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The Antiseptic

A Monthly Journal of Medicine & Surgery

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

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

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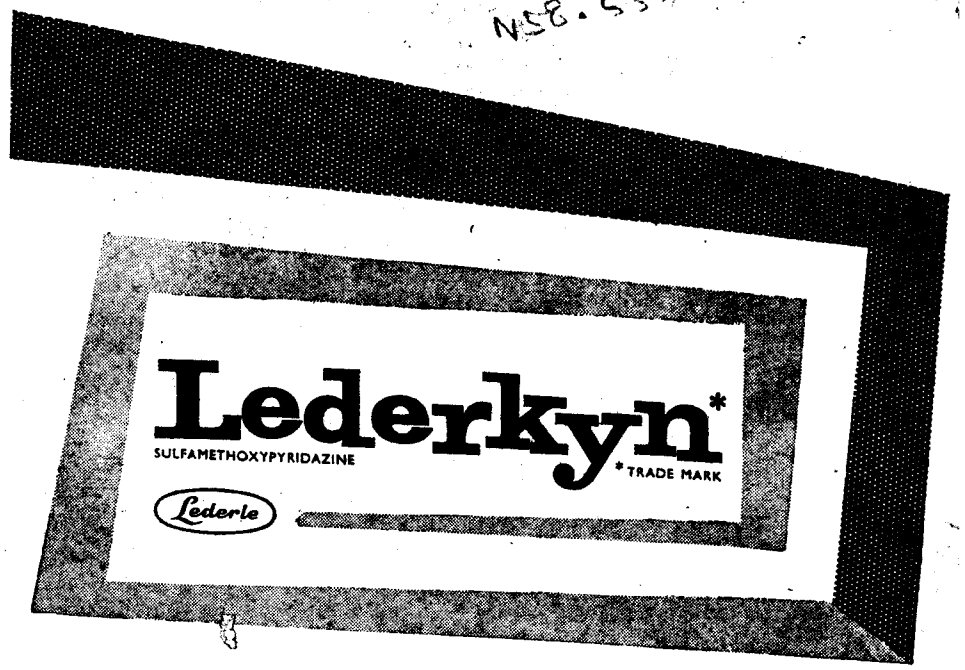

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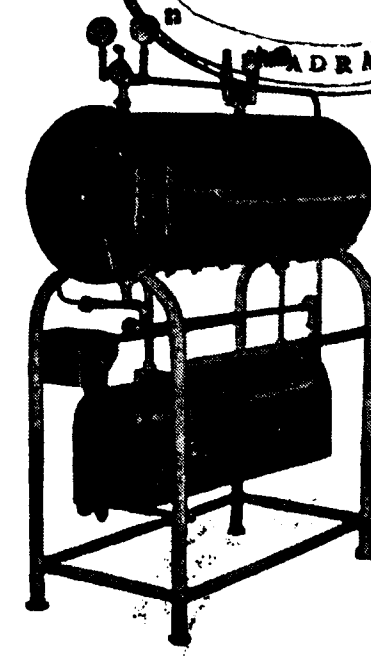

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Prolonging the Middle age

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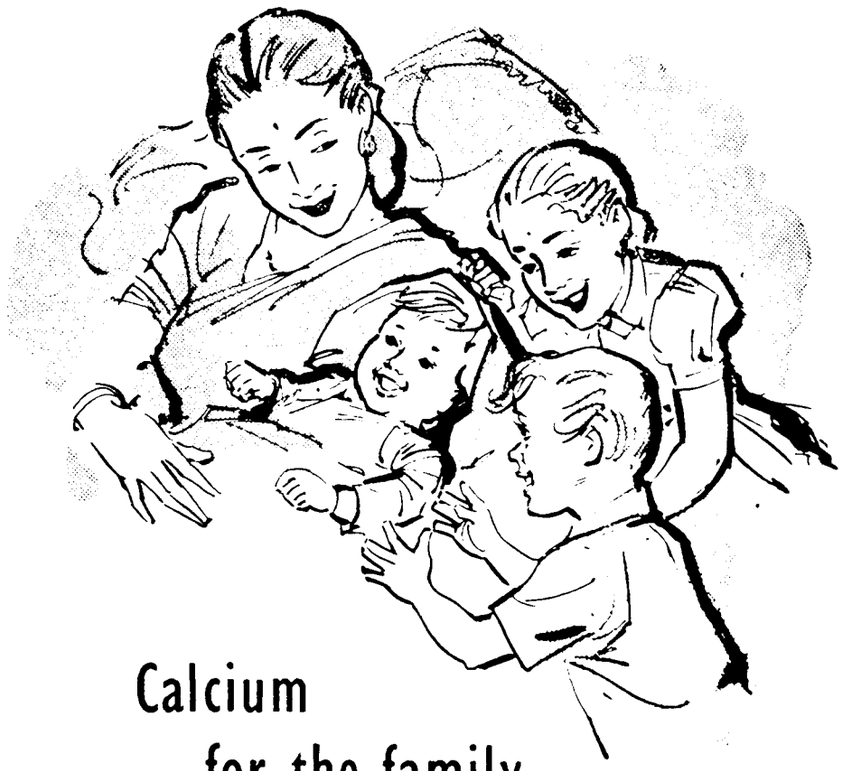

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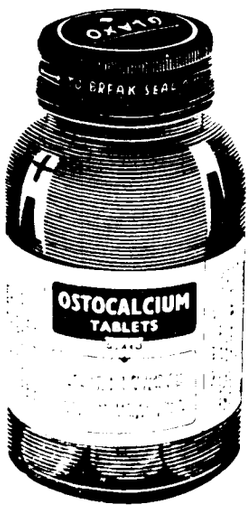

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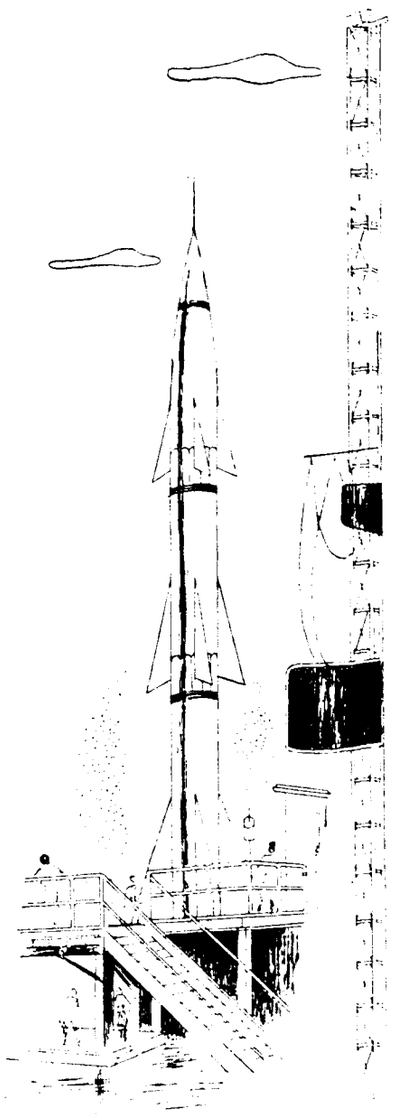

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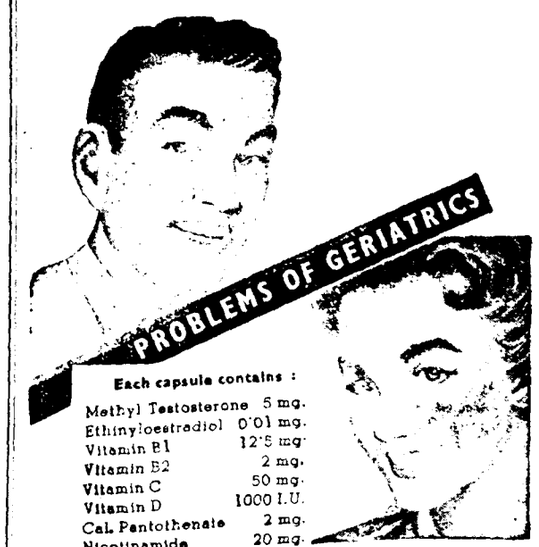

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Vol. 55 | JUNE, 1958 | No. 6

Original Articles

ABO BLOOD GROUPS AND PEPTIC ULCER*

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AND
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INVESTIGATIONS have recently been made to assess if the incidence of a given disease is greater in a particular blood-group. Peptic ulcer[1], specially duodenal ulcer[2] was shown to be significantly common amongst the people belonging to blood-group O[3], while those in group A were found to be more susceptible to gastric cancer, pernicious anæmia[4] and diabetes mellitus[5]. These investigations are from the United Kingdom.

The present investigation attempts to ascertain if there is any relation between ABO blood group and peptic ulcer in Assam. Since this study relates to case material from a single hospital the number of cases is small as compared to those of Aird *et al* [1] and Clarke *et al* [2]; still it is of value, if only to show the tendency of peptic ulceration amongst the Indian people; and it is only by collecting and correlating the results from different populations all over the world that final conclusions of value can be reached.

Collection of data.—*Selection of cases* :—The material comprised in this study was obtained from the hospital attached to the Assam Medical College at Dibrugarh. Though there are district hospitals in the state, this is the only hospital attached to a teaching institution, which commands cases from all over the state though not uniformly. Selection of cases was made from amongst the operated ones with undoubted diagnosis;

* Specially contributed to the ANTISEPTIC.

cases diagnosed clinically or radiologically but not confirmed on operation have been excluded. It is obvious therefore, that this study includes cases of peptic ulcer which required surgical interference for one reason or other.

Selection of controls :—A control of this nature against which the incidence of a disease is compared should be representative of the population from which the cases are drawn. Such a control is not easy to obtain. The nearest available approach to such a control is from a blood-bank, which in this study was obtained from the blood-bank attached to the hospital. Aird *et al*[1] used a similar control from the National Blood-Transfusion service of England.

Results :—*Table I* relates to the basic data.

TABLE I
Basic Data

Group	Disease			Control
	Gastric ulcer	Duodenal ulcer	Peptic ulcer	
O	28	104	132	2584
A	16	57	73	1830
B	29	91	120	2182
AB	8	22	30	504
Total	81	274	355	7100

Table II (*see below*) gives a comparison of the control in Assam with that in London.

Table III (*see below*) gives the percentage increase or decrease of the Assam control over the London control.

Table IV (*see p.* 399) shows that the difference in incidence amongst these two sets of controls in ABO blood-group is rather apparent. The difference is least in group O. Even this is very highly significant as may be seen from X^2 in that Table.

TABLE II

Area	O	A	B	AB	Total
Assam	2584	1830	2182	504	7100
London	4578	4219	890	313	10000

TABLE III

Group	Control London	Control Assam	% increase or decrease on London control
O	45·78	36·39	−20·51
A	42·19	25·77	−38·91
B	8·90	30·74	+245·28
AB	3·13	7·09	+126·52

Table V (*see p.* 399) shows the group frequencies in patients and controls in Assam.

Table VI (*see p.* 399) shows the percentage increase or decrease on the controls.

Table VII (*see p.* 400) seeks to find if the apparent increased or decreased incidence of peptic ulcer on the controls in any of the blood-groups is a significant one. This is shown from X^2 calculated in *Table VIII*. The difference is not significant ; *i.e.* none of the ABO blood-groups is more susceptible to peptic ulcer than the others.

Though Aird *et al*[1] found that there was a preponderance of group O amongst peptic-ulcer patients Clarke *et al*[2],[3] noted this preponderance only amongst duodenal-ulcer patients ; these workers did not find any significant difference in the blood-group distribution amongst the gastric ulcer patients and the controls.

Table VIII (*see p.* 400) gives a comparison of the frequency of blood-groups amongst the duodenal-ulcer patients and the controls in our series.

TABLE IV

Area	O		A+B+AB		Total
	Observed	Expected	Observed	Expected	
Assam	2584	2973·70	4516	4126·30	7100
London	4578	4188·30	5422	5811·70	10000
Total	7162		9938		17100

$x_1 = 150{\cdot}5$ for one d of f.

TABLE V

Group	Gastric ulcer in %	Duodenal ulcer in %	Peptic ulcer in %	Control in %
O	34·58	37·96	37·19	36·39
A	19·75	20·80	20·56	25·77
B	35·80	33·21	33·80	30·74
AB	9·87	8·03	8·45	7·10

TABLE VI

Group	Gastric ulcer	Duodenal ulcer	Peptic ulcer
O	− 4·97	+ 4·31	+ 2·19
A	−23·36	−19·28	−20·21
B	+16·46	+ 8·03	+ 9·94
AB	+39·14	+13·09	+19·01

The results do not show anything of significance. The difference observed in the incidence of ABO blood-groups does not appear to be a real one and the same may be attributed only to chance.

Again Clarke *et al*[2] found a significant difference in the frequency of blood-groups amongst the duodenal and gastric ulcer patients. The number of gastric ulcer cases in our series is however small. *Table IX* (*see p.* 400) gives the results of a comparison between the gastric ulcer and the duodenal ulcer cases with regard to blood-grouping. No significant difference is noted.

Discussion.–The peptic ulcer patients included in this study are those who had to be operated upon for some reason or other.

They therefore, cannot represent all peptic ulcer cases in general, which include those that do not require operative interference. The cases of Aird *et al*[1] and Clarke *et al*[2] are also mainly those who were operated upon so that our series is comparable to those of the above two groups of workers. Again the control group of Aird *et al*[1] was supplied by the blood-group centres and Clarke *et al*[2] did not find any significant difference between the incidence of ABO blood-groups amongst the non-ulcer hospital patient controls on the one hand and the blood-bank centre controls on the other. Our controls therefore, compare favourably with the above two controls.

Our series shows that the incidence of ABO groups amongst the people of Assam is different from that of the people of London (*Table IV*). None of the blood-groups showed any significant predisposition to peptic or duodenal ulcer (*Tables VII* and *VIII*) and the incidence of duodenal ulcer is not different from that of gastric ulcer (*Table IX*).

TABLE VII

	O		A		B		AB		Total
	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	
Disease	132	129·4	73	90·6	120	109,6	30	25·4	355
Control	2584	2586·6	1830,	1812·4,	2182,	2192	504	508·6	7100
Tota	12716		1903		2302		534		7455

x^2==5·6 for 3d of f; probability>0·10.

TABLE VIII

	O		A		B		AB		Total
	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	
Duodenal ulcer	104	99·88	57	70·12	91	84·46	22	19·54	274
Control	2584	2538·12	1830	1816·88	2182	2188·54	504	506·46	7100
Total	2688		1887		2273		526		7374

x^2==3·57 for 3d of f; probability > 0·30.

TABLE IX

	O		A		B		AB		Total
	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	
Gastric ulcer	28	30·11	16	16·66	29	27·39	8	6·84	81
Duodenal ,,	104	101·89	57	56·34	91	92·61	22	23·16	274
Total	132		73		120		30		355

x^2==0·60 for 3d of f; probability > 0·80.

Since it is not possible to get a very large number of cases in a single hospital, it is suggested such investigations even on a small number of cases should be carried out in several hospitals of the country, and the findings collected and coordinated so as to assess the exact significance of the incidence of peptic ulcer in different blood groups.

Summary.—1. ABO blood-group incidence amongst the people of Assam is different from that of London. (2) No particular blood-group is found to be more susceptible to peptic or duodenal ulcer in Assam, as compared with the controls. (3) There was no difference to be noted between the incidence of gastric and duodenal ulcers as regards blood-groups.

Acknowledgement.—Our thanks are due to Dr. J.Medhi, M.Sc., D.Sc. (Paris), Reader in Statistics, Gauhati University for kindly checking up the statistical interpretations; to Professor P. N. Baruah, F.R.F.P.S. and to Dr. J. Mahanta, F.R.C.S. for kindly placing their case records at our disposal; to the Officer-in-charge, of the Blood-Bank and to the Superintendent of the Hospital, Assam Medical College for permission to report the cases and to Mr. B. Bhattacharyya, Librarian for his valuable help.

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A NEW TECHNIQUE OF HERNIOPLASTY*

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Introduction.—Different techniques of repair of inguinal hernia —both direct and indirect have been advocated by different surgeons. In each case herniotomy is done and repair of some sort is carried out with a view to obliterating the defect and preventing a recurrence.

The Bassini operation, still in vogue in several surgeries continues to be the most popular. Edward (1943) reported his own series of recurrent hernias where about 75% followed the previous Bassini repair. Halsted (1893) sutured the external oblique aponeurosis behind the cord and the cord was made to lie in the superficial fascia. Andrews (1895) modified the Bassini operation by fixing the upper flap of the external oblique aponeurosis to the margin of the inguinal ligament behind the cord and devised an artificial canal for the cord itself by bringing up the lower flap of the external oblique superficial to the cord. Kirschner (1910) closed the gap in the posterior wall with a free transplant of the fascia lata. Loewe's idea of transplanting skin to close the defect was applied by Rehn (1914). But Mair (1945, 1946) has used the technique widely with little modification. Gallie and Le Mesurier (1921) used fascial suture by taking a strip of fascia lata and used the same as "darning wool" to close the gap in the posterior wall of the inguinal canal. Bendick and Higginbotham (1935) divided the spermatic cord with a view to obliterating the canal completely. The darning operation has been done by Maingot (1941) with floss silk with good results; but this technique requires meticulous care and sepsis must be avoided. Cole (1941) used silver filigree to cover the defect and Jones (1950) modified Cole's technique by substituting silver filigree with stainless steel wire mesh.

Tanner (1942) did a slide operation which has the advantage of a Bassini operation but does not produce tension on the stitches. Lunn (1948) repaired the defect by suturing the conjoint tendon to Cooper's ligament.

A strip of external oblique aponeurosis is raised, hinged down medially, threaded through a Gallie's needle and the posterior wall is repaired with it (McGavin 1932).

My new technique.—(See *Figs. 1 to 3*). A skin incision is made three centimetres above the level of the anterior superior iliac spine and the incision is carried downwards, towards the midline keeping three centimetres above and parallel to the inguinal ligament.

* Specially contributed to the ANTISEPTIC.

The external oblique aponeurosis is split along the direction of its fibres from the apex of the external ring to the musculo-aponeurotic junction. The lower flap is mobilized to expose the inguinal ligament cleanly. The upper flap is mobilized up to the level of the umbilicus so that when strips are raised in the next step of the operation from both the flaps of the external oblique aponeurosis, the upper flap can be brought down to the margin of the lower flap without tension.

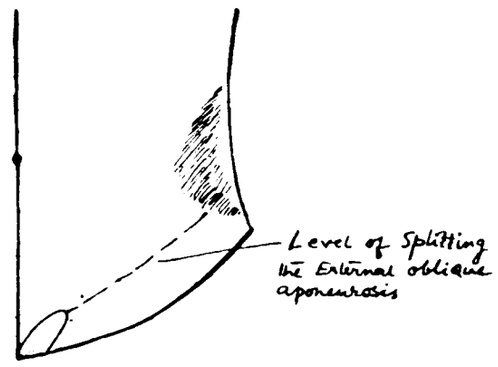

FIG. 1

The hernial sac is removed and the neck of the sac is ligated in the usual way. The cord is freed from its bed completely, pulled downwards and held in a tape gauze.

Strips, 0·5 centimetre wide, are raised from both the upper and the lower flaps from the musculo-aponeurotic junction of the external oblique aponeurosis. Their lateral ends are threaded through two Gallie's needles while their medial ends remain attached to their insertions and thereby maintain the blood supply to the strips. Darning is carried out from the medial to the lateral direction with the double strip of external oblique aponeurosis. The external oblique aponeurosis is then repaired behind the cord and the cord is left in the subcutaneous tissue.

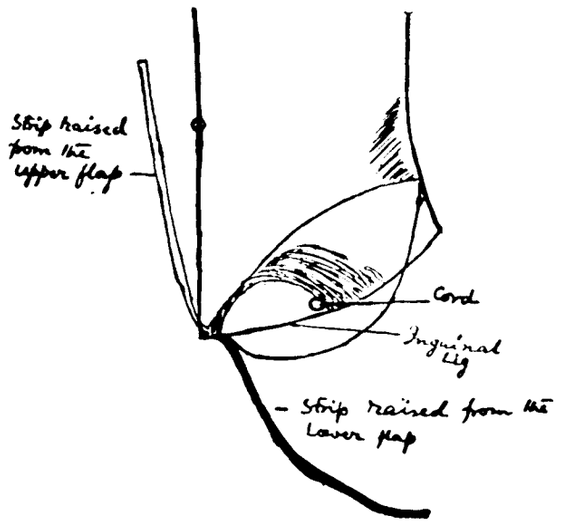

FIG. 2.

Discussion.—The different techniques used and or in vogue relating to this operation have been reviewed. It is obvious that none of these techniques are perfect. Each technique has been described with a view to reaching perfection in the repair of inguinal hernia but unfortunately all the techniques described in the past by different workers have their disadvantages and shortcomings.

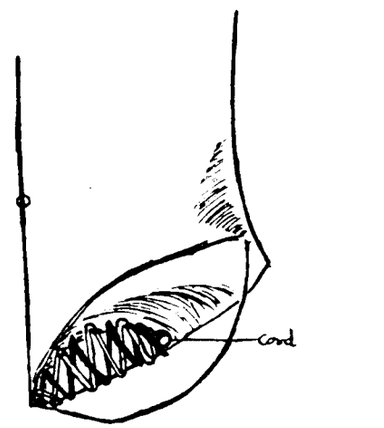

FIG. 3

Recurrence is greatest in the Bassini method. Moreover, if the conjoint tendon and the inguinal ligament do not lie parallel to each other, the repair nearly always fails, due to the tension produced by drawing the conjoint tendon against the inguinal ligament.

Halsted's modification was able to reduce the recurrence rate to a slight extent but was not able to stop the recurrence completely. Andrew's device of making an artificial canal for the spermatic cord is a needless and useless procedure. Lunn's method of repair by suturing the conjoint tendon to the Cooper's ligament produced excessive tension at the site of repair often leading to ultimate failure and recurrence of the hernia. The great disadvantage of Tanner's slide operation is the frequency of recurrence through the gap in the rectus sheath itself.

Bendick and Higginbotham's method of dividing the spermatic cord with a view to obliterating the inguinal canal appears to me to be a somewhat drastic method. The inguinal canal can be obliterated by simply leaving the cord in the subcutaneous tissue and suturing the external oblique aponeurosis behind the cord. Gallie's repair of the posterior wall by fascia lata, includes the advantages of repairing with an autogenous strong material and without tension. But an unnecessary incision is made on the thigh while raising the strip of the fascia lata and this strip of fascia lata though strong is certainly weaker than the tendinous strips of the external oblique aponeurosis. Moreover, the blood supply to the free fascial strip is certainly impaired. Kirschner's technique has also similar drawbacks.

Mair's "skin transplant" gives satisfactory results provided meticulous care is taken and the transplanted skin is fixed under moderate tension. Sloughing of the skin and recurrence of hernia have been reported on many occasions (Strahan 1951) and Powell and Ewing (1952) and Gibbon and Lothian (1952) reported the development of inclusion dermoid cysts in the buried transplants of skin.

The techniques of Maingot (floss-silk), Cole (silver-filigree) and Jonas (stainless-steel wire-mesh) require meticulous care and aseptic technique as foreign bodies are used for repair and are left in the wound.

An ideal repair of hernia would include repairing the gap without tension with a strong tendinous and autogenous material with its blood supply in tact. As the repair should be done without tension, a generous length of suture material is necessary. I believe that my technique approaches the ideal one. Here an autogenous tendinous material with its blood supply in tact is used as the suture material. By taking a double strip of the external oblique aponeurosis, a sufficient length of suture material can be raised having the advantage of repairing the defect in the posterior wall without producing any tension. Lastly the canal is obliterated by suturing the edges of the external oblique aponeurosis together behind the cord while the cord is being left in the subcutaneous tissue.

I have used his technique in repairing 40 cases of indirect, 7 cases of direct and 3 cases of recurrent inguinal hernia during the last two years with very satisfactory results.

I am quite aware of the fact that two years is too short a period to assess the results of the new technique used by me but I have a strong belief that my technique of hernioplasty will stand the test of time.

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GALL-BLADDER PERFORATION

J.R. Massie *et al* review 1253 consecutive gall-bladder operations over a five-year period. Of these 328 were acute or subacute and 925 were chronic. There was a total of 18 perforations. Of these 18 cases six were free perforations into the peritoneal cavity, seven were localized perforations with abscesses about the gall-bladder and five had chronic cholecysto-enteric perforations. In this series there were two deaths occurring in the last two types. In this series there was one of free perforation with massive intraperitoneal hæmorrhage which the authors claim is only the thirteenth reported in the literature.—(*Ann. Surg.*, June, 1957, via *Med. J. of Australia*).

CLINICAL FEATURES ABOUT JAPANESE B ENCEPHALITIS IN PONDICHERRY*

L. LAPEYSSONNIE, M.D., Bact., F.R.S.T.M.H.,
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IN January and February 1955 our attention was drawn, at the General Hospital, Pondicherry, to several cases of encephalitis of a particular type, the clinical picture of which recalled what we had seen the previous year in North Viet-Nam, and what we likened, without any biological evidence to virus encephalitis. The majority of patients that came under our care at Pondicherry at the beginning of 1955 died, on or about the 15th day after admission. We did not have any other cases during the months of April, May and June.

Between July and September 1955 we saw in our Medical Unit at the General Hospital, cases of encephalitis analogous to those we had seen seven months earlier. This time, however, we were in a better position to study and treat them. The reorganized Microbiological Laboratory had a much higher output, and we had our attention drawn to these facts : contact was made with Prof. Lepine of the Institute Pasteur, Paris, (Virus Research Department) with a view to the serological identification of the disease, and the confirmation of our hypothesis that it was really Japanese B encephalitis ; we take this opportunity of recording our grateful thanks to him.

As far as treatment was concerned we had available hibernation techniques with the "gangliopleqiques" such as we had been taught by Laborit, and above all, the possibility of using on a large scale the new antibiotic, Tetracycline the activity and flexibility of which had already been found to be remarkable in the course of our treating other infectious diseases.

We had 7 cases in all, but 2 case histories are omitted in this study because they are incomplete, lumbar puncture, essential for diagnosis not having been done because of the muscular hypertonia and the convulsions characteristic of the disease. Although they were undoubtedly cases of viral encephalitis, we prefer not to present them here.

We present below the reports on 5 cases which form the basis of our study.

CASE 1 :—Y., adolescent 14 years old.

Past history :—Nothing of note, no injuries or wounds.

* Specially contributed to the ANTISEPTIC.

Present history:—Paraphimosis 4 days earlier, several attempts at domiciliary reduction with the aid of several superficial incisions. Almost concomitant appearance of trismus and disturbances in swallowing resulting in admission to hospital on 15-8-'55 with the diagnosis of "Tetanus."

On admission the patient was found to be a moderately well-developed subject. Lucid, trismus, dysphagia, swallowing of fluids, impossible, no paralysis of soft palate, dysarthria. Neck rigidity, mild abdominal refraction; Spastic paralysis of legs (equinism). Ocular reflexes to light and accommodation normal; Sequelæ of inflammatory paraphimosis. Otherwise, nothing special in digestive, respiratory or cardiac systems.

Pulse 100 p.m.; Temperature 38 C; Blood-pressure 110 60; Lumbar puncture cells 6·8; albumin 0·22; Benjoin colloidal normal; chlorides 7·7; sugar 0·65. Other examinations:—Blood-sugar 1·25; blood-urea 0·45; white cells 10,600; polymorphs 82%.

Patient received 120,000 units of anti-tetanic serum and 1 cc. of anti-tetanus anatoxin; cardiotonics.

16-8-'55:—Frequent convulsive crises on a basis of generalized hypertonia; forearms flexed on arms, arms on thorax, fingers showing torsion movements, legs in forced extension, but disturbed with spasmodic jerks: spine in opisthotonos, head forced deflexion.

17-8-'55:—Same condition inspite of treatment with penicillin 600,000 and streptomycin 1 gramme, and partial "deconnection" with Largactil, Phenergan, Dolosal, but the temperature rose to reach 39·3°C on the night of the 17th.

Four doses of 200 mg. Achromycin intramuscularly and two of 250 mg. orally added, but death supervened on the 18th during sustained convulsive crises.

Final diagnosis:—Probable virus encephalitis.

Case 2.—S., woman of 25 years; admitted to a maternity unit on 29-7-'55 for "Eclampsia" with severe albuminuria. The illness began 4 days earlier with convulsive episodes and permanent facial deviation to the left.

On admission:—She was found to have had 3 normal pregnancies; two children died in infancy, the third was alive and well. Fourth para at 4th month. Cervix closed. *Urine*: albumin free, Patient apyrexial, lucid but aphasic. Frequent Jacksonian crises commencing in the left arm, then spreading to the right upper limb and to the face, which remained constantly decrated to the left. Mild trismus. Babinski doubtful on both sides. Lumbar puncture—failed.

Over 4 days she had sedatives and "ganglioplegiques" then was transferred on 3-8-'55 to the medical unit. Cerebral tumour.

On admission to medical unit:—Her general condition was the same. Temperature 37·4°C, pulse 96, B.P. 100/50. Heart sounds muffled, pulmonary congestion on both sides with thick sputum; feeding was difficult, bowels not opened.

The fits were frequent, 20 to 30 in 24 hours, and now bilateral from the start; convulsions beginning in the face, then the upper limbs becoming flexed, the hand on the forearm, and the thumb flexed in the hollow of the other digits, the forearm flexed on the arm: lower limbs in extension, neck rigid, mouth closed: the patient was disturbed with muscular jerks for about a quarter of an hour. Stertorous breathing.

Treatment:—From 4th to the 14th August, 1955 she was given Largactil, Phenergan, Dolosal ½ ampoule (size unstated tr) of each; Sparteine 1 ampoule, Achromycin 100 mg. All in 250 cc. of saline or glucose infusion, intravenously 4 times in 24 hours *plus* intramuscular Achromycin 200 mg., four times. Ouabaine and then digitalis and minor cardiotonics also. Vitamins by injection.

Commencing from the 15th Achromycin orally (250 x 6), liver therapy, and intensive vitamin therapy. There was, as a result, a reduction in the intensity of fits (9-8-'55); a reduction in the number of fits (12-8-'55) and the disappearance of stertor.

The temperature which rose to 39°C returned to normal. Normal feeding was resumed on 19-8-'55. She was discharged recovered on 22-8-'55 with the diagnosis "Virus encephalitis." Patient was seen twice after discharge in good general condition—progress of pregnancy normal.

Case 3:—P., adult male, 30 years was admitted to hospital on 25-7-'55 with the diagnosis of "fits." The illness had begun 4 or 5 days earlier with repeated convulsive attacks and a comatose state, in a known alcoholic with old syphilis (B.W.: +).

On admission:—Patient was in sub-coma, but retained reflex movements on painful stimulation (pinching): incontinent of urine, facial deviation to the right; the right upper limb was permanently contracted against the thorax, the forearm folded on the arm, thumb folded in the hollow of the other flexed fingers, the intercostal muscles were in a state of continual fibrillation visible to the eye, and their uninterrupted contractions interfered with auscultation of heart and lungs; generalized convulsive attacks about every 15 minutes, commencing in the upper limbs.

Temperature 37·8°C pulse 116, blood-pressure 130/80.

Additional examinations:—L.P. 21 lymphocytes per cmm; Albumin 0·81; organisms absent; blood-sugar 1·50; blood-nitrogen 0·60; white cells: 8·200; polymorphs: 78%; Widal + at 1/200 on 5-8-'55; but negative on 25-8-'55.

Treatment *from 27-7-'55 to 9-8-'55.*—Phenergan, Largactil, Dolosal, 1/4 ampoule, Sparteine 1 ampoule and Achromycin 100 mg. in intravenous saline infusion, 4 infusions daily. Intramuscular Achromycin 100 mg x 4 times daily. Insulin 30 units daily on the average. Parenteral vitamin therapy, major and minor cardiotonics were given from 10-8-1955 to 22-8-1955; also Achromycin orally 250 mg. 6 times daily.

Results:—Persistence of convulsive attacks and of coma until 5-8-'55, then progressive improvement; diminution in intensity of the crises, then decreasing frequency. Appearance of sacral bed-sores and ulcers on both ankles as a result of repeated infusions in the veins on the dorsum of the feet. Commencing from 11-8-'55 the patient regained consciousness and commenced to eat: healing of bedsores occurred when motility was regained and patient could sit up in bed. About 18-8-'55 speech was regained but this remained confused and muddled for a long time; walking: bulimia.

The temperature was irregular from 25-7-'55 to 8-8-'55 but never exceeded 39°C and settled commencing from 10-8-'55.

Parallel-improvement in the biological findings:—Blood-sugar was reduced from 2·70 on 1-8-'55 to 1·76 4-8-'55; 1·35 on 6-8-'55; 1·75 on 8-8-'55; 1 36 on 12-8-'55; 1·50 on 16-8-'55; 1·17 on 18-8-'55 and 1·10 on 22-8-'55. Normal without insulin from 22-8-'55.

The blood-urea changes were:—0·50 on 1-8-'55; 0·45 on 2-8-'55; 0·40 on 4-8-'55; 0·25 on 6-8-'55 and normal thereafter.

L.P.: 24 lymphocytes; 0·56 albumin; Benjoin colloidal 1222200022220000 on 7-8-'55: 3·5 lymphocytes; 0·30 albumin; Benjoin colloidal 2222222222210000 on 23-8-'55 and 7·6 lymphocytes; 0·40 albumin on 21-9-'55.

The general condition was good, walking and movements normal; while mild dysphasia, embarrassed speech, œdema of both ankles and marked intellectual impairment persisted.

Prolonged intravenous salicylate and urotropine, combined with staprolysat resulted only in partial improvement.

The patient was, in fact, given malaria (P.vivax) for fever therapy according to Wagner Von Jauregg's method.

Diagnosis on discharge:—"Virus encephalitis." Recovery with post-encephalitic sequelæ.

Case 4:—R., female, aged 35 years showed a minor injury (excoriation) of the right hand, followed by mild trismus eight days before admission to hospital, was admitted to hospital on 13-8-'55 for "Tetanus."

On admission:—The most striking feature was the rigidity of the neck, of the abdominal muscles and hypertonia of the 4 limbs trismus. The patient complained of severe bone and muscle pains.

The results of all other examinations were negative; the temperature was 36·6°C, and the pulse was 88; B.P. 120/80.

Additional examinations:—White cells 8,800; polymorphs 70%; blood nitrogen 0·30; blood sugar 1·10; L.P.: lymphocytes 7·2; albumin 0·22; Benjoin colloidal 0000222222222220 and Widal negative; W.R. negative.

Treatment *from 13-8-'55 to 2-9-'55*:—Anti-tetanic serum 200,000 units and anti-tetanic anatoxin 2 x 3 cc.

Intravenous infusion of 250 cc. of glucose and saline alternately, 4 times in 24 hours, containing Dolosal, Largactil, Phenergan, Diparcol ½ ampoule; Achromycin 200 mg. Achromycin orally: 250 mg x 4 from 13-8-'55 to 2-9-'55 and 250 x 8 from 3rd to 10-9-'55 and minor cardiotonics and injectable polyvitamins first, then orally.

Results:—Until 16-8-'55 increasing hypertonia; on this date appearance of convulsive crises of the tetanic type with opisthotonos, lasting 5 minutes, but interrupted by violent jerks. The temperature was at first normal but rose gradually to 39·8°C on the night of 20-8-'55, the general condition changed, infusions became impossible because of the agitated condition of the patient; they were replaced temporarily by intra-muscular injections of the same medicaments.

In the face of the increasing fever, intravenous injections of 1 g. of Sodium salicylate were given twice daily; the temperature fell to about 38°C very rapidly, and the neurological condition showed definite improvement.

On 27-8-'55 the convulsive attacks ceased but a residual hypertonia persisted. The patient commenced to eat on 3 9-'55. The patient took her first steps. Trismus was no longer present. The temperature became normal after the oral Achromycin was raised from four to eight capsules. All drug treatment was stopped on 10-9-'55.

The patient left hospital on 14-9-'55 in excellent general condition, but still had articular stiffness of the right wrist and elbow as the result of plaster immobilization necessitated by the forced hyperextension of the hand on the forearm, secondary to permanent hypertonia of the extensors of the hand.

She was seen again on 5-10 '55 in good general condition but with the right hand still ankylosed; she was readmitted from 6th to 17-10-'55 for treatment of ankylosed joints of right arm by short wave therapy and vitamin B and P.P.; marked improvement was noticed.

Diagnosis on discharge "Virus encephalitis."

Case 5:—D., male, aged 40 years, had a small ulcer of the forehead for 10 days, and for 4 days marked rigidity of the

neck and spine which prevented him from turning his head. Trismus. Admitted to hospital 23-9-'55.

On admission :—Examination revealed generalized stiffness of the back, incomplete trismus, and obstinate constipation. Nothing else particular. Reflexes, sensation and movements normal. The temperature was 37·5°C; pulse 102; and B.P. 110/80.

Additional examinations :—L.P.: lymphocytes 5·2 cmm.; albumin 0·22; sugar 0·50; chlorides 7·40; blood nitrogen 0·74; blood sugar 1·00.

Treatment :—Consisted from 23-9-'55 to 7-10-'55 of intravenous infusions of 250 cc. glucose and saline alternately with Dolosal, Phenergan, Largactil, Diparcol ½ ampoule and Achromycin I.V. 200 mg. 4 infusions per 24 hours. Minor cardiotonics. Anti-tetanic serum: 200,000 units. Anti-tetanic anatoxin 2 x 3 cc. and vitamin therapy.

Result :—Appearance of more and more frequent convulsive attacks from 25-9-'55, reaching a maximum on 30-9-'55 then becoming gradually less to disappear on 10-10-'55. Fits of the generalized motor type on a basis of hypertonia. Temperature remained between 38°C and 39°C until 7-10-'55, then returned to normal as the fits became less frequent. 4-10-'55 : L.P. : lymphocytes 1·4; albumin 0·22.

Tachycardia of 140 and cardiac insufficiency at the height of the disease (30-9-'55) controlled by digitalis and coramine infusion. Blood-sugar 1·04. Blood-nitrogen 0·46. The patient was discharged on 17-10-'55 in excellent general condition.

Diagnosis on discharge "Virus encephalitis."

From the above case histories the salient facts have been grouped in *Table I, p.* 412, which enable us to describe the clinical evolution, the diagnosis, and the treatment, and some epidemiological findings, of these encephalitides.

Clinical picture of the five encephalitides. –The prodromal period was remarkably uniform; in all our cases the symptoms appeared 4 days before admission into the hospital; they consisted of headache and twitching sensation in the muscles of the neck and back, which were short-lived and rapidly developed objectively, either as fits (2 5) or as paralysis (3 5) or more especially as hypertonia, which deserves passing notice. Hypertonia localized to the lower jaw was present in Cases 1, 4 and 5, and the patients were admitted to hospital with the mistaken diagnosis of tetanus, since it is not difficult to find a portal of entry in the shape of some small wound in a workman or a house-keeper.

Generalized hypertonia, more or less intense rigidity was present in the five cases and constituted a valuable sign in diagnosis in our study.

In Cases, Nos. 2 and 3, the fits were manifest early : in Case 2 they were originally Jacksonian in character, limited to the right upper limb and led to a supposed diagnosis of cerebral tumour. In Case 3 there were coma and convulsions with a raised blood-urea which was immediately suggestive of uræmic coma.

The paralysis was spastic associated with hypertonia of cerebral origin. In Case 1 they were localized to the lower limbs : in Case 2 with a right monobrachial localization; and in Case 3 generalized. It is remarkable that *there was no temperature in the prodromal period, or at the commencement of the illness* : it was only at the end of the first week of the disease that it rose at all, and did not exceed 39°C. This point is important in the differential diagnosis from the acute suppurative meningitides.

Lastly, as a rule, the patients are lucid at this stage (4 Cases out of 5); in Case 3 the patient was comatose.

On admission the patients presented in two types, one hypertonic simulating tetanus, and the other convulsive, depending on the precocity in appearance and the severity of the fits. Lumbar puncture is essential at this stage to arrive at a correct diagnosis. This is however, often difficult to carry out because the patients are often in opisthotonos, or suffering from continuous fits. It revealed *a definite reduction in the pressure of the cerebrospinal fluid* in all our cases, which escapes drop by drop; this characteristic has been found constantly by the Resident of our unit, and disappears with improvement in the clinical condition. The cellular elements, always lymphocytes are never numerous —between 5 and 20 cmm. very often a dozen.

The spinal albumin was normal in 4 of the cases; in No. 3 which was, in addition, the most severe, it was raised to 0·71 and the patient was in coma.

The spinal-sugar and chlorides were mostly normal; in Case No. 4 sugar was increased to 0·88.

The Benjoin colloidal test (Guillain and Laroche's reaction) was altered in 2 of the 3 cases in which it was done, and flocculation was largely to the right and left of the normal zone.

In the developed condition it is the convulsive crisis which dominated the picture and these usually settle the diagnosis already fairly well-established by the findings, particularly those of the lumbar puncture.

The convulsive incidents have a characteristic aspect as described below : the striking thing is the generalization of the fits and their frequency. They affected all the muscles of the body, even though at the beginning they were limited to a limb

or a limb segment (Case 2) they ranged from simple myoclonus or generalized muscular fibrillations (Case 3), to major epileptiform fits ; spread occurred always from the face to upper limbs and then to the lower limbs.

TABLE I—Showing the salient

			On Admission							
No.	Sex	Age	Duration of illness	Temperature	Coma	Trismus	Hypertonia	Paralysis	Fits	L.P.
1	M	14	4 days	Nil	—	+	+	+	—	663/0·22
2	F	25	4 „	„	—	—	+	+	+	12/00·22
3	M	30	4 „	„	+	—	+	+	+	21/0·71
4	F	35	4 „	„	—	+	+	—	—	7·2/0·22
5	M	40	4 „	„	—	+	+	—	—	5·2/0·22

In the fully developed condition, the frequency was extreme, the fits following one another every quarter of an hour, or even becoming continuous, despite the "lytic" cocktails, requiring the use of intravenous "Sedol" or "Somnifers" in addition to the "ganglioplegiques." They diminished in intensity and frequency as the condition improved and constituted the best prognostic criterion, because they disappeared before the hypertonia.

It is interesting to note further in Case 3 the existence of an acute "infectious" diabetes with glycosuria (and particularly the blood sugar reaching 2·70), probably of central origin since cessation of the neurological incident brought everything back to normal ; several months without dieting and without insulin did not entail the patient in any anomaly in carbohydrate regulation. This diabetes was easily controlled with insulin during the acute period.

The period of complete resolution was fairly lengthy since the patient remained in hospital on an average for a month. Signs of improvement generally appeared at the end of the second seven days and it was usually at this time that the "neuroplegiques" reduced and that natural feeding was recommended : the appetite often goes as far as bulimia during this period.

Course of the encephalitis–PROGNOSIS :—Our cases of January and February 1955 all died. Lepine gives the figure of 65% as the average mortality for infectious summer meningo-encephalomyelitis or Japanese B encephalitis. In contrast, our five cases

features of the Case reports

During the Disease					Additional Examinations					
Temperature	Coma	Hyper tonia	Paralysis	Fits	L.P. Benjoin colloidal	Sugar Chlorides C.S.F.	White cells	Blood nitrogen	Widal	Outcome
39°C	—	+	+	+		0·65 7·7	10600 82%	0·45 1·35	—	Died third day
39°C	—	+	+	+	2·8/0·22 Benjoin normal	0·47 F	10800 82%	0·45 1·10	—	Recovery on 26th day
38°C	+	+	+	+	7·6/0.40 B.C. altered	0·45 6·8	8200 78%	2·40 2·60	+ (A) then — after 20 days	Recovery on 30th day but post encephalitic sequelæ
39·8°C	—	+	+	+	3/0·22 B.C.	0·88 7·2	8800 70%	1·10 0·30	—	Recovery on 30th day
38·5°C	—	+	—	+	1·4/0·22	0·50 7·40		1 0·74	—	Recovery on 23rd day

which form the subject of this study have survived in the proportion of 4 out of 5 and the only death took place on the 3rd day in hospital and therefore, unexpectedly early. We think that tetracycline has proved definitely effective, in the large and prolonged doses we used and the significance of these results lies in the fact that it is the first time an antibiotic has shown activity against a virus of the neuraxis.

We are aware that on the basis of *laboratory experiments*, Cox and Hilary make no claim for the activity of tetracycline in cases of arthropod-borne encephalitis. But clinical experiments in man is somewhat different from experiments on animals, especially in diseases of the central nervous system, and if our clinical findings are in favour of a possible activity of tetracycline in that disease, we have no right, as doctors, to withhold any possible chance for the patient.

Further this most likely action of tetracycline has been made possible by the use of the hibernation technique which *lengthens the natural course of the disease* and allows the antibiotic given at high dosages, to work.

Diagnosis:—Clinical diagnosis is difficult, particularly at the onset; it will be based primarily on two major signs—the early appearance of hypertonia and of rigidity coinciding with a normal temperature, and also on the idea of a short and apyrexial prodromal period limited to 4 days.

A differential diagnosis must be made at this stage from tetanus and it is not an easy one to make, only lumbar puncture solving the difficulty; as a generalization there are no changes in the C.S.F. at the beginning of tetanus: in contrast the C.S.F. of our encephalitis cases showed three characteristics:—*viz.*, hypotension; moderate lymphocytosis; and usually normal albumen. The other chemical findings (sugar, chlorides) appear less interesting. The Benjoin colloidal test, if it shows any alteration, will be an important factor in diagnosis.

At the height of the disease, *dominated by the convulsive incidents*, the clinical diagnosis is easier. Only, outside idiopathic epilepsy and the therapeutic encephalopathies, particularly arsenic, certain plastic meningitis cases can give the same clinical picture: here again lumbar puncture will be the indispensable and only aid to diagnosis.

A problem which often arises in practice in our Unit is that of the diagnosis of enterobacterial meningo-encephalitis, particularly due to Salmonella, the diagnosis of which must be seriously considered in regard to viral meningitis.

These meningo-encephalitis cases present themselves in two forms:—

(*i*) *An acute purulent meningitis*, appearing after more than 8 to 10 days of raised temperature, with clearly evident accompanying "typhoid" signs. Its diagnosis is easy: lumbar puncture with its suspicious or turbid fluid, its polymorphs, the presence of organisms on direct examination or after culture easily confirms the diagnosis. However, in some forms, the fluid may be clear, poor in cells (lymphocytes) and organisms infrequent, necessitating culture of the C.S.F.

(*ii*) *An acute allergic encephalitis*, as the result of the liberation of excessive microbial endotoxins at the beginning of treatment of a known case of typhoid with a specific antibiotic, chloramphenicol in particular: diagnosis of this, as can be understood, is rendered relatively easy because of the existing clinical context:—the C.S.F. is clear, and often normal or subnormal.

In both cases, however, an important diagnostic element rests on the fact that the meningo-encephalitic accidents initially coexisting with a raised temperature exclude the virus encephalitis that we have under consideration.

Blood culture and the widal reaction, according to the stage of the disease when the neuroplegic encephalitis accidents become apparent, will be of some help. In one of our cases (No. 3) a transient agglutination at 1/200 with S. paratyphi A. was noted at the time of the maximum febrile access, but was not found 20 days later. In the other cases the Widal reaction was negative.

The precise diagnosis of the species of virus concerned can only be made by a highly specialized laboratory such as that of Prof. Lepine of the Pasteur Institute of Paris. It is based, apart from the post-mortem isolation of the strain from the neuraxis of the patient on the new properties acquired by the cured patient's serum. The sensitization type of antibodies, utilizable in a complement-fixation test, appear towards the 5th day of the illness but persist only for some weeks.

In contrast the neutralizing antibodies persist much longer, probably for several years.

We have been able to send to the Pasteur Institute of Paris early and late specimens of serum from patients No. 3 and 4 who presented a particularly severe form of the disease: the "early" specimens were, in fact, somewhat delayed, 3 weeks in Case 4 and more than 5 weeks after the onset in Case 3: the late specimens were taken in the second and third months.

The results were as under:—

Case No. 3:—Deviation of complement for Japanese B encephalitis: negative.

Neutralization: positive { early serum 50% / late serum 66%

Case No. 4:—Deviation of complement for Japanese B encephalitiis: negative.

Neutralization: positive { early serum 0% / late serum 33%

Prof. Lepine adds "The significance of these results is that we are dealing with subjects having a Japanese encephalitis, and over the acute period since the deviation of complement has already become negative. The antibodies are in the course of stabilization in the first patient, and in the course of appearance in the second. This corresponds to the usual delay of 6 to 8 weeks after the illness. The controls carried out with sera from poliomyelitis patients and normal subjects have all been negative. It is, therefore a specific effect and one can take *these results as establishing with certainty the presence of Japanese encephalitis in your patients.*"

Epidemiology.—Five cases at least of clinically superimposable viral encephalitis made us suspect summer infectious meningo-encephalomyelitis called Japanese B encephalitis. In two cases from whom sera were sent to Paris, two were stated

to be without doubt, Japanese encephalitis; we can reasonably think that all five cases were Japanese encephalitis and that there should be a considerable number of cases in the town for the clinical and biological diagnosis of this condition is difficult: the more so because most, if not all, of the practitioners of this territory, have never seen Japanese encephalitis, nor even heard of this condition of the neuraxis.

It is not therefore, possible to indicate, even approximately, the number of cases which occurred here.

What we *can* say is that all our five cases were admitted to hospital in August and September 1955 and that after Case 5 we have not seen any other patients. These months of August and September are precisely the same months in which 90% of the yearly cases of Japanese B encephalitis appeared in Korea, China, The Phillipines and Japan. It is certainly more than a mere coincidence.

The precise epidemiology of the disease in this territory is still absolutely conjectural. The virus reservoir is unknown, as is the vector: Culex is very common throughout the year at Pondicherry. It is curious to note that traditional Indian Ayurvedic Medicine, describes a "cerebral fever" called in the Tamil of Pondicherry "*Sanni-bada-jouram,*" சன்னி-பாத-ஜுவம் the description of which is curiously like what we have presented at the beginning of this article: the apyrexia at the onset is distinguished by the term "*Outsourame*" or the "Mild form."

Treatment:—It is not our intention to deal in detail here with the treatment given. We shall confine ourselves to the broad principles of the therapeutic measures we have used.

(*a*) Use of "neuroplegiques" (Phenergan, Largactil, Dolosal, Sparteine) and, if hypertonia is pronounced, replacement of Sparteine by Diparcol.

These medicaments are injected by slow (3 hours) intravenous infusion of 250 cc., either glucose or saline, containing the dose of 1/4 ampoule* of Phenergan, Dolosal, Largactil, and Diparcol or 1 ampoule of Sparteine, minor (coramine, aminophylline) or major (ouabaine, digitalis) cardiotonics may also be used, injected slowly into the rubber tubing near the needle.

Four such infusions are given in the 24 hours, two during the day and 2 during the night, and in most cases produce quiet sleep without spasm or hypertonia, but they may reappear between the infusions.

* Phenergan—50 mg. Largactil—50 mmg.
Dolosal or Pethidin—50 mg. Diparcol—250 mmg.

(*b*) To each infusion is added an amount of tetracycline (Achromycin-Lederle specially prepared for intravenous use).

Depending on the amount at our disposal the intravenous injection was either 100 or 200 mg. per infusion. We did not have at this time ampoules of 250 and 500 mg. for the intravenous route. We were, therefore, obliged to supplement this route with an intramuscular addition: 100 mg. x 4 daily, or even oral dose if the patient could swallow 250 mg. x 6 daily.

We have the conviction that Achromycin used thus, in doses representing 4 or 5 times the average dose (10-12 mg/kg orally: 3-4 mg/kg parenterally, normally and prolonged over at least 10, sometimes 15 days with the use of the "neuroplegiques" was the sole reason for the good results obtained by us.

On the question of the intensity and duration of the treatment which are of major importance, we would venture to offer a suggestion which appears to us, in the light of our experience, as absolutely indispensable to success: treatment should be undertaken *very early*, as soon as lumbar puncture clinches the diagnosis, and *before* the appearance of the fever.

Conclusions.—We have presented a report on 5 cases of virus encephalitis, with a distinctive clinical picture: apyrexial onset, prodromal period of 4 days, early hypertonia, and frequent fits.

We have correlated this condition, all the cases of which appeared in August, September 1955 with an infectious meningo-encephalomyelitis or Japanese B encephalitis.

Prof. Lepine of the laboratory of the Institute Pasteur at Paris confirmed the diagnosis of Japanese B encephalitis on specimens of serum sent by us from two cases by the demonstration of neutralizing antibodies in the late sera.

Four of the five patients recovered, 3 without any sequelæ; tetracycline was used in doses 4 or 5 times the usual, associated with "neuroplegiques" in a "lytic" infusion.

We wish to stress the need for intensive, prolonged, treatment and more so the early institution of treatment with the antibiotic of choice.

Work done at the Medical School, Pondicherry.

'Achromycin' (Lederle). The Lederle laboratories through their representative Mr. Sampath provided us with liberal samples of this drug free of cost, for conducting the investigations comprised in this study. We offer our grateful thanks to them.

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IMPORTANCE OF THE GENERAL EXAMINATION OF THE CARDIAC

The man who begins the examination of a patient by slapping his stethoscope over the apex of the heart betrays that he knows little about the heart. The first thing he should do is to look the patient over. Is he pale? Or is he plethoric? Is cyanosis or clubbing present? Is he very fat? Carrying even 30 lb. of excess lard around will eventually tire anybody, and some people carry 4 times that much. Or has he lost weight rapidly? Is the thyroid enlarged or nodular? Does he have a stare or tremor?

Are varicose veins responsible for swelling of his legs? Or tight garters? Is there tenderness along the right costal margin? Is the liver enlarged? Is the liver edge smooth? Do large veins converge on the navel? Is there fluid in his belly? Can you palpate a mass in the lower abdomen that arises from the pelvis? Is the spleen palpable? Can you find any large, hard lymph nodes? In the conjunctivæ or retinæ can you pick up the tiny hæmorrhagic emboli characteristic of subacute bacterial endocarditis? Are the scleræ lemon-colored or bile-stained? Funduscopic examination is of greater value in determining the severity of hypertension than a single blood-pressure determination. Are the pupils normal? Are the knee jerks present, equal, and active?

Is he a barrel-chested man? Is the thorax hyper-resonant? Is expiration prolonged? Is it accompanid by expiratory wheezes? Sometimes such wheezes causing respiratory distress result from excessive use of tobacco: if so, this distress will improve if you can get your patient to give up cigarettes for 3 weeks. Are the breath sounds the same on both sides? Is moisture present in the right base? Or fluid?

Many patients come in complaining of a murmur or "a leaking heart." If the murmur was detected under the age of 4, the chances favour congenital heart disease. One should also cross-examine the patient—or his parents—as to possible rheumatic fever in the past, but the absence of such a history does not rule out rheumatic valvular disease.

While the importance of taking the blood pressure has been exaggerated, it should always be done. If it is high in a robust young person, it is well to see if his femoral arteries pulsate. If they do not, try the abdominal aorta and look for pulsating collateral vessels.

Examination of the blood and urine should always be done. An X-ray of the chest or fluoroscopic examination is desirable.

The question of an ECG arises in almost every case of heart disease, organic or otherwise. If the patient is greatly concerned about his heart, although perfectly sound infratentorially, a tracing is always indicated for his peace of mind. (If the explanation of easy tiring, however, is attributed to acute leukæmia or a bleeding fibroid, an ECG is hardly necessary). There is much to be said for routine yearly ECGs on persons over 40.

Tracings are useful in the management of active rheumatic fever and coronary disease. In these conditions serial tracings are vastly more important than single ones. The first one taken on a rheumatic young person may appear well within the limits of normal until compared with one taken several months after recovery. Similarly, a cardiogram on a man of 60 which appears alarming, may be unchanged after 15 more years of productive life. Finally, trifling normal variations in the ECG are much oftener misinterpreted as of importance than are significant changes overlooked.

Remember 2 things: other pathologic conditions may simulate disease of the heart, but heart disease does not exclude other troubles.—(L. Minor Blackford, *Journal Medical Association of Georgia*, August 1957, via *Current Medical Digest*, December 1957).

ROLE OF ARTIFICIAL PNEUMO-PERITONEUM WITH ANTIBIOTICS IN PULMONARY TUBERCULOSIS*

A Review.

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TUBERCULOSIS has baffled the efforts of the medical profession, through ages. The inconsistent nature of the onset, the divergent nature of its progress, the peculiar biological composition of the tubercle bacillus and the uncertain tissue-reaction have been a great handicap to phthisiologists.

It is only in recent years that the treatment of pulmonary tuberculosis has been revolutionized by the advent of new antimicrobial drugs and improved surgical technique. Many problems still remain to be solved.

Artificial pneumoperitoneum has been a reputed method of treatment it was introduced by Banyai in 1933.[1] Though this treatment had created an impression on some of the phthisiologists for its effect on tuberculous peritonitis, it was not very popular, in the treatment of pulmonary tuberculosis, till Banyai's affirmation.

I will just refer briefly to the mode of action of pneumoperitoneum on pulmonary tuberculosis. It is an accepted fact that relaxation by collapse therapy helps in retrogression in most varieties of pulmonary tuberculosis.

Banyai stated that the pneumoperitoneum acts by reducing the volume of the thoracic cage in a telescopic manner, sliding the lung upwards to be crowded in the narrowed apex. The amount of reduction of space in the thoracic cavity, which is achieved by pneumoperitoneum may vary from 25% to 45%. It was common belief that the indication for pneumoperitoneum was in basal diseases only; but this is not tenable, as there is a generalized reduction in the volume of the chest cavity and the lung being an elastic tissue, the relaxation is uniform and generalised and affects the disease situated anywhere in the lung[4]. But it has its own handicaps; *e.g.*, the pleural adhesion and the solidness of the lesion, come in the way. In some cases, a further reduction of the volume of the chest cavities is obtained by phrenemphraxis. But this is not a routine.

A study was made of 50 random cases of pulmonary tuberculosis in Indians treated with artificial pneumoperitoneum at Kanchrapara T.B. Hospital.

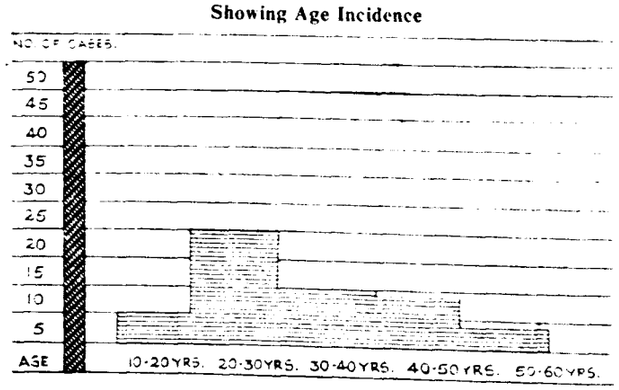
The site of pneumoperitoneum selected was usually the left flank in the inguinal region. The air insufflated varied from case to case. After the primary induction of 300 cc. to 500 cc. of air,

* Specially contributed to the ANTISEPTIC.

refills were given on the 3rd and 7th day. Then a weekly refill of about 1000 cc. of air was given, spacing out the interval further by recording the initial and final water-manometer pressure, as also the fluoroscopic examination.

Chart I

Showing Age Incidence



Five of these 50 cases, were in the 2nd decade; 21 cases in the 3rd, 11 in the 4th, 9 in the 5th and 4 in the 6th decades. Thirty two of the 50 were males and 18 were females.

According to the classification of the American Trudeau Society —the extent of lesion, type of lesion, location of the area, cavitary or non-cavitary, unilateral or bilateral and duration of treatment with supplemental therapy were considered.

Three of the 50 cases, were moderately advanced (6%) and 47 for advanced (94%). No minimal lesion cases were encountered in this series. 12 were unilateral (24%) and 38 bilateral (76%). The upper $\frac{1}{3}$ and the lower $\frac{2}{3}$ in 32 cases (64%), the lower $\frac{2}{3}$ in 5 cases (10%). 17 had exudative lesions and 33 mixed, but there were no fibrotic lesions in the series. All except one had cavitary lesions either single or multiple, of variable size, from a honeycomb to a giant cavity. At the time of induction of pneumoperitoneum 24 had a positive sputum and 26 were negative. But some of the patients were having antibiotics prior to their admission into the hospital.

Table I

Showing classification of disease (N.T.A.)

Extent of disease	Number of patients	Per cent	Unilateral disease	Bilateral disease
Minimal	Nil	—	—	—
Moderately advanced	3	6	1	2
Far advanced	47	94	11	36

Table II

Showing distribution of disease in the lung

Upper 1/3	Upper 1/3 & Lower 2/3	Lower 2/3
13 (26%)	32 (64%)	5 (10%)

The treatment was advised by the Staff Conference with the following views:—Definitive therapy in conjunction with antibiotics—27; pneumothorax failure—5; holding procedure until surgery was advisable—14; last resort—4, *i.e.*, cases which

were resistant to some antibiotics and had far advanced bilateral cavitary lesions with advanced age. One of these cases had diabetes mellitus in addition. In 19 cases phrenic crush was done, 12 in the right side and 7 in the left. The elevation of the diaphragm as was seen in the fluoroscopic examination attained the level of 3rd to 5th rib anteriorly.

The duration of pneumoperitoneum varied from 10 to 49 months. The average duration in the improved group was about 2 years.

All the cases were having antibiotics for a variable period in combination as follows according to the sensitivity status for not less than 12 to 15 months.

(1) Streptomycin 1 g. biweekly and I.N.H. 150 mg. to 200 mg. daily.

(2) Streptomycin 1 g. biweekly and P.A.S. 10 g. daily.

(3) P.A.S. 10 g. daily and I.N.H. 150 mg. to 200 mg. daily.

During therapy severe hæmoptysis were controlled in 2 cases. Body weight increased appreciably in 38 and decreased in 12 cases. E.S.R. increased in 4 and in 46 cases it came down within the normal range. Sputum was negative in smear and culture in 45 cases and was occasionally positive in smear and culture in 5 cases.

The following complications developed in this series and except in 2 cases, treatment was continued after the abatement of the complications.

(1) Right inguinal hernia — 1 (abandoned)
(2) Pneumo-mediastinum — 1
(3) Spontaneous pneumothorax– 1 (abandoned)
(4) Abdominal fluid (slight) — 1

Table III

Showing the Discomforts noted

Symptoms of discomfort	Increased	Decreased	No discomfort
Nausea	15	4	31
Anorexia	15	8	27
Flatulence	7	—	43
Colicky pain (occasional)	4	—	46
Acidity	9	4	37
Constipation	11	—	39

The results of artificial pneumoperitoneum were classified according to American Trudeau Society as :—Improved, Active retrogressing, Active progressing or dead. The criteria used for *Class I. Improved* were : (*a*) closure of all cavities as evidenced by X-ray, or/and tonogram, or/and bronchogram or/and bronchoscopy, (*b*) conversion of sputum negative by the consecutive smears, sputum or laryngeal swab culture. *Class II. Active retrogressing i.e.* (*a*) the

RECENT TRENDS IN LEPROSY*

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Madurai

NOTABLE advances have been made recently in the study of leprosy. The subject will now be discussed under the following heads:—

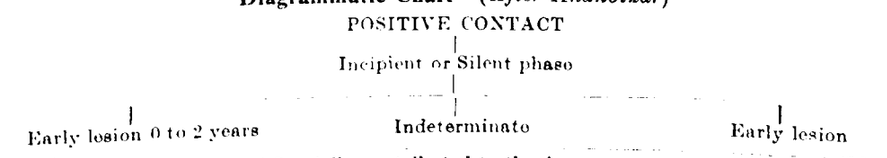
A. Epidemiology and bacteriology including immunology.—The most important discovery is the occurrence of Mycobacterium lepræ in the skin, in about 20 per cent of healthy contacts of open cases. The next important observation is the demonstration of the lepra bacilli by histopathological serial sections in cases which have been negative by the ordinary skin clip examination. Hence our ideas about infectivity have to be revised. For every case of leprosy a clear history of contact must be obtained. An effective segregation of open cases is most important. The closed case is theoretically non-infective. A third important discovery is the brilliant histopathological work of Dr. Khanolkar. The Mycobacterium lepræ first involves the superficial plexus of nerves in the skin.

Lepromin reaction:—In the study of early lesions of leprosy two important steps help us: (1) the lepromin reaction; (2) the concentration method of demonstration of bacilli from tissues lepromin reaction. The consensus of opinion is that all persons who come in contact pass through a positive lepromin phase. The South American leprologists use the lepromin reaction in classifying cases of leprosy and in assessing the prognosis in a given case.

Dr. Muir has used B.C.G. vaccination for immunizing the population.

B. Classification and diagnosis.—The lepromin test is a measure of the tissue immunity but does not help in diagnosis. The earliest stage of an infection with Microbacterium lepræ is the stage of positive contact. During this silent phase the skin may not show any blemishes. The next stage is the indeterminate phase when the disease has not disclosed itself. There are pale pink macules. The lepromin reaction may be positive or negative. There are sparse foci of inflammatory exudates. A small number of bacilli may be demonstrated by the concentration method. Dr. Khanolkar has classified leprosy in a vivid diagrammatic chart.

Diagrammatic Chart—(*After Khanolkar*)



* Specially contributed to the ANTISEPTIC.

Papules and nodules	Infective phase	Pale macules
Tuberculoid Lepromin Strongly positive	Dimorphous Lepromin Negative or weakly positive	Lepromatous Lepromin Negative
A.—1. Infiltrative stage Macule 2. Granulomatous stage minor tuberculoid. 3. Coalescent stage major tuberculoid	A.—1. Infiltrative stage Macule 2. Granulomatous stage. Atypical tuberculoid. Atypical Leproma	A.—1. Infiltrative stage Macule. 2. Granulomatous stage Nodular leproma. 3. Coalescent stage Diffuse leproma
B. Polyneuritic lepride	B. Polyneuritic Dimorphous	B. Polyneuritic Leproma

Clinically leprosy may be divided into: (1) Macular. (2) Infiltrative. (3) Polyneuritic: (*a*) Those with small vague edges, the periphery fading into normal skin. (*b*) Large macules with a sharply defined periphery. (*c*) The lesion looks wrinkled. The edge is less defined than in (*b*) but more defined than in (*a*). The lepromin test is strongly positive in the tuberculoid type. The macules have well defined clear cut margins.

The points of difference between the three types are shown below :—

TUBERCULOID	DIMORPHOUS	LEPROMATOUS
Macules with well defined clear-cut edge.	The dimorphous or border line macule has not been sufficiently studied.	The macules present has indefinite outline.
The cellular infiltration is round cells, epithelial cells and *giant cells around* appendages of skin.	The infiltration is diffuse. There may be epithelial cells, *giant* cells and macrophages.	The round cells are replaced by macrophages (Lepra cells) and many show commencing vacuolation. (Previrchow cells).
The infiltration presses the epidermis and there is no *free subepidermal zone.*	There is a free usually vascular subepidermal zone.	There is a characteristic free subepidermal zone.
Nerves :—Involvement of the nerve with the cellular infiltration of epitheloid and giant cells.	The nerve fibres show varying stages of involvement. There may be hyaline changes.	The nerves are not invaded but there is an endoneural involvement giving a cutling appearance.
The nerve fibres may be seen as remnants among granuloma The bacilli are few.	The bacilli are seen within nerves giving appearance of 'Fish upstream.'	The *bacilli* are seen in large numbers.

The polyneuritic lesions.—There is a polyneuritic group which shows no skin lesions. By doing the lepromin test it is possible to divide into tuberculoid and lepromatous group. Histopathological specimens of these lesions will show large numbers of bacilli with "fish in the stream appearance" in the lepromatous type but practically absent in tuberculoid variety.

The clinical classification of leprosy may now be discussed :- (1) *The indeterminate* phase showing few macules. (2) *Tuberculoid type* :—The lepromin reaction is positive. The tuberculoid lesions may be divided into major and minor and subdivided according to apperance of the skin lesions, *namely.*, papillate, circinate plaques, nodules etc. (3) *The lepromatous lesions* may be: (*a*) lepromatous macules; (*b*) the diffused leproma ; (*c*) the nodular leproma. (4) The border line lesions are typical and designated as dimorphous. When there is no obvious patch but anæsthesia, the condition is called neuritic anæsthetic. The deep reflexes are always brisk and their absence should throw doubt on the diagnosis. The following procedure is essential in the diagnosis of leprosy :—(*a*) *The type of lesions :*—Macular, infiltrated or nodular; (*b*) loss of sensation to the touch, temperature and pain ; (*c*) the sites involved ; (*d*) any thickening of the nerves; (*e*) duration ; (*f*) any trophic lesions and (*g*) the history of contact.

The diagnostic procedures are :—(1) Bacteriological and (2) Histopathological.

Infectivity :—A diagnosis as *leprosy* frightens the patient. Hence the more sober term Hansen's disease is used. Leprosy is not such a terrific disease as is generally believed. It has been shown that even under the most favourable conditions for transmission, the disease develops in about only a fifth of the contacts. *Secondly*, even if the lesion develops there is a tendency for spontaneous remission. *Thirdly*, infants and children are particularly prone to get the infection and not adults. These observations help in taking adequate measures to prevent transmission. Healthy infants and children are to be segregated and prevented from coming in contact with infected persons.

TREATMENT IN LEPROSY :—Due to the brilliant discovery of Faget, sulphones have come to be established as drugs of choice in the treatment of leprosy. The various preparations in use are :—(1) Diphone ; Avlosulphone and Diasulphone ; (2) Promin ; (3) Diasone and Diamidin ; (4) Sulphetrone and Novotrone ; (5) Promacetin and (6) Promiazole.

(1) *Diphone, Avlosulphone* (ICI), Diasulphone (Pasteur) Dapsone (B. W.) are available in 100 mg. tablets. Some of the preparations are available as 20% solution in cocoanut oil or arachis oil. Starts with 25 mg. twice a week, and gradually increased to 25 mg. each fortnight till 100 mg. is reached. Then further

increase each month till 400 mg. twice weekly is reached. Injections :—Weekly injection of 0·5 cc. (100 mg.) I.M. The dose is gradually increased to 2½ cc. (500 mg.) once a week. (2) *Promin* (P. D.) :—is available in 2 g. in 5 cc. and 5 g. in 12½ cc. The initial dose in 1 g. gradually increased to 5 g. given intravenously. Injections are given for 6 days, a week. (3) *Diasone* (Abbott) and *Diamidine* (PD). (Disodium formaldehyde sulphoxylate diamine-diphenyl sulphone). Each tablet or capsule contains 0·3 g. The dose is one tablet a day for 6 days a week, gradually increased to 3 per day. After every month there should be a respite of one week. (4) *Sulphetrone* (B.W.) and *Novotrone* (BCPW) available as 0·5 g. tablet and 50% solution. *Dose* :—Oral one tablet a day for 6 days a week gradually increased to 6 per day. Injections :—½ cc. twice weekly I.M. gradually increased to 3 cc. I.M. twice weekly.

The cost of treatment by injection is cheaper than by the oral treatment. (5) *Promacetin* (P.D.), is a mono-substitute compound and is considered less toxic than the previous compounds. *Dose:*—One tablet daily for 6 days a week gradually increased to 3 tablets a day for 6 days a week. (6) *Promiazole* :—The dose is similar to Promacetin.

Precaution during sulphone therapy.—(1) Feeling of tiredness may occur. This will pass off with rest. (2) A dry feeling in the mucous membrane may occur. This disappears with a reduction in dosage. (3) A temporary exacerbation may be produced called Jarisch-Herxheimer reaction. The condition produced is called Erythema nodosum leprosarium of Waleott. The drug must then be stopped and antihistamines administered. (4) Lepra reaction may be febrile or afebrile. Treatment is :—(*a*) stop all chemotherapy. (*b*) Give calcium gluconate I.V. (*c*) Antimony as potassium antimony tartarate 0·02 g. I.V. or Foudain 2 cc. I.M. or Fontarin 2 cc. I.M. on alternate days, for ten injections. Prednisolone in doses of 20 mg. daily for 5 to 7 days, is beneficial. Other drugs used in leprosy : Thiosemicarbazones are not so effective as claimed and the toxicity is great. A combination of I.N.H. and D.D.S. in 50 mg. and 25 mg. doses daily and increased to thrice daily is found to produce favourable results. The role of hydnocarpus oil is beneficial intradermally in macular patches for disappearance of the patches. The injections are given intradermally twice a week.

General principles :—During sulphone therapy there is a tendency for reduction of blood count. The sulphones interfere with iron absorption and iron and Vit. B_1 tablets should be given, one tablet thrice daily after food.

IS A LIPOCLASTIC ENZYME ISOLATED FROM THE LILIACAE GROUP OF PLANTS SPECIFIC IN THE TREATMENT OF INFECTIVE GRANULOMA?*

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HISTORY.—In 1941, Streptomycin its derivatives P.A.S., I.N.H. were unknown. Calcium, gold, bed-rest, A.P. and to some extent P.P. and surgical interventions—combined with Sanatorium treatment, were the only weapons for the specialists to combat tuberculosis as sulphones are to the leprologists today. While on this platform, came in a patient, accompanied by one of my beloved students of medicine, with extensive bilateral pulmonary tuberculosis, associated with copious expectoration, about 16 ozs. in 24 hours, temperature varying from 101°F. to 103°F. Sputum positive by Ziehl-Neelsen's method about 20-25 bacilli per field and E.S.R., 156 mm. a mean of 2 hours, with complete anorexia, emaciated to skin and bone and with history of having all treatments done prior to coming over to me. One would not accept the responsibility of such a case without a sigh and a sense of helplessness. However, I could not avoid my dear student and tried to ameliorate the symptoms. Injected one grain of Emetine hydrochlor—next day noticed jaundice—repeated 2nd dose—on the third day more deep jaundice with complete yellow coloration of the skin, conjunctiva, saliva and sweat. Asked the patient to have a Van Den Berg done and stopped drugging. On the 5th day to my utter surprise no jaundice, no coloration of the skin, saliva, sweat; condition exactly similar to the condition prior to the injection of Emetine. I could not understand the appearance and disappearance of jaundice, but in all calm and carefree moments—it used to haunt me.

In spite of my best attempts the patient died within two months of tubercular meningitis, but during these two months he used to say, "Doctor, I will give you a pen which will burn throughout your life!" I used to ask with a smile, what was that pen?; he would say he cannot tell but feels an intuition to say so. I leave my readers to find the pen for me.

I thought that the jaundice was due to re-absorption of the bile into the blood, as it did not find split fat owing to the retarded or absent enzyme or its activity in the small intestine consequent upon the moribund state of the patient. But this guesswork could not satisfy me and so I tried to find out an enzyme which would split fat in the test-tube in the identical conditions of the small intestines *i.e.*, the temperature and *p*H value. The

*Specially contributed to the ANTISEPTIC.

lipoclastic enzyme of pancreas, castor seed, commercial pancreatin could not show the quick splitting property as could be found from the enzyme isolated after a strenuous toil for two years from the Liliacæ group of plants found abundantly in India.

Scientific investigation.—With this active enzyme, I took in each of 4 test-tubes, 2 grammes of neutral butter-fat (neutrality of the butter fat is essential as when old and stale it is on the acid side, pH, of 3 to 4, that is, below 7 and thus alters the enzyme activity producing altered observations in the test tubes) and poured 2 cc. of the enzyme in each and shook vigorously—the mixture became whitish fluid, which would not set on being kept over a freezing mixture—proving splitting of fat into glycerol and fatty acid of butter. On standing for a while the fluid in the test-tubes showed a separation into two parts—a lower liquid part and an upper more solid part. The lower portion was pipetted off in one test tube and on standing showed the presence of glycerol by chemical tests and an excess of enzyme with a lowered pH, while upper part showed an acid reaction which was titrated with N/10, caustic soda and the presence of fatty acid of butter was confirmed.

To the other test tubes containing split fat, 0·5 cc. of bile was poured in each and on shaking, the mixture of fatty acid and glycerol was converted to neutral fat again and on putting in a freezing mixture every globule of fat combined to form a single mass showing resynthesis of fat.

The inference from the above experiment is that any fat after ingestion is split up to be cooked up by bile to the similar composition of the consuming animal's fat and then absorbed. But mobilization of fat during tissue needs and starvation remained in darkness. I argued as pancreas is the chief source of fat splitting enzyme, so this gland might be acting in some way to mobilize depot fats. While searching the pancreas for the mobilizing factor, I poured a quantity of commercial Insulin over the fat globule formed in the test tubes, after the addition of bile in the split fat mixture. On shaking, to my utter surprise, the fat was again converted back to fatty acid and glycerol and the formation of fatty acid was proved by titrating the acid by N/10, caustic soda and glycerol by chemical tests. Can lipæmia in diabetics which, diminish after a dose of Insulin within 150 seconds be similar to the test tube experiments? To summarise it may be stated that fat is stored in the body when it is cooked to identical composition of the consuming animals fat and at the time of tissue demands it is mobilized by Insulin as fatty acid and glycerol which is immediately transformed into glucose. I have described this relation between Lipase and Insulin as "Lipo-insulin Reflex."

Thus the changes that are induced in the test tubes by enzyme and bile are identical with the changes that we find in the intestines and the swallowed sputum in patients suffering from pulmonary tuberculosis and experimental animals fed with sputum containing living, virulent tubercle bacilli do not produce tuberculosis, obviously lead one to think that the natural fat splitting ferment or any replacement of the same could act specifically on the tubercle bacilli.

Author's theory and conception of the disease:—The insulin in a ferment failing pancreas, causes mobilization of depot fats as fatty acid and glycerol (Lipo-Insulin reflex) which in its turn to glucose—thus when "glycerol coming and glucose forming" cycle is established T.B. find a glycerol media for infecting the host and slight hyperglycæmia is the down signal for infection with T. bacilli. The following observations corroborate and support the theory (1) Primary tuberculosis of the pancreas or miliary spread or local spread from a gland is unknown; (2) in the first six months of life no insulin and maximum of lipase—no incident of tuberculosis; (3) after 6 months gradually insulin ratio rises high when lipase ratio falls—and tuberculosis results at about 4 years and balance of the insulin and lipase ratio is followed by spontaneous healing of primary foci of Ghon and others; and (4) moist-looking granulation tissue is due to constant presence of glycerol for the use of the T.B.

In other words, I should say I would not fear tuberculosis, if my pancreas is all right, if it can protect itself can it not likewise protect the body?

How fat-splitting enzyme acts:—It acts in three ways: (1) By directly digesting the Lipid-moiety of the tubercle bacilli and thus disintegrating and killing them; (2) by combining the free fatty acid and glycerol in presence of bile into neutral fat when no glycerol and no tubercle bacilli. A biochemical strangulation, if this can be called; and (3) lastly lipase causes a drift of blood to the splanchnic area effecting less blood in the pulmonary area and less glycerol for tubercle bacilli in lungs.

Short note about the enzyme:—This enzyme has been isolated from Liliacæ group of plants. These are annuals and the enzyme concentration is most during the months of March to May. The process of extraction and final preparations are reserved for the next publication.

Physical properties:—Clear amber-coloured watery liquid.

Chemical and bactericidal properties:—Highly antiseptic. Tubercle bacilli are killed instantaneously. When assayed against Klebsiella pneumonia it is found to be 500 times stronger than streptomycin. It has got cidal effects on strepto

and staphylococci and lepra bacilli, when 1 of 2 test tubes each containing 1 cc. of "Leper-juice" with large number of lepra-bacilli is kept overnight with 2 cc. of enzyme and the other with 2 cc. normal saline, in an incubator at 37 C—the enzyme treated test tube shows complete disorganization and fragmentation of the lepra bacilli, with absence of clusters while the control showed no change in the bacilli. The *p*H range of activity is 7 to 9. It is water soluble and protein in nature, inactive after being heated to 80 C—when proteins precipitate, and at a lowered *p*H it becomes highly toxic. It is autolysed by 84 hours—but processing keeps up its activity for 3 years at ordinary temperature. It has got no degenerative effect on other body fats as blood cholesterol content remains constant during short and prolonged administration of the enzyme. Fibrolysis of tuberculoma along with healing by fibrosis proves its "Reversible Reaction".

In vitro the bactericidal properties of Mycozyme is much superior to streptomycin. When 1 cc. is assayed against Klebsiella pneumonia gives the same results as 500 mg. of Dihydrostreptomycin sulphate.

It has been found to be effective against Mycobacterium tuberculosis cultures in ordinary glycerine broth, Loewenstein and Dubos media, entirely riding the field within 24 hours. The clumps of the tubercle bacilli are destroyed within 2 hours, resistant strains also destroyed.

Experiment 1.—A glycerine agar slant with colonies of active virulent tubercle bacilli and another with similar colonies in Lœwenstein's media were taken. With usual precautions a platinum loop was introduced before a Bunsen flame into the test tube and an inoculum removed over a slide and spread with a drop of sterile normal saline and dried. The same was prepared from the colonies in the Loewenstein's media. Both were examined for the presence of tubercle bacilli which was confirmed with the absence of other organisms.

Let T1, T2, T3, T4, T5, T6 be six test tubes containing liquid sterile media for the study of the growth of tubercle bacilli and the action of Mycozyme.

Now T2, T3 were inoculated with tubercle bacilli from the glycerine broth and Loewenstein's media and to each of T4, T5, T6, 1 cc. of mycozyme was added and then T4 and T5 were inoculated with T.B. from glycerine and Loewenstein's. Next all T1, T2, T3, T4, T5, T6 were incubated at 37 C and daily watched for the growth. After 20 days T2, T3 became turbid and by staining an inoculum from these the presence of tubercle bacilli was proved. While T1, T4, T5, T6 remained clear proving thereby that the media and solution were both sterile and Mycozyme prevented the growth of tubercle bacilli in T4, T5.

Experiment 2.—In Experiment I—the fallacy remained as to the number of the bacilli in the inoculum. To correct this T2, T3 containing luxuriant growth were centrifugalized in a tube and stirred with a blunt rod to make an uniform emulsion of tubercle bacilli in saline—and this was repeated several times to ensure washing of tubercle bacilli from media.

Then in a colorimeter tube a portion of the normal saline just used was poured and its deflection was corrected to 0. To this was added 2 cc. of the washed tubercle bacilli and the deflection was found to be 80—after stirring with a blunt glass rod—to ensure uniformity. Now with this bacterial emulsion all the procedures as in Experiment I were repeated—and the observations were as before consequently the interferences were the same.

Further bacteriolytic properties were studied in vivo—as centrifugalized deposits washed in sterile normal saline in T4, T5 failed to produce disease in guinea-pigs and slides stained with acid-fast procedure failed to show morphologically normal tubercle bacilli, and subcultures did not show any growth.

In-vivo study :—Toxicity :—(*a*) Rabbits—Four 2 lb. wt. rabbits were chosen and to each 5 cc. I.V. of mycozyme at the interval of 3 hours for 7 days produced twitching of voluntary muscles lasting for about one to two minutes just after injections. Nothing, if 3 cc. is given.

(*b*) Small guinea-pigs aged about a month (born in the laboratory)—Wt. 5 oz. each—10 of these were chosen—to each twelve cc. were injected intraperitoneally—same twitchings following withdrawal of needle—unconsciousness for 3 to 5 hours—normal after that. One died 12 hours after (after having become normal after 5 hours)—and which on post-mortem examination disclosed an area of peritonitis and rupture of the large gut with fœcal matter coming out of a central perforation just beneath the site of injection—proving that the cause of death was a perforation of the gut by the hypodermic needle. To the same animals 8 cc. daily intraperitoneally did not cause any untoward effect even when injected for 10 days, and prolonged thereafter.

Further in-vivo study :—12 animals—guinea-pigs each weighing 1 lb. were chosen. 2—used as uninoculated controls, 2—study of prophylaxis, 4—inoculated controls, 4—inoculated and treated with drugs.

Uninoculated controls :—2 were kept in cages I and II—E.S.R. —3 each (better done with 5% citrate unlike human examinations with 3·8% solution) weight noted every 7 days, daily rectal temperature was recorded. The balance 10 were injected with tubercle bacilli emulsion at the said colorimetric deflection of 80, and the cages were marked 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 by intraperitoneal route with 1 cc. of the said emulsion for 7 days

while they were starved for four hours before injections and purged with Mag. sulph. to lower the resistance.

From 8th day 3 and 4 were treated with Mycozyme 2 cc. intramuscularly daily and weight, E.S.R., anorexia, rectal temperature were noted. All remained unchanged for two months and on the 1st week of 3rd month 3 and 4 were killed and no disease could be seen. (Prophylaxis).

5, 6, 7, 8, 9, 10, 11 and 12—were all infected with 1 cc. of the above standard bacterial emulsion intraperitoneally. The weights and E.S.R. were noted and the animals were starved for 4 hours before the administration of the inoculating dose and purged with rectal Mag. sulph to lower the resistance. All 5, 6, 7, 8, 9, 10, 11, 12 developed anorexia showed loss of weight, rise of rectal temperature—after three weeks. The E.S.R. increased to 5, 5·2, etc. against a normal of 2, 2·3 mm. 5 and 6 were killed after 7 weeks—nodules in spleen, liver and over the peritoneum were seen. Nos. 7 and 8 allowed to go on untreated died on the 60th and 69th day. On P.M. examination, peritoneum, spleen, liver and lung showed disease. Nos. 9, 10, 11, and 12 were treated with Mycozyme with 3 cc. daily at 7 days' interval after 7 weeks. No. 12 died on the 79th day whereas 9, 10, 11 completely recovered after 108, 112 and 120 days, with resuming normal weight, E.S.R. etc. No. 9 received 59 x 3 cc. 177 cc. of the drug. 10 received 168 cc., and No. 11 received 150 cc.

Excretion :—Mycozyme is eliminated almost entirely through the kidneys and has got no damaging action over the kidney tissue—a definite advantage over streptomycin which often damages kidney tissue with a quick concentration of 500—1500 microgrammes per cc. in the blood.

E.S.R. :-Examined before a dose of Mycozyme and half an hour after, shows a temporary reduction to about half in-patients but a permanent phenomenon in test tubes-unknown with other drugs.

Standardization :—It is standardized by titrating the Olivo-oleic Acid by N 10 Caustic soda formed after treating 5 cc. of neutral olive oil with 1 cc. of Enzyme and incubating at 37 C for 24 hours.

Pharmacology of the drug : —Action on the respiratory system : It checks secretions of the bronchial glands, and rapidly reduces pulmonary congestion. Early infiltrations of about a pea's size disappear within a month as seen in chest films. Cavities of about one and a half inch diameter completely heal up in two months and disappear with the formation of a homogeneous scar, without the formation of any annular ring round the cavity as was hitherto observed. Pain in the chest quickly disappear and chocking sensations gradually reduce till completely recovery. Small cavities completely disappear without any trace in the chest films and sometimes a calcified spot is seen at the previous site ; at others no trace. In very old fibrosis there is breakdown of fibrous tissues and then healing shows only a regeneration of lung tissue.

Case records.—*Case No. 153* :—T.S.D., H. F., 23. Onset : General weakness, emaciation, anorexia followed 2nd child birth on 22-8-'36 and increased after 3rd child birth on 22-8-'38 followed by copious hæmoptysis in November 1939 with evening rise, to a maximum of 101°F. Skiagram and sputum negative till April 1940, when both became positive with bilateral involvement and 2 to 3 bacilli per field. Inspite of treatment copious hæmoptysis on 1st May 1940 caused her removal to Jadavpur T.B. Hospital, and thence to S. B. Dey's Sanatorium, Kurseong on 19-11-'41. On discharge on 8th May '42 both sputum and skiagram remained positive. She conceived again in June and spat out copious blood on 23-9-'42, with evening rise and her condition became worse with complete aversion for food after 10th March 1943, the date of 4th issue. Came in for enzyme treatment on 17th May '43. Skiagram showed extensive bilateral infiltration exudative type with positive sputum 3 to 4 bacilli per field. E.S.R., 153 mm. a mean of 2 hours. Injected 3·5 cc. of the enzyme into the deltoid. 18-5-'43—Husband of the patient said that she had a voracious appetite, took 12 chapatis, one pound of milk and wanted more—had a coughless, sleepful night and felt much comfortable. 19-5-'43—Injected 4 cc. had a rise of temperature that evening but other improvements as before. 21-5-'43 injected 4·5 cc. cough less by 80 per cent—clinically improving. In this way 9 injections were given on alternate days and another 8, at intervals, up to 23-7-'43 when a skiagram showed no disease and on 29-7-'43 a twenty-four hours' collection of sputum was negative and subsequent cultures were negative. Even today the patient is hale and hearty with a negative sputum by culture and Ziehl Neelsen's method and a negative skiagram. From 1944 owing to her husband's death she is doing hard labour in a job in which she is still engaged (September 1957).

B., H.M., 42, past history of 2 years with hæmoptysis, bilateral, exudative type of pulmonary infiltrations with sputum showing 4 to 5 bacilli per field and an elliptical abdominal mass 10 inches long and 6 inches broad lying longitudinally in the long axis of the body, tympanitic on percussion with signs of intestinal obstruction, constant agonizing pain, much emaciated with a terror for food—even liquid. Admitted to R. G. Kar Medical College, where all treatment failed and laparotomy was tried, but due to very bad adhesions and other contraindications the abdomen was stitched up without any intervention. Came under enzyme treatment on the 9th May, '53, started injections on alternate days 4 cc. when pain and discomfort

subsided after 2nd injection and the lump gradually disappeared within 2 months and the lungs did not show any infiltration with a negative sputum by culture and Ziehl-Neelsen's method. This case was followed by Dr. B. K. Pal, M.B., M.R.C.P., T.D.D. (wales), Dr. Sailaja Mookherjee, M.B., B.S., Registrar, Surgical Wards and Dr. Rajib Chatterjee, M.S., Surgeon, R. G. Kar Medical College Hospitals.

The results of treatment of glandular bones, joint and skin tuberculosis are equally dramatic and will be published later.

Statistics of 750 Cases treated with 'Mycozyme'

Early 250	Moderately late 250	Late 300
100%	96%	80%
Cure 200	Cure 240	Cure 240

Reports of leprosy cases.—The following cases that had not responded to recognized treatments elsewhere showed wonderful effects with enzyme treatment.

(1) B. B. B., H. M., 36, No. 11022; 7-2-'56. Had an elliptical, anæsthetic patch, red shining, much raised above the surface occupying the epigastrium and right hypochondrium 8 inches in transverse diameter and 3 inches in vertical diameter. Smear showed lepra bacilli in large numbers (plus 3). Started "*leprazyme*" from 9th February '56 by daily infiltration during first week, later 4 times a week, about 10 cc. a day. Showed clinical improvement and fragmentation of bacilli in three weeks and complete negativity in three months—and this is being maintained for last 15 months with normal look and sensations over the patch—which cannot be recognized now.

(2) C. B., H. F., 18, No. 11218; 2-3-'56. Left ulnar nerve thickened to 1 4th inch, tender, cold abscess with discharge, anæsthesia, atrophy of hypothenar eminence and interossei muscles. Cold to touch, cannot extend or flex little or ring finger. Started 5 cc. I.M. from 26th March '57 into the deltoid daily. No discharge within 10 days. Normal hypothenar eminence, sensations, flexion and extension power complete in 2 months—which is being maintained for last 3 months.

(3) H. B., H. F., 45, No. 11183; 11-9-'56. History of 10 years. Right ulnar nerve thickened to 1 4th inch, tender with a tumour about the size of an almond near elbow joint on the ulnar nerve. Atrophy and anæsthesia of hypothenar eminence with impaired movements of the little and ring fingers. Started on 15-8-'57 4 cc. *Leprazyme* showed some malaise, feverishness, next day 2 cc., the day following 5 cc. Next infiltrated the tissue around the nerve tumour. After 2nd infiltration on the 5th day the almond size swelling completely disappeared and the sensations and hypothenar and interossei are practically normal now with normal movement, though some difference is there as regards wasting.

(4) S.M., H.F., 30. No. 10866; 19-8-'55, Patient came in with complete loss of vision in the left eye with anæsthesia and atrophy of the left thenar eminence. Started on 9-7-'57 injection with 5 cc. daily—showed progress with gradual improvement of vision when on the 28th her vision became practically normal with normal sensation and muscle wasting is now very little and both palms on careful scrutiny shows normal.

Condition of the left eye. -5-7-'57. Iritis with exudation in the anterior chamber vision—Finger counting only. Fundus could not be seen due to haziness of media. 28-7-'57—Pupil round, normal exudation has cleared—Fundus could be seen—only few floating bodies in the vitreous. Vision improved to 6/9.

ANXIETY STATES AND CHEMICAL TRANQUILLIZERS*

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ANXIETY state is a clinical condition dominated by an affect resembling fear which is not transitory or slight and is not secondary to some other condition. The ability to work and maintain social relationship is affected. The bio-chemical changes in the body are inter-related to emotion. The organs of the body are sound and healthy. Emotional tension acting through the autonomic nervous system influences the body chemistry, which in turn, reacts on the emotional life. Anxiety state must be differentiated from fear. Fear is usually related to appreciated danger whereas an anxiety has no relation to a particular threat. Fear is often related to the body whereas anxiety is unrelated to it. Fear lasts only for a short term whereas anxiety continues for an indefinite term. Fear makes the individual survey himself dispassionately while anxiety state involves the individual totally. Every one of us is subject to anger, jealousy, malice, moods of frustration, superstitious fears and unaccountable pains and emotions but they are transitory and are not marked, but when the fear becomes morbid and results in irrational ideas highly charged with emotions, it constitutes an anxiety state.

In claustrophobia (inability to remain alone) fear of pregnancy, fear of the dark, fear of crowds etc., the individual blames the external causes which are usually harmless but a morbidity is responsible for the fear. He is unable to overcome his fear complex because his fears are quite irrational and however much he tries to escape from them, he is unable to overcome them. Morbid thoughts cause organic disorders though there is actually no organic disease.

Everyone must maintain some sort of equilibrium between the demands and pressures of the outside world, his conscience and his satisfaction of his instinct. Some persons break down during the ordinary business of living, others show remarkable resistance to all that life can do to them. There is tension in the voluntary musculature. It often outlives the original anxiety state by producing bad postural habits which perpetuate the condition. There is inability to relax. Restlessness, fatigue and inability to get off to sleep are present. Chronic over-activity of the autonomic nervous system is present. The sympathetic and the para-sympathetic are both over-active and are in a state of varying equilibrium. The anxiety state is not always a continuous malady of steady intensity. There may be intense anxiety attacks which are of short duration, the patient feeling quite well sometimes in between the attacks.

*Specially contributed to the ANTISEPTIC

Wolf and Wolff (1942) have demonstrated that the problem of desire, greed and repressed appetite disturb the digestive tract. The emotional repressions are expressed on the physical level in terms of pain or disorder of the stomach.

Treatment:—New drugs and reports of their usefulness in anxiety states are flooding the market. Recent emphasis on psychosomatic approach in medicine has brought into the market many drugs and the practitioner is prescribing these either to reduce anxiety and tension accompanying an already diagnosed bodily illness or when there is a state of abnormally increased anxiety or depression without any affection of any system in the body. Though these tranquilizing drugs are useful in a way, there is a prospect of precipitation of psychoses in many patients. We should be very careful about using these drugs.

The drugs in use may be classified under three headings:—(1) Depressants of the central nervous system, (2) stimulants, and (3) depressants of the central nervous system with local action especially on the autonomic nervous system.

Depressants.—Formerly the bromides held the field for sedation but the amount of chronic ill-health caused by excessive bromide administration led to the discontinuance of this drug. Next came the barbiturates. 'Front Line' barbiturate sedation in the Second World War prevented many cases of acute neurosis becoming chronic. Barbiturates are very valuable as a psychiatric first aid to prevent aggravation of acute neurosis. It is of doubtful value in chronic neurosis. Some think that it is better for a chronic neurotic to work with barbiturate sedation than to be idle without it. Barbiturates are habit-forming and so unsuitable for prolonged use. Further the withdrawal of the drug produces total incapacity for work. The short-acting barbiturates, amylo-barbitone or quinol-barbitone, are more effective than the long-acting ones like barbitone sodium and phenobarbitone. Patients with panic attacks in well-defined situations which can be anticipated can usefully take ¾ to 1½ gr. about half hour before the attack to obtain a sense of well-being. The withdrawal of this drug must be gradual. Methyl pentynol (Oblivon, Somnesin) and Mephenesin, Lissephen, Myanesin and Halabak are milder in action than barbiturates.

Stimulants.—Amphetamine, Dexamphetamine and Methylamphetamine are reputed to relieve the common symptoms of mental and emotional distress by lifting the patient's mood. Drinamyl is a balanced combination of Dextro-amphetamine sulphate and amino-barbital. Drinamyl directs the energy that causes the psychosomatic symptoms into the proper channel for the cellular life and gives the patient a feeling of well-being and peace of mind. The new stimulants are Meratran and Frenquel, benzhydrol group of drugs.

'Meratran' is 2-piperidyl benzhydrol hydrochloride. It produces a marked increase in purposeful activity more intense than that produced by amphetamine without its ill-effects. There is no irritability or anorexia and it does not affect the B.P., heart-rate or respiratory functions. The phase of stimulation is not followed by a phase of depression. This drug is definitely contra-indicated in all cases showing anxiety and agitation, since it enhances these symptoms. In reactive depression it is very useful. It is better to start with a dose of 1 mg. *t.d.s.* and then gradually increase the dose to 2·5 mg. *t.d.s.* This drug is very useful in combating reactive depression uncomplicated by anxiety or obsession. In the hysterical type it usually does good, though not always. It is of use also in endogenous depressions according to American workers but workers in England do not confirm the American view; they say that such patients got worse with Meratran. The chief drawback is its tendency to produce an exacerbation of the pre-existing anxiety and cause a flare-up in the mental condition.

'Frenquel' is prescribed in 20 mg. tablets, 1 to 3 tablets a day. No complications result from its use. Patients with senile confusional states and hallucinations are greatly benefited by this drug. It is not very useful in obsessional neurosis and anxiety states Recurrent types of depression respond well to it. When combined with E. C. T. it is useful in early schizophrenics.

Local action depressants.—Chlorpromazine is of very great use in obsessional neurotics and in anxiety states where any form of leucotomy is not necessary. Monosymptomatic and chronic obsessions and paranoid states in a schizophrenic setting are maintained in good health for long periods on suitable doses of this drug. The complications are jaundice and a sudden supervention of depression.

'Raudixin' and 'Reserpine' (Rauwolfia alkaloid) are useful in anxiety states associated with hypertension. They also relieve the tension in some chronic schizophrenics, but produce a state of severe depression leading to suicide and severe psychotic disturbances.

'Miltown' (Methyl-propyl-propanediol-dicarbamate) obtainable in 400 mg. tablets is the latest addition to the numerous tranquillizing drugs, producing muscular relaxation and an anticonvulsive effect. It is mainly useful in the reduction of anxiety and tension. It is claimed to have no side-effects.

Psychotherapy by reassurance and explanations in allaying secondary misinterpretations and apprehensions are often of little help. The hysterical patient cannot be convinced that no ball rises from the pit of the stomach to the glottis, nor a tension headache be cured by showing X-ray pictures which show

that there is no sinus infection or tumour of the brain nor any refraction error, nor can a neurotic dyspeptic be cured by a fractional test meal or a barium-meal picture. They do require tranquillizing drugs. A word of warning is necessary. Almost every day we get literature on these tranquillizing drugs and even medical samples. They contain conflicting reports of their untoward manifestations. Chemical tranquillizers are indicated only in certain definite conditions and none of them must be looked upon as a routine handy remedy in the treatment of minor anxiety states in general practice.

Case 1 :—Miss X., aged 18, developed unconsciousness in the evening. Would not open her mouth or eyes nor respond to calls. No organic lesion. Hysterical manifestations. After applying smelling salts to her nose, she opened her eyes and mouth. Half a tablet of Miltown was put inside the mouth and the patient made to swallow it. In half an hour, she woke up as if from a sleep and became normal.

Case 2 :—Mrs. Y., aged 25, had hysterical convulsions and no organic lesion was detected. Treated with Miltown tablets ½ b.d., she recovered completely in 12 hours.

Case 3 :—Mrs. Z., aged 30, had monoplegia of left upper extremity; B.P. normal; Wassermann test negative; Heart normal; Drinamyl tablets 1 *t.d.s.* were given for 4 days; complete recovery resulted.

Case 4 :—Mr. A., aged 20, complained of his heart suddenly stopping and his whole body going to bits. He was sitting on the chair in a state of extreme anxiety awaiting death—heart and pulse normal; no organic lesion. Drinamyl tablets 1 *b.d.* for a week cured him. He had a relapse after 3 months of the same complaint. Drinamyl one *t.d.s.* for 3 days cured him completely.

Case 5 :—Mr. X., complained of headache coming on in the evenings after office hours. He gave a history of a financial loss incurred by his son-in-law, who had come to stay with him after the loss. Eyes showed no refractive error; B. P. normal; urine normal. He was put on Drinamyl tablets 1 *t.d.s.* for 10 days. He soon became his former self marvellously.

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VITAMIN HAZARD

Massive doses of vitamin A can cause loss of hair, nausea, general weakness and hæmorrhage into the skin and mucous membranes. Reducing the vitamin dose to normal levels relieves the symptoms, restores normal condition.—(Drs. Dale W. Creek, Lawrence M. Nelson and Kenneth Jay McNiece, Santa Barbara, Calif., *American College of Gastroenterology*, Boston, Oct. 23, via *G.P.*).

TREATMENT OF SMALLPOX, ACNE AND OTHER MARKS BY 'SAND PAPER' SURGERY OR DERMO-ABRASION (PLANING) *

(In the form of questions and answers)

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1. *What is 'Sand-paper' Surgery or Planing and why is it so called ?*

Sand-paper surgery or planing of the skin first done in the United States by Dr. Iverson is a method of improving the texture of the skin by a process of planing off various thicknesses, in a painless procedure. Originally Iverson used sandpaper but now burrs attached to an electric dental drill is used.

2. *Is this a well-established method of treatment ?*

In fact it is the only method of treatment with sure results and is practised very extensively in the United States and Europe and now in India also.

3. *What is the principle of the treatment ?*

The purpose of the treatment is to level the surrounding healthy skin to the level of either the depressed or elevated unhealthy skin. The "new" skin that is formed is usually fresh and pink. The improvement in the tone and the texture of the skin gives a mental uplift or boost to many patients.

4. *Is the operation completed in one sitting or are more sittings required ? How much is the improvement in one sitting ?*

Improvement depends on the depth of the marks and also of the patient's skin; deep marks require multiple sittings. After the first sitting there is 40 to 50 per cent improvement and the marks become fainter. The usual number of sittings vary from 4 to 6 per person.

5. *At what intervals can the sitting be repeated ?*

The second planing is repeated after 6 weeks and not before; after 6 weeks it may be done at any time. Usually for school and college-going students it is advisable to take the sitting in the 1st week after the holidays start.

6. *What is the actual procedure ?*

The prospective patient is usually admitted to a Nursing Home in the morning, and is told to starve in the morning. An injection is given by which the patient falls asleep and only wakes up after everything is over. The surgeon planes the skin to the required level and no further. A sterile gauze is applied to the planed part. The patient recovers from anæsthesia in a few minutes and is perfectly all right on the same afternoon.

* Specially contributed to the Antiseptic.

7. *Is there any pain after the planing?*

For the first 2 days after planing the patient feels as if there is a slight warm sunburn, but no pain. The planed area is moist for 2 days and a crust forms. The part becomes slightly swollen for 2 or 3 days and this is to be expected. Crusts fall off in a week's time leaving behind fresh pink "new" skin. Redness persists for several weeks but eventually fades away.

8. *Is the whole face treated at one time?*

Yes. This is the general method as it avoids any spotted appearance on the face.

9. *What time does the operation take?*

Usually it takes 30 to 40 minutes.

10. *When can one resume normal diet?*

On the same day of the operation.

11. *Is penicillin given after planing?*

Though not absolutely necessary, all cases are given penicillin for 3 or 4 days to ensure for smooth healing.

12. *How long does the patient stay in the hospital?*

The patient can return home on the same afternoon. Up-country patients prefer to stay in the Nursing Home for a few days.

13. *When can the patient go to work and move in society?*

The patient will probably want to stay out of contact with the public for a period of 8 to 10 days. Women can put on a prescribed lotion make-up which gives the appearance of a healthy glow; but social functions may be avoided for a fortnight. Men can take a shave from the 6th or 8th day.

14. *When can the patient travel?*

After a week's time, the patient can travel but should avoid infection with dirt and dust for 2 weeks. Direct sunlight and windburn are to be avoided for a month or longer.

15. *Is the operation risky to life?*

Not at all.

16. *Is the operation done even when active acne pimples are present?*

Yes, as a matter of fact planing is beneficial and in some types of acne it is the most effective treatment known today.

17. *Are there any subjective changes in a patient undergoing planing operation?*

Yes, besides the foregoing anatomic improvements resulting from planing there are even more gratifying subjective changes. Such changes are not only evident in the facial expression and general appearance but are also reflected in the patient's social relations. A timid stenographer for example, received two proposals for marriage six months after she was planed. A fifty-four-year-old woman, who desired to have her small-pox marks removed, realized her true objective when her friends remarked that she looked 15 years younger.

To the patient the planed skin is soft, pink and fresh in appearance and it feels "more alive."

ARTIFICIAL EPISCLERAL SCHLEMNS CANAL FOR JUVENILE CONGENITAL GLAUCOMA*

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The modern conception about the pathogenesis of juvenile and congenital glaucoma is maldevelopment at the angle of the anterior chamber, mostly maldevelopment of the Schlemns canal leading to defective drainage of the aqueous humour from the anterior chamber.

Goniotomy operation which is the operation of choice in such cases requires costly equipment like the gonioscope etc. to achieve ultimate success.

The few cases of goniotomy in juvenile and congenital glaucoma I have come across have not impressed me at all. I have therefore, adopted the following surgical procedure for these cases which have given good results in my hands.

FIG I

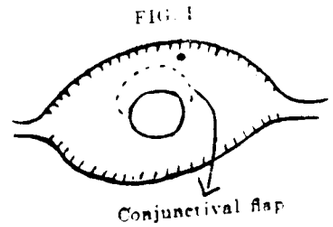
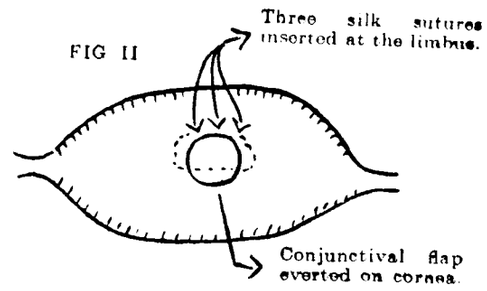


FIG II



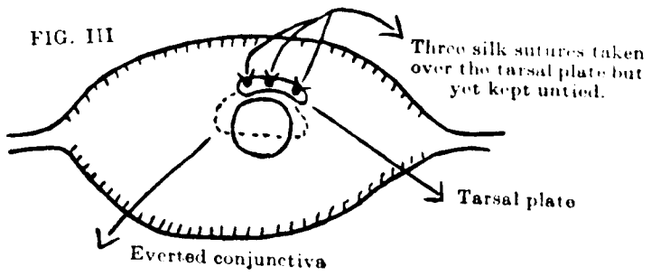
I take the conjunctival flap (*Fig. I*) along with subconjunctival tissue as in sclerocorneal trephining or iridencleisis from 3 to 9 o'clock (upper half circumference of the limbus) and dissect it with a Lang's or Tookes knife as far forward over the cornea as possible. Then I insert three episcleral silk sutures (*Fig. II*) at 12 o'clock, 10 o'clock and 2 o'clock as far forward as possible near the limbus making allowance for a keratome incision at the limbus to open the anterior chamber; just in front of

Specially contributed to the 'Antiseptic.'

these sutures a keratome incision is made and enlarged with Castrovæjo corneal scissors to complete the opening from 3 to 9 o'clock.

Then an elliptical piece of tarsus is taken from the patient's upper lid if it is healthy and nontrachomatous; otherwise a piece of cartilage from the external ear is taken and fashioned to suit the curve of the limbus. The width of the piece should be about 3 mm. or so and the anterior concave side of the piece should be thinner than the posterior convex side.

FIG. III



After turning the conjunctival flap over the cornea, the piece should be adjusted and fixed over the sclera at the site of the sutures by means of the latter which are brought above the piece in the centre of its width at these 3 places (12, 10 and 2 o'clock)

FIG. IV

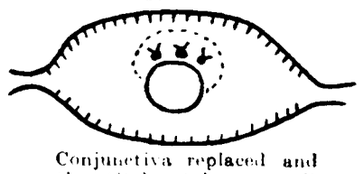
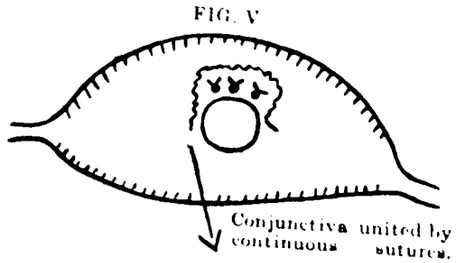


FIG. V



as in (*Fig. III*). The sutures are not tied at this stage but are brought above the corneo-conjunctival flap almost at the junction of conjunctiva with the cornea by entering the flap from underneath as in the case of the tarsal or cartilage plate and tied over there (*Fig. IV*). The two cut conjunctival edges are united by continuous sutures (*Fig. V*). The usual dressing is done daily or on alternate days and the sutures removed after about a week.

PRECAUTIONS:—Before taking the sutures over the conjunctiva at the limbus from underneath the flap of the latter should be stretched thoroughly well above towards the forehead so that (*i*) the sutures are fixed almost at the junction of the corneo-conjunctiva and (*ii*) the plate keeps the anterior chamber slightly open by keeping away the cornea from coming in contact with the cut scleral margin.

Advantages:—This operation requires very little or only cheap equipment as compared with the goniotomy operation and the results are much better and permanent.

Disadvantages:—(1) It is more time-consuming and (2) needs greater technical skill.

NOTE:—If two narrow strips (each 1 mm. wide) are cut out from the width of the plate at 11 o'clock and 1 o'clock after fixing the plate on the sclera by sutures it might prove a still better filtering channel and a genuine Schlemns canal, though personally I have not yet tried it so far. Two deep grooves at these two places in the plate made by a sharp cataract knife might serve the same purpose as taking out the strips.

Two cases will illustrate the points:—(1) Mr. Z., a case of absolute glaucoma was operated in July 1957 for his right eye. Tarsal plate from his own upper lid was grafted. Before operation the right eye tension was 55 (Maclean's tonometer). After operation tension came down to 30 Maclean's which was again checked after 2 months in the 1st week of September and found to be the same.

(2) R., admitted on 26-7-'57, discharged on 23-8-'57. Juvenile glaucoma of the left eye. Tension 35 before operation. Right eye ulcer cornea resulting from phlyctenular keratitis. Cartilage from the left ear was grafted and tension came down to 15 after operation. The patient did not come back for a check-up of the progress, obviously because there was no need, the result of the operation having given her permanent relief.

STANDARD FOR ENRICHMENT OF MILLED RICE

A standard for enriching milled rice was published by the Food and Drug Administration on August 27, 1957 specifying vitamins and amounts to be added by rice packers.

The action is the outcome of recommendations by the National Research Council and is based on Food and Drug Administration proposals published December, 28, 1956, and on written comments on these proposals.

Under the standard, each pound of milled rice labelled "enriched" must contain 2 to 4 milligrams of thiamine, 1·2 to 2·4 milligrams of riboflavin, 16 to 32 milligrams of niacin, and 13 to 26 milligrams of iron. The cost of these enrichment ingredients would be about 5 cents per 100 pounds of rice. The rice packer who chooses to enrich his product further with vitamin D, or calcium, or both, must add 250 to 1,000 U.S.P. units of vitamin D and 500 to 1,000 milligrams of calcium, to each pound of his product.

At present, no rice on the market fully conforms to the standard. South Carolina's compulsory enrichment regulation matches the new Federal standard in all aspects except that the use of riboflavin is optional.

The standard allows two enrichment processes. In one process, a proportion of the kernels is impregnated with the vitamins. The standard requires packers of this product to apply tests for insuring that the loss in rinsing is kept to a minimum. In another process, all the rice is coated with the enriching ingredients. In this case, the product must be labelled with the caution against rinsing before or draining after cooking.

The standard becomes effective 6 months after publication unless objections are made. Thirty days are given to file objections and to request a public hearing.—(*Public Health Reports*, U.S.A., Nov., 1957).

PRINCIPLES OF MEDICAL ETHICS

Preamble :—These principles are intended to aid physicians individually and collectively in maintaining a high level of ethical conduct. They are not laws but standards by which a physician may determine the propriety of his conduct in his relationship with patients, with colleagues, with members of allied professions, and with the public.

Section 1 :—The principal objective of the medical profession is to render service to humanity with full respect for the dignity of man. Physicians should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion.

Section 2 :—Physicians should strive continually to improve medical knowledge and skill, and should make available to their patients and colleagues the benefits of their professional attainments.

Section 3 :—A physician should practice a method of healing founded on a scientific basis ; and he should not voluntarily associate professionally with anyone who violates this principle.

Section 4 :—The medical profession should safeguard the public and itself against physicians deficient in moral character or professional competence. Physicians should observe all laws, uphold the dignity and honour of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

Section 5 :—A physician may choose whom he will serve. In an emergency, however, he should render service to the best of his ability. Having undertaken the care of a patient, he may not neglect him ; and unless he has been discharged he may discontinue his services only after giving adequate notice. He should not solicit patients.

Section 6 :—A physician should not dispose of his services under terms or conditions which tend to interfere with or impair the free and complete exercise of his medical judgement and skill or tend to cause a deterioration of the quality of medical care.

Section 7 :—In the practice of medicine a physician should limit the source of his professional income to medical services actualy rendered by him, or under his supervision, to his patients. His fee should be commensurate with the services rendered *and* the patient's ability to pay. He should neither pay nor receive a commission for referral of patients. Drugs, remedies or appliances may be dispensed or supplied by the physician provided it is in the best interests of the patient.

Section 8 :—A physician should seek consultation upon request ; in doubtful or difficult cases ; or whenever it appears that the quality of medical service may be enhanced thereby.

Section 9 :—A physician may not reveal the confidences entrusted to him in the course of medical attendance, or the deficiencies he may observe in the character of patients, unless he is required to do so by law or unless it becomes necessary in order to protect the welfare of the individual or of the community.

Section 10 :—The honoured ideals of the medical profession imply that the responsibilities of the physician extend not only to the individual, but also to society where these responsibilities deserve his interest and participation in activities which have the purpose of improving both the health and the well-being of the individual and the community.— (*Jour. of American Medical Assocn.*, 27-7-1957).

CLINICAL TRIALS WITH A NEW ANTIMYCOTIC*

In the Treatment of Fungus Infections of the External Ear

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Introduction.—A clinical trial with Multifungin* in the treatment of fungus infection of the external ear was undertaken in the Ear, Nose, Throat Department of the Municipal General Hospital, Sion, Bombay. It lasted for two months from September 1957 to November 1957. During this period only cases of fungus infections of the external ear were specially selected from a large crowd of O.P.D. attendance, and were subjected to the drug either in the powder form or as solution. The patients were re-examined on alternate days till a complete cure both subjective and objective was noted. The response for follow-up clinic was extremely good. Fortythree cases in all were treated and the follow-up lasted for 3 to 4 weeks. The drug was applied by one of us in person and the patient was instructed not to use any other medicine without our knowledge nor was any home treatment prescribed for him.

Multifungin contains a highly active fungicidal compound 5-bromsalicyl-4'-chloranilide which not only destroys fungi but inhibits the growth of bacteria especially staphylococci, which commonly complicate fungus infections. *Multifungin solution* contains this fungicide in 2% concentration with 1% Soventol salicylate which has an antipruritic action as well. *Multifungin powder* does not contain Soventol. The antihistamine helps in preventing allergic or in reactions, when used as powder or solution.

Material and methods :—As stated already, 43 patients with mycotic infection of the external auditory canal were treated in the Municipal General Hospital (ENT Department) during the two months. Only those cases which showed obvious growth of a fungus in the external ear were selected for treatment. Cases showing only signs of furunculosis were not included in this series because we had not decided whether it was bacterial in origin or due to a fungus. This inclusion would involve considerable bacteriological investigations and study. However, patients showing obvious fungus growth with secondary infection of the external auditory canal were included as it would help in assessing the real value of the drug under investigation.

(*Marketed in India under the trade name "Multifungin-Knoll")

Out of the 43 cases so treated, the age-incidence was seen to be highest in those between 20 and 30. Our youngest patient was 8 and the oldest was 60 years of age. The sex-incidence was almost equal. The main symptoms for which the patients sought relief were in order of frequency :–pain and itching; pain, itching and deafness; pain only or itching only. (See *Table 1*). The commonest symptom was pain and itching which was noted in 21 patients. The duration of the symptoms varied between 5 and 10 days. There were, however, 7 cases in which the duration varied from 1 to 3 months and these were really chronic cases. The remaining 36 cases were treated while in the acute phase. Besides the main symptoms these patients also complained of deafness, tinnitus and or vertigo. In this series 26 patients complained of some degree of deafness, 9 had tinnitus and 2 had giddiness. The pain complained of by patients was usually not very severe but was only a moderate dull pain, mostly bearable. In no case was the pain so severe as to require a strong sedative for relief. Itching was also of a peculiar type. The patients usually feel better when the ear has been cleaned; the more you cleaned the ear, the better they felt. The itching was of a moderate type but enough to make the patient uncomfortable and conscious of the disease. Deafness was of the conduction type, due to a mild irritation of the tympanic drum. Out of the 43 patients, 7 had bilateral affection—probably a cross infection from the opposite ear due to unhygienic means of cleaning.

TABLE 1

Symptomatology of our patients

Symptomatology	No. of patients
Pain and itching ...	21
Pain, itching and deafness ...	8
Pain only ...	7
Itching only ...	7
Additional symptoms	
Deafness ...	26
Tinnitus ...	7
Vertigo ...	2

In fact the selection of cases depended upon the detection of the fungus in the external auditory canal. To the naked eye, the fungus growth gives the appearance of a moist-looking coating of a dirty or brownish-grey colour with occasional scattered yellow or black mouldy spots. The mycotic membrane, velvety in texture, gives the appearance of tiny dotted blackish spots on a whitish background. The mycotic membrane is distributed chiefly over the osseous portion of the canal, although the drum head and the cartilaginous portion of the canal may also be covered by it. The appearance is quite typical and easily diagnosed by a person who has once seen it. The mass *can* be removed by syringing, but recurs rapidly. The underlying skin is red, slightly swollen, and largely denuded of epidermis. The epithelium of the auditory canal may show desquamation, scales and fissures.

Though our work right through depended only on the clinical diagnosis of the apperance of the fungus, we did study the fungus microscopically in 5 cases and were able to demonstrate mycelia, spores and spore-bearing stalks. The spores which most commonly cause the disease belong to the species: *Aspergillus niger:* A. flavus and A. fumigatus. Further bacteriological study of the fungus was not undertaken.

We divided our patients into three grades on the basis of the intensity of the growth :—

GROUP I having a mild growth (+); GROUP II with a moderate growth but not occluding the external auditory canal completely (++) and GROUP III showing a heavy growth completely filling the external auditory canal and obscuring the tympanic membrane. (+ + +) *vide Table 2.*

TABLE 2

Showing the clinical growth of the fungus in the external auditory canal

Fungal growth	No. of patients
Grade I (+) ...	15
Grade II (++) ...	22
Grade III (+++) ...	6

Table 2 shows the grouping of our cases. In our series there were two patients who developed fungus infection of the mastoid-operated cavities. In both radical mastoid operation was done at intervals of 2 years and 6 months respectively. Their wounds were being dressed with the newer antibiotics and fungus infection set in as a complication. The fungus growth was removed in all these cases by syringing out the ear and the condition of the external auditory canal and the drumhead was noted. The external auditory canal was normal in 26 cases while in 17 cases the external canal showed signs of epithelitis, excoriations, fissures or furunculosis. Secondary infection of the external canal due to pyogenic organisms was noted in the latter group and had aggravated the symptoms of the parent infection. The organisms, most commonly known to complicate fungus infections are staphylococci, streptococci, B. Proteus and Pseudomonas æruginosa etc.

The appearance of the tympanic membrane is given in *Table 3*. The majority of patients showed a normal appearance in the tympanic membrane. We had 3 cases with a perforation of the tympanic membrane. It is possible for the fungus to grow into the middle ear *via* the perforation; we had no cases of involvement of the middle ear.

TABLE 3

Showing the appearance of the tympanic membrane in association with fungus infection

Condition of drumhead	No. of patients
Normal T. membrane ...	24
Congested drumhead ...	14
Perforation in T.M. ...	3
Radical mastoid cavities ...	2

TREATMENT :—We treated 26 of the 43 cases, with Multifungin powder and the remaining 17 with Multifungin solution.

The technique of application varied with the form of the drug used.

(1) *Treatment with Multifungin Powder* :—The fungus growth and the mycotic membrane were first syringed out using sterile water at 100°F. The mass must be entirely evacuated from the external canal. The ear canal is made completely dry by mopping with sterile cotton swabs. It is well known that the fungus growth is accentuated in moist canals (hence the higher incidence in swimmers and bathers) and therefore, utmost care must be taken in keeping the canal dry before treatment. Multifungin powder is next sprayed on the canal walls. It is necessary to spray as much powder as will form a thin layer of powder in contact with the external canal. Care must also be taken that too much powder is not sprayed into the canal at a time, in order to prevent the formation of a hard cake in the canal, making future examinations and dressings very difficult. At the next visit the ear is again cleaned dry, excess powder is removed by a cottonswab and a fresh sprinkle is administered. The patient was asked to attend the O.P.D. on alternate days, till all the symptoms abated.

Table 4

Showing the effect of multifungin powder on pain

No. of applications	No. of patients relieved
2	... 19
3	... 1
4 to 6	... 5
Failures	... 1

Table 5

Showing the effect of multifungin powder on itching

No. of applications	No. of patients relieved
3	... 9
4	... 4
5 to 6	... 6
7 to 8	.. 3
Failures	... 4

Note:—Itching alone persisted in 2 patients otherwise cured.

Table 6

Showing the effect of multifungin powder on fungal growth

No. of applications	Disappearance of fungus clinically in No. of patients
2	... 11
3	... 8
4 to 6	... 5
Failures	... 2

(2) *Treatment with Multifungin Solution* :—The details are essentially the same. After evacuating the fungus mass and the mycotic membrane the ear is mopped completely dry. A gauze-wick saturated with Multifungin solution is inserted into the canal and kept in place for 48 hours, *i.e.*, till the next O.P.D attendance day. It is not advisable to use the solution as drops, because the solution is very concentrated. However, the solution diluted with equal parts of glycerine was used as aural drops to be put on the top of the wick in the external canal, so as to help in keeping the wick moistened with the drug all the time. The advantage of using a wick impregnated with the drug as against simple ear drops is that the wick helps to keep the drug constantly in contact with the diseased walls, while the drops do not make such an intimate contact possible. Secondly, the drug is slowly liberated from the gauze wick and is effective for a longer time. Later on we learnt from experience that if the solution is used it would be better if the gauze wick was changed daily rather than in 48 hours as the drug does not retain potency so long. Hence, Multifungin solution used on a wick must be changed every 24 hours, or diluted ear drops used in addition.

Discussion of results.—(*a*) *Effects of the powder* :—The effects of the drug were studied in regard to the relief of pain, relief of itching and the fungal growth.

Tables 4, 5 & 6 (*See* p. 448) are self explanatory.

It will be seen that with two applications of the drug the pain was remarkably relieved in the majority of cases. With 4 applications, the pain disappeared in almost all cases except one which required further treatment. The path for relief of itching is not so rosy. Itching required more intense treatment than pain. A minimum of three applications was required to relieve itching. It was also noted that itching persisted for a long time although no obvious growth of fungus was visible. In four cases itching persisted in spite of more than 8 applications. Finally, a visible check on the fungal growth was maintained throughout the treatment. In 2 cases the fungus growth was not under control even after 6 or 8 applications of the drug. Included in this group are 2 cases with radical mastoid cavities, who proved very resistant to treatment ; this was probably due to a large raw area over which there was an exuberant growth of the fungus. The powder was applied 4 to 6 times before the visible growth came under control. Itching continued even after that

Table 7

Showing the effect of multifungin solution on pain

No. of applications	No. of patients relieved
2	... 7
3	... 2
4	... 1
No follow up	... 4
Failures	... 3

Table 8

Showing the effect of multifungin solution on itching

No. of applications	No. of patients relieved
3	... 3
4	... 5
5 to 6	... 2
No follow up	... 4
Failures	... 3

Table 9

Showing the effect of multifungin solution on the fungal growth

No. of applications	Disappearance of fungus clinically in No. of patients
3	.. 4
4	... 4
5 to 6	... 2
Failures	... 3

and we had to have recourse to other fungicidal agents. In one of these patients the fungus growth was not to be seen although the patient still complained of itching.

(*b*) *Effects of Multifungin solution* :—Out of 17 patients subjected to this form of treatment, 4 failed to appear for a follow-up. There were 3 failures of treatment. The remaining 10 patients persisted with the full treatment till there was no visible fungus in the canal They were then switched on to treatment with multifungin powder (See *Tables 7, 8 & 9*, p. 449).

On an average it took about 2 to 3 applications for the symptoms due to fungus infection to be brought under control. Our observations show that the multifungin powder is more efficacious than the solution. However, it was noticed that the multifungin solution has no irritating effect on the skin of the external auditory canal. There was no case of sensitivity to the solution and no case of flaring up of external otitis or perichondritis following the use of the drug. It may be observed that in patients who complained of itching, multifungin solution controlled the symptom with fewer applications than the powder. This may be due to the fungicidal activity being enhanced by the antipruritic action of its Soventol component. In conclusion, we may say that with fungus infection in the external auditory canal, the powder is helpful in controlling the pain and the fungal growth quickly, whereas the itching is brought under control more quickly by the solution. There were in all 5 patients who did *not* react favourably.

Complications.—When the fungus mass is attached to the drumhead it is advisable to use the powder. In 2 of our cases treated with the solution a tympanic perforation resulted because the gauze-wick was in intimate contact with the drumhead. It is difficult to say whether the drum perforation was caused by the fungus or the drug. The tympanic perforation, needless to say, healed after putting the patient on parenteral antibiotics and using powder insufflation.

Summary.—(1) 43 cases were treated in the E.N.T. Department of the Municipal General Hospital, Sion, for fungus infection of the external auditory canal. (2) The fairly good follow-up lasted for 2-3 weeks or longer. (3) The majority of cases reported relief from pain after 2 or 3 applications. (4) Itching was the only symptom which persisted for a longer time requiring prolonged treatment. (5) Multifungin *powder* was found more efficacious for the relief of pain and for preventing the growth of the fungus; the *solution* was indicated where itching was predominant. The Soventol fraction in the latter probably plays a major role. (6) The drug topically applied has no side-effects like burning or irritation of the wall of the external canal as seen in other fungicidal agents. (7) We had no case of sensitivity to the drug in our study. (8) The drug was found to be useful both for mycotic and super-added bacterial infections.

Acknowledgement.—We thank the Superintendent, Municipal General Hospital, Sion, Bombay-22, for the facilities afforded for our clinical trials with the drug and Messrs. Knoll for a regular supply of the drug—Multifungin "Knoll."

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BRADEX-VIOFORM THERAPY IN DERMATOLOGY

(A Review of 68 Cases)

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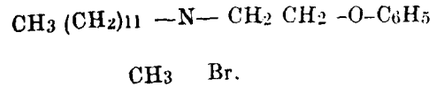
BRADEX-VIOFORM is a preparation containing three active ingredients namely Pyribenzamine 2%, Bradosol 0·05%, and Vioform 2%.

This cream exhibits a very strong anti-mycotic, anti-bacterial and anti-pruritic action. Studies have been made on the use of this cream by various authors in epidermophytosis and other mycotic infections. We have used this cream in a series of varied dermatological lesions in the sub-acute stage with excellent results :—

Chemical composition :—Bradex-Vioform is composed of Bradosol, Pyribenzamine and Vioform in a non-greasy, non-staining, smooth cream base.

Bradosol :—Domiphen bromide is B-phenoxy-ethyl-di-methyl, dodecyl-ammonium bromide with the structural formula given below :—



It is an odourless white powder, which readily dissolves in water to produce a clear solution. It has strong antiseptic properties and is added to Bradex-Vioform in a dilution of 1 in 2,000.

Pyribenzamine :—N-benzyl-N-(a pyridyl)-N-dimethylethylene diamine-hydrochloride is a powerful antihistaminic preparation.

Vioform :—Iodochlorhydroxyquinoline is a useful anti-mycotic agent and is available separately as Vioform cream.

An ideal dermal application should possess the following characteristics : —It should be highly potent; should not stain clothes; should not produce any allergic phenomena; should be stable on storage; should not have any offensive odour and should be reasonably cheap from the patient's point of view.

We firmly believe that Bradex-Vioform* conforms to nearly all these requirements.

Cases for study.—Cases were chosen from those attending the Dermatology Department of the Stanley Hospital, Madras. Diagnosis was established in each case by clinical features and confirmed in the majority of cases by pathological and bacteriological studies whenever possible. Some of the cases had been treated by other medicaments in the same hospital or elsewhere. All cases chosen for study were given Bradex-Vioform for external application and the minimum requirements of internal

*It is manufactured by Messrs. Ciba Laboratories Limited.

medicaments like Vitamin C and B Complex etc.; no case was acute and eczematous in nature. The results were quite satisfactory and are appended below:—

Diagnosis	Number treated	Marked clinical improvement	Fair results	No improvement
Seborrhœic dermatitis	24	17	2	5
Fungus infection including tinea cruris and epidermophytosis	32	14	10	8
Bockhart's impetigo, sycosis barbæ, and folliculitis	8	3	1	4
Atopic and other dermatitis group	4	1	1	2
	68	35	14	19

Remarks.—The response to Bradex-Vioform in the majority of cases tried was quite encouraging, indeed in a few cases spectacular; it was rather surprising that only a small percentage of cases did not respond to the application of this preparation. Even a few cases previously treated with plain Vioform cream without benefit showed good response to this combination.

The anti-pruritic action of Pyribenzamine helped a large number of patients to suffer less from the resultant damage to the skin due to violent bouts of scratching. The anti-pruritic action of Pyribenzamine combined with the antiseptic and anti-mycotic action of Bradosol and Vioform respectively makes Bradex-Vioform an excellent dermal application of high potency for a variety of skin lesions.

Acknowledgements.—We thank the Dean of the Government Stanley Hospital and the Director of Medical Services, Madras, for granting us permission to publish this report. We also thank Messrs. Ciba Pharma Private Limited, Bombay, for their generous supplies of Bradex-Vioform for our clinical trials.

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A CASE OF SOME INTEREST

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On 16-12-'50, at about 1-30 p.m., I was called to see a married girl of 17, who was getting epileptiform seizures at intervals of 15 to 20 minutes. In between the convulsions, the patient tossed about the bed and groaned and did not respond to any questions put to her.

History of the case:—The girl gave birth to a child without any trouble on 24-10-1950, at Mal, (Duars, West Bengal, India). Seven days later, however, she felt severe pain in the left leg, which gradually swelled and became tender. The temperature shot up and she developed Phlegmasia alba dolens. As the condition of the patient deteriorated she was brought down to Jalpaiguri town on 2-11-'50, for better medical aid and was placed under the care of a reputed gynæcologist. She was given penicillin 42 lacs, 6 injections of milk with iodine biweekly and sulphamezathine, sulphatriad with Celin 50 mg. orally, alternately with alkaline mixtures and Ammoket (a Mandelic acid preparation). But she did not improve much, only the temperature came down to some extent.

After three weeks of such treatment the father of the girl changed over to Ayurvedic treatment from 23-11-'50. Thenceforward the patient was improving slowly but suddenly on 12-12-'50 she developed symptoms of persistent vomiting. She could not retain even a sip of water. Again the treatment was switched back to allopathy and she was placed under a veteran physician who injected 50 cc. of 25% glucose with Redoxon 500 mg. I. V. twice a day, and gave tender green cocoanut water orally, ice to suck etc., but all to no purpose. From the early hours of 16-12-'50, the patient started epileptiform convulsions at intervals of 15 to 20 minutes. A few other doctors were called in and all of them diagnosed the case as hysteria and prescribed accordingly.

As the symptoms did not abate in six hours' time, some more doctors were called in and I was one of them. I examined the case and found that the patient was restless and anæmic with a puffed face. The temperature was 99°F, respiration 26, though it could not be ascertained accurately owing to the restlessness of the patient, her pulse was 130 per minute with low volume and tension; B.P. systolic 85 mm. Hg., diastolic 60 mm. Hg.; lungs clear; H.B. rapid, 2nd sound was accentuated in the pulmonary area and there was pre-systolic bruit in the mitral area.

Abdomen:—Tympanitic, the liver was palpable, the spleen was ½" below the costal margin. The left thigh and leg were swollen as compared with the right.

Eye :—Accommodation reflex was lost in the left eye and was partial in the right one. Conjunctival reflex was present in both eyes.

Knee-jerk was lost in left and partial in right one. Other reflexes could not be ascertained due to convulsion and restlessness. During convulsions, there was deviation of the eye balls and mouth on the left side with spasmodic contraction and there was clonic spasm of the left hand and left leg partial on the right side.

After examining the case thoroughly I sent for a pathologist to take blood for M.P., total and Differential counts and the urine and stools for a complete examination. In the meantime, in order to check the convulsions, I injected luminal gr. iii I.M. The pathologists' report was received at 4-30 p.m. which was as follows :—

Erythrocyte—3 millions; Leucocytes—18,000; Poly—80%; Lympho—33%; Mono 5%; Eosino—2%; M.P.—Plasmodium falciparum in the trophozoite and ring forms present in large numbers.

When I hurried to the patient's bed-side, the convulsions had been checked after the luminal injection but the patient was unconscious as before. I, then, injected Quinine bihydro gr. x with 1 cc. Adrenalin chlor—1 in 1000 I.M. into the gluteal region and Crysticillin (Procaine penicillin) 4 lacs I.M. in the deltoid. After 6 hours *i.e.*, at about 11 p.m. another dose of Quinine bihydro gr. x with 1 cc. Adrenalin chlor I.M. was injected.

Next morning *i.e.*, on 17-12-'50 the patient was a little better. Reflexes were normal in both the eyes; of course the patient's look was vacant and the patient was slightly restless and did not answer any question. Another dose of Quinine bihydro gr. x with 1 cc. adrenalin I.M. into the gluteal region and Crysticillin 4 lacs intramuscularly into the deltoid were injected. The bowel was washed with saline.

In the evening the patient looked better, the pulse was 100 per minute; B.P. systolic 100 mm. Hg.; respiration 22; temperature 101°F:, but she could not still answer questions. Another dose of Q. bihydro gr. x with adrenalin was injected and Crysticillin 4 lacs I.M. Next morning *i.e.*, on 18-12-'50 the patient was all right and faintly responded to questions. The pulse was 90 found per minute; temperature 98°F under the tongue; respiration 20; she complained of pain only in the left leg and strangury at the time of micturition. Another dose of Q. bihydro gr. x with 1 cc. adrenalin into the gluteal region and Crysticillin in the deltoid muscle were injected. Orally only an alkaline mixture was prescribed with glucose drinks and green cocoanut water *ad lib*. In the evening another dose of Crysticillin was injected.

Next day *i.e.*, on 19-12-'50 a specimen of urine was sent for macro and microscopical examinations and a catheter specimen of urine for culture.

The report was as follows :—Albumin + +, Pus cells + +, specific gravity 1030, culture showed the presence of B-coli.

Since 20-12-1950, Dihydrostreptomycin ½ g. injection twice a day was continued for 5 days. Gonacrine tablet (M & B) one tablet *t.d.s.* was prescribed orally.

The patient showed spectacular improvement and was relieved of almost all the symptoms; even the longstanding swelling in her leg had subsided.

During the course of treatment she was kept on glucose drinks, green cocoanut water, Ovaltine, Horlicks, milk, barley water etc. But from the fourth day of the disease, she was kept on rice diet with fish soup etc.

After two weeks, Livibron P.D. and Folvron tablets were prescribed to combat the anæmia.

I met that girl accidentally two months later and found her to be in absolutely normal health.

Points for discussion:—1. *Primary* septic infection which continued for 3 months; was it a B.coli infection?

2. *Secondary* :—Malignant malarial infection; onset with gastric troubles followed by cerebral symptoms, after the 4th day, simulating epileptic fits without marked temperature.

3. What was the cause of the Phlegmasia alba dolens? Could that have been due to B.coli infection which however, subsided after a course of Dihydrostreptomycin injections?

———

THE TREATMENT AND PROPHYLAXIS OF SUBACUTE BACTERIAL ENDOCARDITIS

Bactericidal, rather than bacteriostatic, action is apparently necessary for a favourable outcome in treating subacute bacterial endocarditis. Arrest of bacterial growth with subsequent disposal of the organisms by natural bodily defences – sufficient in most infections—are not sufficient here: prevention of relapse depends on elimination of *all* surviving organisms from the endocardial focus. Penicillin and streptomycin, which have bactericidal properties against the chief offenders in this entity, remain the primary therapeutic weapons. Prevention, of course, is the ideal approach, and in all susceptible persons measures should be taken to forestall bacteræmia from the great variety of potential sources: tooth extraction, surgical and diagnostic procedures involving the genito-urinary tract, spontaneous delivery, oral surgery, or, in fact, any procedure that traumatizes a mucosal surface exposed to bacteria. Dr. Ray A. Van Ommen Cleveland Clinic, goes into some detail in discussing the bacteriology, treatment, and prevention of endocardial infection.—(*Cleveland Clinic Quarterly*, January, 1957).

CERVICAL SPINAL CORD INJURY WITHOUT FRACTURE

Compression of the spinal cord by sudden protrusion of an intervertebral disc is probably responsible for cervical cord injuries without roentgenographic evidence of fracture of the vertebræ. If the injury occurs in flexion, a disc can be propelled posteriorly, damaging the anterior portion of the cord. The disc then returns to its former position. With hyperextension injuries, forward bulging of the ligamentum flavum may be responsible for cord trauma.

Dislocation of a vertebral body, followed by recoil and reduction, cannot be responsible for cord injuries without roentgenographic changes because the vertebrae are held in place by ligaments. The ligaments cannot stretch to the extent of dislocation, and rupture does not occur without accompanying bony fracture.

Of 100 patients with cervical spinal cord injuries, 3 had no roentgenographic alterations. The manner of injury indicated acute flexion of the cervical spine at the time of trauma.—(*Mil. Med.*, *121*: 15-16, 1957, via *Modern Medicine*).

NATURAL FOODS FOR TUBE-FEEDING

Tube-feeding with natural whole foods is a well-tolerated and inexpensive method of maintaining nutritional balance in critically ill patients. Bile, gastric and pancreatic juices, and water-soluble drugs can be added to the food mixtures. A mechanical food pump provides comfort and efficiency, and polyethylene tubes of less than 2·5 *mm.* in diameter are preferred.

Strained baby foods, such as meats and vegetables, can be mixed with fruit juice, milk, or eggs. Sugars, syrups, and fat-free powdered milk added to the strained preparations greatly reduce the cost and increase the caloric content.

Mechanical blenders and juice extractors are satisfactory for small-scale use. When using a blender, seeds and bones should be removed, the jar should not be overloaded, and each jar load should be run for five minutes and then carefully strained. Use of homogenized milk prevents butter-formation, and addition of adequate liquid provides an active vortex at full speed.

Serum mills are useful for bulk food preparations; the size of food particles can be regulated by micrometer adjustment.—(*J. Internat. Coll. Surgeons*, *28*: 273-275, 1957, via *Mod. Med.*, December 15, 1957).

MAGNESIUM AND VENTRICULAR FIBRILLATION

The ventricular fibrillation that follows acute coronary occlusion is difficult to prevent. It has been suggested that abnormal metabolic products or pH changes in the ischæmic areas of the myocardium lead to this fatal arrhythmia. The experiments of Carden and Steinhaus indicate the significance of the magnesium and sodium ions in this mechanism.

In dogs, the left circumflex coronary artery was occluded, and the ischæmic area of the myocardium was perfused, with test solutions. One series of results is shown in the diagram below. Using several types of perfusion techniques, the incidence of ventricular fibrillation was always reduced when the ischæmic area was perfused with Locke-Ringer's solution and solutions of magnesium ion in physiologic saline. The normal serum concentration of magnesium in normal saline markedly inhibited fibrillation, whereas the same concentration in 5% dextrose solution appeared to induce ventricular.—(*Circulation Research*, *5*: 405, 1957, via *G.P.*).

The Antiseptic

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Editorials

NATIONAL HEALTH SERVICE

(Value of Contributory Medical Aid Scheme)

IT is a well known fact that medical relief is conspicuous by its absence in the vast majority of villages in India, which number over half a million. The incidence of disease continues to be high in spite of the numerous important control and treatment measures in progress during recent years, when there has also been a simultaneous realization of the need for more intensive and co-ordinated plans for carrying relief to the rural areas. Our Prime Minister who inaugurated the seminar on the Contributory Health Service Scheme of the Union Government on 18th May 1958 at Vigyan Bhavan in Delhi, reiterated this pressing requirement in Indian social life. He commended the approach underlying the scheme, which covers about 90,000 Central Government employees and said the medical facilities open to relatively few persons "a drop in the ocean of Indian humanity," should be spread in the right way towards the objective of a National Health Service providing free treatment for all the people of India.

This must however, remain a cherished hope and a distant probability in view of the tremendous and prohibitive cost involved, in relation to the present economic condition of the country. Still it might be possible to do more along the lines of a contributory service, such as is now in operation for Central Government employees. That could be the foundation for a general extension of the idea to the whole country.

Shri NEHRU's plea that an efficient plan to carry medical relief to the rural population should be speeded up, has been the cry for quite a long time but the answer has always been

a shortage of manpower, inability to find doctors who will go to the rural areas, and, of course, also dearth of money. There have been many ways suggested to overcome this difficulty, but none have really appealed to practitioners, with the result that even today, many dispensaries and small hospitals in India are under-staffed. It is still a fact that the emoluments offered for rural medical men compare unfavourably with those paid to others in Government service with lesser qualifications.

Shri NEHRUJI asked doctors and other medical personnel to take to work in villages with "a missionary spirit" and function as "comrades, colleagues and friends" of the people.

He said the big problem of providing medical aid to villages could only be tackled by going in for simpler buildings and less expensive equipment for rural hospitals. "We cannot afford small editions of city hospitals all over the 5,00,000 villages of India. The right approach would be the contributory type—the villagers coming together and putting up simple structures and the local bodies helping to run these medical institutions. We agree with the Prime Minister that in such cases it is always preferable to have the villagers themselves on managing committees with the doctor-in-charge as a member. This would help in creating a feeling of intimacy, instead of making the hospitals look like appendages of a Government functioning at a considerable distance."

"The basic equipment needed by the rural doctor can be kept in a little hut", said the Prime Minister, "the extension of rural medical relief is like the spread of education, where it is the teacher and the student who make a school and not the building. Doctors should recognize and inculcate in the young people whom they teach in medical colleges, the spirit to go to villages, the hilly areas and other remote places. It should be made obligatory on the part of students taking degrees to spend a year or two in villages, before they begin their career."

There is of course a great deal to be said for the point of view of the Prime Minister that experience in rural areas is essential for the fuller training of young medical graduates, but something *more* is necessary than merely the sending of a newly qualified man or woman to some rural area for a year or two. More is also necessary than, as the Prime Minister said, a "spirit of adventure and missionary zeal," although in the present conditions these are of the greatest importance.

Government themselves (both Central and State) should first demonstrate by their willingness to provide better conditions of service and prospects to assure that such men and women as are willing to go into the rural areas will receive just and fair treatment. Taking for instance, the hospitals as they exist at present we find that they are all overcrowded and conditions obtaining in many of them have been distressingly unsatisfactory and difficult. The provision for medical, nursing and other staff is woefully inadequate and while it is so, it may be difficult to get willing and prompt response to the appeals made to doctors to go to villages. Perhaps a short itinerary in rural areas may be made part of the curricular course of training for medical students in the fourth and final years, and in this they should be closely associated with their professors.

Therefore, if medical aid is to be speedily taken to the whole of rural India, an efficient and co-ordinated scheme that will command the co-operation and goodwill of the profession and at the same time readily commend itself to the Government will alone serve the purpose effectively and well.

EMPLOYEES' STATE INSURANCE CORPORATION

Debate in the Lok Sabha on the Annual Reports for 3 Years

A REVIEW of the working of the Employees' State Insurance Corporation was made in the Lok Sabha last month by Shri G. L. NANDA, Minister for Labour, in answer to the several complaints and criticisms made by some members of Parliament. The complaints made related mainly to lack of adequate hospital facilities to the employees, defective and unsatisfactory implementation of the scheme in some areas, non-implementation in one of the larger mills at Kanpur, delay in extending the benefits of the scheme to the families of workers and in the payment of cash benefits under the scheme.

Shri G. L. NANDA, the Union Minister for Labour and Planning, stated that the various aspects of the working of the E.S.I.C. would be thoroughly examined at the forthcoming Indian Labour Conference to be held at Nainital. If it was considered necessary at this Conference, a committee of enquiry will be appointed to investigate into the working of the scheme. While we agree in principle with the Labour Minister that ordinarily quicker results may be had by round table talks, in this case, a representative Committee composed of persons representing the varied interests will *alone* be able to visualize the different view points in their proper perspective and offer practical advice which should be acceptable to the employees and employers in the several States of India.

Shri NANDA was not unaware of the difficulties experienced by the insured persons under the scheme and so he assured that every possible avenue will be explored to set things right. His impression, after having looked into the working of the whole

scheme, was that the officials concerned were really earnest in trying to remedy defects and place the whole scheme on a sounder footing. It cannot be denied that various improvements had taken place during the last few years and as Shri Nanda observed, "The Health Insurance Scheme made a halting start, but has grown rapidly."

As regards '*Hospitalization facilities*' to the insured workers, it cannot be denied that there were not enough beds and that the workers insured under the Scheme were entitled to greater satisfaction both in regard to the quality of treatment and in regard to the extent of facilities promised to them. A dispassionate view should therefore, be taken in by the Committee in judging of the working of the Panel and Service Systems of medical relief in order to assess their comparative merits.

It is of course necessary for the workers to bear in mind the difficulties which come in the way of construction of more hospitals, but that should not stand in the way of Government and the Corporation making determined and organized efforts to quicken the pace of construction.

As to the shortage of reserved beds in hospitals, we know that certain agreed arrangements have been made between the Corporation and the State Governments to remedy the situation. And we are in hopes that the programme would be speeded up, though it may not meet the whole situation all at once because the number of insured workers is steadily increasing apace.

Referring to the demand that the benefits of the health scheme should be extended to the family of the worker, Mr. Nanda said that most of the State Governments have now agreed to the extension of the benefits to the family of the worker. It is reported that the State of West Bengal had not yet agreed to it. This was because they did not want to assume more responsibilities before they were able to discharge those they had already undertaken. In Bombay, we are told, the delay was due to the fact that time was taken in arriving at a basis on which the benefit should be extended. It is, however, encouraging news to hear that the Union Government is taking care to see that whatever stands in the say of realization of this demand—'*Benefit to families*'—is removed.

As regards the non-implementation of the scheme in the large Muir Mills at Kanpur, the *impasse* resulting from the non-payment of the employers' contribution, will soon be solved as a way had since been found out for keeping details of contributory record and payments are now being expedited.

There can be no doubt that in a developing economy, it is the duty of the State to see that the primary responsibility of social security and health of the worker is fixed on the employer, whose contribution to maintain the proper standards should be forthcoming regularly and without delay or stinting. It is also very necessary, in our opinion, to see that the enthusiasm created in the workers for this welfare scheme when it was started, is not allowed to wane because of defective implementation. For the efficient working of the scheme it is necessary to better the service conditions of the Corporation's doctors, compounders and other ancillary personnel.

In this connection we would strongly reiterate our previous suggestions and recommendation relating to the advisability of adopting the Panel system instead of the Service system, and the imperative necessity for Government to take the Indian Medical Association into its confidence and take consultations with them which would certainly help the Government in solving their difficulties and ensuring a proper and successful working of the system, with satisfaction to all concerned.

ENVIRONMENTAL SANITATION AND THE NATIONAL PROGRAMME

It was towards the end of September 1954 that the National Water Supply and Sanitation programme was inaugurated by the Union Government, in order to implement the recommendation of the Environmental Hygiene Committee made in 1949. This programme envisaged the provision of safe water supply and adequate drainage arrangements for the entire urban and rural population of the country in the course of a few years.

The programme as conceived now, comprises giving technical and financial assistance and supply of materials and equipment imported from abroad to the various State Governments for implementing their urban and rural water supply and drainage schemes.

During the last 18 months (September 1954 to March 1956) of the First Plan period, when the programme was in operation, 196 water supply schemes and 58 drainage schemes submitted by the States were included under the scope of this Programme and a total loan of Rs. 829·465 lakhs was distributed to the various State Governments for implementing these schemes.

During the Second Plan period, about Rs. 91 crores have been made available for implementing the water supply and

sanitation programme in the various States. Out of this, Rs. 28 crores have been set apart for the rural water supply and sanitation schemes and the rest is earmarked for the urban water supply and sanitation schemes.

The amount provided during the Second Plan period is about five times the corresponding amount provided during the First Plan period for the urban and rural schemes under this Programme. During the Second Plan period, so far a sum of Rs. 1,336·19 lakhs as loans and Rs. 234·945 lakhs as grants-in-aid (including adjustment of cost of equipment and material) have been paid to the various State Governments. Two-hundred and fifty-eight urban water supply and drainage schemes and 134 rural water supply and sanitation schemes are in various stages of progress all over the country.

During the last 10 years, great stress has been laid on the creation of a suitable organization both at the State and at the Central level for planning and executing public health engineering works. A Central Public Health Engineering Organization has been set up in the Directorate-General of Health Services, Ministry of Health, since September 1954. The Organization has at present seven Public Health Engineers and a Sanitary Chemist working under a Dy.D.G. (PHE). In addition, five U.S. (T.C.M.) consultants are also attached to this organization. It is gratifying to note that during the last 10 years, compact Public Health Engineering Departments or Sections at least have been set up in almost all the States.

The training of engineers and auxiliary personnel in Public Health Engineering has come into prominence during this period and the Health Ministry has given an added impetus to this aspect of the programme by making a provision of Rs. 50 lakhs in the Second Plan.

Under this programme since the beginning of the Second Plan, over 200 candidates sponsored by the State Governments (Engineers and Overseers, Water Works Operators, etc.) have been trained, at the All-India Institute of Hygiene and Public Health, Calcutta, the Engineering College, Guindy, Madras, and the Delhi Water Works. Monthly stipends to the trainees during the period of their training, and examination fees, tuition fees, etc., on behalf of the trainees are also paid by the Government.

We are indeed very glad to note that during the last 10 years the Indian Council of Medical Research has also been taking keen interest in stimulating research in the field of environmental sanitation. Under their auspices a number of field research projects have recently been set up in Bihar, Kerala, Punjab, Uttar Pradesh and West Bengal.

International agencies are also assisting in this endeavour by helping to establish field research projects. The Ministry of Health in cooperation with the Ford Foundation have set up research-*cum*-action projects in environmental sanitation at Najafgarh (near Delhi), at Singur (near Calcutta) and at Poonamallee (near Madras). Though the projects are concerned with the whole field of environmental sanitation, priority has been given to the development of suitable types of sanitary latrines for use in rural areas.

Government have also arranged to procure the services of foreign experts under the expanded technical assistance programme of assisting the State Governments in the implementation of the rural water supply and sanitation projects. One such project has been started at Trivandrum (Kerala State) and a similar project will shortly start functioning in Uttar Pradesh.

We wish to point out that it is quite significant that during the last 10 years, considerable research activity has been stimulated and attention in this respect has been devoted primarily to the problems of environmental sanitation in rural areas. The N.E.S. Blocks, the Community Projects and other social welfare organizations set up by the Central Government are all keenly interested in improving the sanitation of villages in addition to their primary functions directed towards the raising of the standard of living and general economic and social welfare of the nation.

In September 1955, and again in August 1956, the Ministry of Health convened at Delhi, conferences of Public Health Engineers to discuss all the problems connected with the National Water Supply and Sanitation Programme, particularly with reference to the progress of work achieved and the difficulties faced in implementing the programme.

It was as a result of the recommendations of these conferences that the Ministry of Health have appointed a Committee to study the various standards that are adopted in other countries for water supply and sewerage works, and to evolve suitable standards for adoption in India and also to prepare a code of practice for the use of Public Health Engineers in India.

There can be no two opinions that today this is most essential in our country where there has been no uniformity of working standards in scientific matters, especially in water and sewage purification practices, analytical methods and interpretation of results.

As we stated already, greater attention has been devoted during the last 10 years to the field of environmental sanitation and a more concerted effort has been made than ever before. We have covered some ground no doubt, but we still have a long way to go and so let us all pull together to reach the Welfare State.

CARDIAC REHABILITATION IN INDUSTRY

As part of the nationwide study of the rehabilitation of patients with cardiovascular disease, a detailed questionnaire was sent to the medical directors of a variety of industries in the United States to obtain information on the following questions: (1) general characteristics of the industries surveyed; (2) policies regarding employment of cardiacs; (3) actual number of known cardiacs hired; (4) magnitude of the problem, as reflected in the percentage of employees with heart disease, number of heart attacks, number of deaths due to cardiovascular disease, number of terminations due to heart disease, and absenteeism among employees during the preceding year; and (5) experience with workmen's compensation cases among cardiacs. We hoped, on the basis of information obtained in this survey, to better evaluate the problems involved in the rehabilitation of the cardiac in industry.

The medical directors of 19 diversified industries-operating plants in widely scattered areas of the United States and representing a total working force of approximately 251,000 participated. Only 9 of the 19 industries had a stated policy to hire cardiacs, and during the preceding year only 242 were hired in a total of 19,321 new workers employed.

Factors considered of importance in industry's reluctance to hire cardiacs included (1) possible compensation, sickness benefit, or pension liability; (2) the large number of cardiacs already employed who developed their disease while at work; (3) lack of suitable jobs for cardiacs in addition to those already employed, and (4) a variety of lesser factors.

The actual number of compensation settlements for cardiac cases was small in the industries surveyed so that at the present time this appears to be more of a possible than an actual threat of monetary loss to the employer.

Many problems in the rehabilitation of the cardiac worker in industry remain to be solved but progress can be made by (1) education of practising physicians, patients, and industry; (2) continued research in industry and in the laboratory; (3) a broad legislative study of the whole field of workmen's compensation; and (4) continued and increasing co-operation between physicians in private practice and those in industry.—(*J.A.M.A.*, Oct. 1957).

PRIMARY VARICELLA PNEUMONIA

Although pneumonia due to invasion of the lungs by chickenpox virus is not common, it occurs oftener than varicella encephalitis even though the latter is the more frequently recognized complication. Medical texts usually blame secondary bacterial invasion for lung complications in chickenpox, but necropsies reported in four fatal cases revealed pathologic evidence that varicella pneumonia more often develops as a result of general dissemination of the chickenpox lesions. In presenting two cases (one fatal) of their own, the authors review the literature, discuss clinical features, pathology, and treatment. The complication appears to have a predilection for adults, and its potential severity is indicated by the fact that five of the total 19 cases so far reported resulted in death. In their first case the authors used Terramycin with apparent success. In the second case, Achromycin apparently was of no avail. The authors add that the therapeutic value of the newer antibiotics in varicella pneumonia has not been established.—(*N.Y.S.J.M.*, 1957).

GLEANINGS FROM THE MEDICAL PRESS

OBSTETRICS & GYNÆCOLOGY

Pelvic endometriosis : A review of 101 cases.—(*J.A.M.A.*, *164* : 11, 1957, via *Medical Reporter*, January 1958).

Endometriosis is the only condition in which ectopic benign cells invade and infiltrate other tissues. Internal endometriosis is located within the myometrium and is commonly referred to as endometriosis of the uterus, such as foci in the pelvic peritoneum, the ovaries round ligaments, sigmoid, and other structures. Observations are presented on 101 consecutive pelvic laparotomies in which endometriosis was encountered and verified by microscopic examination of the surgical specimen or biopsy material. 42 patients had internal endometriosis (adenomyosis), and 59 had external endometriosis.

The chief symptoms of internal endometriosis is menometrorrhagia, and it occurs mostly during the 5th decade of life. External endometriosis flourishes during the 3rd and 4th decades, and its principal manifestations are pain and sterility. The decision to advise operation depends on the severity of the symptoms, the age of the patient, her marital status, the desire for children, and the extent of involvement. The nature of the operation is governed by the same considerations. For instance, one ovary and the uterus may be preserved in a patient under 35 years of age with severe symptoms in the hope of subsequent conception, although additional surgery of a more radical nature may be necessary later. The severity of symptoms, on the other hand, may overrule all other considerations, necessitating hysterectomy with or without sacrifice of the ovaries. Ordinarily, the ovaries are not removed in patients under 40 years unless they are involved. Severe symptoms should be treated radically regardless of age.

Misuse of hormones and tranquillizer drugs.—(*Journal R.I.P.H. & H.*, Jan. 1958).

The Council of the Pharmaceutical Society has recently drawn attention to the misuse of tranquillizing drugs and sex hormones and urges pharmacists not to supply these unless they are satisfied that the purchaser is taking them under medical guidance.

The sex hormone, stilbœstrol, is especially mentioned. Many of these drugs can be obtained without a prescription, but the number of these products is increasing very materially and it is uncertain whether the physiological properties of all these compounds have been thoroughly studied.

There is no doubt that nervous disorders are very common in our present-day society, but where they do occur they should be treated by qualified practitioners, not by the haphazard use of tranquillizers, sedatives and other drugs of this type. These substances are at best only palliatives and do not go to the root of the trouble. Some more effective control is undoubtedly desirable.

Comparison of regional and general anæsthesia in obstetrics.—(*J.A.M.A.*, Dec. 28, 1957).

General anæsthesia was compared with regional anæsthesia as to its effects on mother and fœtus in 2,856 vaginal deliveries at term. General anæsthesia was used in 2,019 cases, and in 1,022 of these the anæsthetic was cyclopropane. Biochemical data were obtained from maternal and fœtal blood. In addition, three methods of evaluating the condition of the infant at birth were employed, including a special score based on certain cardiorespiratory and neuromuscular observations. The blood of most infants delivered of mothers receiving cyclopropane contained this gas in demonstrable amounts, but there was no obvious correlation between its concentration and the score noted for the infant. The gas probably induced a mild, readily reversible central narcosis. There was no biochemical evidence that it depressed placental function, but

infants born with the mother under general anæsthesia, specifically cyclopropane, were more depressed than those born with the mother under regional anæsthesia.

Obstetric analgesia and anæsthesia in general practice.—(*J.A.M.A.*, Dec. 28, 1957).

The purposes of this paper are fourfold: (1) to re-emphasize the importance of providing safe analgesia and anæsthesia to obstetric patients, (2) to describe the various roles the general practitioner can play in providing such service, (3) to mention current concepts concerning this problem, and (4) to discuss briefly the agents and techniques presently available.

An essential requisite for best results in obstetric anæsthesia and analgesia is co-operation between physicians doing deliveries and physicians giving anæsthesia. The general practitioner participates in the majority of deliveries in the United States; he therefore, plays a significant part in determining the quality of anæsthetic care. It must cause the least possible disturbance to the bodily functions of the mother and infant. Psychological preparation of the mother is important. Medication to produce analgesia should not begin until uterine contractions occur not less than four minutes apart and last at least 35 seconds, with the cervix dilated to 3 cm. Sedatives must not be confused with analgesics and narcotics, and the respiratory effects of various drugs must be watched most carefully. There is no one method of anæsthesia that is best for all obstetric patients. The several methods of general anæsthesia, like the methods for regional anæsthesia, have specific advantages and disadvantages. Some methods are more likely than others to delay the onset of spontaneous breathing in the infant, and it is the responsibility of the obstetric team to make sure that the infant is not harmed by hypoxia.

In selecting the optimal methods and drugs, it is essential to consider many factors, including the physical and mental status of the mother, the condition of the baby, the presence of obstetric and medical complications, the experience and the practice of the physician performing the delivery, and, most important, the ability and experience of the individual administering the anæsthetic. There are many techniques and drugs available that fulfil the requirements of each individual case. Due consideration must be given not only to the advantages of each method but to the disadvantages, the potential hazards and complications.

Relief of pain during the first stage may be effected by psychological preparation of the mother, the use of certain systemic drugs, inhalation analgesic agents, and/or conduction methods. Any of the general or regional anæsthetic methods may be used effectively to produce anæsthesia during delivery. Proper application of these methods will provide optimal pain-relief with minimal or no effects on the mother and infant. However, should the infant's condition be depressed, it is the responsibility of the obstetric team to institute resuscitative measures.

OPHTHALMOLOGY

Improvement in hypertensive retinopathy following adrenal resection and sympathectomy: results in one hundred and eleven patients.–(W. C. Frayer, *A.M.A. Arch. Ophth.*, *58*: 331–336, Sept. 1957, via *J.A.M.A.*, Dec. 28, 1957).

The author describes the preoperative and post-operative retinal changes observed in 111 severely hypertensive patients after a total or a subtotal adrenalectomy combined with the Adson or Smithwick type of sympathectomy. Improvement in retinopathy was noted in 87 patients (78·4%). The highest incidence of improvement was observed in patients with severe grades of retinopathy; improvement occurred in 92% of those with grade 3 hypertensive retinopathy, and all the patients with grade 4 hypertensive retinopathy showed improvement. Hæmorrhages, exudates, and œdema disappeared rapidly, while arteriolar narrowing and irregularity improved more slowly. Improvement in hypertensive retinopathy may appear without improvement in blood-pressure after the operation. The degree of arteriolar sclerosis present preoperatively appeared to have little bearing on the final blood pressure response, and this finding could not be applied to the individual patient as a prognostic sign. Improvement in retinopathy is probably the result of diminished peripheral resistance with consequent improvement in retinal blood flow.

Adenoviral conjunctivitis.—(*J.A.M.A.*, *165*: 12, Nov. 23, 1957).

During 1955–1956, numerous cases of viral conjunctivitis were seen in Toronto in children and adults. From the hospital for sick children comes a report of laboratory findings in 56 of these cases (*Canad. M.A.J.*, *77*: 675, 1957). Eye washings and throat swabs were collected from patients suspected of having adenovirus infection, and 33 adenovirus strains were isolated from the eye washings. In one epidemic traced to use of a swimming pool, adenovirus type VII was implicated, while adenoviruses of types II, III, VII and IX were isolated from sporadic cases. Serologic tests were carried out on paired serums from 15 of the 33 patients from whom adenovirus was isolated. A significant rise in neutralizing and complement-fixing antibody levels was demonstrated in 12 of these patients. In addition, one patient showed a rise in neutralizing antibody titre, one in complement-fixing antibody titre, and one no rise in either.

EAR, NOSE AND THROAT

Modern treatment of sinusitis.—(W. T. K. Bryan, *A.M.A. Arch. Otolaryng.*, *65*: 567-571, June 1957; via *J.A.M.A.*, 19-10-'57).

The sensitivity of the infecting bacteria to antibiotics, the allergic status, and the endocrine function, were studied to establish an accurate diagnosis of the ætiological factors in 111 patients with sinusitis. Most of the patients were cured when these factors were attacked simultaneously and when appropriate drainage of blocked or filled sinuses was employed. One patient had polypectomy. All patients were given local medication to relieve congestion. Other medical treatment, given to 11 patients consisted primarily in antibiotics and allergic management. Vaccines were used for patients with frequent acute infections without detectable defects, in those with prolonged and repeated courses of antibiotics, and in those with bacterial hypersensitivity. Displacement was the reliable treatment of 59 patients during the subacute stage of the disease. Antrum irrigation was indicated for local therapy in 27, and both displacement and antrum irrigation were necessary in 10 patients. The remaining 3 underwent Caldwell-Luc operation. The "wiped nasal smear" offered objective cytological evidence in regard to the nasal mucous membrane.

Allergic rhinitis.—(*Lancet*, 26th Oct. 1955, p 828).

It is often found difficult to control the symptoms of allergic rhinitis throughout the night with anti-histamine therapy and many patients complain that they suffer most in the early mornings. Increasing the night dose, often produces drowsiness or even giddness.

A new drug diphenylpyraline was used in the form of 'Histyl spansule', (supplied by Smith, Kline and French) each capsule containing 5 mg. of the drug. Every patient was given the standard dose of one capsule night and morning. Symptoms were completely relieved in 34 of 43 patients treated with the drug for 4 weeks.

Management of epistaxis.—(*B.M.J.*, 14-12-'57 p. 1435).

The proper treatment is to apply pressure to the bleeding point by pressing hard on the soft part of the side of the nose, or simply by pinching the nose tight between the finger and thumb. The patient is made to sit

on a chair and lean forward, bathe the face with the cold water or ice water if ready at hand. If the head is leaned forward, the blood will overflow at the back of the nose and escape from the mouth. If the head is held back the blood will flow in to the throat and cause spluttering and choking, which will increase the hæmorrhage and anxiety. Deep breathing in and out of the mouth will tend to empty the veins and the neck and stop most nose-bleeds. If this fails the patient must be put to bed and the nose plugged. Nasal plugging and consequent pressure give the vessel time to become obliterated by organized blood clot. Plugs with adrenaline only cause vasodilatation after preliminary vasoconstriction, and so raise the blood-pressure. Further, if these are left for more than 24 hours they will stink and infect the nasal mucosa.

The nasal plug to be effective should contain penicillin and sulphathiazole. A sufficient length of gauze or bandage is wetted to be sufficiently damp for the powders to adhere when the powder is rubbed into it. With or without preliminary cocainization, the nose is packed tight from the floor upwards in such a way that no loose end can fall into the nasopharynx. The plug is left in for four days in severe cases.

A new operation for conductive deafness.—(*Arch. Otolaryng.*, November, 1957 via *M. J. of Australia*).

J. H. T. Rambo describes a new operation to restore hearing in conductive deafness of chronic suppurative origin. The operation, performed in one stage, is designed with a threefold purpose: (i) the elimination of diseased tissue; (ii) the reconstruction of a middle-ear air space; and (iii) the establishment of a new conducting mechanism. A radical mastoidectomy is considered necessary for the elimination of diseased tissue. In chronic disease sufficiently established in the middle ear to cause deafness, conservative measures will not enable the surgeon adequately to remove diseased bone and other material which may be in the middle ear. Plastic reconstruction will break down unless all diseased tissue is removed. The restoration of an air-containing functional middle ear cavity requires an open round window and Eustachian tube. The second part of the operation aims at reconstruction of an air-containing middle ear cavity. In five cases of the first 10 in which this was attempted it was found possible to close total perforations of the drum with a pedicled flap from the anterior canal wall. By combining the new air space with a fenestration procedure it was found possible to obtain good practical hearing. However, cholesteatomatous activity from the in-turned epithelium destroyed all the new drums in three or four months. Split skin grafts from the thigh tended to become distorted and to develop fibrous adhesions. It is possible to take a more adequate pedicled graft from the temporal muscle, and this is thick enough to bridge the middle ear space without actually collapsing into it. A sound-conducting system is created on the fenestration principle, the external semi-circular canal being used for the new window. It is believed that the relatively thick temporal muscle covering the middle ear also provides a loading of the round window, and thus better phase differentiation and better hearing. Pedicled flaps of integument from the external auditory canal are finally placed over the lower part of the muscle flap, thus maintaining an external canal.

SURGERY

Operating-theatres.—(*Lancet*, 25-1-'58).

Perhaps the most significant change in operating-room mechanics in the past twenty years has been, in a sense, a return to Listerism. Antisepsis inculcated an aggressive approach to organisms, which were attacked even in the air; this attitude changed with the advent of asepsis to one rather of peaceful coexistence; and conveniently the hazard of airborne organisms in theatres was almost forgotten, for how could air be sterilized? Yet some

remained vigilant. Hart showed that hæmolytic *Staphylococcus aureus* was the predominant organism in 90% of unexplained wound infections; that this organism was not to be found in recently laundered materials; that the staphylococcus obtained from the skin and sweat of staff and patients was usually *Staph. albus*, almost never hæmolytic *Staph. aureus;* and that *Staph. aureus* could invariably be obtained from the air of the operating-room. Air contamination was worse in winter, and the source appeared to be the nasopharynges of those working in the theatre. After introduction of air sterilization by ultraviolet irradiation, wound infection fell to a hundredth of its previous level in thoracoplasties and mastectomies. In this country Cairns was concerned about airborne infection of neurosurgical cases from similar sources. But the source contaminating the air pool does not always lie within the noses of those working in the theatre: Sevitt found that two cases of tetanus were due to introduction into the theatre of spores from plaster hair being used for building repairs nearby; he indicted the ventilation system, and yet had the discouraging experience four years later of having to report gas gangrene infection due to the still faulty system.

Except for a few hospitals equipped with the plenum heating system, the standard ventilation system during half a century of asepsis has been on the exhaust principle: in order to get rid of steam from the sterilizers and to provide comfortable working conditions for surgeon and staff, air is changed by extraction. The possibility that organisms from outside the theatre might thus be sucked in was long ignored; and so the great majority of our hospitals today, even those built just before the late war, have to face a new era of infection with dangerous equipment. A bulletin just published by the Ministry of Health, the first of a series to help those concerned with designing and planning hospitals, is particularly welcome since it recognizes the *volte-face*—the return to the attack on air-borne organisms. Both ultraviolet radiation and ærosols are dismissed as means of air sterilization. Instead it is recommended that positive-pressure systems of ventilation be installed in all new theatres so that organisms shed within the theatre are blown out, while dust and organisms outside are driven away from its precincts. But installing a positive-pressure system cannot alone ensure security, since the current of air may disturb dust lying on the floor; its direction must be controlled in the light of smoke tests. Moreover, vertical shafts connecting suites of theatres tend to develop into extraction systems owing to a Venturi effect as warm air rises up them, thus nullifying the attempt at positive pressure—yet another reason for constructing theatre suites in horizontal, as the bulletin recommends. There is one quite important omission. Sometimes people outside the theatre—usually members of the medical staff—need to speak to the surgeon while he is operating. This is best done by means of microphone and speaker circuits, which obviate disturbance due to movement in and out of the theatre—movement which Bourdillon *et al* have shown to be followed by an increase in air-borne organisms.

One innovation in the layout of the theatre suite is the inclusion of a recovery room—an admirable recommendation which may nevertheless evoke controversy. All would agree on the need for a site to be set aside where the anæsthetist may readily reach the patient who has just been operated on, while still conducting the rest of the operating-list; a third of all anæsthetic deaths occur within half an hour of the end of the operation, and these are almost invariably due to obstruction of the airway. But some would remove the recovery room from the theatre and place it, as a recovery ward, immediately adjacent; they insist on the need for such a ward not only for immediate post-anæsthetic care but for the first two or three days after operation when the patient can (it is claimed) be better treated in this special ward and the staffing of the ward he has come from

can be correspondingly lightened. Recovery wards are the vogue in the New World, where they doubtless help to reduce the handicap of the scarcity (even greater there than here) of experienced nurses. Where this scarcity is not so great, the other practical advantages of concentrating postoperative patients in a single ward must be set against the disadvantage of requiring them to enter a new environment at a time of special stress. Any patient coming into hospital is quite suddenly alone, with human contacts—those stabilizing factors in life—severed. Accordingly he must set about establishing new contacts, with the staff and his fellow patients. To the surgical patient the new contacts that he establishes before operation are especially valuable in the first few postoperative days.

Surgery of primary pulmonary tuberculosis.—(*Thorax*, *12*: 159, 1957, via *G.P.*).

Surgical intervention in primary tuberculosis of childhood is indicated in five conditions, according to Chesterman. The *first* of these is an acute perforation of a major air passage that causes severe respiratory embarrassment. An immediate bronchoscopic aspiration is often a life-saving measure when this occurs. *Second*, the perforation of a glandular mass into a main airway may cause recurrent episodes of obstruction. In this situation, glands should be excised and the perforation sutured. A *third* indication for surgical treatment is the enlargement of glands causing bronchial obstruction and pulmonary collapse lasting more than one month. The mass should be excised.

The *other two* conditions in which Chesterman recommends operation result from long-standing glandular pressure, causing fibrous bronchial stenosis or superior vena caval obstruction. If bronchial stenosis has resulted, the area may be resected along with adjacent nonfunctioning pulmonary tissue, or the area of stricture and diseased pulmonary tissue, if any, may be resected and the remaining bronchial tissue re-anastomosed. The author advised a careful lysis in the presence of superior vena caval or œsophageal obstruction.

Febrile transfusion reactions caused by sensitivity to donor leucocytes and platelets.—(*J.A.M.A.*, 19-10-'57).

The hypothesis that some otherwise unexplained febrile reactions to blood transfusions may be caused by isoimmunization of patients against the donors' leucocytes was tested in 10 patients who needed transfusions. Five patients (group A) had previously had from 20 to 85 transfusions, had histories of repeated transfusion reactions, and had demonstrable antibodies against the specific normal leucocytes administered during this study. The other five patients (group B) had had only seven or less previous transfusions, with no histories of transfusion reactions. Group A did not experience adverse effects when the blood used for transfusion was so prepared, by centrifuging, as to remove as much as possible of the buffy layer, but all reacted with fever, typical symptoms, and characteristic laboratory findings to subsequent transfusion of the buffy coat which had been so removed. Gronp B did not react adversely to either fraction of the donors' blood. Immunologic evidence suggested that it was the leucocytes rather than the platelets in the buffy layer that caused the reactions. Techniques for removing the buffy coat when blood is prepared for transfusion offer a means of preventing the dangerous reactions that occur when patients, after multiple transfusions, become isoimmunized to donor leucocytes.

Hazards of the immediate postoperative period.—(*J.A.M.A.*, October 19, 1957).

The surgical patient's welfare may be threatened by situations that develop in the interval between the termination of the operation and his arrival in the recovery room. It is essential that his condition be watched closely while his position is changed, the level

of anæsthesia is reduced and the endotracheal tube is removed. This is particularly true if transfusions have been given for blood loss, respiration has been depressed by relaxants, or other factors exist that favour hæmorrhage, embolism, anoxia, or vomiting. The excitement stage sometimes seen during induction has its counterpart in a delirium that sometimes occurs during emergence; the latter can be a traumatic experience to all concerned unless it is properly dealt with. The three primary causes for alarm are hypotension, respiratory obstruction or depression, and excitement. They must be watched for, before and during the transportation of the patient to the recovery room.

Treatment of the agitated individual includes a number of possibilities. If the patient has been in one position upon the operating table for a long period of time, this position should be changed in the bed or the litter. If pain is a factor, a small dose of narcotic (morphine, 5 mg., meperidine [Demerol] hydrochloride, 15 to 25 mg., or anileridine [Leritine], 10 mg., administered intravenously or intramuscularly) is indicated. Chlorpromazine (Thorazine) hydrochloride, in doses of 2·5 to 5·0 mg., or apomorphine hydrochloride, 1·0 to 1·5 mg. in 5 ml. of saline solution, given slowly by vein is often effective. A final method of controlling postoperative excitement in the intravenous administration of a cerebral cortical stimulant, such as caffeine and sodium benzoate or nikethamide.

These medications are not without hazard. All may cause hypotension, retching, and vomiting. The hypotension after the injection of chlorpromazine and less frequently after the administration of a narcotic may be profound. Fortunately, as the anæsthetics are eliminated and self-control is re-established, agitation lessens, and the patient becomes quiet. Time therefore, is on one's side. The experience, however, may be a traumatic one, not only for the patient but for his attendants as well.

MEDICINE & THERAPEUTICS

The clinical significance of sternal tenderness.—(*Lancet*, 11-1-1958).

Bone tenderness in hæmopoietic disorders is well-known (Wintrobe, 1946, Witts, 1946, Whitby and Britton, 1953), and may affect any bone, most commonly the sternum, particularly in leukæmia, polycythæmia, and myelomatosis. Less attention has been paid to the occurrence of bone tenderness in association with metastatic neoplasms and reticulosis, although some workers have reported that diagnostic material may be aspirated more regularly from tender than from non-tender bone.

Marrow puncture, however, is still generally done as a blind biopsy of either the iliac crests or the upper part of the sternum. Although this is satisfactory in the diagnosis of hæmopoietic disorders it probably accounts for the comparative rarity with which neoplasms are diagnosed by marrow examination.

To assess the frequency and significance of tenderness 200 consecutive patients about to undergo marrow puncture were examined for tenderness of the sternum. The bone was palpated from the manubrium downwards, firm pressure being made with the ball of the index finger. Most of the patients who experienced tenderness on palpation also complained of pain on light percussion of the sternum, but the tenderness was elicited less constantly in this way.

Marrow was aspirated from these tender spots or, if tenderness were absent, from the sternum at the junction of its upper two-thirds and lower third.

Of the 200 patients 61 were considered to have tenderness of the sternum. In most cases the tenderness was quite sharply localized to small areas, usually in the lower third of the sternum. Diffuse sternal tenderness was seen in a few cases of metastatic carcinoma, myelomatosis, acute leukæmia, and, most noticeably, in 4 of 6 patients with myeloid reticulosis

as defined by Israels (1951). In these patients generalized bone tenderness and spontaneous bone pain were usual.

Carbarsone toxicity.—(*Ann. Internal Med.*, Sept. 1957).

Radke *et al* report on 1,500 cases of amœbiasis treated with carbarsone; 45 showed toxic reactions. In most of these cases, initially fever, epigastric burning, abdominal pain, diarrhœa, nausea and vomiting were present. The epigastric pain was severe and long-lasting with diarrhœa and epigastric and liver tenderness. The symptoms disappeared on stopping the drug in 36 cases and BAL caused dramatic improvement in nine. There was exfoliative dermatitis in 3 cases, central-nervous system was involved in 5 cases and the central nervous system as well as the liver suffered in one case.

In the arsenic encephalopathy group, severe headache usually occurred first, followed rapidly by apprehension, disorientation, delirium, delusions and convulsions. Two in this group died in spite of anticonvulsants and BAL. In both groups carbarsone was found to be contaminated with arsanilic acid.

Carbarsone toxicity was found to be due to:—(1) Hypersensitivity; an allergic reaction to the arsenic; (2) overdosage in 24 cases; the dose must not exceed 0·25 g. three times daily for an average adult male and twice daily for females and smaller males; a full course should not exceed 10 days nor may it be repeated in under 10 days, and (3) the drug containing arsanilic acid as impurity due to whatever cause, was found toxic to 19 patients, 2 of whom died.

Hæmorrhages from salicylic acid.—(*J. A. M. A.*, Oct. 12, 1957).

To investigate the rather vague impression that salicylic acid frequently causes gastrointestinal hæmorrhages, Dr. Lis Mellemgaard (*Ugeskrift for laeger*, July 18, 1957) reported the findings in a series of 124 patients, excluding those in whom the hæmorrhage might have been due to gastric ulcer, cancer, or varicose veins. Of these, 18 had taken large quantities of salicylic acid shortly before admission to the hospital. Attention is drawn to a vicious circle. Taking salicylates, leads to mucosal bleeding. The ensuing anæmia gives rise to headache which in its turn calls for the taking of more salicylates. Again, the anæmia so often associated with chronic diseases of the joints may not always be due to them but may be the outcome of taking salicylates. Because occult gastrointestinal hæmorrhages are such a drain on the diagnostic resources of radiologists and others, awareness of the dangers of salicylate medication may often prove helpful.

Unheralded pulmonary embolism.—(*B.M.J.*, 23-11-'57, pp. 1209-1212).

Pulmonary embolism accounts for 2 to 3% of all deaths in hospitals. It is suspected when a patient has acute chest symptoms either post-operatively or after prolonged bed-rest. It occurs also in patients who appear to be fit, are active, and have no signs of venous thrombosis, and in these patients diagnosis is difficult; for the clinical picture frequently resembles pneumonia.

Thrombosis of the calf veins may not produce pain or tenderness. In pulmonary embolism signs of thrombosis may be present in the deep veins.

Cohen and Daly report ten cases of this condition, none of which showed any signs of venous thrombosis when first seen, and eight had been well and active up to the time when they first developed symptoms. Nearly all of them had recurrent attacks of pleurisy which did not respond to antibiotics, and there was no purulent sputum. Anticoagulants were useful.

Pulmonary embolism should be considered in cases of recurrent pleurisy or pneumonia not responding to antibiotics, particularly if symptoms and signs are bilateral, even in the absence of signs of venous thrombosis. Blood-tinged sputum may be present.

Transmission of colds.—(*J. Lab. & Clin. Med.*, *50*: 516, 1957, via *G.P.*).

In a study of the effects of certain host factors upon susceptibility to colds, Dowling and his colleagues instilled infectious secretions taken from patients with common colds into the nares of human volunteers. The following interesting results were obtained.

Among 143 *allergic* subjects, 45% developed colds. Among 693 non-allergic subjects challenged in the same manner, 31% developed colds. These differences were statistically significant.

Tobacco smoking and *prior removal of tonsils* bore no relationship to the frequency of development of the experimental common cold.

Ten of the 13 female volunteers who were *chilled* and then given an infectious secretion *during the middle third of the menstrual cycle* developed colds (77%). This incidence was significantly higher than that in subjects similarly treated during the first or last third of the menstrual cycle, or in those challenged during the middle third without being chilled.

These studies may throw additional light on why some persons have more colds than others. Women are known to acquire colds more frequently than men. The influences of endocrine secretions on the nasal mucosa and on resistance to infections are controversial.

CORRESPONDENCE

To, The Editor, ANTISEPTIC, Madras.

Sir,

From the Hindusthan Year Book for 1958, I find that there are *still* two Medical *Schools* functioning in India for the training of licentiates. One which trains L.M.Ps. is stated to be the Bangalore Medical School under the Mysore University, and unfortunately the location of the second is not mentioned.

I, therefore, request you or any of your readers to confirm the existence of such institutions even now and to supply me with detailed information regarding admissions.

P.O. Tisri,
Dist. Hazaribagh
14-5-'58.

A. N. DAS,
Medical Officer,
Chrestien Hospital,
(Bihar).

BOOKS RECEIVED

The Diagnostic Application of Cardiac Catheterization in Some Acquired Heart Diseases—By SHANTILAL J. SHAH. 1958. Pp. 217. (Journal of J. J. Group of Hospitals and Grant Medical College, Bombay). Price Rs. 10.

Respiratory Disease and the General Practitioner—By C.H.C. TOUSSAINT, Pp. 28. (National Association for the Prevention of Tuberculosis, Tavistock House, North, Tavistock Square, London, W. C. 1). Price 7s. 6d.

Modern Drug Treatment in Tuberculosis—By J. D. Ross. Pp. 47. (National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W. C. 1). Price 5s.

Ophthalmic Medicine and Surgery with Sight-Testing—By M. A. KAMATH, M.B., & O.M. 1953. (The Kothari Book Depot, Parel, Bombay 12). Price Rs. 12.

NEWS AND NOTES

Caffeine Plant in Kerala

A Bombay firm will soon set up in Kerala a plant for the production of Caffeine from tea waste.

Sponsored by Unifine Pharmaceuticals, the Rs. 10 lakh plant is expected to go into production by July this year.

The factory will be set up in Devicolam High Ranges and will initially start with processing 1,000 maunds of tea waste a month producing over 1,200 pounds of Caffeine. The capacity will be trebled in six months. The expansion plans include the preparation of liver extract, crude drug extract from nux vomica etc.

The Kerala Government has agreed to grant the firm exemption from excise duty on tea waste etc. The British firm of Kannan Devan Hill Produce Company in Munnar has agreed to supply sufficient tea waste.

The project is a purely Indian one. The machinery and plant will be fabricated in India.

Madras Branch of All-India Dental Association

At the annual general body meeting of the Madras State branch of the All-India Dental Association held recently the following office-bearers were elected for the year 1958. President: Dr. C. S. Raman; Vice-Presidents: Dr. M. L. Freeman and Dr. V. P. Chopra; Hon. State Secretary: Dr. C. A. Pillai; Hon. Joint Secretary: Dr. K. Azuma; Hon. Assistant Secretary: Dr. G. R. Bhat: Hon. Treasurer: Dr. P. N. V. Giri.

Pasteur Institute Association

The Association of the Pasteur Institute of Southern India, at its annual general meeting on 5-2-'58 decided to include representatives from Mysore, and requested the Mysore Government to nominate six officers.

The annual report for 1956-57, presented by Dr. N. Veeraraghavan, Secretary, stated that with the facilities being developed in the Laboratories, the Institute would be in a position to undertake work on any type of virus disease. The Committee felt that the Institute should concentrate on starting work on respiratory and intestinal viruses. During the year, 12,000 cc. of plasma were prepared and distributed to various hospitals in Nilgiris and Coimbatore. In 1956, antirabic treatment at the Institute was given to 33,675 patients.

The Institute carried out, on behalf of the W.H.O. a number of researches. Two workers from the Central Public Health Organization of Afghanistan underwent training at the Institute for a year. Over 50,000 doses of influenza vaccine were prepared for distribution to various States.

Asian Pædiatric Congress

The First Asian Pædiatric Congress was held at Singapore from May 26 for five days. Specialists in pædiatrics from Asian countries attended the Congress and the International Pædiatrics Society sent its Secretary-General to participate in it. Dr. S. T. Achar, Director of the Institute of Pædiatrics, Madras, presided over the plenary session.

Medical College for Tanjore

The Madras Government are going ahead with the arrangements for starting a medical college at Tanjore in the next academic year.

It is understood that the Syndicate of the Madras University has approved the proposal. To start with, there will be provision in the pre-medical course for a maximum of 75 students. Men students admitted to the course will undergo their training at the Raja Serfoji College, Tanjore, while the women students will receive their training at the Holy Cross College, at Tiruchirapalli.

New Medical Colleges

In a circular to the District Medical Officers in the States, the Director of Medical Services, Andhra Pradesh, has requested them to consult the Presidents of Medical Associations and philanthropists, and explore the possibilities of establishing medical colleges at Tirupati, Warangal, and Kakinada, with voluntary contributions to the extent of about Rs. 30 lakhs for each college.

In starting medical colleges, facilities for hospitals with 300 to 400 beds, and buildings to accommodate non-clinical departments, should be considered. If a suitable hospital is available a medical college building with equipment, hostels, and staff quarters would cost only about Rs. 50 lakhs. If people's participation would be to the extent of about Rs. 30 lakhs, it would be a suitable proposition for the Government to meet the balance.

Of these three places, Tirupati has already moved in the matter. With a Rs. five-lakh contribution by Mr. R. R. Ruia of Bombay, and a donation of Rs. 10 lakhs by the Tirumalai-Tirupati Devasthanams, together with the gift of a site to construct a 300-bed hospital, a start has been made towards the establishment of a medical college at Tirupati, Chittoor Dist.

Commissions for Nurses

Commissions are to be granted in the rank of Sister (Lieutenant), in the military nursing service (temporary) says a Defence Ministry Press Note dated 15-5-'58.

Civilian female nurses, between 21 and 35 years of age, who are eligible to apply for such commissions should be in possession of a certificate of training in an approved hospital and be State-registered as fully-trained nurses in the medical and surgical nursing of men, women and children, and midwifery. Applicants should be unmarried, divorced or otherwise separated females or widows without encumbrances.

World Labour Conference

Mr. R. Venkataraman, Minister for Industries, Madras State, is leading the Government of India delegation to the International Labour Conference meeting in session in Geneva from June 4 to 26. Other members are Mr. L. N. Mishra, Parliamentary Secretary and Mr. W. E. Oak, Labour Commissioner, Madhya Pradesh.

Mr. Venkataraman will also visit industrial centres in Europe to study the working of low shaft furnaces, aluminium plants, etc.

Pasteurization at Coimbatore

A scheme for the installation of a pasteurization plant at Coimbatore at an estimated cost of Rs. 6,50,000 has been drawn up by the Government.

The scheme is expected to be finalized shortly, and the work will commence at an early date. Dr. Sikka, Dairy Development Adviser to the Union Government, visited Coimbatore recently in this connection.

Manufacture of Basic Drugs

Central Government to set up factory

It was disclosed in the Lok Sabha that the Government intend to put up, during the Second Plan period, a drug factory in the public sector, which would cater to all the basic drugs needed by the country.

Some negotiations are going on with the Soviet Union for assistance in the setting up of the drugs plant.

Donated Blood 27 Times

Mr. S. V. Narasimha Rao, Advocate who donated blood 27 times—probably a record for the whole country—was honoured by the Nellore Bar Association at its annual function on 20-4-'58. He was presented with a silver casket.

Surgical Instruments At The Guindy Industrial Estates, Madras

In the industrial estate at Guindy, Madras, the service centre for the manufacture of surgical instruments is to be expanded. A loan and a grant totalling Rs. 77,000 have been sanctioned to the State for the purpose.

Pharmacists' Training

Presiding over the 14th annual meeting of the Madurai Chemists and Druggists Association Dr. K.P. Sarathi, Assistant Director of Medical Services and Assistant State Drugs Controller, said a new course to train pharmacists would be started in the Madurai Medical College soon.

T. B. Clinics in Three More Districts

The Government have sanctioned the establishment of three more T. B.

clinics in the Government Headquarters Hospital at Salem, Tiruchirapalli and Kancheepuram.

Three such clinics were opened at Tanjore, Coimbatore, and Madurai last year under the Second Five-Year Plan scheme, which sanctioned 11 fully equipped and adequately staffed T.B. clinics to be opened in District Headquarters Hospitals. Each clinic will have a minimum of 30 beds.

The Government of India have agreed to subsidize the cost of equipment amounting to Rs. 50,000 in each clinic, while the Government of Madras will bear the expenditure towards the staff aggregating to Rs. 10,000 per clinic per year. The construction of buildings for these clinics at an estimated cost of Rs. 1·36 lakhs each has also been sanctioned by the Government of Madras.

New Antibiotic Discovered

Japanese scientists report that a new Japanese-discovered antibiotic, Kanamycin, had shown "wondrous effects" in 79 tuberculosis cases tested during the last six months.

The scientists said that in a group of the cases, 81 per cent of the patients showed improvement in three to four months, compared with 67 per cent attainable with Streptomycin.

Dr. Tokuki Ichikawa, co-discoverer of the drug, told a recent symposium, the scientific team had confirmed that the drug could also cure 95 per cent of all acute cases of gonorrhœa in three to 24 hours, heal acute colitis in 24 hours and acute cystitis in a week.

Pre-Medical Course of Baroda University

From 1958, only those students who have passed the Pre-medical Course Examination of the Baroda University will be eligible for admission to the first year of the M.B.B.S. course of the Medical College, The Pre-medical Course is of oneyear's duration.

This year 35 seats in the Pre-medical Course of the Baroda University are available for students who have passed the Preparatory Pre-university or First Year examination in Science from an institution affiliated to the Universities in the State of Bombay excepting the M.S. University of Baroda and the Osmania University of Hyderabad, Deccan. To be eligible for admission to the Pre-medical Course, candidates must have obtained at least a second class in these examinations. 5 out of these 35 seats are reserved for the Backward Classes, including Scheduled castes and Scheduled tribes.

Those seeking admission into the Pre-medical Course, must appear for a test which will be conducted in 5 centres and they should apply in the prescribed form to the Principal of any one of the following Medical Colleges :—

1. Grant Medical College, Bombay. 2. M. P. Shah Medical College, Jamnagar. 3. B. J. Medical College, Poona. 4. B. J. Medical College, Ahmedabad, and 5. Medical College, Nagpur.

All India Institute of Hygiene and Public Health, Calcutta

Silver Jubilee Souvenir

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THE ANTISEPTIC

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THE ANTISEPTIC

Vol. 55, No. 9 **INDEX TO ADVERTISERS** **SEPTEMBER, 1958**

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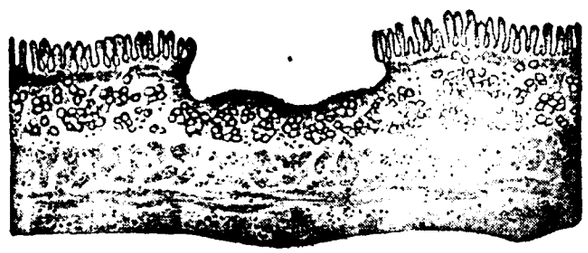

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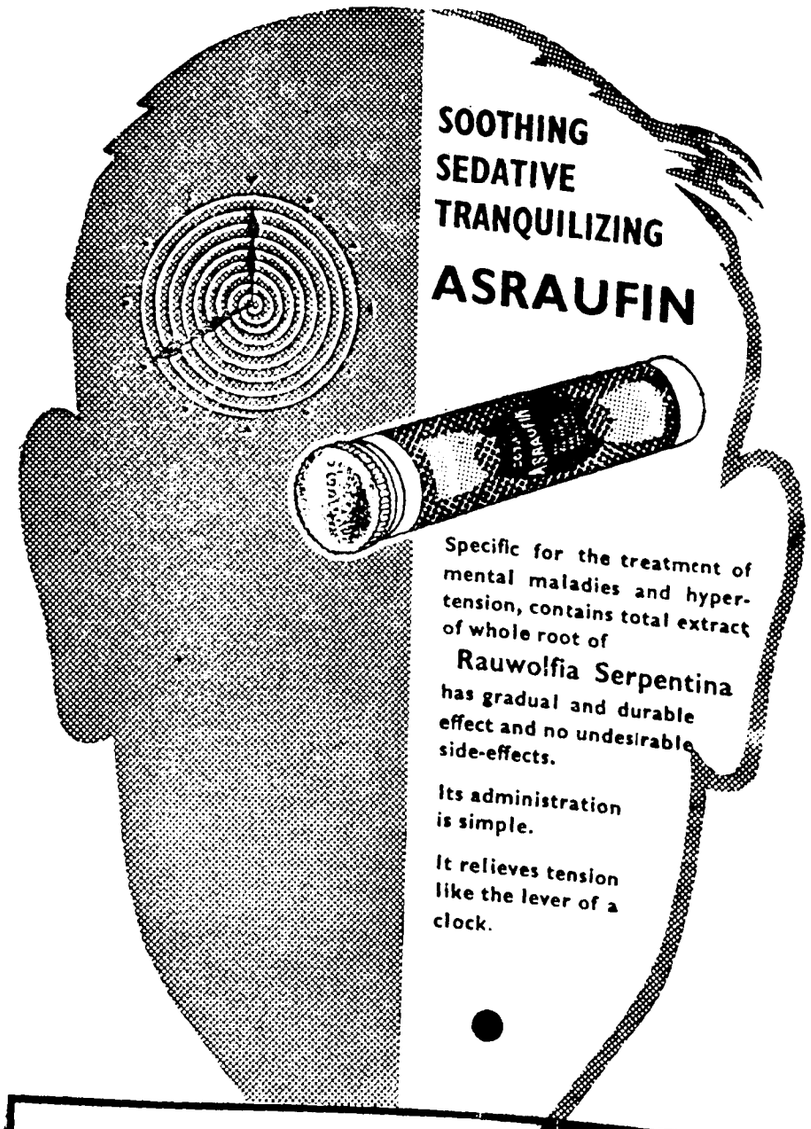

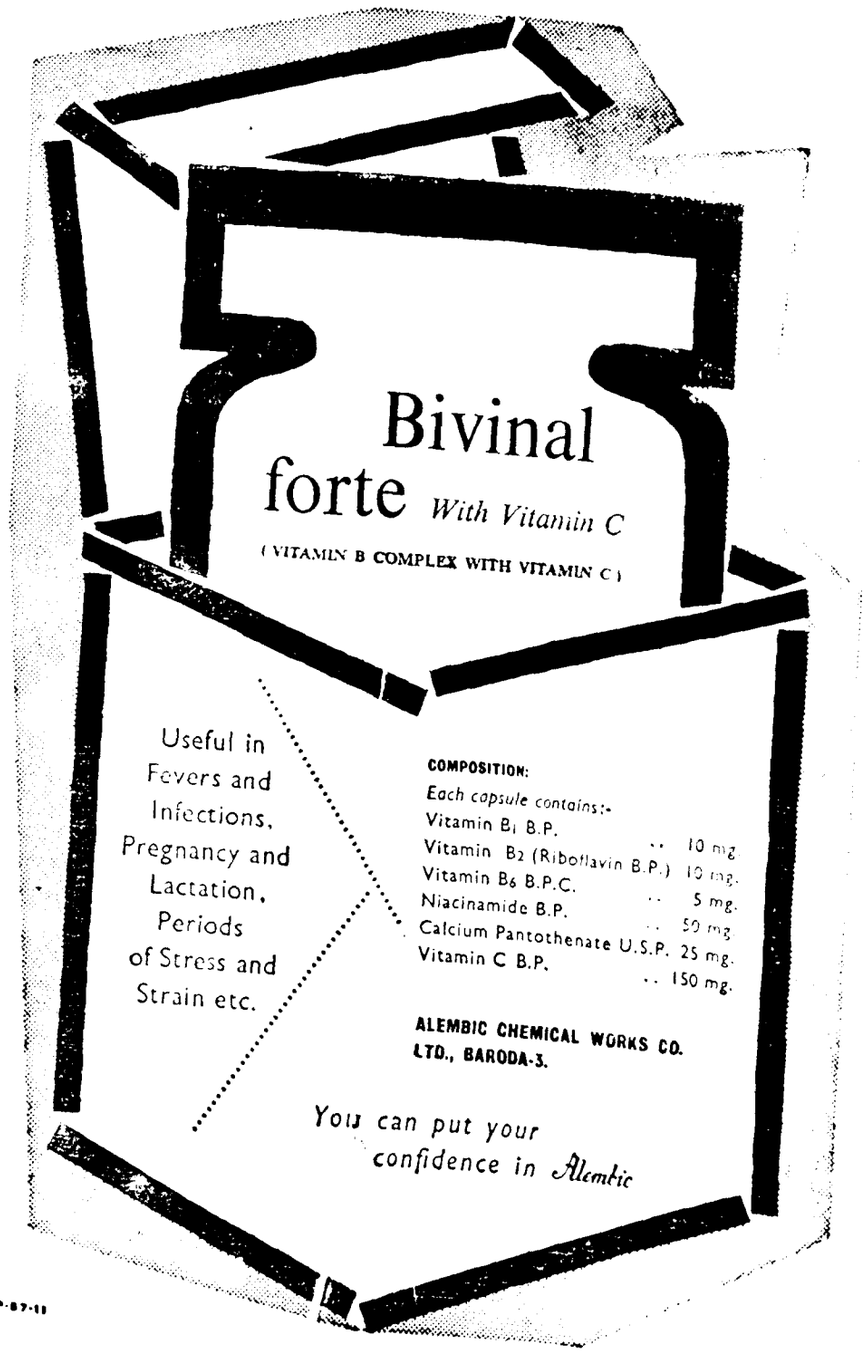
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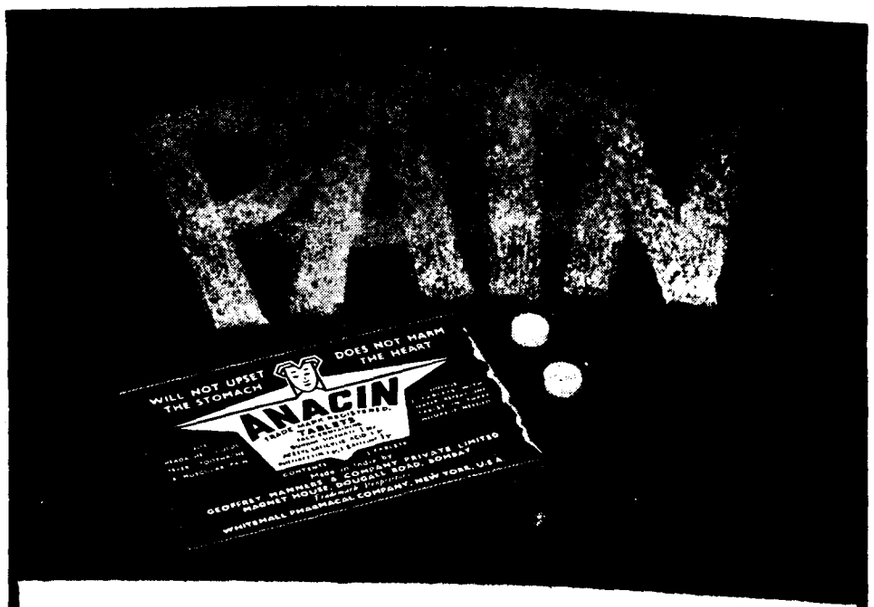

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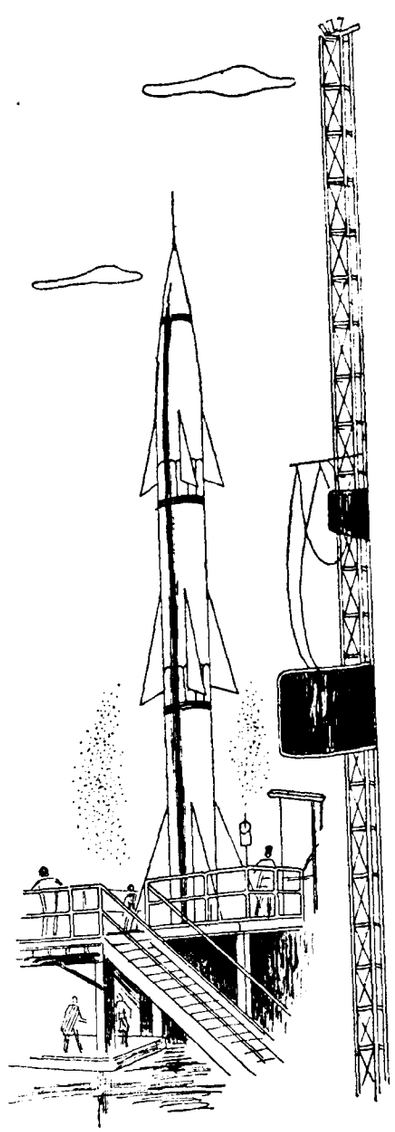

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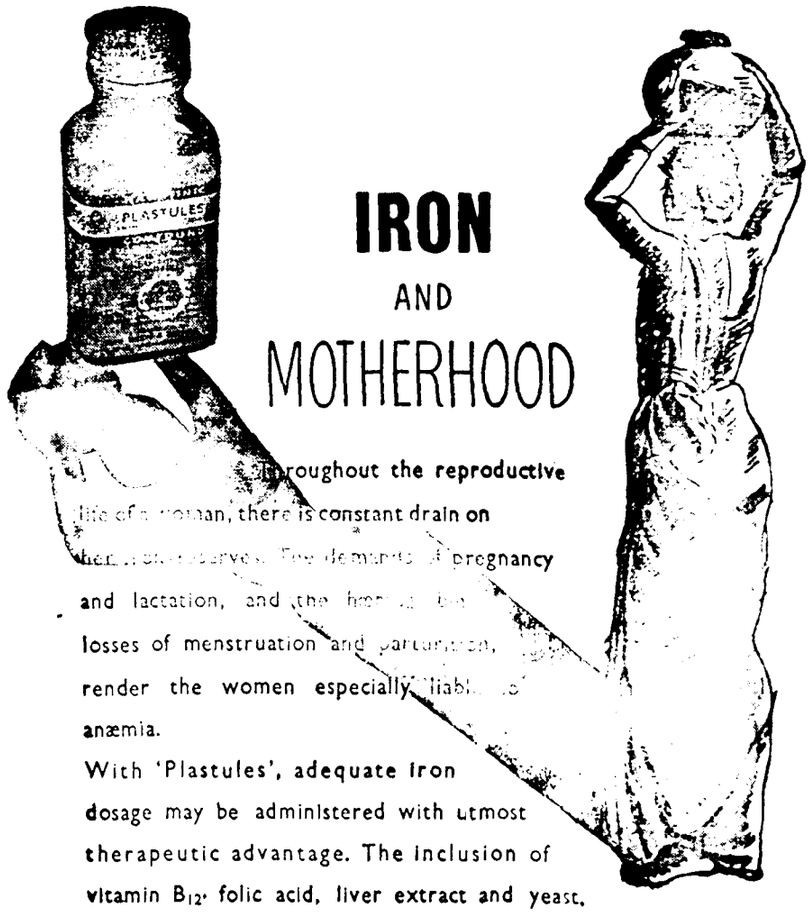

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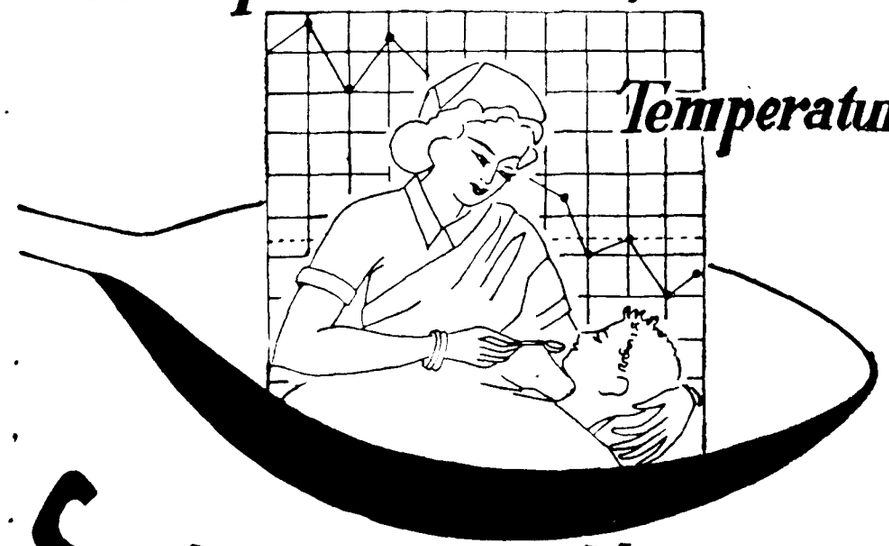

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By contributing a large amount of energy, fat relieves the intestinal tract of the necessity for dealing with an excessive amount of carbohydrate food, and to a certain extent, it spares protein. It also aids in the digestive functions and favours absorption of fat soluble factors. Fat is also included in the diet for its flavour, lubricant action and 'satiety value' which Werner has particularly stressed.

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As regards absorption, Deuel has found that margarine and shortening (the latter is similar to vanaspati) have the same rate of absorption as butter fat and lard. In the latest study from the University of Southern California, Alfin-Slater *et al.* report that rats have subsisted for 46 generations on diets in which selectively hydrogenated vegetable oils comprised practically the sole source of fat. The performance of the animals as judged by gain in weight, longevity and histopathological examination of the tissues have shown that hydrogenated fats are safe, fully digestible and have full nutritional value.

Fat is also included in the diet because it can act as a carrier of fat-soluble vitamins A and D. Lack of Vitamin A is the single factor responsible for a large number of deficiency diseases. In some parts of the tropics, deficiency of Vitamin A is quite high. Lack of Vitamin D causes rickets. According to Health Bulletin No. 23 (a Government of India publication), minor degrees of rickets are probably more common in Indian infants and young children than is generally believed.

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Original Articles

RECENT ADVANCES IN OUR KNOWLEDGE OF THE SPRUE SYNDROME*

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Christian Medical College, Vellore

INTEREST in the study of the sprue syndrome was on the wane a decade before the World War II. Napier (1956) was very sceptical as to the prevalence of sprue among Indians and wrote that he had not seen a typical case of sprue in an Indian though he believed that typical cases did occur among the fairer northern Indians. But interest in the sprue syndrome has been revived since the occurrence of many cases of sprue among Indian troops at various theatres of war. Balbir Singh (1944), Bramweel-Cook (1944), Chaudhuri and Rai Chaudhuri (1944), Keeble and Bound (1946), Walters (1947) and Howell (1947) have published reports on sprue-like syndromes occurring among Indian and British troops in the various Indian theatres of war. In other countries researches in sprue have been pursued uninterruptedly. Medical literature during the past 20 years has not significantly altered the basic concepts about sprue. Recent observations, however, have contributed materially to a better understanding of the ætiologic factors, diagnostic criteria, and effective treatment of this interesting syndrome.

Definition.—Sprue is a disease of unknown ætiology involving the gastro-intestinal tract, characterized by defects in gastric secretion and inability to absorb adequately fat, glucose, calcium and sometimes vitamins as well. Typically there is an apyrexial, morning diarrhœa with bulky, pale, gaseous, fatty stools, inflammatory lesions of the tongue and buccal mucosa, megaloblastic anæmia, asthenia and wasting (Fairley, 1949).

*Specially contributed to the ANTISEPTIC.

Clinical features.—For purposes of description and on the assumption that the onset and progression of sprue are related closely to the extension and severity of the intestinal malabsorption, Stefanini (1948) divided the course of the syndrome into 3 stages: (1) Initial stage of diarrhœa, dyspepsia, nausea, vomiting, and fever; (2) stage of secondary nutritional deficiencies: diarrhœa, glossitis, angular stomatitis, pigmentation, paræsthesias, muscular cramps and hypotension; and (3) stage of the fully developed picture of tropical sprue (in addition to diarrhœa and deficiency symptoms): anæmia, (hyperchromic macrocytic), œdema.

Pathogenesis.—Many theories have been advanced to explain the nature of the fundamental defect in sprue; some of the principal ones indicating the trends of current thought are given below:—

(1) *A cellular defect*:—To many, the malabsorption defect in sprue is suggestive of an intrinsic cellular defect. Verzer (1936) and Stannus (1942) attributed the failure of glucose and fat absorption to failure of phosphorylation within the mucosal cells. Verzer believed that phosphorylation was an essential process for all fat absorption and that phosphorylation was in turn governed by an adrenal hormone. His thesis was based on work performed on adrenalectomized rats. Barnes and his colleagues (1939) and others have since shown by repeating Verzer's rat experiments that fat absorption is not disturbed by adrenalectomy provided the animals are maintained in good condition by the administration of adequate amounts of sodium chloride. According to Stannus, phosphorylation is affected or catalysed, normally in the body by enzymes; the actual enzymes involved in the process have not been determined but there is some evidence for believing that some part of the vitamin B_1 complex is involved in this catalysis.

(2) *A deficiency disorder*:—Castle and associates (1935) believed that liver extract supplied an essential factor which is deficient in sprue. Black and associates (1947) noted that yeast extract also contained this factor; and Spies and his colleagues attributed tropical sprue largely to a deficiency of folic acid. Stefanini (1948) concluded that tropical sprue in his Italian prisoners of war was mainly due to dietary deficiency. Manson-Bahr (1941) advanced the hypothesis that the sprue syndrome is mainly due to non-absorption or destruction of vitamin B_2 in the small intestine. He assumed that the disease, tropical sprue, represents the fully developed picture of small intestine deficiency and is presumably due to damage to the intestinal mucosa. Rodriguez-Malina (1954) believes that pernicious anæmia, sprue (tropical and non-tropical), cœliac disease, nutritional macrocytic anæmia, and pellagra are closely

related and allied diseases probably having a common denominator. Fairley remarks, the conception of sprue either as a disease caused by lack of extrinsic factor in the diet or as a primary deficiency in any of the known vitamins is untenable.

(3) *A mechanical defect*:—Based on the radiological appearances of the small intestines Hurst (1942) suggested that the characteristic features of the sprue syndrome are the result of paralysis of the muscularis mucosæ which would lead to the loss of the pumping action of the villi, by means of which fat is conveyed from the lacteal radicles of the villi into the larger lacteals, and to the flattening of the valvulæ conniventes without change in the normal appearances of the mucous membrane. Paralysis of the muscularis mucosæ may be secondary to loss of the normal stimulant of Meissner's (submucosal) plexus or to the effect of vitamin deficiency or to some toxæmia of the plexus.

The radiological appearances of the small intestine in sprue have been attributed in large measure to the presence of excessive mucous secretion which is supposed to interfere with the contact between fat particles and the mucosa. It is suggested that the absorptive defect might be due to excessive secretion of mucus, or hypomotility of the intestine, or to both these factors together. Similarly faulty water absorption is attributed to the presence in the intestine of abnormally bulky contents. There is, therefore, good evidence of the importance of intestinal dysfunction and of interference with the absorption by the contents of the intestine in the sprue syndrome.

Ingelfinger and Moss (1944) have shown with ballistographic studies that the small intestine in sprue is less resistant to distention and that its normal reaction is restored by treatment with acetyl-methyl-choline chloride. They suggest, therefore, that in sprue the intestinal intra-mural nervous apparatus fails to liberate acetylcholine.

Stannus (1942) concludes, the conditions obtaining in the small intestine as interpreted by radiological examination, are the expression of a passive reaction to the abnormal and bulky contents. There is a functional derangement of the bowel due to deficient fat-absorption and not deficient fat-absorption due to paralysis of the muscularis mucosæ of its wall.

(4) *A change in the bacterial flora of the intestine*:–Leishman (1945) has suggested that a change in the bacterial equilibrium within the lumen of the intestine could affect the synthesis of the B group vitamins and hence, bring about indirectly a deficiency disorder manifesting itself as the complex sprue syndrome. Support for this suggestion is provided by the response to antibiotic agents. It is known that a change of climate or of

altitude alone, may greatly benefit a patient suffering from tropical sprue and this, perhaps, is effective through a change in the intestinal flora. Frazer (1949) has attributed a deprivation of vitamins to competition between exuberant intestinal bacteria and the host. "Whereas the evidence strongly supports the view that changes in the intestinal flora are of a secondary nature in the sprue syndrome." Remarks Faterson (1956) "It is of interest to note that antibiotic agents (sulphaguanidine, chloromycetin, aureomycin and terramycin) have been held responsible for the development of chronic diarrhœa and steatorrhœa."

(5) *The importance of climatic and local factors* : - Some peculiarities of the cases of sprue described in India during the war, like the epidemic occurrence of sprue in a particular season of the year or its sudden, high incidence among military units shortly after their transfer to certain areas, cannot be explained on the basis of "dietary deficiency" alone. Sprue occurred whenever and wherever favourable seasonal and climatic conditions existed, particularly among individuals with previous dietary deficiencies. Local, climatic and seasonal factors are therefore, important in the pathogenesis of tropical sprue (Stefanini). Ayrey-Frank (1948) has also reported outbreaks of sprue in British and Indian troops in the Burma Campaign. Hitherto an infective origin was postulated to account for these epidemics but this may be explained as noted above, on the basis of a change in the intestinal flora.

Diagnosis :—The lack of accepted diagnostic criteria is the main obstacle in correctly recognizing tropical sprue. Hanse (1942) has the following diagnostic criteria of the syndrome :

(1) *Steatorrhoea :*–Sprue cannot be diagnosed in the absence of steatorrhœa demonstrated quantitatively, though steatorrhœa does occur in other diseases.

(2) *Loss of weight :*—This is practically a constant finding and may equal or exceed that seen in any other condition.

(3) *Low glucose tolerance curve :*—The sprue patient exhibits a very constant rise of less than 40 mg. per 100 cc. in the blood-sugar curve when given one gm. of glucose per kilo of body weight. As a rule, the rise is very slight and no rise may occur at all. The average rise in blood-sugar in most published reports is 20 mg. per 100 cc.

(4) *Anaemia* :—The fully developed sprue syndrome in adults practically always exhibits a macrocytic-hyperchromic anæmia, which cannot be distinguished either by peripheral blood or bone marrow studies from the hæmatologic picture of pernicious anæmia.

(5) *Hypochlorhydria and achlorhydria :*—Low acid values in gastric contents after histamine stimulation are commonly seen in untreated sprue, the acid values rising however, with fair rapidity after successful liver and dietary treatment. Histamine-refractory achlorhydria does not occur in sprue more often than in normal individuals.

There are other features of the sprue syndrome, such as sore, reddened and depilated tongue, with or without aphthous ulcers ; a pendulous gaseous abdomen, with a much distended colon, and certain roentgenary findings common to several other deficiency states, which fill in the clinical picture, but the five findings described above are highly characteristic of the sprue syndrome, and unless present one should be very reluctant to make this diagnosis.

Foecal fat excretion.—Observation of the macroscopic and microscopic appearances of the stool is not a reliable method for the determination of steatorrhœa. The macroscopic appearance of the stool of a patient with sprue is not diagnostic, particularly in the initial stage, as it may vary in weight, consistency and colour. Even microscopic examination which reveals the absence of fatty acids, crystals or soaps is insufficient evidence to assume that the stool is not fatty. Only the study of fat-absorption over a period of days under standardized conditions with a fixed fat-intake is reliable. Black *et al*, and Stefanini consider that fat balance studies are more reliable than chylomicron counts or serum liquid curves as a diagnostic sign of intestinal malabsorption of fats. Observations have revealed that steatorrhœa, with a ratio of split to unsplit fœcal fat higher than normal, and a deficient pecentage of fat-absorption are practically constant, are present from the onset of the condition and are, therefore, significant diagnostic findings in tropical sprue.

Radiology of the small intestine.—The X-ray appearances in sprue are :–segmental distribution of the barium, either localized to the one part or throughout the whole of the small intestine ; the mucosal folds of the duodenum thickened and the lumen irregularly dilated ; the valvulæ conniventis of the jejunum thickened irregular in shape and more widely spaced, the lumen often dilated in isolated segments ; the barium passes through to the jejunum slowly and irregularly and is apt to collect in the dilated segments ; later, all the barium may collect in a localized pocket and the changes in the ileum are similar ; the colon may be dilated and redundant. Snell and Camp (1934) thought the intestinal phenomena were neither specific nor characteristic ; Golden (1941) thought the abnormalities of form and movement found on X-ray examination of the small intestines were common to all deficiency states with the exception of pernicious anæmia.

Mackie and Pound (1935) included pernicious anæmia with sprue, pellagra, beri-beri and nutritional œdema as giving rather similar X-ray appearances.

Differential diagnosis.—The following different possibilities must be considered in the diagnosis of the sprue syndrome :—(1) pernicious anæmia ; (2) multiple avitaminosis ; (3) pancreatic disease ; (4) tabes mesenterica ; (5) gastrocolic fistula ; (6) anorexia nervosa ; and (7) Simmon's disease. The presence of a deficiency pattern (segmentation and fragmentation) tends to exclude a diagnosis of pancreatogenous steatorrhœa. Gastrointestinal tract X-ray studies also aid differentiation of the sprue syndrome from steatorrhœa due to anatomic abnormalities of the intestine such as gastrocolic fistula and enterostomy and ileocolostomy etc.

Treatment :—Castle and associates first introduced liver extract in the treatment of tropical sprue. They advocated the administration of adequate doses of liver extracts by parenteral injection and pointed out that adequate doses of liver extract are as important in controlling the manifestations of the alimentary tract as in promoting the formation of blood in cases of sprue. Crude liver extracts in large doses have proved more effective than refined extracts in small doses.

Black and associates obtained good response to yeast extract administered orally. In 1946, Spies and his colleagues introduced folic acid in the treatment of sprue, which constituted a great therapeutic advance. Folic acid 5 to 25 mg. daily given parenterally or orally brings about a rapid relief of symptoms, cessation of diarrhœa, gain in weight and a return to normal absorption, X-ray appearances of the intestine and glucose absorption curve. Folic acid conjugates administered orally are equally effective. Folic acid alone should not be relied upon in the treatment, but liver extract, yeast extract or other hæmopoietic agents should also be added. Folinic acid administered orally has produced good clinical and hæmatological result. Hæmatological and clinical remissions have been obtained when both Vitamin B_{12} and folic acid are employed.

Keile found sulphaguanidine helpful in controlling watery diarrhœa in sprue. Striking remissions in sprue symptoms—anæmia and steatorrhœa—have been reported following the administration of aureomycin, chloromycetin, streptomycin, penicillin and sulphaguanidine.

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PATHO-PHYSIOLOGY AND ÆTIOLOGY OF FEVERS*

K. G. DAS, M.D. (Madras),
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By fever we mean elevation of body temperature due to diseases. Normally body gains heat by combustion of food, from surrounding air and sun. The out-put of heat under basal conditions is about 1700 calories per day. During moderately active exercise, it will vary between 2000 to 3000 calories and during severe exercise it may rise to 7000 calories. When the temperature of air exceeds that of the skin, the body takes heat from its immediate surroundings. Heat is gained from sun directly and also by reflected radiation.

The body loses heat mainly by radiation, vapourization conduction and convection. One litre of water on evaporation carries with it about 580 calories of heat. Through water loss from the lungs, the body loses about 200 calories of heat. Through sweat the major part of the body heat is lost. Sweat is an important means of heat loss. There are two main types of perspiration :—(1) *Insensible perspiration :*—Where the fluid diffuses through the epidermis and is later evaporated. This is not true perspiration. Heat that is lost through this method is about 600 calories. This is independent of environment; (2) *True sweating* :—True sweating is of two types: One commonly called 'thermal sweating' which increases with the increase in temperature ; the other is the mental sweating—where sweating occurs mainly over the palm, soles and axillæ. When the body is subjected to exercise there is a marked increase in both mental and thermal sweating. One litre of sweat on evaporation takes away about 550 calories of heat. And under strenuous conditions, 1·5 litres of sweat may be secreted per hour. A maximum of about 7000 calories of heat may be lost by this route. If sweat is wiped off, it will not carry with it any heat, hence it amounts only to a harmful form of fluid loss. In hot dry climates, sweating is a very useful means of heat loss ; if the external air is hot and humid, heat loss is impossible. When the body is exposed to external heat, cutaneous nerve endings are stimulated and bring about vaso-dilatation. Vasodilatation also occurs by the direct action of heat on vessels and by blood temperature acting directly on the vasomotor centre. When vasodilatation occurs more heat is lost by radiation, vapourization and convection.

The maintenance of body temperature is under the control of the nervous system. The anterior part of the hypothalamus is concerned with heat loss and the posterior with the conservation of heat. When C.N.S. is depressed or injured, the centres

*Based on a lecture delivered before the South Kanara branch of the Indian Medical Association. Specially contributed to the ANTISEPTIC.

are paralyzed and the temperature regulation fails resulting in a marked alteration in body temperature.

Ductless glands, like the adrenal medulla, adrenal cortex and thyroid take part in heat production.

In the skin, there are the temperature nerve endings both "warm" endings and "cold" endings. Stimulation of these endings bring about reflex changes in sweating and in the vasomotor set-up.

Normal temperature.—In some persons, the normal temperature may be as low as 97°F while in some others it may be as high as 100°F. In an adult the average oral temperature is 98·4°F. It is usually abnormal if it is over 99°F. In persons who take complete bed-rest, the body temperature is a little lower—about 98°F. In these cases 98·6°F may be regarded as fever. We can record the body temperature from mouth, axilla, groin, rectum or midstream of urine. The thermometer must be kept at least for one full minute. The axillary temperature is usually 1°F lower than the oral. The oral temperature is more or less the same as the groin temperature. Rectal temperature is ½°F to ¾°F higher than the oral; the urine temperature is 0·3°F to 0·5°F above the oral. In some persons the oral temperature is always above 99·2°F but the rectal temperature will be less than 99·6°F at all times. Some call this as "essential oral hyperthermia" (Rappaport). Rectal temperature is less variable and is hence preferred to the oral temperature; but the oral temperature is more convenient. In young children and in other persons who cannot breathe with their mouths closed, the oral temperature should not be relied upon. A high oral reading is common after taking hot drinks or even a meal.

Diurnal variation:—This variation may be as much as 2°F. It is usually highest in the early evening and lowest in the early morning. In tropical countries, the body temperature is about 1°F. above the normal range found in temperature regions.

Age:—Marked temperature variation occurs in infancy because heat regulation is poor. After exercise, this temperature may be as high as 100°F or a fit of screaming may cause a rise in the child's temperature. It is important to remember about these, while assessing the significance of fever in children.

Effect of exercise:—After strenuous exercise, the body temperature may be 102°F, or even more but the temperature falls in about thirty minutes after the exercising is over. After strenuous movements of the muscles of mastication or after vigorous chewing, the oral temperature may rise by 1°F. Compared with normal, a small amount of exercise produces an excessive rise of temperature in patients suffering from pulmonary tuberculosis.

Food:—After a heavy meal, the body temperature may be raised—usually 2 hours later.

Environment:—During very hot days, quite a good number of people may have a body-temperature of 99°F. or more.

Menstrual period, ovulation and pregnancy:—During menses, the temperature falls down, but rises during ovulation. During the early months of pregnancy, there is a slight rise in temperature, and then there is a gradual fall.

Limits of temperature, compatible with life:—Formerly, it was thought that if the body temperature fell below 90°F, life will cease to exist. Now we know that this belief is wrong because the body temperature can be lowered without harm to 75°F to 80°F by sedatives and by application of cold, maintained at that level.

If the body-temperature goes over 114°F, irreversible changes occur in the tissues which may be incompatible with life. In most of the cases, when the body-temperature goes over 105°F to 106°F, there is a temperature "Ceiling" effect. This thermostatic arrangement can be very rarely disturbed so that body-temperature is allowed to rise beyond 105°F or 106°F.

Pathology and aetiology of fevers.—Fever occurs as a result of body-reaction to various factors like infections, injuries, neoplasms, vascular accidents etc. The products of tissue injury act on the thermo-regulatory centres in the brain. It can also occur as the result of pyrogenic substances produced by the organisms (some call it as "Pyrexin").

Body-changes during fever.—First of all, the basal metabolic rate is increased. About 7% rise in B.M.R., occurs for every degree rise of body-temperature. The nitrogen catabolism is also increased. There is dehydration—Na and Cl enter into the cells while phosphorus, and nitrogen are lost from the cells. Hypochlorhydria or achlorhydria is the common feature. During the height of the fever, there is usually hæmoconcentration. There is a marked stimulation of the hypothalamic pituitary-adrenal cortex system.

Albuminuria is common which is often due to the direct effect of toxins on the kidneys or due to the direct effect of temperature on the kidneys.

Herpes simplex commonly occurs in malaria, pneumonia, meningo-coccal septicæmia etc.

Rigors are common in most infectious fevers. Convulsion and delirium occur in some cases of fever.

Spurious fevers may result from the following, *e.g.*, heating the thermometer with hot water, holding the thermometer tightly with the fingers, rubbing it against bed-clothes, friction with the tongue or anal sphincters, taking the temperature after hot drinks, or after chewing etc.

temperature is higher than normal—some call it habitual hyperthermia (Reimann).

Emotional upsets may give rise to fever, *e.g.*, the so-called "Examination fever," or quarrel with near relations. In these cases, the administration of sedatives, will relieve the fever because sedatives depress the cerebral functions and relieve emotional upsets.

Common causes of "Pyrexias of unknown origin".—Every medical practitioner, would have encountered in his practice atleast a few instances presenting the challenging problem of fever of obscure origin. The following conditions may produce fevers of obscure origin, and if these are remembered as probable causes of so called "*P.U.Os*," the number of errors committed may be minimized and proper investigations directed towards unearthing these conditions and unmask their obscurity.

(*a*) A small local collection of pus may give rise to a fluctuating temperature. It may be difficult to locate the site of infection. The abscess may be deep-seated, as in the liver, perinephric or gluteal regions. The focus of infection may be in the mastoid, tonsillar region, throat, pelvis etc. A careful examination of these sites may be helpful in solving the problem; (*b*) urinary tract infections sometimes give rise to obscure fevers. There may not be any signs referable to the urinary tract except vague backache, fever with chill, occasionally dysuria. Urine examination may show presence of only a few pus cells. Hydronephrosis when infected may give rise only to a low-grade fever; (*c*) in a good number of cases of *P.U.O.* the lesion is usually tubercular which may be in the mediastinal region or cervical glands or in the kidneys; (*d*) sometimes syphilis exists without other manifestations and there may be only fever; (*e*) absorption of products of necrotic material into the system may give rise to obscure fever, *etc.*, chronic gastro-intestinal bleeding or malignancy; (*f*) in some malignant diseases, fever may occur months before the true nature of the disease is revealed. This is especially true in leukæmia, sarcomas, and lymphomas. The abdominal type of Hodgkins disease is very difficult to diagnose. The patient may have for months fever of great obscurity. It may be low-grade, fluctuating, or in a small number of cases of the Pel Ebstein type. Certain malignant growths affecting the pleura, lungs, biliary passages, or kidneys may give rise only to fever for a long time. Hypernephroma is notorious for its producing irregular fever for days or months together; and (*g*) in certain collagen diseases, fever may be the only manifestation.

In children the very common causes of obscure fevers are *B. coli* infection of the urinary tract, tonsillitis, progressive primary complex, tuberculous adenitis, involving mainly the bronchial, mediastinal or mesenteric group.

Common causes of hyperpyrexia.—This term is commonly used when the temperature rises beyond 105°F. The common causes are very virulent pyogenic infections, malaria, cholera, heat-stroke. It may also occur in certain disorders of the central nervous system, such as cerebral hæmorrhage, pontine hæmorrhage, fracture of the skull or cervical cord injuries. In children, hyperpyrexia, may occur after severe convulsions. It is interesting to note that hyperpyrexia may occur even in functional disorders like hysteria.

Fevers with rigors.—Many infectious fevers start with rigors, *e.g.*, pneumonia, influenza. In these cases, there is usually single rigor. In diseases like malaria, in conditions where the infection spreads, septicæmias or in conditions where abscess develops as a complication, phlebitis, pyelophlebitis, biliary tract obstructions, brucellosis and subacute bacterial endocarditis usually multiple rigors occur. The problem of fever is very important, especially when the cause is not very obvious. If the clinician keeps in mind the various common factors which are responsible for fevers, mistakes may be minimized and prompt investigations may reveal the true nature of the disease, enabling proper treatment to be adopted without delay.

NIPPLE SECRETION IN THE NON-LACTATING BREAST

Abnormal discharge from any orifice of the body is a warning signal of altered metabolism or altered structure, which may be potentially lethal. This is as true of the non-puerperal nipple discharge as of intermenstrual or post-menopausal vaginal bleeding. In the presence of a palpable mass, the nipple discharge is of secondary importance, for biopsy is indicated and establishes diagnosis. In the absence of a palpable mass, however, the character of a nipple discharge is of importance to diagnosis and therapy.

The gross nature of the discharge and its source from single or multiple ducts is of importance. Microscopic examination using cellular stains will reveal the presence or absence of erythrocytes and tumour cells.

Approximately 8 per cent of patients with mammary complaints have nipple discharge. Grossly, the discharge may be bloody, serous, milky, green, brown, or a combination of these types. From 80 to 90 per cent of discharges from the non-puerperal, non-lactating breasts in adults are due to intraductal papilloma, cancer, or fibrocystic change. Unusual causes are trauma, sarcoma, vicarious menstruation, chancre, and inflammatory states. Stagnation type of discharge is found in fibrocystic changes in the breast. Hyperplastic discharge, serous or bloody, is commonly caused by intraductal papilloma or carcinoma in approximately equal percentage.

Intraductal papilloma is a benign lesion and may be treated by local excision. Papillomatosis, however, should be regarded as a pre-malignant lesion and microscopic foci of papillary carcinoma should be sought.—(*North-West Medicine*, Jan. 1958).

ACUTE NEPHRITIS IN SOUTH-INDIAN CHILDREN*

(A Study of 100 Cases)

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ACUTE glomerular nephritis otherwise known as acute hæmorrhagic nephritis or Type-1-nephritis is largely a disease of childhood and occurs among children all over the world. The disease was first described in 1827 by Richard Bright and so bears the name "Bright's disease." It is mainly characterized by œdema, oliguria, hæmaturia and hypertension. This paper is based on a study of 100 cases of acute glomerulo-nephritis in South-Indian children from the records of Stanley Hospital, Madras, with special reference to its ætiology, clinical features and treatment. The course and termination of the disease, observed here is generally similar to what has been described by various authors in other parts of the world. But there is reason to believe that the disease runs a more benign course here perhaps due to the lower protein intake and to the predominantly carbohydrate diet of the South-Indian. There are some significant points to be noted especially with regard to the ætiology of acute nephritis in South-Indian children.

Incidence.—Acute nephritis occurs most commonly between the ages of 3 and 7, the average being about 5½ years. More than half of the cases in my series belonged to this age group. The maximum age was 11 years and the minimum three months. Only three patients were below 1 year. Hughes (1952) states that the disease can occur under 1 year but then its cause is ascribable to syphilis. According to Nelson (1954) the disease is practically unknown in children under 3 years. Spence and Davison (1954) are of the opinion that it is rare under eighteen months; the maximum incidence being in later childhood.

In the present series of 100 cases, there were 61 male and 39 female children. This is statistically significant and suggests that the predilection to the disease is greater among the males. Rabinovich and Winter (1950) did not find a special proneness of the disease to boys. Ellis (1953) mentions that the disease is more common in boys; Nelson (1954) is also of the same opinion. According to Sheldon (1955) the disease affects both sexes equally.

Family history.—Family diathesis seems to be rare. Only one of our 100 cases gave a family history of acute nephritis. Payne and Illingworth (1940) found a family history of nephritis in 10% of their cases. However, according to Nelson (1954) there is usually little familial susceptibility.

* Specially contributed to the ANTISEPTIC.

COMMUNITY :—The present series comprised 86 Hindus, 13 Muslims and 1 Christian. In the series reported by Rabinovich and Winter (1950) the disease was equally distributed among European and Oriental children.

SEASONAL INCIDENCE :—The disease did not show any increase during any particular month or season of the year. It was practically uniformly distributed throughout the whole year.

AETIOLOGY :—Acute nephritis usually follows an external focus of bacterial infection. The extrarenal focus being in the month, nasopharynx, sinuses or the ear and the infecting organism being streptococcus hæmolyticus. Longcop (1927, cited by Payne and Illingworth, 1940) found this to be the causative organism in 81·2% of his cases. Staphylococcal and streptococcal infections of the skin also, can cause acute glomerulo-nephritis. Hughes (1952) mentions that in the southern states of America, approximately half the cases occurring especially late in the summer are secondary to skin infection, usually simple sores. Scarlet fever is a common cause of acute nephritis in the West but this has never been noted in South India.

The precise manner in which the extra-renal focus causes the renal lesion is not yet fully understood, but it is now generally agreed that acute nephritis is due to an allergic antigen-antibody reaction, the bacterial toxin and not the bacteria *per se* being considered responsible for the renal lesion. After the streptococcal extra-renal infection there is usually a latent interval varying from a few days to weeks before the onset of the acute nephritis. By the time the nephritis sets in, the child would in most cases have recovered almost completely from the preceding extra-renal infection. Actual invasion of the kidneys or the blood stream by the bacteria never takes place during acute nephritis. This fact together with the observation that antibodies against the organism have been found in rising titres lends support to the allergic mechanism.

As probable correlated causative factors bearing on its ætiology, the following observations were made in the present series :–In 21% of cases there was a definite history of scabies, a few weeks before the onset of acute nephritis. In 10% a mild upper respiratory catarrh was a prior illness. In one case the child had an extensive seborrhœa of the scalp a month before the onset of acute nephritis. In another case a boil on the scalp seemed to have acted as the extra-renal focus of infection because the child developed acute nephritis while the boil was being treated. One case followed vaccination for small-pox.

Payne and Illingworth (1940) state that 77% of their cases gave a history of preceding bacterial infection of the ear, nose

or throat. Fonton and Verger (1948) cite the example of a ten year old girl who developed acute nephritis after she had extensive impetigo. Bradley (1951) describes a case of dermatomyositis with acute nephritis in a negro girl of 10. Porge (1950), described a case of post-vaccinal nephritis. McCullough, Coffee and Price (1951) mention that the ætiological factor in 33% of their cases was impetigo and in 31% acute tonsillitis. Wang, Turg Chen and Hu (1948) have described four cases of acute nephritis in adults following scabies. Hughes (1952) mentions that scabies was the ætiological factor in 50% of cases of acute nephritis in the John Gaston Children's Hospital.

Syphilis has been suggested as being responsible for acute nephritis in very young infants The way syphilis acts is surmised as follows:—The spirochætes do not actually invade the kidneys, but they lower the general resistance of the body especially of the mucous membranes and so favour the multiplication of streptococci which, in turn produce an allergic reaction with the end-result of an acute nephritis. However, in all the three cases in the present series in which the infant was below one year the ætiological factor was observed to be scabies.

McPhee and Kaye (1932), cited by Payne and Illingworth (1940) could point to a definite ætiological factor only in 10% of cases. In the present series, however, an ætiological factor was ascertainable in 31% of cases.

Cold and wet:—A combination of cold and wet also seems to act as a predisposing factor. These probably influence by diminishing the blood supply to the kidneys and concurrently also causing ischæmia and vaso-constriction of the mucous membrane of the throat and thus predisposing it to bacterial infection. This in turn would cause the acute nephritis.

Lastly, it may be mentioned that any condition which lowers the body resistance can act as a predisposing factor. In one case acute nephritis was preceded a month before by an attack of severe dysentery and in another case the nephritis followed treatment for ascariasis.

Pathology:—Acute glomerular nephritis is a non-suppurative inflammatory process affecting primarily the glomerular tufts of the kidney with secondary involvement of the tubules and the interstitial tissue.

Morbid anatomy:—The kidneys are larger in size, the capsule and the cut surface are pale due to cloudy swelling, and punctate hæmorrhages may be noted on the outer surface and in sections of the kidney.

Histology:—The main changes noted are the following:—There is endothelial proliferation of the capillaries of the glomerular tufts with obstruction to blood flow. There is damage not only to the capillaries of the glomerular tufts but also a generalized capillary damage throughout the body. This probably accounts for the hypertension which so commonly accompanies acute nephritis. The epithelial cells of the capsular space and the tufts also proliferate. There is exudation of blood cells and proteins into the glomerular filtrate. This would explain the presence of hæmaturia and albumin in the urine. The interstitial tissue too, is not spared. It is infiltrated with polymorphonuclear leucocytes and monocytes.

Clinical features.—The major symptoms of acute nephritis may be discussed under the following heads:—(1) General malaise. (2) Oedema. (3) Oliguria. (4) Hæmaturia. (5) Temperature. (6) Hypertension. (7) Gastro-intestinal disturbances. (8) Respiratory symptoms, and (9) Cardio-vascular disturbances.

After presenting the clinical picture of the typical case, each symptom will be dealt with in more detail. The majority of children in the present series came to hospital for puffiness of the face and slight œdema of the lower limbs. In practically all the cases there was oliguria. Hæmaturia was also a frequent feature; the degree of hæmaturia, however, varied from case to case. Hypertension was not a sign in all the cases. Temperature findings were also not constant or significant.

(1) *General malaise*:—General malaise is often slight but may be severe. In the majority of cases very little disturbance of general health was noticed at the onset of the disease. In one case the disease commenced with severe vomiting. The disease may be ushered in with severe headache or convulsions. This was not however met with, in the present series.

(2) *Oedema*:—In many of the cases œdema is the complaint for which medical aid is sought. In all my cases, with only one exception there was œdema of varying degrees. Aldrich (1930) noticed œdema in 75% of his cases. The œdema is first noticed on the face, the puffiness being most marked on waking up in the morning and subsiding with the progress of the day. The œdema becomes generalized in a few days in some cases. Free fluid in the abdomen may or may not be present. An important point worthy of note regarding œdema in acute nephritis is that it is never very great as in nephrosis. The œdema may be very marked due to the superimposition of the œdema of cardiac decompensation, where it occurs. This may lead to transudation of fluids into the serous membranes producing hydrothorax and ascites. The generalized œdema is pitting in nature and usually subsides in about 2 weeks.

Sometimes visible œdema is not present but the child shows a sudden increase in weight. This is called latent œdema and could only be noticed if the child happened to be one that is being weighed regularly.

(3) *Oliguria* :—The quantity of urine passed by the child in acute nephritis is always reduced in amount. The actual amount of urine passed varies in individual cases. Complete suppression of urine does not commonly occur. Only in one case, was it noticed in this series ; it was the onset symptom and did not last for more than 48 hours. Nelson (1954) noticed in 5% of cases, marked oliguria amounting to anuria. This decrease in the urine output is due probably to decreased glomerular filtration. The quantity of urine passed usually returns to normal within a week.

(4) *Haematuria* :—This is also a characteristic symptom of acute nephritis. In many cases the urine is reddish or dark brown in colour. In the majority of cases in the present series the urine was dark brown in colour and microscopic examination revealed red blood cells in every case. Aldrich (1930) also noticed hæmaturia in all his cases. Gross hæmaturia usually disappears within a few days of the onset but microscopic hæmaturia may continue for weeks even after the recovery of the patient. Addis count is not done as a routine in this hospital. According to Hughes (1952) and Nelson (1954) Addis count shows an increase in the erythrocytes for about four months on an average.

(5) *Temperature* :—Temperature is a varying symptom. Pyrexia accompanying acute nephritis was noted only in 27% of cases. In the others there was no significant change in temperature. The rise in temperature usually occurs simultaneously with the œdema or follows it and then subsides within the first week. Irregular low-grade pyrexia may continue for a week or two.

(6) *Hypertension* :—Hypertension was not noticed in many of the cases. The exact percentage of cases in this series showing hypertension cannot be furnished since regular blood-pressure readings of all the cases was not maintained. Aldrich (1930) noticed that the blood-pressure was elevated above 130 mm. Hg. in 26% of cases and the blood-pressure reading was 20 mm. more than the lowest level in convalescence in 73% of cases. Sixty to seventy percent of cases show a slight degree of hypertension according to Nelson (1954). Epistaxis was noted in one case in the series while the child was being treated for acute nephritis.

(7) *Gastro-intestinal symptoms* :—These may be associated with other symptoms. In one case there was vomiting at the onset of the disease and in four other cases there was diarrhœa with the œdema.

(8) *Respiratory symptoms* :—In 12% of cases the main complaint mentioned by the mother was that the child had suddenly become breathless, though there were slight œdema and oliguria. Cardiac failure was responsible for the breathlessness. These

cases showed basal dullness on percussion and moist rales on auscultation.

(9) *Cardiac vascular disturbances* :—Cardiac involvement was noticed in 12% of cases. Rubin and Rapoport (1938) noticed cardiac failure in 20% of cases. Pluckhun and Hose Mann (1951) observed cardiac involvement in 20% of their cases. According to Spence and Davison (1954) there is some myocardial damage probably in a third or fourth of all cases of acute nephritis. They also observed manifest heart failure in 5 to 10% of cases. Apart from dilatation of the heart, a soft systolic murmur, triple rhythm or extrasystoles may be heard on auscultation. In three cases of the present series triple rhythm was heard and in one case extrasystoles were present. In another case the pulse showed bradycardia.

Frank cardiac decompensation would produce orthopnœa, prominence and pulsation of neck veins, œdema most marked in the dependent parts, basal rales in the lungs and enlargement of the liver. X-ray of the chest will reveal enlargement of the heart and congestion of the lungs. Sometimes cardiac involvement may be the only presenting symptom. Levy (1936) has described ten such cases in which the presenting symptom was a disturbance of the circulatory system.

Electro-cardiographic changes.—In the majority of cases the evidence of cardiac involvement is limited to the changes in the E.C.G. Rubin and Rapoport (1938) noticed E.C.G. changes in 75% of cases. Hughes (1952) also confirms this. Nelson (1954) says that in 75 to 80% of cases evidence of cardiac involvement is limited to E.C.G. changes. The principal change noticed in the E.C.G. is the flattening or inversion of the T-wave in one or more leads.

Laboratory investigations.—*Urinary changes* :—The *quantity* is diminished in almost all the cases. The *specific gravity* of the urine is increased usually in acute nephritis. *Albumin* is always present but the quantity varies from a trace to a thick deposit. However, the amount is not as much as in nephrosis. The amount of albumin in the urine gets markedly reduced as the renal lesion heals, usually within three weeks. A trace of albumin may persist in the urine even after all the physical signs have completely subsided. The amount of albumin in the urine is not related to the severity of the disease. All the cases showed the presence of red blood cells in the urine. The urine may also show the presence of leucocytes. Granular, red blood cells and epithelial urinary casts are also seen.

Erythrocyte sedimentation rate :—Erythrocyte sedimentation rate has been used for its prognostic value in acute nephritis.

It is high during the acute stage of the disease and usually comes to normal as the renal lesion heals.

Blood protein estimation :—According to many authors blood protein usually does not show a decrease in acute nephritis. In this series blood protein estimation was done only in three cases, in all of which it was only about 3·5 g. per 100 cc.

Blood cholesterol estimation was done in a small number of cases and the value was normal in all of these.

Blood urea estimation showed an elevation to about 65 mg. % in two cases. In the others it was below 40 mg. per 100 cc.

R.B.C. count and haemoglobin estimation :—Acute nephritis was often associated with a low RBC count, about 3·5 million, and a hæmoglobin percentage varying from 65 to 70%. Since the above investigations were not done in all the cases definite statistical data could not be given.

Diagnosis :—The typical clinical picture of acute nephritis —œdema, oliguria, hæmaturia and hypertension, together with the urinary findings makes the diagnosis easy. The condition from which acute nephritis has to be differentiated are the following :—(1) Other causes of œdema in children like (*a*) chronic nephritis with exacerbation, (*b*) nephrosis, (*c*) congestive failure, and (*d*) nutritional dystrophy ; (2) other causes of hæmaturia like (*a*) scurvy, (*b*) urinary calculus, (*c*) anaphylactoid purpura, (*d*) tumours of the kidney, (*e*) acute pyelonephritis, (*f*) drug therapy, (*g*) trauma and (*h*) tuberculosis of the urinary tract ; and (3) other causes of albuminuria like (*a*) febrile albuminuria, (*b*) orthostatic albuminuria, (*c*) embolic nephritis and (*d*) renal rickets.

Course and complications.—The disease usually ends favourably in the great majority of cases. The major complications usually met with are :—(1) Cardiac failure ; (2) hypertensive encephalopathy and (3) uræmia.

(1) *Cardiac failure* :—It is due to hypertension and toxic myocarditis. In addition to these there might be ischæmia and œdema of the myocardium which further impair the action of the heart. In severe cases death might result from cardiac failure.

(2) *Hypertensive encephalopathy* : —This is the second common complication. It is characterized by restlessness, headache, stupor, convulsions and visual changes, which are considered to be due to vasospasm and cerebral œdema. It is probably due more to vasospasm since constriction of the arterioles of the retina is seen in acute nephritis, but papillœdema is very rare. The cerebrospinal fluid pressure is usually within normal limits, which would rather favour the view that vasospasm may be the cause of the encephalopathy.

(3) *Uraemia* :—This is the rarest of the three complications. There is renal acidosis with retention of nitrogenous waste products.

Treatment :—The treatment of acute nephritis may be considered under the following heads :—(i) rest in bed ; (ii) dietary regimen ; (iii) antibiotics ; (iv) diuretics and (v) drugs and other therapy.

(*i*) *Rest in bed* :—Absolute rest in bed is essential from the time of onset of the disease for a minimum period of six weeks. It is also essential to see that the child is well protected from exposure to chill.

(*ii*) *Dietary regimen* :—The diet during the first week is restricted purely to sweetened fluids like orange juice which can be supplemented with barley water. The actual amount given depends upon the age of the child, and upon the severity of the disease. On an average 1 to 1½ oz. of fluid per lb. of body weight during the acute stage of the disease is indicated. The smaller the age of the child, the larger will be the fluid requirement. This fluid diet which is both salt and fat-free is continued for about a week. Depending upon the output of urine the intake of fluid may be gradually increased to 2 to 2½ oz. per lb. of body-weight. When the child has slightly improved rice is added. Skimmed milk is given to prevent hypoproteinæmia. Salt-free diet is continued till the œdema has completely subsided. The child can have its normal diet by the time it is allowed to get up from bed.

(*iii*) *Antibiotics* :—These are indicated only when there is an active focus of infection. The usual antibiotic given is penicillin, 5 lacs twice daily.

(*iv*) *Diuretics* :—Usually the only diuretic indicated is an alkaline diuretic mixture.

(*v*) *Drugs and other therapy* :—The child is given potassium citrate mixture to facilitate free excretion of sodium. Vitamin C in 300 to 500 mg. doses is given for its antitoxic and antiallergic action. Some workers like Thomson (1947) and Lawson (1951) have tried antihistamines in the treatment of acute nephritis. Only in three cases in the above series Anthisan was tried in doses of 100 mg. three times a day. No significant effect was noted. Salvioli (1930) noted the effect of roentgen irradiation of the lumbar region in twelve cases of acute nephritis. He observed increased diuresis with decreased hæmaturia in 2 cases, increased diuresis in 3 and decreased hæmaturia in 3 and there was no effect on the other 4.

In cases with cardiac failure, Digoxin in doses depending upon the degree of failure is indicated. Oxygen inhalation

may be started if the child is dyspnœic. Where there is hypertension, magnesium sulphate is given I.M. as a 50% solution, the dose depending on the age of the child. In very severe cases a 2% solution may be given I.V. very slowly and cautiously, the B-P. reading being taken continuously during the procedure. If the child is having signs of hypertensive encephalopathy a lumbar puncture may be done to lower the tension of the cerebrospinal fluid. Sedation is obtained with paraldehyde I.M. or in milder cases with phenobarbitone administered orally.

Lastly, a word about surgery to eradicate the focus of extrarenal infection. Usually surgery is undertaken only after the symptoms of acute nephritis have subsided, indicating the absence of acute renal disease.

Summary.—A study of acute nephritis in 100 South-Indian children has been made. Acute nephritis is more common in boys (61%) and scabies is an important predisposing ætiological factor in nearly one fourth of the cases.

The disease is characterized by œdema, oliguria and hæmaturia, hypertension being noted only in a very small percentage of cases. The course of the disease is comparatively benign here and in the majority of cases it terminates favourably without complications. The suggestion has been put forward that this is due to the predominantly carbohydrate and low-protein diet of our people. The complications that may be met with are cardiac failure, hypertensive encephalopathy and uræmia, the latter two being however, very rare.

The essentials of treatment are :—(1) Rest in bed, (2) Salt-free fluid diet and (3) an alkaline diuretic mixture. When there is pyrexia and an active focus of infection, antibiotics are indicated.

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OBSERVATIONS IN GENERAL PRACTICE*

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I WOULD like to record my observations under the following three heads:—

(1) Observations in infants and children.

(2) Observations in adults of both sexes.

(3) Observations in old persons.

1. Observations in infants and children.—Regarding infants I have particularly noted that the ear, nose, throat and genitals should be examined in order to detect any congenital deformities, like phimosis and diseases like diphtheria, enlarged tonsils, etc.

I have observed in many infants (six to eighteen months old) whose mothers informed me that the infants had occasional oliguria and cried during micturition. On examination of the prepuce of the infants, various degrees of phimosis were observed and as such circumcision was advised. After circumcision all the infants became completely free of micturatory troubles. I have also observed that due to ignorance and poverty some of the parents of the infants with phimosis do not agree to the operation even though it is a minor one. In such cases the hazards of grave complications should be clearly and fully explained to the parents.

Diphtheria is a grave disease and is common in infants. Thrush is another common disease simulating diphtheria. So diphtheria should be differentiated from thrush. I would like to mention here two of my cases of diphtheria—one in a girl of 15 months and another in a boy of 2 years. Generally the membrane begins near the tonsils. There is slight fever and difficulty in breathing.

After directing one case of diphtheria to the Hospital, the child died of lack of prompt treatment. Hence the parents of the patients should be instructed to obtain prompt treatment to children suffering from diphtheria in order to save their lives.

An infant aged 8 months, was found to be very pale and anæmic. Oral iron preparations were not well tolerated because he was getting sometimes diarrhœa and sometimes vomiting and constipation. So I stopped the oral iron preparations and instead, injected iron-dextran complex (Imferon) 1·5 cc. I.M. twice a week for four weeks. The hæmoglobin per cent was restored to normal after the injections.

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For diarrhœa in infants and children I have observed that preliminary fasting and administration of enough water by mouth help much in controlling the diarrhœa. Due to ignorance, many mothers feed their infants whenever they cry. Also they do not give water to the infants even in the hot season and even when the infants have frequent motions. This has often resulted in the death of many infants. Hence I always strongly advise such mothers to give enough water to their children especially when they have frequency of stools.

In an infant aged 12 months there was sudden distention of the abdomen with high fever (104°F). There was constipation but no vomiting. The infant had slight fever and cough for six days. Four hours before the distention, the infant was very uneasy and so I injected 30 mg. pethidine hydrochloride intramuscularly. As the distention was alarming I got the infant admitted in hospital, but on the next day he became worse owing to repeated vomitings and died in the evening. From this case I noted that even a small dose of pethidine is likely to cause paralytic ileus in an infant.

In small-pox nearly three weeks after the fourth stage, complications like otitis media and bacillary dysentery were found in a boy aged 6 years. I noted that intensive treatment *e.g.* strepto-penicillin injections (8), B-complex injections (6), Vitamin D injections (4 in 4 weeks), Vitamin A-D drops orally and cleaning the ears and installing chloromycetin ear-drops resulted in complete recovery of the patient. Advice regarding cleanliness of the mouth, daily sponging of the body and daily change of clothes and bed-sheets hasten the recovery.

I have observed in many of my patients with whooping cough that Vitamin K 10 mg. in aqueous solution injected daily for ten days results in complete recovery. After the fourth injection the frequency of attacks decreases and at the end of 7th or 8th injection there is almost no attack. However, it is necessary to give ten injections, because in one of my patients I observed that after five injections the treatment was stopped (against medical advice) and so there was recurrence after three weeks. The course was repeated and there was complete recovery. From this I have come to the conclusion that Vitamin K injections administered as above are specific for whooping cough, while with antibiotic medicaments such good and quick results are not obtained, let alone their high cost and debilitating effects.

Possibility of helminthiasis should always be borne in mind while examining children with big bellies, constipation, and pain in the abdomen. I have recently observed a peculiar case of round worm infestation in a child of 5 years. The father of the child gave the history of worms being passed in the stools of the

child occasionally. I gave 3 drams of piperazine citrate elixir diluted with 6 drams of water. After about ten hours the child had a desire to pass stools, so the father made him sit on the ground. He kept a long piece of cloth with him and coaxed the child to strain and round worms in a bunch of 5 to 10 came out. The father pulled the worms out with the help of the cloth and buried them near the ground. In this way the child strained about 15 times in 30 minutes and nearly 175 round worms were pulled out. From this case I found that it is good to dilute the piperazine solution so that it may rapidly reach the intestine. Another important thing to be noted is that the parents of the child should be instructed to coax the child to strain at stools every 2 to 3 minutes and to pull out the worms which should not be shown to the child otherwise the child may be afraid of the worms looking like serpents and may get up from the ground in fear.

Impending blindness due to mild tuberculous meningitis was observed in a child aged 4 years. The child was brought to me for slight fever, emaciation and peevishness. In the course of treatment it was observed that the child was not able to stare at anything and was not playing with its dolls, etc. So blindness was suspected and its C.S.F. was examined. He was put on daily injections of 1 g. of dihydrostreptomycin for 10 days. He was also given isonicotinic acid hydrazide tablets 50 mg., one tablet twice a day. The child's eye-sight was gradually restored to normal.

In a girl aged 10 years there was fever and severe pain in the right knee-joint with a slight swelling over the knee due to rheumatoid arthritis. The pain was so severe that she was not able to walk. A single intramuscular injection of 3·5 cc. of Irgapyrin (Geigy) was so very effective that after about four hours there was neither pain nor fever and the child was able to walk. Along with the injection the usual salicylate mixture was given orally and next day the injection was repeated. The girl was free of all symptoms after 6 days. In this case I observed that for giving relief to a patient having acute rheumatic pain, injection of Irgapyrine is very good.

Premature ejaculation in adult males during sex-act is a common-complaint in general practice. I have observed that one or two hours before coitus if pethidine hydrochloride 50 to 75 mg. is injected intramuscularly in the male, he can have retention during coitus for almost twice or thrice his usual time. However, he should be warned against unnecessary haste and continuous movements during coitus. Pethidine should be used sparingly, otherwise, there is danger of addiction.

A woman aged 30, had headache, slight fever and burning in the eyes. Besides other measures, procaine penicillin four lakhs

units were injected intramuscularly daily for 6 days. After the second injection the patient complained of slight blurring of vision and tension in the head. But this was neglected and the course of injections was pushed to completion; and one week after the last injection the patient had almost complete loss of vision. Luckily this acquired blindness gradually disappeared and after about 6 months her vision was fully restored without any other treatment.

In chronic dry eczema on the hands and legs I have observed that almost all types of ointments and lotions prove useless or provide only slight relief. In ten of my cases the eczema was cured by ten exposures (once a week for 60 to 100 seconds) to superficial X-rays (100*r*). It was observed that after 3 weeks the eczematous rough skin became smooth and itching also decreased. At the end of 8 weeks the skin was almost normal in appearance except blackish in colour. To avoid recurrence, a complete course of ten exposures is necessary. The blackish colour of the skin gradually disappears within 3 to 6 months.

An adult aged 20, had an eczematous ulcer 1·5"x2" of 2 years' duration in the middle of his right leg. It had defied all treatment. After cleansing, I dressed the ulcer with an ointment containing highly unsaturated fatty acids *viz.*, F. 99, in the beginning daily and later on after two weeks, thrice a week for a further 4 weeks. The ulcer completely healed. It was observed that the patient was weak and underweight and as such the healing of the ulcer was delayed so long. Had his resistance been increased by F 99 oral capsules or some other medicine, the ulcer would have healed earlier.

Breast abscess in the puerperal period.—A female aged 20 had a hard lump in her left breast. History given was that a few days back while she was breast-feeding her 4 months' old child, the head of the child butted against her left breast. There was slight fever and pain as well. Strepto-penicillin injections were given one every day for 8 days. The lump became somewhat small in size, but did not resolve completely. She was advised hot fomentations to the breast. In order to effect a radical cure, pus was evacuated by an incision. From this case it was observed that after two or three antibiotic injections, deep incision should be made in the breast, adhesions should be broken and pus evacuated. From the next day, injection should be continued. In this way the recovery period can be shortened.

One thing in particular should be noted in this connection: even today there are persons especially in the villages of Gujarat (India), who believe in superstitions and magic-cures. They should be educated about the folly and uselessness of such beliefs.

Post-abortive and post-partum haemorrhages.—In such hæmorrhages one cc. (0·2 mg.) of a solution of Methylergometrine tartrate (Methergin-Sandoz) given slowly intravenously, controls the bleeding quickly. In very severe cases, the injection should be repeated after 3 to 4 hours, otherwise the patient can be put on oral Methergin tablets—1 *t.d.s.* for a further period of four days. The above routine was very successful in many of my cases. Anæmia caused by loss of blood before the hæmorrhage is controlled, can be very easily combated by giving intramuscular injections of iron-dextran complex (Imferon) thrice a week for two to three weeks.

Delayed menstruation and pregnancy test.—When there is delayed menstruation in a married woman, the question arises whether it is merely delayed menstruation or pregnancy. In many of my cases I have observed that when one cc. solution of 20 mg. progesterone and 2 mg. œstradiol benzoate in oil (Zondek) is given intramuscularly on two successive days, menstruation starts within 5 to 10 days (sometimes even 12 days) if it is only delayed menstruation. If however, there is no bleeding, there is a probability of pregnancy. Pregnancy is most likely if the lady is healthy with a history of previous regular menstrual cycles. I have observed this result in many of my female patients. This method is also very useful in case of amenorrhœa of long duration (6 to 8 years) in adult female patients.

Chlorpromazine in vomiting of pregnancy:—Chlorpromazine (Largactil-M & B) 10 mg. tablets 1 *t.d.s.* are very effective in the vomiting of pregnancy. As 25 mg. tablets cause drowsiness, only 10 mg. tablets are suitable for ambulatory patients.

Pumpkin-seeds in tape-worm infestation:—A non-vegetarian patient, aged 25 was suffering from tape-worm infestation for four years. He had tried all available medicines *e.g.*, filix mas, crystalline hexylresorcinol pills (Crystoids-Sharp & Dohme) etc., but there was no radical cure, as only a part of the worm was temporarily evacuating but the head might be remaining. The following simple treatment was tried recently on the same patient with great success:—

About two ounces of fresh pumpkin seeds were dried and after removing their shells, a fine powder was made. As the oil from the seeds comes out during powdering, the mass of powdered seeds becomes sticky and does not look like ordinary dry powder. But one should not mind this. This mass was mixed with 3 ounces of milk and was given to the patient at 8 in the morning after 24 hours' fasting. Three hours later *i.e.* at 11 a.m., one ounce of castor oil was given. After 4 hours *i.e.* at 3 p.m., the patient felt a desire to evacuate. The patient informed me that at first the powder mixed with milk was

evacuated and then a big ball of tapeworms came out. Since then the patient is quite healthy and has gained 6 lbs. in weight.

Deproteinated pancreatic extract in ureteric colic :—In many of my patients with severe ureteric colic, prompt and satisfactory results were obtained by injecting 2 cc. of Deproteinated pancreatic extract (Depropanex—Sharp & Dohme). The patient gets great relief of the severe pain of renal colic.

Methischol in diabetes mellitus :—An old patient, aged 55, had diabetes mellitus of long duration (15 years), which was controlled by daily insulin injections. Recently he was given 20 methischol (choline, inositol and methionin) injections 2 cc. each intramuscularly one every day. Later on, he was put on Methischol liquid for two months. I have noted that this treatment had a very favourable effect on his diabetes. He no longer requires insulin injections. Recently his prostate was removed. He had an uneventful recovery from the operation of prostatectomy. The patient is somewhat obese. In obese persons there is a tendency to sluggish liver and hence the above good results.

Angina-pectoris.—I have often observed that in old persons the pain of angina pectoris is quickly controlled by administering 10 to 15 drops of coramine adenosine liquid (Ciba) in one ounce of water. This can be safely repeated every time there is an attack.

Severe burns.—About a year ago, a man aged 52, sustained severe burns from the bursting of a primus stove. There were extensive burns of 2nd and 3rd degrees on his face, ears, chest and hands. Preliminary treatment *e.g.* A.T.S. injections, glucose-saline drip, morphia, etc. was given in a large municipal hospital. On the 3rd day of the accident, there was considerable œdema on his face. After 8 days the patient was brought to me. I was not very hopeful about the prognosis as there was hardly 1 or 2% chances of recovery. I removed the old dressings and carefully cleaned the burned areas and tried the open method of treatment by applying Badinal-gel (Bayer) and later on chlorasium ointment. As the patient had great debility, fever and exudation of pus from the burned parts, six streptopenicillin injections and six Liver B-complex injections were given. Luckily the patient recovered after 6 weeks. From this case it was observed that with the open method of dressing burn cases, and the proper use of antibiotics and vitamin injections, the prognosis gets more favourable than with the old closed method of dressing.

Fungus infection of toes.—I have observed in many of my patients with fungus infection of the toes that a single application of the ointment Tineafax (B. W. & Co.—Compound Undecylenate ointment) gives excellent results. Three or four

applications once daily at bed-time, are sufficient to effect a complete cure.

A case of dyspepsia mistaken for heart-disease.—Four months ago I was called to see a patient aged 55. I found that his heart sounds and pulse were normal; B.P. was 135 mm. of Hg. and his temperature was normal. I was told that 4 days back he was seen by a cardiologist, who took a cardiogram and would examine him in detail after taking further cardiograms. The patient had constipation, anorexia, flatulence and occasional uneasiness due to the upward pressure of gas in the gastro-intestinal tract. This was relieved when he walked to and fro in his room for 5 to 10 minutes. I treated him for his dyspepsia, flatulence and anorexia. I also gave 4 Testosterone propionate injections each of 25 mg. twice a week and 4 B-complex with colloidal calcium and Vitamin D injections twice a week for his general debility. After 3 months the patient became quite all right and resumed his usual work of managing a shop. From this case I have observed that simple diseases should not be lost sight of in diagnosing a patient's condition. Of course, the possibility of grave diseases should also be borne in mind but the common disease should first be excluded.

In the present era of antibiotics and other potent medicines like cortisone etc., it is often possible to give prompt relief to patients suffering from various diseases. But I have observed that this encourages the ignorant and poor patients to discontinue the treatment the very next day after getting relief. Incomplete treatment often results in severe complications and recurrences later. Hence such patients should be warned against the hazards of incomplete treatment, in their own interests.

The above observations are based on my experience with 13,000 patients over a ten year period 1948 to date.

DETECTION OF GASTROINTESTINAL BLEEDING

Henry has used a mixture of hydrogen peroxide and barium as a diagnostic aid in cases of upper gastrointestinal bleeding in which the bleeding abnormality was not otherwise apparent. He added approximately 12 cc. of hydrogen peroxide to 180 cc. of standard barium, as the test mixture. In the presence of blood, a foam forms that is readily seen on the X-ray films.

This method is of no use in detecting bleeding areas in the colon, as fœcal matter will also cause foaming of the mixture. A certain number of false positives are obtained in the upper gastrointestinal tract. Further, the mixture will not always foam at the exact point of bleeding and the detection of foaming is interpreted to mean that the bleeding point is in the area of the foaming or proximal to this. No untoward sequelæ have resulted from the examination.—(*Am. J. Roentgenol.*, *78*: 698, 1957, via *G.P.*).

CLINICAL TRIAL WITH 'PYRACORTINE' *(HOECHST)**

(Prednisone *plus* Pyramidon)

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A LARGE number of analgesic drugs are available for the management of painful conditions of the musculo-skeletal system. Some cases are not relieved of the pains with the recommended pharmacopœial dosage of the drugs and higher dosages are likely to produce toxic effects. Prednisone, an effective recent addition to our therapeutic armamentarium for the treatment of such conditions is prohibitive in cost and produces untoward effects on high dosage. 'Pyracortine' (Hoechst) which contains prednisone 0·75 mg. and pyramidon 150 mg. in each tablet was selected for therapeutic trial in view of the powerful analgesic effects of the constituent drugs and of the small dosage of each in the combination.

Material and methods.—Sixteen consecutive patients with moderate to severe degrees of pain were included in the study. There were six cases of rheumatoid arthritis, six of spondylitis ankylopoietica, two of gout, one of acute rheumatic fever and one case of osteo-arthritis. The duration of the ailments was from two days to six years. Twelve of the patients were males and four females. Diagnosis was arrived at after careful history-taking, full clinical and radiological examinations and the examination of blood.

Two aims were kept in view in the clinical trial: (1) therapeutic value of the drug and (2) any associated untoward effects. The therapeutic value was assessed both subjectively and objectively. Subjective evaluation was done, on the general feeling of the patient and on pain and tenderness of the affected parts. Objective assessment was based on swelling, colour, temperature and mobility of the painful parts and E.S.R. Investigations for untoward effects related to œdema, body-weight, clinical examination of the liver, blood examination for R.B.C., Hb., T.C., D.C., and urea, urine examination and withdrawal effects. Any other effects, especially skin rashes and gastric dysfunction when observed, were noted. The assessment was made by one of us throughout. The patients were kept under observation, at least for three days after the period of treatment, to note any withdrawal effects.

*Specially contributed to the ANTISEPTIC

The dosage scheduled was as follows: 1st day—2 tablets, 8 hourly after food; 2nd day—1 tablet 6 hourly; and for the following 10 days—1 tablet thrice daily. In cases where the therapeutic response was not satisfactory in 4 days, the dosage was increased to 2 tablets 8 hourly for 8 days. The total duration of treatment was only 12 days.

The patients were put on iron and multivitamin when necessary and physiotherapy in the form of passive and active

TABLE

S. No.	Name, sex, age and date of admission	Complaints with duration period	Diagnosis	Joint	Before treatment
	P., M., 38 yrs. 25-6-'57	Pain all over the body, specially in joints, back and chest. Cannot walk without a support. Pain is constant. Duration of pain: 3 yrs.	Rheumatoid arthritis	(*a*) Pain	In all the joints of body and in the back and chest
				(*b*) Swelling	Nil
				(*c*) Colour	No change
				(*d*) Tenderness	All the joints including those of vertebral column and thoracic cage
				(*e*) Temperature	Not raised
				(*f*) Mobility	Varying degrees of restriction in all the joints involved, mainly in ankle and wrist joints and spine; walks with a support.
2	A., F., 56 yrs. 2-7-'57	Pain in big joints of body and back. Constant: more at rest. Gradually increasing. 3 yrs'. duration.	Osteoarthritis	(*a*) Pain	In all the big joint and the spine
				(*b*) Swelling	Nil
				(*c*) Colour	No change
				(*d*) Tenderness	Nil
				(*e*) Temperature	Not raised
				(*f*) Mobility	Present, very slightly restricted, associated with pain; more at first while trying to move.
3	B., M., 24 yrs. 6-7-'57	Low back-ache—both at rest and on movement, more on sitting, bending and getting up from bed. 1 yr's. duration	Spondylitis Ankylopoietica	(*a*) Pain	Constant back-ache with aggravation on movement
				(*b*) Swelling	Nil
				(*c*) Colour	No change
				(*d*) Tenderness	Nil
				(*e*) Temperature	Not raised
				(*f*) mobility	Full range but associated with pain

movements and the application of heat with hot water bags were instituted wherever feasible.

Findings.—Detailed observations regarding the therapeutic effects are given in Table I (*below*) and those relating to untoward effects are given in Table II (*see p.* 676 and 677). Table III (*see p.* 678) shows the summary of the important effects. The salient features alone are summarized in Table IV (*see p.* 678).

I

Conditions			E.S.R. (Westergren) in 1st hour		Remarks
3rd day of treatment	7th day of treatment	13th day of treatment	Before treatment	After treatment	
Much less. Can move joints to some extent.	Less pain	Markedly relieved	112 mm.	100 mm.	Patient felt much improved at the end of treatment
Nil	Nil	Nil			
No change	No change	No change			
Slightly less	Less	Less by almost half			Fall of E.S.R. by 10·5%
					Result of treatment: good
Not raised	Not raised	Not raised			
—	—	Can walk for short distances without support. Feels 'freeness' in joints. Restriction not completely gone			
Almost same	Little less	Less pain	7 mm.	6 mm.	Patient did not feel much difference at the end of treatment, though during movement of the joints he admitted having less pain
Nil	Nil	Nil			
No change	No change	No change			
Nil	Nil	Nil			
					Result of treatment: fair
Not raised	Not raised	Not raised			
—	—	Less pain, say by half, in movement			
No improvement	Intensity of pain slightly less	Slight improvement	45 mm.	42 mm.	Improvement is not conspicuous. Patient not feeling better
Nil	Nil	Nil			
No change	No change	No change			
Nil	Nil	Nil			
					Result of treatment—poor.
Not raised	Not raised	Not raised			
		Full range, pain was slightly relieved			

Table I—*(Contd.)*

S. No.	Name, sex, age and date of admission	Complaints with duration period	Diagnosis	Joint	Before treatment	E.S.R. (Westergren) in 1st hour: Before treatment	E.S.R. (Westergren) in 1st hour: After treatment	3rd day of treatment	7th day of treatment	13th day of treatment	Remarks
4	G., F., 35 yrs. 9-7-'57	1. Pain in the back, from neck to buttock. 2. Stiffness of back. 3. Pain in peripheral joints. 4 yrs'. duration. Progressive: constant; movements painful. Patient cannot straighten the body. No fever	Rheumatoid spondylitis	(*a*) Pain	Constant crippling pain in the back and peripheral joints. Slightest movement increases the pain, keeps the body stiff	42 mm.	15 mm.	Almost same	Pain much relieved, can move the neck and body freely to some extent, but stiffness still same	Pain relieved almost by half. Sleeping and talking both with much less pain, moving the neck in all directions quite freely	Patient's general feeling was better and she was cheerful.
				(*b*) Lacking	Slight swelling of the interphalangeal joints			No change	Swelling relieved	No swelling	Fall of E.S.R. by 36%
				(*c*) Colour	No change			No change	No change	No change	Result of treatment: good.
				(*d*) Tenderness	Tenderness mainly in the spine—cervical and lumbar region and in the peripheral joints			Almost same	Tenderness markedly relieved	Only some tenderness in the spine and peripheral joints free from tenderness	
				(*e*) Mobility	Restricted all along the spine—more in the neck. Active movements very slight; passive movement, though little more, is associated with pain. Movement in peripheral joints not very much restricted	—	—	—	—	Marked improvement especially in neck region. Range of both active and passive movements markedly increased. Specially nodding movement. Can see sideways. Severity of stiffness less. In peripheral joints, there is no marked change	
5	R., M., 58 yrs. 18-7-'57	1. Pain in toe-joints, ankle, elbow, wrist and finger joints 2. Swelling of the affected joints. 3. Occasional exacerbations with constant aching pain: 4 yrs'. duration	Gout (chronic)	(*a*) Pain	In the ankle, elbow, wrist, finger and toe-joints—persistent, movement aggravates pain. Limbs practically useless	25 mm.	10 mm.	No change	Less pain in wrist and ankle joint only	Slightly less in other joints also	Blood uric acid: 9 mg% before treatment which came down to 7·8 mg% at the end of treatment
				(*b*) Swelling	Moderate swelling of all joints involved			No change	No change	No change	Fall of ESR by 60%
				(*c*) Colour	No change			No change	No change	No change	
				(*d*) Tenderness	Marked in all the joints involved			No change	No change	Slightly less	Patient did not feel better. Result of treatment not very encouraging: Fair
				(*e*) Temperature	Not raised			Not raised	Not raised	Not raised	
				(*f*) Mobility	Restricted active movement of all the joints affected in varying degrees. Passive movement resented due to pain			—	—	Range of active movement: Same range of passive movement slightly increased	

TABLE

S. No.	Name, sex, age and date of admission	Complaints with duration period	Diagnosis	Joint	Before treatment
6	S., M., 20 yrs. 20-8-'57	1. Pain in the knee-joints and back. 2. Stiffness of back. Progressive, constant pain gradually crippling the patient. No fever, wasting present. 3 yrs'. duration	Rheumatoid arthritis	(*a*) Pain	In the back and knee joints constant boring pain which gets worse on movement. Patient afraid of walking
				(*b*) Swelling	Knee joints moderately swollen
				(*c*) Colour	No change
				(*d*) Tenderness	Over the spine, sacro-iliac joint and knee-joints
				(*e*) Temperature	Not raised
				(*f*) Mobility	Greatly restricted movement in all directions in spine. Some restriction in knee joints
7	A., M., 25 yrs. 27-8-'57	1. Low back-ache, more on movement, constant, gradually increasing. 1 yr. 2. Pain along the legs.	Spondylitis Ankylopoietica	(*a*) Pain	Low back-ache, constant even at rest, cannot work or freely move about. Pain also along the lower limbs.
				(*b*) Swelling	Nil
				(*c*) Colour	No change
				(*d*) Tenderness	Slight at lumbo-sacral region.
				(*e*) Temperature	Not raised.
				(*f*) Mobility	Present : painful on extreme flexion and extension of back
8	J., M., 20 yrs. 7-9-'57	1. Pain and swelling of the joints of the right upper limb and both lower limbs. 2. Inability to walk properly. 3. Pain is constant with exacerbation. —2 yrs.	Rheumatoid arthritis	(*a*) Pain	Constant pain in joints of right upper and lower limbs which increase on active and passive movement.
				(*b*) Swelling	Moderate swelling of the joints affected.
				(*c*) Colour	No change
				(*d*) Tenderness	Over all the joints moderate.
				(*e*) Temperature	Not raised.
				(*f*) Mobility	Restricted movement in all the affected; forceful passive movement is successful only a little.

I—(*Contd.*)

Conditions			E.S.R. (Westergren) in 1st hour		Remarks
3rd day of treatment	7th day of treatment	13th day of treatment	Before treatment	After treatment	
No change	Slightly better	Pain less by about a third	105 mm.	118 mm.	Patient did not feel better; ESR went up by 12%. Result of treatment : Fair
No change	Slightly less	Less by about half			
No change	No change	No change			
No change	No change	Slightly less			
Not raised	Not raised	Not raised			
—	—	No change			
Same	Slightly less pain in back.	Slight relief in back. Leg pain same as before.	95 mm.	72 mm.	Patient developed increased appetite; otherwise, no change. Fall of ESR by 24%. Result : Poor.
Nil	Nil	Nil			
No change	No change	No change			
No change	No change	No change			
Not raised	Not raised	Not raised			
—	—	Little less pain on extreme flexion and extension.			
No change	No change	No change	100 mm.	95 mm.	Patient did not feel better. Result of treatment : Poor.
No change	No change	No change			
No change	No change	No change			
No change	No change	No change			
Not raised	Not raised	Not raised			
—	—	No change			

TABLE I—(*Contd.*)

S. No.	Name, sex, age, and date of admission	Complaints with duration period	Diagnosis	Joint	Before treatment	3rd day of treatment	7th day of treatment	13th day of treatment	E.S.R. (Westergren) in 1st hour: Before treatment	E.S.R. (Westergren) in 1st hour: After treatment	Remarks
9	A., M., 58 yrs. 10-9-'57	Low back pain constant, more on bending: 2 yrs.' duration	Spondylitis ankylopoietica	(*a*) Pain	Pain over the lower spine, sacro-iliac joints; Persistent with aggravation on movement	No change	No change	No change	15 mm.	11 mm.	Patient did not feel improved Result of treatment: poor
				(*b*) Swelling	Nil	Nil	Nil	Nil			
				(*c*) Colour	No change	No change	No change	No change			
				(*d*) Tenderness	Over sacro-iliac joints	Not raised	Not raised	Not raised			
				(*e*) Temperature	Not raised	—	—	No change			
				(*f*) Mobility	All movements in the region of the lumbo-sacral spine are painful, specially the forward and backward bending. Some restriction of movement	Chest pain: less; back pain: same	Chest pain: much less; back-pain: some improvement	Chest pain: nil back-pain greatly reduced	10 mm.	10 mm.	Patient was happy at the treatment. Result of treatment: good
10	P., M., 29 yrs. 21-9-'57	Dull-aching pain in the chest and back, constant with exacerbation. Pain increases on movement: 4 yrs.' duration	Spondylitis ankylopoietica	(*a*) Pain	In the chest: on twisting and forced respiration; in the back, on twisting and bending—pain increase; otherwise constant	Nil	Nil	Nil			
				(*b*) Swelling	Nil	No change	No change	No change			
				(*c*) Colour	No change	Same	Same	Same			
				(*d*) Tenderness	Over lumbo-sacral spine and sacro-iliac joint on deep pressure	Not raised	Not raised	Not raised			
				(*e*) Temperature	Not raised	—	—	Present in all directions; with only slight pain			
				(*f*) Mobility	Present in all directions, but painful	Same	Little less pain	Much less pain though not completely relieved. Feels less pain on forward and backward bending	70 mm.	35 mm.	Patient felt better. Result of treatment: Good. Fall of ESR by 50%.
11	P., F., 21 yrs. 1-10-'57	Constant low backache, more on movement: 5 months' duration	Spondylitis Ankylopoietica	(*a*) Pain	Pain on lumbo-sacral region and sacro-iliac joints, constant: aggravated on forward and backward bending.	Nil	Nil	Nil			
				(*b*) Swelling	Nil	No change	No change	No change			
				(*c*) Colour	No change	Same	Less	Markedly improved but not completely			
				(*d*) Tenderness.	Over the sacro-iliac and lumbo-sacral joints on deep pressure	Not raised	Not raised	Not raised			
				(*e*) Temperature	Not raised	—	—	Very little pain on movement which is not restricted			
				(*f*) Mobility	Not restricted but forward and backward bending produces pain						

TABLE I—*(Contd.)*

S. No.	Name, sex, age and date of admission	Complaints with duration period	Diagnosis	Joint	Before treatment	Condition 3rd day of treatment	Condition 7th day of treatment	Condition 13th day of treatment	E.S.R. (Westergren) in 1st hour: Before treatment	E.S.R. (Westergren) in 1st hour: After treatment	Remarks
12	A., M., 26 yrs. 5-10-'57	Pain and swelling of the right 2nd and 3rd metatarso-phalangeal joints. Sudden onset with intense pain and some fever. 2 days' duration.	Acute gout	(*a*) Pain	Excruciating intense pain in the 2nd and 3rd toes of right foot.	Pain strikingly less	Pain completely relieved	No pain	35 mm.	12 mm.	Blood uric acid came down from 4·8 mg.% before to 3·6 mg.% after treatment. Patient felt very well. No temperature. Result of treatment: Excellent. Fall of ESR by 66%.
				(*b*) Swelling	Markedly swollen (affected joints)	Subsiding	Very little left	No swelling			
				(*c*) Colour	Dusky red colour	Redness vanishing	Normal colour.	Normal colour			
				(*d*) Tenderness	Acutely tender	Lessening	Very little tenderness	No tenderness			
				(*e*) Temperature	Warm joints	Temperature subsiding	Not raised	Not raised			
				(*f*) Mobility	Completely restricted	—	—	Free movement			
13	K., M., 26 yrs. 17-10-'57	1. Pain in the ankle and knee joints: 6 yrs. 2. Pain in left wrist joint: 2 yrs'. duration Gradual onset; pain is constant, gradually increasing. Associated with swelling.	Rheumatoid arthritis	(*a*) Pain	Pain in ankle and knee joints, both sides and in left wrist Constant: aggravates on movement	No improvement	No improvement	No improvement	35 mm.	20 mm.	Patient did not feel better. Result of treatment: Poor.
				(*b*) Swelling	Moderate	Same	Same	Same			Fall of ESR by 43%.
				(*c*) Colour	No change	No change	No change	No change			
				(*d*) Tenderness	Marked	Same	Same	Same			
				(*e*) Temperature	Not raised	Not raised	Not raised	Not raised			
				(*f*) Mobility	Restricted in the joints involved: Forced passive movement is painful	—	—	No change			
14	N., F., 35 yrs. 10-11-'57	1. Pain and swelling of all the peripheral joints. Pain in back. 2. Fever: Moderate. Sudden onset, almost simultaneous involvement of all the joints.— 7 days' duration	Acute rheumatic fever?	(*a*) Pain	Acute pain in all the joints of the periphery and of the cervical spine: Incapacitating; constant; cannot use limbs	Pain a little less	Pain much relieved. Can use limbs. Takes food with hands	Using hand freely and walking freely but slight residual pain is still persisting	45 mm.	55 mm.	Patient felt better. No fever at the end of treatment. Result of treatment: Excellent. Rise of ESR by 22%.
				(*b*) Swelling	Affected joint of the periphery moderately swollen	Swelling little subsiding	Markedly subsiding	Little left in ankle joints; others are normal			
				(*c*) Colour	Red	Redness diminishing	Normal colour	Normal			
				(*d*) Tenderness	Acutely tender.	Diminishing	Very slight	Very slight on deep pressure			
				(*e*) Temperature	Warm	Slightly warm	Normal	Normal			
				(*f*) Mobility	Extremely painful: markedly restricted	—	—	Free movement			

TABLE

S. No.	Name, sex, age and date of admission	Complaints with duration period	Diagnosis	Joint	Before treatment
15	M., M., 45 yrs. 14-11-'57	Pain in the low back & left buttock: 2½ months' duration. Gradually increasing. Aggravated by exertion and relieved by rest	Sacro-iliac arthritis —spondylitis	(*a*) Pain	Constant pain in the back and left buttock and along left leg; cannot walk properly.
				(*b*) Swelling	Nil
				(*c*) Colour	No change
				(*d*) Tenderness	Over sacro-iliac joints both sides on deep pressure
				(*e*) Temperature	Not raised
				(*f*) Mobility	Not restricted though painful on bending and twisting the back.
16	G., M., 47 yrs. 16-11-'57	1. Pain of the right upper limb including the joints, more in the interphalangeal joints. 2. Pain low-back and joints of left leg. Progressive, constant both at rest and on exertion. 2 yrs.' duration	Rheumatoid arthritis (?)	(*a*) Pain	Pain right upper limb including joints, constant and in back and joints of left leg.
				(*b*) Swelling	Moderate swelling of left knee and ankle joints.
				(*c*) Colour	No change
				(*d*) Tenderness	Tenderness in the affected parts.
				(*e*) Temperature	Not raised
				(*f*) Mobility	All movements in right upper limbs specially at the shoulder are restricted. Forceful passive movement gives extreme pain: left knee and ankle movements are also restricted

I—(*Contd.*)

Condition			E.S.R. (Westergren) in 1st hour		Remarks
3rd day of treatment	7th day of treatment	13th day of treatment	Before treatment	After treatment	
Almost same	Little less	Little less in the back; said to be same in buttock and leg; but the patient is seen to be walking about freely and boldly	25 mm.	18 mm.	Objectively, the patient was better, though he would not admit it. Result of treatment: Fair. Fall of E.S.R. by 28%.
Nil	Nil	Nil			
No change	No change	No change			
Same	Same	Little less			
Not raised	Not raised	Not raised			
—	—	Said to be less pain in movement			
Same	Slightly less in knee and ankle joints. No improvement in upper limbs	Though the patient did not admit of relief of pain, he moves about freely. Right upper limb is kept immobile	64 mm.	95 mm.	Patient did not feel better, though some relief of pain and movement in lower limb occurred. Result of treatment: Fair. Rise of E.S.R. by 48%
Almost same	Much subsided	Subsided by ¾th; not normal			
No change	No change	No change			
Same	Less on knee and ankle joints	Marked relief though present			
Not raised	Not raised	Not raised			
—	—	No movement at all at right upper limb. In the left lower limb, movements are little 'freer' than before			

TABLE

S. No.		Blood findings				Kidney findings	
		Before treatment	3rd day	7th day	13th day		Before
1	R.B.C./cmm.	4 mil.	4 mil.	4·2 mil.	4·2 mil.	Urine	No abnormality
	Hb% (Hellige)	50	55	65	70	Blood urea in mgm%	36
	T.C. per cmm.	7,200	8,200	8,000	7,000		
	D.C. (P.L.M.E.)	52, 44, 4, 0	68, 20, 7, 5	62, 31, 4, 3	56, 32, 5, 7		
2	R.B.C./cmm.	3·2 mil.	3·2 mil.	3·1 mil.	3·1 mil.	Urine	No abnormality
	Hb% (Hellige)	55	55	55	56	Blood urea in mgm%	40
	T.C./cmm.	4,800	5,000	5,600	5,700		
	D.C. (P.L.M.E.)	55, 37, 3, 5	64, 29, 4, 3	60, 32, 3, 5	57, 34, 5, 4		
3	R.B.C./cmm.	2·5 mil.	2·8 mil.	3·1 mil.	3 mil.	Urine	No abnormality
	Hb% (Hellige)	45	50	50	52	Blood urea in mgm%	48
	T.C./cmm.	8,200	8,200	8,100	7,400		
	D.C. (P.L.M.E.)	57, 32, 5, 6	40, 47, 5, 8	53, 35, 5, 7	64, 31, 3, 2		
4	R.B.C./cmm.	1·1 mil.	1·2 mil.	1·6 mil.	1·8 mil.	Urine	No abnormality
	Hb% (Hellige)	23	22	30	32	Blood urea in mgm%	32
	T.C./cmm.	6,500	6,800	6,500	3,000		
	D.C. (P.L.M.E.)	60, 35, 4, 1	62, 33, 4, 1	65, 28, 5, 2	51, 43, 2, 4		
5	R.B.C./cmm.	2·6 mil.	2·5 mil.	2·7 mil.	3·1 mil.	Urine	No abnormality
	Hb% (Hellige)	55	58	58	60	Blood urea in mgm%	48
	T.C./cmm.	6,800	6,600	5,800	5,600		
	D.C. (P.L.M.E.)	63, 32, 3, 2	65, 30 4, 1	59, 36, 2, 3	58, 34, 4, 4		
6	R.B.C./cmm.	2·6 mil.	2·4 mil.	2·4 mil.	2·6 mil.	Urine	No abnormality
	Hb% (Hellige)	50	50	50	50	Blood urea in mgm%	38
	T.C./cmm.	6,800	6,400	6,600	6,300		
	D.C. (P.L.M.E.)	63, 32, 3, 2	60, 33, 5, 2	60, 29, 6, 5	62, 31, 4, 3		
7	R.B.C./cmm.	3·8 mil.	3·6 mil.	3·8 mil.	4 mil.	Urine	No abnormality
	Hb% (Hellige)	60	60	62	64	Blood urea in mgm%	30
	T.C. cmm.	6,700	6,800	8,900	9,000		
	D.C. (P.L.M.E.)	64, 32, 3, 1	70, 29, 1, 0	54, 40, 6, 0	65, 32, 2, 1		
8	R.B.C./cmm.	2·3 mil.	2·4 mil.	2·3 mil.	2·6 mil.	Urine	No abnormality
	Hb% (Hellige)	50	55	55	60	Blood urea in mgm%	28
	T.C./cmm.	12,400	13,600	10,000	13,200		
	D.C. (P.L.M.E.)	62, 30, 5, 3	50, 45, 4. 1	69, 27, 3, 1	69, 27, 3, 1		
9	R.B.C./cmm.	3·7 mil.	3·5 mil.	3·7 mil.	3·8 mil.	Urine	No abnormality
	Hb% (Hellige)	65	65	68	68	Blood urea in mgm%	40
	T.C./cmm.	6,600	6,900	6,700	6,900		
	D.C. (P.L.M.E.)	65, 30, 2, 3	66, 29, 3, 2	67, 30. 1, 2	61, 35, 2, 2		
10	R.B.C./cmm.	3·3 mil.	3·2 mil.	3·4 mil.	3·3 mil.	Urine	No abnormality
	Hb% (Hellige)	75	73	70	70	Blood urea in mgm%	38
	T.C./cmm.	6,800	5,300	5,100	4,600		
	D.C. (P.L.M.E.)	70, 24, 0, 6	66, 30, 2 2	63, 31, 2, 4	62, 30, 5, 3		
11	R.B.C./cmm.	2·4 mil.	2·2 mil.	2·5 mil.	2·7 mil.	Urine	No abnormality
	Hb% (Hellige)	55	55	57	60	Blood urea in mgm%	30
	T.C./cmm.	7,000	5,600	5,400	6,300		
	D.C. (P.L.M.E.)	49, 48, 2, 1	47, 43, 3, 6	48, 45, 3, 4	51, 39, 4, 6		
12	R.B.C./cmm.	4·8 mil.	4·6 mil.	4·7 mil.	4·6 mil.	Urine	No abnormality
	Hb% (Hellige)	80	80	80	80	Blood urea in mgm%	44
	T.C./cmm.	6,200	6,600	7,200	7,300		
	D.C. (P.L.M.E.)	6, 36, 2, 1	58, 37, 3, 2	60, 38, 1, 1	60, 35, 4, 1		
13	R.B.C./cmm.	4·8 mil.	4·4 mil.	4·2 mil.	4·2 mil.	Urine	No abnormality
	Hb% (Hellige)	88	85	85	80	Blood urea in mgm%	36
	T.C./cmm.	6,000	5,600	5,800	4,400		
	D.C. (P.L.M.E.)	60 35, 1, 4	57, 36, 1, 6	59, 34, 2, 5	60, 36, 3, 1		
14	R.B.C./cmm.	2·5 mil.	3 mil	3·4 mil.	3·7 mil.	Urine	No abnormality
	Hb% (Hellige)	50	60	65	68	Blodd urea in mgm%	32
	T.C. cmm.	6,800	7,000	6,500	6,400		
	D.C. (P.L.M.E.)	60, 37, 2, 1	66, 30, 2, 2	71, 26, 2, 1	68, 28, 2, 2		
15	R.B.C./cmm.	3·9 mil.	3·7 mil.	3·6 mil.	3·8 mil.	Urine	No abnormality
	Hb% (Hellige)	75	75	75	78	Blood urea in mgm%	32
	T.C./cmm.	8,400	7,200	6,200	6,000		
	D.C. (P.L.M.E.)	72, 25, 2, 1	71, 25, 1, 3	69, 22, 5, 4	59, 36, 2, 3		
16	R.B.C./cmm.	3·2 mil.	3·3 mil.	3·4 mil.	3·7 mil.	Urine	No abnormality
	Hb% (Hellige)	60	60	65	70	Blood urea in mgm%	36
	T.C./cmm.	6,300	6,000	6,000	6,200		
	D.C. (P.L.M.E.)	60, 36, 2, 2	57, 37, 4, 2	58, 29, 7, 6	61, 37, 1, 1		

II

(functions)	Liver		Weight in lbs.		Oedema		Withdrawal effect	Remarks
After	Before	After	Before	After	Before	After		
Same 38	Not palpable Not tender	Same Same	98	100	Nil	Nil	Nil	No untoward effect. Rise of Hb. by 40%
Same 38	Just palpable Not tender	Same	91	91	Nil	Nil	Nil	No untoward effect. Rise of T.C. by 19%
Same 44	Not palpable Not tender	Same	126	126	Nil	Nil	Nil	Fall of T.C. by 9%
Same 32	Not palpable Not tender	Same	72	69	Nil	Nil	Nil	Some Leucopænia Fall of TC. by 54% Rise of Hb. by 46%
Same 44	Not palpable Not tender	Same	114	114	Nil	Nil	Nil	No untoward effect. Fall of T.C. by 18%
Same 40	Not palpable Not tender	Same	78	76	Nil	Nil	Nil	No untoward effect
Same 28	Not palpable Not tender	Same	106	104	Nil	Nil	Nil	No untoward effect. Rise of T.C. by 34%
Same 30	Not palpable Not tender	Same	88	89	Nil	Nil	Nil	No untoward effect. Rise of Hb. by 20%
Same 32	Not palpable Not tender	Same	102	102	Nil	Nil	Nil	No untoward effect
Same 40	Not palpable Not tender	Same	110	110	Nil	Nil	Nil	Some leucopænia Fall of T.C. by 32%
Same 32	Not palpable Not tender	Same	71	73	Nil	Nil	Nil	No untoward effect
Same 40	Not palpable Not tender	Same	112	114	Nil	Nil	Nil	No untoward effect. Rise of T.C. by 17%
Same 34	Not palpable Not tender	Same	134	134	Nil	Nil	Nil	Leucopænia Fall of T.C. by 26%
Same 30	Not palpable Not tender	Same	82	82	Nil	Nil	Nil	No untoward effect Rise of Hb by 36%
Same 34	Not palpable Not tender	Same	81	81	Nil	Nil	Nil	Some leucopænia by about 28% and some neutropænia
Same 40	Not palpable Not tender	Same	95	94	Nil	Nil	Nil	No untoward effect Rise of Hb by 17%

TABLE III

Summary of the Important Effects

Sl. No. Ref. T. I	Disease	Clinical effect	Effect on E.S.R.	Other associated effects
1	Rheumatoid arthritis—3 years	Good	Fall by 10.5%	Rise of Hb. by 40%
2	Osteo-arthritis—3 years	Fair	No significant change	Rise of T.C. by 19%
3	Spondylitis ankylopoietica —1 year	Poor	do.	Fall of T.C. by 9%
4	Rheumatoid spondylitis —4 years	Good	Fall by 36%	Rise of Hb. by 46% & Fall of T.C. by 54%
5	Gout (Chronic)—4 years	Fair	Fall by 60%	Fall of T.C. by 18% Fall of blood uric acid by 20%
6	Rheumatoid arthritis—3 years	Fair	Rise by 12%	—
7	Spondylitis ankylopoietica —1 year	Poor	Fall by 24%	Rise of T.C. by 34%
8	Rheumatoid arthritis—2 years	do.	No significant change	Rise of Hb. by 20%
9	Spondylitis ankylopoietica —2 years	do.	do.	—
10	Spondylitis ankylopoietica —4 years	Good	do.	Fall of T.C. by 32%
11	Spondylitis ankylopoietica —5 months	do.	Fall by 50%	—
12	Acute gout—2 days	Excellent	Fall by 66%	Rise of T.C. by 17% and Fall of blood uric acid by 25
13	Rheumatoid arthritis—6 years	Poor	Fall by 43%	Fall of T.C. by 26%
14	Acute rheumatic fever (?) —7 days	Excellent	Rise by 22%	Rise of Hb. by 36%
15	Spondylitis ankylopoietica —2½ months	Fair	Fall by 28%	Fall of T.C. by 28% and Neutropenia
16	Rheumatoid arthritis—2 years	do.	Rise by 48%	Rise of Hb. by 17%

TABLE IV

Abstract of Salient Features

Clinical effects :—Excellent 2; Good 4; Fair 5; Poor 5.	
Significant fall of E.S.R.	—8 cases (from 10·5% to 66%)
Significant rise of R.S.R.	—3 cases (from 12% to 48%)
Fall of blood uric acid	—In both the two cases (from 20% to 25%)
Significant rise of Hb.	—5 cases
Significant rise of total count	—3 cases
Significant fall of total count	—6 cases
Neutropænia	—1 case
Types of cases treated :—Rheumatoid arthritis—6; Spondylitis ankylopoietica—6; Osteo-arthritis—1; Gout—2; Acute rheumatic fever—1	

Discussion.—Clinical therapeutic assessment of any drug in the treatment of the conditions included in this study—rheumatoid arthritis, spondylitis ankylopœitica, gout, osteoarthritis—must be done on the background that these diseases admit of no complete cure. Judged from this point of view, the results of treatment in two cases were excellent—one of acute gout and, the other of acute rheumatic fever. In four cases they were good—3 of spondylitis ankylopœitica and one of rheumatoid arthritis; whereas one case of spondylitis, two of rheumatoid

arthritis, one of osteo-arthritis and one of gout (a total of five cases) showed fair results. Response to the treatment in the remaining five cases was poor. No correlation could be found between the type and duration of the disease and the response to treatment.

Eight cases (50%) showed a fall in E.S.R. Changes in E.S.R. bore no relation to the clinical response to treatment. If the rise or fall of E.S.R. is an index to the activity of a disease, the clinical effect on 'pyracortine' therapy is a poor index for the activity of the disease. It must be noted that prednisone gives a non-specific sense of well-being.

The two cases of gout showed a reduction of 20 to 25% in the blood uric acid level.

Oedema was absent and some weight-gain was noticed in a few cases. This weight gain may have been due to rest and good diet in the hospital. Since prednisone rarely produces sodium retention in the body, œdema and weight gain due to water-logging are not expected. There were no dyspeptic symptoms—a very important complication on therapy with cortical preparations. Pyramidon occasionally produces leucopænia and neutropænia. In this series, six cases showed some fall in total leucocytic count with one showing a reduction of neutrophil count in addition. On the other hand, three cases showed a rise in the total leucocytic count. Five cases had a rise in the Hb percentage.

Rise in Hb percentage might be due to good diet, vitamins and iron. The cause for the elevated leucocyte count needs to be explored. Liver did not show any change clinically. Blood-urea was not raised and urinary findings revealed no abnormality. No skin reaction was noted. It will also be seen, that pyracortine did not produce any untoward effects except a fall of leucocytes in some cases (27·5%) and neutropænia in one.

Summary.—1. Pyracortine in the dosage schedule given above is a useful analgesic drug in some painful conditions. No relationship could be made out between the type and the duration of the disease and the response to treatment. A fall of E.S.R. occurred in 50% of cases but it bore no relationship to the olinical effects. Blood uric acid level fell by 20 to 25%.

2. A fall in leucocyte count occurred in 27·5% of cases. No untoward effect was seen on the erythroblastic tissue as seen from the peripheral blood, kidney functions and on the liver. Water-logging, dyspepsia and skin reactions were not observed. Withdrawal effect as observed for three days after causation of treatment was not seen.

Acknowledgement.—Our thanks are due to the Superintendent, Assam Medical College Hospitals for permission to carry out the trials, to Messrs. Farbwerke Hoechst Ag., for kindly supplying the drugs, to the House physicians of the Unit and to Mr. B. Bhattacharjee, Librarian, Assam Medical College for their ungrudging help.

MUCOID IMPACTION OF THE BRONCHI

Five cases of dilated bronchi filled with inspissated mucus complicating asthma or obstructive bronchitis have recently been reported.

All five cases were in upper lobes, but one also involved the superior division of the lower lobe. This feature of predilection for the upper may aid in distinguishing residual bronchiectasis from the usual variety of bronchiectasis, which often involves the basal segments of the lower lobes.

Symptoms of mucoid impaction of the bronchi are similar to those of asthma or chronic obstructive bronchitis (wheezing respiration, dyspnœa, cough and often a history of allergy). As there may be no new symptoms, the condition may be found by the careful physician taking yearly chest roentgenograms of patients having these chronic diseases. New symptoms may suggest further study. In the reports on 10 cases by Shaw and in the five new cases discussed here, several symptoms occurred frequently enough to warrant mention. Fever or a history of pneumonia was present in nine of the 15 cases. Hæmoptysis occurred in three cases, chest pain in three, and the expectoration of mucoid plugs in four. Physical examination is of no aid in the diagnosis, as the findings are those of the underlying asthma, obstructive bronchitis or secondary inflammation.

Roentgenograms show shadows with rather distinctive characteristics. In patients without secondary infection, the plugs cast a V-shaped shadow with the vertex of the V toward the hilum, or have a "cluster-of-grapes" appearance. Atelectasis of varying degree is present in some cases. Those with secondary infection show ovoid peripheral shadows reaching the pleural surface. If some of the plugs are expectorated, an air cavity may be evident, or an air-fluid level may be seen in an abscess cavity. As the mucus becomes liquefied or as expectoration clears the pneumonitis, the bronchi remain dilated and there are typical findings of bronchiectasis in unusual locations. There may be seen cystic, mottled areas in plain views and these dilated bronchi are outlined in bronchograms. No contrast media enter the bronchi, if the mucus has not been evacuated. The appearance of multiple shadows or other areas with similar findings is also suggestive. Planigrams may aid in demonstrating the character of the shadow and in viewing evacuated bronchi. The large dilated bronchi which remain may be mistaken for the cavities of tuberculosis. A history of expectoration of plugs of mucus is important in suggesting the diagnosis.

Medical therapy consists of antibiotics for secondary infection, drugs to relieve bronchospasm, and medication to promote thinning of the secretions to prevent further impaction. Pot. iodide is one of the most effective drugs. Steroid therapy and X-ray therapy do not benefit much in this disease.

The indications for surgery are the persistence of secondary suppurative disease, persistent hæmoptysis from bronchiectasis, and the need to obtain an exact diagnosis. In many patients the differentiation between tuberculosis and mucoid impaction is important from the stand-point of therapy and loss of time from work. The differentiation between carcinoma and mucoid impaction is even more important, as one wishes to conserve lung tissue in patients with mucoid impaction.

Three additional cases have since been observed by the author. One has cleared on medical treatment and one is under treatment. The third patient had a segmental resection to exclude carcinoma, although the diagnosis of mucoid impaction was suspected. Incidentally, this was the only patient observed with a peripheral blood eosinophilia, varying from 11% to 21%.—(*Annals of Internal Medicine*, March 1957).

THE DIAGNOSIS OF TUMOURS OF BONE*

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PRIOR to the last half century clinicians were compelled to make a diagnosis of a lesion of the skeletal system entirely on the basis of the patient's history and a physical examination. They did not have the assistance of the roentgenologist nor of the pathologist's accurate interpretation of tissue sections. Since that time, however, due to developments in the fields of pathology, roentgenology and chemistry, the identification of these tumours has become more feasible. This does not mean that a correct diagnosis is made in every case. On the contrary one is impressed with the number of patients who have been incorrectly treated on an erroneous diagnosis or have received no therapy at all because the diagnosis had not been reached.

The approach to the problem of establishing a diagnosis in a lesion of the skeletal system implies the following steps:—(1) History. (2) Physical examination. (3) X-ray examination. (4 Blood chemical studies. (5) Biopsy and histological examination.

History and physical examination.—The importance of a carefully elicited history and a complete and searching physical examination should be emphasized since the tendency is to neglect them in favour of other diagnostic measures. Both are as important today as they were when they were the only known means of diagnosis. They still form the foundation upon which the various other investigations must rest. Neglect of them continues to result in serious errors of interpretation of roentgen ray and laboratory findings, or in postponement of these tests which is equally grave in its consequences.

Probably the one single factor that would tend to an earlier recognition of bone sarcoma is the general knowledge on the part of the practitioner that pain is the earliest and most constant symptom; and that a patient complaining of pain in an extremity deserves a presumptive diagnosis of sarcoma with an immediate diagnostic survey (see *Table I*, p. 682) to confirm or exclude it. Such a suspicious attitude would prevent the lapse of weeks or months, during which, many patients receive therapy consisting of massage, heat, liniments, diathermy and even exercise on the assumption that the condition is 'rheumatic' or 'neuritic' or a strain of muscle or ligament. It has been repeatedly emphasized that pain in a limb that persists without obvious explanation is most often due to a bone tumour.

*Specially contributed to the ANTISEPTIC.

TABLE I

Outline of a complete Diagnostic Survey to be undertaken when the initial Examiner suspects a Bone Neoplasm

1. Elicit a complete history covering the following:—
   (*a*) Chief complaint : pain (character-nocturnal ?), swelling, disability ; (*b*) onset of symptom (sudden-insidious-progressive-intermittent) ; (*c*) previous illnesses ; (*d*) accidents or injuries ; (*e*) family history.
2. Make a thorough physical examination.
   (*a*) General—(i) primary tumour elsewhere (breast-thyroid-kidney-prostate, etc.) ; (ii) evidence of deformed skull or long bones, neurofibromatosis, pigmentation, lymphadenopathy, splenomegaly, anæmia.
   (*b*) Local—(i) inspection (swelling, deformity, colour of skin, presence of tumour and its location in respect to the part of bone involved) ; (ii) palpation (presence of tumour, its mobility, consistence (hard-soft-elastic-fluctuant-pulsating), outline (discrete or indefinite) ; (iii) menstruation, (circumference of the limb at measured levels, and of the normal limb for comparison).
3. Roentgenographic examination.
   (*a*) Local—(views of the affected area in anteroposterior and lateral projections on films large enough to cover wide area proximal and distal to area complained of or to site of any obvious tumour).
   (*b*) General—(i) chest—anteroposterior and lateral—for evidence of pulmonary metastasis ; (ii) other bones, especially skull, pelvis, spine, humeri and femora.
   Note :—Spot films of the involved bone taken in several projections and with varying degrees of intensity of exposure are valuable.
4. Laboratory studies.
   (*a*) Routine blood count ; (*b*) urinalysis (including test for Bence-Jones bodies) ; (*c*) serology ; (*d*) blood chemistry—(i) serum calcium, phosphorous, alkaline phosphatase (including acid phosphatase if cancer of prostate is suspected) ; (ii) serum protein (if plasma cell myeloma is a possibility).
   (*e*) Biopsy—(i) aspiration biopsy ; (ii) open biopsy if aspiration method is unsuccessful or if it is not considered advisable for reasons of location of tumour or unwillingness on the part of the pathologist to render an opinion on aspirated material, or failure of aspiration to provide a diagnosis.

Swelling usually appears later than pain. Both are progressive, although there is considerable variation in the rate of increase of the swelling depending upon the individual tumour's cellularity and its capacity for growth. Disability is also variable although it is present in most cases in some degree even early in the course of the disease. Benign tumours, on the contrary, seldom cause severe pain. When they do, it is because of pronounced pressure on important overlying structures. Such tumours rarely cause pain while the part is at rest, in contrast to malignant tumours which often keep the patient awake at night. Swelling in a benign tumour is either stationary or

increased by insensible gradations ; often it is reported by the patient to have existed unchanged for years. A history of recent rapid increase in size or complaint of recent pain should suggest malignant transformation.

Any injury sustained prior to the onset of symptoms should be recorded in detail by the initial observer, for whether it is held to be responsible for the subsequently developing tumour or considered to be of no ætiological significance is still a matter of controversy. While the patient often ascribes it as a cause of the disease, competent authorities are sceptical of its influence. Ewing Stewart and others have expressed the conviction that a single trauma cannot be credited with initiating a malignant process. It seems probable that in the vast majority of cases the injury focused the patient's attention on a region already the site of a neoplastic process. However, I believe that we are not wholly justified in denying categorically the possibility that a localized bone trauma can initiate the reparative process which, under certain conditions may lead to unrestrained growth and eventually to the development of a bone sarcoma, especially in view of the fact that approximately 50 per cent of the histories of cases of osteogenic sarcoma record a definite injury at the site of the subsequent tumour.

I have even a strong conviction that injury is an important ætiological factor in the development of giant cell tumour of the bone—a view also held by William B. Coley, Codman and Bradley M. Coley.

It becomes at once apparent that :—*first*, such cases may be the subject of future litigation, and *second*, that a fairer disposition of them can be made if the initial examiner's history had been elicited fully and accurately, presumably at a time when the patient's replies to the questions are not so apt to be coloured by self-interest. The records should include answers to the following questions :—

(1) When did the injury or accident occur ? (2) Where was the exact site of the injury ? (3) Was the injury followed by swelling, tenderness or ecchymosis ? (4) How long a period has elapsed between the disappearance of symptoms due to the injury and the appearance of symptoms referable to the tumour ?

The characteristics noted on physical examination that denote a benign tumour of bone are :—the absence of soft-tissue involvement, a discrete sharply-defined outline, the absence of skin change, the lack of increased vascularity as shown by dilated superficial veins and an increased surface temperature. The location of the swelling is of some significance, for giant cell tumours have a nearly constant onset at the ends of long bones ; osteogenic sarcoma shows a marked predilection for the

metaphyseal region; and endothelioma or Ewing's tumour which may also commence in this region, tends to progress along the diaphysis and to involve one fourth to one half of the entire length of the bone. Tenderness, although usually present only in mild degree, is a finding in malignant tumours which is seldom present in benign neoplasms.

Table II below, shows, in a diagramatic form the method of approach adopted at the Memorial Hospital in establishing the diagnosis. While many of the conditions listed are admittedly unusual or even rare, Dr. Coley feels that they should be kept in mind.

TABLE II

Diagram showing Method of Differential Diagnosis by Exclusion in a Case of Bone Disease

TUMOUR

- Benign
  - Central
    - Chondroblastoma (Jaffe)
    - Chondroma
    - Myxoma
    - Fibroma (nonosteogenic—Jaffe)
    - Bone cyst
    - Giant cell tumour, benign
    - Xanthoma
  - Central and cortical
    - Angioma of bone
    - Osteoid osteoma
  - Cortical (osteoma)
    - Exostosis
    - Osteochondroma
    - Multiple—chondrodysplasia
    - Ollier's disease
- Malignant
  - Primary
    - Monostatic
      - Osteogenic sarcoma
      - Endothelioma (Ewing's sarcoma)
      - Reticulum cell sarcoma
      - (Liposarcoma)
    - Polyostatic
      - Plasma cell mysloma
      - Myelocytoma
      - Erythroblastoma
  - Metastatic
    - Breast, Kidney
    - Thyroid, Prostate, Lung, etc.

NOT A TUMOUR

- Inflammatory
  - Pyogenic (Brodie's disease)
  - Luetic (Charcot's disease)
  - Tubercular
  - Caronic sclerosing osteitis
- Post-traumatic—Myositis ossificans
- Parasitic—Hydatid disease of bone
- Metabolic—lipoid granulomas
  - Eosinophilic granuloma
  - Hand-Schuller Christian's disease
  - Gaucher's disease
  - Niemann-Pick's disease
  - Lotterer-Siwe's disease
- Circulatory—Calcinosis
- Endocrine—Hyperparathyroidism (Von Recklinghausen's disease
- Uncertain aetiology
  - Paget's disease (Osteitis deformans)
  - Fibrous dysplasia, Melorrheostosis
  - Osteopetrosis, Osteopoikilosis

Roentgenographic examination.—While the roentgenographic examination is of great value and capable of comparatively accurate interpretation by experienced roentgenologists, it is still attended by certain difficulties. There are many conditions in which it is almost possible to render an accurate opinion by this means alone (see *Table III* below).

TABLE III

The Differential Diagnosis of Bone Tumours, with particular Reference to the Roentgenogram, as an aid

ACTUAL DIAGNOSIS :—**Osteogenic Sarcoma :**

To be differentiated from :—1. *Endothelioma* :—When a wide extent of shaft, especially mid-portion, is involved.

2. *Giant cell tumour* :—When purely osteolytic and when area of destruction is confined to epiphyseal area which is the site of giant cell tumours.

3. *Liposarcoma* :—Although it is extremely infrequent roentgenographic distinction may be very difficult.

4. *Inflammatory bone lesions* :—Sclerosing and low grade subacute osteomyelitis.

5. *Ossifying haematoma* (myositis ossificans) :—Unless stereoscopic views are taken showing process to be unconnected with shaft of bone and the cortical line is intact.

6. *Metastatic carcinoma* :—When lesion is apparently solitary it may resemble osteolytic sarcoma.

7. *Chondroblastoma* (Jaffe) :—Calcifying chondromatous giant cell tumour (Codman). This is a difficult distinction to make and must depend ultimately upon biopsy.

8. *Reticulum cell sarcoma* :—Where an osteogenic sarcoma is of osteolytic type it may require histological confirmation to establish the correct diagnosis. This is particularly true of lesions involving the metaphyseal area. Those occurring in the midshaft are more likely to prove reticulum cell sarcoma.

ACTUAL DIAGNOSIS :—**Endothelioma :**

To be differentiated from :—1. *Subacute osteomyelitis* :—This is a most difficult differential diagnosis to make when uncertainty exists, histologic proof should be obtained before any roentgen therapy is given, otherwise a 'false negative' biopsy is often obtained and only at a later date is the malignant nature recognized.

2. *Osteogenic sarcoma* (see under osteogenic sarcoma).

3. *Reticulum cell sarcoma* :—This diagnosis may be very difficult if the patient is below 30 years of age. Reticulum cell sarcoma can occur at any age, while endothelioma is confined to childhood and early adult life.

ACTUAL DIAGNOSIS :—**Giant cell tumour :**

To be differentiated from :—1. *Bone cyst* :—The site, age of patient and clinical course differ.

2. *Malignant from benign giant cell tumour* :—Generally the malignant form is a transition from a previously benign giant cell tumour. This means that during or after treatment, a recurrence of activity is suggestive that the lesion is undergoing malignant transformation. Cases that are malignant from the outset are rare and the roentgenographic features are often more typical of a benign giant cell tumour.

3. *Calcifying chondromatous giant cell tumour* (Codman, chondroblastoma (Jaffe). These tumours more closely resemble an osteogenic sarcoma but may occasionally suggest a giant cell tumour. They are benign. A biopsy is needed to establish the diagnosis.

4. *Osteogenic sarcoma* (see under osteogenic sarcoma),

ACTUAL DIAGNOSIS :—**Chondrosarcoma :**

To be differentiated from :—1. *Chondroma* :—This may require expert microscopic diagnosis. Small bits of tissue are not sufficient material upon which to base an opinion.

2. *Giant cell tumour* :—Central chondromyxosarcoma may closely simulate giant cell tumour. This accounts for some discouraging sequelæ of radiation therapy of supposed giant cell tumour without histologic diagnosis.

3. *Osteogenic sarcoma* :—May be very difficult to distinguish from chondroblastic sarcoma in children or young adults. Distinction here is not important. The treatment is the same and the outlook equally grave.

4. *Chondroma* :—Rarely seen, may resemble sacral chondro-sarcoma, microscopical appearance of chondroma is distinctive.

ACTUAL DIAGNOSIS :—**Plasma cell myeloma :**

To be differentiated from :—1. *Metastatic carcinoma* :—In the absence of a primary carcinoma this distinction is often impossible without histologic confirmation. Aspiration biopsy of one of the lesions, or sternal marrow puncture may disclose plasma cells and lead to the correct diagnosis.

Laboratory studies.—(1) Blood chemical examinations—as indicated in *Table IV*, below. (2) Biopsy—by closed and open methods.

TABLE IV

Chemical Determinations in Tumours and in other Lesions of the Skeletal System (Woodard and Coley)

Disease	Serum acid P-ase	Serum alk. P-ase	Serum inorganic phosphorus	Total serum calcium	Urine sulkowitch	Urine B-J protein	Total serum protein
Chondroma		Normal	Normal	Normal			
Osteochondroma							
Osteoma							
Exostoses							
Solitary bone cyst		do.	do.	do.			
Giant cell tumour	Normal	Normal or sl. raised	do.	do.			
Osteogenic sarcoma	do.	Usually high	do.	do.			
Endothelioma of bone		Normal or sl. raised	do.	do.			
Reticulum cell sarcoma of bone		Normal or sl. raised	do.	do.			
Rickets		High	Normal or low	Normal or low			
Inflammatory disease of bone		Usually normal	Normal	Normal			
Osteolytic metastatic disease	Normal	Normal or moderately raised	Normal or high	Normal or high	High	Negative	Normal
Osteoplastic metastases not from prostate	Normal	High	Normal	Normal	Normal	do.	do.
Carcinoma prostate metastatic to bone	High in 70% of cases	High	do.	do.	do.	do.	do.
Plasma cell myeloma	Normal	Normal or sl. raised	Normal or high	Normal or high		Positive in 60% of cases	Normal to very high
Osteomalacia	Normal	Moderately raised	Normal or low	Usually low	Usually low		Normal or low
Senile osteoporosis		Normal	Normal	Normal	Normal		Normal
Hyperparathyroidism		High	Low	High	High		
Osteitis deformans	Normal	do.	Normal	Normal	Normal		do.

The histologic examination is generally considered to be the final step in establishing the diagnosis not only in all forms of bone neoplasms but in other bone conditions which may resemble them. Unquestionably this is the most reliable single measure at our disposal. It should be understood, however, that even

pathologists of wide experience encounter innumerable situations in which an exact microscopical diagnosis is extremely difficult.

The following are cited as examples of errors in diagnosis :—

(1) Reticulum cell sarcoma *versus* endothelioma.

(2) Undifferentiated small cell osteogenic sarcoma *versus* endothelioma.

(3) Osteogenic sarcoma *versus* early ossifying hæmatoma or myositis ossificans.

(4) Benign giant cell tumour *versus* malignant cell tumour.

In these difficult decisions it has been noted that the more experienced the pathologist the more willing he is to concede an element of doubt and to refuse to make an unqualified diagnosis. Here then, the clinical and roentgenographic findings must be carefully weighed with the laboratory evidence. To illustrate, the stereoscopic roentgenogram is of great importance in differentiating an early ossifying hæmatoma from an osteogenic sarcoma. On several occasions it has been seen that the X-ray is more accurate than the microscopical interpretation of material removed by open biopsy. In a few of these cases highly qualified pathologists regarded the condition as one of osteogenic sarcoma and in each instance the X-ray diagnosis of ossifying hæmatoma was ultimately sustained. In another case, a surgeon performed a thigh amputation only to find on later examination of the limb that the biopsy report of osteogenic sarcoma was incorrect.

Two features of ossifying hæmatoma ought to be emphasized in this connection :—(1) the patient does not have the unremitting pain characteristic of sarcoma, and (2) the tumour fails to increase progressively in size. Moreover it always follows directly upon a severe trauma and fails to cause any break in the cortical line when viewed by stereoscopic roentgenograms.

Of importance, too, is the decision as to whether or not a benign giant cell tumour has undergone malignant alteration. This change may take place insidiously, and successive specimens obtained at several operations may reveal a gradual transition from benign to malignant. It rests with the pathologist to decide at what point a hitherto benign lesion has changed to a potentially dangerous growth with the ability to metastasize and end fatally. Experience has taught that the recurrent giant cell tumour must be regarded as a disease with a definite threat of becoming ultimately malignant, and that unsuccessful radiation therapy has contributed to a greater proportion of these cases. Accordingly in these cases suspicions are at once aroused and one should not postpone too long, the confirmation by histologic study for the purpose of further roentgen therapy.

Non-neoplastic conditions that need to be considered in the differential diagnosis.—There are many conditions which are not true neoplasms and which at times give rise to difficulties in the matter of bone tumour diagnosis. Some of these bear only a superficial resemblance while others are often difficult to differentiate. In order to call attention to them they are listed in *Table V*, below, with the corresponding tumours which they may at times resemble.

TABLE V

Showing Non-neoplastic Conditions of Bone that may have to be considered in the Diagnosis of Tumours of Bone

Non-neoplastic condition		May resemble
1. Infections		
Pyogenic	...	Endothelioma
Typhoid	...	Myeloma
Syphilis	...	Almost any form of bone tumour
Tuberculosis	...	Myeloma of spine: synovioma with bone involvement
Chronic sclerosing osteitis	...	Sclerosing osteogenic sarcoma
2. Parasitic diseases	...	Echinococcus disease of bone
3. Fibrocystic diseases		
Solitary bone cyst (unicameral)	...	Giant cell tumour, central chondroma
Hyperparathyroidism	...	Skeletal metastases from carcinoma
Fibrous dysplasia	...	Central chondroma, nonosteogenic fibroma
4. Diseases of uncertain ætiology		
Osteitis deformans	...	Monostatic form (osteogenic sarcoma, polyostatic form (metastatic prostatic carcinoma)
Leontiasis ossium	...	Low-grade sarcoma
Osteoid osteoma	...	Sclerosing osteogenic sarcoma
5. Lipoid storage diseases		
Hand-schuller-Christian's diseases	...	Metastatic carcinoma primary osteolytic osteogenic sarcoma
Eosinophilic granuloma	...	
6. Circulatory disturbances of bone		
Aseptic necrosis of bone	...	Chondroblastoma
Calcinosis (tumoral form)	...	Sclerosing osteogenic sarcoma
7. Disturbances due to injury		
Ossifying hæmatoma (myositis ossificans)	...	Osteogenic sarcoma
Fatigue fracture (early reparative stage)	...	Osteogenic sarcoma
Periosteal injuries (early stage)	..	Osteogenic sarcoma (early)

Conclusion.—In attempting to reach an early correct diagnosis of any lesion of bone suspected to be neoplastic, the history and clinical examination should precede other measures. The value of the roentgenographic, chemical and histological studies are unquestioned but the necessity of relying on the correlated information gained from all these sources, rather than from any one of them, is emphasized.

The procedures and methods of arriving at the diagnosis as described above and outlined in the various tables, have been particularly advocated and followed by Dr. M. Bradley Coley and his associates of the Bone Tumour Service, Memorial Hospital for Cancer and allied diseases in New York which I had the privilege to attend. The views expressed are those of Dr. B. Coley which are followed and accepted all over the world without reservation.

Cases and Comments

A CASE OF ACUTE CHLORPROMAZINE POISONING

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CHLORPROMAZINE is widely used nowadays in various ailments as a sedative, a tranquillizer, an anti-emetic etc. The drug is said to be least toxic and to be likely to give rise to blood dyscrasia and jaundice only on prolonged use ; the jaundice however, will disappear quickly as soon as the drug is withdrawn.

Recently I had occasion to see an unusual case of acute chlorpromazine poisoning which I am reporting here.

On 29-4-'58, at about 2 A.M. a young lady, aged about 22 years, swallowed owing to some domestic quarrel 25 tablets of 'Largactil' (25 mg.). Within an hour she had some discomfort in the chest and felt very sleepy. At about 7 A.M. she was found in a stage of coma and two local doctors who saw her called me in at about 8 A.M.

Physical examination :—A young girl of 22, of average build and nutrition, lying flat on the back with closed eyes. Extremities not cold. Pallor present, but no cyanosis : pulse 60/min., regular : B.P. 90/60 mm. Hg. Respiration 14/min. shallow but regular : Temp. 97·2°F. Pupils pin-point and not reacting to light : Corneal and conjunctival reflexes absent. Limbs flaccid, all deep and superficial reflexes absent. The patient could only be roused with great difficulty ; after a good deal of shaking she would only open her eyes but could not answer any questions.

As the history of the patient's having taken 'Largactil' was not available at the time, the treatment given was as follows :—

Atropin sulph. gr. 1/50 and Coramine 2 cc. I.M. *stat.* Stomach wash at first with plain water and then with Pot. permanganate lotion. *S.S.* Magsulph 2 ounces given through the stomach tube after the wash. Glucose 25% solution 100 cc. administered I.V. At 12 noon I saw the patient again. The condition was the same as before. Pupils pin-point and fixed : Pulse 60/min. B.P. 80/50 mm. Hg : Respiration 14/min : Picrotoxin 6 mg. was then injected I.M. every 2 hours.

At 8 P.M. on the same evening consciousness was fairly regained. The pupils were slightly dilated, light reflex sluggish, conjunctival and corneal reflexes sluggish : Pulse 65/min : B.P. 100/60 mm. Hg.

Soap-water enema was given and the bowels moved satisfactorily and there was free urination. The patient was given some coffee and milk orally. Two more injections of Picrotoxin (6 mg.) were given during the night and 25% glucose solution 100 cc. injected I.V.

On the next morning, the patient regained her full consciousness although she complained of uncontrollable sleep. Pupils—normal, superficial and deep reflexes appeared, but sluggish. The B.P. was 110/70 mm. Hg: pulse 70/min. The patient made a complete recovery by the evening of 30-4-'58. After recovery we learnt from her that she took 25 tablets of 'Largactil.'

It will be seen that even after taking as much as 625 mg. of Chlorpromazine, the patient did not die and made a complete recovery in the course of about 36 hours; which shows that there is a wide margin of safety between the therapeutic and the lethal dose of the drug. During the acute phase it looked to me that she was in a deep tranquillizing state.

I would like to thank Dr. N. Das, M.B., B.S. and Dr. S. N. Guha, M.B., B.S. of Calcutta for giving me an opportunity to study the case and for supplying me with details about it.

PURULENT CONJUNCTIVITIS IN AN ADULT

(A Case Report)

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PURULENT conjunctivitis or acute blenorrhœa in adults was at one time one of the most dangerous and destructive diseases of the eye. It was a major contributing factor for blindness, particularly in the Middle East. With the advent of modern antibiotics and chemotherapeutic agents it has ceased to be the menace it was in the past. It is a disease of fairly uncommon occurrence and has been reported to occur in one among 700 to 800 cases of conjunctivitis. Out of 683 patients with conjunctivitis who attended our dispensary during the last three years I came across only one case of gonococcal conjunctivitis, which is reported below.

Case report.—T.C., labourer, aged 25, married 2 years back attended the dispensary on 26-8-'57; on examination he was found to be suffering from acute urethritis. There was swelling of the prepuce, a moderate degree of balanitis and copious discharge of pus per urethra. The patient had contracted a gonococcal infection five days prior to consultation. After three days of the contact the patient began to have burning in micturition and swelling of the prepuce. Subsequently he began to have purulent discharge per urethra and scalding pain during micturition. A smear of the urethral discharge stained with Gram's stain, was strongly positive for gonococci. The patient was put on injections of procaine penicillin 4 lac units daily for six days and sulfadiazine tablets 1 *q.i.d.* The patient was clinically cured.

The patient reported again on 16-9-'57, this time with acute conjunctivitis in the left eye. The eyelids were swollen, bulbar conjunctiva chemosed and associated with a copious discharge of pus. There was marked photophobia, pre-auricular adenitis and pyrexia (102°F). On 19-9-'57 the right eye was also found affected.

Diagnosis was evident from the recent history of gonorrhœal urethritis. It was however, confirmed by a smear examination of the discharge from the affected eye which was positive for gonococci.

The patient was immediately put on topical penicillin drops (2000 units/cc. in distilled water) to be used frequently. In addition he was given an injection of procaine penicillin 4 lacs units daily and sulphadiazine 1 tablet *q.i.d.* for four days. Within 24 hours there was remarkable improvement. Swelling of the lids diminished and there was hardly any pus. The conjunctiva was however still slightly congested. The patient was discharged cured as the conjunctival smear was negative for gonococcal infection.

Comments.—The incidence of this case tallies with that quoted by J. Herbert Parsons. Taking into consideration the cases of gonococcal urethritis met with in general practice purulent conjunctivitis is seldom seen nowadays. I have seen 68 cases of gonococcal urethritis during the last 2½ years and this was the only case with ocular involvement.

Many cases may be missed if the history of previous urethritis is not enquired into as a routine in cases of acute conjunctivitis. It may be mistaken for acute catarrhal conjunctivitis which it closely simulates. Hence this is a point of importance in medico-legal cases. A history of gonococcal urethritis particularly, a recent one, gives an important clue to diagnosis as in this case. The modern trend is to prescribe antibiotics and drops indiscriminately to almost every case of conjunctivitis; hence there is a greater possibility of missing the exact nature of the conjunctivitis.

The right eye was also affected inspite of every possible care taken to prevent it. Probably the infection was already lurking in the right eye in a sub-clinical state when the left eye was showing a full-blown picture of acute blenorrhœa.

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LEPROSY IS ALSO A CAUSE OF FACIAL PARALYSIS*

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LEPROSY has not been described as the cause of facial paralysis in the literature or in any text book of medicine but in tropical countries it should be kept in mind while investigating the cause of facial paralysis. The present discussion refers to a series of twelve cases due to leprosy which came under my observation and treatment.

In my series there was no neuralgic pain nor sensory disturbance in the area supplied by the facial nerve. Area of skin supplied by the affected nerve do not at any time become anæsthetic to pain and temperature. The affected skin area appeared macular in two cases but in the rest there were slightly pigmented areas. The cases have often been missed as cellulitis or erysipelas or due to some underlying condition like sinusitis etc.

Lesions of the seventh cranial nerve gives rise to paralysis, more common in the upper part of the face. Paresis and later paralysis of the orbicularis oculi muscle cause ectropion and lagophthalmos of the eye. Lower parts of the face are sometimes affected and involvement of the orbicularis oris produce ectropion of the mouth which result in dribbling.

Twelve cases were met with, during the last four years; the ages of the patients ranged from 15 to 45; six of them were in the 15 to 30 age-group and the other six in the 31-45 age-group.

They were all successively treated with sulphone drugs.

Summary.—Facial paralysis due to leprosy, though not common, is not absolutely rare. This possibility should be borne in mind, when investigating cases of facial paralysis, specially in the tropics. The incidence of twelve cases, met in four years' time among 8730 cases of leprosy patients in the Skin Diseases Clinic of S.C.B. Medical College and Hospital, Cuttack, is recorded. Treatment with sulphone group of drugs was found to be effective.

Acknowledgement.—I am grateful to Brigadier B. D. Khurana, Director of Health Services, Orissa, for having permitted me to publish this article and for all his kind encouragement. My grateful thanks are due to Dr. G. C. Pattanayak. Principal *cum* Superintendent of S.C.B. Medical College and Hospital, Cuttack for according permission to utilize the hospital records.

*Read at the Indian Science Congress at Madras 1958.

OCULAR LESIONS FOLLOWING TUBERCULIN TEST

Dr. Shu-Jen reports a case of a 12 year old school girl who had a tuberculin test of 0·1 mg. intradermally before BCG vaccination. The test was strongly positive and local necrosis 1·5 by 2·0 cm. in size developed.

One week after the test, the patient had deep keratitis in the right eye with marked ciliary injection and photophobia. Vision was reduced to counting finger at one metre. The corneal opacities occupied the temporal and lower two-thirds of the right cornea with deep vascularization present. At the same time phlyctenular conjunctivitis appeared in the left eye.—*Chinese J. Ophth.*, *8* (*3*): 173-174, 1958).

A CASE OF GUINEA-WORM ABSCESS

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A MALE passenger travelling from Aden to Port Sudan came for dressing treatment of his left foot having a sinus discharging foul pus situated below the lateral malleolus. There was another small area with foul pus on his left leg, lower third region of which appeared to be a hair follicle infection; and on the dorsum of his foot half an inch away from last two toes was an healed area.

On the first day the first two affected areas were cleaned with Dettol solution, Hydrogen peroxide and Acriflavine sol. was painted. Boro-iodoform powder was dusted on the wound, vaseline on lint etc., and parts were bandaged. That very evening it was painful and he removed the dressings himself and came at 8-00 P.M. for fresh application of dressings. So the part was cleaned again. Ichthyol dressing was given. He did not come for treatment on the next day. *But on the third day* while dressing the sinus below the left lateral malleolus a lump of coil came out on pressing, which was a guinea-worm to my surprise. The size of the worm appeared to be longer and it was coiled up on the stick and ichthyol dressing was again done after irrigating the sinus with hydrogen peroxide and H. P. Lotion. The remaining portion of the worm came out on the next day.

The other area appearing to be a hair follicle infection had some connection with the lateral malleolus sinus and required opening up, but it was left for the shore surgeon, as on board only temporary relief is given, radical treatment being out of the question.

The healed area may have discharged a similar worm, but it could not be elicited due to want of familiarity with his language.

Comments.—This passenger was coming to Aden from Yemen and had previously been to Port Sudan. So the first question that occurred to my mind was to find out the prevalence of guinea-worm in these localities. On referring to text-books on Tropical Medicine I found "The early Arabian and Persian physicians were well aware of this infection and Avicenna, the Arabian Physician, named the worm *vena medina*, as it was common in Medina. Geographical distribution is in Arabia, in Africa, in the Nile Valley and in the Anglo-Egyptian Sudan." This confirmed my diagnosis.

Definition.—Guinea-worm disease is characterized by prodromal systemic reaction, local irritation at the site of worm, septic complications at the point of emergence and local fibrotic sequelæ. Cellulitis along the course of the dead worm is

said to occur eventually if the worm is left dead or its removal is attempted inexpertly and if it breaks, (but I had cut off a part of the worm before tying up to the stick and luckily the next day the remaining portion came out).

Historical.—The oldest known tropical disease 'Fiery Serpent' in Ancient Hebrew literature probably refers to this disease. Moses knew the method of twisting the worm out on a stick and the symbol on the snake on stick that he made was a model of this method of extraction. Dracontiasis was named as such by Galen (A.D. 131 to 210). Alexander and others show that in the regions adjoining the Red Sea, it was highly endemic even before the Christian era. Our present knowledge dates from 1869 through a Russian Biologist Fedschenko, in Turkestan, who showed the spread of the disease through embryo undergoing developmental changes in cyclops. Latest in 1913, Liston, Turkhud and Bhave demonstrated at the Haffkine Institute, Bombay, that a man who drank water containing infected cyclops developed the worm in 348 days. Thus the incubation period is about 8 months to 1 year the time taken by the larvæ to develop into the adult worm within the human body.

N.B.—Whilst there is no evidence that man ever enjoys complete immunity from invasion by this worm, there is evidence from human experiments in Bombay, in which volunteers were fed large numbers of infected cyclops only one developed a single worm infection and from numerous animal experiments, that only a small percentage of larvæ ingested by man reach maturity.

Migration of adult worm may also be determined by thermotaxis, as in Rajputana, where *bheesties* (water-carriers) carry water in leather bags on their backs, and worms often appear on back. In people who carry water in pots on their shoulders or head, the worm may appear on the neck, or even on the head itself. In one individual from Rajputana as many as 22 worms were removed at the School of Tropical Medicine, Calcutta, during one year and in another case as many as 56 worms have been found in one person at the same time.

Treatment:—There is no specific treatment. Text-books of Tropical Medicine should be consulted.

Prognosis.—Temporarily incapacitated for work during the few weeks following development of the blister. Fit to work after complete removal of the worm and healing of the ulcer until next season. Sometimes however fixed joints (ankle or knee) develop as a result of prolonged immobilization on account of inflammation and suppuration associated with the disease and become cripples for life.

REFERENCE:

Napier, (1946)—The Principles and Practice of Tropical Medicine.

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Editorials

THE DANGERS OF ATOMIC RADIATION

(Report of U.N. General Assembly's Scientific Committee)

THE report of the fifteen-nation Committee based on two long years' study of mass data compiled by top-ranking international experts, will we understand, be debated by the General Assembly of the United Nations during its next autumn session. So far we have had only speculative discussions from various angles and not well or fully authenticated accounts of the immediate and future effects of atomic radiation, whether from explosions of high powered atomic weapons in tests or from apparatus and instruments used for various domestic and medical purposes. In their 228-page report, the Scientific Committee has warned against underestimating the effects of atomic radiation and stated that the cessation of nuclear weapon tests would certainly act to the benefit of human health.

The radio-active contamination of the environment resulting from explosions of nuclear weapons is admitted to constitute a growing increment to world-wide radiation levels. It is therefore, reasonable to expect that this involves new and unpredictable hazards to present and future populations and by their very nature these hazards are not possible of control by the exposed persons. As the full extent of damage caused by radiation is not immediately manifest and the present knowledge of the long-term effects does not permit the best of scientists to make a precise evaluation of the possible dire consequences, the conclusions of the Committee can be considered at best tentative. But in view of the fact, that the dangers to mankind can be enormous when there is an appreciable increase in radiation, it behoves all concerned to ensure that such increase is not

permitted, so that catastrophe will not overtake the human race, not only in sudden deaths from the possible explosion of atomic weapons in warfare, but also in the death that insidiously creeps upon mankind, generation after generation, as increasing numbers of rays bombard it from all directions.

The Committee was perfectly aware that considerations involving the effective control of all sources of radiation involved national and international decisions, which lay outside the scope of its work. One general conclusion that clearly emerges from the Committee's studies is that even the smallest amounts of radiation are liable to cause deleterious, genetic, and perhaps also somatic (physical) effects.

The atomic bombing of Hiroshima and Nagasaki took place thirteen years ago and the medical experts who have been studying the after-effects appear to be of the view that they are not as dangerous as was at first feared and that children, do not seem to have been seriously affected physically or mentally, at all events those who had been conceived during the explosions. But according to the U. N. Scientific Committee, the effects can be transmitted into future generations, and it adds that eventually appreciable damage may be caused before it can definitely be identified as due to radiation. Even now, how can one be positive that some or even all the abnormalities observed in any of the children in the bombed areas of Japan may not in fact be due to the radiation? The Committee is of the opinion that the situation requires that mankind proceeds with great caution instead of underestimating the hazards. It is quite possible, however, that "our present estimate exaggerates the hazards of chronic exposure to low levels of radiation, and only further intensive research can establish the real position." That may be so; but where is the need to add to man's worries and ills by continuing with processes which certainly do? There is warning in the Committee's opinion that it is necessary to proceed with great caution. The point is that atomic radiation whether it is from radio-active fall-out or from the use of domestic or therapeutic appliances, is not without some risk which has led to concern in the minds of many people and the following extracts from the press version of the Committee's report lend support to the popular fear.

The relevant physical data refer to the world's population as a whole, as well as to individuals and groups of people receiving relatively high exposure because of their occupation, or place of living.

"These exposures may involve the whole body uniformly, or may be greater for certain organs or tissues, as when radio-active material is selectively concentrated in them. Tissues of the embryo, of the bone and the bone marrow, and of the gonads are of particular importance. Irradiation of the embryo (and of the fœtus) may lead to abnormalities of development and may prove fatal.

Irradiation of bone marrow and of bone may give rise to leukæmia and to bone tumours, and these tissues are subjected to higher doses than other tissues of the body by radio-active materials, such as Trontium-90 and radium, which become concentrated in bones. Irradiation of the gonads is able to bring about changes in the hereditary material; and these may be transmitted to subsequent generations if the irradiation is received before or during the years of reproductive activity."

As we have stated *supra*, the serious ill-effects of radiation may be long-term but that should not give room for any complaisance now. The graver danger lies in the military use of the hydrogen or atomic weapons which could extirpate and decimate whole populations in the twinkling of an eye, and cause untold destruction to property. It is, therefore, imperative that every effort should be made to prevent these major catastrophes by making the use of nuclear weapons impossible by means of honourably concluded international agreement.

MEDICAL AID IN INDIA

Integration of the Indigenous and Western Systems

'Integrated Medicine' has been very much to the fore during recent years and particularly in the context of the Second Five-Year Plan in which a provision of a crore of rupees has been made for the development of the indigenous systems of medicine. Leaders of political thought and experienced educationists and students of culture have all been in favour of integration in various fields of human endeavour and sought for unity in the diversity of Indian civilization and cultural pursuits. We learn, however, that its application to the Science of Medicine has not found favour with the Uttar Pradesh Government. A special committee appointed by that Government has suggested a five years' course for students graduating from the 12 Ayurvedic Colleges in that State. The more important of their recommendations for imparting medical training that are set forth in the committee's 50-page report are :—

"Only those students will be admitted to the Ayurvedic colleges who have either passed Madhyama examination and possess a working knowledge of English, *or* those who have passed their intermediate examination with Samskrit.

During the five-year course, the students should be given both practical and theoretical training which has been divided into two parts, *Salya* (surgery) and *Salaka* propounded by Charaka and Susruta respectively.

Students who pass the course of Ayurveda should be awarded the degree of *Ayurvedacharya*.

A good hint was given by the Chief Minister Dr. Sampurnanand on 27-6-'58, while addressing a meeting of the High Power Committee on Ayurvedic Education, to the effect that the U. P. Government may shortly revise the rules governing the recruitment of the teaching staff for Ayurvedic institutions and the registration of Vaidyas.

The U. P. Committee has definitely expressed the opinion that the integration of Indian and Western systems of medicine has failed to evolve a satisfactory synthesis, as evidenced by the far-from-happy experience gained in the working of the integrated courses over a period of 25 years in U.P.

There however seems to be a certain volume—not negligible of course—of informed opinion in certain quarters that integration *is* possible or at all events should be attempted in every Ayurvedic institution in the country. The arguments advanced by these well meaning persons are somewhat on the following lines :—

> "The College of Indian Medicine established in Madras in 1925 which has since developed into a College of Integrated Medicine, is reported to be functioning efficiently and well; in this college there has been a really substantial and judicious combination of the two systems. Its syllabus includes subjects prescribed for the Madras University's degree course in modern medicine, such as physiology, anatomy, hygiene, medicine, surgery, midwifery and medical jurisprudence. The studies in indigenous medicine comprise fundamental principles of the indigenous systems, indigenous materia medica, pathology and allied subjects. Ancient operative surgery, originally taught in the College has however, now been given up, as being outmoded and unsuited to modern times when there have been tremendous advances in modern surgery, which must therefore be taught in preference to the ancient operative techniques, so as to enable the graduates of this college to become well-qualified and fully equipped with a thorough and upto-date knowledge of modern surgery in all its varied branches. Though the Madras College of Integrated Medicine is still not quite as fully equipped and staffed as it should be, and the standards of teaching and training therefore, require to be raised considerably, the new integrated system in vogue must be considered to have greatly enhanced the usefulness of the Madras institution."

We certainly do not wish to be uncharitable and dub such arguments as specious or lop-sided. While we do realize and have always held the view that all that is best in other systems of medicine should be incorporated into the modern system, we are unable to subscribe to the view that immediate and wholesale integration should become the order of the day in all Ayurvedic Institutions. There have been to our knowledge, complaints and grievances amongst the graduates of the Madras College of Integrated medicine about discrimination. If the Central and State Governments feel that wholesale integration *is* possible and *must* be made—as it has come to stay from all accounts—we can only say '*Festina lente*' and advance the following facts for mature consideration :

The Chopra Committee of 1946, the Pandit Committee of 1949, and the Dave Committee of 1955 have all expressed themselves in unequivocal terms on the need for research into and the subsequent integration of the indigenous systems of medicine ; and the Union Government's decision to recognize and utilize the best in these systems, and to promote

the result. The Government of India accordingly established at Jamnagar in 1953, a Central Institute of Research in indigenous systems of medicine. This Institute has a dual function to perform; *first*, to promote research in indigenous systems of medicine in such a manner that the best in them could be brought out for being utilized for the benefit of humanity as a whole and without any reservation, and *secondly*, to provide facilities for training of workers in methods of research.

In furtherance of the same policy, a post-graduate training centre was also established at Jamnagar in 1956. Twentyfive students were admitted at this centre to start with, and both *Vaidyas* and graduates of modern medicine were eligible for admission. Training in the institution is conducted entirely on Ayurvedic lines and the students are required to undertake research as a part of the training and all facilities are provided to them for qualifying for higher degrees in Ayurveda.

The establishment of this post-graduate training centre serves to satisfy a long-felt need in the development of Ayurveda, and in course of time is expected to produce a band of highly trained personnel who will help in raising the standard of instruction in the existing Ayurvedic institutions in the country, so as to effect a judicious combination of all that is best in modern and the other indigenous systems.

The Central Council of Health which met at Delhi in January 1958, after mature consideration expressed the view that "under existing conditions it is not possible to lay down a uniform policy for all States on the questions relating to indigenous systems of medicine" and it recommended to the State Governments to take such steps as they considered practicable and desirable for the development of Ayurveda and other indigenous systems of medicine. At the same time the Council also recommended that the Government of India should actively encourage research in Ayurvedic, Unani and Homœopathic and other indigenous systems, obviously with a view to *eventual integration of those systems with allopathy*.

In the light of what we have stated at some length in this article, we wish to reiterate what we have said before, that although the task before Government and their health advisers is not an easy one, a *bona-fide* attempt should *be* made to conduct well-planned researches and *then* evolve a suitable scheme of integration of all that is best in every system of medicine so as to afford the maximum benefit to ailing humanity at minimum cost. In a poor country like ours, is not cheapness consistent with efficacy the essence of all ameliorative or curative measures designed to safeguard the health of the nation?

— —

CONTINUED USEFUL WORK BY THE INDIAN RED CROSS SOCIETY

(Madras Branch)

The Red Cross is very well known as an entirely non-political voluntary organization established nearly a hundred years ago, (1864 to be precise) for rendering humanitarian Service. The Indian Red Cross Society was established in 1929 with branches in all the States. The Rashtrapathi of the Indian Union is the President of the I. R. C. Society which is also a member of the League of Red Cross Societies and of the International Committee of the Red Cross at Geneva.

At the Annual General Meeting of the Madras State Branch of the Society held at the Red Cross Buildings in Madras on the 14th of July 1958, Shri Dr. U. Krishna Rau, Chairman of the General Committee of the I.R.C. Madras State Branch, cordially welcomed the gathering and spoke in appreciative terms of the useful work done by the Society during the year under report. He complimented the office bearers of the Madras State Branch and the District and Sub-Branches of the Society on the very satisfactory and willing work rendered in assuaging misery and unhappiness amongst the distressed and in providing help and amenities to the needy—largely peace-time work as it was this year.

Shri Dr. A. Lakshmanaswami Mudaliar, Vice-Chancellor of the Madras University who presided over the function referred to the useful work done by the State branch, and said that he was happy to see that the movement showed an increasing appeal to the public and particularly a larger number of our women were taking active interest in its work. This was clear from the fact that more women had taken certificates in the current year as Junior Red Cross Counsellors. He repeated what has long been a chronic state of affairs that the activities of the society were greatly limited by finance Luckily, the year under report was relatively free from major calamities like floods, fires etc., and so the strain on their finance was perhaps a little less. Referring to the 19th International Red Cross Conference which was held at Delhi in October 1957, a report of which was published in our December 1957 issue of the Antiseptic, he said it was a remarkable gathering which gave an idea of the useful work done by the Red Cross in many countries in the world. A perfect feeling of comradeship prevailed in the conference, barring an unfortunate incident at the closing stage. It was being increasingly recognized that the Red Cross had a significant part to play both in peace and war times and the movement had taken a stronghold in the United States; there was another institution called the "Blue Cross" in America which was largely responsible for life insurance of the public. He wished that it would be possible for the Red Cross in India to take up such work also, at least in some of the big cities.

Dr. Mudaliar thanked the Madras Corporation for the increased grant it had given this year to the Society. We are glad to be told that there is also a proposal to run a Carnival in the month of October this year in support of the Red Cross and that the Army, Navy and Air Forces in Madras have offered their hearty co-operation. This is indeed a very happy augury and we hope that the public also would extend their fullest co-operation to make it a success.

The increase in membership of this most deserving institution has not been as satisfactory as it should be. Many more hundreds should become members every year to enable the society to meet the steadily growing demands on its useful services. An institution with such a great tradition and high ideals of service to humanity certainly deserves unstinting patronage from every sincere and discerning son of India.

Special Feature

NEWSLETTER FROM THE UNITED STATES

Medical research is continually producing new cures for old diseases, but just as important are new methods for detection of these diseases. *A study of the tubeless gastric-analysis technique*, reported by T. Rodman and co-workers in the May 10 issue of *The Journal of American Medical Association*, indicates that the technique is reliable even in the presence of diseases formerly thought to make it useless. In a group of 114 patients with heart disease, mild to moderately severe liver and kidney disease, and various other conditions, there were comparatively few false reactions to the test. The test is simple. The patient swallows an organic dye ; then colour reaction of the urine indicates the presence or absence of hydrochloric acid in the stomach.....L. Hantschmann and H. Planz report in the March issue of the *German Medical Monthly* (*3* : 91, 1958) on *treatment of 29 patients who were persistent carriers of typhoid or paratyphoid bacilli*, some of whom had been carriers for many years. Treatment with Chloromycetin and administration of one or two blood transfusions proved successful in eliminating the carrier state in 19 of the 29 patients. Six of them were cured on this regimen after a previous cholecystectomy had failed..... L. T. Palumbo, speaking at the International Congress of the International College of Surgeons in Los Angeles, described *a new surgical technique for treating angina pectoris and vascular insufficiency of the hands*. The operation involves surgical removal of the sensory and motor pathways to and from the heart. This eliminates the undesirable action of the motor nerves on the blood vessels of the heart, almost completely relieving the patient's pain and hence his fear of pain. Many patients regain their ability to live relatively normal lives without the assistance of medications they had formerly required.

The technique described entails fewer complications and less risk to the patient than any of the other surgical procedures usually employed.....A. L. Lorincz, dermatologist, reports in the April 12 issue of *The Journal of American Medical Association* (*166*: 1862, 1958) that *dietary factors have very little to do with most skin disorders.* The most frequently met nutritional disturbance that causes or aggravates skin conditions is malnutrition in the form of obesity. Obese persons tend to have skin disorders on opposing surfaces of the body—in skin folds where heat and moisture accumulate. Also, excessive sweating associated with obesity has an adverse effect on normal skin and an especially bad effect on inflamed skin. Restriction of fat and carbohydrates is helpful for some specific skin conditions, and Vitamin A has a therapeutic effect in some of the rare skin disorders. Other nutritional factors, according to the author, have little practical importance in dermatologic disorders.....Dactil, a piperidol derivative, has been used with great success for treatment of gastroduodenal spasm, pylorospasm, and other hypermotility states. *A new use for Dactil* has recently been reported by L. J. Stephens in the *American Journal of Obstetrics and Gynaecology* (*73*: 694, 1957). Premature delivery has been found to be preceded by a period of preparation by the cervix and lower uterine segment. These changes are similar to those that occur before normal delivery. Dr. Stephens says that of all the regimens and drugs employed to ward off premature delivery, Dactil proved to be the only drug that could prevent premature labour once it had started or while it was imminent. Dosages of 50 to 100 mg. of Dactil four times daily were effective in preventing occurrence of labour in patients whose cervices were thinning or dilated..... *A new operation for chronic ulcerative colitis*, which restores the patient to a happy and healthy life, was reported by L. T. Palumbo at the International Congress of the International College of Surgeons in Los Angeles. In this one-stage operation, the entire large bowel is removed, and the end of the small bowel is permanently fixed to an opening in the abdominal wall. After the operation, a weight gain of from 75 to 90 pounds is not unusual, psychologic changes are dramatic, and the patient is able to return to a normal life with no limitation of physical or athletic activity.....Two psychiatrists, N. Chivers and T. L. Dorpat, reporting in the May issue of *G.P.* (*17*: 108, 1958), say that *full recovery after surgical operations may depend on the patients' emotional reactions.* For example, some children who have not been prepared for surgery undergo extreme fear and anxiety which may produce prolonged after-effects when they return home. Very small children in particular have an intense fear of abandonment. The threat posed by some types of operations may undermine important personality defences, such as pride in a physique, and genital operations may create sexual conflicts in the patient. Apprehension and morbid introspection can frequently be allayed by a straightforward explanation of the surgical procedure and its consequences.....N. D. Fabricant reports in the March issue of the *A.M.A. Archives of Otolaryngology* (*67*: 344, 1958) that *drinking alcoholic beverages is useful in several respects for fighting the common cold.* After chilling or exposure to bad weather, consumption of alcohol increases circulation of blood, promotes warmth and comfort, and induces drowsiness and a desire to rest. Rest in bed, according to Dr. Fabricant, diminishes the severity of a cold, minimizes the spread of infection to others, and reduces the incidence of complications. Alcoholic beverages are beneficial in still another way. Before a cold occurs, the temperature in the nasal passages drops and the blood vessels in the nose constrict. The resulting dry passages lower resistance to the cold. Alcohol raises the temperature of the nasal membranes thereby restoring the nasal passages to normal. Dr. Fabricant reported that within 30 minutes after consumption of alcohol, the temperature of the nasal membranes increased.

GLEANINGS FROM THE MEDICAL PRESS

MEDICINE & THERAPEUTICS

Corticosteroids and the tuberculin test.—(*Brit. M. J.*, *2*: 1135, 1957 via *J.A.M.A.*, 18-1-1958).

Truelove, observed that corticosteroids in moderate or low doses can convert a negative into a positive tuberculin reaction in some patients. Twenty-four patients who were admitted to medical wards and who were likely to require steroid treatment were treated by intradermal injection of 0·1 cc. of old tuberculin into the volar surface of the forearm, and those showing a positive reaction excluded. The positive reactors were treated with cortisone or prednisolone. They received diet, fluid intake, and drugs appropriate to their condition. While being treated with corticosteroids in moderate or small doses, the tuberculin reaction became positive at the same or higher dilutions in 20 of the 24 patients. These were mostly elderly people, although patients from all age groups were included, or people who showed frank signs of suprarenal cortical suppression. Truelove suggested that corticosteroids, although able to suppress a positive tuberculin reaction when given in large doses, as in the treatment of tuberculosis, may, when given in smaller doses, restore a reaction which has been suppressed by age, infection, or suprarenal deficiency. He also suggested that other severe infections apart from tuberculosis might respond, especially in the elderly, to the addition of steroid hormones in small doses to standard antibiotic treatment.

The clinical significance of hæmaturia.—(*J.A.M.A.*, 18-1-1958).

Hæmaturia, or the presence of blood in the urine, is one of the more frequent symptoms of disease of the genitourinary tract.

Hæmaturia is not a disease but a symptom ; it can occur in association with systemic disease, with intrinsic disease of the genitourinary tract, or with disease localized in other parts of the body. Dr. Higgins of Cleveland found that the nature of the underlying cause varied strikingly with age. In children between the ages of 1 and 5 years cystitis was the most frequent cause ; in children between 5 and 10 it was glomerulonephritis. From ages 11 to 40 inflammatory lesions, with cystitis and pyelonephritis, predominated in both sexes, but a difference between the sexes was found as regards the distribution of the less frequent conditions. In men from 41 to 60 various vesical neoplasms were the most frequent cause ; from 61 to 70 benign or malignant forms of prostatism predominated. These results confirm the conclusions of previous investigators as to the gravity of hæmaturia as a symptom. A physician confronted with it should make sure that he is not dealing with a serious organic lesion or a malignant tumour.

The public must be informed of the serious aspects of hæmaturia and advised to seek immediate medical advice when the condition is first observed. Cessation of the bleeding spontaneously does not necessarily minimize the gravity of the symptom. The physician assumes the responsibility, the obligation, of proving beyond question that a serious organic lesion or a malignant or potentially malignant tumour is not the causative factor.

Primary chronic interstitial nephritis.—(*German Med. Monthly*, Feb. 1958).

The clinical features of chronic interstitial nephritis caused by an excessive intake of phenacetin over many years are reviewed on the basis of 28 cases observed by the authors (total intake in these instances ranged from 10,000 to 200,000 tablets over 11 to 15 years).

After a clinically not easily diagnosable latent stage there follows a second, well-defined, stage of renal tubular insufficiency, with normochromic anæmia, polyuria, hyposthenuria, azotæmia, and acidosis ; it is often associa-

ted with electrolyte disturbances but without blood-pressure elevation, which only occurs in the terminal stage of the contracted kidney with total renal failure.

Erythrocyte survival time (measured in 33 of the patients in whom excessive intake of phenacetin could be proven) was markedly shortened in all stages of phenacetin excess, whether the early one characterized by nervous symptoms only, the later one with signs of sulpha-hæmoglobinæmia or that of interstitial nephritis. This finding could be duplicated in animal experiments; but it has not yet been possible to reproduce the nephritis experimentally.

It is suggested that superimposed urinary infections, especially cystopyelitis, favour or precipitates the development of interstitial nephritis (60 % of the author's cases).

Treatment of phenacetin abuse varies with the stage of the disease. In the first stage, social welfare and the prevention of further consumption of the drugs are important. Should the general practitioner be unsuccessful in his efforts, specialist advice should be sought; institutional psychiatric treatment may become necessary. This was, in fact, often found to be the best way. In the second stage, large doses of vitamin C and iron should be administered. In the third stage, treatment should be directed along the lines previously indicated and urinary infections should be cleared up.

The treatment of herpes zoster.—(*M. J. of Australia*).

E. Epstein and H. V. Allington (*Arch. Dermat.*, October 1957) review the results of treatment of *herpes zoster* presented in 37 different articles published over the past 26 years. These articles announce or discuss 22 basically different methods of treatment, illustrated by the histories of 251 patients. The average number of cases reported per article is 19, which the authors point out, is too small a figure on which to base sound conclusions, in the case of a self-limiting disease. The authors undertook this review to find out whether autohæmotherapy was an effective way to shorten the course of the disease. This treatment was given to 98 patients included in the present review. Other treatments included the exhibition of various broadspectrum antibiotics, Vitamin B, given orally and parenterally, injections of "Pituitrin," X-ray therapy, the administration of corticosteroids, and symptomatic treatment only. Many of the patients received more than one form of therapy. These cases were analysed according to the period during which the patient was under treatment. The figures for the duration of the disease in patients submitted to various forms of treatment were strictly similar. By those criteria it would appear that the type of treatment employed made no difference to the duration of the disease.

OPHTHALMOLOGY

Topical anæsthetics for eye injuries.—(*Northwest Medicine*, December '57).

The exact mechanism of action of topical anæsthetics is not known. These agents may alter permeability of the limiting membrane of the nerve and thus influence rapidity of exchange of cations, or they may compete with acetylcholine for an enzyme present in the nerve fibres involved in nerve impulse transmission.

The cornea is richly supplied with sensory fibres which provide unusually high sensitivity. This is a protective device in a vital structure exposed to the external environment. However, when the eye is injured, the protection is paid for by pain, photophobia and excessive lacrimation. Thus following injury this high sensitivity may be considered detrimental since further exposure to the external environment intensifies all the discomforts of the injury and stimulates both voluntary and involuntary spastic closure of the lids. Adequate examination of such an eye is always difficult and often impossible. The problem of examination is partially solved by instilling a topical anæsthetic or blocking the seventh nerve by local infiltration or both. Instillation of one of several available topical anæsthetics is relatively simple and safe. The drugs are quick acting and provide excellent exposure because of immediate relief of pain.

An eye injury commonly treated with anæsthetic agents, by practitioners and ophthalmologists alike, is ultraviolet light. This is the cause of snow blindness. In industry this type of injury commonly follows exposure to the light emitted from the welding arc. Ordinarily such injuries are exceedingly painful but superficial. Relief and recovery are often achieved following several instillations of an anæsthetic solution or ointment and a night's sleep during which time the lids are closed.

There are several anæsthetic solutions now available in sterile containers. These may be kept on hand for prolonged periods and used repeatedly without undue fear of contamination. These include, among others, tetracaine (Pontocaine), benoxinate (Dorsacaine), Lidocaine (Xylocaine) and cocaine.

Postoperative vision in retinal detachment surgery.—(*The Eye, Ear, Nose and Throat Monthly*, January 1958).

A brief survey was made by Colyear in an effort to obtain a general idea of what central visual acuity is achieved following retinal detachment surgery. All of the patients included in this study were private patients and have been followed for at least one year postoperatively. A successive series of 70 retinal detachments cured by diathermy coagulation is first presented, and then compared with a similar number 70 retinal detachments cured with diathermy coagulation in conjunction with lamellar scleral resection (these latter patients are also consecutive).

Aside from the fact that the patients who underwent surgery by diathermy coagulation alone had a *better* prognosis because of the recent onset of the detachment, there was very little difference in the post-operative visual results obtained in the two groups of patients.

Assuming that the surgeon understands the indications for scleral resection, there is no valid reason for believing that the operation in itself should affect adversely the final visual result.

DERMATOLOGY

The decline of X-ray therapy in dermatology.—(*London Hospital Gazette*, February 1958).

Brian Russell, M.D., F.R.C.P. writes: X-irradiation remains the treatment of choice for most cutaneous epitheliomata. For many years it has been replaced by other methods in the treatment of lupus vulgaris; first by ultraviolet irradiation, then by calciferol, and finally by isoniazid. Elderly patients continue to attend the lupus follow-up clinic with atrophic, pigmentary and keratotic changes resulting from the use of X-rays for this disease early in the century.

The introduction of hydrocortisone lotions and creams has made it easier to treat the large cutaneous miscellany covered by the expressions eczema, dermatitis, pruritus, prurigo, and lichen simplex. In the past, the clinician prescribed fractional X-ray exposures in the treatment of some of these chronic and relapsing disorders. Today, some clinicians use the less-penetrating and therefore safer Grenz rays, and others use local applications of thorium-X in spirit.

The more conservative clinicians have been using X-rays less and less in the treatment of some conditions, in the belief that there are better tools than a sledge-hammer with which to crack a nut, and that "*Primum non nocere*" must be the first principle of therapy. In acne vulgaris and rosacea it rarely seems necessary to suppress with X-rays the sebaceous glandular activity, and in hyperidrosis it is not a good thing to dry the skin by damaging or destroying the sweat glands. X-ray treatment is unethical in the treatment of

hirsutes, carrying with it, as it does, the grave risk of chronic radiodermatitis, with telangiectasia, atrophy and pigmentary changes and subsequent keratosis and epithelioma formation. Similarly, the use of X-rays in the treatment of warts can rarely be justified.

The main uses of X-rays in dermatology today are :—

(1) To destroy epitheliomata. (2) To suppress reticulotic lesions. (3) To prevent or reduce keloids carring.

(4) To stimulate re-epithelialization of open paronychial folds.

(5) To epilate in scalp ringworm due to Microsporon audouini or to the endothrix trichophyta.

(6) To relieve some chronic, itchy, inflammatory conditions which have proved resistant to hydrocortisone and other remedies.

The amount of X-ray treatment given in the Skin Department at The London Hospital in 1956 as compared with that given in 1946 shows a reduction from 21·4 to 10·3 per cent in the treatment of skin diseases.

X-rays continue to be the treatment of choice for most epitheliomata, for some forms of cutaneous reticulosis, and for tinea capitis when epilation is required. X-ray treatment may also be indicated in the management of keloids, chronic paronychia, hypertrophic lichen planus, and other chronic, itchy, inflammatory conditions of the skin.

Novocain block therapy in 565 cases of dermatoses.—(*Chinese J. Dermat., 6 (1)*: 1-6-1958, via *Chinese Medical Journal*, April 1958).

Novocain block therapy was given in 565 cases of dermatoses comprising 182 cases of neurodermatitis, 88 cases of psoriasis, 79 cases of eczema, 64 cases of urticaria, 29 cases of disseminated neurodermatitis, 28 cases of eczematoid dermatitis and 95 cases of miscellaneous skin conditions. One of the five kinds of novocain block therapy, namely, local, perirenal, humeral and femoral, lumbar sympathetic and intravenous block, was used. The results obtained were as follows:—*excellent* in band-like circumscribed scleroderma, chronic trophic ulcers and dermatitis herpetiformis; *good* in psoriasis, neurodermatitis, herpes zoster, eczema, eczematoid dermatitis and generalized pruritus; and not apparently effective in dermographism, angioneurotic œdema, pruritus of scrotum, lichen planus and keloid. No serious reaction was found in this series but only mild transient reactions such as dizziness, headache, fatigue, tremor, flushing of the face, and nausea. The authors highly recommend the use of intravenous block therapy with a double solution containing 50 mg. of novocain and 100 mg. of ascorbic acid in 20 cc. of distilled water for ambulatory patients.

SURGERY

Fatal acute appendicitis in a fifteen-day-old infant.—(J. H. Shinaberger, E. J. Tomsovic and W. C. Butz. *J. Paediat., 51*: 422-428, Oct. 1957, St. Louis, via *J.A.M.A.*).

Snyder, reviewing the literature (up to 1951) of reported cases of acute appendicitis occurring in patients under 2 years of age, discovered 34 cases in patients less than 1 year of age and 10 cases occurring in patients during the first 3 weeks of life. In infants less than 1 year of age, Meckel's diverticulum, intussusception, volvulus, and malrotation are far more common causes for surgical intervention. The high incidence of peritonitis is ascribed to poor defenses in a small infant where omentum is short and thin and who has almost no capacity for walling off suppuration. Failure in diagnosis for infants is as common today as was noted by Abt in 1917. The case cited in this report was diagnosed as cellulitis of the abdominal wall with probable septicemia, shock, and dehydration. Fever, constipation, abdominal pain, restlessness, and fitful sleep are frequent presenting symptoms, diarrhœa being noted as an uncommon symptom. Point tenderness is highly

significant, although the appendix may lie anywhere from the midline to the right flank and from the liver above to the pelvis below. Adynamic ileus, manifested by distention, tympany, and diminished peristalsis on auscultation, is an important finding, although it may occur in pneumonia and other severe infections. Leucocytosis, with a leucocyte count of more than 12,000 per cubic millimeter and 85 to 95% polymorphonuclears, is one of the few typical manifestations. A suitable programme, once the diagnosis is suspect, is to correct shock and dehydration with intravenous infusion and to employ intestinal decompression, antibiotics, and sedation. Surgical intervention should be attempted after 4 to 8 hours of preparation when the pulse has dropped below 140 per minute and the temperature below 103 F. Successful treatment hinges upon carrying an infant through appendectomy, which, of necessity, precludes a correct diagnosis.

Fractures of the elbow in children.—(Review of three hundred consecutive cases. *J.A.M.A.* 18-1-1958).

Fractures of the elbow in children constitute a major problem in management because of resulting deformities from inaccurate reduction and complications arising from vascular and nerve damage. The elbow is one of the most frequent sites of fracture and is one of the few regions where operative treatment is frequently indicated in children, and here it may be necessary in a variety of types of fractures.

Among 300 fractures of the elbow in children, the most frequent type was the supracondylar fracture (177 cases, with marked displacement in 72 of these); skeletal traction as the primary treatment for this fracture if there is severe displacement; three weeks of traction are generally followed by two weeks of immobilization in a cast.

Fractures of the lateral condyle (34 cases) require careful diagnosis because even a slight displacement of the capitellar epiphysis can result in deformity. Open reduction was necessary in 14 of these cases. Fractures of the medial epicondyle (27 cases) were accompanied by dislocation in 14 cases and by incarceration of a fragment of bone in the joint in 4 cases. Such incarceration must be watched for, since it calls for either excision or reattachment of the fragment. Fracture of the head of the radius (22 cases) was successfully treated by immobilization (15 cases) without severe displacement; others required either manipulation or open operation. Gentleness in dealing with soft tissues is essential. Evidence of circulatory trouble demands prompt action. Restoration of function to injured nerves occurred in all cases but one. The expense and inconvenience of a few weeks of hospital care should not influence the choice of treatment, which largely decides whether the elbow is ever to regain normal form and function.

Stones in urethral diverticulum.—(*New York State, J. Med.*, 15-12-1957).

The occurrence of urethral stones in the female is uncommon and its complications so debilitating that a search for it should be made in any female complaining of dyspareunia, dysuria, frequency, and urethral discharge.

A forty-five-year old female with a history of eight normal pregnancies complained of pain during coitus and a hard mass in the vagina of three months' duration. A diagnosis of stones in a urethral diverticulum was established on the basis of the physical examination, including milking of the urethra, and X-ray studies.

The abdomen and vagina were prepared under spinal Pontocaine. Through a lower paramedian incision the space of Retzius was exposed, and exposed, and dissection was carried downward. The bladder was opened extraperitoneally, and no connection was found with the stone formation.

While the assistant was pressing outward, the anterior vagina was opened, utilizing vertical incision.

The diverticulum was freed from the surrounding tissue and opened. Two fairly large stones were removed. Most of the diverticulum was excised, and the neck was closed in two layers, using 000 chromic suture material. A Foley catheter was left *in situ* and a soft tissue drain was left in the space of Retzius. The vagina was packed with a single sponge for compression with an order to remove it in twenty-four hours. The skin was closed with silk suture. The entire procedure was terminated without incident.

Chemically, the stones were composed of calcium, ammonia, phosphate, and magnesium.

The post-operative course was uneventful. The Foley catheter was removed after five days, and the sutures were removed on the seventh day. After ninety days the patient was reexamined and found to be normal.

OBSTETRICS & GYNÆCOLOGY

Diseases of the female urethra.—(*J.A.M.A.*, 18-1-'58).

Acute gonorrhœal urethritis in women has become rare, but chronic nonspecific granular urethritis is now frequent. Polyps are most often found associated with the latter, and may be responsible for the appearance of blood toward the end of each urination. Carbuncles near the urethral meatus at times cause bleeding and pain, but they are usually symptomless and rarely undergo malignant degeneration. Obstruction of the urethra in children by folds of mucous membrane can cause symptoms of all degrees of severity including intractable enuresis and persistent infection; removal of such folds by fulguration or resection has often relieved these symptoms completely, but must be done with care to avoid producing incontinence and fistulas. The treatment of strictures is very difficult; scarring leads to rigidity of the urethral wall and incontinence at the sphincter, and the latter is not relieved by repeated dilatations. Urethral diverticula can be rendered visible by positive pressure urethrography; they sometimes afford an explanation of chronic or recurrent cystitis. Malignant tumours in and about the urethra are very difficult to treat surgically. Treatment by radiation has given better results in two series of malignant tumours in this location.

Vaginal cytology in breast cancer patients.—(W. Liu, *Surg. Gynaec. and Obst.*, *105*: 421-426, Oct. 1957, via *J.A.M.A.*, 18-1-1958).

The vaginal cytology of patients with breast cancer was studied in order to ascertain if: (1) vaginal smears from patients with breast cancer are different from those of normal women, (2) vaginal cytology is of any value in evaluating the progress of patients with breast cancer undergoing castration, and (3) vaginal smears are helpful in following the patient's course during hormone treatment. Vaginal smears were studied in a total of 460 patients treated for cancer of the breast at the Massachusetts General Hospital in Boston between 1948 and 1956. The number of smears taken in individual women varied between 1 and 67. It was found that during hormone treatment for breast cancer, vaginal cytology is of value in observing the patient's clinical course. Patients who had a clinical remission with hormone therapy also showed a marked hormone effect in vaginal cytology and *vice versa*. This observation was especially obvious in the patients treated with œstrogens. It may be concluded that a full hormone effect shown by vaginal cytology is a prerequisite for clinical remission. Therefore, repeated vaginal smears may be used at the initiation of hormone therapy, together with a scheduled increase in dose, to arrive at a dosage level which is optimum and effective in individual patients. The evaluation of the clinical response to a hormone is made only after the cytology has shown a marked degree of hormone effect, unless the patient cytologically is found to be refractory.

REVIEWS OF BOOKS

Modern Drug Treatment in Tuberculosis—By J. D. Ross, M.B., Ch.B., F.R.C.P.E., M.P.H. (Johns Hopkins), Consulting Physician and Superintendent, Royal Victoria Hospital, Edinburgh, (1958). Pp. 48. Published by N.A.P.T., Tavistock House North, Tavistock Square, London, W.C. 1. [Price 5 shillings.

Since the advent of antibiotic chemotherapy in the form of Streptomycin, PAS and INAH, there has been a great change in the outlook on the treatment of pulmonary tuberculosis. These new forms of treatment really add to the problems confronting both doctors and nurses. This booklet is indeed most welcome at the present juncture, as it gives a detailed account of the problem of resistance, a description of the sensitivity tests and a very clear summary of the 3 main drugs used in treating tuberculosis and also other anti-tuberculous drugs like Viomycin, cycloserine, pyrazinamide, and terramycin which are used sometimes—aptly described as 'Salvage' chemotherapy. In chapter 8 the value of ACTH hormone, and adrenocortical steroids is well brought out, as also their limitation in tuberculosis therapy.

This book will be of practical value to doctors, medical students and nurses working in chest wards of General Hospitals and in Sanatoria.

T.N.S.R.

Handicrafts in Hot Climates—Booklet of 20 pages, published by N.A.P.T., Tavistock Square, London, W.C. 1. Price not stated.

The advice contained in this small but very imformative booklet has been gathered from experts who have worked amongst sick people in overseas territories of the world. It is intended primarily for the amateur, the pioneer and the pioneer enthusiast rather than for the fully-qualified and experienced occupational therapist. Even this specialist, if out of his or her own environment may find it helpful in an emergency. T.N.S.R.

How Ayurveda is Misconstrued in the Land—Booklet by Ayurveda Visharada and Ayurveda Bhushana Dr. I. K. P. SHARMA, A.M.A.C., Mangalore-3, (1958). Pp. 30. Published by the author. Price: nP. 25.

In the form of sixteen Questions and Answers Shree I. K. P. Sharma attempts to dispel the misconceptions entertained by certain responsible persons regarding the genuine value and importance of the science and practice of Ayurveda. This small booklet may be read with interest by persons who are not quite *au fait* with the Science of Ayurveda.

T.N.S.R.

BOOKS RECEIVED

The New Mysore Medical and Pharmaceutical Directory, 1958—Published by New Mysore Publishers, Line Bazar, Dharwar. Pp.

Price: Rs. 10-50, postage extra.

World Health Organization Technical Report Series, No. 145–Expert Committee on Poliomyelitis—Second Report, 1958. Pp. 83. (World Health Organization, Palais Des Nations, Geneva).

Price: Sh. 3/6, $ 0.60 Sw. Fr. 2.

World Health Organization Technical Report Series, No. 146. Expert Committee on Water Fluoridation–First Report, 1958. Pp. 25. (World Health Organization, Palais Des Nations, Geneva).

Price: Sh. 1/9, $ 0.30, Sw. Fr. 1.

The Mammalian Cerebral Cortex—By B. DELISLE BURNS. Pp. 119. (Edward Arnold (Publishers) Ltd., London). Received from Orient Longmans Private Ltd., 36-A, Mount Road, Madras 2. Price: 21 sh. net.

Essentials of Chemical Pathology—By D. N. BARON, M.D. Pp. 247. (The English Universities Press Ltd., 102, Newgate Street, London, E.C. 1). Received from Messrs Orient Longmans Private Ltd., 36-A, Mount Road, Madras-2. Price: 25 sh. net.

Neuropathology—By J. G. Greenfield. Pp. 640. (Edward Arnold (Publishers) Ltd., London). Received from Messrs Orient Longmans Private Ltd., 36-A, Mount Road, Madras-2. Price: 105 sh. net.

Manual of Medical Emergencies—By S.C. Cullen and E.G. Gross. Third edition. Pp. 302. (Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11. Price: $ 5·75.

The Medical Annual, 1958—Seventy-sixth issue. Pp. 580. John Wright & Sons Ltd., The Stonebridge Press, Bath Road, Bristol-4.

The Acute Abdomen—By William Requarth. Second edition, 1958. Pp. 313. (The Year Book Publishers Inc., 200, East Illinois St., Chicago 11, Ill).

Medicine for Dental Students—By Nandi and Ganguli. Pp. 203. (U.N. Dhur & Sons Private Ltd., 15, Bankim Chatterjee Street, Calcutta). Price: Rs. 10-50.

Fractures and Dislocations—By George Perkins. Pp. 363. (Messrs. Orient Longmans Private Ltd., 36-A, Mount Road Madras 2). Price 57s. 6d.

Sachitra Ayurveda—Special Number (Sachitra Ayurveda Office, 11, Gupta Lane, Calcutta 6).

PREPARATIONS AND INVENTIONS

Ledercort Triamcinolone

Messrs Lederle Laboratories have developed this new adrenocortical hormone, which they claim has demonstrated considerable therapeutic efficiency without causing many of the undesirable side effects associated with corticosteroid therapy. It is claimed to be very effective in rheumatoid arthritis, lupus erythematosus, allergic conditions and other disorders in which corticosteroid therapy. Hypertension and development of œdema were not observed in treatment with this drug. Ledercort is claimed to promote natruresis and diuresis. Messrs Lederle Laboratories (India) Private Limited, 16, Queen's Road, Bombay 1, will be pleased to supply more details about this drug.

Telmid

Messrs Eli Lilly & Company of India have introduced 'Telmid' (Dithiazanine Iodide) a new drug for the treatment of worm parasites that infect the human body. It is stated to be a new broad spectrum anthelmintic. The parasites which 'Telmid' is meant to destroy are pinworm, large round worm, whipworm, threadworm and hook-worm. Messrs Eli Lilly & Company of India, Inc., 88-c, Parbhadevi Road, Bombay 28 would be pleased to supply further information, if required.

Three New Products of M. & B.

May & Baker (India) Private Limited announce the introduction of three new products:—

'Oracyn'—brand phenoxymethylpenicillin tablets B. P. each containing 60 mg. of Penicillin-V.

These are for oral administration in the treatment of those conditions for which parenteral penicillin is used. The therapeutic effect of one 'Oracyn' tablet is approximately equal to that of 100,000 units of crystalline penicillin given by intramuscular injection.

'Sonergan'—brand promethazine butobarbitone tablets—each tablet contains 75 mg. butobarbitone and 15 mg. promethazine hydrochloride.

'Sonergan' is indicated for general use as a sedative and hypnotic at bedtime in patients with insomnia and for minor mental and emotional disturbances. 'Sonergan' is also indicated for special use in pre-operative preparation and post-operative sedation, where the additional antiemotic effect of the promethazine content makes it particularly valuable.

'Broptol'—Brand dibromopropamidine eye ointment is a new preparation for the treatment of acute and chronic conjunctivitis and corneal ulceration due to a variety of organisms, and for the prevention and treatment of infection in superficial traumatic eye lesions.

Speman Forte

The Himalaya Drug Co. has just put on the market Speman forte which is a combination of their Sperman (now known as Speman) with Serpina.

Speman forte is particularly recommended in resistant Spermatorrhœa, ejaculation præcox, hyperæsthetic sexual conditions, senile sex aberrations and other symptoms of enlarged prostate.

CORRESPONDENCE

To The Editor, The Antiseptic, Madras

Dear Sir,

For sometime past, the Ministry of Health, Government of India, had been contemplating the integration of Health Services of all Organizations under their control, into one "Central Health Services." We understand that this scheme is now more or less complete and is going to be given effect in near future. Need for such a cadre was long felt. But though the scheme is a move in the right direction there is discontentment in certain sectors regarding the way some existing junior Medical Officers have been graded in the scheme. There are five grades of medical officers in the Central Health Services, of which the scale of pay of junior most Medical Officers (Grade V) is from Rs. 260 - to Rs. 500 - p.m. This, we consider too inadequate to attract good Medical Officers for the Central Health Services when there is already a move in the States and Railways of raising the scales of pay etc., of this category of officers and as a matter of fact it has already been raised in the State of West Bengal.

We are informed that the Medical Officers serving in the Coal Mines Labour Welfare Organization have been taken in the Central Health Services and the junior Medical Officers have all been put in Grade V. These junior Medical Officers were enjoying a higher scale of pay and certain other benefits. Now if they accept the grade, they are losing their higher scales of pay etc., which were more attractive in the Coal Mines Labour Welfare Organisation, some of the Medical Officers left their State Government and Railway Services to join this organization. Now when the scale of pay etc., are being revised in the States and Railways it is seen that their scales of pay are lowered.

In the light of the above facts we feel that there should be a proper review of the grading of the Medical Officers and the scale of pay of junior Medical Officers should be raised to attract efficient and experienced Medical Officers for better service to the people.

Yours faithfully,

Asansol. 22-6-'58 } J. Sharma, M.B., B.S., D.T.M., *Hony. Secretary, I.M.A., Asansol Branch.*

To The Editor, The Antiseptic, Madras

Dear Sir,

Will you or any of the readers of the Antiseptic throw some light on the following matter?

1. The solution of Streptomycin sulphate gets discoloured in a few hours after preparation while that of dihydrostreptomycin remains colourless even after 24 hours. Why is it so?

2. Can this discoloured solution be used for intramuscular injections?

Vill. & P.O. Lohara, Dt. Hoshiarpur. 20-7-'58 } Dr. D. R. Sharma

NEWS AND NOTES

Dr. S. N. Bhansali Charitable Trust Prize

The Bombay Obstetric and Gynæcological Society, invites Essays or Theses on "Any Original Work on Human Sterility" for the award of Dr. S. N. Bhansali Charity Trust Prize, worth about Rs. 500.

There are two prizes, one for the year 1956 and one for the year 1957. The envelope containing the Thesis/Essay should state on top the year for which the entry is submitted. The entries should reach the Society's office by 1st November 1958. The prize competition is open to all Registered Medical Graduates all over India.

For full details and rules governing the award of the prize please write to the Hon. Secretary, Bombay Obstetric and Gynæcological Society, Purandare Griha, Chowpaty Sea Face, Bombay 7.

Industrial-Health Seminar in London

Specialists from 21 European countries attended a seminar in London on occupational health problems. This was the second stage of a travelling seminar arranged by the World Health Organization, the earlier part having been held in France. The object of the seminar was to provide an insight into the practical working of industrial health with a view to improving working conditions and the health of workers.

Symposium on Antibiotic Therapy

Leading scientists from all parts of Italy gathered in Milan recently for the first European symposium devoted to a review of the most recent achievements in antibiotic therapy. The main subject of discussion was the role of combinations of antibiotics in control of bacterial infections. The symposium was a great success.

History of Medicine

The Madras State Government have opened a department of History of Medicine in the Government College of Integrated Medicine, Poonamallee High Road, Kilpauk, Madras. This department is sanctioned for the promotion of a knowledge of History of Medicine in Ayurveda, Siddha and Unani by lectures, medico-legal researches and examination of materials available in the various libraries or museums in India.

ASPIRIN AND DIABETES MELLITUS

Disappearance of glycosuria and the return of fasting blood sugar to normal in a young diabetic during aspirin treatment for acute rheumatism led to reinvestigation of the effect of salicylate in diabetes mellitus.

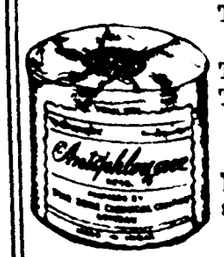
An intensive 2 weeks' course of aspirin abolished glycosuria and lowered the fasting blood sugar to normal or near normal in 7 mild to moderately severe diabetics.

No decisive effect on glucose tolerance was obtained, though the blood-sugar curves were always lower during aspirin administration than they were either before or after.

Moderate ketonuria in 2 patients was reduced to normal with aspirin.

Clinical improvement accompanied the biochemical changes induced by aspirin, and, while serious toxic manifestations were not conspicuous, tinnitus and deafness were annoying. The possible place of aspirin in the treatment of diabetes mellitus is discussed.

The action of aspirin in diabetes mellitus has been located in the tissues, and this is of interest in the light of the proper establishment of the drug as a peripheralacting metabolic stimulant.–(J. Reid, A. I. MacDougall, and M. M. Andrews, *British Medical Journal*, 9-11-1957, via *Current Medical Digest*, Feb. 1958).



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