programme should, however, be versed both in public health and in leprology. The study of leprology should be linked with other scientific disciplines, and the basic research worker should be encouraged to take an interest in its problems. Medical practitioners and students ought to learn more about leprosy, tuition during the student years and refresher courses afterwards being valuable.

Knowledge about the main facts of leprosy should be as widely diffused as possible, and propaganda should—the Conference stressed—be directed not only at the general public but at doctors, health workers and patients. There should be no hesitation in stating that leprosy is a curable disease, and it should be emphasized that early treatment may prevent deformity, which is itself usually correctable. In this

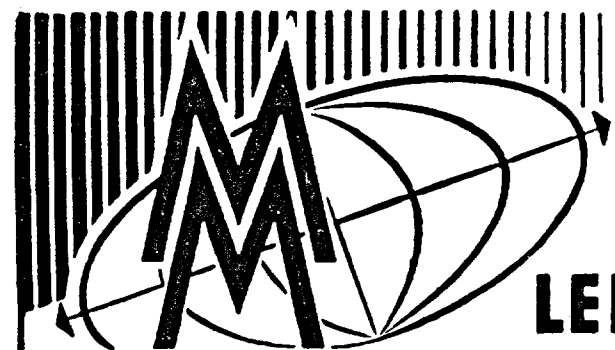
way, the fear of the leprosy, which is rooted in idea that it is incurable and in its association with deformity, will be allayed, and leprosy patients will no longer be regarded with loathing and dread.

The Conference also discussed the assessment of the results of leprosy control, favouring the evaluation indices suggested at the Seventh International Congress on Leprology; and dealt finally with the important subject of the social, physical, and psychological rehabilitation of leprosy patients. It is particularly necessary to convince the public that leprosy is not a disease apart, and that patients can be accepted and

rehabilitated within the community. Deformities that cannot or have not been prevented can be improved or corrected by physiotherapy in conjunction with orthopaedic and plastic surgery. For this purpose, each country should have at least one centre where specialists can provide teaching facilities and consultant services for surgeons and physiotherapists in the area. Surgical services can be attached to the general hospitals and leprosy centres, the essential requirement being that the surgeon should have received special training and that he should be aided by auxiliary personnel who can prepare the cases and follow them up. Occupational facilities should be provided.

HEALTH STAFF TRAINEES—STIPENDS INCREASED

The Union Ministry of Health has raised the grant of cash awards (stipends) to Dhais under training from Rs. 20 to Rs. 30 a month under the scheme launched in 1956. Under this scheme, 36,000 Dhais were to be trained as part of the Health personnel required for the implementation of health programme in the Second Plan. The training course is of six months' duration and in accordance with the syllabus prescribed by the Indian Nursing Council.



For details contact:
LEIPZIG FAIR AGENCY
P.O. Box No. 1993, BOMBAY 1
D-17, Nizamuddin East, NEW DELHI 13
34-A, Brabourne Road, CALCUTTA 1.
"Lemond", 46, Harrington Road,
MADRAS 31

Further information and free
advice on sources of supply from.

Leipziger Messeamt
Hainstr. 18 a Leipzig C 1
GERMAN DEMOCRATIC REPUBLIC

4th - 11th SEPTEMBER 1960

LEIPZIG TRADE FAIR

International Display of Consumer
Goods of Every Kind

Exhibits from 45 different countries for
comparison

An ever growing volume of
East-West Trade

Direct flights . Reduced fares by train over the continent
Literature from all leading travel agencies
Latest position of research & practice in the offer of instruments
of the medicinal technique & equipments for the medical
profession.

PUBLIC HEALTH SERVICES IN USSR

By PROF. V. M. ZHDANOV
Deputy Minister of Public Health of the USSR

A LOOK AT STATISTICS

A look at statistics will give the reader an idea of the achievements of Soviet health services in the forty-two years of existence of Soviet power.

The death rate in the country in 1913 was 30.5 per 1,000 of the population; today it is no more than 7.5—7.7. Child mortality decreased in this period from 273 to 40 per 1,000 new-borns. The average life span which in 1913 was 34 years has doubled and is today 67 years. The USSR now has the most favourable indices for birth-rate for increase in population, as compared to many advanced countries of the West.

These indices are the result of general improvement in the well-being of the Soviet people, the rise in their culture and the tremendous work put in by the workers of the health services during the years the Soviet state has been in existence.

After the victory of the October Revolution, health services had to be built up anew. The entire population of the vast country prior to the Revolution was attended by only 23,000 doctors and 50,000 junior medical personnel concentrated chiefly in the cities. There were very few hospitals with only 1.3 beds to a thousand of the population. One of the main tasks therefore was to establish a network of hospitals and clinics and train medical personnel. Today there are more than 1,500,000 hospital beds; general and specialised hospitals, polyclinics and health centres are to be found all over the land. Some 360,000 doctors and more than one million medical workers are engaged in public health institutions while the medical colleges train annually as many doctors as there were throughout tsarist Russia.

MASS SCALE DEVELOPMENT OF MEDICAL SCIENCE

Pre-revolutionary Russian medical science made no small contribution to the promotion of world medicine. But it was only in the years of Soviet government that medical science really developed on a mass scale in all its branches. It was precisely in these years that I,

Pavlov, E. Pavlovsky, K. Skryabin, A. Bakulev, and the numerous scientists of the younger generation, enriched medicine by their great discoveries. Scientific researches are now being conducted in 90 medical and pharmacological institutes, and about 300 scientific-research institutes are engaged in special fields of medicine.

As regards the medical industry, it actually did not exist before the Revolution, and medicines and medical equipment were mostly imported. Today the Soviet



At the surgery-room of the Burdenko Institute of Neurosurgery in Moscow.

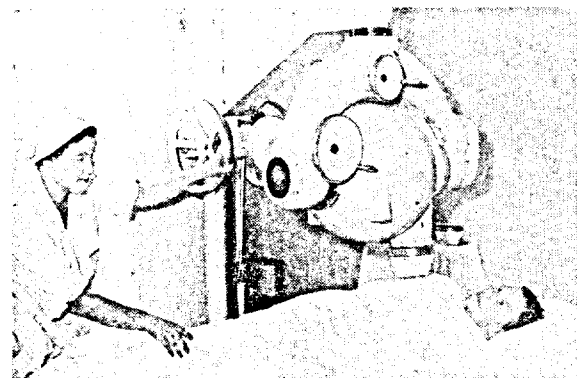
medical industry supplies the health institutions with all kinds of medicines and equipments. Many new medicines and medical instruments developed in the USSR have become world-famous.

PROPHYLAXIS—MAJOR PRINCIPLE OF SOVIET MEDICINE

The major principle of Soviet health protection is prophylaxis of diseases. This principle is reflected in extensive measures directed towards removing the causes of social, occupational and infectious diseases, and in particular ensuring the health of mother and child, and in measures for health education and enlightenment.

The emphasis on prophylaxis, on prevention, does not mean that the role of medical treatment is minimized. On the contrary, prophylactic work develops in close relation with medical treatment.

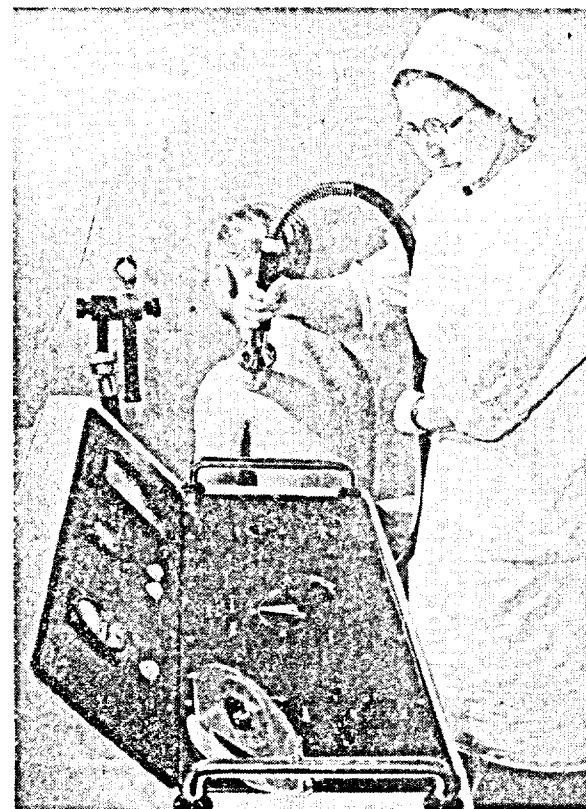
Prophylactics include not only the work of medical institutions, they consist, if one may say so, of non-medical and medical prophylactics. Let us take malaria as an example. At one time it was a difficult problem to combat this disease since large areas in the country were malaria infested, and every year millions of people suffered from this disease. Chemical prophylactics—destruction of mosquitoes with the help of DDT and other chemicals—played an important role in combating this disease. Malaria was quickly eradicated because leaders of enterprises and institu-



Medical nurse Mariya Ivashenko is preparing a patient for irradiation by the GUT-400 teleradium device at the Gertsen Oncologic Research Institute of Moscow.

tions joined in these efforts, while sanitary inspection organs ensured effective control over the fulfilment of measures for preventing the breeding of mosquitoes. In the areas where dams and other hydrostructures were built, malaria not only did not spread but was even eradicated earlier than in other places, since these construction projects were a powerful factor in clearing the locality of malaria.

The example of malaria shows how successful is the combination of non-medical (public) prophylactics and medical prophylactics. Following this principle the Soviet health services achieved important successes in fighting many occupational and infectious diseases, some of which have disappeared altogether.



Doctor Nina Sozinova is administering ultra-sound treatment to a patient at the Gorky Car-Building Plant.

MASS PROPHYLACTIC EXAMINATIONS

Prophylactic medical examinations and regular medical examinations of groups of the population have tremendous importance in the system of prophylactic measures of the Soviet health services.

There is no need to prove that any disease lends itself to treatment far better if it is detected at a very early stage. Prophylactic examinations, which are carried out in the USSR in a planned and systematic manner, conform to this very aim. Certain occupational groups of the population, aged people, particularly women, the inhabitants of certain localities are subjected to such examinations. Every year about sixty million people are subjected to various kinds of

prophylactic medical examinations, which reveal initial forms of cancer, high blood pressure, functional disorders of the organism. Patients receive surgical, therapeutic or sanatorium treatment.

SANATORIUMS AND REST HOMES

In the Soviet Union, great significance is attached to sanatorium treatment and organisation of rest and recreation of the people, as an important health-building measure. Sanatoria and rest homes, where every year more than three million people undergo treatment and spend their holidays, are situated in various parts of the country where the climate is salubrious, or where natural mineral springs exist.

Finally, we might note the extensive work conducted in the USSR to protect the health of mothers and children. The mother and child consultation centres which are organized all over the country pursue this purpose. Expectant mothers are under observation from the first months of pregnancy; they are given advice and consultation, and after the birth of children they are well looked after. There is no doubt that the sharp decline in the death rate achieved in the post-war years is largely due to the work of these institutions.

VAST DEVELOPMENT ENVISAGED IN NEAR FUTURE

The Soviet health services will be greatly developed under the current Seven-Year Plan. A large number of hospitals, with half a million beds, will be built. Accommodation for more than 800,000 children will be made available in the new kindergartens. Production of medical goods will increase on an average by three times, and that of more effective medical preparations and new medical instruments—four or five times. In 1965 the number of doctors in the country will reach 500,000 and the junior medical personnel—1,500,000.

The Soviet health services are faced with new and big tasks in the seven-year period. These briefly are: an offensive against such infectious diseases as influenza, poliomyelitis and measles, improvement in the measures for combating cardiovascular diseases and cancer and care of children. The practitioners

expect the scientists during these years to enrich our medicine with new effective prophylactic means and means of treatment of diseases.

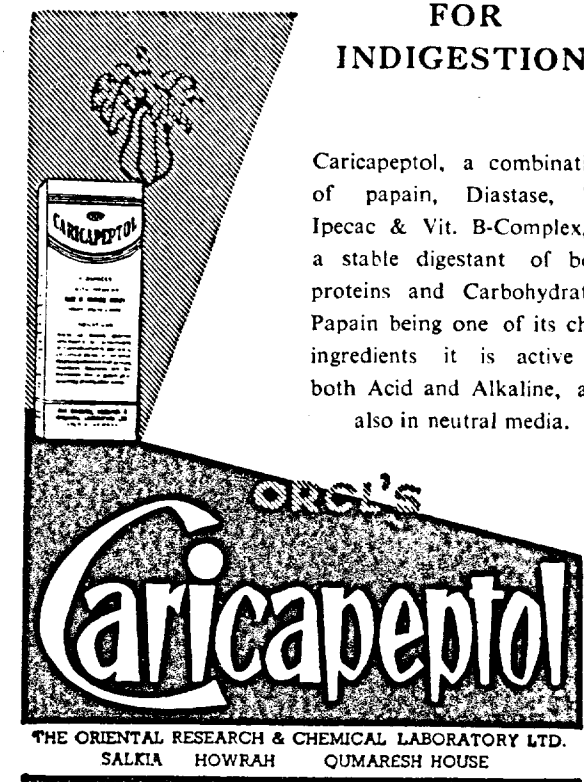
To protect the health of the people is a difficult but a great and honourable task, to which all the activities of Soviet health services are directed.

Site for surgical instruments Plant

The site selected by the Madras Government for the establishment of a surgical-instruments-manufacturing plant in Madras, has been approved by the Soviet delegation, which was in Madras, to investigate the suitability of the site. The delegation, headed by Mr. Lapin, Chief Engineer, visited the General Hospital and acquainted itself with the various types of instruments used. It also visited some of the factories and has convinced itself of the technical skill of the workers in Madras. The cost of the project, which will be implemented with Soviet collaboration, is Rs. 3 crores.

FOR INDIGESTION

Caricaeptol, a combination of papain, Diastase, Tr. Ipecac & Vit. B-Complex, is a stable digestant of both proteins and Carbohydrates. Papain being one of its chief ingredients it is active in both Acid and Alkaline, and also in neutral media.



MARVELS OF SOVIET MEDICINE

BY DR. E. TIKHANOV

1,500 "Dead" Persons Restored to Life

SOME 1,500 people who had stopped breathing and whose hearts had stopped beating—people who by normal standards were dead—have been restored to life in the Soviet Union in the past two years.

They owe their return from inside the gates of death to the work of a group of Soviet scientists and doctors, headed by Professor Vladimir Negovsky, who has devoted 20 years to the study of death and how to overcome it.

This group has found that death comes in three stages.

First there is the period of death agony when breathing is jerky and uncontrolled—a period which may last for minutes or hours.

Then respiration and heart beats stop and for some five or six minutes there is a stage called clinical death, during which life may be restored by arterial pumping of blood, by heart massage or by electric shock.

Finally there is biological death—the point of no return.

By experiments on animals, Professor Negovsky's team is learning how to prolong the second period to give surgeons a greater chance of bringing patients back to life.

Already they have in their laboratory animals which have been clinically dead for 30, 40 and even 60 minutes.

But it is not just a laboratory stunt. There are these 1,500 people snatched back from death in various hospitals all over the Soviet Union by Professor Negovsky's arterial blood pumping apparatus to prove how real an advance has been made by the armourers of life in their never-ending battle with death.

There is no resting on laurels already won in the Professor's laboratory. Day in and day out the search proceeds for more knowledge and better techniques of restoration to life.

PORTABLE APPARATUS FOR OVERCOMING FIBRILLATION OF HEART

Another armourer of life is engineer Yury Khudyi, scientific worker in the Moscow Research Institute for surgical equipment.

He has designed a portable apparatus for overcoming fibrillation of the heart, a condition brought on by severe electrical shock and one that also occurs in major surgical operations.

A single electric shock of 1,500 to 2,500 volts, lasting a hundredth of a second or less, is sent through the heart and starts it working normally again.

Because the apparatus is portable it can be used on the spot without the delay involved in getting the patient to hospital.

Yury Khudi has also helped in the design of the electric sleep machine used in treatment of some forms of schizophrenia, epilepsy, insomnia and other disorders.

The sleep machine transmits electrical impulses to the cortex of the brain, checks the activity of the nerve cells there and induces drowsiness and sleep. Already the instrument is in general production.

ULTRA-SOUND APPARATUS TO DETECT MALIGNANT TUMOURS

Another group of workers in the same institute has designed an ultra-sound instrument which can detect the presence of malignant tumours and cancers long before they are developed sufficiently to show up on X-ray plates.

Michail Gurevich, who headed the design team, explained that the machine worked on the same principle as an echo-sounder and showed the size and position of the tumour by means of light spots on a cathode ray tube.

The machine is able to distinguish clearly between a cyst and a malignant tumour and is more sensitive than X-rays.

Ultra-sound has been put to a more prosaic but nonetheless startling use by Arkady Kolosov. He has applied it to secure painless drilling of teeth.

No longer need the occupant of a dentist's chair feel the grinding of the drill. Instead, a high speed jet of finely divided aluminium oxide and water, agitated by the rapidly vibrating tip of the "drill", washes away the decayed part of the tooth—without the tip touching the tooth itself.

LISTENING TO THE HEART FROM THE INSIDE

Other engineers have designed a tiny microphone which enables a doctor to listen to the working of the heart from inside the heart itself. At the same time as the doctor listens the sounds of the heart are recorded permanently in graph form.

The microphone can be introduced into the heart cavity through a vein or, when operations are being performed, through a slit in the heart wall.

NETWORK OF ONCOLOGICAL CENTRES

The main establishment in the Soviet Union for combating cancer is the oncological centre which includes a polyclinic and a hospital. Apart from this, there are 220 oncological centres located in the regions, cities and districts of the Soviet Union. They represent a powerful therapeutic-prophylactic system for the fight against cancer.

The Soviet medical workers conduct a constant campaign with the object of drawing the attention of the people to early cancer and pre-tumour symptoms and inducing them to seek timely medical advice. Unfortunately however cancerous diseases in their early stages have few symptoms and are utterly painless. The fate of a cancer patient thus largely depends on the detection of the disease at an early stage.

Besides listening inside the heart, doctors have new instruments enabling them to see what is happening inside various parts of the body—such as the lungs, the stomach and the bladder.

To some of these instruments cameras may be attached to take colour photographs of the organs concerned allowing the doctor an opportunity of checking his own visual impressions.

Investigation of brain conditions can be made by radioactive isotopes which tend to congregate in tumours and so allow the position of the tumour to be located from outside the head.

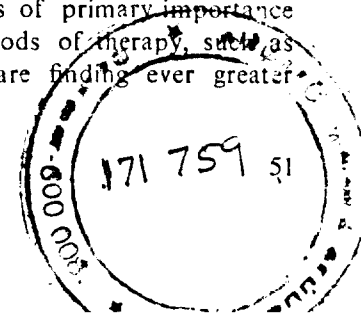
From the Latvian Institute of Experimental Medicine comes another method of probing the brain by beaming radio waves through the skull and so discovering the condition of the blood vessels in various parts. The diagnosis of blood pressure, sclerosis and other ailments has been helped considerably by this means.

SPUTNIKS OF SOVIET MEDICINE

Special instruments for suturing large blood vessels and rejoining special nerves have been greeted by many overseas surgeons as "sputniks of Soviet medicine," so great has been their impact on surgery of the heart, lungs, stomach and other major organs. They have considerably increased the chances of successful operations in the chest and abdominal cavities.

There is little doubt that cancer is curable. Thousands of persons are hale and hearty today many years after they had cancer. External forms of cancer are the easiest to detect and treat. At present 95% of the patients with cancer of the skin can achieve full and stable cure. Considerable success has also been achieved in the treatment of cancer of the uterus, of the mammary gland and other organs.

Even cancers of such deeply located organs as the stomach, lungs and esophagus—the most difficult to detect and cure—have become susceptible to treatment. Surgical intervention is of primary importance in such cases. Other methods of therapy, such as X-rays, radioisotopes etc., are finding ever greater application.



SYPHILITIC JUXTA-ARTICULAR NODES

ANALYSIS OF 103 CASES

By

DR. LI HUNG-CHIUNG, DR. MA HAI-TEH,
DR. FAN LIEN-CHIEH and DR. LIU CHI-HO

Institute of Dermatology and Venereology, Chinese Academy of Medical Sciences, Peking

DR. WANG SHUANG-YUAN

Department of Dermatology and
Venereology, Peking Medical
College, Peking

DR. SUN MU-YUNG

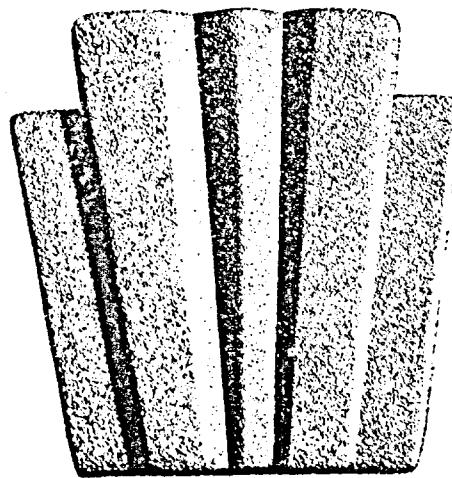
Department of Dermatology and
Venereology, Kunming Medical
College, Yunnan

DR. TENG KUEI

Institute of Communicable Diseases
Prevention, Autonomous Region
of Inner Mongolia

an
important new use
for a remarkable
new drug

A KEYSTONE IN THE THERAPY OF ALL HYPERTENSIVE PATIENTS



DOSAGE: 1 to 4 tablets a day depending
on the severity of the condition.
SUPPLIED: 0.5 Gm. scored tablets in
bottles of 10, 25, 100 and 1000

Originally developed as an oral diuretic—with effectiveness comparable to that of parenteral mercurials—further extensive clinical research has shown CHLOTRIDE to possess the following unique advantages in the therapy of hypertension: potentiates the action of reserpine, Veratrum, hydralazine, and ganglionic blocking agents such as MEVASINE* / permits reduced dosage of these drugs and, therefore, lower incidence of side effects / enhances the effects of splanchnicectomy / simplifies dosage regimens / may permit more liberal dietary salt intake / virtually nontoxic.

Chlotride*

TRADE MARK (CHLOROTHIAZIDE)

MSD MERCK SHARP & DOHME OF INDIA PRIVATE LIMITED,

Post Box 10081, BOMBAY 1

Distributed by VOLTAS LIMITED, Bombay, Calcutta, Madras, New Delhi, Bangalore, Cochin, Kanpur

JUXTA-ARTICULAR nodes are usually seen among patients suffering from syphilis, yaws, etc., and are of great diagnostic significance. In 1953, Putkonen et al¹ could find in the literature only 200 cases of syphilitic juxta-articular nodes reported from nontropical regions, indicating that this condition is quite rare. In China, Poupalein² reported 12 cases, Hu et al³ 31 cases, Yu et al⁴ 1 case, Ting⁵ 4 cases, Tu⁶ 22 cases, Wang⁷ 42 cases and Hsu et al⁸ 2 cases, totalling 114 cases. In 1954-58, in the course of venereal disease control among national minorities in Hainan Island, Yunnan, Sinkiang and Inner Mongolia, 98 cases of syphilitic juxta-articular nodes were seen which, together with 5 cases observed in our OPD in Peking, made the total number 103. Thus, the condition is apparently not so rare in this country.

ANALYSIS OF CASES

Of 103 cases, 72 cases were seen in Lotung and Paoting counties, Hainan Island, 26 cases in Yunnan, Sinkiang and Inner Mongolia, and 5 cases in Peking. With the exception of the last 5 patients who were either laborers, cultural workers or housewives, all were peasants or herdsmen of the Li, Kazakh, Ah and Mongol national minorities. Epidemiologic field studies of venereal diseases were based on complete population surveys. The diagnosis in each case was based on a combined consideration of the findings in the history, physical examination, serologic reactions, therapeutic result and follow-up of the patient's condition.

1. *Incidence.* In the epidemiologic survey in Hainan Island, we found altogether 1,357 cases of

syphilis, 657 males and 700 females. Among them, 72 (male 38, female 34) had juxta-articular nodes. The incidence for both sexes was 5.3%, males 5.7% and females 4.8%.

In similar epidemiologic surveys in Yunnan, Sinkiang and Inner Mongolia, we found altogether 1,779 cases of syphilis, of which 929 were males and 850 females. Among them, 26 (male 18, female 8) had juxta-articular nodes. The incidence for both sexes was 1.4%, males 1.9% and females 0.9%.

In our OPD in Peking, among 1,416 cases of syphilis (935 males and 481 females), 5 cases (male 3, female 2) had juxta-articular nodes. The incidence for both sexes was 0.35%, males 0.3% and females 0.4%.

2. *Sex and age.* Of our 103 cases, 59 were males and 44 females, the ratio being 1.3:1 (corrected ratio 1.1:1). The age of the patients varied from 27 to 71 years for both sexes, males 30-71 and females 27-70. The average age for cases observed in Hainan Island was 46.8 years. There were 6 cases whose age was under 30 years, 28 cases between 31 and 40 years, 34 cases between 41 and 50 years, 24 cases between 51 and 60 years and 11 cases above 60 years. In 94.3% of cases, the age was above 31 years.

3. *Onset of juxta-articular nodes after syphilitic infection.* Of 103 cases, the date of the syphilitic infection and juxta-articular nodes formation was known in 57. Among these, 3 cases had the lesions within the first two years of syphilitic infection, 6 cases between two and four years, 11 cases between five and ten years, 15 cases between 11 and 20 years.

12 cases between 21 and 30 years and 10 cases between 31 and 40 years. 15.8% of the cases had the lesions within four years of syphilitic infection and 84.2% after four years. The nodes developed at the earliest in the third month of infection and at the latest 40 years after infection.

4. *Duration of the nodes.* Of 103 cases, the duration of the nodes was known in 81, the shortest being three months and the longest 43 years.

5. *Location of the nodes.* In calculating the location frequency, bilaterally distributed lesions were counted as double and lesions located at one site as one. The nodes were distributed over the coccygeal joint 122 times (51.5%), the most favored site, over the elbow joint 29 times (12%), over the ischial and sacrococcygeal regions 25 times each (10.6%), over the knee joint 16 times (7.8%), over the fibular region five times (2.1%), over ankle and shoulder joint four times each (1.7%), over the anterior iliac crest two times (0.8%), over the wrist, sternoclavicular region, lumbar region, mandibular joint and abdominothoracic arch once each (0.4%).

6. *Number of sites involved in individual cases.* This item was fully recorded in 77 cases. In 30 cases (38%), the lesion was found at one site, in 47 cases (62%) over two or more sites. There was 1 case in which the nodes were found in 13 different sites.

7. *Number of nodes.* The number of nodes varied from 1 to 19. Of 98 cases in which this item could be counted, 29 cases had only one lesion each, 32 cases two lesions each, and 37 cases three or more lesions each. On the average, each case had 2.8 nodes. Matted nodes were considered as one node.

8. *Symmetrical distribution of nodes.* Among 77 cases in which this item could be fully investigated, 50 cases had bilateral distribution of nodes and 27 cases unilateral distribution, the former distribution being almost twice as frequent.

9. *Size of the nodes.* Among 98 cases in which the size was recorded, the largest one measured 7-8 cm in diameter, and the smallest 0.3-0.5 cm. One 43 year old lesion was only 3-4 cm across, while a two year old lesion measured 7-8 cm across. The size of the lesion is apparently not closely related to its duration.

10. *Characteristics of the nodes.* These were their juxta-articular distribution, subcutaneous location, not being fixed to the overlying skin, cartilaginous consistency, painlessness, slow growth and lack of signs of breaking down. Of 199 nodes with their shape well described and recorded, 116 were spheroid (58.7%) and 83 spherical (41.3%) in shape. Among 71 cases in which the state of fixation of the nodes was recorded, 46 cases had mobile subcutaneous nodes and 25 cases fixed. These were usually the large and matted nodes fixed to the deeper structures but not usually to the overlying skin.

11. *Frequency of other syphilitic manifestations.* Of the 103 cases, 6 had simultaneously syphilides, 3 syphilitic bursitis, and 1 each concomitant periostitis, arthritis and aortic regurgitation.

12. *Other complications.* Of the series, there were 22 cases complicated by filariasis and 3 by leprosy. Not a single case of yaws was found.

13. *Serologic reaction (STS) and cerebrospinal fluid examination.* Kahn, Citochol and Wassermann reactions were done on all the cases and the results were all positive. Cerebrospinal fluid examination was done in 3 cases only and the results were all negative. In Hainan Island, we saw 2 cases of juxta-articular nodes possibly syphilitic in etiology, but with negative serology. Since a final diagnosis could not be made, they are not included in this report.

14. *Histopathologic findings.* Histopathologic examinations were done in 5 cases. The chief findings were dense fibrosis with varying degrees of cellular infiltration, swelling of the vascular endothelium and perivascular round cell infiltration. In some places mild degree of hyalinization of the fibrous tissue was seen. In our material we did not find the three zone arrangement in the lesion as described by Lever⁷.

15. *Result of animal inoculation.* In 2 cases, the venous blood and biopsied material respectively were inoculated into rabbits. The result was negative for blood inoculation in both cases and positive in 1 case for node material inoculation occurring in the third generation of transfer.

16. *Therapeutic results.* Except 1 case in which two injections of neoarsphenamine had been given during the primary stage, all the patients had received

no previous antisyphilitic therapy. The majority of our cases received 6 megaunits of PAM in a ten day course. Due to the brevity of our stay at the different places, we were not able to observe long-term results. At the end of penicillin treatment, juxta-articular nodes began to decrease in size in a few patients. In our OPD in Peking, we found that the nodes responded very well to antisyphilitic treatment. In 1 case, a large node of 7-8 cm decreased markedly in size and the smaller nodes disappeared entirely after one course of combined treatment with arsenic and heavy metal. In another 2 cases the nodes all showed marked reduction in size, one after six injections of PAM with a total of 2.4 megaunits and the other after ten injections of PAM with a total of 6 megaunits.

DISCUSSION

1. *DIAGNOSIS.* As juxta-articular nodes may be due to a variety of causes, the establishment of their syphilitic etiology must depend on a careful consideration of the findings in the clinical history, physical examination, serologic tests for syphilis, therapeutic response, and, when available, histopathologic examination and animal inoculation. In our series, all except 26 cases in which the venereal history was denied or uncertain had positive venereal history and serologic reactions. The series reported by other authors^{2, 3, 6} also had positive serologic reactions for syphilis. Greenbaum² considered that in such cases the complement fixation test was 100% positive, but 16 of Cutierrez's 22 cases² and 2 of Wang's 42 cases⁶ had negative reactions. The 2 Hainan cases mentioned above which had negative serology and were highly suspected of syphilis may be mentioned here in this connection. It is possible, therefore, that in a few cases the serology may be negative. In our series, 3 cases had leprosy simultaneously, and 22 had filariasis. This raises the question whether or not these diseases might be responsible for producing the nodes. However, in 200 cases of leprosy and 256 cases of filariasis in the same region, none had juxta-articular nodes. Furthermore, we could find neither acid-fast bacilli nor filaria larvæ in the specimens taken from patients complicated by leprosy or filariasis. Therefore, we consider these two diseases are solely complications and are not responsible for juxta-articular nodes in our cases. The syphilitic origin of the other 78 uncomplicated cases is of course unquestionable.

Among 103 cases, there were 3 cases in which the juxta-articular nodes developed between the age of 3 and 5 years. This induces us to consider the possibility of congenital syphilis as the cause in these cases, though they presented no stigmata of the disease. According to Ting², Drought and Dennie had mentioned that congenital syphilis could cause juxta-articular nodes, but such reports have been few.

Small nodes are often overlooked by both the patient and physician. In our series we missed 1 such case during the first examination. Diagnosis was made only at a subsequent detailed examination. Of 4 cases reported by Ting², one was missed during the first examination and another one misdiagnosed as fibroma. Therefore, a careful search should be made in each syphilitic case during physical examination.

2. *DIFFERENTIAL DIAGNOSIS.* The diagnosis of syphilitic juxta-articular nodes is usually not difficult, but diseases in which nodular lesions are common, such as yaws, rheumatism, cysticercosis, xanthoma tuberosum, calcinosis, filariasis, leprosy, tuberculosis and aspergillosis, should be excluded first.

Frambesic juxta-articular nodes. In yaws, juxta-articular nodes are fairly common and should be differentiated from those caused by syphilis. But in China, yaws occurs endemically in northern Kiangsu and Taiwan only. In syphilitic cases, one can usually obtain venereal histories and findings of other syphilitic manifestations. Of course, should animal inoculation be done, it may also help to differentiate the causative agents.

Rheumatic nodosities. These are commonly seen among youths with rheumatic history, arthritis, and myocardial or valvular lesions. The lesions are comparatively small, erupting in crops over the small joints, accompanied by signs of inflammation. The clinical course is short, lasting only a few weeks. The serologic reactions of the patients are usually negative.

Cysticercosis. In this disease, the cysts may appear at any site and are softer in consistency. The etiology can be easily determined by stool examination and histopathologic study of biopsied specimens.

Xanthoma tuberosum. The nodular lesions in this metabolic disease are yellowish or reddish brown in color and softer in consistency. Histopathologic section may show numerous foam cells and Touton

giant cells. The patient's serologic reactions are usually negative and the blood cholesterol content is elevated.

Nodosities due to filariasis. These usually appear over the chest below the axilla and over the anterior iliac crests. In sections larvæ may be found. The patient's serologic reactions are usually negative.

Leprotic nodules. These can be easily diagnosed by the accompanying lepromatous manifestations. In sections, one may find typical lepromatous changes and by acid-fast stain lots of lepra bacilli. Therapeutic test may also help to differentiate this condition from syphilis.

Foreign body tumor. In the past 2 cases of nodular lesions caused by deposit of bullet fragments in the juxta-articular regions were seen. They were quite hard in consistency and very similar in appearance to syphilitic juxta-articular nodes. But the history of bullet wounds, finding of wound scars in the adjacent regions, and röntgenologic examinations cleared the diagnosis. Such foreign body tumors simulating juxta-articular nodes have not been reported before and are worth mentioning.

With regard to nodosities caused by calcinosis, scleroderma, tuberculosis, aspergillosis, etc., they are either very rare in occurrence or easily recognized. Their differential diagnosis is thus omitted here. Nodular lesions of lupus erythematosus and erythema perstans, etc., have their own characteristics. Other conditions, such as bursitis, fibromata and bone tumors, may be differentiated by the lesions, serologic reactions, pathologic sections and therapeutic tests.

3. FACTORS PROMOTING NODE FORMATION. The fact that syphilitic juxta-articular nodes are directly caused by *Treponema pallidum* has been well recognized and the organisms have been repeatedly found in the nodes. Hu et al³ found that the sites of predilection were frequently where pressure is exerted during sleep or work. But De Querrain quoted by Ting² thought that a special strain with affinity for juxta-articular regions is responsible for the formation of nodes.

As has been stated, the incidence of juxta-articular nodes varies greatly in different regions. In Hainan Island, it is as high as 5.3%, in Yunnan, Sinkiang and Inner Mongolia 1.4% and in our OPD in

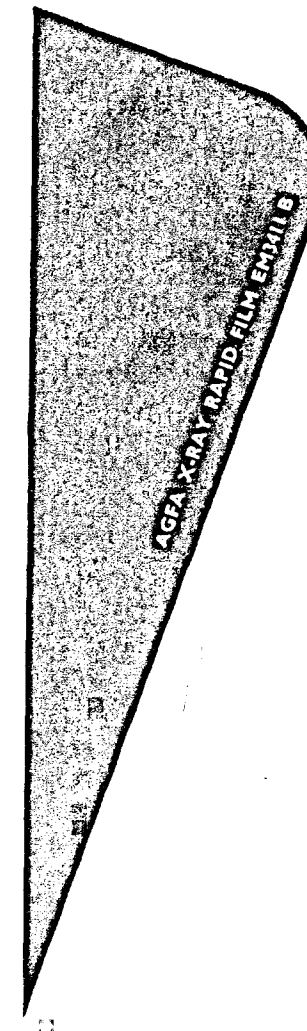
Peking 0.35%. Of course, the incidence found in a general survey cannot be compared with that found in the OPD. However, the marked difference between the first two figures still needs explanation. We believe that the high incidence in Hainan Island is because the natives there are more liable to physical trauma and body point pressure, as they wear very little clothing and sleep on hard wooden boards and bamboo beds. This also helps to explain why 76% of the juxta-articular nodes seen there developed at the sacral, coccygeal, ischial and scapular regions which bear pressure most during sleep.

In view of the fact that in 1 case the node started at the site of abrasion and that the incidence of juxta-articular nodes is 2.5-3.5 times higher among cases simultaneously complicated by filariasis or leprosy than uncomplicated ones, we believe that trauma and resistance-lowering diseases are among the promoting factors in node formation. We do not subscribe to De Querrain's assumption that a special strain of *Treponema* is responsible for the production of nodes.

The fact that, of our 57 cases with known duration of infection, 9 developed the nodes within four years of infection (the earliest being only three months), and the other 48 cases developed lesions later than four years, and that 11 cases of Hu's series developed lesions within two years of infection and the remaining 11 cases at later periods shows that juxta-articular nodes may appear early or late in the course of syphilis. However, in the majority of our cases the lesions developed late. Without antisyphilitic treatment, they might persist as long as 28³ to 43 years as in one of our cases.

As we were able to isolate *Treponema pallidum* from a 25 year old node by rabbit inoculation, we are led to believe that such lesions are still active despite a long duration. The good response to antisyphilitic treatment in our cases and in those reported by others^{2, 3, 5, 6}—considerable decrease in the size of the nodes or their complete disappearance—also indicates the active nature of the lesion.

As to the question whether the nodes that do not show any change after sufficient antisyphilitic treatment has been given can be taken as evidence that syphilis has not been cured, we hold the view that we should not consider only the clinical response of the nodes, since they may have been entirely fibrosed or



Agfa

X-RAY FILMS FROM WOLFEN

*used and trusted by
millions of medical practitioners
the world over...*

VEB FILMFABRIK
AGFA WOLFEN
Wolfen, Kreis Bitterfeld,
**GERMAN
DEMOCRATIC
REPUBLIC**

For particulars, please contact
our sole importers and distributors:
AGFA INDIA PRIVATE LIMITED
198 Jamshedji Tata Road, Bombay 1
Branches:
31 Chittaranjan Avenue, Calcutta 12
202 Mount Road, Madras

ajanta GDR/A-2-A



hyalinized after a long period. Antisyphilitic treatment, though ordinarily sufficient enough, may not influence such old lesions. Therefore, it is important to make an early diagnosis and give early treatment in order to obtain good therapeutic results and to prevent late sequelae of syphilis.

SUMMARY

1. A clinical analysis of 103 cases of syphilitic juxta-articular nodes is made in this report. The incidence of this particular condition found during complete population surveys of syphilis was 5.3% among syphilitics in Hainan Island and 1.4% in Yunnan, Sinkiang and Inner Mongolia. Among syphilitic patients in our OPD in Peking, the incidence of juxta-articular nodes was only 0.35%. There was no appreciable difference in incidence among the sexes. 94.3% of cases were among adults above 30 years of age. 84.2% of cases had the lesions four or more years after acquiring syphilitic infection. One lesion in this series persisted for 43 years. The sites of predilection were the coccygeal, elbow, ischial, and sacral regions. 84.1% of the lesions developed in the above mentioned regions. 62% of cases had lesions at two or more sites. 64% of cases had a

bilateral distribution of lesions. The highest number of lesions in 1 case was 19 and the largest lesion measured 7-8 cm in diameter. 12.5% of cases had at the same time other syphilitic manifestations. The serologic reactions in all cases were positive. Histopathologic examination showed marked fibrosis, varying degrees of hyalinization, round cell infiltration, hyperplasia of vascular endothelium and perivascular infiltration. Animal inoculation of node material for isolation of *TREPONEMA PALLIDUM* was successful in certain cases. Under antisyphilitic treatment the nodes might show marked reduction in size or even disappear entirely.

2. The diagnosis and differential diagnosis of syphilitic juxta-articular nodes are briefly discussed. The necessity of careful search and detailed examination to avoid missing small early nodes is emphasized. Pressure, trauma and chronic infections such as filariasis and leprosy are considered to be promoting factors in node formation. The nodes, though indolent, should be considered as active manifestations of syphilis. Early diagnosis and treatment are important for effecting a cure of the condition and prevention of late relapses.

(Courtesy: "The Chinese Medical Journal")

Detection of achlorhydria without intubation. Conway, H. and Meikle, R. W., *British Medical Journal*, Great Britain, II: 1019-1020, November 7, 1953.

The quininium cation exchange indicator compound, Diagnex, was employed to determine the presence or absence of achlorhydria without intubation in 22 patients. The results obtained with Diagnex compared very favorably with those secured by the more conventional aspiration technique. In one exceptional case (a partial gastrectomy patient) use of the intubation technique showed 6.4 clinical units of hydrochloric acid by intubation and an excretion of 12.8 mcg. of quinine when Diagnex was used. Generally, the presence of free gastric hydrochloric acid was associated with an output of more than 50 mcg. of quinine, while 20 mcg. of quinine or less indicated achlorhydria. The authors feel that while, at present, Diagnex may be restricted to certain patients, particularly those who are unwilling or unable to

swallow a stomach tube, it is altogether possible that in the course of time it will become the routine procedure for gastric analysis in view of the comfort and convenience afforded. Diagnex shows every likelihood of being a highly useful instrument in gastric exploration. From the patient's point of view the Diagnex method requires only the taking of a safe and tasteless material, an injection of histamine, and collection of urine. This obviously overcomes the customary objections to intubation. Diagnex appears to be extremely well adapted for studies on the frequency of achlorhydria in the general population. It has been recommended as preferable to intubation after recent bleeding from the upper gastro-intestinal tract. It has also been suggested for use following partial gastrectomy.

PLASTICS AS A HEALING SUBSTANCE

BY DR. R. GORDIN
Moscow

A NINE year old girl was brought to No. 1 Kishinev City Hospital in a coma, with mortal burns. The interne on duty did all he could to save her, nevertheless the child's condition continued to worsen.

Nikolai Kuznetsov, M. Sc. (Medicine) and head of the Histology Department of the Kishinev Medical Institute, came to the rescue. On examining the girl he recommended treatment with bioplastics and gave to the surgeon several sheets of biological plastics, as thin as tissue paper.

The process of treating burns with biological plastics is very simple: the injured parts are wrapped in sheets of bioplastics. The results of the treatment were excellent: the little girl grew better on the very second day, in the week's time she could smile weakly at the doctor, and in a month she was able to sit up in bed. Healthy skin grew and spread gradually under the layer of bioplastics.

This seemed almost miraculous and surgeon Michael Kaufman decided to apply the new stuff in a wider field and try it on cases of incurable trophic ulcers. The results were most encouraging. For example, a woman aged sixty, who had been suffering from a deep trophic ulcer for eight years and tried every remedy in vain was cured in the course of only two weeks.

Surgeon Kaufman's clinical work is only one link in a long chain of experiments made by Moldavian doctors with various biological plastics elaborated by Kuznetsov. These experiments are not confined to Moldavia and Assistant Professor Kuznetsov receives letters from various Soviet cities almost daily. Some of them tell of clinical experiments, others ask for bioplastic material: films, tubes, catgut, pins, etc.

EVOLUTION OF A UNIVERSAL HEALING SUBSTANCE

Generations of surgeons had dreamt of such material: solid, light, not requiring special storage, easily sterilized and simplifying the technique of operation; i. e. material that replaces metal, ordinary

plastics, natural and synthetic rubber in plastic surgery.

Almost three decades ago Nikolai Kuznetsov, then Assistant in the Department of Histology of the Moscow Medical Institute, studied the serous cover of internal organs and discovered that it consists of strong longitudinal fibre of rather great length. The serous cover of the peritoneum of cows and oxen later became the initial material from which biological plastics were made. Bioplastics are often called a universal healing substance. Light and strong, bioplastic materials are now universally applied in surgery. Their effect on the organism is similar to that of a catalyser of vital processes, in other words of a biological stimulant. And bioplastics have another very important advantage: after the healing process is over they fully dissolve in the body.

Kuznetsov's plastics are applied on a growing scale. The eminent Russian eye specialist, Professor Ivan Kurlov, noticed that catgut made of bioplastics has a powerful healing influence on the eye tissues. As he later wrote: a complete cure was achieved even in cases where surgery seemed unavoidable and the patient was threatened with complete blindness. A great Soviet scientist, the late Academician Filatov, called the use of bioplastics in surgery "the method of the future".

Surgeon Pyotr Polyakov has developed a new method of treating complicated fractures of the tubular bones with Kuznetsov's bioplastics. Three or four years ago a 19 year-old student of Kagula was threatened with amputation of the arm. By using bioplastics Polyakov saved the youth's arm and completely restored its function.

SOME EXCELLENT RESULTS

Similarly doctor Michael Zagarskikh has had excellent results in the treatment of stenoses of the larynx and upper respiratory tract. Let us look into the case records filed in the archives of doctor Zagarskikh. Here is the case of a year-old baby who was brought to the clinic where the doctor worked. The child was suffering from post-operational stenosis of the larynx. Although experienced surgeons had

(Continued on page 60)

Heart Disease Answer Sought in Odd Animal

(By A Medical Correspondent)

A LITTLE rat-like animal called a gerbil, which normally lives in the deserts of the Middle East and North Africa, may hold the answer to one of the most prevalent forms of heart disease.

Why this might be so was explained to scientists attending the meeting of the Federation of American Societies for Experimental Biology by two researchers from Cyanamid International's Lederle Laboratories, in Pearl River, New York.

Dr. Samuel Gordon and Walter Cekleniak of Lederle noted that atherosclerosis, or hardening of the arteries, is characterized by accumulations of fatty substances such as cholesterol in the arteries, which tends to reduce their size and restrict blood flow. When these substances collect in arteries leading to the brain or heart they are particularly dangerous.

The gerbil, the scientists went on, has so well adapted to its desert habitat that it has learned to survive without water—an adaptation that prompted Lederle to establish its own gerbil colony. The tiny animals have been studied in several research fields since 1957.

Of importance in heart disease research was the discovery that the gerbil can withstand high cholesterol

levels for prolonged periods of time without developing the blocking substances characteristic of atherosclerosis. Apparently some unknown factor in the metabolism of the gerbil allows it to safely endure the high cholesterol diets which are suspected of causing certain forms of heart disease in man.

The Lederle researchers reported that gerbils maintained on a one percent daily cholesterol diet—far in excess of what the average human consumes—showed no formation of artery blocking substances, even after six months on the diet.

Although physicians for the past 25 years have felt that there was a definite correlation between diet, high blood cholesterol levels and the incidence of heart disease, the Lederle study indicated that the total fat-protein pattern may be more significant than just the cholesterol level.

Further research is being done to see whether the metabolism of certain dietary fats and protein—rather than merely cholesterol-containing fats—holds the clue for the understanding of high blood cholesterol formation in man.

If this can be proved, new insight will have been achieved into the cause of heart disease which is still the number one killer.

(Continued from page 59)

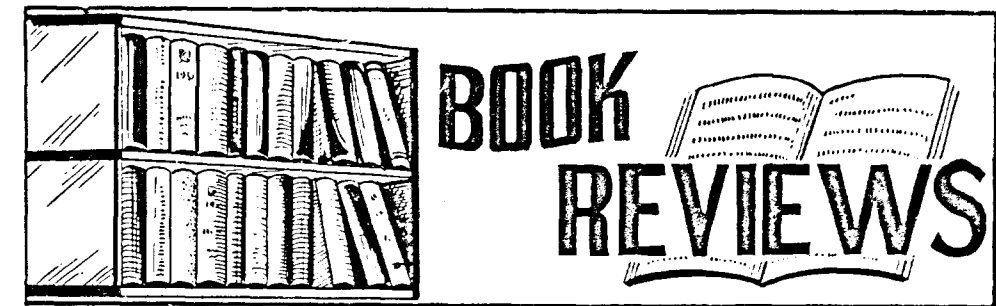
operated four times and every possible means was tried, the larynx was gradually narrowing and the child was threatened with death through suffocation.

Zagarskikh undertook to treat the little patient. A tube, made of biological plastics, was introduced in the child's larynx where it remained 25 days, after which the child left the clinic with the breathing and vocal functions of the larynx fully restored.

But this could have been due to the restorative powers of the baby's organism, one may say. Nothing of the kind. Here is another case. This time the new method was tried on a 52-years old patient who was brought to the clinic with a severe scleroma of the larynx. Previously he was operated twice and had two courses of treatment with streptomycin and X-rays. In spite of all this he was slowly dying of suffocation.

It took Zagarskikh only eight days to restore the patient to his normal health.

Preparations made of Kuznetsov's bioplastics have been applied with unvarying success to correct defects of the biliary ducts, in the treatment of hard hearing, restoration of disrupted blood vessels, nerves and liver ducts, traumatic injuries to the hard cortex of the brain, tendons and digestive tract. The Presidium of the Scientific Medical Council of the USSR Ministry of Public Health has passed a resolution favouring the broad use of Kuznetsov's bioplastics in medical practice and publication of the collective works of Kuznetsov and his followers. There are at present about 100 of these works in various fields of medicine. The same resolution proves for the regular output of preparations made from biological plastics, which are already in very great demand.



RADIOLOGY AS A DIAGNOSTIC AID IN CLINICAL SURGERY—

By Howard Middlemiss, M.D., F.F.R., D.M.R.D.,
William Heinemann Medical Books Ltd., London
1960 (Price 30 Sh.)

This attractively produced book of 151 pages contains 86 x-ray reproductions. There are nine chapters in this book. Chapter 1 deals with emergency work and considers fractures, conditions of skeletal trauma that may be missed despite an x-ray examination, head injuries, foreign bodies, kidney injuries and abdominal emergencies. In this chapter the author's remarks on skeletal trauma that may be missed despite the x-ray examination is of great interest. In abdominal emergencies are considered intussusception, perforation of a hollow Viscus and intestinal obstruction. Chapter 2 is of very great importance in that it considers post operative conditions in which diagnostic radiology can play a very useful part. It includes post thoracotomy examination, post operative ileus, swabs left in the abdomen, sub-phrenic abscess and pulmonary infarction. Chapter 3 deals with the mouth, nose and neck and 4 with the Alimentary Tract. Chapter 5 deals with the Biliary Tract and Pancreas. Chapter 6 concerns the Urinary Tract. Chapter 7 discusses bony lesions. Chapter 8 includes Vascular investigations, such as aortography femoral arteriography, venography of the leg, and portal venography. Chapter 9 deals with the protection of personnel who come into contact with radiation. It also considers how the patient can be protected.

In his introduction the author is quite clear as to the purpose of the book and states "It is intended for practising surgeons. He has tried to impart a better understanding of the scope and limitations of this branch of medicine so that he may obtain all the

help that can be made available and avoid the pitfalls that too implicit a faith in the power of radiology may produce. Special care has been taken to produce paper and blocks which will give the finest possible reproduction of the illustrations, each of which illustrates some definite lesion and has been specially chosen because of its clarity." These remarks are in no way an exaggeration.

We wish most heartily to congratulate the author not only for the subject matter but for the manner in which he has chosen the x-rays and presented the information. We wish he had included some pictures of gynaecological lesions as well because these conditions sometimes need to be tackled by general surgeons and enter in the field of differential diagnosis. We would urge him to include a chapter on the female genital tract in the next edition.

Although we are in danger of repeating ourselves, we wish never the less to congratulate William Heinemann Medical Books Ltd. on yet another excellent production which will be of service to the medical profession.

* * * * *

VARIATIONS ON A THEME BY SYDENHAM: SMALL-POX—

By P. B. Wilkinson, M.R.C.P. with 69 Illustrations.
John Wright & Sons Limited, Bristol 1960 (Price not stated)

This is a lavishly produced 40 page monograph on the subject. At the end of the book there are 40 photographs depicting the lesions of small pox. The material for this study was collected during the epidemic of small-pox which attacked Hong Kong in 1937-38. The disease first appeared in the colony

early in the winter of 1937, and the epidemic reached its peak in March 1938, when 236 cases and 192 deaths were recorded during the week which ended on March 19. Canton was placed in quarantine for the first time in the history of the colony, and various other exceptional measures had to be taken to control the spread of the disease. Eight hundred and sixty patients were admitted to the small-pox hospital, of whom 810 were suffering from the disease.

The subject matter is divided into various sections such as History, Clinical Picture, Complications, Differential Diagnosis and Treatment. The manner in which the author has written this book shows that he is not only an authority on the subject but also a scholar in English. The book is dedicated to the great Sydenham. This book is of special importance to those who practice in our country because small-pox is one of the diseases which we have to combat.

British Scientists Isolate Trachoma Virus

The isolation of the trachoma virus offers possibilities for effective ways of treating and preventing this disease that is enormously widespread, occurring in the Far East, in China and Japan; in the Middle East, in India, Pakistan, Malaya, Ceylon and Burma; in the Arab countries, also in the African continent.

It also occurs in Yugoslavia, in Southern Italy and Spain and Portugal, in some of the United States. The WHO estimates that about 400,000,000 people are affected, that is one-seventh of the entire world population.

Trachoma is a chronic conjunctivitis, which may go on for very many years and damage the eye, causing also blindness.

We have so far treated trachoma with modern antibiotics and also with the sulpha-drugs. This treatment is however, rather prolonged.

The successful research we have just completed means that now, we can grow the virus in the laboratory, and so test new drugs in the laboratory for their effectiveness; which is much easier than trying them; in the field on patients.

The prevention of trachoma can now be done in two ways. First by increasing as we have done till now the standard of hygiene. Now that we can grow the virus in large quantities in the laboratory, it may be possible to develop a vaccine which, when given to people in infected areas, will prevent the disease developing.

Dr. Leslie Collier *et al* of the Lister Institute have isolated a virus that seemed identical with the one they got from Dr. Tang of Peking. It remained to prove conclusively that the viruses isolated in China and in Africa were the cause of trachoma. The only

way of proving that any virus, isolated from the eye is that which causes this disease, *i. e.*, to inoculate a human volunteer and produce the disease in this volunteer with virus that has been grown for some time in the laboratory. And they did this in London, with the collaboration of Sir Stewart Duke Elder and other members of the Institute of Ophthalmology. They inoculated two blind men and produced typical trachoma. The virus they had isolated in Africa was thus proved to be the cause of this disease. It is this positive proof which opens new lines of advance in the campaign against this widespread affliction of trachoma.

* * * * *

THE "ELECTRONIC LUNG" HELPS PATIENT AND SURGEON ALIKE

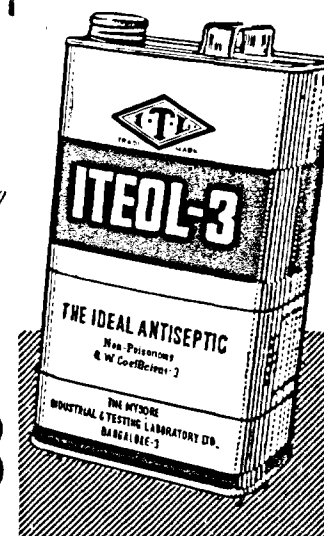
Seven years of clinical tests on more than 3,000 patients have gone to the perfecting of an important new application of electronics to medicine. It is the Barnet Ventilator, an "electronic lung" which can take over all the duties of conventional breathing apparatus, yet incorporates additional facilities that allow an anaesthetist to retain complete and accurate control of the breathing of a patient during an operation. The Ventilator has been put into production by W. Watson and Sons, Ltd., of Barnet, Hertfordshire, England, a member of the Pye Instrument Group of companies.

Another of its advantages is that, for the patient there is little restriction, because the process of controlled breathing requires only two lightweight plastic tubes which, for short periods, are applied to a conventional face mask and, for longer treatment, can be introduced into the patient's breathing circuit by a simple perforation of the trachea at the base of the throat.

SURGEONS PREFER IT

*3 times more powerful
than Carbolic acid!*

ITEOL-3



The Rideal Walker test has proved that Iteol-3 is three times more powerful as a germicide than carbolic acid. That's why it is used for medical sterilisation, in the operating theatre and the home.



MIZ-3

Manufactured by:
THE MYSORE INDUSTRIAL & TESTING LABORATORY LTD.
MALLESWARAM, BANGALORE-3

Sales Depot:
35/37, THAMBUCHETTY STREET, MADRAS-1.

71/4 Arcot Srinivasachar Street, BANGALORE-2

SELLING AGENTS:

M/s: KHATAU VALABHDAS & Co.
Indian Globe Chambers, Fort St. BOMBAY-1

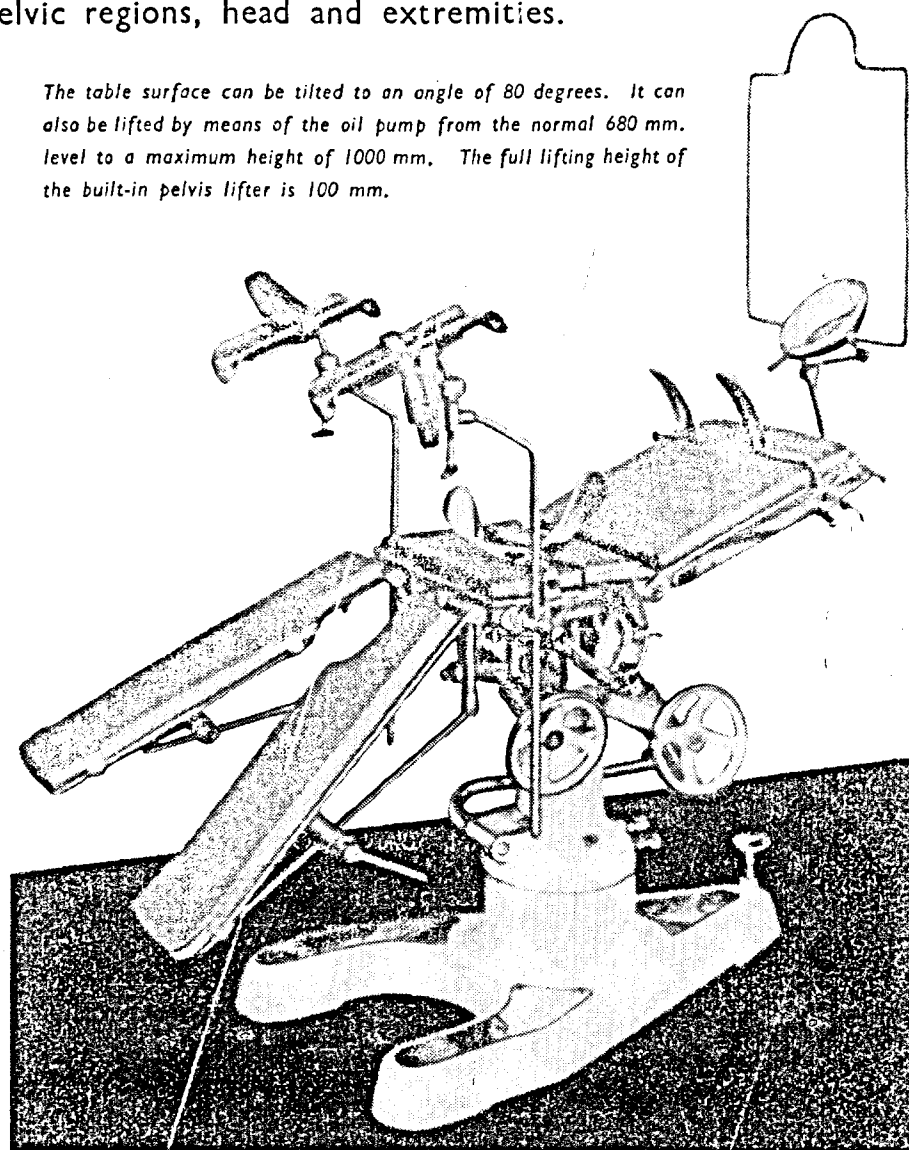
M/s: KARNATAK & DECCAN AGENCIES,
Hublikar Buildings, Koppikar St. HUBLI

M/s: DECCAN DRUG AGENCY
Dr. Kirloskar Buildings, Abid Road,
HYDERABAD

Oil-Pump-Actuated Operating Table Korbeoil 1004

KORBEOIL 1004 is suitable for all kinds of surgical operations. Its ease and quickness of manipulation offer invaluable help to the surgeon at operations in the abdominal, renal and pelvic regions, head and extremities.

The table surface can be tilted to an angle of 80 degrees. It can also be lifted by means of the oil pump from the normal 680 mm. level to a maximum height of 1000 mm. The full lifting height of the built-in pelvis lifter is 100 mm.



Length 1900 mm.
Width 470 mm.

Height min. 680 mm. max. 1000 mm.
Capacity of Oil Pump 6 litres.

METRIMPEN Hungarian Trading Company for Instruments

Letters: BUDAPEST 62, P.O.B. 202

Telegrams: INSTRUMENT BUDAPEST

For further details, please contact:

The Trade Representation of the Hungarian People's Republic in India
18, GOLF LINK AREA, NEW DELHI

Trade Commission for the Hungarian People's Republic
IN BOMBAY IN CALCUTTA

"Revills", 45, New Cuffe Parade, Bombay 5

229, Lower Circular Road, Calcutta-20