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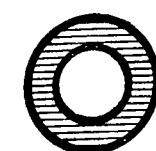
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THE ANTISEPTIC

Vol. 54, No. 3

CONTENTS

MARCH 1957

ORIGINAL ARTICLES:

- | | |
|--|-----|
| Medical Management of Peptic Ulcer —K. Govinda Das, M.D. (Madras), Mangalore ... | 157 |
| Drug Therapy in Hypertension —R. Subramaniam, M.D., M.R.C.P. (Lond.), Madras ... | 167 |
| Modern Problems in Medical Vitaminology in the USSR —Professor V. V. Yofremov ... | 173 |
| Typhoid Fever (Enteric fever, fievre typhoïde) and Sulphamycetine —Conte Hans C. Engelhardt ... | 177 |
| Chylous Ascites in Infancy —John L. Do Rosario, M.D., Chicago, Illinois, U.S.A. ... | 181 |
| Surgery in a Mofussil Hospital —J. S. Bhatnagar, Banswara (Rajasthan) ... | 193 |
| Some Clinical Observations in the Treatment of Vitiligo —C. H. Venkateswaran, Coimbatore ... | 209 |

CASES AND COMMENTS:

- | | |
|--|-----|
| Tuberculous Meningitis and Optic Atrophy —B. B. Mukherji, M.B. (Cal.), M.R.C.P. (Lond. & Edin.), P.O. Disergarh, District Burdwan ... | 213 |
| A Case of Hypernephroma Showing Unusual Symptoms —K. P. Sen Gupta, M.B., Asansol ... | 217 |

EDITORIALS:

- | | |
|--|-----|
| The Fourteenth International Tuberculosis Conference —A Brief Resume of the Scientific Reports, and Discussions at the Conference ... | 219 |
| The Need for Psychiatric Clinics in all Medical Institutions ... | 224 |

GLEANINGS FROM MEDICAL PRESS: PAGE

Medicine and Therapeutics:

- | | |
|---|-----|
| Chlorpromazine (thorazine) hepatitis ... | 166 |
| Acute attacks of gout ... | 166 |
| Barium enema examination ... | 172 |
| Chloramphenicol ... | 192 |
| Streptomycin and dihydrostreptomycin ... | 192 |
| Association of emphysema and peptic ulcer ... | 208 |
| Rapid therapy of infectious hepatitis ... | 227 |
| Acute gouty arthritis treatment ... | 228 |
| Management of acute alcoholism ... | 229 |

Dermatology

- | | |
|---------------------------------|-----|
| Drug eruptions ... | 230 |
| Dermabrasion for acne scars ... | 232 |

Obstetrics & Gynaecology:

- | | |
|---------------------------------|-----|
| Functional uterine bleeding ... | 232 |
|---------------------------------|-----|

Surgery:

- | | |
|--|-----|
| The unprepared colon ... | 180 |
| Treatment of cysts of the iris with electrolysis ... | 180 |
| Unencumbered incisions—The quicker healing of wounds ... | 212 |
| Lobectomy for bronchial carcinoma ... | 216 |
| Rupture of tuboovarian abscess ... | 226 |
| Advances in surgery ... | 233 |

Pædiatrics:

- | | |
|---|-----|
| Management of erythroblastosis foetalis ... | 234 |
| Management of inguinal hernia in children ... | 235 |

Drug Review

- | | |
|----------------|-----|
| Corrigenda ... | 236 |
|----------------|-----|

THE ANTISEPTIC

Vol. 54, No. 3

INDEX TO ADVERTISERS

MARCH 1957

A	PAGE	J	PAGE
Abbott Laboratories India Ltd.	60	Jai Singh & Co., Dr.	67
Albert David Ltd.	1	Javori Bros.	78
Adcco Ltd.	41	John Wyeth & Brother Ltd.	8, 21, 71
Alembic Chemical Works Co. Ltd.	52	Juggat Singh's Son & Bro.	25
Allen & Hanburys Ltd.	10, 19	K	
Amarchand Sobachand	39	Kemp & Co. Ltd.	70
Antiseptic	68	Kothari Book Depot, The	5
Asepticus Co.	72	L	
Associated Drug Co. Private Ltd.	33	Lederle Lab. (I) Private Ltd. <i>Inside Front Cover</i>	
Atul Drug House	51	Lord & Co., J. L.	72
B		M	
Babbla Bros. (Private) Ltd.	45	Mandoss Drugs Ltd.	49
B.A. & Bros.	67	Marmite Food Extract	75
B.D.H. (India) Private Ltd.	27, 46	Martin & Harris Private Ltd.	72
Behar Chemical Works	68	Martin H. Smith Company	34
Bengal Chemical Works <i>Inside Back Cover</i>		May & Baker (India) Private Ltd.	14
Bengal Health & Chemical Works Ltd.	67	Menley & James Ltd.	66
Bengal Immunity Co. Ltd.	34	Mukerji H. & Banerjee Surgical Ltd.	37
Birla Laboratories	33	N	
Bombay Tablet Mfg. Co.	77	Narotam & Co., C.	24
Bronkol Private Ltd.	49	Nath & Co.	43
B. W. & Co. (India) Private Ltd.	6	Navaratna Pharmaceutical Laboratories	43
O		Neo-Pharma Private Ltd.	55, 57
Calcutta Chemical Co. Ltd., The	54	New Indian Scientific Apparatus Co.	67
Capco Private Ltd.	59	O.R.C.L. Ltd.	45, 48, 50
Chowgule & Co. Hind (Private) Ltd.	74	Organon Laboratories Ltd.	3
Cipla Laboratories	16	Oriental Pharmaceutical Industries Ltd.	75
Coates & Cooper Ltd.	48	Osler Pharmacy	76
Corn Products Co. (India) Ltd.	35	P	
Cow & Gate Ltd.	62	Pannalal Bros.	49, 50
Crookes Laboratories Ltd., The	12	Parke Davis & Co., Ltd. <i>Outside Back Cover</i>	
Current Technical Lit. Co. Private Ltd.	4	Parry & Co.	
D		Patel & Co., B.	
Dalmas Ltd.	44	Phytosynth Laboratories	
Darbara Singh & Sons	37	Pixie Products	
Das Gupta & Co.	4	Popular Book Depot, The	
Dey's Medical Stores Private Ltd.	30	Q	
Diamelin Research Laboratory	41	Quaker Oates	
Dumex Private Limited	63, 65	R	
E		Ranbaxy & Co., Private Ltd.	
East India Pharm. Works Ltd. <i>Front Cover</i>		Ravison Pharmaceuticals Ltd.	
Eli Lilly & Company of India, Inc.	29	Rosbay & Co.	
F		Ruma Laboratories	
Franco-Indian United Laboratories	15, 31	S	
G		Sandoz Ltd.	
G.D.A. Chemicals Ltd.	42	Sarcor Book Company	
General Electric Co. of India Private Ltd.	7	Scientific Publication Concern	
Geoffrey Manners & Co. Private Ltd.	13	Scientific Publishing Co.	
German Democratic Republic	28	Shah & Co., D.	
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Gluconate Ltd.	47	Spencer & Co. Ltd.	
Grahams Trading Co. Private Ltd.	11	Sri Krishnan Bros.	
H		Stadmed Private Ltd.	
Hamdard	32	Suren & Co. Private Ltd. W. T.	
Health	68	T	
Hewlett & Son (India) Ltd., C. J.	36	Tablets (Private) Ltd.	
Hindusthan Drug House Ltd.	48	Thakore, T. M.	
Horlicks	38	Therapeutic Pharmaceuticals	
Hyderabad Chemical & Phar. Works Ltd.	17	U	
Hygienic Research Institute	50	Unichem Laboratories	
I		Union Drug Co. Ltd.	
I. C. I. (India) Private Ltd.	2, 22	United Pharma (India) Private Ltd.	
Indian Health Institute & Lab. Ltd.	48	V	
Indoco Remedies Ltd.	48	Voltas Ltd.	
Indo-French Pharmaceutical Co.	36, 38	Vora & Co., P. N.	
Indo-German Drug Stores	76	W	
Indra Laboratories	49	Wander Dr. A.	
Industrial & Engr. Apps. Co. Private Ltd.	67	Wincarnis	
		Z	
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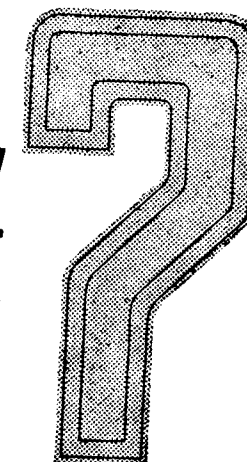
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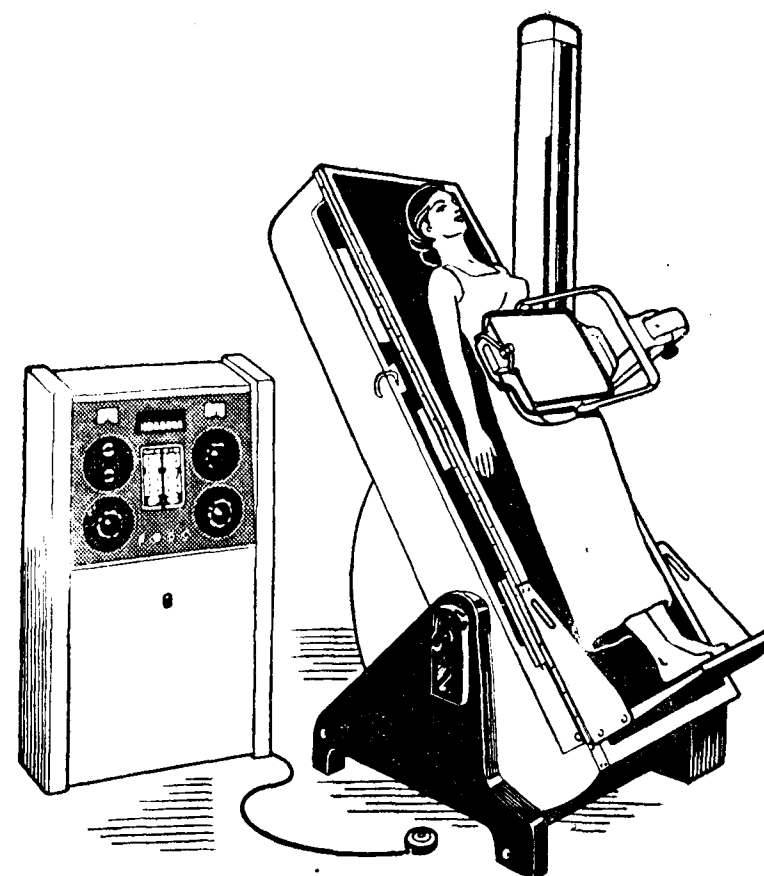
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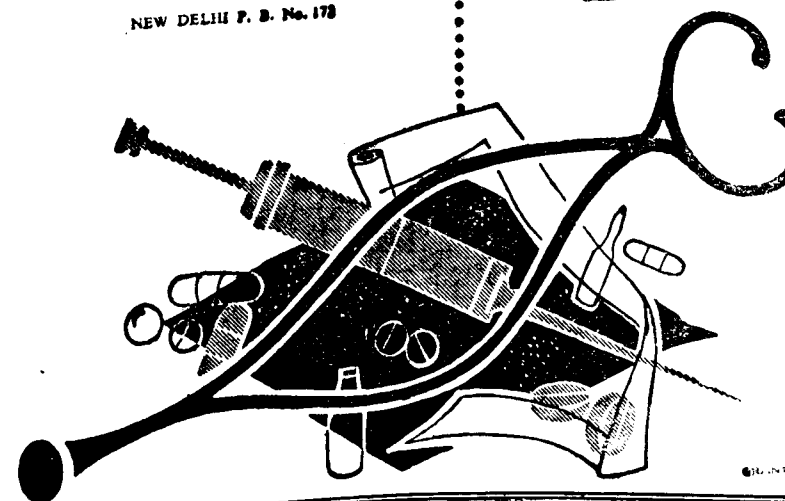
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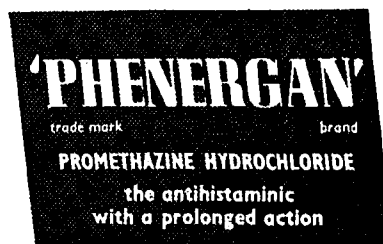
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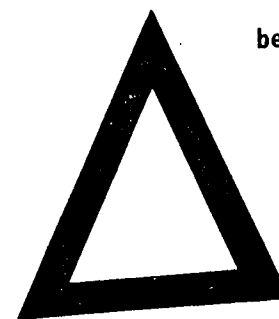
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5 mg. tablets according to the formula:
Delta-Cortisone.....2.5 mg.
Delta-Hydrocortisone.....2.5 mg.
VIALS OF 10 & 20 TABLETS

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(Prednisone)
Vials of 15 tablets of 5 mg.
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Particulars, Literature, Etc. From
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for
HYPERTENSION
No longer
RESERPINE
But
SERPINOID
TABLETS

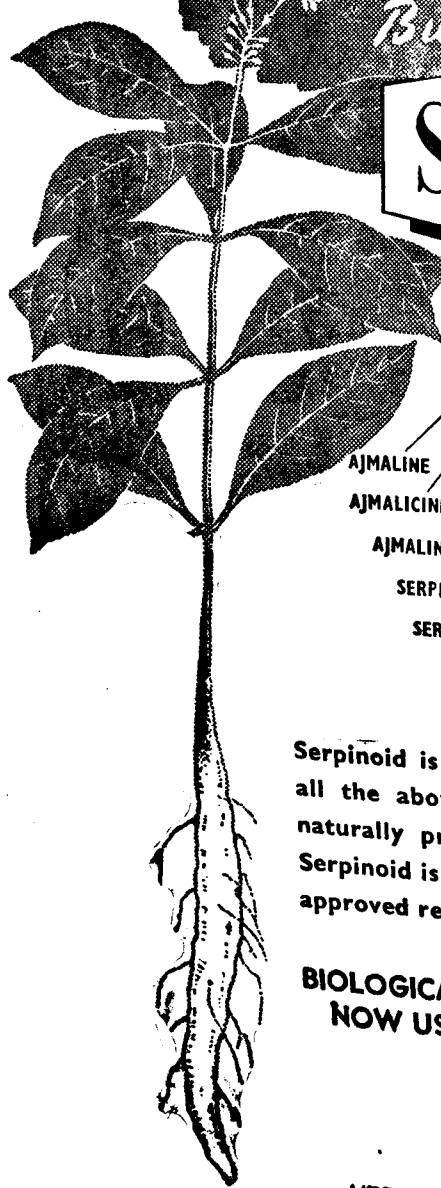


Diagram showing the components of Serpinoid Tablets:

- AJMALINE
- AJMALICINE
- AJMALININE
- SERPENTINE
- SERPENTININE
- NEO-AJMALINE
- ISOAJMALINE
- CORYNANTHEINE
- RAUWOLFINE
- RAUWOLFINE
- RESCINNAMINE
- OLEORESIN-RESERPINE

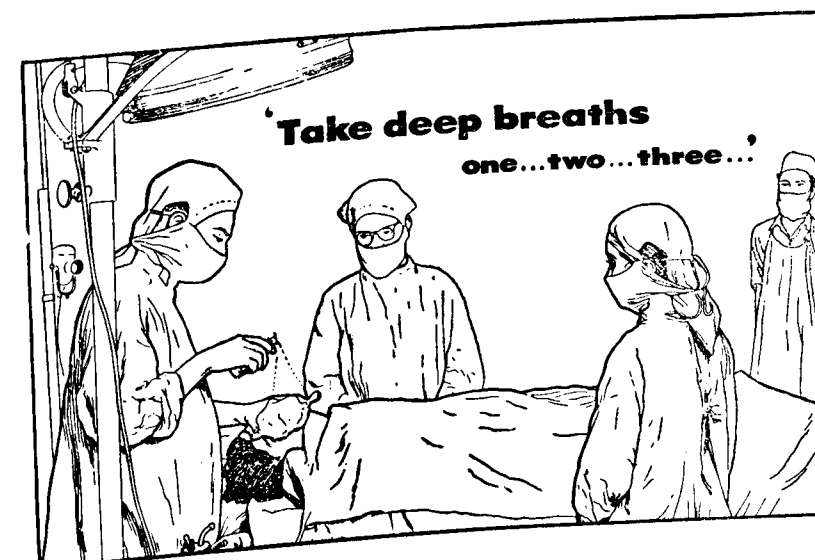
OTHER FRACTIONS.

Serpinoid is a well-balanced product containing all the above alkaloids and active principles naturally present in Rauwolfia Serpentina. Serpinoid is the most effective, safe and clinically approved remedy of Hypertension.

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BIOLOGICALLY ASSAYED & STANDARDISED
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TABLETS



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Special advantages of T.C.F. Serpirutin-C:

- * No toxic reactions or side effects
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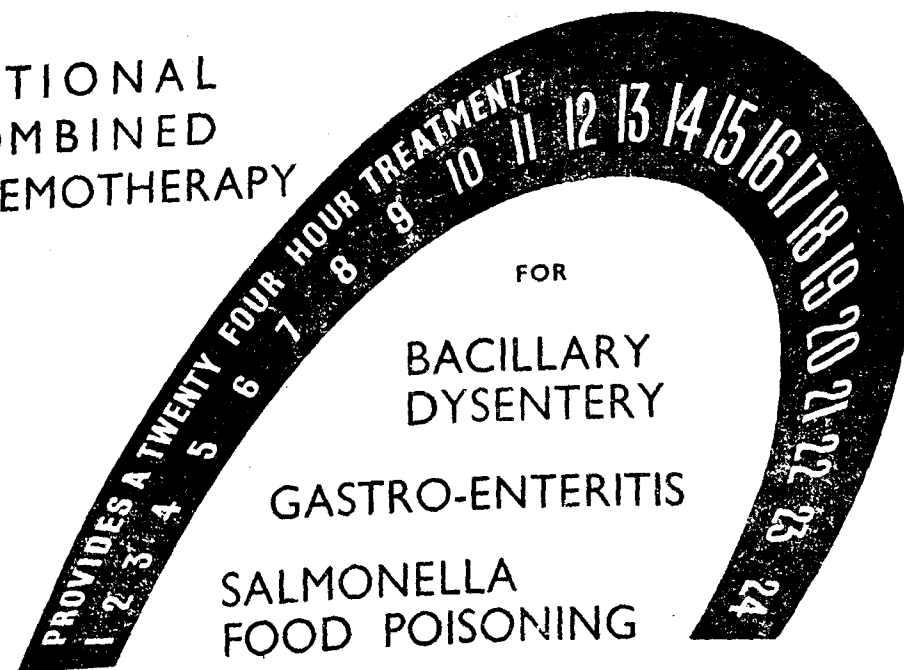
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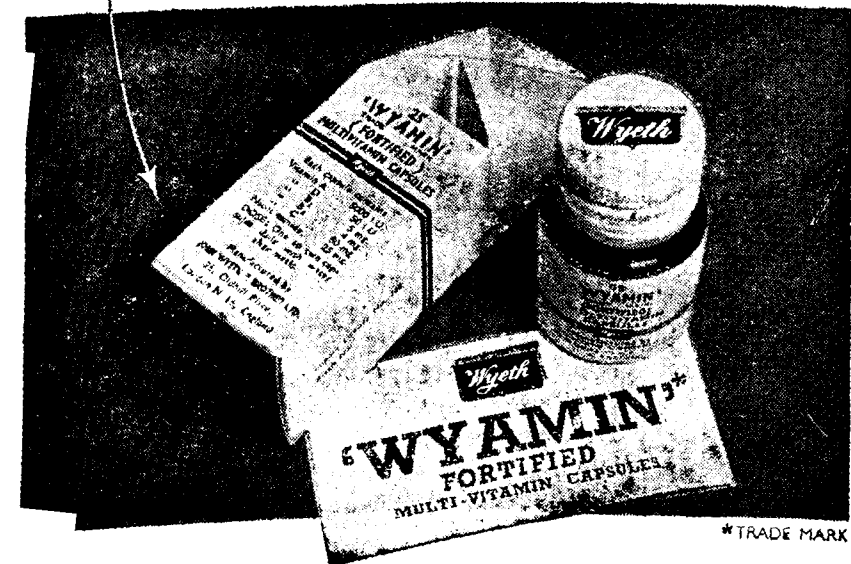
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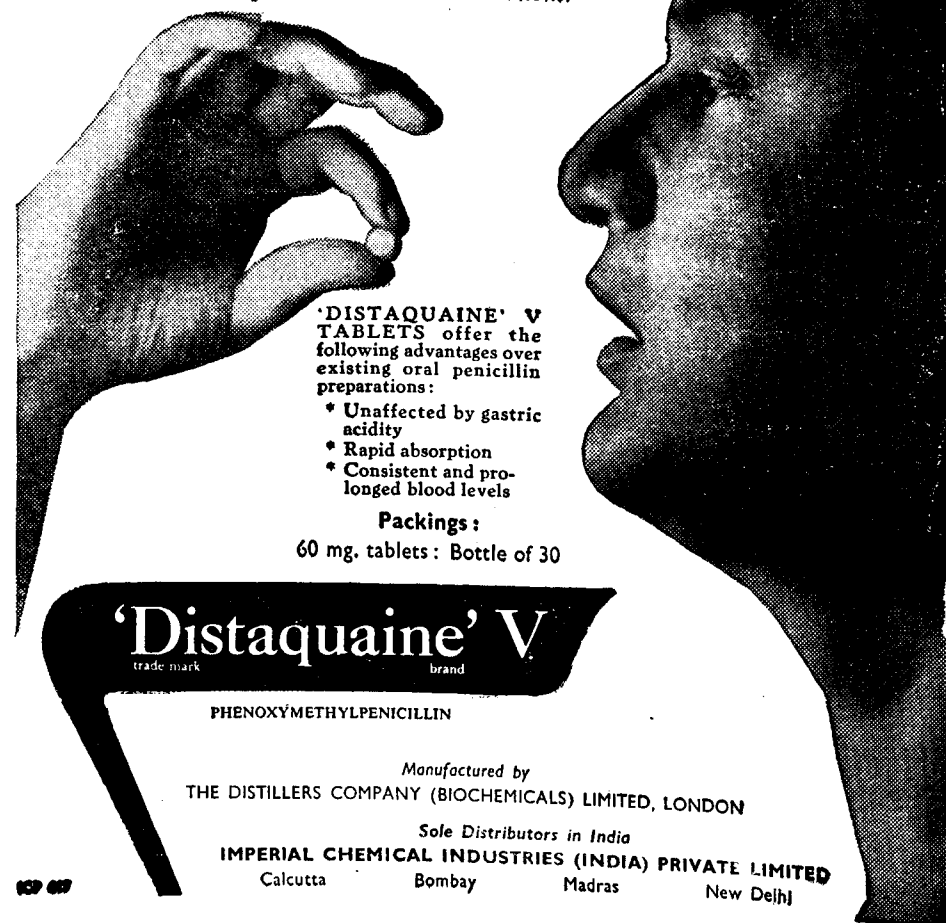
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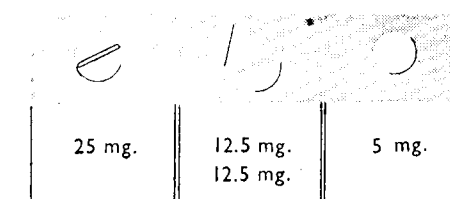
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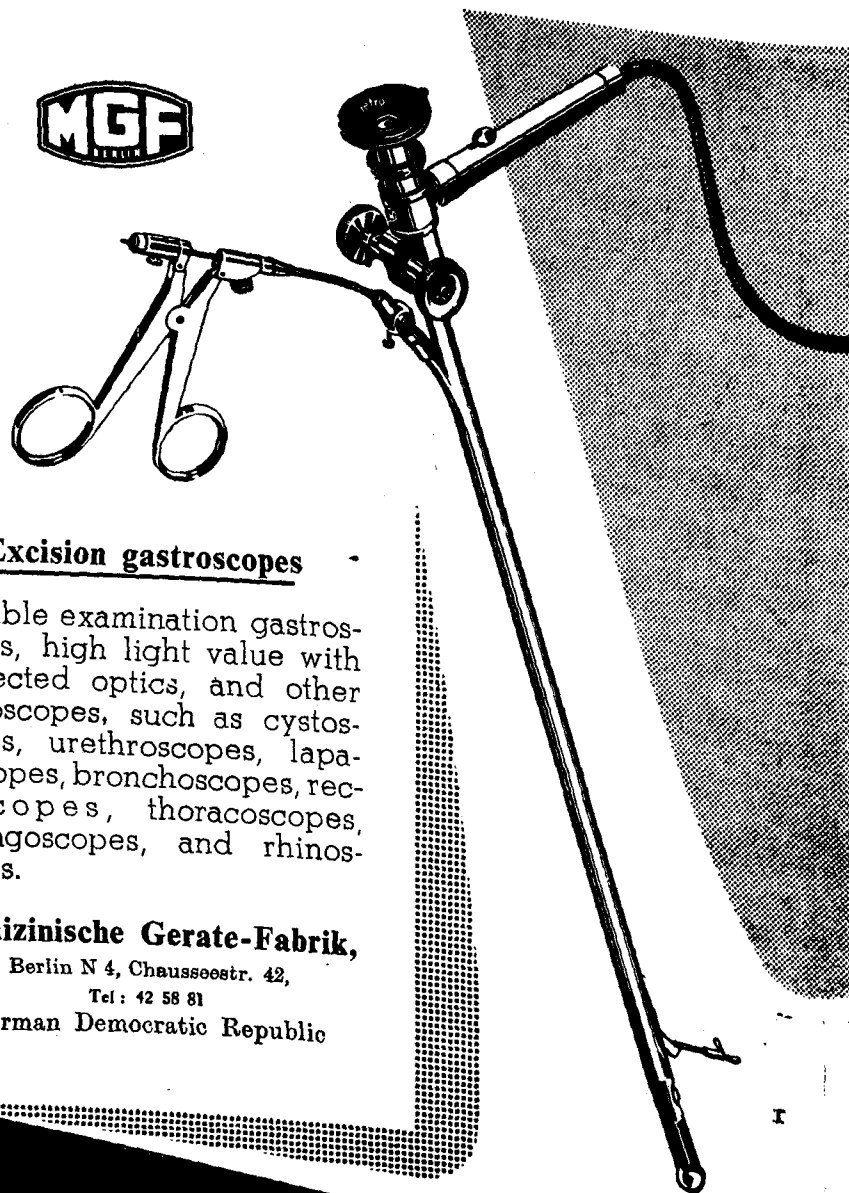
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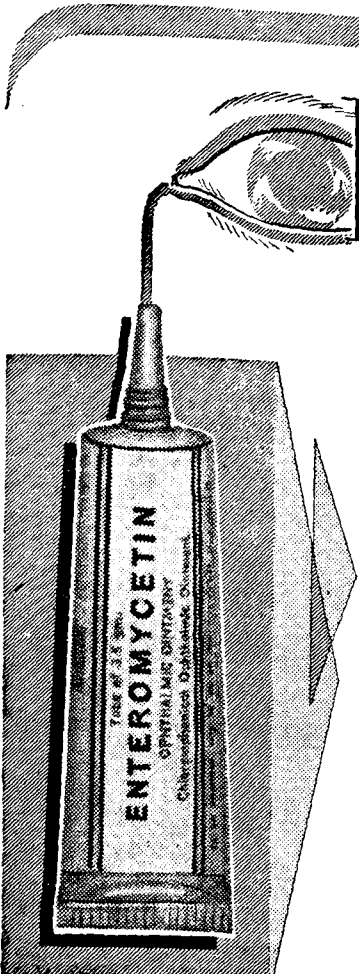
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Bapnu Ghar, Hornby Vellard, BOMBAY 18.

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fortified with
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GLUCOVITA EVERY 100 PARTS CONTAIN:
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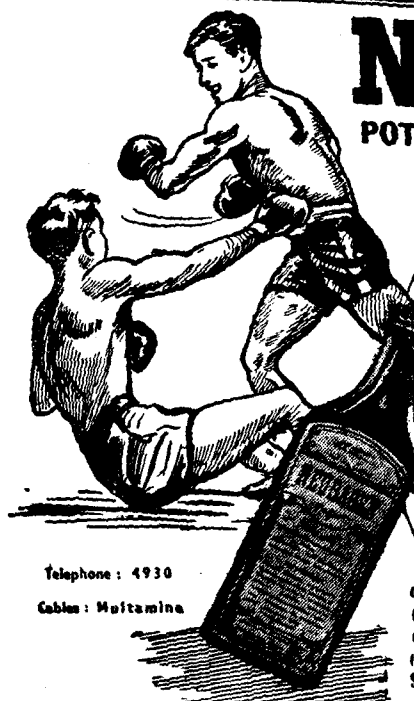
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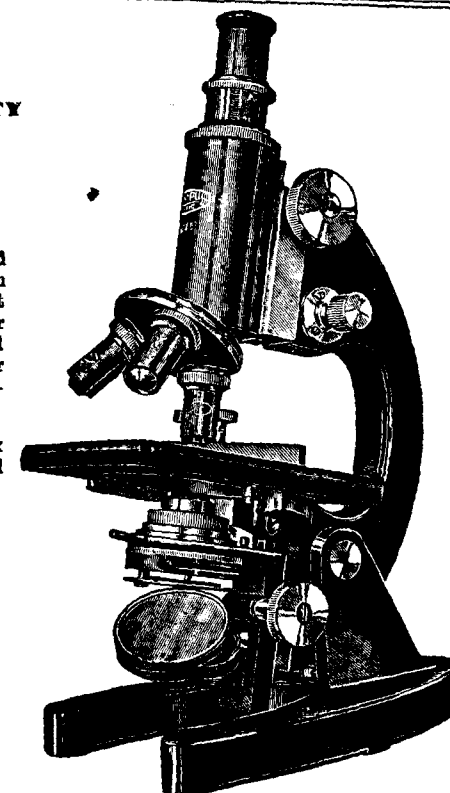
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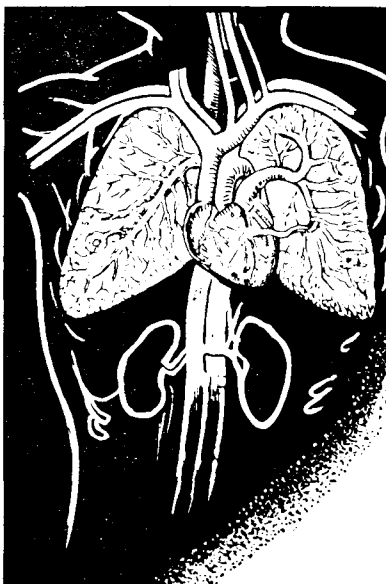
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Ephedrine, Lobelia, Hyoscyamus, Grindelia, Belladonna,
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RAMACILLIN COMPOSITUM

1,200,000 I.U.

Long Acting Penicillin

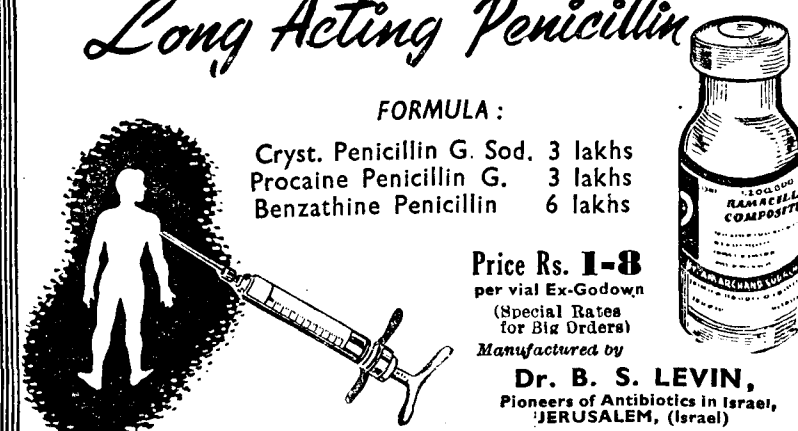
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Cryst. Penicillin G. Sod.	3 lakhs
Procaine Penicillin G.	3 lakhs
Benzathine Penicillin	6 lakhs

Price Rs. 1-8
per vial Ex-Godown
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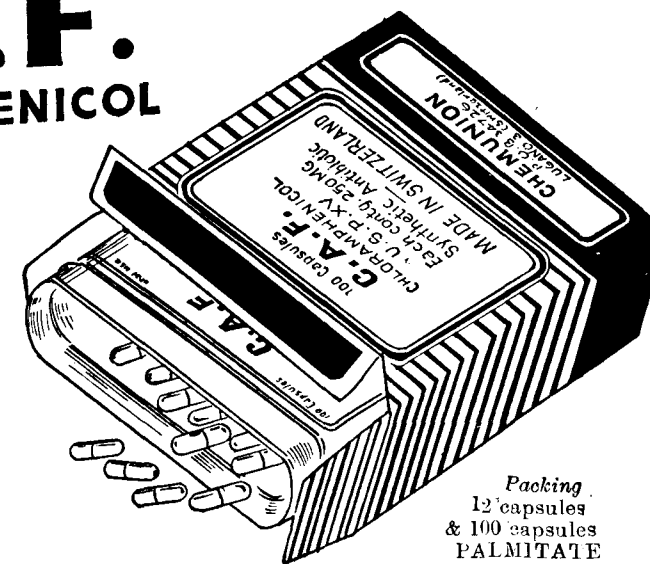
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Packing
12 capsules
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In Case of Malnutrition and
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WITH

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Supplies

Minerals and generous amount of Vitamins

For Vigour and Vitality

Pulmo-cod also prevents Seasonal Ailments,
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(Creosote)

Each fluid ounce contains:

Pancreatic hydrolysate

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50 mg.

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Sodi Hypo. 120 mg.

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Calcii Hypo. 240 mg.

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Gualacol 1

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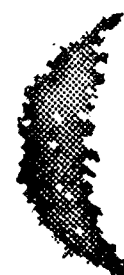
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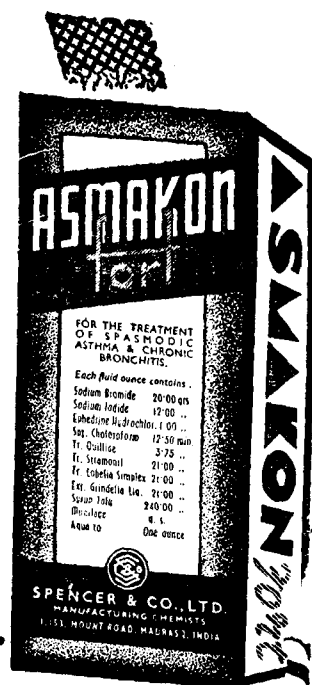
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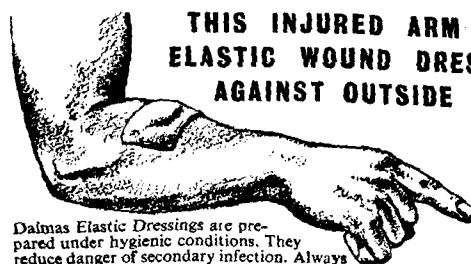


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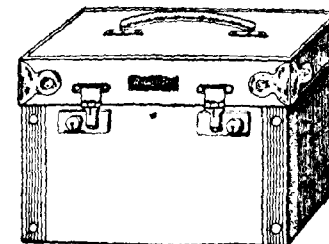
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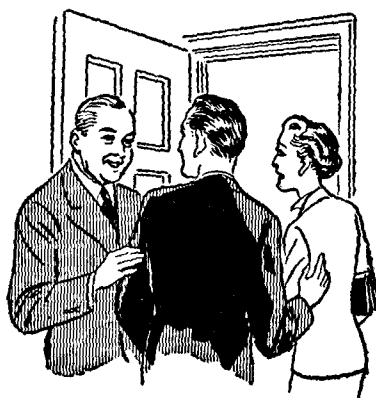
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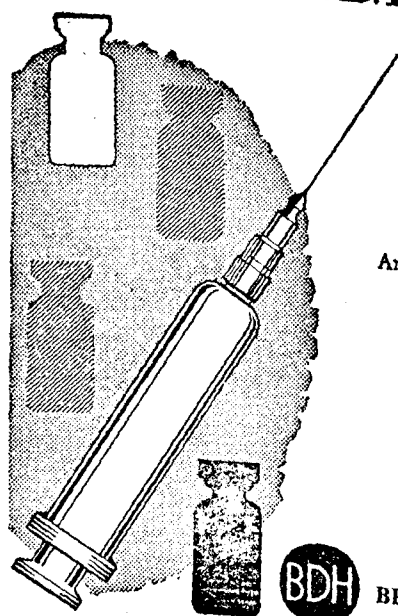
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WITH OR
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References:—

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

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Original Articles

MEDICAL MANAGEMENT OF PEPTIC ULCER*

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Role of psycho-therapy in peptic ulcer.—The psychic aspects of somatic disorders are receiving considerable attention at the present day. Peptic ulcer has long been recognized to be one of the important psycho-somatic disorders affecting the gastro-intestinal tract; the proper management of the condition, consists in treating the patient as well as his ulcer. It is always good to start the medical treatment with a long conversation with the patient. A complete history is taken making at the same time a preliminary assessment of his personality. Most people with peptic ulcer suffer from "bottled-up" feelings and so talking to them freely might alone bring about an unburthening of his difficulties and help to relieve the "emotional constipation." Emotional upsets harm a patient suffering from peptic ulcer a great deal and may induce hæmorrhages, perforations and recurrences. The physician must remember that peptic ulcer is the least unpleasant complication of functional stomach disorder of long standing. Psychotherapy is both of preventive and curative value and often averts recurrences. There is no need for elaborate or special psychotherapy; the ordinary family physician himself can successfully treat the patient by means of talks, reassurance and a show of sympathetic understanding.

Bilateral ablation of area 13 is sometimes followed by achlorhydria, and has opened a new avenue for a probably successful plan of attack on the higher centre. Here is great

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scope for research. What is the treatment to be given? Medical leucotomy with chlorpromazine or the use in fairly large doses of any tranquilizing agents such as reserpine etc. in the management (psychic aspect) of peptic ulcer? The final answer is not yet available, but both may prove to be of great value and are worth trying. Acid and pepsin are raised in highly strung persons; so the use of such drugs will bring about relief in the anxiety state, and the ulcer may get an opportunity to heal.

Emotions may depress the gastric secretion in some cases. Hyposecretion means less of protective material and makes the stomach more prone to irritation. Hence a balanced emotional state is essential to maintain the normal physiological functions of the gastro-intestinal tract and unless this is maintained, the ulcer may not heal.

Medical treatment—proper.—The medical treatment of all straightforward cases of peptic ulcer is the same, whatever its position may be. It differs only in long-standing chronic cases because of the complications, e.g. duodenal ulcer may lead to pyloric stenosis, ulcer of lesser curvature to hour-glass contraction and ulcers of pyloric antrum to malignancy. I would like to emphasize that there is a "Therapeutic Fallacy" in the treatment of peptic ulcer because it is a disease of remissions and exacerbations. This often makes the patients and physicians resort freely to countless new remedies.

Rational treatment must aim at providing adequate rest, suitable and proper diet and at neutralizing the acid secreted. It must also be able to reduce gastric mobility, relieve spasm and inhibit gastric secretion and prevent recurrences.

Rest:—Rest in the real sense does not mean quitting one's job but consists in adapting oneself to the altered sphere both physically and mentally. Often it is advisable to have bed-rest in a hospital for at least 2 to 3 weeks during an acute attack; for hospitalization helps to relieve the patient at least partially of his domestic tensions. Two to three weeks of bed-rest, usually brings about great relief in all cases of peptic ulcer and so if there is no relief in a few days with bed-rest, one may even be justified in attempting a fresh diagnosis. It is advisable to recommend 4 weeks' bed-rest for a case of gastric and 6 for duodenal ulcer. If the ulcer is large, as much as 10 weeks of rest may be needed; no hard and fast rule can be laid down with regard to the length of bed-rest. Symptoms may vanish much earlier than the ulcer crater in X-ray. The crater may disappear in X-ray but gastroscopy may reveal an active lesion. Symptomatic relief and disappearance of occult blood do not constitute evidence of a cure of the condition.

Diet:—The diet must aim at keeping the acid value as low as possible and also avoid irritation of the healing ulcer. Fats

have a moderately inhibitory effect on gastric emptying and secretions. Protein food stuffs have acid-combining power, hence a mixture of milk and cream or a high-protein milk is preferable to skimmed or whole milk.

Diet in the acute stage.—The patient must have two-hourly milk feeds of 5 ozs. each containing equal parts of whole milk and 20% cream, which is maintained, till the pain subsides, when bland food may be added to increase the calories. The best index at this stage is pain. If a rapid increase is made in the size of the feeds, pain may recur. Once the pain has subsided, a very nutritious bland diet enabling the patient to increase in weight, is indicated. The diet should not be monotonous and unattractive because the mental outlook is so important that irritation from unappetising diet may be harmful. Many patients say they do not tolerate milk well; in such cases persuasion may help. If the patient develops distaste for milk and cream during the course of treatment with alkalis etc., the possibility of alkalosis must be suspected. The ordinary two-hourly milk feeds may be alternated with eggs; I have found the egg to be a very useful antacid. Some patients develop vomiting during the milk-treatment, in which case the milk may be diluted with 50% water and the feeds reduced to 3 ozs. Strict milk-regimen is continued for 1 week. During the 2nd week, in addition to the milk diet, buttered biscuits and toast may be added. In three weeks' time, three light meals with a generous breakfast are allowed. Milk with cream is given in between. A monthly check-up is made, for a whole year. The dietetic treatment must be kept up at least for 6 months or else there may be a recurrence. Seasoned food, coarse vegetables, strong coffee, strong tea and alcohol must be avoided. The meals should always be small but given at frequent intervals. It is worth emphasizing that a peptic ulcer patient should never fast for long intervals, because the peristalsis is great during hunger; the stomach can be set at rest, not by fasting but by frequent small meals which change the strong hunger contractions into more slow digestive peristalsis. The liberal use of milk, eggs, butter, and cream in the diet give gratifying results.

A very useful measure of treatment which I strongly advocate during the acute stage is the continuous milk-drip, as it eliminates the potent cephalic phase of secretion. It can be usefully combined with antacids. Five grams of Sodium bicarbonate should be added to a litre of milk, to be given in 8 hours. In addition 200 cc. of 7% aluminium hydroxide mixed in 600 cc. of water may be given in 24 hours by gastric drip.

Measures to neutralize the acid secreted.—Sippy's views about the gastric juice and its relation to ulcer production has stood the test of time in spite of much adverse criticism from

several workers. There will be no ulcer problem, if it were feasible to bring about a state of total and permanent gastric anacidity. We know that duodenal ulcers occur even with normal acid and gastric ulcers develop with low acidity. It is equally true that ulcers heal in spite of high acid. The small feeds and atropine used in therapeutic quantities cannot neutralise the acid. Still the fact remains that ulcers occur only in those areas exposed to acid in the stomach, duodenum, jejunum after gastro-enterostomy and in Meckel's diverticulum. "No acid—No ulcer" is true in the vast majority of cases. Although frequent feeding, alkalies and belladonna are ineffective in controlling the secretion of acid—they are of great value in the treatment.

Drugs that neutralize the acid.—Milk is the best gastric antacid.

Drugs :—The commonly used antacids are Sodium bicarbonate, Magnesium oxide, Magnesium carbonate, Calcium carbonate, Magnesium trisilicate, Aluminium hydroxide, Sodium carboxymethyl cellulose, anion-exchange-resins, gastric mucin and protein hydrolysates.

Sodium bicarbonate in repeated 2 gram doses no doubt brings about quick relief of pain but when given with or after meals it increases the gastric secretion.

Magnesium oxide in repeated 1 gram doses is a very effective neutralizer but has a laxative action while *Magnesium carbonate* has the same action but with a less laxative effect.

Calcium carbonate in 2 to 4 gram doses is a satisfactory antacid but has the great disadvantage of producing severe constipation and faecal impaction. It can however, be judiciously combined with 1 to 2 grams of Magnesium carbonate—which as already stated, has a laxative action. All carbonates release CO_2 and bring about a rebound phenomenon and an increase in secretion.

Magnesium trisilicate is the best of all drugs, has a laxative effect and when given in 1 gram doses every 6 hours, acts as a good antacid.

Aluminium hydroxide gel which is a 3 to 4% emulsion of aluminium hydroxide is also a good antacid. It does not bring about alkalosis, does not release CO_2 and acts as an astringent to the gut. It is given in doses of one to four teaspoonfuls in milk every 4 hours, half an hour after meals.

Sodium carboxy-methyl cellulose (S.C.M.C.)—is a recent addition to the group of antacids. It is given in tablet form 1.5 grams thrice a day.

Anion-exchange-resins :—Given in 2 gram doses every two hours, it does not produce alkalosis. In the presence of acid in

the stomach the resin becomes a chloride compound. In alkaline intestinal fluids, the chloride compound of the resin becomes again a carbonate leaving the chlorine ion behind for absorption. Treatment with this drug is a costly one.

The control of night secretion is an important problem to be tackled. Gastric aspiration at night time which was once recommended is rarely done now. A double dose of gastric antacid, a tumblerful of milk with cream at 10 p.m. and a full dose of atropine are very useful. A cup of milk at 2 a.m. may be necessary in some cases.

Measures to inhibit gastric secretion, spasm, and mobility.—Peptic ulcer is often the result of a biological adaptive pattern of the individual to specific stress. Vagotomy in such cases relieves symptoms by modifying such peripheral physiological responses as mobility and secretions thereby facilitating the healing process. In cases where the chief avenue of discharge for emotional conflicts is the stomach, vagotomy is likely to have unfavourable results. When emotional problems predominate in ulcer patients, even the most enthusiastic proponents of vagotomy will find the results unfavourable. Vagotomy will relieve the cephalic phase of secretion but does not change psychic conflicts—primary disturbances in a chain of events leading to ulcerations in the gastrointestinal tract. It may lead to other disturbances. Based on the success of vagotomy in some cases, various parasympatholytic agents have been used in the treatment of peptic ulcer :—

(1) *Banthine* :—Methantheline. It is a quaternary amine, which will control vagotonia when given orally in 50 to 100 mg. doses every 6 hours. It gives better results when given by the intramuscular route and with other antacids. It decreases gastric secretion, peristalsis and emptying, thereby facilitating neutralization of the gastric contents with food and antacids. It may however, produce dry mouth, blurred vision, dysuria etc.

(2) *Probanthine* is more powerful and less toxic than *Banthine*; and is given orally in 15 mg doses three times a day. At bed time 30 mg. may be given.

(3) *Oxyphenonium* :—(Antrenyl), which is more powerful than *Banthine*, is given orally, 5 mg. every 4 hours. In sensitive patients, 2.5 mg. is given per dose initially. It produces the same side-effects as *Banthine* but less commonly.

There is a preparation called "Antrenyl duplex" (10 mg. per tablet) which contains a central core of 5 mg. Antrenyl covered by an acid-resisting coat, covering this core is again 5 mg. Antrenyl which has sugar-coating. This 5 mg. of the drug gets dissolved in the acid gastric juice but the central 5 mg. core passes into the intestine where the coating is dissolved by the alkaline intestinal juices, liberating the drug there. As this preparation

ACTH and Cortisone in peptic ulcer.—ACTH, Cortisone and allied drugs are definitely dangerous to use in cases of peptic ulcer. Hence before these drugs are administered a careful history to rule out the possibility of peptic ulcer must be elicited. When administered to peptic ulcer patients fatal hæmorrhage or perforation may be precipitated by these drugs.

Medical management of complications.—1. The most important complication is cancer. Has the ulcer become malignant? In most cases, careful history-taking, X-ray findings and therapeutic response to treatment will help in differentiation.

(a) The age of patients will not be of much help because gastric carcinoma may occur in the third decade of life and sometimes benign ulcers may be found in the very old.

(b) A long history may suggest the benign nature of the disease while a short history is more in favour of a malignant condition.

(c) A change in the nature and quality of the pain may point to a malignant change.

(d) Definite periodicity often favours the diagnosis of a benign lesion.

(e) Relation of pain to food, with relief after food or alkaline or after vomiting may not be of great value because a similar history may be elicited even in gastric carcinoma.

(f) Loss of appetite favours a diagnosis of carcinoma.

(g) Continued presence of occult blood for 2 to 3 weeks after medical treatment should lead to a suspicion of malignancy. Continued absence of occult blood in the faeces, is in favour of a benign lesion.

(h) Gastric analysis:—It is wise to make a diagnosis of chronic benign ulcer in the presence of continued and complete histamine anacidity, whereas gastric carcinoma may be seen in the presence of high acidity.

(i) Radiological: If the ulcer is situated on the greater curvature, or over the antrum or over the prepyloric region, malignancy must be the first to think of. The size of the ulcer as such does not give any clue. The parallel rugæ tend to stop abruptly interrupted by carcinomatous ulcer; whereas in benign ones, they usually converge to the lesion. The greater the distance of the lesion from the lesser curvature, the greater the likelihood of carcinoma.

(j) Therapeutic test:—After successful therapy, a benign lesion will disappear but a malignant lesion will persist.

In practice, it is safe to consider tentatively, all sharply circumscribed penetrating lesions of the lesser curvature as benign, provided the stomach is found to be able to secrete acid

gastric juice. Occult blood must disappear in 2 to 3 weeks' time. The progress of the ulcer must be checked-up by X-ray pictures every fortnight and by gastroscopic examinations.

2. MASSIVE HÆMORRHAGES.—There are three schools of thought in regard to the management of these hæmorrhages viz.:—(a) No food is permitted for 24 to 48 hours. (b) Immediate full diet. (c) Fluids only for the first 2 days.

The first school of thought believes in complete starvation for the first 1 to 4 days. The patient is given complete bed-rest, the foot of the bed is elevated, ice is given to suck and morphia is used for sedation. In many cases, this yields good results.

The second school of thought originated from Meulen Graht who recommended a full diet even from the start of the hæmorrhage. Witt's regimen consists of giving the patient 2,500 calories with the addition of vitamin A, D and C. Fluids to the extent of 2½ litres are given in 24 hours, and no purgative is given for 5 days.

For our patients we may adopt the following methods:—The patient is put on bed-rest immediately on admission and a quarter grain of morphia is injected subcutaneously. The blood-pressure is recorded and a half-hourly pulse chart is made. If the pulse-rate rises above 120 per minute, the blood-pressure falls below 120 mm. of Hg. and the patient becomes restless, blood-transfusion must be given. If the rate of transfusion is adjusted in such a way that only 30 drops per minute and no more flow in, there is no danger of any sudden rise in blood-pressure and precipitation of bleeding again. If possible, the blood-urea must be estimated; anything over 100 mg.%, points to a severe internal hæmorrhage and the need for a transfusion.

If the patient has vomiting, he is starved till nausea and vomiting stop, only ice being given to suck. Careful aspiration may help.

If there is no vomiting, 3 ozs. of milk with cream may be given every hour for 12 doses. Aluminium hydroxide gel 3 i to 3 ii should be given 4 to 6 times a day. Milk-drip is very useful, the only disadvantage being that it may produce retching in some cases.

Careful gastric suction is quite useful in cases of hæmorrhage because it will give an idea of the progress made and also it will remove the blood that has accumulated in the stomach and acts as an irritant bringing about powerful contractions of the stomach which may precipitate bleeding again. Needless to say that blood coagulants are useless. If bleeding continues in spite of treatment, a surgeon should be consulted about the operability of the case.

3. ALKALOSIS.—This is a common complication in the medical treatment of peptic ulcer but often fails to be recognized.

The patient usually complains of headache, vomiting, nausea and drowsiness. The blood urea rises and there is a fall of chlorides. The condition is successfully treated with intravenous saline. Orally, 15 grains of ammonium chloride in capsules is given thrice a day.

In conclusion, it is my belief that a good number of cases of peptic ulcer *can* be treated successfully by using a combination of psychotherapy and drugs. Success depends largely on the patience and perseverance of doctor and patient. In India, medical treatment often yields poor results, because most patients, are not able to afford the prolonged and costly medical treatment. But we should, with the existing facilities, attempt to give our patients the best that can be afforded. If we could treat the condition successfully without having to resort to gastrectomy we would have achieved a great thing.

CHLORPROMAZINE (THORAZINE) HEPATITIS

Since its introduction into America chlorpromazine (Thorazine) has been used extensively in the treatment of various disorders. Its effectiveness in neuropsychiatric problems, nausea and vomiting, hiccoughs, and as a potentiator of narcotics has been well established. However, the increasing number of reports indicating undesirable and serious complications from the use of this drug must serve as a warning against indiscriminate use. In addition to the frequent minor side-effects against indiscriminate sedative action, the more serious problems of jaundice and agranulocytosis have been reported.

Three cases are reported as typical of the deranged liver function that can result from the use of Thorazine.

One of these patients was acutely ill and had a prolonged convalescence with jaundice persisting for approximately one month. The latent period that can be present between the time of discontinuing the drug and the appearance of symptoms is stressed. In one case ACTH gel seemed to accelerate the return to normal liver function. In regard to the latter, further study is indicated.

Although Thorazine hepatitis is usually of short duration, there have been reports of jaundice persisting up to several months. Cases of agranulocytosis also have been reported, with fatality in one instance. Accordingly, the indiscriminate use of this drug is to be avoided. Specifically, it would seem advisable to avoid its use in the treatment of minor psychoneurotic problems.—(*New York State Journal of Medicine*, October 1, 1956).

ACUTE ATTACKS OF GOUT are often preceded by slight symptoms in the joint that is subsequently involved. Since these sensations rarely occur in persons with other types of arthritis, Weiss and Segaloff, of the Ochsner Clinic and Tulane University, New Orleans, believe that this warning sign is characteristic of gout and, therefore, colchicine therapy should be started immediately. The discomfort, described as burning, tingling, stiffness, numbness, warmth or awareness, appeared in 60 of 95 patients from one to forty-eight hours before the onset of typical gouty pain.—(*Am. Pract. & Digest Treat.*, 7: 969-970, 1956, via *Mod. Med.*, Sep. 15, 1956).

DRUG THERAPY IN HYPERTENSION*

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TILL very recently there was no drug worth mentioning, which acted on cases of essential hypertension, without producing serious side-effects; so it was not considered advisable to reduce hypertension. This conception about the treatment of hypertension has undergone a revolutionary change with the introduction of the *Rauwolfia serpentina* group of alkaloids, as ganglion-blocking agents.

Hypertension is a very common problem in general practice. The symptoms associated with hypertension such as head-ache, tiredness, lassitude, giddiness, are all likely to occur even without hypertension and may be absent even with high pressures. If a cursory reading of the blood-pressure shows elevation, it does not constitute hypertension. The B.P. should be found consistently elevated in order to diagnose the case as one of hypertension. The systolic pressure should be above 180 mm. Hg and the diastolic above 100 mm. of Hg. In a large percentage of cases the nervous factor has got to be eliminated, by means of bed-rest and a little sedation. Many cases of so-called hypertension settle down to normal levels. Those cases in which the pressure settles down to normal are to be considered as suffering from labile hypertension. The significance of this labile hypertension is that they produce hypertension at a later date. They may not need any treatment at the moment, though they need to be kept under observation. These cases are frequently seen in the course of routine medical examinations as when candidates appear for physical fitness before a Medical Board. Fear and a nervous state are often responsible for the high pressures that are now and then met in these cases.

When a case consistently records a high pressure, both systolic and diastolic, one can quickly eliminate secondary hypertension—secondary to some factor which may or may not be corrected. The most common factor is some disorder of the kidney. It may be calculus of the kidney, focal infection of the kidney, vascular damage to the kidney, or obstruction to the kidney. In these cases again the elevated pressure may not be evident till it is recorded, or the patient may come under observation for one of the complications that may arise as result of hypertension. After kidney disorders, practically all the endocrine glands are likely to cause hypertension. For instance, pituitary basophilism to over-active thyroid, dysfunction of the islet cells of the pancreas, the supra-renal glands,

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50 mm. in systolic pressure but only 35 mm. In other words, the fall in pressure is not proportional to the dose of the drug administered. The action of the drug is greatest when it is administered *before* and *not after* food. Occasionally patients may feel drowsy but the drowsiness is not so great as to interfere with active work. This is particularly noticed when the person working in his office has to go through files all by himself. Under these conditions, patients may complain that they have got a tendency to fall sleep with the files open. When R.S. 51 has failed to bring about the desired effect, we tried R.S. *forte* with very good results. Some of my patients have been taking these drugs (both R.S. 51 and R.S. *forte*) for more than 3 years without any adverse effects, except in the one case that I have mentioned above. To my mind the great advantage in the use of R.S. 51 lies in the fact that the pressure reduction is brought about gradually without any severe side-effects and even in these cases where the pressure reduction is not appreciable, it combines very well with other ganglion-blocking agents.

Ganglion-blocking agents:—When first introduced it was in the form of T.A.B. (Tetra-ethyl-Ammon bromide). Its disadvantage was that it had to be injected intramuscularly or intravenously. It got rapidly destroyed and the action was too transitory and needed constant attention. It was very soon replaced by hexamethonium bromide, which was introduced under the trade name 'Vegolysen' which was effective both orally and parenterally, with the occasional drawback, that the oral drug was uncertain in its effect. Sometimes the absorption was good and at other times poor, so that the effect on the pressure was unpredictable, while the parenteral route gave consistent results. I have used this successfully in more than 50 cases. As already mentioned, I have combined R.S. 51 with this drug with very gratifying results. While the blocking of the sympathetic ganglia is a desirable action of the drug, it also blocks the para-sympathetic ganglia. Nearly all the side-effects are due to paralytic sympathetic ganglia. The most outstanding of them are paralytic in vomiting or nausea, constipation and in elderly people difficulty in the micturition, and very rarely in spite of constipation, diarrhoea may occur. In one case the periods of constipation were found to alternate with periods of diarrhoea. Recently about a year and a half ago a very potent drug has been introduced under the trade name Ansolysin (Pentolineum tartarate), in the form of 250 mg. tablets: this dose was found to be heavy and the manufacturers have since introduced the same as 10 and 40 mg. tablets; 10 mg. tablets serve to introduce the drug and the 40 mg. tablets serve for maintenance of the therapy. The side-effects are also more marked with Ansolysin, than with

Vegolysen. My usual routine is to start with 10 mg. tablets along with R.S. 51, watch the effect for the next 3 to 4 days and if there is no effect on the pressure, step up the dose in 10 mg. doses till 40 mg. is reached. If still the fall of pressure is not effective the dose is stepped up to 60 mg. in the morning, 40 mg. at noon and 60 mg. during the night. So long as there are no side-effects the dose may be increased still further. For the dryness of the mouth and the blurring of vision, pilocarpin nitrate may be given twice or thrice a day. Prostigmin for the constipation and Carbacol to relieve difficulty in micturition may be used. When a patient is on the ganglion-blocking agent, constipation should not be allowed to trouble the patient for more than 24 hours; otherwise faecal infection and paralytic ileus may occur. It is advisable in the case of patients who are already constipated, to put them on a dose of milk of magnesia regularly at bed-time. It is also advisable to nurse the patients in the same erect position both by day and by night. It is incumbent that the patient should not be allowed to get up suddenly from the sitting posture without support, but acts of vertigo may occur with a severe fall in pressure and result in a collapse of the patient. Ansolysin is also available in an injectable form but it is desirable that injections of ganglion-blocking agents are given only in an institution and *not* in private houses. Sometimes the fall may be so severe as to lead to pulmonary oedema. If hexamethonium is used it is better to use an initial dose of 20 mg. subcutaneously; if Ansolysin is used, only 3 mg. should be given by the same route. Drug-tolerance occurs very quickly and the initial dose gives an idea about the further dose that may be needed. When it comes to a question of parenteral administration, I personally, prefer the hexamethonium compound as it allows a fairly wide adjuvant. After a few days of parenteral therapy when the pressure would have been brought down to normal levels, further injections may conveniently be discontinued and oral treatment started. If a combination of Ansolysin and Reserpin is used the dose of both drugs can be cut down considerably.

Another Progestrin compound was introduced about a year ago under the trade name Apresolin (hydralase hydrochlor). The drug is stated to prevent the excessive flow of sympathetic vaso-pressor effects. It is further claimed to act as a vaso-dilator of the renal vessels. The makers particularly advise that it is a drug of value in the treatment of hypertension of original origin. We have used this drug in a select number of cases. By itself, the dose of the drug that is needed is very large and side-effects are prominent. Patients generally complain of nausea, vomiting, tingling and numbness of the extremities and nasal congestion. They do not tolerate the drug very well and the

occasions in which the drug is likely to be of value is bound to be limited by the fact that it is particularly useful in hypertension of renal origin. The drug can be combined with the Rauwolfia group of alkaloids and the ganglion-blocking agents and when combined in that way, the amount of drug that is needed is comparatively less and the side-effects are very much lessened. It is advisable to start the patient on 10 mg. doses, thrice a day and increase it by 30 mg. per week till 150 mg. per day is reached. Apresoline is reported to cause serious clinical manifestations, similar to those in collagen diseases, but in the few cases which came under my care such manifestations were not noticed. In one of my cases spontaneous vomiting occurred but it is very difficult to say whether it was due to the Apresoline or the Ansolysin both of which, the patient was having. Though he had vomiting this patient was relieved of his very troublesome nocturnal dyspnoea.

In cases of hypertension, complicated by coronary thrombosis or cerebral thrombosis, the Rauwolfia group of alkaloids may be used, but the ganglion-blocking agents should be used with caution. In one case of cerebral haemorrhage admitted into my wards, I was able to keep him alive for about a week by administering hexamethonium compounds and keeping the pressure down, but a slow haemorrhage must have gone on all the time as the patient deteriorated and died. Though we were able to reduce the pressure, the complications of hypertension could not altogether be avoided, as the condition is very well seen even in the elderly age groups. At a time when degenerative changes are common, these hypotensive agents were useful in making the person's existence more comfortable.

Summary.—Three important hypotensive agents are discussed in the treatment of hypertension—the Rauwolfia serpentina group of alkaloids, ganglion-blocking agents and Apresoline.

The main advantages and disadvantages of hypotensive agents are discussed and the practical management of established cases of hypertension is presented.

BARIUM ENEMA EXAMINATION of incontinent patients may be successfully accomplished with the subject on a bedpan. Steel pans interfere slightly with passage of X-rays, but aluminium receptacles are almost non-opaque, reports Westing, of the Veterans Administration Hospital, Newington, Conn. When obstruction of the lower bowel or the necessity for speed prevents administration of barium meal orally, a continuous enema flow is maintained through an occluding rectal catheter. As soon as the urge to defaecate has subsided and the pan has been removed, residual barium in the colon and terminal ileum can be observed fluoroscopically and films can be made.—(*Radiology*, 66: 582-584, 1956, via *Mod. Med.*, Sep. 15, 1956).

MODERN PROBLEMS IN MEDICAL VITAMINOLOGY IN THE USSR*

PROFESSOR V. V. YEFREMOV

The laboratory of vitamin research of the institute of nutrition of the USSR Academy of Sciences.—Vitaminology is an independent science in the USSR which includes elements of biology, organic and biological chemistry, physiology, the hygiene of nutrition and clinical practice. The scientific and practical interests of several different specialists coincide and interweave in vitaminology.

We will discuss briefly in this article only certain problems pertaining to the hygiene of nutrition.

The determination of man's physiological requirements in vitamins and the necessary vitaminization of food for the general population constitute the most important hygienic problems in vitaminology.

Man's requirements of vitamins depend upon a number of external and internal factors like climate, type of work, nutritional background, and also upon such physiological states as pregnancy and lactation.

A study of vitamin metabolism under the above-conditions has enabled the daily rates of vitamin consumption to be established and set down as obligatory health measures.

In the Soviet Union the minimal rates of daily vitamin consumption were established by a special committee of scientists and adopted in 1944. Within recent years these rates have played a favourable role in elaborating preventive measures against vitamin deficiency. Proceeding from them, work was conducted on the vitaminization of food at the public nutrition enterprises and in large public organizations as well as in the Organization of Children's Nutrition.

The Soviet vitamin industry was also guided by these rates. Comprehensive researches are now being conducted in the USSR to determine the range of physiological fluctuations in man's vitamin requirements.

We have yet no unified, universal record of requirements in vitamins for all conditions of human life. The requirements in vitamins are physiological in nature, i.e., they must correspond in full to the influence of external and internal environmental factors such as the climate, the nature of a person's occupation, nutrition, age, etc. Thus the vitamin requirements cover a wide range of fluctuations beyond which the reactive capacity of the organism becomes pathological.

That is why in order to study the vitamin requirements of a healthy person it is extremely important to consider the influence

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of both external and internal factors. In this way a new preventive trend is being outlined in Soviet medical vitaminology which, is in entire agreement with the basic tenets of Pavlov.

Vitamin requirements should be studied against a proper nutritional background, *i.e.* a diet containing all the necessary food substances, chiefly the proteins.

The choice of suitable criteria for determining man's vitamin requirements is extremely important.

A very important index which, up till recently, failed to attract sufficient attention on the part of scientists is the state of the nervous system, especially the higher nervous system.

The work of Soviet researchers shows that serious disturbances of the conditioned reflex activity occur in animals due to the development of vitamin B₁ deficiency (Eswald, 1948, 1949; Krauklis, 1952; Aptekar, 1954) vitamin PP or nicotinic acid deficiency (Yefremov, Makarychev, Tikhomirova, 1954, 1955), vitamin B₂ or riboflavin deficiency (Yefremov, Makaryshev, Maslenikova, and Tikhomirova, 1955), vitamin B₆ deficiency (Kosenko, 1955) and folic acid deficiency (Yefremov, Tikhomirova and Penard, 1956). The conditioned reflexes are restored after supplying these vitamins. The above-mentioned authors have also recorded individual differences in the vitamin requirements of animals depending upon the types of their higher nervous activity.

Certain facts elicited from animal experiments have been confirmed in respect of the higher nervous activity of the child in connexion with fluctuations in the nicotinic acid content of its diet (Maximovich, 1955).

In order to study the state of the central nervous system it is necessary, whenever possible, to apply objective and not relative indices. Such indices as proficiency in studies, efficiency, motor, sensory and optical chronaxia and also the adaptation of the eye to darkness are relative and indirect indices.

Tentative data may be rapidly obtained in studying the bioelectric activity of the brain. However, the investigation of conditioned reflexes is the only objective method. Plethysmography may also serve as an objective method, especially in work connected with children (Maximovich, 1955).

An important index of vitamin requirements in mass examinations is the reactive capacity of the organism to ordinary infections.

For a laboratory confirmation of the organism's reactive capacity, primarily such reactions should be utilized as the determination of the phagocyte index, complementary activity and the content of gamma-globulins.

Among other clinical laboratory indices the blood-forming apparatus, *i.e.*, the changes in the quantity of haemoglobin, erythrocytes, reticulocytes and leucocytes is an early and sensitive reagent.

A very sensitive substance in the blood which changes at an early stage in cases of deficiency of certain vitamins (first of all riboflavin) is globin (Yefremov *et al.*, 1955).

In studying vitamin A and B₂ requirements the study of adaptation to darkness is a sufficiently characteristic test although not quite specific.

In studying both vitamin A and riboflavin deficiency it is desirable that control tests of the eye be conducted with a slit lamp.

When performing mass examinations however, we cannot limit ourselves to the above-mentioned reactions but special tests must be carried out. Such are the reactions which determine the state of vitamin metabolism by analyzing their content in the urine and the blood.

The excretion of vitamins from the organism through the kidney undoubtedly depends on the state of that organ as any pathological changes in it interfere with proper excretion. The excretion of vitamins is likewise governed by this rule. However, in spite of all these limitations we can utilize this test because many years of study have shown that the excretion of vitamin C in the urine almost correctly reflects its sufficiency or defect in the tissues.

This method can also be applied in practice to the study of the metabolism of vitamins PP, B₁ and B₂.

Regarding the amount of vitamins in the blood, there is no direct interrelation between the contents of vitamins in the tissues, and in the blood; there is only a definite dynamic correlation between them which is influenced by the trophic and receptor mechanisms.

Of course, laboratory studies in this direction can be best conducted on specially selected groups of people whose state of health is thoroughly examined and who are placed on diet in which the types of nutritional substances and the amount of calories are precisely determined. Such groups are placed in special "health hospitals," without keeping them away from their work.

In order to assess the organism's supply of vitamins C and P, it is advisable to utilize the determination of the resistance of capillaries to high or low pressure and also capillaroscopy. These methods, are not of course, specific but if standard conditions are observed they are sufficiently characteristic and make

it possible to judge the extent of deficiency of these vitamins. It is therefore, clear that we have a sufficiently large number of methods suitable for studying vitamin metabolism, determining the range of physiological norms and deducing from them the average daily consumption of vitamins.

The rise in the standard of living of the Soviet people and the growing abundance and variety of foodstuffs has not yet solved the problem of supplying in full, the physiological requirements in vitamins. On the one hand, a greater amount of refined and canned products is consumed which are excellent in taste and quality but contain less vitamins than the natural products. On the other hand, the amount of vitamins in foodstuffs is gradually diminished in storage while the vitamin requirements during the winter and spring season increases. This raises the problem of adding vitamins to food preparations as an important preventive measure, which greatly strengthens the capacity of the adult and child organism to resist certain infections such as influenza, sore throat, measles, scarlet fever, diphtheria and ("colds") catarrh of the respiratory organs, pneumonia in children, etc.

Food can be vitaminized in two ways:—The first is the introduction of vitamin preparations into individual foods chiefly in liquid form and the enrichment of common foodstuffs. The comparatively simple methods of vitaminizing food have doubtless helped the population of the USSR in eliminating the consequences of World War II as regards damage to the health of the population.

The second method is mass-scale vitaminization by the addition of vitamins to everyday food-products.

This route is, no doubt promising, but requires, in the first place, the correct choice of really popular products, and secondly the proper preservation of the vitamins in them.

In a number of works Soviet scientists have proved the possibility of vitaminizing products and preserving vitamins in such foodstuffs as bread (the vitamin B group), sugar (vitamin C), salt (vitamin C), milk (vitamin C), and fats (vitamin A).

The vitaminization of these products in the USSR has passed the stage of experimentation and it is now possible to provide increased vitamins to the population of large inhabited localities in the remote districts of the USSR.

The great expansion of the Soviet vitamin industry with its many well-equipped vitamin factories in different districts of the country has contributed largely to the success of these measures.

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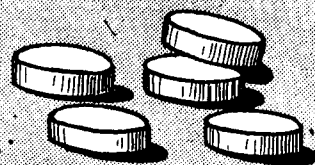
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TYPHOID FEVER

(Enteric fever, fièvre typhoïde)

and

SULPHAMYCETINE*

CONTE HANS C ENGELHARDT

DURING a survey in Java—Indonesia—Typhoid Fever was found to be of very common occurrence. 182 patients were treated with Chloramphenicol, 102 patients with Tetracycline (Achromycin)—(Lederle)—and 412 patients with Sulphamycetine (Lepetit). Recent literature mentions the success of Chloramphenicol given over a period of 10 days. But it has not cured the “Carriers.” Our observations showed that not only the “Carriers” were not cured, but 4 other undesirable factors appeared in these 182 patients; bleeding and perforation of the intestines and relapses have occurred; the bacteriological picture did not improve, only the clinical picture showing an improvement over a period of 3 to 4 days. For these reasons 112 patients were treated with Tetracycline. The results of this treatment demonstrated, that only 47 patients were cured, but these cured patients showed rapid improvement in the clinical and bacteriological pictures) 24 to 48 hours after the first dose). In the hope of getting still better results 412 patients were treated with Sulphamycetine (Lepetit, Italy).

The causative organism in typhoid—*Eberthella typhosa*—was discovered by Karl Ebert in the year 1880 in the lymphatic tissue. Fever, bradycardia, rose-coloured eruptions, abdominal signs, lung infiltration and splenomegaly are the characteristic signs. In the observed cases by us, the infection in adults and children was in the ratio of 2 to 1. In this survey it was often elicited from patients that the disease occurred two years before the Japanese occupation, or at the time of the revolution.

The organism enters the body through the gastrointestinal tract, and then invades the lymphatic channels. A hyperplasia occurs and in about 59% of the observed cases ulcerations also of the Peyer's patches specially in the ileum and caecum. In this survey the ulcers were found to heal up without scar-formation after Sulphamycetine. The kidney and liver showed inflammation and the spleen was enlarged in all observed cases. 22% of the cases revealed pneumonic changes.

The incubation period was on an average 10 to 12 days. The onset was sudden with the following symptoms:—Chills, malaise, headache, anorexia, epistaxis and backache. In 42% of cases, diarrhoea occurred while the remaining cases had constipation. In 52% of the cases bronchitis was present. In 12% sore throat (pharyngeal symptom) was predominant. The temperature was not

* Specially contributed to the ANTISEPTIC

[177]

typical of typhoid fever—rising daily by steps—but a sudden rise to the maximum; then the temperature did not maintain a peak level, but showed variations. The pulse was relatively slow and dicrotic. The rose-coloured spots were observed between the 5th and 7th day after the sudden onset, not only on the abdomen and chest, but also on the extremities in all observed cases, and 16% had also a face involvement. In 8% the rose-coloured spots were developed necrosis. During the time the rose-coloured spots were observed—the patients suffered from severe pain in all the joints. The erythematous “rose-spots” were discrete and rounded and often disappeared under pressure. They persisted over a period of 8 to 10 days. All patients demonstrated a splenomegaly, but they had all suffered previously from malaria, and so it could not be definitely ascribed to the typhoid fever. A nephritis occurred in 12% of the patients. The diazo-reaction and the Weiss-reaction were positive in all cases.

The following complications were observed in patients, who were treated with Chloramphenicol:—

1. Intestinal hæmorrhage; slight bleeding in 63 per cent and profuse bleeding in 37 per cent. There was a sudden fall in the temperature or an abrupt rise in the pulse-rate; also pallor, sweating and hypotension.
2. Intestinal perforation occurred with abdominal pain, usually in the lower right quadrant accompanied by nausea, vomiting, a fall in temperature, rapid pulse, leucocytosis and muscle spasm.
3. Thrombophlebitis, or parotitis, myocarditis, or meningitis, or peripheral neuritis, alopecia, or nephritis, or cystitis, or osteitis, or otitis.

The patients, treated with Sulphamycetine did not suffer from the above complications.

The diagnosis was established by the demonstration of the Typhoid bacilli in the blood and by a positive Widal test. Agglutination of H and O antigens was also estimated. The O antigen titre rises only during a typhoid infection.

Therapy.—As mentioned before, 182 patients were treated with Chloramphenicol.

Table I showing the results of treatment of 182 cases with Chloramphenicol

Without complication	Admission stage	Number	Treatment		
			10 days	14 and 18 days	
Intestinal hæmorrhage	2-3 weeks	63	—	21	42
Intestinal perforation	2-3 "	59	7	41	11
Relapse	2-3 "	19	2	16	1
	2-3 "	41	8	26	7
Total	...	182	17	104	61

Chloramphenicol was given in daily dosage of 4 capsules, each capsule containing 0.25 g.

Table II showing the results of treatment of 112 cases with Tetracycline.

Admission stage	Number of patients	Cured	Not cured
2 weeks	43	19	24
3 weeks	69	28	41
Total ...	112	47	65

The cured patients revealed a fever-drop in from 24 to 48 hours after the first dose and a rapid improvement as shown by the Widal reaction, Weiss reaction and the O antigen reaction. No complications occurred. Tetracycline was given for a period of 6 days. The dose was regulated according to the body-weight (40 to 50 kg.) and the patient's constitution (avitaminosis, protein deficiency): 5 capsules (250 mg.) were given daily over the 24 hours.

Table III showing the results of treatment of 412 cases with Sulphamycetine

Admission stage	Number of patients	Cured	Not cured
1 week	82	81	1
2 weeks	147	143	4
3 "	165	163	2
"Carriers"	18	18	—
Total ...	412	405	7

The cured patients revealed a fever-drop in 24 to 48 hours after the first dose. 48 hours after the first dose, the Widal reaction and the Weiss reactions showed rapid improvement. The same was the case with the O antigen reaction. Sulphamycetine was given for 5 days, the dose being adjusted to suit the body-weight (40 to 50 kg.) and the patient's constitution (avitaminosis, protein deficiency): 5 to 6 tablets (0.5 g.) were given daily over the 24 hours in divided doses.

All the above mentioned patients received no other medication during the treatment with Chloramphenicol, Tetracycline and Sulphamycetine respectively.

It must be mentioned that all the above drugs may cause collapse if administered in large doses.

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THE UNPREPARED COLON

Preoperative sterilization of the bowel by specific antibiotics has in recent years lowered the morbidity following open operations on the colon to a level that compares with that following other intra-abdominal procedures. These agents have become universally accepted, so much so, in fact, that surgeons trained in the antibiotic era have come to accept them as a *sine qua non* for opening the colon during laparotomy.

The principles of bowel surgery have not changed basically since the advent of the antibiotics: mechanical cleansing of the bowel is still essential, and accurate anastomotic technique is as important as ever in achieving good final results. Protection of the wound and peritoneum against contact with bowel contents is still essential in avoiding the complications associated with infection. If one rigidly adheres to these principles, it is possible, with the use of intraperitoneal antibiotics and postoperative parenteral antibiotic therapy, to perform open operations upon the previously unprepared colon without fear of untoward complications.

Not infrequently in the course of pelvic surgery the operator finds that the disease process is primary in the colon, or involves the bowel wall or mesentery in such a manner that complete removal of the diseased tissue requires opening of the bowel or interfering with its blood supply so that resection is necessary. The same situation occurs in gastric surgery, and occasionally the "acute appendicitis" turns out to be caecal or sigmoid diverticulitis. It is naturally desirable to correct these lesions at the time of the initial exploration.

Experience has shown that if the colon is not obstructed proximal to the lesion, resection and primary intestinal anastomosis can be carried out safely without previous use of antibiotics. Of course it is desirable to have an empty, grossly clean colon, which condition exists if cleansing enemas have been utilized prior to laparotomy—as they should be in all elective procedures. Even this requirement is not essential, however, if proper precautions are taken by the operator to pack the operative field with abdominal pads and to prevent spillage from the proximal bowel. This latter can be done with rubber-shod intestinal clamps, or by passing a Pen-rose drain or rubber catheter through the mesentery adjacent to the bowel and tightening it as a tourniquet to prevent the escape of liquid stool from above. The liberal application of suspensions of Neomycin to the completed anastomosis and adjacent viscera as recommended by Poth seems a logical and desirable safeguard. Copious lavage of the wound with saline solution with the closure of each layer, floats out devitalized fat and bacteria, and should be carried out following the closing of the peritoneum. No drains are placed, and in our experience proximal decompression is unnecessary unless obstruction is present. Postoperative use of large doses of penicillin and streptomycin is routine and is undoubtedly largely responsible for the low incidence of wound infections and intraperitoneal infections seen in these patients.—(*Hawaii Med. Jour.*, Honolulu, 16: 1, '56).

TREATMENT OF CYSTS OF THE IRIS WITH ELECTROLYSIS

P. J. Kennedy (*Arch. Ophthalm.*, April, 1956) reports on the use of electrolysis in the treatment of six patients with cysts of the iris. In five patients cyst formation followed the extraction of a cataract. The electrolysis needle was placed through a knife-needle incision into the centre of the cyst. The current was turned on, 10 to 15 milliamperes being used. The electrolysis was continued until the cyst was filled with hydrogen bubbles. In the use of this technique the needle should not be allowed to penetrate and rupture the free wall of the cyst, because there may be some damage to the endothelium as the hydrogen comes into contact with it.—(*M. J. of Australia*).

CHYLOUS ASCITES IN INFANCY*

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CHYLOUS ascites in children is certainly a rare condition as a review of the medical literature on this subject will indicate. Kessel¹⁰ (1952) found only 31 cases in the literature, while Chi-Hao-Lee and Young, (1953) reported only 27 well-authenticated cases in the literature, occurring in children up to the age of 15 years. Fourteen of these were under one year when they developed the condition; ten between 1 and 12 years and three were 15 years old, indicating that the maximum incidence of the condition was in the immediate post-natal period; with a progressive decline in the later age-groups.

Embryology.—No discussion of this subject will be complete without a detailed consideration of the developmental anatomy of the lymphatic system—a study which will help us to understand the many developmental anomalies to which this system is particularly liable, and more particularly in regard to congenital chylous cysts of the abdomen. At present, two conflicting theories hold sway. The older theory of Sabin, postulated the fact that all lymph vessels developed as sac-like outgrowths of venous endothelium, which by centrifugal growth and branching, infiltrated and ramified throughout all tissues of the body. The original connections of the venous channels might or might not be retained as definitive connections of the adult lymphatic system. The more recent and currently accepted theory of lymphatic evolution supported by Huntington and Zimmerman (1940) implies that the lymphatic system arises by the confluence of peri-venous mesenchymal spaces to form larger spaces, these in turn becoming confluent to form continuous vessels which eventually open into the venous systems. In the human embryo, the beginnings of the lymphatic system occur in the jugular region of each side, and coalesce to form what is called the 'jugular lymph sacs' which at an early period of development become associated with the lymphatics of the arm bud and empty into the subclavian vein. From the caudal part of these sacs, the cranial end of the thoracic duct originates; which by a process of growth and elongation distally, establishes an ultimate connection with the lymph reservoir of the abdomen—the cisterna chyli. The paired thoracic ducts are connected together by several anastomatic channels—the right duct becoming more attenuated as more lymph reaches the left jugular sac. Even in the second month of intra-uterine life, valves can be demonstrated in both the jugular lymph sacs, and the cranial end of the thoracic duct (Kampnier) and by the fifth month of foetal life, the valvular mechanism is almost as complete as in the adult system.

* Specially contributed to the ANTISEPTIC

Anatomy.—The peripheral lymphatic system of the intestinal tract with which we are most concerned originates as blind ductules that extend between the tubular glands of the stomach and into the villi of the intestine. These ductules empty themselves into a rich sub-epithelial mucosal plexus, which in turn has anastomotic connections with a larger and coarser sub-mucosal plexus. Those parts of the intestinal tract that are covered by the peritoneum, have in addition large collecting channels beneath the mesothelium, known as lacteals, which receive the lymph or chyle from the coarse sub-mucosal plexuses and convey them through large channels in the mesentery to the cisterna chyli. Although the lymphatics of the intestine are given the special name of lacteals, they differ in no way from the lymphatics of other parts of the body, except that they contain a milky fluid called *chyle*. The cisterna chyli is the abdominal lymph reservoir and lies usually on the antero-lateral surfaces of the bodies of L. i and L. ii on the left side. It is formed by the union of three lumbar trunks from either side of the abdominal cavity, *plus* another unpaired trunk which drains the main portion of the intestinal tract directly—a fact that explains why chylous ascites due to obstruction of this collecting trunk can occur independently of lymph oedema of the lower extremities, scrotum or abdominal wall. The cisterna is continuous above with the dilated tortuous caudal extremity of the thoracic duct, which enters the thoracic cage *via* the aortic hiatus in the diaphragm and extends upward in the posterior mediastinum until, in the region of the aortic arch, it crosses the median line behind the oesophagus and terminates in the left innominate vein at the junction of the left sub-clavian and the left internal jugular veins. The location of the duct and cisterna against the hard unyielding bony spine, would account for the exceeding vulnerability of this structure to pathological involvement in the surrounding structures or organs.

Chylous ascites in the pædiatric age-group may result from a variety of causes, which may be simply and broadly classified under one of four main groups:—

- (1) Congenital; (2) traumatic; (3) organic obstructive; (a) extrinsic or (b) intrinsic; and (4) idiopathic.

1. *Congenital causes*:—Congenital maldevelopment of the central or of the peripheral lymphatics of the intestine, producing either a stenosis or atresia of these structures could theoretically produce dilation of the smaller distal radicles with seepage of lymph across the attenuated vessel walls or its ultimate rupture with escape of chyle into the peritoneal cavity. We can only speculate on these possibilities or on the factors leading to their spontaneous alleviation. Of the 55 cases of chylous ascites that I found in the literature, as occurring in infants, a satisfactory

cause was determined at autopsy or at operation *only* in 24 cases; in the other 31 cases no satisfactory explanation for the chylous effusion could be given, except to hazard a guess on the basis of a congenital malformation or hypoplasia.

A rare but interesting manifestation of congenital intestinal anomalies is the so-called 'chylous enteric cyst,' first described by a Florentine anatomist, Beinveni as an anatomical curiosity in 1507. Since then several such reports have accumulated in the literature. Handelsman⁷ and Ravitch (1954) described 4 cases of chylous mesenteric cysts in children, all of which were characterized by the occurrence of a clinical picture resembling acute appendicitis and which at operation revealed a chylous cyst of the mesentery—one of which had ruptured with an out-pouring of free chyle into the general peritoneal cavity. These cysts are not unlike lymphangiomas in other parts of the body and Ladd and Gross¹¹ believe that these cysts develop from mesenchymal lymphatic rests, which proliferate and subsequently accumulate fluid because they do not communicate with the parent lymph system. The formation of chyle within these cysts is hard to explain, except on the supposition of some connection of the cyst to a few of the intestinal lacteals as stated by Dowd⁹ (1900).

2. *Traumatic causes*:—Trauma as a cause *per se* of chylous ascites in infants is extremely rare, as judged from the literature. In recent years, however, a few instances have been recorded of chylous ascites resulting from inadvertent injury to the cisterna or thoracic duct during surgery.

Gulldman⁸ (1921) reported a case of chyloperitoneum in a boy of 14 in whom a tear of the mesentery secondary to an injury was encountered during operation and through which a milky fluid was oozing. The clinical picture was one of an acute peritonitis and recovery ensued with a simple suture of the tear. In his experience he could recall only one other similar case of a boy with a rupture of the thoracic duct. Feeding by the rectum for a time arrested the chylorrhœa and the rupture healed. No case has so far been recorded of rupture of the large lymph channels in infants born in difficult labour. This is undoubtedly due to the fact that we have as yet, no clinical means at our disposal whereby the association of chylous ascites with rupture of a major lymph duct can be conclusively demonstrated; it is, however, not irrational to presume that a certain percentage of those cases listed now as idiopathic chylous ascites, might possibly have been due to hyperextensive injuries of the spine with rupture of a major lymph duct and secondary chylous ascites—the spontaneous clearing of the ascites being attributable to sealing of the rupture and absorption of the chyle from the peritoneal cavity.

TABLE 1

Showing the number of cases of chylous ascites: aetiology unknown and known

A. Idiopathic chylous ascites. (Aetiology unknown):	
1. Recovered without operation so that no search for cause was made	No. of cases
2. Operated upon, but no cause found	... 23
3. Died but no cause found at postmortem examination	... 5
	3
Total	... 31
B. Definitive Aetiology present:	
1. At operation	
(a) Enlarged mesenteric glands with pressure on the chyle duct	...
(b) Adhesions from previous operations	... 7
(c) Tumour in the region of the vertebral column	... 5
(d) Traumatic rupture	... 3
	... 2
Total	... 17
2. At postmortem examination:	
(a) Marked stenosis of the thoracic duct	... 3
(b) Enlarged tuberculous mesenteric glands	... 4
Total	... 7

3. *Organic obstructive causes*:—(a) *Extrinsic*:—Among the cases of chylous peritoneal effusion in children listed in Table 1, where an aetiological cause could be demonstrated either at surgery or at autopsy, by far the largest number were due to extrinsic factors producing compression and occlusion of the cisterna chyli and the larger lymph channels in the mesentery. Of 55 cases of chylous ascites collected from the literature, an aetiological basis could be found in only 24; and of these, pressure on the chyle duct due to extrinsic obstructive factors accounted for nearly 18 cases—an incidence of almost 75%. Whittlesey *et al*¹⁵ (1955) describe the occurrence of 5 cases of chylous ascites in infants, due to blockage of primary lymph channels in the mesentery by enlarged mesenteric lymph nodes. This enlargement may be due to non-specific inflammatory changes in the glands as is usual in the great majority of the cases reported, or it may be due to reactionary change in the glands secondary to tuberculosis, Hodgkin's or to malignant disease. Primary malignancy elsewhere, with secondary enlargement of the mesenteric lymph glands leading to lymph obstruction, is uncommon in the paediatric age-group, and when it does occur, it is most often due to an embryonic Wilms' tumour or a neuroblastoma sympathicum. Quincke (1875) reported a case in which there was inflammatory thickening of the mesentery with

closure of the lymphatic vessels, resulting in chylous ascites. Pratt and McReady⁹ (1949) in discussing the association of chylous effusion with an acute abdomen, record the instance of chylous ascites due to a thick adhesive band which extended from the mid-mesentery of the proximal jejunum to the serosal surface of the terminal ileum, and which so constricted the base of the mesentery as to occlude and partially obstruct both venous and lymph flows resulting ultimately in chylous ascites. The mesenteric thickening seen in the lipodystrophy of Whipple's disease could also in some instances occlude the main lymph channels and result in chylous effusion. There may probably be some inter-relation between recurrent attacks of mesenteric lymph-adenitis and the progressive end result of Whipple's lipodystrophy of the mesentery.

(b) *Intrinsic*:—In tropical countries, parasitic infection by either *Filaria sanguinis hominis* or by *Bilharzia*, may cause obstruction in the main lymph channels—the cisterna or the thoracic duct, by either the adult worms in Filariasis or the blood flukes in Bilharziasis respectively. This intrinsic obstruction is by and large, the commonest cause of chylous ascites occurring here. Inflammation of the cisterna and the main lymph channels analogous to that which occurs in the lymph vessels of the extremities, occurs very occasionally in the lymph carriage system of the intestinal tract; but rarely produces a chylous ascitic effusion, because of the richness of the anastomotic lymph channels. Primary lymph tumours—mesotheliomas, lymphosarcomas etc., could theoretically occur and give rise to one form of intrinsic lymph obstruction, but are statistically rare occurrences in infancy.

4. *Idiopathic causes*:—Under this heading are included all those cases in which no definite ascertainable cause could be ascertained for the occurrence of the chylous ascites, where spontaneous alleviation of symptoms occurred under conservative medical management, or those cases in which no aetiological cause could be demonstrated conclusively either at surgery or at autopsy.

Signs and symptoms.—The development of chylous effusion within the abdomen may occur either insidiously as a slow and progressive abdominal distention; resembling the ascites of cirrhosis, or it may occur with catastrophic suddenness, presenting a clinical picture not unlike that in acute perforative peritonitis. Cohen¹ (1931) was, I believe, the first to describe the clinical picture of acute chylous peritonitis, though Murphy at an earlier date, had made mention of such an entity, which he called a "milky peritonitis," but the aetiological cause of which he was unable to determine. Maier¹³ (1940) and Karp (1951) also

drew attention to this clinical manifestation of chylous ascites, presenting as a picture of acute abdomen with an elevated temperature and white cell count, and which, on exploration, showed a milky peritoneal fluid with distended and dilated mesenteric lacteals. The association of chylous effusion with lower right abdominal pain resembling that of acute or sub-acute appendicitis was reported upon by Whittlesey *et al.* (loc cit) the operative findings in each case revealing a normal appendix with markedly dilated lacteals and enlarged mesenteric lymph nodes.

The above constitute but a small percentage of the total number of cases presenting with a diagnosis of chylous ascites. By far the largest group of cases at least in the paediatric age group, present themselves with no acute episode of pain, and very often seek consultation because of a slowly progressive and distending abdomen. Physical examination of such children, reveal no remarkable signs indicative of the condition and diagnosis is established only by abdominal paracentesis with recovery of fat laden chylous fluid. Wyatt and Gross (1941) drew attention to the marked difference in density of the liver as compared to that of the surrounding ascitic fluid. The latter was more radiolucent; and since this feature is contrary to what obtains in other ascitic collections they predicted from their radiographs that the ascites was chylous. We were unable in our case to demonstrate this roentgenological manifestation nor were we able to confirm the validity of this sign from the writings of other observers.

Much confusion has arisen over the use of such terms as chylous and pseudo-chylous effusions. Most workers describe and distinguish three varieties:—

(1) *True chylous ascites* in which actual chyle accumulates in the peritoneal cavity as the result of direct leakage from a large lymph vessel or from a tear of the thoracic duct or the receptaculum.

(2) *Pseudo-chylous or chyloform ascites* where the condition is in the main one of ascites, but the fluid becomes milky-looking from the chemical changes taking place in the proteins. Some chyloform effusions may be due to the presence of such substances as lecithin, cholesterol and other albuminoid substances.

(3) *Lactescent non-chylous fluid* is a milky effusion in which there is no fat globules but a glyco-proteid.

The differentiation of the two former types is afforded by chemical and microscopical analysis of the fluid obtained by abdominal paracentesis. The chief points of distinction are listed in the tabular statement (p. 187).

Chylous ascites	Chyloform ascites
1. The fluid tends to accumulate very rapidly, and in consequence large volumes are removed at each paracentesis.	1. It collects more slowly, the volume of the fluid varying with the exciting pathological condition.
2. The fluid is generally yellowish-white in colour and opalescent with the formation of a distinct buffy cream layer at the top on standing.	2. It is pure milky-white emulsion, less opalescent and does not usually show a top creamy layer on standing. A sediment frequently settles out.
3. Microscopically the fluid contains fine fat globules with very few cellular elements.	3. The quantity of free fat is variable; often numerous fine highly refractile granules are present, and these do not give the reactions of fat. Cellular elements are numerous and often contain fat.
4. The specific gravity usually exceeds 1012, while the total solids often exceed 4 per cent.	4. The specific gravity is less than 1012 and the total solids rarely exceed 2%.
5. The fat content is generally high varying from 0.4 to 4%. The fat corresponds in all its properties to the fat contained in the food that is consumed.	5. The fat content is generally low often only in traces. In its melting point and chemical composition it does not vary <i>paripassu</i> with variations in the kinds of fat that are ingested.
6. Of the lipins; cholesterol is commonly found, and lecithin only in traces.	6. The most characteristic lipin is lecithin, though cholesterol is occasionally present.
7. The total protein content is usually over 3%, the serum albumen being the largest fraction, globulin occurring only in traces.	7. The protein content varies between 0.1 and 3%, serum globulin occurring in appreciable amounts.
8. There is no evidence of a lipin-globulin combination.	8. The lecithin is mainly combined with the globulin; and this combination is usually the cause of the opalescence of the fluid. Such fluids resist putrefaction.
9. The salts and organic substances present approximate to the values found in the serum or lymph.	9. Same as for chylous fluids.

A simple and very effective test for differentiating a chylous ascitic fluid from that of a chyloform nature is to perform a paracentesis abdominis, several hours after the patient has eaten a fat meal containing a lipophilic dye. The dyes which give the best concentrations in chyle are coal tar dyes, commercially designated as D&C red No. 17, D&C red No. 18, and D&C green No. 6. In preparing the dye for ingestion 1 g. of the dye is mixed with $\frac{1}{4}$ lb. of butter or margarine which is then eaten on bread or ice-cream. Abdominal paracentesis is performed on the

following morning. The aspirated fluid will be grossly discoloured with the dye in cases of chylous ascites. This test should be performed in all cases of turbid sterile, alkaline ascitic fluid where chylous ascites is suspected.

Clinically, chylous effusion may be considered as occurring in one of three clinical types.

(a) *Acute chylous peritonitis*:—With distention, temperature elevation, pain and leucocytosis and possible muscle rigidity constituting the prominent symptom-complex.

(b) *Idiopathic chylous ascites*:—With non-symptomatic but progressive abdominal distention, for which no satisfactory aetiological factor can be demonstrated clinically. This would include traumatic rupture of the cisterna or larger lymph vessels as sometimes obtains in hyper-extension spinal injuries, rupture of mesenteric chyle cysts, or congenital anomalies of the abdominal lymph system.

(c) *Chronic chylous ascites*:—Occurring as part of the clinical picture in demonstrable obstructive lesions of the lymph system. This would include obstruction of the main lymph pathways by abdominal neoplasms, retro-peritoneal tumours, tuberculous mesenteric adenitis, or mesenteric thickening secondary to Whipple's lipodystrophy. Here the main clinical symptomatology, is that of the primary disease, with chylous effusion occurring as a secondary manifestation of obstruction to lymph channels.

Case report.—J.M., a four-week-old white male infant, was admitted to the Pædiatric Department of the Mercy Hospital on April 26th 1956, because of a slowly progressive abdominal distention of 2 weeks' duration. The mother stated that the child was the second of the twins that were born to her; but affirmed that to the best of her knowledge, there had been no difficulty or complicating factor during her labour. The child developed normally during the immediate neonatal period, and maintained reasonably good health until about 2 weeks ago, when the mother first noted the onset of abdominal distention.

On admission, physical examination revealed a well-developed slightly under-nourished infant, with gross distention of the abdomen, and marked dilatation of the superficial veins over its surface. There was no demonstrable abdominal rigidity or tenderness, no clinical liver enlargement and no masses felt on careful palpation of the abdomen. Dullness was however, present over both flanks with easily elicitable fluid wave and shifting dullness. A flat plate of the abdomen at the time of admission showed free fluid in the abdomen with secondary elevation of the diaphragmatic leaves. The Hb was 12.4 g. per cent or 84% of the normal, the total red cells being 4,050,000 cells per cmm. The white

cell count was 5,400 cells per cmm. with a normal differential count. The Mantoux Test was interpreted as negative. On April 29th 1956, because of increasing respiratory embarrassment, a paracentesis was performed and about 500 cc. of a creamy opalescent fluid resembling chyle was removed. The specific gravity of this fluid was 1016 with a total protein content of 2.3 g. per cent. Bacteriological culture of this fluid proved sterile. The child's condition improved temporarily, but the abdomen continued to fill and on May 7th i.e., nine days after the initial tap a repeat-paracentesis had to be performed because of increasing difficulty in breathing. On this occasion 580 cc. of a pale milky opalescent, homogeneous fluid was removed which, on standing, produced a pale buffy cream upper layer. Examination of this layer showed the presence of numerous fat droplets that took the usual fat stains. The chemical examination yielded the following figures:—

Total proteins 2.13 g. per cent; Cholesterol 68 mg.%; Lecithin: trace; Neutral fat 240 mg.%; Chlorides 108.3 mEq.; Sodium 136.8 mEq.; Potassium 4.84 mEq.; Water 959.5 gm. per Kg.

Culture proved negative. The child's appetite was in no way impaired by the chylous ascites and as no demonstrable cause could be found, other than the conjecture that the malady was probably a congenital one, treatment on conservative lines was deemed in order; and a therapeutic regimen consisting of a protein, high carbohydrate, low fat, high-vitamin diet was ordered, supplemented by the judicious use of abdominal paracentesis, when necessary. Three days after the institution of this regime the child once again became distended, cyanotic and restless. A third paracentesis was performed on May 10th 1956, with the removal of a further 580 cc. of a similar chylous fluid, which microscopically and chemically differed in no way from the previous specimen. The dietetic regimen was continued as before and from now on the child improved appreciably with gradual reduction of abdominal girth until its discharge three and a half weeks later on May 28th 1956 as cured. There is no clinical evidence of free abdominal fluid to date.

TREATMENT:—In every case of chylous effusion an attempt should be made to determine the causative factor involved in its production. Intravenous pyelograms, tuberculin tests and examination of the blood for parasitic infection might materially help in searching for a cause. If the condition should be secondary to an operable obstructive tumour mass, or perhaps to blockage of the main lymphatic channels by parasitic infestation as occurs not uncommonly in tropical climates, attention should of course, be turned to the treatment of the primary cause. Likewise in those cases where clinical evaluation leads to a supposition of an inflammatory basis as the cause active treatment of the

infection will lead to a cure of the chylous ascites. Those few cases of chylous effusion that present with symptoms and signs of an acute abdominal catastrophe, will require an exploratory laparotomy to exclude any co-existent pathology. In the absence of such pathology and where it is believed that the effusion is due to a tear or rupture of the lacteals, treatment will consist of simple drainage of the peritoneal cavity (a) because of the difficulty in locating the site of the tear and (b) because of the fact that suturing the very delicate and friable lacteals is not a feasible proposition.

Where, however the clinical picture is one of a painless slowly progressive effusion, for which no demonstrable cause can be determined, a conservative medical regimen should be given a fair trial. This would consist in the institution of a high protein, high-carbohydrate, high-vitamin and low-fat diet, coupled with the judicious use of abdominal paracentesis. The rationale of this therapy is to inhibit as far as possible the formation of chyle within the peritoneal cavity and to permit either healing of a ruptured lymph vessel or the development of a new anastomotic channel. Adherence to a high-vitamin, high-protein diet is mandatory in order to compensate for the inevitable hypoproteinaemia and anaemia that these children often suffer from, as a result of the chylous effusion into the peritoneal cavities.

When, despite all efforts at conservative management, no tangible result is forthcoming surgical decompression of the abdomen would become necessary in order to provide an outlet for the continually forming chylous fluid.

I. Subcutaneous peritoneal shunt.—(*Crosby-Cooney operation*):—This operation provides a channel through a glass button, by which ascitic fluid can drain freely from the peritoneal cavity, where it is formed, to a subcutaneous space created in the lower wall. By this means, the enormous loss of proteins which takes place when ascitic fluid is withdrawn by paracentesis is prevented and both patient and physician are spared the inconvenience of repeated abdominal taps and the consequent enormous loss of protein and the disturbance of serum-protein levels.

II. Sapheno-peritoneal shunt procedure.—(*Route's operation*):—Since all the chyle formed within the abdomen ultimately reaches the venous system, Route's ingenious operation of performing a sapheno-peritoneal shunt, is a physiological procedure more than the Crosby-Cooney button operation. In this operation the saphenous vein is mobilized for a distance of 8" to 10" from the sapheno-femoral junction, and after ligation of its main feeding channels, transected between ligatures, leaving its proximal end connected to the saphenous vein. Patent sapheno-femoral

valves to prevent reflux of blood into the saphenous segment is necessary for the success of this procedure. The lower end of the proximal segment is now anastomosed to the lowest part of the peritoneal cavity, thus permitting chylous fluid formed within the peritoneal cavity to flow through the saphenous vein into the general venous circulation. Many modifications of this device have been described, notable among which is the ingenious use by Schnee²⁰ (1950) of a vitallium channelled button, one end of which is connected to the saphenous vein and the other the bulbous end projecting into the peritoneal cavity, with an ingenious device to prevent blockage of the channel by omentum.

Summary.—1. A brief review of the literature is presented of cases of chylous ascites occurring in infancy, together with a short account of the embryology and anatomy of the lymph system.

2. Causes of chylous ascites have been listed as occurring under one of four main groups; viz:—Congenital; obstructive; traumatic and idiopathic.

3. The signs and symptoms vary in different cases, and although an acute onset with symptoms indistinguishable from an acute peritonitis is occasionally met with, by far the largest number of cases exhibit symptoms of an insidious nature like progressive abdominal distention, the true nature of which is discovered only on a diagnostic paracentesis.

4. The differences between chylous and pseudo-chylous fluids are discussed and a simple practical test for differentiating between the two is described.

5. The case report of a four-week-old male infant, is presented—obviously a case of congenital chylous ascites—to show the value of conservative therapy in the initial management of a case of chylous ascites of unknown aetiology.

6. A brief review of the treatment of chylous ascites is made. It is the failure of conservative medical management to effect a cure that provides the indication for surgical decompressive measures.

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Chloramphenicol (Chloromycetin) is stable, easily diffusible, and was the first broad-spectrum antibiotic to be made available, for general use. However, now that many other agents are available, it is urged that this drug be used only when its superior effectiveness justifies the possible risk involved. Like the other broad-spectrum antibiotics, gastro-intestinal disturbances frequently follow its use, but its absorption is rapid and these reactions are relatively unimportant. Although the occurrence is infrequent, chloramphenicol may have a grave toxic action on the bone marrow resulting in aplastic anaemia which is usually fatal. In the case of typhoid fever, administration of this agent has greatly lowered the mortality rate, and decreased the complications. Typical dosage consists of 50 mg. per kg. body weight daily divided into eight-hourly doses. After the temperature returns to normal, a dosage of 30 mg. per kg. body weight is maintained for ten to fourteen days. The action of the drug is bacteriostatic rather than bactericidal to the typhoid bacillus. In influenzal meningitis, chloramphenicol being readily diffusible achieves a greater degree of concentration in the cerebrospinal fluid. It may be taken orally or administered by stomach tube. A loading dose of 75 to 100 mg. per kg. body weight is followed by 0.75 to 1.5 grams daily for seven to fourteen days. Clifford Wilson of the University of London, *Practitioner*, 176: 14, 1956 is of the opinion that the use of chloramphenicol should be confined largely to the treatment of these diseases because of its superior action without the need of prolonged dosage.

STREPTOMYCIN AND DIHYDROSTREPTOMYCIN

In evaluating the status of streptomycin and dihydrostreptomycin, they are considered together because they share limitations, i.e., bacterial resistance and side-effects. Streptomycin may be administered orally, intramuscularly or intrathecally. The oral dosage is 0.5 to 1.0 gram twice or three times daily, but the usefulness of the drug by this route is limited since intestinal organisms acquire resistance readily. For intramuscular injections, streptomycin sulphate (one gram daily) is the preparation of choice, being less painful during injection. Larger doses should not be used continuously for more than five days.

Because of its incapacitating effect on the eighth cranial nerve, dihydrostreptomycin should never be used alone, but in combination with streptomycin. In the use of chemotherapy for active tuberculosis, streptomycin is one of the three agents used in combination that is believed essential for the best results from therapy. In cases of subacute bacterial endocarditis, streptomycin and penicillin given concurrently have produced excellent results, but further evaluation is indicated. Many bacteria are sensitive to streptomycin which is bactericidal in high concentrations and bacteriostatic in lower concentrations.

The drug especially in combined therapy, is widely and successfully used in the management of a number of infections due to gram-negative organisms. The simultaneous administration of two chemotherapeutic agents to which the organism is sensitive doubles the mutation necessary for its protection. Small doses of streptomycin and of dihydrostreptomycin are necessary if ototoxicity is to be kept to a minimum; also serious impairment of hearing is an ever-present danger. John Macleod of Edinburgh, writing in the *Practitioner*, 176: 5, 1956 believes that these drugs have a clearly defined sphere of use, but untoward reactions must be kept in mind.

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SURGERY IN A MOFUSSIL HOSPITAL*

J. S. BHATNAGAR,

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SURGERY worth the name, is performed largely even now in large towns and Headquarters hospitals, where improved anaesthetic technique, blood transfusion facility, sufficient trained and qualified staff for the efficient management of pre- and post-operative complications, good nursing, suitable building for the in-patient wards, a fully equipped fly-proof operation theatre with shadowless lamp, Boyle's apparatus for anaesthesia, modern operation tables, good sharp instruments, high-pressure sterilizers, linen and sponges, X-ray and laboratory investigation facilities, are all readily available. Besides a collection of suitable equipment, trained assistants to prepare the patient and the theatre and to assist the surgeon during operation and an experienced anaesthetist to look after the general condition of the patient keeping an eye on the blood-pressure and fluid balance are all very essential. The academic qualifications, experience and training of the operating surgeon are also considered important by the public and by the authorities who run the hospitals.

Ideal conditions and facilities for surgery such as these, are not usually available in mofussil hospitals, and State Governments are unable to find adequate funds for providing them. Even where funds are available, well-qualified surgeons and specialists with post-graduate qualifications do not, for various reasons, like to be posted to out-of-the-way stations.

In spite of such considerations, it is my firm belief that good surgery can still be performed in mofussil hospitals provided the surgeon is keen, persevering, enthusiastic, and possesses adequate worldly wisdom and is animated by a spirit of service to humanity. He can easily train suitable assistants to help him in his work.

In the last week of May, 1955, I was posted on transfer to Banswara, where even the barest necessities for surgery were not to be had. There was no suitable operating theatre, nor wards to receive the operated patients. Facilities were however, soon improvised, as if for a camp hospital. The staff was trained to prepare the theatre equipment, and the patient; necessary linen and sponges were got tailored under supervision, a small laboratory was set-up in about a month's time for carrying out the simpler urine and stool examinations, and also complete blood-smear examinations. A second-hand reconditioned 25 ma X-ray portable machine without table or bucky or darkroom accessories or developing tank was also installed. This machine was very kindly sent at my request by the Director o

*Specially contributed to the ANTISEPTIC

Medical and Health Services. The staff was slowly imbued with zeal and were willing to work even after normal routine hospital hours. Some new instruments were also obtained and an old operation table which could be adjusted atleast for Trendelenburg and lithotomy positions was put in order.

During the past eleven months that I have been working here, I have performed 250 major operations of various types and 75 minor ones not requiring any special surgical technique. Particulars of the major operations only with a few photoprints (before, during and after operation) for illustrative purposes are given in this article. The routine procedure adopted which is well known to all surgeons is briefly indicated with a view to showing that surgical relief *can* be given to poor suffering humanity without elaborate equipment, even in interior places far away from railway communications and inhabited mostly by poor, illiterate Bhil Adhivasis.

1. *Investigations*:—On admission the surgeon makes a thorough examination and ascertains the previous history to the extent possible; for it is impossible to elicit from these Bhils and villagers much useful informations which would help the surgeon; so he has to be guided mostly by his own observations and experience. Routine urine and stool examinations are done; when necessary a complete blood-picture and bleeding time are determined. Radiological examinations are conducted by the surgeon personally, with the help of a grade IV compounder who was trained to do dark-room work.

2. *Pre-operative care*:—I always took care to bring the patient to operation in a physiologic balance—the food reserves in their normal state, the intestines working normally, the respiratory tract free from infection, the circulation at its optimum efficiency, and the nervous system undisturbed and peaceful as in daily life. Normal food is not restricted; even on the night before operation semi-solid food is allowed. A dose of castor oil is given on the previous night just sufficient to give one or two motions. Soap-water enema is given early in the morning to wash the lower bowels. In operations not involving the stomach and intestines, even weak tea on the morning of operation and glucose water on the operation table during operation is allowed to be given in small quantity. The hospitalization period has been greatly reduced. Peace of mind and confidence are secured by allowing the waiting patients to watch the operations before their turn. This unusual practice, which is neither desirable nor normally permissible, has worked a miracle in this area; so that even patients suffering from diseases not needing surgical intervention often insist on getting operative treatment to get cured! Hæmopoietics are given in anæmic cases where the bleeding time is above 3 minutes. Calcium

vitamin C and vitamin K orally or parenterally are administered. Since this is a malarial district Quinine bihydrochloride in appropriate doses (1 m once or twice) is given 72 hours before operation as I found by experience that surgical shock invariably provoked the latent malaria, thereby making post-operative care difficult. In cases suffering from chronic malnutrition, hypoproteinaemia, assimilable proteins like Ledinac or protein hydrolysates, multivitamin preparations, iron, and vitamin B complex are given daily. Penicillin, 2½ lacs twice daily, 48 hours before operation is a routine in every case. The operating field is prepared in the usual way, painted with spirit mercurochrome 1% and covered with a sterile towel or gauze and bandaged. For the abdomen, an abdominal multi-tail binder is used, which is removed in the operating room. In cases of pelvic operations, complete inspection of the external genitalia, vagina, cervix, as also as digital examination of the rectum and vagina are done.

3. *Anaesthesia*:—The majority of the operations were performed under:—(i) Spinal—Barker's stovaine or nupercaine heavy solution being used. (ii) Local novocaine 2% infiltration, or nerve block. In the nervous types of patients either of the two is supplemented with ethyl chloride or ether inhalations by face-mask.

Children are always given ether (general) inhalation. One hour before operation either Tuinal capsule orally or an appropriate dose of morphia and atropine is given. The local or regional anaesthesia is given before actual operation by an ordinary Luer-lock syringe. Since we have no anaesthesia apparatus, the face-mask is used for inhalation anaesthesia by a compounder or by a doctor when one is available.

3. *Position during operation*:—The patient is placed on the table in a comfortable supine position. Special positions like lithotomy, Trendelenburg or kidney or acute angulation of the neck, are secured when needed by tilting the table or by using pillows or sand bags.

4. *Operative preparation*:—Where prolonged procedure is contemplated or when the diagnosis is obscure, glucose-saline by intravenous drip is started before operation. The operating field is cleaned with a lipolytic agent like ether, for removal of skin fat and then thoroughly painted over thrice with Tincture of iodine 1% in rectified spirit.

5. *Surgical technique*:—The details of the operative technique were of the standard type. Gentleness to tissues, careful hæmostasis and asepsis which are the bases of the surgeon's art were strictly practised, as it was my firm belief that such operative procedures lasting for four to five hours left the patient in a better condition than when they were performed rapidly in

30 minutes with loss of blood, and injury to tissues. Fine silk or cotton thread generally, and catgut to some extent were used as suture material. Coaptation of the subcutaneous tissues was attempted in every case for satisfactory cosmetic result and for early removal of skin sutures preventing formation of wide scars. The skin sutures were applied just to hold lips of wound in apposition (*vide* photoprints after operations). Unabsorbable ligature material wound on 2" x 3" long rubber tube or glass spool were sterilized by boiling after which they were stored in glass jars in rectified spirit. The spools or tubes were stored in immediately before use. After closure the wound was sealed off for 48 hours by means of adhesive plaster and the drains (pieces of torn rubber gloves which were left) were removed on the third post-operative day.

6. *Post-operative care*:—Post-operative pain was controlled by a judicious use of narcotics; when necessary glucose-saline, Periston (Bayers) or Plasmosan (M&B) by drip method was administered. Complications if any, were suitably dealt with. The drains were removed on the third post-operative day, dressings changed and the wounds again sealed with adhesive plaster. The serum if any was expressed by pressing the sides of the wound. The skin sutures were removed between the 5th and 10th post-operative day. As the diet of the average Indian, particularly of the villagers and Bhils, is deficient both in vitamin and caloric value, most of the operated cases were given glucose + vitamin C for three post-operative days and Vimix (an injectable multivitamin preparation) with vitamin B complex on alternate days till the patient got well and was able to eat a full normal diet. Latterly, Biascose was used instead of glucose. Larger quantities of glucose saline was used during summer for maintaining the fluid-balance. There was no post-operative nursing available to the patients; an intelligent relative, when one was available, cared for the patient. One nurse and two compounders of grade IV did their best in the matter of nursing and post-operative care. Early ambulation was practised and this certainly speeded up recovery, accelerated the desire and tolerations. I have established a method of assisting patients out of bed and taught the principles to those responsible for the bedside care, including relatives. On the evening of the operation the patient is encouraged to change his position in bed frequently, and move his legs and feet. He is encouraged to sit on the edge of the bed. The following day, he is turned on his side (wound-site down) with the hips and knees flexed. This brings the knees to the edge of the bed and an assistant then helps him to raise himself sideways to a sitting position, as his feet and lower legs fall over the side of the bed. He is then made to swing his legs

and move his feet, stand erect, and breathe deeply and cough several times. Following this he takes eight or ten steps and sits in a chair for ten minutes. He returns to bed by a reversal of the foregoing steps. Once a patient is up, he is encouraged to get up twice daily and later on to be up and walking as much as his condition would permit. As a routine, penicillin or strepto-penicillin is given twice daily for 5 to 7 days post-operatively. In hernia cases the patient is allowed to sit after 18 days and walk about after 24 days, and in cases of cataract the patient is allowed to change his sides after 24 hours and to sit after 48 hours. The soiling of abdominal and inguinal dressings due to the application of the principle of early ambulation was negligible in children and adults alike. Prolonged starvation was avoided and tea, biscuits, glucose water, and diluted milk were allowed on the 3rd post-operative day. When the bowels did not move, a glycerine enema on the third post-operative day was given for bowel action.

TABLE I
Showing the number of cases operated caste-war.

Communities	Number of			Total
	Males	Females	Children under 12	
Bhil Adhivasis	53	16	23	92
Muslims	22	9	10	41
Other castes	65	44	12	121
Total ...	140	69	45	254

TABLE II—Showing details of the cases operated upon

S. No.	Diagnosis	Operation	Total No.	Result		Reference to No. of photo
				Cured	Died or otherwise	
1	Multiple epitheliomata and warts, groin.	Excision: Incision elliptical.	1	Do.	—	—
2	Tubercular lymphadenitis with multiple sinuses both sides neck.	Lymphadenectomy and scraping of caseating glands.	1	Do.	—	—
	Tubercular lymphadenitis, chain right side.	Lymphadenectomy (Excision of complete chain).	1	Do.	—	—
	Benign lymphadenitis.	Lymphadenectomy.	3	Do.	—	—
3	Injury lower lip complete division and separation from lower jaw.	Sterilization—repair as for hare lip.	1	Do.	—	—

TABLE II. Showing details of the cases operated upon—(Contd.)

S. No.	Diagnosis	Operation	Total No.	Result		Reference to No. of photo
				Cured	Died or otherwise	
4	Colloid goitre, thyroid.	Partial thyroidectomy under local novocaine.	2	Do.	—	2
	Thyroid adenoma bilateral.	Thyroidectomy (under local).	2	Do.	—	3
	Adenomata of neck left side.	Excision (under local).	2	Do.	—	4
	Injury neck cut throat—cutting thyroid and trachea.	Toilet, sterilization repair of trachea etc. (under local).	1	Do.	—	—
5	Acute mastoiditis.	Schwartz's mastoidectomy.	1	Do.	—	—
6	Enlarged tonsils.	Tonsillectomy guillotine method.	3	Do.	—	—
	Fibro-adenoma nasopharynx. Size 2"x2"	Excision.	1	Do.	—	—
7	Oesophagus—foreign body—coin.	Removal (under general ether).	1	Do.	—	—
8	Deflected septum with maxillary spur (obstruction right side nose).	Submucous resection of nasal septum and excision of maxillary spur.	1	Do.	—	—
9	Cystadenoma breast right.	Simple mastectomy (under local).	1	Do.	—	5
	Cancer breast left.	Radical mastectomy (under local), with skin grafting.	1	Do.	—	6
10	Penetrating gun shot injury.	Toilet, sterilization—removal of bullet and fractured rib.	1	Do.	—	—
	Foreign body air passages—stone in right bronchus near bifurcation of trachea.	Elective tracheotomy and removal of stone.	1	Do.	—	—
11	Acute generalised peritonitis.	Suprapubic laparotomy, drainage.	1	Do.	—	—
	Perforating injury. Abdomen herniation of intestine and omentum act general peritonitis.	Exploratory laparotomy after 36 hours of sustaining injury.	1	—	Died	—
	Hydatid cysts spleen.	Splenectomy.	1	Do.	—	—
	Splenomegaly.	Splenectomy.	1	Do.	—	—
12	Right inguinal indirect hernia.	Herniorrhaphy Bassini's, Halsted and Darnning's (under local).	29	Do.	—	7

TABLE II. Showing details of the cases operated upon—(Contd.)

S. No.	Diagnosis	Operation	Total No.	Result		Reference to No. of photo
				Cured	Died or otherwise	
	Left inguinal indirect hernia.	Do.	13	Do.	—	—
	Bilateral indirect inguinal hernia.	Bilateral herniorrhaphy in one sitting (under local).	5	Do.	—	8
	Ventral hernia.	Mayo's classical operation (under local).	2	Do.	—	9
	Umbilical hernia acquired and congenital.	Mayo's classical operation (under local).	3	Do.	—	10 10-a
	Femoral strangulated hernia.	Combined inguinal operation (Lothieson) (under local).	1	Do.	—	—
	Hernia en glissade (right side).	Herniorrhaphy and appendectomy (under local).	2	Do.	—	—
	Strangulated right indirect inguinal hernia.	Herniorrhaphy Bassini's (under local).	1	Do.	—	—
13	Fistula-in-ano.	Excision and saucerisation.	5	Do.	—	—
	Piles.	Hæmorrhoidectomy.	6	Do.	—	—
14	Acute obstructive appendicitis (æcolith found) in centre of lumen of appendix.	McBurney's appendectomy (under spinal).	1	Do.	—	—
	Acute appendicitis.	Do. (under spinal).	1	Do.	—	—
	Chronic appendicitis.	Appendectomy McBurney's and rt. paramedian incision (under spinal and local).	9	Do.	—	11
	Retrocaecal appendicular abscess.	McBurney's incision and drainage.	1	Do.	—	—
15	Renal lithiasis stone left pelvis of kidney.	Pyelo lithotomy (under spinal).	1	Do.	—	12
16	Stone in urinary bladder.	Suprapubic cysto lithotomy—both open and closed method.	17	Do.	—	—
	Advanced enlarged prostate (retention urine).	Suprapubic cystotomy.	1	Do.	—	—
	Cancer prostate (retention urine developing uræmia).	Do.	1	—	Died	—
17	Cancer penis.	Partial amputation with excision of groin glands.	1	Do.	—	—
	Phimosis.	Circumcision.	3	Do.	—	—

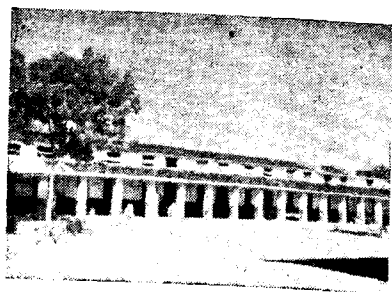


Fig. 1. Tinroofed ward of a mofussil Hospital at Banswara (Rajasthan).



Fig. 2. Colloid goitre thyroid. Partial thyroidectomy under local before and 10th day of operation. [Vide p. 198.]



Fig. 3. Thyroid adenomata bilateral. Thyroidectomy under local before and 2 months after operation. [Vide p. 198.]

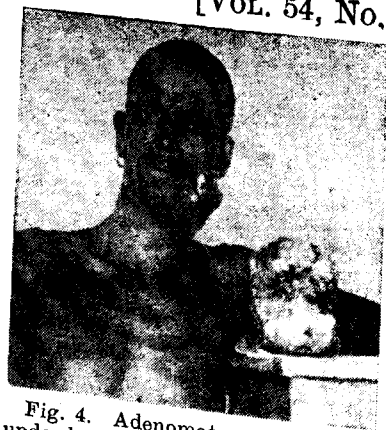


Fig. 4. Adenomata neck excision under local. 10th day after operation. [Vide p. 198.]



Fig. 5. Cystadenoma breast simple mastectomy. Before and 10th day of operation. [Vide p. 198.]



Fig. 6. Cancer breast. Radical massectomy under local with skin grafting. [Vide p. 198.]



Fig. 7. Splenomegaly: splenectomy 10th day after operation with removed spleen. [Vide p. 198.]



Fig. 10. Umbilical hernia in an obese female patient. Mayo's classical operation. Subcuticular stitches.

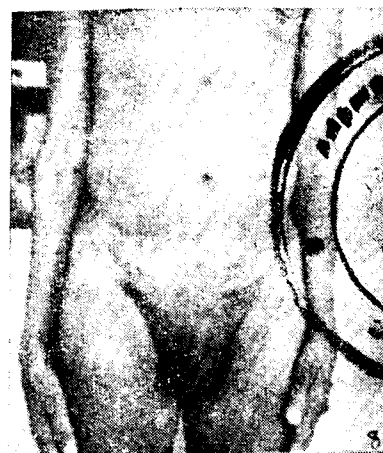


Fig. 8. Bilateral herniorrhaphy Halsted in one sitting. [Vide p. 199.]



Fig. 10(a). Congenital umbilical hernia. Mayo's classical operation. Before and after operation.



Fig. 9. Ventral hernia. Mayo's classical operation and suprapubic ligature tubes. In one sitting under local. [Vide p. 199.]



Fig. 11. Chronic appendicitis. 30 yrs' duration. Retrocaecal appendix adherent. 2 months after operation. [Vide p. 199.]



Fig. 12. Renal lithiasis stone in left pelvis of kidney. Pyelo-lithotomy. 10th day after operation. [Vide p. 199.]



Fig. 13. Polypus cervix (abnormal size). Excision. [Vide p. 204.]



Fig. 14. Vaginal hysterectomy. 10th day after operation. [Vide p. 204.]



Fig. 15. Fibroid uterus. Total abdominal hysterectomy. 10th day after operation. [Vide p. 204.]



Fig. 16. Interligamentous cyst. Subtotal hysterectomy. 20th day after operation. [Vide p. 204.]



Fig. 17. Interligamentous cyst ovary. Oophorectomy and bilateral salpingectomy. 10th day after operation. [Vide p. 204.]



Fig. 18. Unilocular ovarian cyst. Removal and bilateral salpingectomy. During operation and 10th day after operation. [Vide p. 204.]



Fig. 19. Multi-locular pseudomucinous cyst ovary. Oophorectomy and bilateral salpingectomy. 10th day after operation. Adhesive plaster on wound. [Vide p. 204.]



Fig. 20. Dermoid cyst ovary weighing 22 lbs. Before and 18th day after operation with cyst. [Vide p. 204.]



Fig. 20(a). Ovarian cyst undergone torsion. Adherent with intestines; shown during operation. Removal cyst. 10th day after operation. [Vide p. 204.]



Fig. 21. Lipoma chest. Excision. Before and 10th day after operation. [Vide p. 205.]



Fig. 22. Dermoid cyst scalp: duration 30 yrs. Excision. Before and 12th day after operation. [Vide p. 206.]



Fig. 23. Ileo-caecal T.B. Ileo-colostomy side-to-side anastomosis. Before and 18th day after operation. [Vide p. 206.]

TABLE II—Showing details of the cases operated upon—(Contd.)

S. No.	Diagnosis	Operation	Total No.	Result		Refer-ence to No. of photo
				Cured	Died or otherwise	
18	Hydrocele.	Winkelbaum's radical operation (4 and 3).	7	Do.	—	—
	Epitheliomata sero-tum.	Excision and orchidec-tomy.	1	Do.	—	—
	Varicocele.	Excision-vasectomy.	1	Do.	—	—
19	Sterility.	D and C.	6	Do.	—	—
	Salpingitis.	Bilateral salpingec-tomy and appendec-tomy.	3	Do.	—	—
	Cystocele.	Cystocele repair and advancement of blad-der.	1	Do.	—	—
	Polypus cervix	Excision.	2	Do.	—	13
	Adherent placenta.	Placenta extraction.	1	Do.	—	—
	Complete procidentia (prolapse uterus).	Vaginal hysterectomy.	4	Do.	—	14
	Fibroid uterus.	Total abdominal hyste-rectomy.	1	Do.	—	15
	Interligamentous cyst.	Subtotal hysterectomy and oophorectomy.	1	Do.	—	16
	Multilocular pseudo-mucinous ovarian cyst.	Oophorectomy.	1	—	Died	—
	Interligamentous cyst, ovary.	Oophorectomy and sal-pingectomy; bilate-ral.	2	Do.	—	17
	Ovarian cysts unilo-ular.	Removal of cyst and bilateral salpingec-tomy.	2	Do.	—	18
	Multilocular pseudo-mucinous cyst ovary and dermoid cyst of ovary.	Oophorectomy and bilateral salpingec-tomy.	4	Do.	—	19, 20, 20-a
20	Injury scalp and tem-ple-lacerated wound (car accident).	Toilet sterilization and repair.	1	Do.	—	—
	Compound depressed comminuted fracture skull.	Decompression.	1	—	LAA	—
21	Osteoma back (sca-pula infraspinatus region).	Excision.	1	Do.	—	—
	Simple fracture supra-condylar malunited.	Refracture setting plas-tering (open reduc-tion).	1	Do.	—	—

TABLE II—Showing details of the cases operated upon—(Contd.)

S. No.	Diagnosis	Operation	Total No.	Result		Refer-ences to No. of photo
				Cured	Died or otherwise	
	Colle's fracture ribs with lacerated wound hand and palm com-pound fractures.	Toilet-sterilization and repair-setting plas-tering.	1	Do.	—	—
	Right supracondylar.	Open reduction as advocated by Arnold K. Henry (extensile exposures applied to limb surgery).	1	Do.	—	—
	Radius and ulna (bone protruding out).	Open reduction.	1	Do.	—	—
	Left femur with severe hæmorrhage.	Sterilization, setting, and plastering.	1	—	Died	—
	Left tibia and fibula.	Winett Orr's closed drainage.	1	Do.	—	—
	Osteomyelitis with sequestrum.	Sequestrectomy and sancerization.	6	Do.	—	—
	Ilium bone left.	Sequestrectomy and canalisation of iliac crest elliptical inci-sion entering retro-peritoneally.	1	Do.	—	—
	Rib carries T.B.	Rib resection.	1	Do.	—	—
22	Deformity and keloid formation after severe burns.	Correction, excision of keloid and skin graf-ting.	3	Do.	—	—
23	Lipoma back	Excision.	1	Do.	—	—
	Chest	"	1	Do.	—	21
	Shoulder	"	1	Do.	—	—
	Scalp	"	1	Do.	—	—
	Left side abdomen (cancer).	Incision and closure (excision not possi-ble).	1	Do.	—	—
24	Gangrene foot.	Amputation arm.	1	Do.	Left against advice	Deve-loped tetanus
	Compound fracture tibia and fibula cru-shing injury).	Amputation at site of election.	1	Do.	—	—
25	Cataract RE	Intracapsular extrac-tion.	20	18 Cured	1 Septic	—
	" LE	Do.	8	Do.	—	—
	" RE	Extracapsular extrac-tion.	17	16 Cured	1 Septic	—
	" LE	Do.	12	Do.	—	—

TABLE II.—Showing details of the cases operated upon—(Contd.)

S. No.	Diagnosis	Operation	Total No.	Result		Reference to No. of photo
				Cured	Died or otherwise	
	Trichiāsis.	Transgrafting operation.	1	Do.	—	—
26	Chronic sinus buttock (extensive) TB?	Excision (involving whole buttock).	1	Do.	—	—
	Chronic sinus lumbar region after perinephric abscess?	Excision incision as for kidney exposure by oblique lumbar method.	1	Do.	—	—
	Chronic sinus frontal bone with eversion of upper lid.	Scraping and skin grafting (construction of lid).	1	Do.	—	—
27	Guinea worm cysts abdomen—multilobular thigh—very big and deep eye lid—encysted.	Excision complete.	3	Do.	—	—
28	Dermoid cyst scalp—forehead (during 30 years).	Excision.	1	Do.	—	22
29	TB Ileo-cæcal region chronic partial obstruction.	Ileo-colostomy side-to-side anastomosis.	1	Do.	—	23
Total			256		2 eyes septic 4 deaths 2 LAA	refer mortality rate

LAA = Left against advice.

1. Average pre-operative period—about one week (6.8) days.
2. Average post-operative period—about 12 days (11.6).
3. Average period of hospitalization—19 days (18.4).
4. Post-operative complications:—(i) Vomiting—only a few had two or three vomits within 24 hours of operation; (ii) headache—only two patients with severe headache (spinal anæsthesia) continuously for 3 days relieved by aspirin, Sardon, Veganin and I.V. Hexamine; (iii) distention of abdomen—A little distention not very uncommon specially in pelvic operation, noticed in a few cases was relieved by Carbachol, or Prostigmin injection and flatus tube. No case developed ileus; (iv) dysfunction of urinary bladder.—Only one case had to be catheterized (vaginal hysterectomy) for 5 days, otherwise the urine was passed naturally within 48 hours after operation. No case developed atonia of the bladder; (v) any other complication including lungs—only in one case (splenectomy) Ryles tube had

to be passed for suction of the stomach contents, otherwise no lung complication was noticed.

5. Percentage of sepsis—Two eyes developed panophthalmitis and one delayed meningitis (case of decompression of skull LAA) otherwise there was no sepsis.

6. Average post-operative day of removal of skin sutures, 8.68 days.

7. Percentage of sinus formation due to the use of unabsorbable suture material—nil.

8. Percentage of recurrence of hernia—nil; about 60% of the cases have been examined 2 or 3 months after herniorrhaphy, and not one had even impulse on coughing.

9. Percentage of operations under:—(i) spinal stovaine or nupercaine 13%; (ii) local novocaine or nerve block 60%; (iii) general ether inhalation 26%; and (iv) I.V. pentothal sodium 1%.

10. The mortality rate was less than 1%.

The case of prostate cancer in the series was very much advanced and uræmic symptoms had developed. On the insistence of the relatives, supra-pubic cystotomy was attempted in order to drain the bladder. The other case of compound fracture had profusely bled; and death was due to the hæmorrhage rather than to the surgical shock. Surgical procedure cannot be blamed for the death of the case of perforating injury of the abdomen, which was brought to hospital 36 hours after sustaining the injury (the horn of a cow was pushed into the left side of the epigastrium) and had distention of the abdomen, intestinal loop with omentum herniating out through the wound. Generalized peritonitis had developed and pus was found on opening the abdomen. So in fact only one death occurred as a result of surgical shock.

Points of interest.—1. Early ambulation of patients during the post-operative period was responsible for the low incidence of complications. If the surgeon recognizes that the good or bad sequelæ of surgery, depend entirely on the pre-operative preparation, the operation proper and the post-operative care, will prevent all avoidable complications.

2. Along with aseptic measures, the routine use of antibiotics during the pre-and post-operative periods was responsible for the good results and absence of sepsis. It should however be remembered that in no sense are they substitutes for good surgical technique.

3. Lack of tension on the skin sutures and their early removal often in 6 to 8 days eliminated ugly cross-hatching and wide scars which are illustrated in the photographs.

4. The 'Bhils' have marvellous powers of endurance and show considerable resistance to infection; they can stand operative procedures very well without serious complications.

5. Since general inhalation anaesthesia was avoided as far as possible, and since most operations were performed under spinal or local novocaine infiltration or nerve-block, the incidence of lung complications was *nil*.

6. The work detailed above was performed with the assistance of a C.A.S. Class II Lady Doctor, a few grade IV Compounders, some of whom are not qualified and ward attendants. This is mentioned first to show that given the enthusiasm, the desire and the will to serve humanity one can turn out excellent work with the minimum of equipment and staff.

Suggestion.—It would perhaps, not be out of place to mention here that doctors interested in surgery should be trained at the Headquarters hospitals for a minimum period of one year and later on posted to mofussil hospitals to afford surgical relief to the poor people. These doctors must have a working knowledge of X-ray and Laboratory techniques, without which they will be greatly handicapped. The Director of Medical and Health Services, Rajasthan—Dr. B. N. Sharma M.B., B.S., F.V.A.S. F.V.A.G. F.A.C.S. Zeagunis—has taken a bold step forward in this connection by selecting capable surgical hands from the C.A.S. Class I cadre which should be an eye-opener to other States in India.

I wish to express my grateful thanks to Dr. B. P. Singh, M.B., B.S., District Medical and Health Officer, Banswara, for giving me every assistance and cooperation and for supplying available equipment, instruments and machines.

I am very grateful to Dr. (Mrs.) Zachariah, Lady Doctor, who assisted me in all the operations on male or female patients and also helped in the pre- and post-operative treatment to female patients. My appreciation is due to Dr. R. S. Rathore, to compounders Nanalal, Jugalkishore, Kishanlal Laxminarayan and theatre-attendant Nanda who worked hard and gave their best cooperation to my grateful thanks are also due to Shri Saraf Natwarlal who helped me with the photographs.

ASSOCIATION OF EMPHYSEMA AND PEPTIC ULCER

Peptic ulceration should be suspected when an emphysematous patient has signs or symptoms of gastrointestinal disease. Steroid therapy should be used only with caution for emphysematous patients, since the corticoids may stimulate acid secretion.

Peptic ulceration was proved radiologically or by postmortem examination in about 20% of 586 patients with emphysema; an additional 20% had symptoms or signs but no radiologically demonstrable ulcer crater. This incidence is 3.6 times higher than expected by chance; the association is, therefore, significant.

The reason for high incidence of peptic ulcer with emphysema is not known. However, carbon-dioxide content of blood may increase gastric acid secretion, as may emotions of hostility and resentment. Adrenal corticoid secretion may be elevated by chronic stress.—(*Modern Medicine*).

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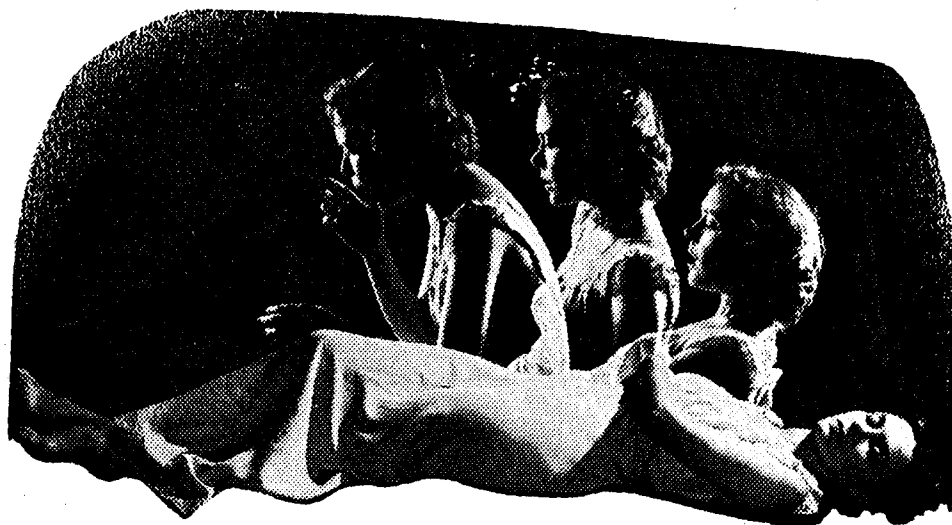
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SOME CLINICAL OBSERVATIONS IN THE TREATMENT OF VITILIGO*

C. H. VENKATESWARAN,
 Skin Clinic, R. S. Puram, Coimbatore

THIS paper deals with some observations gathered during the last two years in the course of treatment of 54 cases of vitiligo. The results of treatment of 9 cases previously together with my observations have already been published. For the sake of convenience and accuracy in assessment, the cases are classified into 4 groups:—

Group (i):—Having small lesions totalling on the whole not more than 1 square inch.

Group (ii):—Total area not more than 3 sq. inches.

Group (iii):—Above 3 sq. inches but less than 8 sq. inches.

Group (iv):—Above 8 sq. inches.

The influence of heredity.—Four out of the 54 patients gave a history of the disease in their parents or very near relatives.

Predisposing causes.—Three patients gave a history that the disease started after a bite by a small snake, or other insects. In two elderly patients above 60 years of age the patches commenced on the face and head after an attack of Herpes zoster affecting the first division of the fifth cranial nerve. The lesions appeared on the forehead and head first and then spread to the trunk and extremities.

The selective sites of vitiligo.—In 18 patients the disease first appeared on the lower lips, on an average not less than 5 years previously and then spread gradually. In 10 out of 18, the disease was confined to the lips only. Vitiligo of the lips is resistant to treatment because strong solutions cannot be applied to the lips and the hypopigmentation requires prolonged mild treatment including proper dental care and removal of other causes of oral sepsis. In 8 patients, the disease was first noticed in the prepuce and in 3 of them the disease was confined to the lips and prepuce only. In these cases circumcision was done and this with other measures resulted in the cure of the condition. In four young girls below 12, the disease appeared first in the fourchette and labia minora and in 3 of these girls it was limited to these parts. Two of these patients have been cured, and in the remaining two who are still under treatment show marked improvement. Vitiligo affecting the face, ears, neck and trunk responds rapidly to treatment, fingers less so, but the legs and specially the feet show the least response to treatment. I have four patients in whom all the lesions disappeared except those on the legs and feet.

*(Paper read at the Third All-India Dermatologists' and Venereologists' Conference held at Madras on 29-12-1956).

Specially contributed to the 'ANTISEPTIC.'

[209]

Association with other diseases.—Although a multidiagnosis or quintuple diagnosis had to be put down. In children it is very common to find Vitiligo with helminthic infestations, tonsillar sepsis, dental and nasal infections and anæmia and all place. In adults also helminthic infections, anæmia, intestinal amœbiasis and sometimes diabetes mellitus are frequently associated with Vitiligo. I had six cases with chronic septic tonsils. In three cases, the results after removal of the tonsils were remarkable and in three others there was no appreciable change.

Vitiligo in association with syphilis.—Only three cases gave a clear history of penile sore some years ago with a positive Kahn reaction. They were given full doses of PAM and watched for six months after the blood became negative to repeated tests. The Vitiligo did not clear up and they had to be put on *Ammi Majus Linn* extracts. During the same period I have come across three cases of true syphilitic leucoderma. All the three were imperfectly treated cases of syphilis, and the parts affected were the back of the head and neck and the palms of the hands. These three cases responded to proper treatment with PAM.

Anaemia in Vitiligo.—Routine laboratory tests showed that with the exception of six cases, the rest of the patients showed marked diminution both in hæmoglobin and red corpuscles. The anæmia was mostly of the microcytic or normocytic, hypochromic type, and prolonged oral administration of an easily assimilable iron preparation such as Colliron gave good results. In four cases the anæmia showed response only after Folic acid therapy.

Method of treatment.—Simultaneous administration of Meladinine tablets and application of the solution with exposure to day-light or sunlight at least an hour after application for 2 to 10 minutes once daily was the routine adopted. In children below 12, I have not used more than 2 tablets a day and in adults I use only two or three tablets a day. My experience has been that larger doses are not well tolerated and are not necessary. Prolonged treatment with 2 or 3 tablets a day, with a break of one week after a month's treatment is my usual routine. In my experience irradiation by sun's rays gave very good results five cases were treated by ultra-violet ray exposures. As a control, cases nearly similar in all respects were given solar radiation. The results with sun's rays were better. Both the tablets and solution were tolerated better by dark skinned individuals. Children and young adults tolerated the tablets very well. In 5 adults the tablets caused burning sensation in the stomach, insomnia, indigestion and the tablets had to be discontinued and only external application continued. Generalized pruritus

was the most common side-effect; 10 of the patients complained of this symptom three to six months after commencing this treatment. It is very important to start with a dilute solution externally and increase the strength according to toleration. I use a 1 in 5 solution in rectified spirit for the lips and start with a 1 in 3 solution for other parts of the body. In large areas if the undiluted solution is applied to start with, a severe dermatitis is caused with bullæ, and hence the necessity for caution and frequent observation of the patient.

Results of treatment.—If the patient is not above 65 years of age, and has no organic disease like diabetes mellitus, renal, hepatic, cardiac disease of hypertension, he may be selected for the treatment, and he should be warned of the necessity for prolonged treatment even up to 3 or 4 years. Given such patients, I am of the opinion that treatment with Meladinine is the best treatment for Vitiligo that we have at our disposal today.

TABLE I
Showing the results of treatment with Meladinine

Classification	Total No. of cases	Cured	Greatly improved	Improved	No response
1st degree	18	9	7	2	—
2nd degree	16	3	9	4	—
3rd degree	8	1	3	2	2
4th degree	12	—	3	5	4
Total	44	13 or 24%	22 or 41%	13 or 24%	6 or 11%

In this disease the ætiology of which is still obscure, the progress is very uncertain and for which there is no specific cure, the selection of cases is important. All children, young men and women should be treated even though they have very few lesions, as there is no certainty that the disease may not spread. This is a disease causing great mental anxiety and distress, not only in the young people affected but also in their parents and hence the attending physician should exercise sympathy, patience, tact and constant vigilance in examining and treating the patient as a whole, and not merely see the hypopigmented spots perhaps strewn with black or brownish pigment at every visit.

Conclusion.—A psychosomatic approach is essential together with a thorough examination to ascertain what is wrong or is lacking in the patient. A comprehensive treatment for all the observed errors and deficiencies is essential together with a prolonged course of treatment with Meladinine externally and internally. This disease is fairly common in our country and causes considerable misery in many families; it is therefore, a research problem for all the dermatologists in India. We should not look for guidance and help from London, Paris, or New York in solving our problems but put our shoulders to the wheel and make

intensive and extensive studies on these pigmentary disturbances. Well-equipped research laboratories and dermatological departments should be started both at the Centre and in the State capitals throughout the country. These institutes should be staffed by the right type of men with a *flair* for research and a spirit of service to humanity.

REFERENCE: 1. Venkateswaran, C. H., (1955)—*Jour. Ind. Med. Assoc.*, 16: 618.

UNENCUMBERED INCISIONS THE QUICKER HEALING OF WOUNDS

Surgeons who have undergone surgery themselves have learned that, although the major risks of surgery have steadily decreased, the minor inconveniences and discomforts remain as irksome as ever before. The many relatively trivial procedures which follow the main performance in the operating room contribute considerably in making the over-all experience of any operation an unpleasant one.

Fortunately, now that early ambulation has come in, the bedpan is on the way out—unlamented. A critical appraisal will disclose other conventional procedures which may well be eliminated. Palumbo, Monning and Wilkinson have recently questioned once more the rationale of another uncomfortable feature of the postoperative routine—the dressing of wounds.

Berkeley and Bonney and Mengert and Hermes were early advocates of the uncovered incision. Later, other clinicians reported favourably on their own experience with the principle; but many surgeons have remained either unconvinced or uninterested.

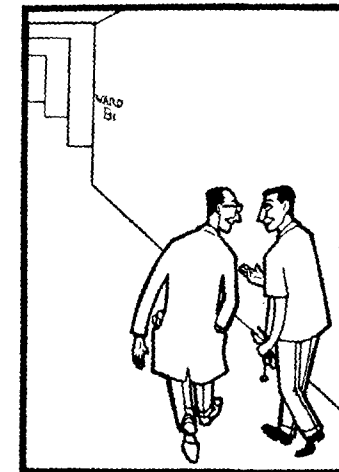
Palumbo, Monning and Wilkinson have observed 222 clean surgical wounds, in half of which the dressings were left in place for several days, while in the other half they were removed after 6 to 24 hours. The wounds included thoracotomy, laparotomy, and hernia incisions. In this controlled study, there were fewer complications in the wounds exposed to the air from the first day.

These observations will not greatly surprise most surgeons, who have learned that cleanly incised wounds are sealed off by fibrin within a few hours after surgical closure, and that granulation tissue bridges the gap with amazing rapidity. The exposure treatment of burns has demonstrated that coolness, dryness, and light are reasonably efficient bacteriostatic agents—even in this era of antibiotic "wonder drugs." Experience has taught most of us that inadequate haemostasis is more to be feared than the stray staphylococcus.

Elimination of the traditional thick dressings, bound tightly with wide adhesive straps, from clean surgical wounds will conserve much nursing time and material. The patient will be spared the discomfort of dressing changes—an unpleasant procedure even in the gentlest of hands—but more importantly, healing will probably be accelerated.

For the past five years Dr. Arthur Baptisti, Jr., has covered all freshly closed, clean laparotomy wounds with only a single layer of rectangular gauze, 6 by 3 inches, anchored at the top and bottom with a single short strip of inch-wide adhesive tape. This loose gauze strip, which allows the air to reach the incision, remains in place until the sutures are removed about the fifth post-operative day. At this time the wound is usually well healed and thereafter remains uncovered. The results with the routine have been excellent, both from the stand-point of healing and comfort.

It would seem that persistence with the ritual of prolonged, heavy wound dressing may spring more from deference tradition than from scientific reasoning.—(Editorial: *Intern. Med. Dig.*, 69: No. 3, Sep. 1956).



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Cases and Comments

TUBERCULOUS MENINGITIS AND OPTIC ATROPHY

B. B. MUKHERJI, M.B. (Cal.), M.N.C.P. (Lond. & Edin.),

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Two cases of optic atrophy developing from tuberculous meningitis have been noted in a series of 16 cases treated by me in the last 4 years. The possible causes for this dreadful sequela of tuberculous meningitis and the measures that may be adopted to prevent such a sequela will be discussed.

Case reports.—CASE 1:—S. S., male, 5 years old, was admitted in hospital in an unconscious state on 26-2-'55. He had been suffering from irritability, anorexia, headache, and occasional fevers for one month. He became drowsy and restless about 14 days previously and had gradually progressed to a comatose condition.

The clinical picture was fairly typical of tuberculous meningitis. The diagnosis was established by the examination of the cerebro-spinal fluid.

Investigations.—C.S.F.:—Pressure moderately increased. Cell count—120 per cmm. mostly lymphocytes. Protein—100 mg. %; Chlorides—545 mg. % and Sugar—10 mg. %. Examination of smear from centrifuged cerebrospinal fluid did not reveal A.F.B.

Tuberculin patch test:—Negative.

X-ray of chest:—N.A.D.

Ophthalmoscopic examination:—Optic discs pale; no tubercles in the choroid.

Treatment and progress.—Nasal feeding had to be done regularly 4 times a day for several weeks. He was treated with streptomycin 0.5 g. I.M. once daily for 12 weeks and then 0.5 g. every other day. 50 mg. of streptomycin was administered intrathecally every day for 30 days and then every other day for another 20 injections. He was also given isoniazid 50 mg. twice daily; P.A.S.—1 g. 4 times a day after meals, multivitamins and iron.

Improvement was noticed in 3 weeks' time. He gradually came back to consciousness in 6 to 8 weeks when he complained of impaired vision.

Ophthalmoscopic examination revealed optic atrophy. An eye specialist's opinion was obtained. A course of vitamin B₁—100 mg. daily for 10 days was then given when his vision somewhat improved. Further courses of vitamin B₁ had no effect.

The patient was discharged from hospital on 28-5-'55. He had treatment for 1 year with intramuscular streptomycin every other day, isoniazid, P.A.S. and general tonics by mouth.

He was cured of the tuberculous meningitis but he has been left with the dreadful permanent disability of an optic atrophy.

CASE 2:—H. S., male, 26 years, was admitted in the hospital on 17-2-'56 in an unconscious condition. He was having severe headache and irregular fever for 5 weeks. About two weeks ago he had become semi-comatose which progressively deepened.

The clinical picture was of tuberculous meningitis. The diagnosis was established by the examination of C.S.F.

Investigations.—C.S.F.:—Pressure moderately increased. Cell count—500 per cmm. mostly lymphocytes. Protein—120 mg. %; Chloride—585 mg. %; Sugar—15 mg. %; No A.F.B. detected on examination of a smear from the centrifuged C.S.F.

Ophthalmoscopic examination—discs pale; no tubercles in choroid.

X-ray of chest—N.A.D.

Treatment and progress.—Regular nasal feeding was given 4 times a day. Streptomycin 1 g. i.m. daily. 100 mg. of streptomycin intrathecally daily for 30 days and then every other day for another 15 injections. Isoniazid—300 mg. and P.A.S. 12 g. a day were also given in divided doses in addition to a liberal use of multivitamins and iron.

Improvement was noticed 3 to 4 weeks after his admission in hospital. He gradually got back consciousness a few weeks later, when he complained of loss of vision.

Ophthalmoscopic examination revealed optic atrophy. Courses of vitamin B₁ in large doses did not improve the vision.

The patient was discharged from hospital on 18-5-'56. He was examined again in the 1st week of October '56 when he was continuing the same treatment. Vision had not returned.

Discussion.—Optic atrophy in these 2 cases was in all probability due to pressure-effects of the tuberculous exudate on the optic nerves, chiasma and optic tracts. The exudate collects at the base of the brain and the inter-peduncular fossa extending from the chiasma in front to the cerebellum behind. The compression effects of the exudate on the optic paths may have possibly caused the irreversible changes of optic atrophy on both sides.

No other cause for the optic atrophy seems plausible. The patients were not suffering from any familial disorders. No papilloedema or lesion on choroid or retina could be seen on ophthalmoscopic examination. Kahn test of blood was negative. The drugs used in the treatment for tuberculous meningitis are not so far known to cause toxic optic atrophy. Isoniazid may occasionally cause peripheral neuritis but it is not known to affect only the optic nerves.

The treatment of such optic atrophies obviously lies in its prevention. Measures are to be taken before irreversible changes take place in the optic paths. Such measures are:—

(1) Early diagnosis and prompt treatment of tuberculous meningitis before permanent changes have taken place in the optic paths.

(2) Use of anti-exudate agents should be considered the chief anti-exudative agents being:—(a) Streptokinase; (b) intrathecal tuberculins or P.P.D.; (purified protein derivative); (c) cortisone and A.C.T.H. and (d) Trypsin and Heparin.

Streptokinase—acts by activating plasminogen which must be present in adequate quantities for the streptokinase to become effective. Cathie's report (1950) regarding efficacy of streptokinase was favourable. Dubois (1952) however, explains the failure of streptokinase to be due to the inadequate quantity of plasminogen usually found in the cerebrospinal fluid in tuberculous meningitis.

Intrathecal tuberculin and P.P.D. (Purified Protein Derivative):—Smith (1950) discovered the anti-exudative property of tuberculin in tuberculous meningitis complicated by spinal block. She observed dramatic results with intrathecal tuberculin in very seriously ill children who were restored to almost normal health. Taylor (1954) suggests that P.P.D. has anti-exudative properties in the treatment of tuberculous meningitis and in his Oxford series of cases transverse myelitis was uncommon amongst patients who were receiving intrathecal tuberculins.

Cortisone and A.C.T.H.—Although these drugs are known to activate a tuberculous focus, they can safely be administered if used cautiously under the umbrella of anti-tuberculous drugs. Ashly and Grant (1955), in a series of 12 cases of tuberculous meningitis treated with standard treatment, half the cases however, having oral cortisone in addition, found complete recovery without neurological complications in the group having additional cortisone as compared to 1 death and 3 cases of permanent neurological sequelæ in the other group. De Laverne and others (1954) found with cortisone, remissions from blindness thrice in a woman suffering from tuberculous meningitis which relapsed each time cortisone was discontinued. Later they failed to achieve such success in two other cases. Shane and Riley (1953) administered cortisone in seven cases two of whom died. The amount of exudate at the base of the brain in these two cases on *post mortem* was however found to be less when compared to their earlier cases. Bulkeley (1953) treated 31 cases without controls and no definite conclusions of value can be drawn from the results they had regarding the value of A.C.T.H. Michel *et al* (1955) treated eight cases with oral cortisone with complete recovery in all without any neurological sequelæ.

Dangers of cortisone therapy are dissemination of tuberculous infection, sodium retention and potassium depletion, suprarenal failure during withdrawal of the drug, advent of secondary infections and septicæmia. The new derivatives of cortisone—Prednisone and Prednisolone—are stated to be somewhat free from side-effects of sodium retention and œdema and the results obtained with such steroids are awaited with interest. *Trypsin and heparin* have been used intrathecally for dissolving tuberculous exudates and their results are also awaited. These drugs are not ordinarily to be had in this country.

Summary.—In a series of 16 cases of tuberculous meningitis treated by me two developed optic atrophy, as a dreadful sequela.

The cause of optic atrophy in both cases appears to be the pressure of the tuberculous exudate on the optic paths.

The best measure of preventing such dreadful complications would appear therefore, to be early diagnosis and prompt treatment before irreversible changes have occurred in the optic paths.

In cases of tuberculous meningitis coming up late for treatment and particularly for those showing pallor of the optic discs on ophthalmoscopic examination, the use of anti-exudative agents should be seriously considered. In fact they should be tried in such cases to evaluate more precisely the effectiveness of anti-exudative drugs in preventing this dreadful sequela.

My grateful thanks are due to Dr. N. K. Munshi, for his valuable opinion on the results of his examination of the eyes of both the cases and to Dr. S. K. Banerjee, Assistant Professor of Pathology, Calcutta Medical College for kindly examining for me the cerebrospinal fluids of these 2 patients.

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LOBECTOMY FOR BRONCHIAL CARCINOMA

Lobectomy should be done instead of pneumonectomy for bronchial cancer when possible. Results of lobectomy are as good as or better than those reported for pneumonectomy. Surgical mortality is lower and post-operative pulmonary function better.

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The outcome is closely related to glandular involvement. With lymph node metastases, only one-third of patients survive for two years, whereas half of the patients without nodal involvement do.

Almost half of the fatalities after lobectomy are due to general metastases, and another one-fourth to local extension. About 90% of deaths from metastases occur within two years of operation.—(*Lancet*, 270: 349-353, 1956-via *Modern Medicine*, 15-9-1956).

A CASE OF HYPERNEPHROMA SHOWING UNUSUAL SYMPTOMS

K. P. SEN GUPTA, M.B.,

Assistant Surgeon, L. M. Hospital, Asansol

A MALE, aged about 40 years, was admitted in L.M. Hospital, Asansol on 8-2-'56 with the complaint of pain in front of the left groin radiating downwards to the knee. The same kind of pain was felt at times along the right groin also. The pain was almost continual with aggravation at nights. There was occasional fever and the pain was so severe at times that he could not sleep at nights even with the administration of Pethidine hydrochloride 100 mg. intramuscularly. Duration of the illness was about nine months. He was treated on conservative lines without any benefit.

Examination:—Clinical examination confirmed by radiology did not reveal any pathology of the lower lumbo-dorsal, lumbo-sacral, sacro-iliac or hip joints. The muscle power was equal in both lower limbs although a slight wasting was noticed on the left side as compared with the right side. The testes, spermatic cord, and hernial apertures showed no abnormality. The abdomen was soft without any swelling or lump on palpation. The spleen, liver, heart and lungs were all normal. His general health showed a tiredness and exhaustion probably due to the loss of sleep and want of nutrition owing to lack of appetite. P. R. examination did not reveal any abnormality in the prostate, seminal vesicles or rectum.

Laboratory examinations:—Blood hæmoglobin 65%; total RBC 3½ millions; total WBC 8000 cmm. Urine: reaction acid; Sp. gr. 1012; albumen and sugar absent; microscopically too no abnormality was detected. Stool: nothing abnormal.

Discussion.—The chief complaint was pain from the front of the groins along the thighs. Then there was temporary remission of pain he used to feel quite normal. As the cause of the pain could not be ascertained, palliative treatment was given and the patient was advised to consult a neuro-surgeon to which he agreed. On the night previous to his proposed leaving this hospital, he had an attack of hæmaturia with discomfort on the right side of the abdomen. He was again examined during this attack but no swelling or lump could be palpated in either kidney region. A plain skiagram and an intravenous pyelogram were taken. The former showed an enlargement of the right kidney and the pyelogram revealed normal excretion and also normal patterns of the calyces, pelvis and ureter on the left side. The right kidney did not excrete the dye at all. The calyces were not outlined. The opinion of the radiologist was the left kidney was functioning normally while the right appeared to be non-function-

ing. The larger size of the right kidney with filling defect in the calyces and right renal pelvis was highly suggestive of hydro-nephrosis. The radiologist's finding was not corroborative of the clinical data. As the hæmaturia was almost painless the following further investigations were carried out keeping hypernephroma and Koch's kidney infection in mind. The lungs were X-rayed but did not reveal malignant metastasis or tuberculous infiltration. The urine showed plenty of RBC's and a trace of albumen. AFB could not be detected by the concentration method. E.S.R. was 90 mm. per hour.

Having completed the possible investigations detailed above it was decided to explore the kidneys; but which one to explore was a problem. For the patient was all along complaining of pain on the left side but the discomfort during the attack of hæmaturia was on the right side. Taking the radiological finding as the guide, I decided to open the right kidney from the back. On exposure it was found enlarged as a whole, its upper three fourths being more markedly enlarged and the tumour was irregular and hard in consistency. Adhesion was present all round especially on the anterior surface. The lower pole was softer and appeared to be normal. The condition after exploration was considered to be one of renal neoplasm and the nephrectomy was completed after a painstaking dissection.

The removed kidney was slit open on its convex border and the upper three fourths of the kidney was found invaded by a light yellowish hard growth encroaching upon areas of the calyces. The growth had a tendency to invade the renal pelvis as well. The outer surface was irregular. The lower one third was healthy and had retained the normal pattern. On the anterior surface the area which was adherent to loops of the duodenum was softer. Biopsy could not be done for lack of facilities.

The pain which was a conspicuous symptom before operation disappeared like magic. The agonising troubles being no longer present the patient became quiet, and slept well at night; and gradually but slowly he improved in his general health. Union of the post-operative wound was good after the removal of stitches and the patient was discharged from hospital after three weeks, and advised to take further treatment from some cancer institute at Calcutta.

Summary.—This case was referred as a case for a neuro-surgeon. The onset of sudden hæmaturia changed the entire outlook and the line of investigation then followed led to a diagnosis of Hypernephroma of the right kidney.

Acknowledgement.—I wish to express my sincere thanks to the Civil Surgeon of Burdwan for permitting me to publish this case report. My thanks are also due to Dr. H. K. Chakraborty M.B., and Dr. S. C. Adhicary for their kind help in the preparation of this report.

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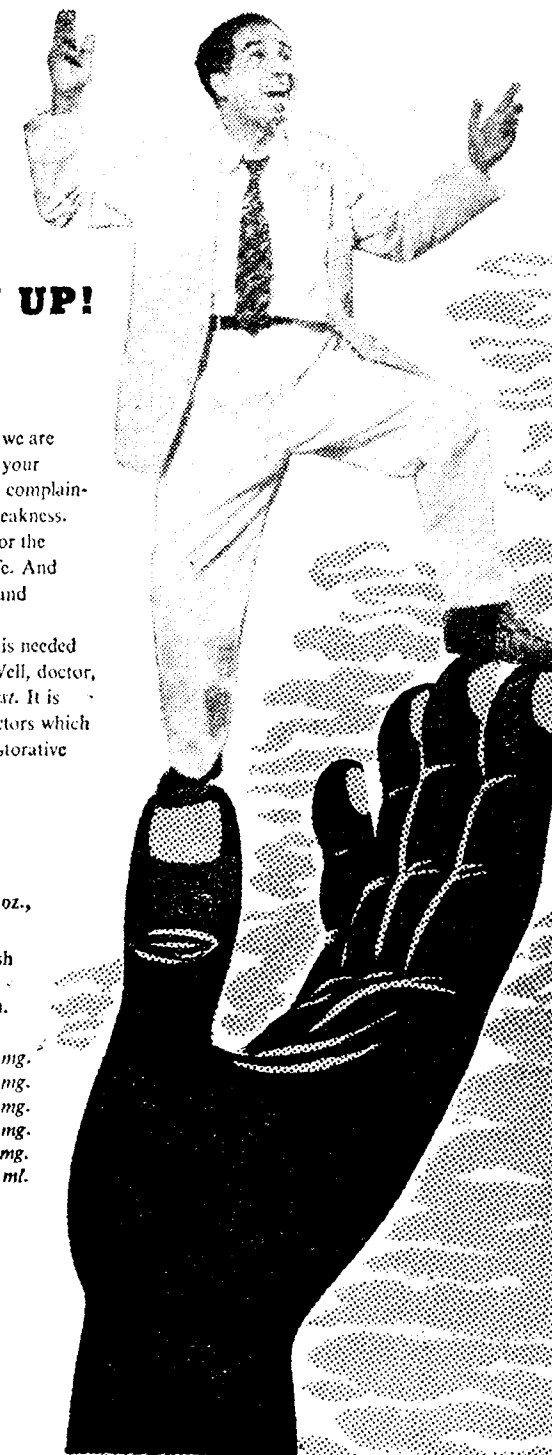
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Editorials

THE FOURTEENTH INTERNATIONAL TUBERCULOSIS CONFERENCE

A Brief Resume of the Scientific Reports, and Discussions at the Conference

SOME of the world's well-known workers on Tuberculosis participated in the Scientific Sessions and Symposia held in connection with the International Tuberculosis Conference and we now give a short account of the reports and discussions, as promised in our last issue.

Economic, therapeutical, diagnostic and biological problems relating to the use of isoniazid and the INH-resistant tubercle bacilli were discussed at the First Scientific Session. Twelve papers in all were placed before the Conference and 20 eminent doctors took part in the discussion which was under a panel of 16 members from France, Germany, India, Italy, Japan, Holland, Rumania, Spain, Switzerland, Turkey, USA, and USSR. Delegates from other countries were also invited to express their views on the subject. Dr. GARDNER MIDDLEBROOK of USA presented the principal report on the subject and laid stress on the need for great care and circumspection in the treatment of tuberculosis patients with isoniazid as the problems created by the resistant-bacilli were grave and very real. The difficulties may be classified under the three different aspects in which the resistant-bacilli presented themselves to the doctor: first as a germ, secondly, from the aspect of the host (patient), thirdly, from the public health aspect or the effect on the community and possibility of increased infection. A fourth factor was also to be taken into account, viz., the economic factor.

Dr. MIDDLEBROOK emphasized the quantitative aspect of resistant-bacilli and analysed these reactions. He also included their susceptibility to hydrogen

peroxide. He placed much stress on the implications of this phenomenon, particularly for the formulation of changes in public health measures.

Dr. NOEL RIST and Prof. BORIS KREIS (France) in their paper detailed results of tests on guinea pigs and human beings and stressed the difference between the reactions of the two. They emphasized the wide variety in which the bacilli, which resisted Isoniazid were to be found, the extent of their sensitivity and the frequent occurrence of mixed varieties of bacilli. They however, maintained that the reaction of Isoniazid on guineapig-bacilli made it impossible to foresee their likely behaviour in the case of human beings who could best be studied only clinically.

Dr. FREERKSON and Dr. MEISSNER (Germany) listed six important changes they noticed in the nature of the bacilli with the introduction of Isoniazid. *First*, impairment of growth, *secondly*, weakening of sensitivity, *thirdly*, reduction in their activity as catalytic agents, *fourthly*, in the guinea pig especially, low virulence, *fifthly*, the hereditary nature of the activities as catalysts of individual bacilli and *sixthly*, reduction in their viability after Isoniazid could not be increased by resort to other drugs at a later stage: also, the initial resistance to Isoniazid was more marked in adult than in children.

Prof. DADDI and Prof. M. LUCCHESI (Italy) detailed their observations during tests of virulence of Isoniazid resistant-bacilli and specified the relationship between the virulence of the bacilli and their catalytic activity.

Prof. TADAO TODA (Japan) said the study of the behaviour of the resistant bacilli was of importance not only in therapy, but also important from the biological and genetical points of view. He posed the important question of how the magnitude of virulence, which is a main characteristic of the bacilli, could be measured.

The members of the panel emphasized that anti-microbial drugs given singly produced resistant bacilli faster than when two or more drugs were used.

Dr. WALSH McDERMOTT (USA) emerged as the chief protagonist of the use of Isoniazid as a cheap drug, especially in countries economically backward and with a large number of patients. He suggested the treatment of adults and children found to be infected by tubercle germs with Isoniazid, even though they might not have symptoms of the disease. He maintained the problem was the same in developed as well as in underdeveloped countries.

Dr. SIRSI (India) pointed to the lack of mechanism to determine the presence and virulence of resistant bacilli. All that was known was that in some way, Isoniazid interfered with the organic growth of the tubercle bacilli.

The members of the panel were generally of the view that tubercle bacilli never increased in virulence as a result of Isoniazid treatment. Considerable difference of opinion prevailed on the degree of resistance produced. Equally contradictory were the opinions expressed on the degree of the danger to the community as a whole, while some doctors opined that Isoniazid-resistant bacilli increased the infectious aspect of the disease.

Dr. JOSEPH (India) introduced the economic aspect of the question and said the economic factor had to be taken into consideration by under-developed countries. In India, however, he said efficacy of Isoniazid had not been tried out, as dependence on a single drug in India would be considered heresy. The possible menace of the use of the drug alone had held the public eyes so much that even the mention of the method was likely to be discountenanced.

Dr. WU of China said that the combined use was advisable so long as the biological relationship between Isoniazid and the tubercle bacilli was unpredictable.

Dr. A. C. UKIL of India, said the scientific aspect of the treatment should be given more importance than the economic aspect. If it was necessary that

the cheaper Isoniazid should be combined with the costlier P.A.S. or Streptomycin, economic considerations should not be allowed to stand in the way.

Dr. NASSAU of Britain also wanted treatment first with Isoniazid alone to be followed up, if necessary, with treatment by a combination of drugs.

The question whether persons suffering from lung tuberculosis should be treated in sanatoria or be asked to take their treatment from dispensaries or out-patient wards of hospitals was discussed at the Second Scientific Session.

Prof. GRIESBACH of Germany submitted the principal report which was entitled, "clinical results of ambulatory treatment of pulmonary tuberculosis." Prof. COTTEN of Edinburgh University, presided.

Prof. Griesbach said it was not possible to maintain any longer the opinion hitherto held that ambulatory "chemotherapy" is inferior to treatment in hospital or sanatorium for all forms of lung tuberculosis. Better results by "hospitalization" or by ambulatory treatment, depended not only on the type and stage of tuberculosis which the patient presented, but also on the psychological attitude of the patient towards his surroundings, his work, and his illness.

Absolute indications for hospital treatment were for cases with very acute types of pulmonary tuberculosis and in cases where surgical interventions were planned. The method of ambulatory treatment should not follow a fixed scheme, and it should, in principle, be carried out by experienced specialists; there was no doubt, that ambulatory long-term treatment of lung tuberculosis with adequate drugs given in correct dosage, reduced the danger of spreading infection, and besides preventing a relapse, helped to achieve a definite cure and also minimized relapse-rates.

Dr. C. G. YHAVER of Canada and Dr. G. GRAVESON of Denmark favoured ambulant therapy when certain precautionary measures were observed *namely*: satisfactory co-operation of the patient, preliminary "hospitalization" of feverish cases, continued exact control and the possibility of supplementary surgery.

Dr. B. SIKHAND, Director of the New Delhi Tuberculosis Centre who had been carrying out planned and controlled domiciliary treatment in selected areas of New Delhi for nearly 5 years, stated that very satisfactory results had been obtained and so he strongly advocated the measure.

Dr. LEVI VALENSI of Algeria, Dr. T. IWASAKI of Japan and Dr. LUIS DE VELASCO of Spain related their experiences which were all in favour of ambulant therapy applied early, together with rest during the first few months of the disease.

Dr. M. GILBERT of Switzerland said, under favourable conditions treatment in the home with rest, when applied according to the principles observed in hospitals, gave results comparable to those which can be obtained in sanatoria. In severe cases, however, there was an advantage to be gained from making the initial attack on the disease in hospital or sanatorium.

Dr. HOWARD W. BOSWORTH of the U.S. said that ambulatory chemotherapy, when properly used, had become an important factor in the treatment of pulmonary tuberculosis, but the trend was definitely towards including hospital or sanatorium care whenever possible.

Prof. PHILIPPE CHEBANOV of the Soviet Union said in the USSR ambulatory treatment of lung T.B. patients by means of anti-bacterial preparations was widely practised. He said the toxic effect of antibiotics was not great and did not constitute an obstacle to ambulatory treatment of T.B. patients.

The consensus of opinion after the discussions was that with the extensive use of antibiotic drugs treatment of T.B. at home, i.e. ambulatory therapy, could be extended but with sufficient provision for medical attention.

The view was held during the discussions that it should be left to doctors to decide in each particular case, depending on the stage of the disease, whether treatment should be done in a sanatorium or at home.

The incidence of tuberculosis in under-developed countries and its relation to environmental conditions was the main theme of the Third Scientific Session and was introduced by Dr. P. V. BENJAMIN of India who said that T.B. seemed to be widely prevalent in under-developed countries where there was a high infection rate, though it might be undetected and unaccounted for.

In a comparative study between figures for developed and under-developed countries, Dr. BENJAMIN said the rate varied from 72 to 77 per 100,000 population in under-developed countries as against 9 to 63 per 100,000 population in developed countries. Though the latest figures for Africa showed a declining tendency, the problem, as indicated by data, remained great. Dr. BENJAMIN's suggestion found ready acceptance among all the doctors who were present.

Unanimity was equally evident on the natural corollary—that of raising the general standard of living, apart from immediate preventive and curative measures to be taken to arrest further infection.

The methods widely practised in under-developed countries to evaluate the incidence of the disease through mass miniature X-ray surveys and sputum tests, though generally accepted by the doctors as the best methods available, were found not practicable by delegates from many countries owing to limitations of finance, equipment, personnel and the time factor. Divergent views were expressed on the practicability of random sample surveys owing to the inter-play of various factors.

Dr. ARVID WALLGREN (Sweden) pointed to the relationship of tuberculin sensitivity in childhood to the prevalence of the disease in different countries. Tests of school children, should be able to provide a rough estimate of T. B. morbidity in an area and also the pattern of the development. Conclusions arrived at with this method, he argued, would not be affected by the location of the area in economically backward or advanced countries.

Prof. FERNANDO GOMEZ (Uruguay) argued that the rate of incidence from T. B. as established by mass X-rays in economically under-developed countries was disproportionately lower than the true extent of T. B. infection in these countries.

Prof. GIOVANNI L'ELTORE (Italy) was inclined to divide the world into geographical zones on statistical data collected by him, indicating the north, and eastern zones of the world with the highest T. B. mortality rate varying from 2 to 4.5 per thousand population. He found the incidence more accentuated in India, the Philippines and less in Soviet Russia, Poland and Czechoslovakia. He found it least in the north-western zone with a rate of 0.5 per thousand almost identical in the south-eastern zone with the difference that in the southern zones it fluctuated.

Four subjects were discussed in the symposium held at the concluding session of the conference. They were the 'Role of voluntary bodies in tuberculosis control programme,' 'Importance of nutritional factors in tuberculosis,' 'Cortisone in the treatment of tuberculosis' and 'Value of tuberculin reactions for the selection of cases for B.C.G. vaccination and significance of post-vaccination allergy.'

Mr. B. M. CARIAPPA, Secretary of the Tuberculosis Association of India, presenting a report on the subject of the role of voluntary organizations in T.B. work, said that depending on the Government for everything would curb individual effort. He emphasized that voluntary organizations had a very important role to play in the control of tuberculosis in the various countries. During the last two decades the Tuberculosis Association had directed its activities mainly towards creating public consciousness about the disease and promoting voluntary effort.

Dr. C. GOPALAN of India presenting the report on the importance of nutritional factors in tuberculosis, said clinical studies with different diets on tuberculosis patients indicated that for successful treatment, adult cases of tuberculosis of moderate severity required at least about 100 grams of protein daily, a major portion of the protein being of animal origin.

Prof. KREIS of France said he thought that probably the deleterious effects of tuberculosis would be apparent only in advanced malnutrition.

Dr. SIRSI of India said his investigations had shown that severe under-nutrition increased the susceptibility of animals to tuberculosis, while minor deficiencies of protein were without apparent effect.

Dr. HASAN of Pakistan presented epidemiological evidence pointing to a relation between increased incidence of T.B. and inadequate food supply, in the Punjab.

Summing up, Dr. Gopalan pointed out that there was to-day overwhelming evidence to show that malnutrition was a very important aggravating factor in tuberculosis.

A panel of experts with Prof. E. BERNARD of France as moderator, held the unanimous view that Cortisone therapy should always be given with anti-microbial drugs.

The members of the panel agreed that in the case of patients who had previously had prolonged treatment with Isoniazid and had Isoniazid-resistant tubercle bacilli, treatment with Cortisone, even though combined with Streptomycin and Isoniazid, could be extremely dangerous.

There was no agreement among the experts on the question whether Cortisone treatment should be given in the hospital or at home. Some said that such treatment could be carried out at home but others emphasized that treatment with this drug should always be carried out in hospital.

Another panel of experts, presided over by Prof. H. J. USTVEDT of Norway expressed the unanimous view that a tuberculin test should always be carried out before B.C.G. vaccination.

Prof. USTVEDT said that the panel agreed that carefully controlled studies were needed to evaluate whether or to what extent people with low-grade sensitivity would benefit from BCG vaccination.

Expressing the considered view of the panel, he said that till such time as such studies were made, the practical BCG programme should be carried on as before using a single pre-vaccination test with a small dose of tuberculin (for instance 5 TU) and vaccinate all those who did not react to this dose.

In this way, he said, individuals with essentially no sensitivity would be vaccinated as well as individuals with low-grade sensitivity. There was no reason, whatsoever, to assume that the latter individuals were harmed by the BCG vaccination. On the other hand, added Prof. Ustvedt, they could derive some benefit from it.

Delegates from 12 Far Eastern countries adopted a resolution at the end of the conference to form an Eastern Regional Committee of the International Union Against tuberculosis with a Secretariat at New Delhi. Dr. P. V. BENJAMIN would currently be the President of the Union and of this Committee. This would be the third Regional Committee to be formed since 1952. The Committee is expected to bring together specialists from many countries dealing with almost identical problems and under similar circumstances.

THE NEED FOR PSYCHIATRIC CLINICS IN ALL MEDICAL INSTITUTIONS

INAUGURATING the Eighth Annual Conference of the Indian Psychiatric Society at the Government Mental Hospital in Madras on 1st February 1957, Dr. A. LAKSHMANASWAMI MUDALIAR, Vice-Chancellor of the Madras University said that psychiatrists will have to play an important role in instilling into the mind of man the needs of tolerance, understanding, a sympathetic outlook and a cosmopolitan spirit which are very much needed at the present day. So psychiatry, like public health, must be continuously taught to all students of medicine. Dr. MUDALIAR expressed his belief that 95 per cent of the patients could recover with no medicine at all, if doctors adopted the right bedside manner. He added, "in humility, that the cures for which doctors took credit were, more or less, a result of psychic pressure on the patients. This is also brought out by the fact that the hospitals in most parts of our country are so terribly overcrowded, understaffed and scantily equipped that the treatment provided under such conditions cannot obviously be very effective. Yet a very large percentage of the patients is, happily, cured and it is a marvel that so much is accomplished with such inadequate resources. The doctors, the nurses, and other staff, of course, usually give of their best; and those in a great many hospitals are very much overworked. It would appear,

however, that many of the sick are restored to health less by medication than by mental influences, or by faith. That may be related in part to psychiatry, which has an important place in the art of healing.

Dr. MUDALIAR was perfectly right when he said that the importance placed on physical welfare was far too great, so much so the mental aspect was neglected. "Spare the rod and spoil the child" seems to be the dictum of so many educated people, with the result that later in life, cases of psychosis predominated. Medicine and surgery have made giant strides, especially during wars. But wars produced in their train tremendous psychoses also, in the whole society.

"It is, therefore, necessary," said Dr. MUDALIAR, "that this treatment of psychic disorder be undertaken at a much earlier stage than when they become more or less manifestly obvious to the common man." It is on this basis that a great deal of emphasis is placed on the treatment of borderline cases in institutions all over the world.

The WHO was aware of it from the beginning, and has therefore, taken steps to publicize sufficient materials in this regard.

The whole objective is to begin the treatment at a stage when the obvious manifestations of mental disorders are not present. That is why, we believe, he emphasized that in every medical institution, there should be a psychiatric clinic, and psychiatrists should be in close contact with the patients, to see where exactly the treatment part of the mental science should begin.

It is for this very reason nowadays that in all big institutions, like schools, and jails, where there is a large concourse of people, it has been suggested that psychiatrists should be associated with the institutions.

The Second Five-Year Plan aims at the establishment of another 2,600 hospitals, with 30,000 beds. But even this cannot solve the problem of overcrowding. In Madras, as well as in other States, congestion in the big general hospitals in the cities can be relieved to some extent if all local fund and municipal hospitals are provincialized. In Madras, the Government is implementing a scheme for the development of local hospitals, though it needs to be expanded very considerably. The number of mental hospitals in India is very small and they are not all well-equipped. It would indeed be an exaggeration to lay all the blame on the Governments for the backward condition of the mental hospitals in the past. Their trouble today is lack of trained personnel to man the hospitals. Medical officers and nurses are not willing to work in mental hospitals.

But being keenly alive to the problem, the Government is sending candidates for training in the Bangalore Upgraded Hospital. Many more centres for the purpose should be created, and we are sure the Government of India would come forward with funds to afford these facilities.

The State Government, we are told, is also forward with

The State Government, we are told, is prepared to assist with money, equipment, etc., to enhance the standards of treatment in the mental institutions, and this is as it should be. But the implementation of their desire to assist should be prompt and whole-hearted.

RUPTURE OF TUBOOVARIAN ABSCESS

DIAGNOSIS:—Symptoms are the same as those with ruptured hollow viscus but may also be confused with hemothorax and the peritoneal cavity. Abdominal tenderness is usually localized to the right lower quadrant.

DIAGNOSIS:—Symptoms are the same as those with rupture of any hollow viscus but may also be confused with hæmorrhage or exudate into the peritoneal cavity. Abdominal, pelvic, and rebound tenderness, absent or diminished peristalsis, and rigidity are the usual non-specific physical findings. In two-thirds of patients, a pelvic mass is felt. Pain, tenderness, and rigidity in the upper abdomen may be more pronounced than in the pelvis because of the spread of exudate in colic gutters and beneath liver and diaphragm. Laboratory data and roentgenograms do not aid diagnosis.

TREATMENT:—Salpingo-oophorectomy and hysterectomy is a patient in good condition. The operation is made in the following manner:

TREATMENT:—Salpingo-oophorectomy and hysterectomy are advisable for a patient in good condition. The most difficult part of the operation is mobilization of the adnexal masses, and removal of the uterus does not greatly prolong surgery. When the patient is practically moribund, simple salpingo-oophorectomy is attempted. If the patient's condition improves during operation, hysterectomy may be added. Subtotal hysterectomy is never justified. Patients treated with adnexectomy alone usually return later for hysterectomy.

The pelvic veins should be explored carefully. In cases of purpuric pelvic thrombophlebitis marked by the presence of a large, tender mass in the pelvis, the pelvic veins should be explored early and accurate gross examination of aspirated material

The entire abdomen is examined at the time of laparotomy. The exudate is removed by aspiration. The peritoneal cavity is irrigated with saline solution. The abdominal cavity is closed with the usual method.

The entire abdomen is examined at the time of laparotomy, and all exudate is removed by aspiration. The peritoneal cavity cannot be drained, so the vaginal cuff is either closed or left open without drains. The abdomen is closed with small rubber drains between the peritoneum and posterior rectus sheath and between the anterior rectus sheath and abdominal wall fat. Both drains are brought out through the lower angle of the incision and removed in five to seven days.

Nasogastric suction is employed until the patient's abdomen is soft and flat postoperatively. Parenteral fluids, antibiotics, whole blood, adrenal cortical extracts, and nasal oxygen are used as needed. When shock is not relieved by transfusion or vasoconstrictors, 200 cc. of 3% sodium chloride usually produces excellent results.—(*Am. J. Obst. & Gynaec.*, 72: 820-829, 1956, via *Modern Medicine*, 1-1-'57).



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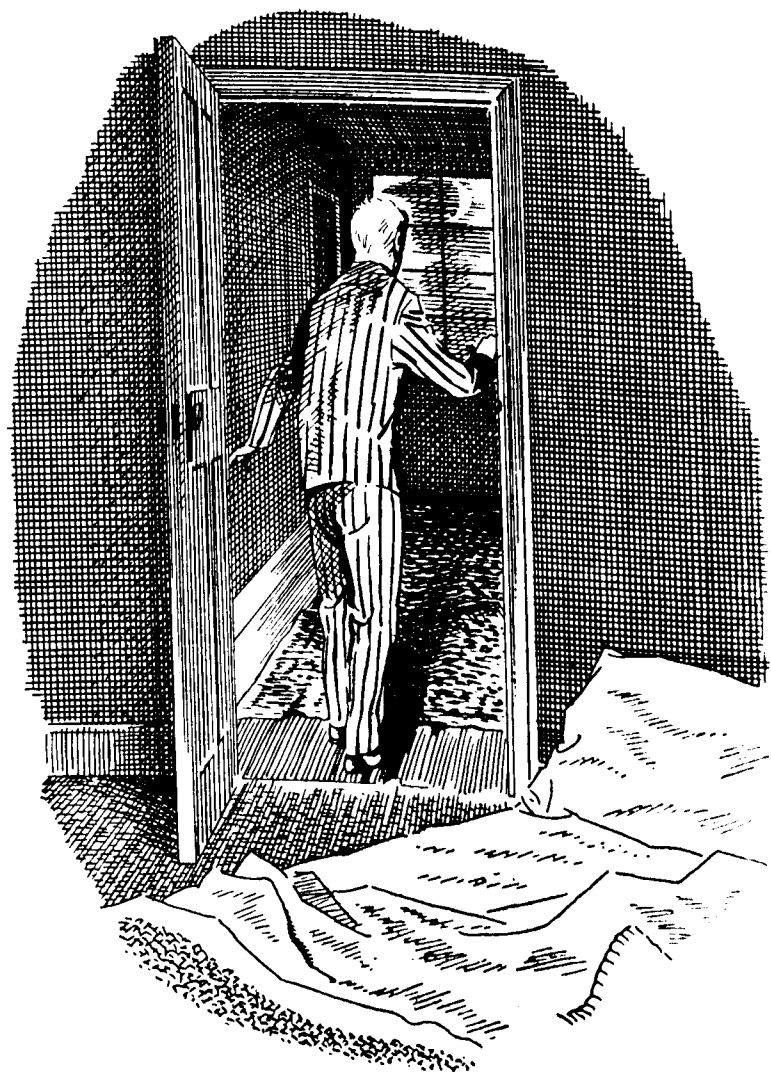
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GLEANINGS FROM THE MEDICAL PRESS

MEDICINE & THERAPEUTICS

Rapid therapy of infectious hepatitis.—
(*New York State Journal of Medicine*,
October 1, 1956).

Infectious hepatitis has now risen to fifth place on the New York State Health Department's list of communicable diseases. A total of 49,722 cases were reported last year, and this probably represents only a fraction of the real total since many physicians do not report their cases. A wide assortment of therapeutic procedures has been advocated, but this in itself indicates the lack of success of any one measure.

With the appearance of the newer antibiotics, hope for specific therapy of infectious hepatitis once more rose. However, no drug has proved curative, and to date the beneficial effect of broad-spectrum antibiotics such as Aureomycin or tetracycline, is uncertain. As a matter of fact, minor toxic effects like nausea and vomiting which may be induced by these drugs may further complicate the management of the disease. More important are the reports that Aureomycin can cause further damage to the liver. There is little hesitation, however, in employing broad-spectrum antibiotics in the patient who becomes desperately ill with his hepatitis. If a real state of cholæmia develops, the antibiotic may help bring the patient out of coma by sterilizing the gastrointestinal tract and reducing the work load of the liver and may help in preventing a terminal type *Bacterium coli* septicæmia.

Jacobson and Ressler of the Mount Sinai Hospital, New York, have developed a more effective method of management or a method of treatment which would bring about rapid recovery in patients afflicted with this illness by using a combination of cortisone and broad-spectrum antibiotics in a definite programme.

Methods and materials:—In the past our routine method of treatment of

infectious hepatitis was as follows: (1) rest in bed, (2) high-calorie but moderate fat diet with extra feedings, (3) intravenous glucose in saline if the patient complained of anorexia, nausea, or vomiting, and (4) B complex vitamins by injection, multivitamin capsules by mouth and occasionally vitamin B₁₂ and/or crude liver parenterally.

All the patients were hospitalized and to this programme was added the combination of cortisone and a broad-spectrum antibiotic. When the study was first begun, no intravenous cortisone solution was available; later hydrocortisone made its appearance in an alcoholic solution. Ordinary doses of cortisone had been found a complicating factor in treating liver disease, and we felt that small doses given intravenously in drip form might secure better results. Accordingly, one of us prepared a soluble form of cortisone which we continued to use despite the advent of hydrocortisone solution because of the theoretic objection to the alcohol content of the latter.

At first cortisone acetate was merely added to propylene glycol in the proportion of 8 mg. per cc. of the diluent. Later we used a soluble cortisone solution prepared and supplied through the courtesy of the York-Regency Medical Laboratory in New York.

Our cortisone solution was freely miscible in glucose in water, even with the addition of intravenous Aureomycin or tetracycline. Each day an intravenous drip solution was prepared which consisted of 10 to 30 mg of soluble cortisone and 500 mg. Aureomycin or Achromycin intravenous in 500 cc. of 5% glucose in distilled water. This was administered fairly rapidly in an average time of from one to two hours.

Once the study was started, every case of infectious hepatitis which we encountered in private practice was treated according to standard routine along with the daily intravenous drip

therapy of cortisone and antibiotic as described. Twelve successive cases were treated in this way with only minor variations. No patient in whom the diagnosis was made, was excluded.

In all cases except one there was sudden amelioration of toxicity. In twenty-four to forty-eight hours patients felt much better, and there was marked, visible improvement in the general condition. In all cases this included a cessation of nausea and vomiting with subsequent ability to maintain adequate nutrition through normal channels. The high-calorie intake or forced feeding which is of so much importance was at once possible. A rapid decrease in the amount of bile in the urine took place. In seven to ten days the patients were clinically well, and various indices, such as icteric index, bilirubin, cephalin flocculation, and bromsulphalein retention, were often within normal limits.

In dealing with a disease of high incidence and long morbidity like infectious hepatitis, the results obtained with this combination of antibiotic and cortisone may indicate some gain in attacking the "hepatitis problem."

Acute gouty arthritis treatment.—(*Current Medical Digest*, December 1956).

Sixty acute attacks of gout occurring in 42 consecutive admissions of male patients with gouty arthritis have been treated with oral phenylbutazone by Drs. G.M. Wilson, Jr., Elston R. Huffman, and Charley J. Smyth either in the Veterans Administration Hospital, Denver or the Arthritis Clinic of Colorado General Hospital (*American Journal of Medicine*, September 1956).

In 14 patients the disease was in a chronic stage with superimposed bouts of acute joint inflammation; the remaining 28 patients suffered acute attacks but had symptomless intercritical periods.

Phenylbutazone was administered orally as 100 or 200 mg. coated tablets. For the most part, the dosage schedules used were 100 mg. every 4 hours

(400 to 600 mg./day), 200 mg. every 4 hours (800 to 1,200 mg. day) and 400 or 800 mg. as a single dose. If the early clinical improvement was not maintained, these single doses were often supplemented after 18 or 24 hours. The period of drug administration ranged from 1 to 5 days.

Therapeutic response was evaluated by 2 criteria: the time required to produce significant pain relief estimated at 50% or more, and the time required to resolve evidences of joint inflammation. The first criterion, which is both subjective and objective, was defined arbitrarily as a definite subjective relief of pain, with restoration of comfortable function of the involved joints. Phenylbutazone blood levels and serum urate concentrations were determined. Pain relief is related to attainment of an effective mean serum phenylbutazone level, 3.09 to 0.57 mg. %.

The acute attack of gout responded to oral phenylbutazone in 2 phases. First, marked relief of joint pain occurred with minimal or no objective changes in the other signs of inflammation. Second, the remaining signs of joint inflammation gradually resolved. The initial pain reduction occurred within 24 hours in 55 attacks, and the subsequent resolution of joint inflammation occurred within 72 hours in 46 attacks.

This effect occurred earliest with the large single initial phenylbutazone doses of 400 to 800 mg. In 16 of 19 attacks it occurred in 4 hours. In 5 of the patients treated with 800 mg. the pain in the involved joints was relieved within 2 hours.

On a dosage of 100 mg. every 4 hours 10 of 18 attacks showed resolution of all signs of inflammation in 24 hours. Seventeen of 18 attacks were resolved within 72 hours. On a dosage schedule of 200 mg. every 4 hours 6 of 14 attacks showed resolution in 24 hours. In 13 of 14 attacks resolution occurred within 72 hours. On a dose of 400 mg. resolution occurred within 24 hours in 5 of 10 attacks. Resolution was complete in 72 hours

in 9 of these. With a dose of 800 mg. resolution of the attack occurred within 24 hours in 3 patients, 3 patients resolved their attacks in 48 hours, and another in 120 hours. Although a single large initial dose of phenylbutazone (400 to 800 mg.) effects early pain relief, 8 of 19 acute attacks so treated required institution of an intermittent dosage schedule to maintain the initial improvement and effect final resolution.

A recommended programme for the use of oral phenylbutazone in acute gouty arthritis is a large initial dose of 400 to 800 mg., followed by intermittent administration of 100 mg. or 200 mg. 4 x daily for 3 days, or until the attack resolves.

Treating mainly hospitalized bed patients, oral administration of phenylbutazone has controlled pain in 56 of 58 attacks of acute gout within 24 hours, and has resolved all evidence of the disease within 72 hours in 47 of 51 attacks. Improvement with oral colchicine seldom occurs before 8 to 12 hours. Pain relief is obtained with oral phenylbutazone as early as 2 to 4 hours following administration of a large initial dose. In 16 of 19 attacks significant pain relief occurred within 4 hours when initial doses of 400 or 800 mg. were given.

Moreover, the noxious side effects (diarrhoea, nausea, and vomiting) which occur so commonly with the dose of colchicine required to effect pain relief were not a problem with phenylbutazone. Occasionally a patient who received 800 mg. doses complained of mild epigastric burning. Otherwise, no undesirable side reactions attributable to phenylbutazone have been observed during or after the 3 to 4 days of therapy necessary for the treatment of an acute attack of gout.

Management of acute alcoholism.—(*Current Medical Digest*, Dec. 1956).

Sixty-one private patients seen at Peachtree Sanitarium, Atlanta in 75 admissions, over a 13 week period, were treated with promazine, a new member of the phenothiazine series,

by Dr. Vernelle Fox (*American Practitioner and Digest of Treatment*, Sept. 1956).

Some of the patients were typical spree drinkers, given to brief episodes of inebriation 3 or 4 times a month, or to prolonged debauches 3 or more times a year. Certain others had been drinking constantly for months or years and were rarely entirely sober.

In the great majority of admissions the therapeutic course employed a combination of intramuscular and oral medication. According to standing treatment orders, patients admitted in an excited condition, with systolic pressure higher than normal, received an initial intramuscular injection of 100 mg. promazine. This dose was repeated once or twice at intervals of 2 to 4 hours if necessary. Less agitated patients received 100 mg. orally every 2 to 4 hours, or as required. Thus it was possible to control hyperactivity with moderate dosage, administered at 2 hour intervals if necessary, but without heavy sedation of the patient. All could be easily awakened whenever desirable. For maintenance, 100 mg. was administered about every 4 hours by mouth.

The maintenance dosage ranged from a minimum of 3 doses, in 1 case of simple inebriation requiring treatment for less than 24 hours, to a maximum of 35 doses for 1 patient admitted in delirium tremens, who stayed about 5 days. However, in general, a total of 16 maintenance doses sufficed during the hospital stay for the majority of patients.

Private patients almost always demand alcohol as a supplement to the medication. All of these patients previously treated at this institution received alcohol in some amount, averaging up to 15 oz., during the hospital stay. In the present series, however, the craving for alcohol subsided rapidly. For the first time, in this group of patients 21 were able to do without supplementary alcohol, and the others received an average of only 3 oz. Fifty-one of the patients were

able to leave the sanitarium after 1 to 3 days, 29 were satisfactory "dried out" in 2 days, 14 required 3 days, and 8 left in 1 day. The remaining 10 stayed 4 to 6 days.

Although generally noisy and belligerent on admission, and in some cases combative, and destructive, most patients became quiet and manageable in 20 to 30 minutes after the first injection.

No narcotics were necessary; however, 29 received an average total dosage of 1.6 g. Equanil as supplementary sedation at night. Rarely were restraints needed.

Most dramatic was the improvement seen in patients with hallucinations. A few minutes after injection they appeared to become less frightened, and soon assumed an air of detachment toward their hallucinations; excitations and restlessness were partially controlled. Relaxation occurred in all cases without precipitous fall in blood pressure, and without pronounced tachycardia.

In patients with an initial elevation of blood pressure the reduction in pressure and pulse rate toward normal values was consistent with the quieting effects of promazine. No patient required intravenous infusions. All could ingest food and fluids from the day of admission onward. Many had been vomiting, hence were dehydrated to some extent. No jaundice or Parkinson-like symptoms appeared, although some received 1 g. of promazine or more per day for several days. Intramuscular injection caused no more pain than that usually to be expected from spreading of the tissues, and no cellulitis or other local tissue reaction developed. No evidence of sensitization appeared in the nurses.

On completion of treatment in the present series, the patients were all sent home on maintenance doses of the medication. Twelve patients either entered immediately on a rehabilitation programme or expressed interest in some similar type of management. A number of others left in an improved emotional condition.

DERMATOLOGY

Drug eruptions.—(E. J. Moynahan, Assistant Physician, Dermatological Dept., Guy's Hospital, London, via *The Practitioner*, May 1956).

A drug eruption may be defined as a cutaneous or mucosal reaction which is produced in a susceptible person when the drug is given in therapeutic amounts by any route. The drug may be taken by mouth, inhaled, injected or rubbed into the skin or it may be absorbed through skin, conjunctiva, bladder, nasal sinus, pleura or peritoneum. The drug reaches the skin or mucosa by the blood stream to produce eruption. It is customary to exclude contact eruptions from the category of drug reactions, although these, too, are often hypersensitivity reactions.

Skin changes produced as a pharmacological or physiological effect should never be confused with true drug eruptions: e.g., the acne produced in women receiving testosterone, or in patients of either sex who have been given prolonged and high doses of cortisone, is a physiological effect of such treatment and differs from the acne seen in patients under treatment with bromides or iodides which is a true hypersensitivity phenomenon. Similarly, purpura resulting from overdosage with an anticoagulant differs from the purpura seen after heavy metal therapy.

Drug eruptions are not uncommon but their incidence is low, particularly when considered in relation to the incidence of skin diseases in general and, even more so, when we realize the vast amounts of drugs of all kinds consumed each day.

The blood count will sometimes assist in establishing the diagnosis, as certain drug eruptions are often associated with eosinophilia: e.g., serum sickness, barbiturates, sulphonamides, neosphenamine. Eosinophilia is of less significance when the patient is receiving streptomycin.

The clinical picture and, in particular, the character of the eruption, will often give the clue to the diagnosis.

MAR. '57]

GLEANINGS FROM

Eruptions produced by drugs exhibit all degrees of severity from a slight transient erythema, with or without itching, to extensive exudative, exfoliating or fungating lesions which imperil life. The patient may feel well or he may be gravely ill with high fever, rigors, delirium or extreme prostration.

Antibiotics.—Penicillin is the cheapest, safest and most widely used antibiotic. It is also the commonest cause of hypersensitivity and it has replaced sera in this respect, as the need for these has declined so much in recent years. Notwithstanding what has just been said regarding its safety, it must be pointed out that there has been a steady increase in the number of deaths attributed to penicillin in the last few years, and this number will continue to get larger, unless suitable precautions are taken, as more and more of the population become exposed to the risk of sensitization to the antibiotic. Most of these deaths were due to anaphylactic shock and occurred within a few minutes of an injection of penicillin. Urticaria or angioneurotic oedema, sometimes persisting for many weeks, is a fairly common manifestation of penicillin sensitivity, which does not necessarily compel withdrawal of the drug, but should the patient be an atopic subject (i.e., give a history of asthma, hay fever or infantile eczema) then an alternative antibiotic or chemotherapeutic agent should be substituted. The young house officer would be well advised to seek more experienced advice before beginning routine penicillin treatment in any patient who has previously had a severe skin eruption due to penicillin. Other eruptions may also be produced by penicillin but apart from erythematous and maculopapular forms they are rare.

Streptomycin commonly produces erythematous, maculopapular and urticarial rashes but, as a rule, treatment with the antibiotic need not be discontinued, unless the eruption becomes more severe if therapy is persisted with. Eruptions from chlor-

tetracycline, oxy-
thromycin are extremely

Most drug eruptions are mild, withdrawal of the drug is usually all that is needed in the way of treatment. The severe eruptions, such as exfoliative dermatitis which may be produced by heavy metals, the barbiturates, organic arsenicals and occasionally other drugs, will require vigorous treatment. Cortisone or corticotrophin should be given in doses sufficient to suppress the eruption completely, and the dose should then be gradually reduced until the rash has entirely faded. When a heavy metal or arsenic is responsible for the eruption it is advisable to give a full course of dimercaprol (BAL), as exfoliative dermatitis has been produced by gold in patients who had been receiving cortisone at the same time. The antihistamines are of limited value in controlling the pruritus which may accompany a drug rash, but are quite effective when urticaria plays a prominent part in the symptomatology. There is still no satisfactory treatment for iodism, but intravenous normal saline is helpful in clearing the skin lesions. Liberal amounts of sodium chloride should also be given for bromide eruptions.

Anaphylactic shock should be treated by injection of adrenaline, followed by a plasma drip infusion containing noradrenaline or aminophylline. The foot of the bed should be raised and artificial respiration, or the administration of oxygen under positive pressure, should be carried out, depending upon the circumstances. It should be the invariable rule of the practitioner never to give an injection of any drug, unless he has adrenaline at hand for immediate use, and personal experience of mass inoculations of Service personnel has demonstrated how this precaution can be lifesaving.

Drug reactions are not uncommon and are usually mild. Hypersensitivity reactions, however, are sometimes serious and even fatal. The rashes which the practitioner should treat with the greatest respect are exfoliative dermatitis, vesicular and bullous eruptions, purpura and the

fungating granulomatous lesions produced by halogens. Urticaria and the exanthematous rashes, which are by far the most common, usually give little trouble, but any hypersensitive reactions in atopic subjects call for the greatest caution in the subsequent administration of the drug.

Dermabrasion for acne scars.—(John S. Strauss, and Albert M. Kligman, *Acne. Arch. Dermat.*, 74: 397-404, 1956, via *Modern Medicine*, 1-1-'57).

Ethyl chloride volatilized under a strong stream of air from a blower can be sprayed on selected areas of facial skin until a solidly frozen plaque forms. Sufficient time is thus provided for thorough dermabrasion of acne scars. Dichlorotetra-fluoroethane (Freon 114) applied without a blower produces a similar effect.

Effects of freezing.—Even when freezing of an area 2 in. in diameter is maintained for as long as eight minutes, tissue damage is not irreversible. Freezing of the skin beyond a depth of 2.5 mm. is prevented by the profusion of blood vessels and by the frozen surface, which acts as an insulating surface. Moreover, no untoward effects result from refreezing the same area, although profuse bleeding after dermabrasion makes refreezing technically difficult.

Removal of pits.—After freezing, acne pits 2 mm. deep can be removed by vigorous dermabrasion without subsequent scarring. However, individuals with tendencies to excessive scar tissue formation probably should not have dermabrasion. Since acne pits rarely exceed this depth, complete removal is possible in one treatment.

Regeneration of epidermis.—After deep dermabrasion, the epidermis regenerates from the remaining epithelial reservoirs, that is, portions of hair follicles, sebaceous and sweat glands, and deep strands of epithelium. The epithelial covering is replaced in about one week, and normal histologic appearance returns to the skin in less than a month. However, healing is slower. Inflammatory reaction is

greater, and postoperative discomfort is more severe than with conservative dermabrasion.

Repigmentation.—In subjects with highly pigmented skin, repigmentation of the planed areas usually blends uniformly with the untreated skin. Slight hypo- or hyperpigmentation is seldom of cosmetic importance.

Depth of planing.—A method that aids in determining how deeply to plane consists of painting the skin thoroughly with gentian violet. When all the dye has been abraded away, the deepest pits have been removed.

OBSTETRICS & GYNÆCOLOGY

Functional uterine bleeding. (*Am. Jour. Obst. Gynaecol.*, 71: 1322, 1956).

Jacobs and Lindley report on 22 cases of functional uterine bleeding admitted into the Jefferson Davis Hospital, Houston, Texas during the 30 month period, July 1, 1952, through December 31, 1954. During this period, 112 patients were seen with the primary diagnosis of functional uterine bleeding; 26 of these, however, were subsequently found to have organic pathological conditions and thus were removed from the series. The remaining 92 cases form the basis of their report.

In patients under 35, the diagnosis can be made on the history and pelvic examination, and the patients can be treated medically if the bleeding is not too profuse or of unduly long duration. Red blood cell count and hemoglobin levels are checked in all patients who receive medical treatment on an outpatient basis. The ages of the patients ranged from 7 up to 50 years. There are no patients over 50 years of age, because the authors do not consider postmenopausal bleeding as being functional, even if no pelvic disease is found.

The total number of pregnancies for the entire group was 255, an incidence of 2.88 pregnancies per patient. Of extreme interest is the infertility rate. Offhand, it appears that since functional uterine bleeding is probably on some basis of endocrine dysfunction,

infertility should be common among such patients.

The total number of abortions for the group is 53, an incidence of 20.9 per cent indicating the possibility of some basic endocrine dysfunction.

The endometrium was available for study in 59 of the 92 cases. Eight patients had received previous hormone therapy fairly recently, however, and were discarded. The 51 cases available for study were obtained by curettage or endometrial biopsy with a Randall curette. Although it is commonly thought that hyperplasia is the most common endometrial finding in association with functional uterine bleeding, this series does not bear that out. The relatively large number of patients with secretory endometrium is interesting, indicating that functional uterine bleeding is not uncommon in the presence of ovulation. The 5 cases of mixed endometrium probably represent the syndrome of irregular shedding.

In the main, the treatment given these patients was either curettage, cyclic oestrogen therapy, or a combination of sedation and empiric thyroid. No patient in this series received progesterone. Two patients, only, received androgens, and 2 patients received blutene. Only one patient had a hysterectomy. A total of 125 treatments were given to these 92 patients, as many patients had more than one type of treatment because of failure to respond to one or more kinds in a given case.

Of interest is the fact that 42 of 46 patients had immediate good results from curettage, while 32 of 44 patients had immediate good results from cyclic oestrogen therapy. Of the 32 patients, 29 remained well for three months, in contrast to 27 of 42 patients of the curettage group who remained well for three months. Curettage offers better immediate results than cyclic oestrogens, with the ultimate cure rate about the same. But if the patient responds immediately to cyclic oestrogens, her chances of remaining well are better than those of a similar patient who is curetted.

Seventeen out of 24 patients given

sedation and thyroid were apparently cured; given time, most of these patients will probably have a spontaneous cure. It is hard to see how this medication has a great deal of effect upon the endocrine system except, possibly, that sedation has some effect upon the hypothalamus, which is probably more important than is generally realized.

Only 2 patients received androgen therapy and, in both of these, previous curettage and cyclic oestrogens had been tried without result. Both responded well. Most reports dealing with androgen therapy for functional uterine bleeding indicate that the results are just about comparable to those of oestrogen therapy.

Hysterectomy should be done in the premenopausal and menopausal groups with recurrent bleeding, or even in younger women whose bleeding becomes intractable and fails to respond to conservative treatment. "Hysterectomy is preferred to irradiation, because the ovaries can be conserved, and it obviates any possibility of post-irradiation bleeding.

It is felt that the main problems regarding functional uterine bleeding are:—(1) to rule out organic pathological conditions, employing curettage in all patients 35 years of age and over, and in younger women where the diagnosis is in doubt; (2) to provide some means of immediate, or reasonably immediate, haemostasis. It is felt that, given time, most patients will then probably undergo spontaneous cure.

SURGERY

Advances in surgery.—(*Practitioner*, 177: Oct. '56).

The heart.—It is only a few years ago since Blalock and Taussig developed the first successful treatment for patients with the tetralogy of Fallot. Their procedure consisted in establishing a shunt between the greater circulation and the pulmonary circulation, usually a left aorta-pulmonary artery anastomosis. Some of these patients have now been followed up for eight years and 68 per cent. are

considered to have a good result. The operative mortality is 15 per cent. for patients under 3 years of age and 3 to 6 per cent. for patients over 3 years. It is now recognized, however, that whilst these patients are greatly improved by this operation, only an open heart operation will be curative. The same is true for pulmonary stenosis which, up to the present, has been treated by a closed method of pulmonary valvotomy.

Research work is being carried out in many centres on various mechanical devices to permit the heart and lungs to be totally by-passed. These machines are being perfected and simplified, and several are already in use. Until recently closure of interatrial and interventricular septal defects has been attempted by indirect suture through the heart wall or with the use of an atrial well as devised by Gross. As Brock and others have pointed out, ventricular defects and pulmonary stenosis can be adequately treated only by a direct exposure of the abnormality. Today these septal defects are being closed by suture or by graft with the surgeon working within the open heart. The vital processes are maintained by means of the extracorporeal circulation. All of the venous blood from the superior and inferior venæ cavæ is circulated through the 'heart-lung' machine, oxygenated and returned at a standard rate and volume to the patient's aorta. As Taussig has pointed out, important questions still remain to be answered: 'Will a heart that has been opened and sewn together again, grow with the patient? Will the pulmonary infundibulum re-stenose after it has been resected?'

The results of the surgical treatment of mitral stenosis continue to be encouraging. Harken believes that division of the stenotic ring with a knife guided by the finger inserted through the auricular appendage is superior to forceful fracture and dilatation by the finger alone. Mitral insufficiency is being treated by division of the shortened chordæ tendineæ, working through the auricular appendage. In the

same manner, the size of the mitral ring is reduced by suture. Cerebral emboli from clots developing within the heart remain the major hazard in mitral commissurotomy, and ventricular fibrillation the most serious complication of surgery of the ventricle.

Aortic stenosis is treated by finger dilatation, working through a pouch sutured to an opening made in the aorta above the valve. The pouch may be made of synthetic material or from a homograft of pericardium.

Hufnagel has developed an ingenious procedure for the surgical correction of aortic insufficiency. A ball valve made of plastic material is sutured into the distal portion of the aortic arch. So far the operation has been carried out only on those patients with aortic insufficiency who have progressive signs and symptoms. He feels that the results are encouraging and has now operated on 90 patients, the first having been done in 1952. The mortality is 10% in the early good-risk patients, and 40% in poor-risk patients. Although this procedure is far from a complete answer to the problem of aortic insufficiency, it is the best treatment yet devised for it. One of the interesting, although less serious, defects of the procedure has been the distinctly audible clicking noise made by the ball valve with each beat of the heart.

PÆDIATRICS

Management of erythroblastosis foetalis.—(Wiener, Wexler and Brancato, *J. Paediat.*, 49: 381-393, 1956, via *Mod. Medicine*, 1-1-'57).

Although most cases of erythroblastosis foetalis are caused by Rh-sensitization, hr' and ABO sensitizations are being found more frequently. Diagnosis and treatment are delayed in these less classical groups because present antenatal management of isoimmunization is designed to disclose Rho sensitization only.

A practicable screening procedure to detect Rh-Hr sensitization can be

applied to all pregnant women. Test cells are treated with proteolytic enzymes, especially papain and ficin. The serum is tested against suspensions of papain-treated cells of types Rh₁R₁, Rh₂, and rh. If clumping is observed in one or more of the tests, further investigation is in order. This method detects Rh₀ sensitization which may have been overlooked during pregnancy as well as sensitization to hr or other blood factors. This test also serves to anticipate and to prevent transfusion reactions and to uncover autosensitization in unrecognized cases of disseminated lupus erythematosus and acquired hæmolytic anæmia. The procedure is a supplement and not a replacement for other isosensitization tests.

Treatment:—The use of partially concentrated blood for replacement transfusions avoids circulatory overload and the introduction of excessive amounts of diluted citrated blood.

Relatively fresh blood is allowed to sediment and part of the supernatant is removed. A mixture of 500 cc. of one-to three-day-old bank blood and 120 cc. of ACD solution is allowed to sediment. The supernatant is aspirated down to the 450-cc. mark, providing concentration to 0.5 hæmatocrit.

The amount of concentrated blood administered varies with the severity of the erythroblastosis and the weight of the infant. For large and severely affected infants 2 units (800 to 900 cc. are given; 1 unit suffices for small and less diseased babies. If the serum bilirubin continues to rise and the erythroblast and reticulocyte counts remain elevated, a second replacement transfusion is administered after twenty-four to forty-eight hours.

Results:—The initial drop in bilirubin concentration after exchange transfusion is succeeded by a rise as more bilirubin diffuses into the blood stream from the tissues; then a second permanent decrease occurs as the disease process is arrested. More than 2 exchange transfusions are never given.

Survival rate continues to improve with better management of erythro-

blastosis. The mortality rate among severely affected infants without treatment is about 65%; among those receiving simple transfusion therapy, 42%; among those treated by exchange transfusion, 20%; and among those treated by exchange transfusion with partially concentrated blood by the radial artery-saphenous vein technique, 4%.

Management of inguinal hernia in children.—(*J. Dis. Child.*, 92: 266-271, 1956, *Modern Medicine*, January, 1-1-'57).

Inguinal hernias in infants and children should be corrected surgically as soon as diagnosis is established.

Diagnosis of inguinal hernia may be made when an abnormal swelling in the inguinal region appears during crying or straining and disappears when digital pressure is exerted over the canal. Thickening of the cord on one side, noted when the cord structures in the canal are gently compressed, also suggests inguinal hernia.

Surgical repair should not be postponed because of age, since conservative management is rarely satisfactory. Almost 60% of the instances of inguinal hernia in paediatric patients occur during the first year of life, and almost three-quarters of complicated hernias appear in infants under 6 months of age. If reduction of the hernia occurs after admission to the hospital, operation is deferred for two or three days to permit oedema of the canal to subside.

The usual inguinal incision may be used for children over 3 years of age. For younger patients, the incision is made transversely, beginning at the anterosuperior spine of the ileum and projecting medially in the lower abdominal crease for 3 cm.

The sac is picked up with very fine forceps, and all adherent structures are freed carefully until the neck is clearly delineated at a high level. The sac is then ligated. If the hernia is complete, the distal portion about the testis is removed as thoroughly as possible, and the remainder is everted

to prevent subsequent testicular hydrocele.

Whenever operation is done for unilateral hernia in an infant under 3 years of age, the opposite side should also be explored. A second hernia, not demonstrable pre-operatively, is found in almost half of these children.

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CORRIGENDA

(1) Please substitute the following for the last paragraph of the article on Anaesthesia on page 89 of the ANTISEPTIC for February 1957.

"It is a great privilege to have a share in the training of anaesthetists here in India; we hope that many more people will choose the speciality, so that our patients may receive the advantages of greater safety and decreased morbidity and so that surgery in India may be able to progress at the same rate as surgery in other parts of the world."

(2) On page 95 of Feb. '57 issue of the ANTISEPTIC, please read 'Serpentina alkaloids' instead of 'Reserpine' under dosage.

On page 129 of the February 1957 issue of the ANTISEPTIC, Para 1 line 3, please read 'Park Town P.O., Madras-3,' instead of 'George Town, Madras.'

Statement about 'Antiseptic' under Rule 8 of the Registration of Newspapers (Central) Rules 1956.

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I, Dr. U. Vasudeva Rau, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Date 14th Feb. 1957

Sd. U. VASUDEVA RAU
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" B-Complex 10cc. 0-6; forte 1-6	8-12 15-0 5gr x 1cc 100 amp	A.G. Jap. Sup 0-14 1-2 1-10 2-0 3-10
" Vit. C 10 cc. 1-0	Aminophyllin 10 cc. 50 9-8; 10 2-0	" ord. 0-12 0-15 1-2 1-8 2-10
" 2 cc x 25 A 4-2 100A 16-0	Calcium Gluconate 10% 100amp	Record 3-0 4-0 4-8 6-8 12-8
" oral 4oz. 2-8	10x10cc 10ly 7-8; 5cc 7-0; 10cc 9-8	LuerLockBD 8-8 9-0 11-12 16-0 32-8
" B1 100mg 10cc 1-1; 50x2cc 8-4	" Sandoz 5x10cc 5-8 10x5cc 8-12	Jap Sup 1-8 2-4 2-12 4-8 6-8
" B1 & B6 10 cc. 50 mg. 3-2	" with Vit C 10x5cc 10-12	Re. 1-0 more for side nozzle.
" B6 10cc. 50mg 2-6 100mg 3-14	" 5x10 cc 6-0; 50x5cc 47-0	M. Cass Jap 2cc 2-2 5cc 3-2 10cc 4-2
" B12 10cc. 100 mg 2-8; 200mg 4-8; 500mg x 5cc. 5-0	Distill Water 100 amp 2cc 3-0	Ind. 1-2 1-10 2-4 2-12 4-10
" 1000 mg x 5cc. 9-6	5cc 3-12 10cc 4-8	Lint 3-0; Cotton 1-12
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" D2 6x1cc 1-4	Emetine 1 gr 12A 10-0	Eng. 3-4 Down 4-4 doz Record
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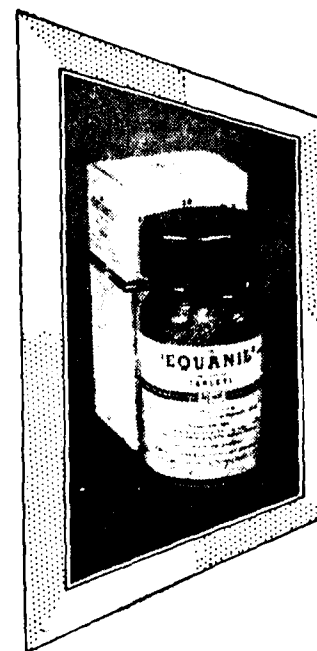


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Sulphaguanidine 500T 4/9; M&B 10/14
Sulphanilamide 500T 3/2, M&B 6/4
Sulphatriad 500T 21/4, M&B 33/4
Sulphadiazine 500T 16/8, M&B 28/8
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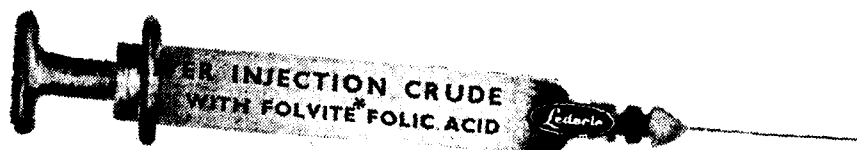
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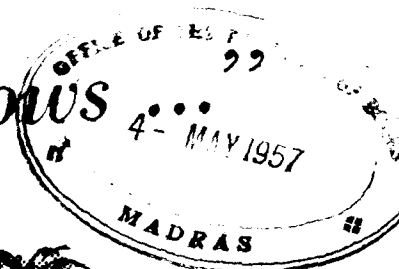
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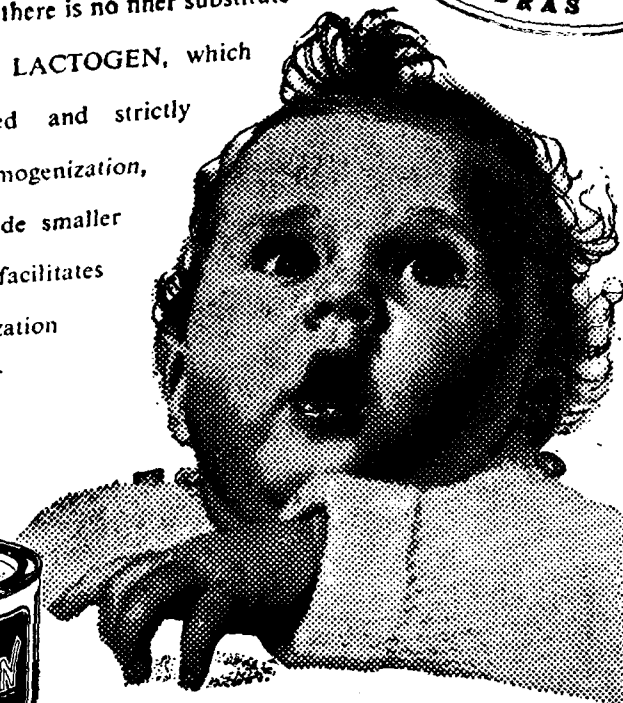
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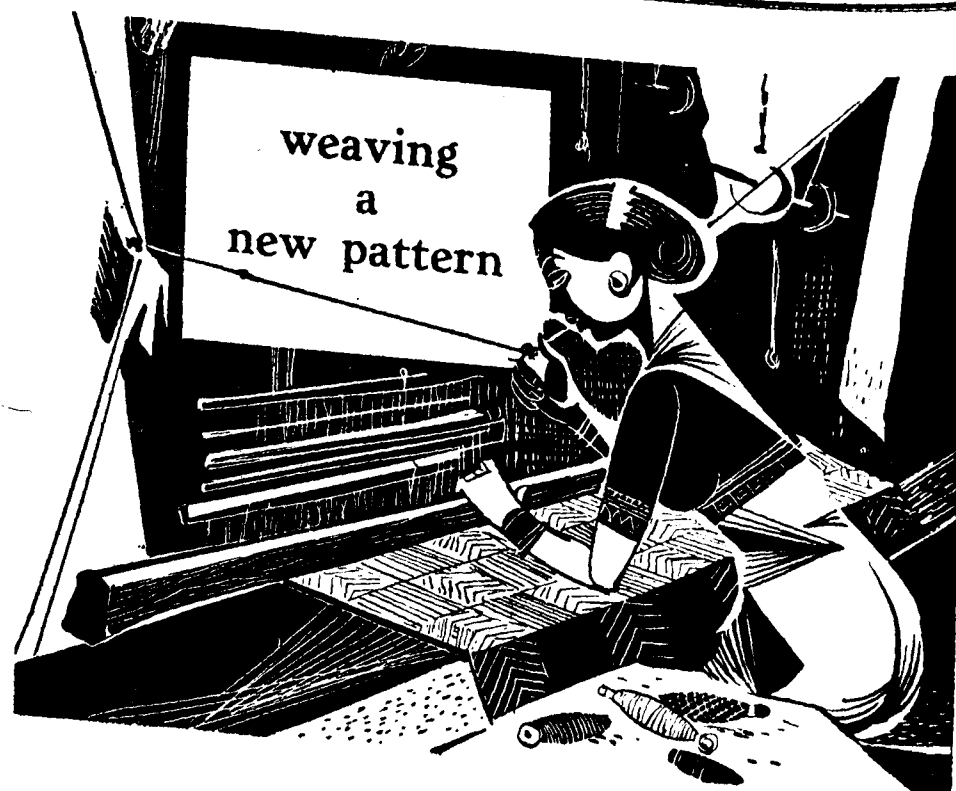
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ORIGINAL ARTICLES:

- B.Z. 55 in the Treatment of Diabetes Mellitus**—R. Subramaniam, B.Sc., M.D., M.R.C.P., (Lond.), Madras and Rajaram, M.B., B.S. ... 237

- Nutritional Disorders in Children**—R. C. Bohidar, M.B., B.S., (Pat.), Orissa ... 245

- Human Constitution in Clinical Medicine**—P. M. Mehta, M.D., M.S., F.C.P.S., F.I.C.S., Jamnagar ... 255

- Psychosis Due to Cerebral-Arterial Sclerosis and its Treatment**—Thakorbhai D. Rana, L.C.P.S. (Bom.), L.M. (Dublin), L.T.M. (Cal.), Dip. Psy. (Zir.), Navsari, W.Rly. ... 267

- Lupus Erythematosus in India**—K. D. Lahiri, M.B., B.S. (Patna), D.T.M. & H. (London), M.D. (Dermat.), Zurich, Ph.D. (Dermat.) Edinburgh, West Bengal, (India) ... 271

- Baldness**—T. V. Venkatesan, M.B., B.S., F.D.S., F.C.C.P., F.A.I.M., Madurai, (S.I.) ... 275

CASES AND COMMENTS:

- Use of Procaine Penicillin as Sub-Conjunctival Injection**—Manmohan Malhotra, F.R.C.S. and N. C. Singhal, D.O.M.S., New Delhi, India ... 277

- Chronic Haemolytic Anaemias of Childhood with Special Reference to Cooley's Anaemia**—(With Case Reports)—M. N. Bhattacharyya, B.A., M.B., D.T.M., D.C.H., M.R.C.P., and N. C. Dey, B.Sc., M.B., D. Bact. (Manchester), Dibrugarh ... 283

- Case of Situs Inversus with Pulmonary Tuberculosis**—L. R. Sarin, M.R.C.P., and R. K. Bhargava, M.B., B.S., Jaipur ... 293

EDITORIALS:

- The Duty of Scientists and the Importance of Research** ... 295
Treatment of Eye Diseases ... 297
The Development of Dental Science ... 299

GLEANINGS FROM MEDICAL PRESS: PAGE

Medicine and Therapeutics:

- Causes of tropical anaemia ... 266
Blood groups in diabetes ... 282
Damaging effects of strenuous exercise ... 292
Rehabilitation of the tuberculosis ... 292
Effect of reserpine of gastric secretion ... 301
Clinical study of a geriatric drug with hypocholesterolaemic action ... 301
Antibiotics ... 302
Collapse therapy in pulmonary tuberculosis ... 303

Surgery:

- Problems in haemorrhoidal disease ... 265
Prevention of fat embolism during surgery ... 282
Ligation of oesophageal varices ... 304
Report concerning the therapy of 500 cases of cancer of the lungs ... 304
Untoward effects of spinal anaesthesia on the spinal cord and its investments ... 305
Carcinoma of the rectum and rectosigmoid ... 305

Obstetrics & Gynaecology:

- Advances in obstetrics—Post-partum haemorrhage ... 244
Addison's disease and pregnancy ... 294
The treatment of imminent eclampsia ... 306
Results obtained by preoperative radiation in 343 cases of breast carcinoma ... 307

Ophthalmology:

- Outline of treatment for eye injuries ... 307
Antibiotics for use in the eye ... 308

Otolaryngology:

- Diagnostic laryngoscopy and the anaesthesiologist ... 309

Dermatology:

- Chronic urticaria ... 309

Radiology:

- Roentgen diagnosis of abdominal disease ... 311
The accuracy of roentgen examination ... 312
Fracture of the femoral neck following irradiation of the pelvis ... 313

Reviews of Reports:

- Peaceful Uses of Atomic Energy: Vol. 14 ... 313
Peaceful Uses of Atomic Energy: Vol. 12 ... 313

Reviews of Books:

- Pulmonary Carcinoma, Pathogenesis, Diagnosis and Treatment ... 314
An Outline of Bacteriology and Immunity ... 315

Books and Periodicals Received:

- Preparations and Inventions: ... 316

News and Notes:

- ... 317

THE ANTISEPTIC

Vol. 54, No. 4

INDEX TO ADVERTISERS

APRIL 1957

A		J—(Contd.)	
	PAGE		PAGE
Adcco Ltd.	31	John Wyeth & Brother Ltd.	10, 19
Alembic Chemical Works Co. Ltd.	11	Juggat Singh's Son & Bro.	12
Allen & Hanburys Ltd.	21		
Amalgamated Chemical & Dyestuffs Co. Private Ltd.	66	K	
Amarchand Sobachand	37	Kemp & Co. Ltd.	80
Anaesthetics	75	Kodak Ltd.	9
Antiseptic	80	Kothari Book Depot, The	5
Asepticus Co.	78		
Associated Drug Co. Private Ltd.	33	L	
Atlantis (East) Ltd.	45	Lederle Lab. (I) Private Ltd. Inside Front Cover	
Atul Drug House	43	Lord & Co., J. L.	71
B		M	
B.A. & Bros.	72	Mandoss Drugs Ltd.	79
B.D.H. (India) Private Ltd.	42, 48	Martin & Harris Private Ltd.	76
Behar Chemical Works	71	Martin H. Smith Company	26
Bengal Chemical Works Inside Back Cover		May & Baker (India) Private Ltd.	20
Bengal Health & Chemical Works Ltd.,	71	Menley & James Ltd.	64, 65
Bengal Immunity Co. Ltd.	34	Mohan Brothers	29
Bhattacharji & Bhattacharji	49	Mukerji H. & Banerjee Surgical Ltd.	35
Birla Laboratories	39	Mysore Nutriment	49
Bombay Tablet Mfg. Co.	45		
Bronkol Private Ltd.	78	N	
B. W. & Co. (India) Private Ltd.	51	Narotam & Co., C.	13
		National India Rubber Works Ltd.	79
Calcutta Chemical Co. Ltd., The	58	Neo-Pharma Private Ltd.	41, 59, 61
Capco Private Ltd.	62	Nestle's Products (India) Ltd.	1
Chowgule & Co. Hind (Private) Ltd.	44		
Ciba Pharma Ltd.	14	O	
Cipla Laboratories	18	O.R.C.L. Ltd.	31, 78, 81
Corn Products Co. (India) Ltd.	38	Organon Laboratories Ltd.	3
Cow & Gate Ltd.	60	Oriental Pharmaceutical Industries Ltd.	74
Crookes Laboratories Ltd., The	54	Osler Pharmacy	71
Current Technical Lit. Co. Private Ltd.	4, 5		
		P	
D		Parke Davis & Co., Ltd. Outside Back Cover	
Dalmas Ltd.	30	Parry & Co. Ltd.	73
Darbara Singh & Sons	35	Pasteur Laboratories Private Ltd.	38
Das Gupta & Co.	4	Patel & Co., B.	77
Dey's Medical Stores Private Ltd.	8	Pharmaceutical & Research Laboratories	77
Diamelin Research Laboratory	39	Phytosynth Laboratories	36
Dumex Private Limited	68, 69	Pixie Products	72
		Popular Book Depot, The	4
E			
East India Pharm. Works Ltd. Front Cover		Q	
Eli Lilly & Company of India, Inc.	22	Quaker Oats	25
F		R	
Fedco Ltd.	57, 58	Rajnikant Bros.	84
Foreign Surgical Co.	71	Ranbaxy & Co., Private Ltd.	16, 48
Franco-Indian United Laboratories	7, 15	Ravison Pharmaceuticals Ltd.	70
		Rosbay & Co.	72
G			
G.D.A. Chemicals Ltd.	28	S	
General Electric Co. of India Private Ltd.	82	Sandoz Ltd.	53
Geoffrey Manners & Co. Private Ltd.	17	Sanitex Chemical Industries Ltd.	27
German Democratic Republic	32	Sarabhai Chemicals	47
Glaxo Laboratories (India) Private Ltd.	55	Sarecor Book Company	4
		Scientific Publication Concern	4
H		Shah & Co., D.	76
Hamdard	52	Shanti Trading Co.	83
Health & Co.	71	Spencer & Co. Ltd.	74, 77
Hering & Kent	36	Stadmed Private Ltd.	28
Hewlett & Son (India) Ltd., C. J.	27	Suren & Co. Private Ltd. W. T.	2
Himalaya Drug Co., The	46		
Hindusthan Drug House Ltd.	84	T	
Horlicks	50	Tablets (Private) Ltd.	25
Hygienic Research Institute	81	Thakore, T. M.	78
		Therapeutic Pharmaceuticals	6
I			
I. C. I. (India) Private Ltd.	2, 24	U	
Indian Health Institute & Lab. Ltd.	78	Ubique Chemical Laboratory Private Ltd.	71
Indoco Remedies Ltd.	79	Unichem Laboratories	34
Indo-French Pharmaceutical Co.	30, 32	Union Drug Co. Ltd.	28
Indo-German Drug Stores	81	Unique Trading Corporation	33
Indra Laboratories	79	United Pharma (India) Private Ltd.	72
Industrial & Engr. Apps. Co. Private Ltd.	71	Universal Drug House Ltd.	81
J		V	
Jai Singh's Son & Co. Dr.	4	Voltas Ltd.	83, 87
Jaswant Singh & Co., Dr.	77	Vora & Co., P. N.	76
		W	
		Wander Dr. A.	40
		Z	
		Zandu Pharmaceutical Works Ltd.	75
		Zeal Pharmaceuticals	84
		Zone Chemical Co.	72

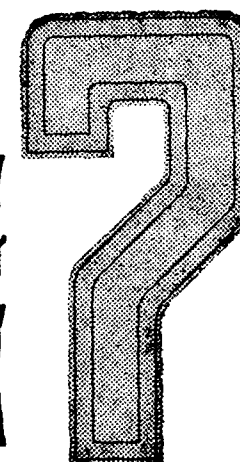
[Page 237-B]

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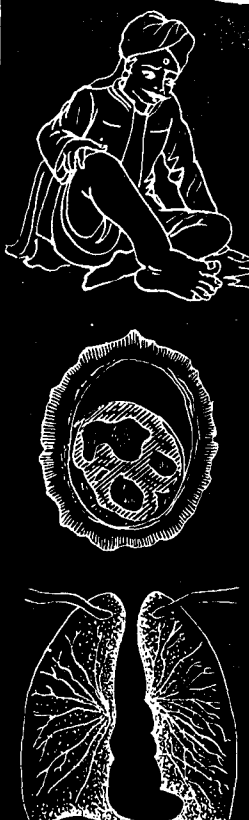
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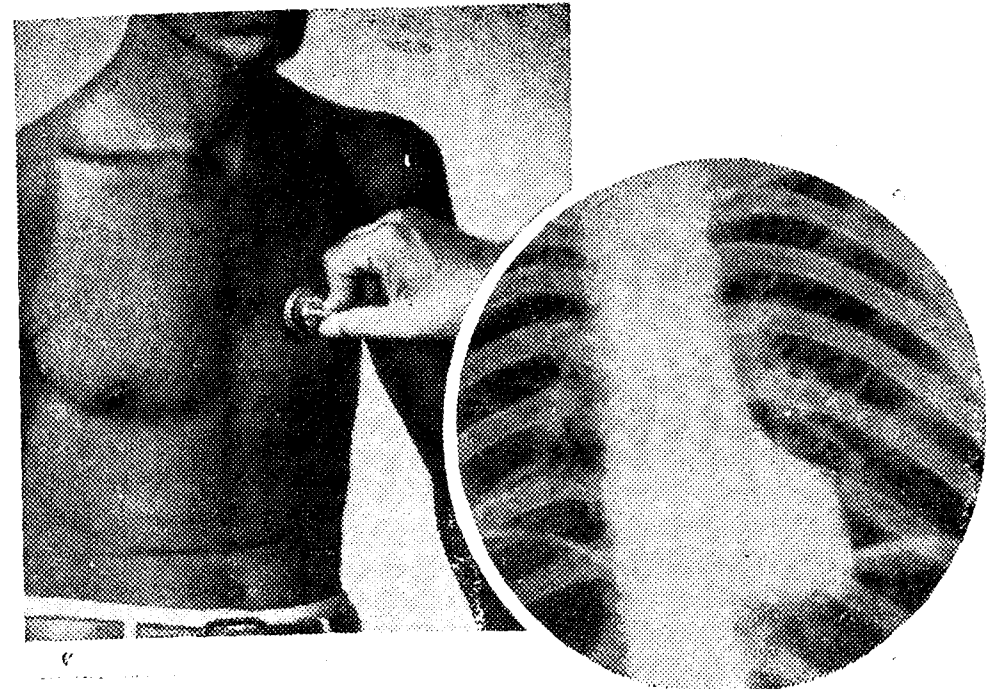
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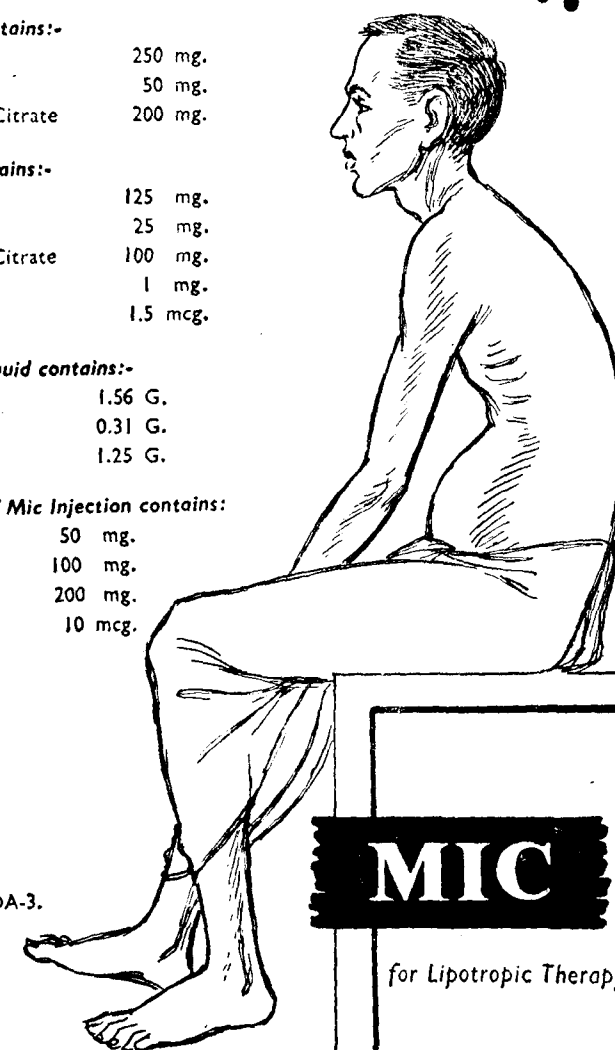
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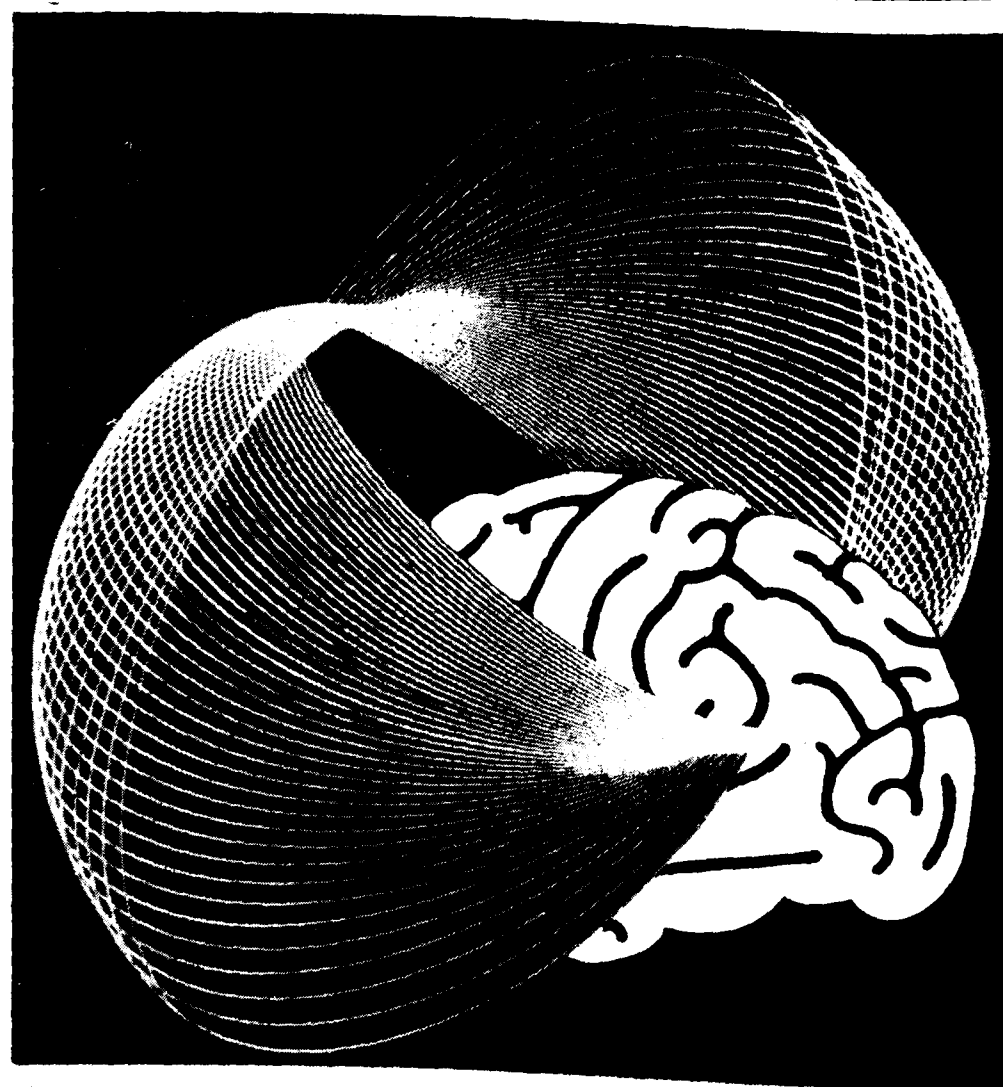
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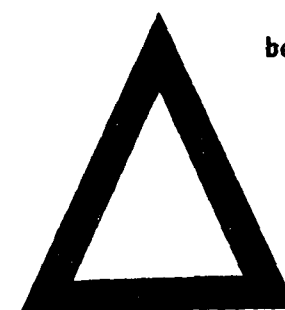
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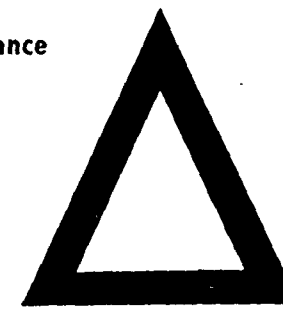
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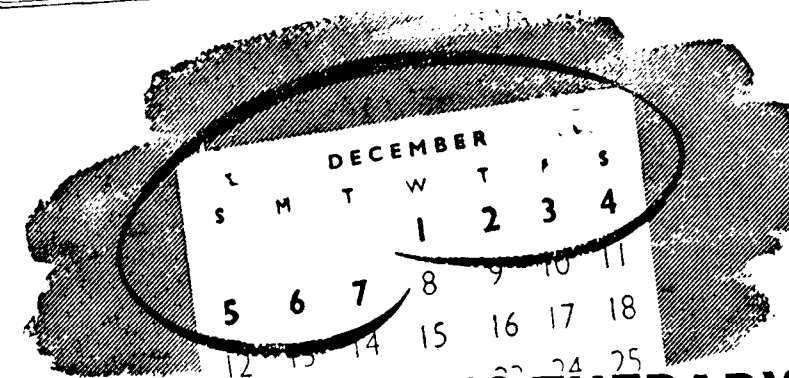
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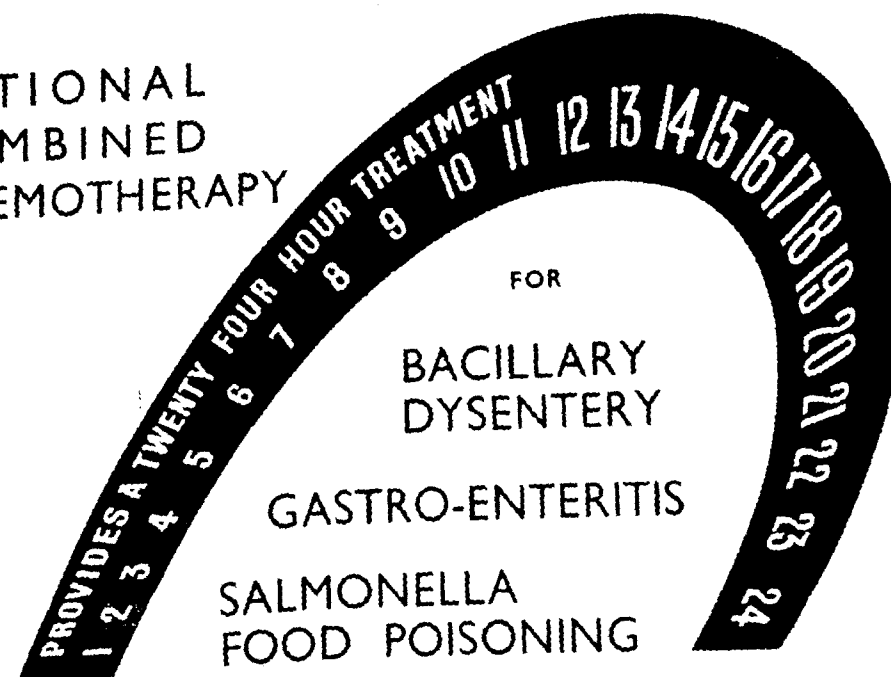
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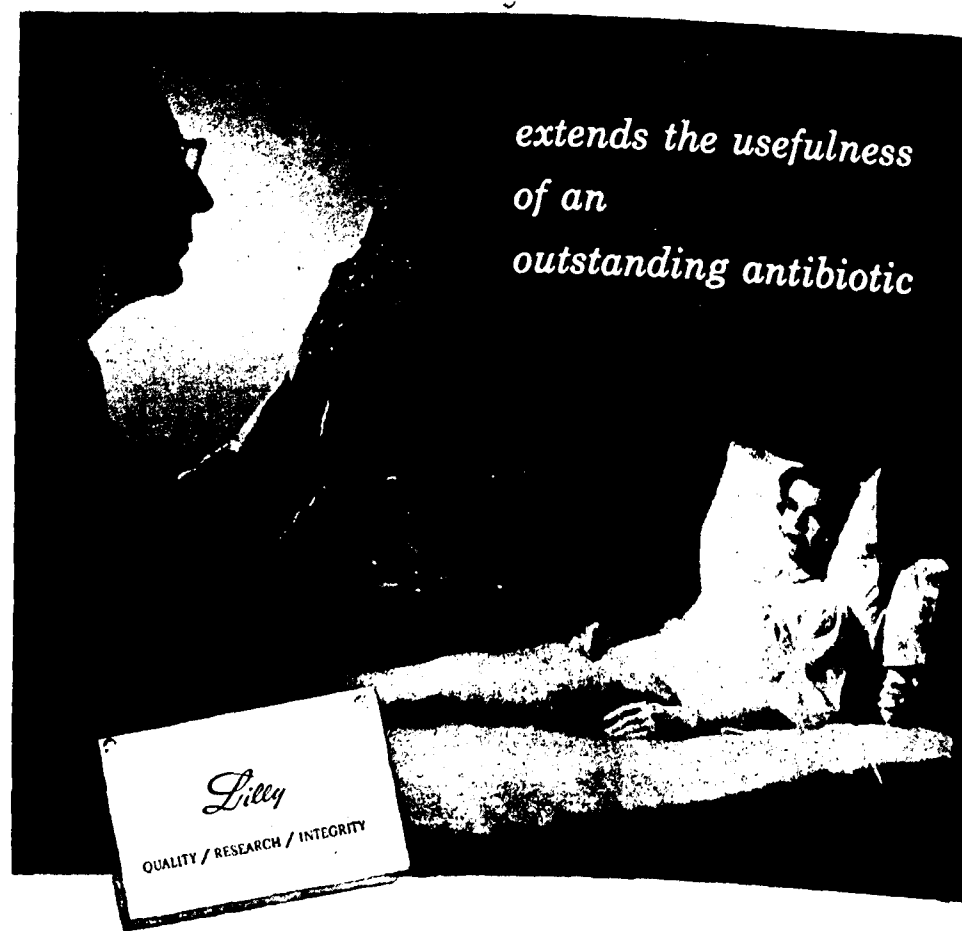
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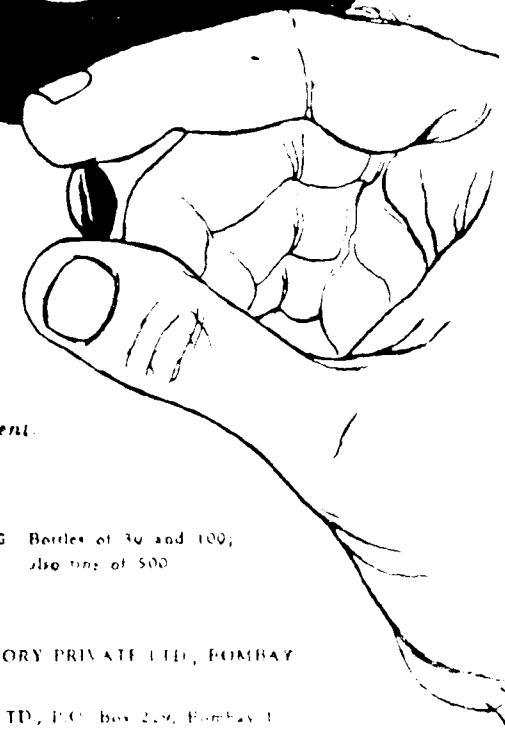
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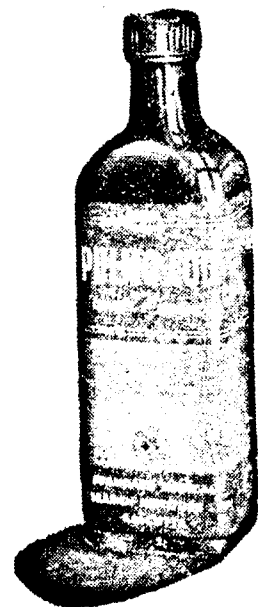
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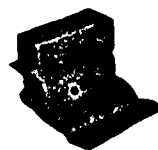
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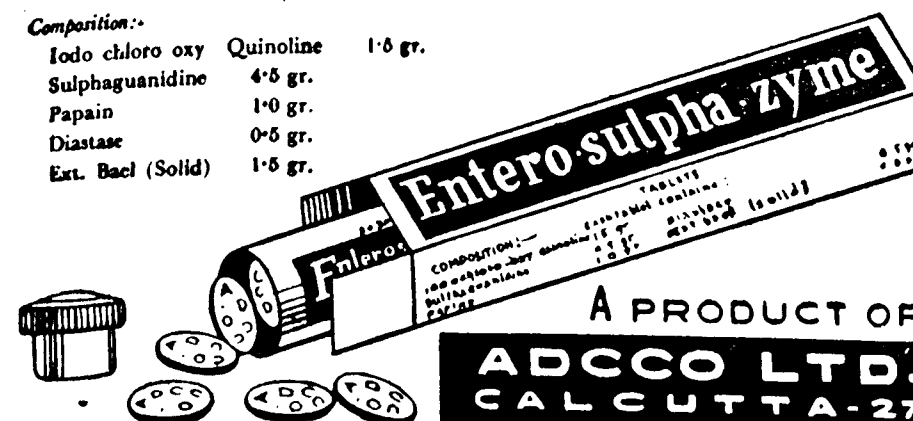
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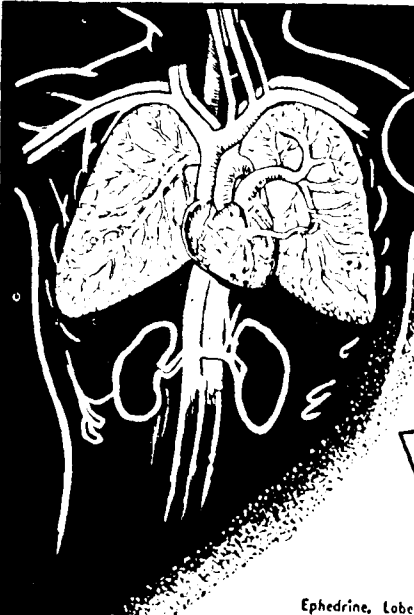
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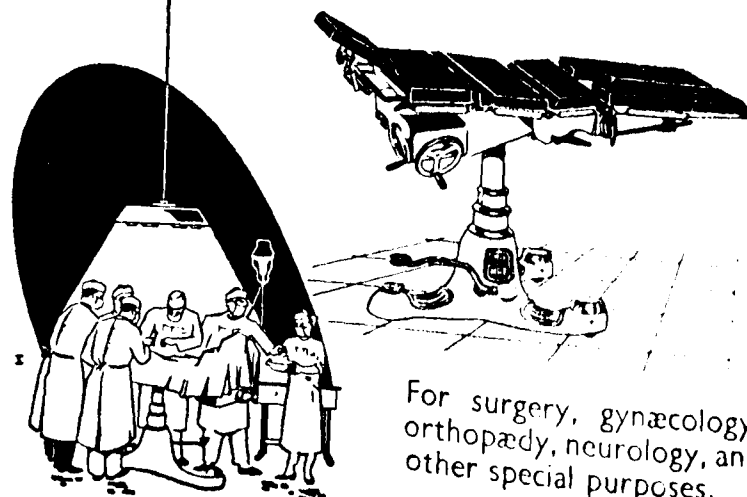
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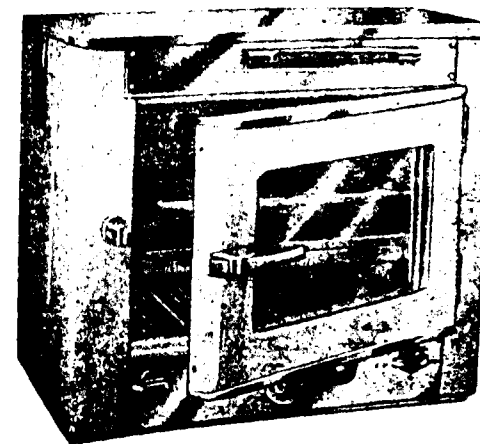
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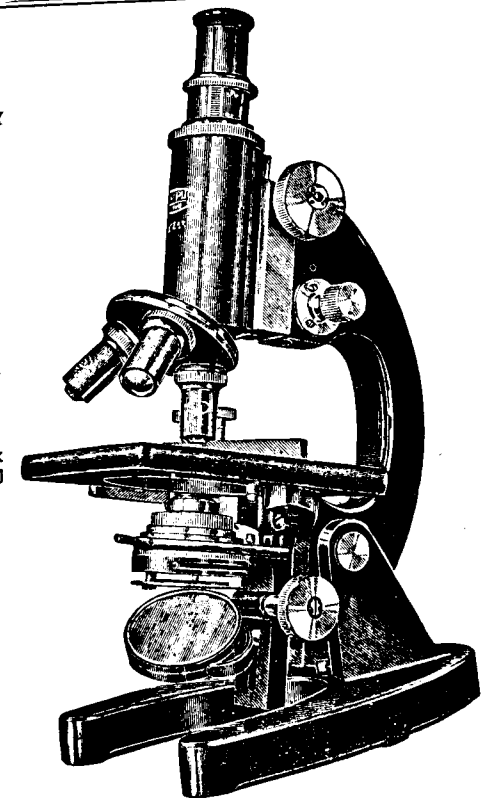
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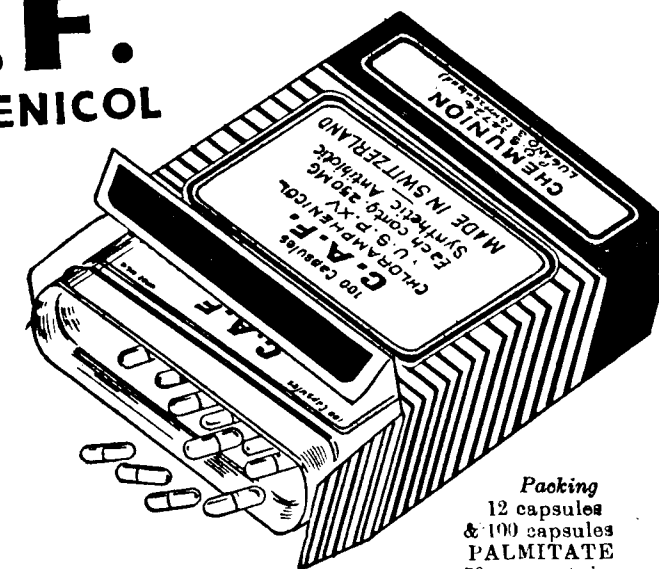


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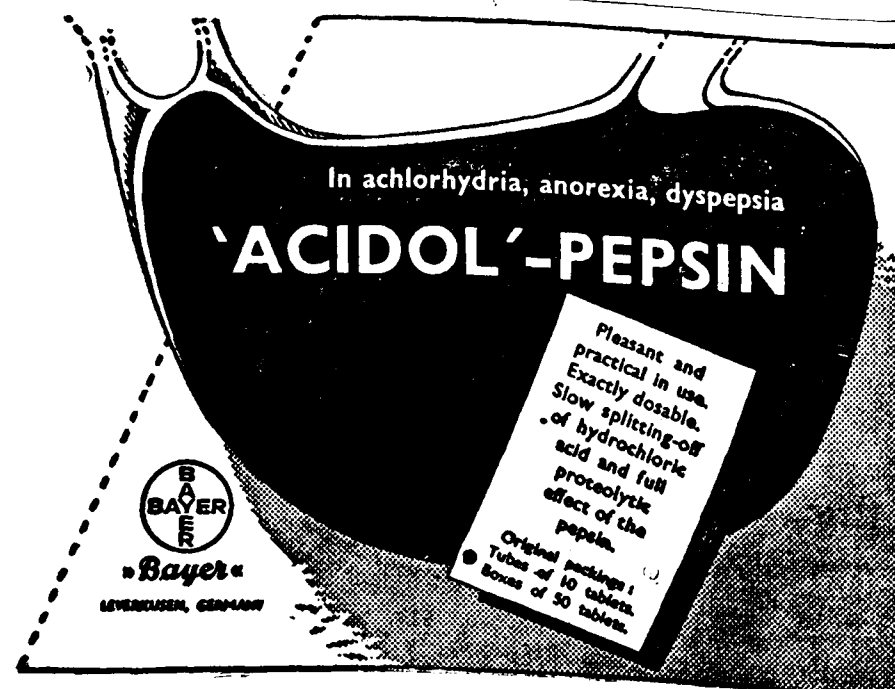
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TABLETS

In the management of
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DOSAGE: ADULTS: 2—3 coated tablets 3 or 4 times a day.

CHILDREN: 1—2 uncoated tablets 3 or 4 times a day.

REFERENCES:

Dr. C. R. Sule, M.D., *et al* 'Ascites due to Liver Deficiency Treated with an Indigenous Drug'. *The Indian Practitioner*, 1956, 4, 357.

Dr. G. R. Murkibhavi, G.B.V.C., F.G. and Prof. U. K. Sheth, M.D., F.C.P.S., B.Sc., 'Treatment of Jaundice in Dogs with an Indigenous Preparation Liv. 52'.—*Under Print*.

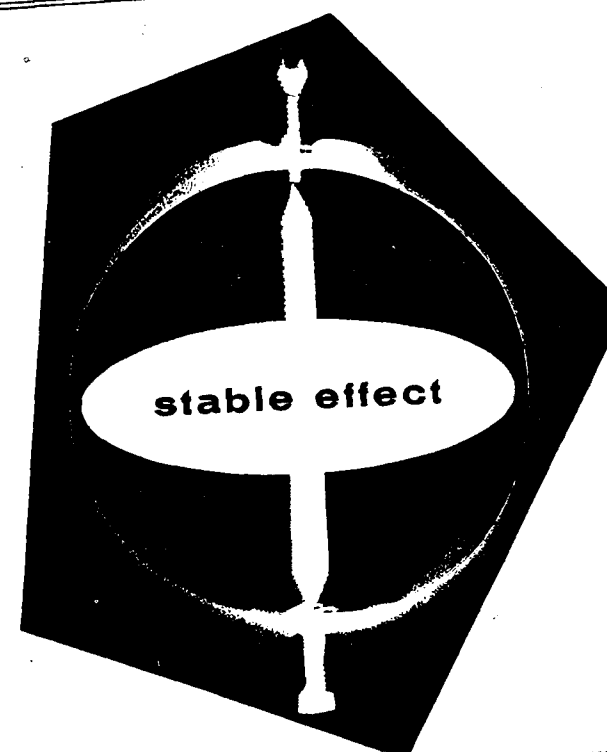
Dr. C. R. Sule, M.D. and Dr. P. M. Sathe, M.B., B.S., 'Liv. 52 in the Treatment of Ascites'. *Current Medical Practice*, 1957, 1, 42.

Dr. P. S. Mathur, M.D., D.O.H., 'Some Clinical Observations on the Use of Liv. 52 (an indigenous drug) in Cases of Cirrhosis of Liver in Children'.—*Under Print*.

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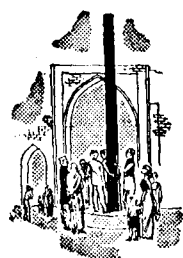
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A logical 4 in 1 control for Obesity that depresses appetite, supplies vitamin requirements, elevates mood, provides calorie-free bulk. Available everywhere. Treatment is inexpensive.

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- Indicated in all protein deficiency states, anaemias and wasting diseases.

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Made from full-cream fresh milk and the nutritive extracts of wheat flour and malted barley, Horlicks forms an excellent addition to the diet of expectant and nursing mothers.

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diseases of Children*

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INFLAMMATION OF GUMS,
WEAKNESS DURING CONVALE-
SCENCE, PELLAGRA, ARTHRITIS
INFLAMMATION OF MOUTH,
COLDS & CATARRH.

FORMULA

*Each dose of 4-5 c.c. (approx.
one teaspoonful) contains:*

Vitamin A	... 2000 I.U.
Vitamin B ₁	... 0.4 mg.
Vitamin B ₂	... 0.6 mg.
Niacinamide	... 5 mg.
Vitamin C	... 20 mg.
Vitamin D ₂	... 500 I.U.
Calcium Glycero- phosphate	... 0.5 gr.
Sodium Glycero- phosphate	... 0.25 gr.
Sucrose	q.s.

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THE RICHEST TONIC FOR BABIES

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ENLARGEMENT OF LIVER &
SPLEEN, DISTURBED SLEEP,
INFLAMMATION OF MOUTH,
SALIVATION, ROUND WORMS
& OTHER WORMS, EXCESSIVE
THIRST.

FORMULA

*Each dose of 4-5 c.c. (approx.
one teaspoonful) contains:—*

Aqua Pudina Destil- lata	... 3 min.
Aqua Zira Destillata	... 3 min.
Conc. Anisi Water	... 1 min.
Aqua Anethi Conc.	... 1 min.
Aqua Menth. Pip	... 1 min.
Soda Bicarb	... gr.
Sodii Bromidum	... 1 gr.
Spt. Ammonia Aromat	... 1 min.
Spt. Chloroformi	... 1 min.
Sucrose	q.s.

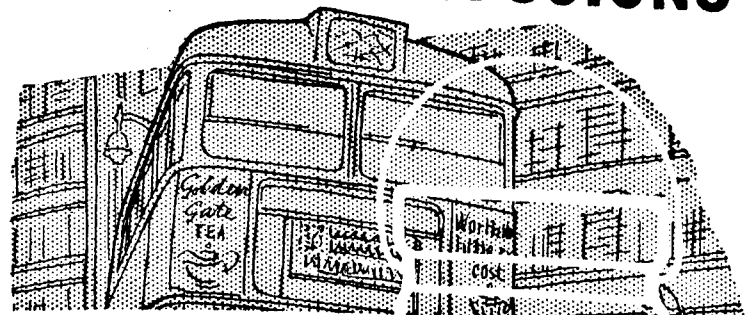
Calcium-Sandoz with VITAMIN C

500
mg.

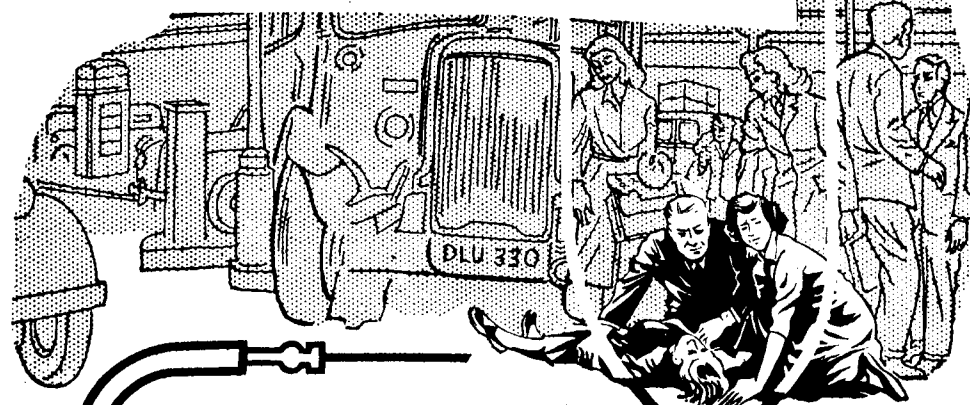
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in
10 cc



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Startling, but true, for by saving minutes in giving a transfusion a life is often saved

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PYROGEN FREE
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Normal

Saline 0.9%

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Saline 0.9%

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Whatever the walk of life, whatever the age, lack of iron is the commonest nutritional deficiency and administration of iron by mouth is the treatment. Fersolate provides ferrous sulphate, the most efficient iron compound, with traces of copper and manganese, all so essential for haemoglobin synthesis.

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TABLETS**

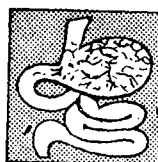
Each tablet contains exsiccated ferrous sulphate, 200 mg. (3 grains); copper sulphate, 2.5 mg. (1/25 grain); and manganese sulphate, 2.5 mg. (1/25 grain).

In bottles of 100 and 500



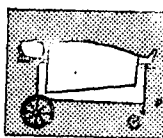
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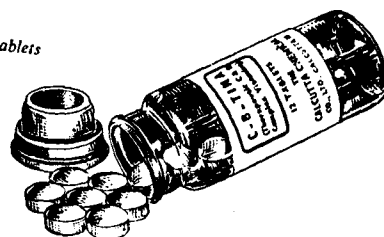
C-B-TINA

Each tablet contains:

Ascorbic Acid (C)	150 mg.
Thiamine Mononitrate (B ₁)	15 mg.
Riboflavin Soluble (B ₂)	15 mg.
Pyridoxine Hydrochloride (B ₆)	10 mg.
Nicotinamide (B ₃)	50 mg.

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Effective oral therapy of tuberculosis!

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TABLET

COMPOSITION: Each Tablet Contains:

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Calciferol (D ₃)	.. 1000 I.U.	
Pyridoxine Hydrochloride (B ₆)	.. 5 mg.	0.9%
Calcium Ascorbate (C)	.. 50 mg.	

Dosage: 2 tablets twice daily.

Supply: Phials of 100, 250 & 1000 Tablets

* (Dr. Clegg (B.M.J. 1955, 2 1004) has tried this new salt and observed remarkable effectiveness without developing any drug resistance).

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APRIL, 1957

No. 4

Original Articles

Z 55 IN THE TREATMENT OF DIABETES MELLITUS*

R. SUBRAMANIAM, B.Sc., M.D., M.R.C.P., (Lond.),

Professor of Therapeutics, Madras Medical College and
Physician, Government General Hospital, Madras

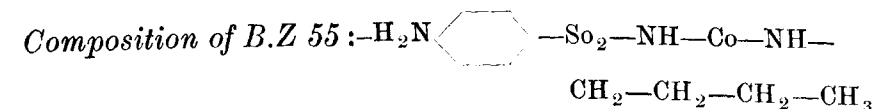
AND

RAJARAM, M.B., B.S.

WITH the introduction of antibiotics, the use of sulphanilamides was going to the background. It was even felt a few years ago, that the sulphanilamides may go out of the market. Just at that time the unique action of one of the sulphanilamide-compounds Acitazolamide marketed under the trade name of DIAMOX was used as a diuretic and for the elimination of sodium and potassium from the body. Last year various workers utilized the new sulphanilamide compound B.Z 55 marketed under the trade names of INVENOL and NADISAN.

Published reports on these drugs have been very favourable particularly in the treatment of elderly diabetics.

The depressing action of sulphanilamide compounds was due to hypoglycæmia produced by some of them as shown by blood-sugar analysis and that led to the development of B.Z 55.



Molecular formula: $\text{—C}_{11} \text{H}_{17} \text{O}_3 \text{N}_3 \text{S}$

This drug has been extensively studied in Germany where it was first synthesized.

* Specially contributed to the ANTISEPTIC

B.Z 55 has been used by us in the treatment of 20 selected cases of Diabetes mellitus. All cases that were chosen have been on insulin treatment for varying periods. The shortest period for which the patient has been having insulin therapy was one year and 6 months and the longest was as long as 14 years. Most of them suffered from diabetic neuritis and in one case (Case XI), there was surgical complication at the time of admission. He was admitted for diabetic cellulitis of the foot for which my consulting surgeon advised amputation. By effective treatment including antibiotics, we were able to control cellulitis and he was started on B.Z 55. Due to very small supply of the drug, the first 5 cases were treated with INVENOL and the others with NADISAN. These tablets are marketed as 0.5 g tablets. The dosage given was irrespective of the blood-sugar level and the clinical conditions. Five tablets on the first day 4 on the second day, 3 on the 3rd day and 2 from the fourth day onwards, were given at divided intervals. For instance, on the 1st day it was given 3 hourly and second day hourly, 3rd day 8 hourly and fourth day onwards *b.d.* We had the glucose-tolerance test done before starting the treatment and the same was repeated roughly a fortnight later. In 12 cases, we did this before and after and in 8 cases, the glucose-tolerance test was not done but in all of them, urine examination was done periodically and watch was kept on the total WBC count. In case No. 2, Dr. J., the fall in leucocyte count was fairly pronounced. It was 9600 to start with and fell down to 3800. But on administering vitamin B₁₂, the count steadily went up and has been maintaining normal count though she was on B.Z 55.

Case No. 4, was complicated by a small T.B. lesion of the lung. The lesion was not made worse or better by the administration of B.Z 55.

The effect of the administration of B.Z 55 was evident, almost from the start by a sense of well-being. The side-effects were urticaria, leucopænia and rash which were rapidly brought under control. The patients felt that they could do their day's work without getting tired. Case No. 2, a doctor volunteered the statement that she never felt so fit as after taking these tablets, though she was regularly taking insulin for a number of years. The administration of these tablets should, at the moment be considered purely as a substitute for insulin and not as a cure for diabetes. This is an oral replacement of parenteral insulin. There are limitations to the use of this drug, in that it is of no use in the treatment of juvenile diabetics. It has also no effect whatsoever on diabetic neuritis.

In cases Nos. 1, 7, 8 and 11, neuritis had to be treated with Vitamin B₁, and B₁₂, in addition to giving B.Z 55.

Being sulpha-compounds, the leucocyte count has got to be watched, in addition to urine examination. Urine examination is facilitated by the introduction of *Testape* by Messrs Eli Lilly & Co. This is a very convenient and handy instrument. It has a roll of paper inside like litmus paper, a strip from which has to be dipped in urine and taken out and after a few seconds, the paper changes colour. The colour has to be compared with the side of the instrument, and the reading straightaway gives the amount of sugar that is present in the urine. I have asked my diabetic patients to buy this small instrument so that they could test the urine themselves every time. About 1500 tests could be done at a nominal cost of about Rs. 10.

All the 20 patients were above 40 years of age. In 12 cases, the glucose-tolerance test was done before and after. Ten of them showed considerable reduction (*vide* Table, *p.* 240, 241 and 242).

In 2 cases, it failed to control the blood-sugar level and in 1 case, a small dose of insulin was found to be adequate for controlling it.

So far, none of the patients have become completely sugar-free. It is roughly two months since the first patient was started on B.Z 55. This drug has been found useful even in cases where the diabetic state persisted there for as long as 14 years as in Case No. 1. Severe neuritis needed morphia sometimes, to control the pain. Most of them have been on insulin ever since diabetes was detected, but not in a systematic way and insulin was being taken haphazardly. In spite of all these, they were on insulin for a number of years and B.Z 55 was quite useful. In Case No. 3, mild dermatitis occurred for which no active medical treatment was given. He was kept under observation and as the observation progressed, the dermatitis cleared up spontaneously.

Discussion.—After years of struggle and research, we have at last, a drug which on being administered orally, is capable of reducing the blood-sugar levels. The drug cannot be considered to have solved the problems of diabetes. Even in this limited series of cases, two who had complications like neuritis did not show good response. They do not seem to be in any way controlled by this drug. On the other hand, in Case No. 2 Dr. J., the diabetic neuritis seemed to have become worse, though the blood-sugar level was appreciably reduced and the urine sugar had also been brought down considerably by the administration of B.Z 55 and B₁₂. Other antineuritic drugs have got to be used: The mode of action is still in the realm of conjecture. Several possibilities are mentioned, and one which appeals to us is that, in the older age group diabetics there is insulin secretion which is being destroyed by the insulinase produced by the liver.

TABLE I

S. No.	Date	Name of patient	Blood sugar level					Total W.B.C.	Remarks
			Fast-ing	½ an hour	One hour	1½ hours	Two hours		
1	2-9-'56	Mr. K.	227.3	259.1	292.5	318.2	330.7	8125	Nadisan
		Urine sugar	+	+	+	+	5.5%		
	22-9-'56	Urine sugar	203.1	238.4	274.2	282.7	267.5	7500	
2			+	+	+	+	3.5%		
	2-8-'56	Dr. J.	290.0	375.0	440.0		390.0	9600	Invenol Urine sugar + ex- cept on one or two occasions
		Urine sugar	3.3%	5%	7%		8%	4800	
	7-8-'56							6800	
	11-8-'56							4600	
	18-8-'56							6425	
	22-8-'56		175	260	290		240	3800	
	13-9-'56	Urine sugar	nil	1.6%	3%		5%		
3	1-8-'56	Mr. I	214.2	246.5	281.7	293.3	272.8	8750	Invenol
		Urine sugar	+	+	+	+	3.5%		
	5-8-'56	" Trace						6300	
	8-8-'56	" Trace						5650	
	11-8-'56	" Trace to +						5350	
	22-8-'56	Urine sugar	198.3	220.7	248.2	261.5	243.0	5450	
	29-9-'56	" Trace	Trace	+	+	+	2.0%	4950	
	21-10-'56	" Trace to +						6050	
4	28-9-'56	Mr. M.	151.7	193.5	232.8	257.3	230.5	9375	Nadisan
		Urine sugar	nil	+	+	+	1.75%		
	14-10-'56	Urine sugar	139.1	175.3	207.2	233.6	210.4	8125	
5			nil	nil	+	+	1.0%		
	17-9-'56	Mr. P.	191.6	213.2	237.8	229.2	215.8	7500	Nadisan
		Urine sugar	Trace	+	+	+	1.0%		
	10-10-'56	Urine sugar	163.8	189.1	217.4	210.6	202.3	8125	
6			nil	Trace	+	+	0.5%		
	17-8-'56	Mr. N.	194.2	238.6	272.5	287.3	268.1	9375	Nadisan
		Urine sugar	+	+	+	+	3.0%		
	6-10-'56	Urine sugar	377.4	460.0	487.8	482.0	454.6	8120	
7			4.8%	4.8%	4.8%	4.9%	5.1%		
	21-9-'56	Mrs. Se	206.9	238.2	273.8	261.7	240.4	9375	Nadisan
		Urine sugar	+	+	+	+	2.5%		
	20-10-'56	Urine sugar	120.0	160.0	184.0	216.0	216.0	6250	
8			nil	nil	Trace	+	0.4%	8350	
	13-10-'56	Mrs. Su	253.2	281.8	305.3	327.6	340.4	6875	Nadisan
		Urine sugar	+	++	++	++	5.5%		
	30-10-'56	Urine sugar	220.7	283.1	276.4	295.2	280.6	6250	
9			+	+	+	+	4.0%		
	27-8-'56	Mr. R.	151.3	196.5	232.8	227.1	218.4	9375	Nadisan
		Urine sugar	nil	+	+	+	1.0%		
	20-11-'56	Urine sugar	121.7	156.3	188.1	162.5	136.3	6875	
			nil	nil	—	nil	nil		

TABLE I—(Contd.)

S. No.	Date	Name of patient	Fast-ing	Blood sugar level				Total W.B.C.	Remarks
				½ an hour	One hour	1½ hours	Two hours		
10	1-9-'56	Mr. L. S. K.	95.2	166.6	210.6	235.2	200.0	6400	Invenol + Nadisan
		Urine sugar	nil	nil	+	+++	+++		
	14-9-'56	Urine sugar	131.5	164.2	196.0	215.3	192.7	8125	
11			nil	nil	+	+	0.5%		
	24-7-'56	Mr. T. V. C.	235.2	250.0	285.7	333.3	357.2		Invenol
		Urine sugar	Trace	+	+	+	+	11200	
	3-8-'56		117.6	125.0	181.8	222.2	266.6	8400	
	4-8-'56	Urine sugar	Trace	Trace	+	+	+	5600	
			100.0	121.2	200.0	250.0	285.7		
	6-8-'56	Urine sugar	Trace	Trace	Trace	Trace	Trace	3800	
	21-8-'56	Random blood sugar	117.6	mgm. %				7600	
	7-9-'56	"	117.6	mgm. %				7550	
12			100.5	mgm. %				8050	
	20-9-'56	"							
	26-9-'56								
	30-9-'56	Mr. A. R.	243.8	275.1	298.4	306.2	319.7	9375	Nadisan
		Urine sugar	+	+	+	+	4.5%		
13	3-10-'56	Mr. D. R. R.	228.3	261.5	284.2	296.0	308.6	6250	Nadisan
		Urine sugar	+	+	+	+	4.5%		
14	30-9-'56	Mrs. A.	199.3	225.5	253.1	241.7	223.5	8125	Nadisan
		Urine sugar	+	+	+	+	+		
15		Mr. M.	201.8	233.2	267.5	252.8	230.6	7500	Nadisan
		Urine sugar	+	+	+	+	2.0%		
16	20-11-'56	Dr. K.	148.2	—	307.6	—	363.6		Invenol
		Urine sugar	Trace	—	Not available	—	Not available	7200	
	23-11-'56							4900	
	29-11-'56								
17	25-8-'56	Mr. A.	181.8	210.6	235.2	333.3	363.6	8600	Invenol
		Urine sugar	Trace	+	+++	+++	+++	6400	
	8-9-'56	Random blood sugar		160					
	10-9-'56			mgm. %				7600	
	14-9-'56	Random blood sugar		200					
	20-9-'56			mgm. %				6200	
	22-9-'56	Random blood sugar		111.1				5750	
	29-9-'56			mgm. %					

TABLE I—(Contd.)

S. No.	Date	Name of patient	Blood sugar level					Total W.B.C.	Remarks
			Fasting	1/2 an hour	One hour	1 1/2 hours	Two hours		
18	11-8-'56	Mr. A. H.							
		Urino sugar	152.0 nil	198.0 Trace	249.0 below 1.0%	261.0 1.0%	251.0 1.0%		Invenol
	9-11-'56								
	13-11-'56	Urine sugar	94.8 Trace	161.2 +	190.4 ++	181.8 +++	204.0 +++	6800	
19	28-11-'56							4950	
		Mrs. M. R. P.							
	4-10-'56								
		Urino sugar	231.8 +	264.3 —	298.1 —	316.4 ++	327.2 4.5%		Invenol
	25-9-'56	Urino sugar	208.5 +	236.2 +	271.9 +	257.1 +	232.6 2.0%		
20		Mr. G.							
	9-10-'56		227.1 +	264.6	291.3	282.5	268.2		
	19-10-'56	Urino sugar							Nadisan
		Random blood sugar		261.0 mgm.		+	3.5%	8750	
	26-10-'56	Random blood sugar		243.4 mgm.					
		Urino sugar	2.5%						
	3-11-'56	Random blood sugar		238.1 mgm.					
		Urino sugar	2.5%						
	12-11-'56	Random blood sugar		241.5 mgm.					
		Urino sugar	2.5%						
	21-11-'56	Random blood sugar		230.8 mgm.					
		Urino sugar	2.0%						

Probably B.Z 55 inhibits the production of insulinase rather than that it stimulates beta cells or inhibits alpha cells. Other theories which are of academic interest are that B.Z 55 depresses the glucogen activity of the pancreas. Fenner and Range¹ reported post-mortem studies on patients who were treated with B.Z 55; two died of some other cause and no damage in the alpha-cells was seen. Histopathology did not reveal any damage to the alpha cells nor was there any degranulation of the beta-cells which one expects as evidences of increased insulin output.

The fact that irrespective of the action of B.Z 55 *i.e.*, hypoglycæmia does not occur, indicates that the action of this drug is elsewhere than at the level of the pancreas. If there is any action

on the pancreas it would not be a direct one but an indirect one and even for this indirect action, the presence of beta-cells in the pancreas is necessary as shown by the ineffectiveness of the drug in juvenile diabetics. Menon and Moses³ have reported that B.Z 55 was found useful in a case of renal glycosuria. Until now, it was recorded that renal glycosuria was not due to any disease of the pancreas but that it is the renal filtrate that is at fault. If this drug can correct renal glycosuria, it obviously means that the drug can alter the permeability of the renal tubules to glucose. In a case reported by them, to start with, the urine showed a blood-sugar level of 80 mg. and after the administration of B.Z 55, the urine became sugar-free though the blood-sugar level was 90-95 mg %. It is only with further work, both experimental and clinical that we will be able to assess finally the exact role played by this drug. In severe diabetics, where this drug fails to render the urine completely sugar-free, a small dose of insulin was found to be adequate, as was seen in our Case No. 2, where originally the patient needed about 100 to 120 units to keep the sugar down and with B.Z 55, with 20 to 30 units, the patient was able to maintain herself sugar-free. One theory assumes that B.Z 55 depresses in moderate doses the over-activity of alpha-cells and indirectly stimulates beta-cells. In animal experiments, very high doses of B.Z 55 caused hyperglycæmia whereas it was expected to cause hypoglycæmia. In other words, it stimulated the beta-cells more than the alpha-cells. This hyperglycæmic effect has not been observed in our clinical series, since heavy dosage was not administered to any of the patients.

Conclusions.—B.Z 55 has been administered in 20 selected cases of Diabetes mellitus. All except two cases, showed uniform clinical response. In most of them, one gram a day, was found to be adequate and it was remarkable that even high percentages of sugar responded very well to this minimum amount of the drug. All the patients felt on taking this drug, a sense of well-being which they never had when taking insulin. Probably, this is due to a better utilization of the blood-sugar rather than a psychic effect. Various drugs have been used in the treatment of diabetes by the oral route—some of them causing disappearance of the glycosuria by elevating the renal threshold. The introduction of B.Z 55, should be considered as occupying more or less the same place occupied by parenteral insulin therapy. For the drug-action to be best felt, patients must continue to observe the same dietetic restrictions as when taking insulin. In one or two cases, where the blood-sugar level was found to be high, it was found on interrogation, that the patients did not rigidly adhere to dietetic restrictions. To our mind, the great advantage, apart from the oral administration, is the comparatively non-toxic

nature of the drug. As we are concluding this article, we learn that Messrs. Hoechst are introducing a new compound under the trade name RASTINON having an effect similar to that of B.Z 55 but without the sulpha-radical. This will terminate one of the serious side-effects but this drug is not available in India just yet, but we hope to get it for clinical trial.

Summary.—1. A brief clinical report is made on the use of B.Z 55, in the treatment of diabetes mellitus in 20 selected cases.

2. The drug cannot be considered as completely solving the problems of diabetes, since complications do occur occasionally.

3. The toxicity is very mild and is what may be expected with any sulpha-compound.

The same precautions as are observed during the administration of sulpha-compounds, have got to be observed with this drug also.

Acknowledgement.—We are thankful to Dr. C. K. Prasada Rao, M.D., Dean, Government General Hospital, Madras for permitting us to utilize the hospital records and to Messrs Hoechst (Indo-agencies Ltd) and Messrs Neo-Pharma Ltd., respectively for the supply of B.Z 55 under the title of INVENOL and NADISAN and to the Director of Medical Services, Madras, for permitting us to publish this report.

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ADVANCES IN OBSTETRICS

POST-PARTUM HÆMORRHAGE

The old prejudices against the use of oxytocic drugs before the delivery of the placenta have surely disappeared at last. The fear of hour-glass retention of the placenta was much exaggerated and this complication was usually due to associated attempts at expression of the placenta. Many reports, such as those of Martin and Dumoulin (1953), draw attention to the value of intravenous ergometrine in lowering both the post-partum hæmorrhage rate and the size of individual hæmorrhages, but unfortunately, in the absence of a doctor, midwives confronted with a rapid and serious hæmorrhage have to employ the intramuscular route, which may delay effective response for a few minutes. Kimbell (1954) described the use of intramuscular ergometrine given with hyaluronidase in over 1,700 cases at the moment of crowning of the head, and compared the results in the third stage of labour with about 700 controls. He found that the manual removal rate was not increased and that the post-partum hæmorrhage rate was nine times as high in the controls as in the treated cases. He noted, however, that placental retention may develop if the drug is given too late: for example, after the child's body has been expelled from the uterus. It would appear that the absorption of the drug, thanks to the hyaluronidase, is almost as rapid as can be achieved by direct intravenous injection.—(*Practitioner*, Oct. 1956).

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NUTRITIONAL DISORDERS IN CHILDREN*

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Introduction.—Nutrition is of fundamental importance especially in the tropics. The wider implications of this problem have been studied very little, inspite of the advances being made in this field of medical science.

Children suffer more from the effects of malnutrition, specially in tropical countries like India, where the average span of life is much less and the mortality and morbidity rates in infants and children are much higher than in Western countries and hence, this problem will be discussed in the context of the conditions prevailing in the local population.

Nutritional disorders in children indicate some derangement in the normal physiological functioning of the body, due to the inadequacy of one or more of the nutritional elements, essential for normal health and development. The principal food substances required for the health and well-being of the individual are carbohydrates, proteins, fats, mineral salts and vitamins. Proteins provide materials for growth and for the repair of the constant wear and tear, while fats and carbohydrates provide energy for work. Mineral salt of calcium, phosphorus and iron play important roles in the body-metabolism. Vitamins, the accessory food-factors, are essential for the normal growth and health of the individual, probably through hormonal influences.

Children suffer more from the effects of malnutrition, as their requirements of the essential food factors are higher than those of adults, in order to secure proper physical and mental growth, and owing to their increased metabolic needs. Their nutritional needs are relatively high.

Causative factors.—Primary deficiency is due to inadequate intake of the various nutritional elements in food-stuffs, due to poverty, over-population, food scarcity and adulteration of foods, lack of health consciousness and food-allergy.

“Malnutrition is unfortunately a scourge of the poor class which includes the majority of pigmented people all over the world. Where good food is unevenly distributed among the various sections of the population, so that one section lives in plenty and the other in want, malnutrition becomes a social disgrace and casts reflection on the integrity and social conscience of a nation” said Gilman, whose observations have particular reference to the present day conditions in India and elsewhere, but the rich and the educated middle class people also suffer from malnutrition, mostly of the primary deficiency type—the result of faulty food habits and traditional prejudices against certain foods.

* Specially contributed to the **ANTISEPTIC**
[245]

Rich, spicy and over-cooked foods lose much of their nutritive value in processing and children indulging in such foods are liable to suffer from malnutrition. Sweets, sugar, starchy and fatty foods often lead to flatulence caused by chronic indigestion.

Secondary deficiency is due to (1) poor absorption and utilization of food-elements, (2) their increased demands in the body under certain febrile and metabolic disorders and (3) excessive excretion.

Impaired digestion and absorption may be due to inadequate mastication of food, over-eating, constipation and chronic gastrointestinal catarrh, due to chronic infection in the throat, tonsils, naso-pharynx and middle-ear, intestinal worms, diarrhoea and dysenteries; if this is allowed to persist for a long time, it may lead to malnutrition. In certain liver disorders the proper utilization and storage of foods get impaired, whereas in some renal disorders (*e.g.*, renal rickets) they are excreted in excess.

In order to ascertain the factors responsible for causing malnutrition in children, extensive nutritional surveys of the child population, particularly those living in rural areas would be essential. The present report is based on a study of the nutritional status of 344 school children in four different villages within the Bargarh Community Project areas. The villages were widely scattered, one of them was about 20 miles away and three were each about 6 miles away from Bargarh; an L. P. School in Bargarh town was also surveyed. The age, sex, social and economical conditions, food-habits, weight, height, chest-girth, physical and mental growth, chronic co-existing diseases if any, deficiency disorders, were all ascertained and recorded. The educational status and occupation of the parents or guardians were also noted and lastly, the seasonal variations of disorders if any, were also assessed. They were as under:—

(1) *The total number of school children included in this survey was 344, of whom 266 (77.32%) were males and 78 (22.67%) were females; and their ages varied from 5 to 10 years: 95 were between 5 and 6 years of age; 36 were 7 years old; 45 were 8 years old; 56 were 9 years old and there were 112 who were 10 years of age.*

(2) *Occupation of the parents or guardians:—299 were labourers or cultivators; 40 were rural craftsman or skilled workers and 5 were either idle or of sedentary life.*

(3) *Income per capita in the family per month:—(a) between Rs. 1 to Rs. 10/- 299 (or 73.75%); (b) between Rs. 11 to Rs. 20/- 79 (or 22.91%); (c) between Rs. 21 to Rs. 30/- 8 (or 2.32%); and (d) between Rs. 31 to Rs. 40/- 3 (or 0.87%).*

(4) *Food-habits of the children:—Nearly all were non-vegetarians, and only 63 (18.31%) had a well-balanced diet, while*

the rest 281 had a very poor ill-balanced diet. Out of the 344 cases studied, 168 (48.83%) showed definite evidence of deficiency diseases; 53 of these were malnourished; *i.e.*, loss of sub-cutaneous fat, emaciation, pallor, dry and rough skin, poor growth, low Pelidisi index etc. (*vide infra*).

(5) Among the 344 cases the *chronic co-existing diseases* were: Tonsillitis in 72; otitis media in 2; chronic nasopharyngeal catarrh in 17; oral and dental infection in 54; chronic malaria in 10; dysenteries in 9; intestinal worms in 5; chronic bronchitis in 20; congenital syphilis in 3 and leprosy in 1; making a total of 193 or 56.1%.

Of these 193 cases, 41 were free from deficiency diseases, whereas, out of the 168 children who showed definite signs of deficiency diseases, 31 had no chronic co-existing diseases, which would appear to suggest that such deficiencies were probably due to poverty and ignorance and consequent lack of the protective foods in the daily diet.

Out of four thousand children examined in the Bargarh Hospital, 1268 cases showed evidence of malnutrition. Most of them were anæmic and emaciated with puffy faces and dry, wrinkled skins. At least 60% of them belonged to the poorer classes living on a semi-starvation diet.

The various diseases which might have contributed towards malnutrition in these children were as under:—

Table showing probable causes of malnutrition

Diseases	No. of cases
1. Diarrhoeas	136
2. Intestinal worms	98
3. Dysenteries	68
4. Chronic malaria	128
5. Fevers	151
6. Chronic sepsis	182
7. Chronic nasopharyngeal catarrh and respiratory tract infections	305
Total	1068

Most of the children were suffering from either bowel disorders, intestinal worms or chronic sepsis, all of which may cause chronic indigestion.

Therefore it was difficult to assess the number of children, who were affected primarily as a result of inadequacy of the various food factors in the daily diet.

At least in 2 cases of polyneuritis, 5 cases of rickets, 25 cases of glossitis and angular stomatitis and in 10 cases of xerophthalmia, there was no evidence of chronic sepsis or digestive disorders; it was most probably due to poverty and an ill-balanced diet.

Prematurity in infants, ill-balanced diet of lactating mothers, poor and ill-managed weaning of a child in the case of breast-fed babies, may all pre-dispose to malnutrition.

Lastly, it may be stated here that rice forms the staple article of food of the people here and their average daily menu consists chiefly, of rice and pulses with a little vegetable, meat, milk, fruits etc. Indian children suffer badly, from malnutrition due to lack of the protective food stuffs, specially milk which is seldom available to them.

Classification :—They are broadly classified in the order of their incidence :—

(1) Avitaminosis; (2) anæmias (deficiency type); (3) hypoproteinaemia; (4) tetany due to low serum-calcium level in the blood; (5) multiple deficiency diseases due to a combination of the above disorders, often seen in a good many poor and debilitated children.

Well advanced cases are easy to diagnose; the diagnosis is often difficult in those with early signs and symptoms of these disorders. Obesity in children is not an indication of good health and may be due to over-feeding, resulting in chronic indigestion in the long run.

A child, nutritionally healthy should be sprightly, gay and cheerful, playful, happy and contented, with a smooth shining skin, bright and sparkling eyes and with the mouth, nose, throat and ears free from discharges; there must be steady gain in weight; he should maintain his normal growth (physical and mental) and march along the milestones of life, with equal and uniform spacing. His muscles and bones are symmetrically developed.

Children with nutritional disorders, present a sorry picture, the opposite of what has been stated above.

1. Deficiency anaemias.—Both hypochromic and hyper-chromic (rarely seen) types occur due to lack of iron, copper, cobalt, Vitamin C, thyroxine, proteins, folic acid and vitamin B₁₂. They are frequently associated with malaria, kala-azar, syphilis, hook-worm and ascaris infections; chronic sepsis, anæmbiasis and other parasitic infections also play an important role in their causation.

2. Hypoproteinaemia.—These cases are usually anæmic, and debilitated, with œdema of the limbs (nutritional or famine œdema). There is defective and tardy wound-healing with a lowered resistance to infections; and various liver and kidney disorders may occur. Animal proteins contain essential amino-acids like leucine, tyrosine, cystine and tryptophane; hence they are essential for the growth and well-being of the child, for maintaining the normal functions of the liver and the kidneys and lastly, for building up various cells, tissues and

antibodies etc. Marasmus in children indicates a marked protein deficiency.

3. Vitamin deficiency.—(a) *Vitamin A deficiency* :—Vitamin A is necessary for normal growth. It protects the skin and mucous membranes from infection, plays an important role in urinary secretion and prevents stone-formation in the kidneys. Its deficiency is manifested by retarded growth, increased susceptibility to infections particularly of the respiratory and cutaneous systems, night-blindness, xerophthalmia, blepharitis, infection and stone formation in the urinary tract through damaged epithelial tissues and lastly dermal changes like follicular hyperkeratosis.

(b) *Vitamin B complex deficiency* :—This group consists mainly, of thiamine hydrochloride, riboflavin, nicotinic acid and its amide, pyridoxine, pantothenic acid, biotin, inositol and folic acid. Thiamine hydrochloride plays an important role in the normal carbohydrate metabolism, especially that of neuro-muscular tissues and in some enzymatic functions. It constitutes the most important single deficiency in tropical diets, which consist mostly of carbohydrates—milled or polished rice with prolonged storage. Bandmann describes a condition termed subtropical beri-beri which consists of lassitude, debility, low resistance, loss of appetite, constipation, irritability and retarded growth. In severe cases it is manifested by polyneuritis, circulatory asthenia specially due to myocardial weakness and with serous effusions in the body cavities and in tissues.

Riboflavin is essential, for proper growth and tissue functioning. Its deficiency may lead to cheilosis, angular stomatitis, glossitis, dermatitis of the shark-skin type and vascular keratitis.

Deficiency of nicotinic acid and its amide causes anorexia, abdominal discomfort, glossitis and stomatitis and in severe cases dementia, dermatitis and diarrhoea of infantile pellagra which is also characterized by headache, giddiness, unsteady gait, tremors and spasms of muscles and gingivitis.

Pantothenic acid is said to be an adjuvant factor in development and growth during childhood.

Biotin (Vitamin H) has proved effective in the treatment of skin diseases of childhood.

(c) *Vitamin C deficiency* :—Vitamin C is responsible for the production and maintenance of the intercellular material, cementing the cells into a tissue (Wolbac) specially those of mesenchymal origin. It also plays an important part in wound-repair, hæmopoiesis and in the formation of anti-bodies during infection. Its deficiency may lead to anæmias, infantile scurvy, in which condition fretfulness, irritability, bleeding from the gums, nose and conjunctiva, hæmaturia, hæmatemesis, and melæna and subperiosteal hæmorrhage in long bones and with beadings

of the ribs occur. Infection and ascorbic acid deficiency are common in megaloblastic anæmia in infants, suggesting a deficiency of folic acid and vitamin B₁₂. Ascorbic acid tends to get depleted during infection and the requirement of folic acid is increased during ascorbic acid deficiency. Hence megaloblastic anæmias are often associated with infections, specially when of long standing. Infants probably, do not synthesize folic acid or vitamin B₁₂ but depend for them on the food and their production by intestinal bacteria. Normal infants on the usual feeding regime which contains an adequate ascorbic acid supply do not require extra folic acid or vitamin B₁₂.

(d) *Vitamin D deficiency*:—Calciferol or vitamin D, regulates the process of absorption of calcium and phosphorus from the intestine producing a concentration, ideal for the maintenance of normal bone metabolism. Its deficiency causes rickets, a disease characterised by disordered skeletal metabolism due to failure of calcium phosphate to be deposited at the growing ends of bones. The serum calcium or phosphorus concentration may be reduced in cases of active rickets and the child may show delayed dentition and irregular ossification of the skull-bones (Craniotabes), ribs (Rickettyrosary) "pigeon-chest," Harrison's sulcus, enlarged epiphysis of the long bones which may get curved to the pull of muscles and the gravitational pull of the body weight, pot-belly with intestinal stasis and persistence of a low-grade infection of the respiratory tract.

(e) *Vitamin K deficiency*:—This vitamin is essential for the formation of prothrombin by the liver, hence, its deficiency causes a condition of hypoprothrombinæmia which is manifested by defective coagulation of the blood and a state of hæmorrhagic diathesis. Spontaneous hæmorrhage may occur in any of the viscera, body cavities and tissues and blood may be seen coming from different orifices in the body. All hæmorrhagic diseases of the new born fall under this category.

(f) *Calcium deficiency*:—Calcium plays an important role in allaying neuromuscular irritability, in the mechanism of blood-clotting and for maintaining the rhythmic contraction of the heart muscles. A reduction of calcium level in the blood causes spasmophilia, a condition characterised by tetany, laryngismus, stridulus and convulsions, besides, diarrhœa with chronic indigestion and frequent respiratory tract infection.

Many of these deficiencies may be present in the same individual, specially in those children, who suffer from extreme poverty, starvation and ill-balanced diet, besides chronic focal sepsis, bowel and metabolic disorders.

A total of 850 children were examined in the different rural schools in this area; 255 of them (30·03%) were suffering from

The following were the deficiencies noted:—Vitamin A deficiency: 36; Vitamin B group deficiency: 16; Vitamin D deficiency: 12; Calcium deficiency: 24; anæmias: 82; and multiple deficiencies: 85. Vitamin C deficiency was not observed.

These observations have been corroborated by the figures, obtained at the Bargarh Hospital for the last 2 years. Out of 4,000 children treated, 1,268 (31·7%) cases were found to be suffering from the effects of malnutrition. As most of them were suffering from deficiencies of more than one of these nutrients complicated with fever, diarrhœas, skin disorders, tuberculosis, etc., the exact assessment of the particular food-factor, deficient in these cases and its respective role, in the causation of the particular disorder, could not be ascertained. These figures indicate roughly the present state of nutrition in children, in many parts of this country.

In the survey of the nutritional status of 344 school children already referred to at page 247, 168 children showed signs of deficiency disorders of various types; deficiency of vitamin A in 35; of vitamin B in 30; of vitamin C deficiency in 3; of vitamin D deficiency in 10 and of calcium in 35. Severe anæmias were found in 2 and multiple anæmias in 53; making a total of 168 or 48·83% of the entire group surveyed.

Fifty three of these 344 cases showed as already stated, minor deficiency states, *viz.*, emaciation, pallor, lack of energy etc.

A study of the physical and mental developments of these children showed:

MENTAL			PHYSICAL		
Poor	Average (fair)	Good	Poor	Average (fair)	Good
64 = 18·60%	182 = 52·9%	98 = 28·48%	170 = 49·41%	140 = 40·69%	34 = 9·89%

The age and sexwar incidence of nutritional disorders, as observed in these 344 school children was as under:—

Age:		5 to 6 years		7 years		8 years		9 years		10 years	
Sex:		Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
		36	8	11	4	13	3	14	9	63	6

Measures to control malnutrition.—The following measures will serve to tackle the problem of malnutrition in children:—

PREVENTIVE.—An adequate daily intake of properly balanced essential foods, natural and synthetic in a palatable easily digestible form.

(a) Anæmia, rickets and infection develop frequently in premature infants. Their digestive capacity is greatly reduced

In spite of the various schemes and implementation programmes undertaken by the Central and State Governments for raising the economic and health standards of the people of the country at an enormous cost, malnutrition still remains a major problem and the incidence of deficiency diseases in children continues to be very high.

The child of today is the citizen of to-morrow. Dietiticians and health experts should therefore, concentrate on building the health of the nation, by raising the nutritional standard of the entire child population, of the country at all levels.

Schools, children's nurseries, child-welfare centres and child-guidance clinics are the most convenient centres, where the nutritional standards of all children could be frequently checked in relation to their growth, height and weight, constitutional development (physical and mental) the presence of anaemia, hypoproteinaemia and avitaminosis and any incidental or co-existing diseases.

Doctors, dietiticians, health visitors, midwives, school teachers and all social workers, who run Children's Nurseries and Welfare Centres must be given necessary training in the science of nutrition and in the control of deficiency diseases. In the words of Sir Alexander Russell, "No preventive campaign against malaria, against tuberculosis, or against leprosy, no maternity relief or child welfare activities, are likely to achieve any great success unless those responsible, recognize the vital importance of this factor of defective nutrition and from the very start give it their most serious attention. Abundant supplies of quinine and provision of more of tuberculosis hospitals, sanatoria, leprosy colonies and maternity and child-welfare centres are no doubt desirable, if not essential, but none of these go to the root of the matter. The essentials for the prevention of diseases are: a higher standard of health, a better physique and greater powers of resistance to infection. This can only be attained if the food of the people is such as will give all the physiological and nutritional requirements of the human frame."

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Evolution of life means individualization.—Hence the central truth of the medical sciences is the study of the individual constitution (प्रकृति):—No two people are the same in looks, tastes and degree of tolerance to heat or cold. Consequently the degree of their individual adjustment and adaptive reaction must be different and in helping to bring about similar results, varying methods and degrees of effort have to be pursued. Evolution of life means individualization. On what does this difference in degree and quality depend? What are the causes that have brought about these differences in reaction to a common environment? In answering these questions we stumble upon the central truth of medical science, that is the study of the individual constitution (प्रकृति). Complete adjustment of the individual with his environment is possible only on the basis and appreciation of the facts of his individual constitution. It is only by viewing environment and constitution together, that we can accomplish the complete and successful harmonization of man with his environment, which is the sole aim and justification of medicine.

The study of constitution.—The outstanding fact of life is that no two individuals are exactly alike in their appearance or in their physical and mental aptitudes, abilities or gifts. This is because each person occupies a point in space-time different from that of every one else. This endows each person at the very moment of his coming into being, with a peculiar group of qualities and tendencies through the 'genes.' Each person thus comes into life with a peculiar view-point, mode of reaction to environment and susceptibility to physical and psychic influences. That is why we find that though people live in a common environment, no two of them react in identical fashion. Sir William Osler, the great physician says, "No two persons react equally to incursion of injury. No two persons suffering from the same disease run exactly similar clinical courses." Plato said of medicine, that it is an art which considers the constitution of the patient, and has principles of action and reasons in each case. This emphasizes the importance of the study of the individual's constitution in medical science.

It is difficult to say in the present state of our knowledge, how and what factors go into the making of this unique bundle of tendencies and qualities, why certain ancestral and race traits get to be recessive in one child and dominant in another. But that such is the case is evident from the investigations of Mendel and other scientists who have tried to reduce the subject to a biological law. The constitution still remains the riddle of all time.

Classification of types.—If one may be over-scrupulous in statement, there are as many types as there are individuals.

that is unhelpful in reducing the subject to some approximate formula. Therefore, some biologists and medical scientists have classified these types, racewise, groupwise, regionwise and in other ways. But the inadequacy of these classifications becomes evident from the medical clinician's point of view when individuals of the same race, group or region show divergent reactions and degrees of tolerance to common disease factors. Hence a totally biological classification and grouping alone is entitled to the clinician's credence and appreciation.

In the ancient medicine of India and to an approximate degree in that of Greece, such a biological view and classification do obtain. Probably Vatsyayana, the author of *Kam-Sastra* (the classical work on Sexology) was the first to make scientific use of the constitutional classification of men and women to achieve satisfactory and successful sex-life in them. Vatsyayana classified human males and females in four groups and indicated the biological importance, and value in selecting the mating partner. In India constitution or *Prakriti* (प्रकृति) has been broadly classified into three groups allowing of innumerable minor groupings according to the varied combinations of these three main categories. This classification was done both from the physiological and pathological points of view, in the light of the triumvirate of biological organizations. This classification became the guiding spirit of the clinician and the patient in the maintenance of positive health and in prophylactic as well as curative measures against diseases. It was also the beacon-light in the realm of diagnostics and practical therapeutics.

In the daily regimen of diet and behaviour meant for balancing and correcting the factors predisposing to disease, this constitutional perspective was considered of supreme significance. Charaka says:—

विरतीगुणस्तेषां स्वस्थवृत्तेर्विधिर्हितः ।

च.सु.७-४१

"A practice of things antagonistic in effect to one's predisposing factors, is recommended in the wholesome living." It also contains the means of revitalizing and the prevention of aging in different constitutions. (*Char. Sutra* 7-41). This contains the seed or beginning of the science of immunity in its active aspect where the individual is enabled to react powerfully with all his vital powers of resistance.

The term '*Constitution*' is used in physiology nearly in the same sense as in sociology wherein it is defined as "the fundamental law according to which the Government of a state is organized and the relations of individuals to society as a whole are regulated." This regulation is accomplished by the legislature, the administration and the judiciary, all three co-operating with and dependent on one another. Thus it is with integrated

shape the constitutional destiny of the individual. The inheritance of previous incarnations, being subtle is the psychic but they in turn have their influence on the somatic reactions. Thus at birth, a whole world of influences had already been at work in giving the individual a definite predisposition, a definite pattern of tendencies, set in motion, which determines his or her degree of tolerance and resistance to the external and internal disease-factor. The varying effects of climate on the gravida and her habits and tendencies and social and seasonal environment are found to have profound consequences. (कालगर्भाशयप्रकृति and सतुराहारविहारप्रकृति). Thus at the very moment of birth, the individual is a complex being, a bundle of tendencies bearing the seal of destiny, with of course, a margin for freedom of will and action.

Certain characteristics of the constitution.—Constitution is an inherited or geno-typical condition, that cannot be altered fundamentally and is a life-long concern of supreme significance in determining the conditions of health and disease in man. This finds emphatic expression in the following verses of Charaka and Sushruta :—

समपित्तानिलकफा केचिद् गर्भादि मानवाः ।
दृश्यन्ते वातलाः केचित् पित्तलाः श्लेष्मलास्तथा ॥
सेवामनातुरा पूर्वे वातलाताः सदातुराः ।
दोषानुशयिताहयेषां देहप्रकृतिरुच्यते ॥

च.सू.७-३६

“From the moment of conception some men are equilibrated as regards the three *vitia*—*Vata*, *Pitta*, *Kapha* and some have a predominance of *Vata*, some of *Pitta*, and some of *Kapha*.

Of them the first alone enjoy perfect health while the others are ever liable to disease. Their body-habitus is named according to the continual predominance of a particular *vitium* in the body.” (Charaka Sutra, 7 : 39-40).

शुक्रशोणितसंयोगे यो भवेद्दोष उक्तः ।
प्रकृतिर्जायते तेन तस्या मे लक्षणं शृणु ॥

सु.शा.४-६३

“These are the symptoms of the hereditary disposition or constitution formed by the predominant vital habitus formed at the time of the fertilization of the ovum by the sperm.” (Sushruta Sharir, 4 : 63).

शुद्धं स्वभावकर्मभ्यां वातादौर्दुष्टमंशन ।
दृष्टै वीजार्थकृद्बीजं तत्र प्रकृतिरुत्तरम् ॥

उल्हाण टीक

“There any part of the healthy seed (germ-cell) is vitiated by the nature and action of the *vitia*, that is *Vata*, *Pitta* or *Kapha*;

that affected part of the germ-cell determines the future constitutional type of the person.”

प्रकोपो वाऽन्यभावो वा क्षयो वा नोपजायते ।

प्रकृतीनां स्वभावेन जायते तु गतायुषः ॥

सु.शा.४-७८

“The constitutional condition does not get reversed, nor increased nor diminished generally except at the terminal stage of life.” (Sushruta Sharir, 7 : 48).

The arch-poet Magha aptly portrays constitution as the faithful wife. “The constitutional condition like a faithful wife, tenaciously follows a man even in his other births.”

सतीव योषित् प्रकृतिः सुनिश्चला पुंसां समभ्येतिमवान्तरेष्वपि ॥

Sheldon in his “*Varieties of Human Physique*” states that he could discover no case in which there has been a convincing change in the somato-type.

Science has proved not only that there are no two identical hand-prints in the whole world but has even ascertained that the papillary lines of finger-prints are not liable to alter or change from birth to death.

It has also been noted that body-reactions of the individual to various stimuli remain the same throughout life. Thus the importance of knowledge of constitution is established both in physiology as well as in pathology.

The origin and evolution of the triumvirate or *tridosha* concept.—It is necessary to understand the back-ground of the origin and growth of the *Tridosha* concept that relates to the existence, working and maintenance of the life currents of the psycho-somatic constitution of man. The *Tridosha* concept has remained the central doctrine of health and disease in Ayurveda for two millenia. Synthetic and analytic studies led to the evolution of the science of qualities (गुणविज्ञान), which classified the inanimate world in five categories (पंचमहाभूत) and evolved for animate world an all-comprehensive but more concise classification of three categories of triumvirate concept and made the practical application of it to all phenomena and conditions of life both in health and disease. When these qualities (गुण) are normal and well-balanced the physiological state of life prevails but when they become abnormal that is become *vitia* (दोषा), the pathological condition appears. This concept of the triumvirate of pathogenesis or *Tridosha* pathogenesis is called the constitutional pathology of Ayurveda. As medicine deals primarily with pathological conditions, the term “science of quality” (गुणविज्ञान) is given the designation of the science of *vitium* (दोषविज्ञानम्) in Ayurveda.

research. The analytic process was carried on till the least common measure of classification was arrived at.

And these (L.C.M.) lowest common multiples or denominators were made use of to integrate all the substances.

The progress of any science, it is said, depends, in large part upon its ability to identify 'elements,' which in the combination found in nature constitute the phenomena that science has set out to examine. Without its table of elements, chemistry could not exist; without the discovery of the cell, biology would be little better than primitive animism; physics while it has discarded one set of elements after another, comes again in the quantum theory to another type of element. Acting similarly Ayurveda arrived at the concept of '*Panchmahabhuta*' पंचमहाभूत or five categories of proto-elements or the elements in the sub-atomic stage.

Atreya—one of the great sage-scholar of science and spiritual knowledge reduces the universe to nine categories of substances viz., the five proto-elements, the mind, the spirit, time and space.

स्वादीन्यात्मानःकालो दिशश्च द्रव्यसंग्रहः ।

च.सू.१-४८

The five proto-elements, ether and others together with the spirit, mind, time and space constitute the totality of substances.

These combine to form the two main groups of things—inanimate and animate.

सेन्द्रियं चेतनं द्रव्यं, निरिन्द्रियं अचेतनम् ।

च.सू.१-४८

The thing that is endowed with the sensory organization is organic or sentient and that which is not so endowed is inorganic or non-sentient.

The five categories of all substances of the inanimate world.—All physical substances are reduced to five categories or proto-elements or elements in the sub-atomic stage and each proto-element is ascribed certain specific qualities, totalling twenty in number. Thus the body substance, environmental factors necessary for life-processes, causative or curative factors of diseases—were all reduced to a specific number of qualities whose use or avoidance could be prescribed in an arithmetical ratio.

As a result of the analytical process, they arrived at the conclusion that each substance or thing, consisted of an aggregate and specific qualities. These systems, they termed proto-elements or *Mahabhuta*. The quality of each proto-element was determined, and the manifestation of particular qualities of its

specific grade or intensity in a substance depended upon the relative proportions and method of combination of the proto-elements in that particular substance.

Inanimate things are static while animate things are dynamic. The quintessence of life-element being an unknown factor, the study of animate things is possible only by the science of quality (*guna vignan*). All phenomena of life are the result of these quality variations and changes of relations. Protoplasm cannot be analysed as it dies when subjected to analytic process. It is the properties or the qualities of living protoplasm that we study and recognize as signs of life.

This formula of proto-elements served the purpose in dealing with the merely physical realities. But biological entities had two more factors to reckon with viz., mind and spirit, which utilized and transformed physical matter to suit life's purpose. Both these are dynamic forces, and cannot be observed by physical means (अव्यक्तव्यक्तकर्म). They can be known only by the effects they produce on the body and their nature is the object of inferential knowledge.

PROBLEMS IN HÆMORRHOIDAL DISEASE

Studies of the causation of hæmorrhoidal disease are still inconclusive. Absence of valves within the hæmorrhoidal veins and lack of substantial support of the venous plexus in the submucosa of the rectum constitute substantial anatomic handicaps that may be responsible for the reverse flow of the venous blood; these handicaps may be aggravated by the factor of gravity favouring stasis in the vascular tree and resultant passive congestion.

The management of hæmorrhoids offers three alternatives: They may be neglected, injected, or resected. In my experience says Dr. Robert Turell of New York, over 20% of patients with anatomic hæmorrhoids discovered either by the patient or by the physician in the course of a routine physical examination are either asymptomatic or so mildly symptomatic that no therapy is indicated. Another 30% of the patients are suitable for injectional sclerosing therapy. They have small to medium-sized internal, usually bleeding, prolapsing but spontaneously reducible piles. Still another 40% of patients who have either large internal or internoexternal (mixed) hæmorrhoids with or without bleeding, pain, or protrusion require surgery. The remaining 10% of patients constitute the border-line cases or those with concomitant systemic disease in whom a trial of conservative therapy is justified. However, a personal study of patients with systemic disease on whom I eventually have performed hæmorrhoidectomies following a trial of injectional sclerosing therapy has convinced me (as well as the patients) of the superiority of surgery in the presence of clear-cut local indications.

For patients with strangulated internal hæmorrhoids, I prefer immediate hæmorrhoidectomy to conservative management or watchful waiting. In such instances delay may allow marked swelling of the external components and spasm of the anal sphincter muscles which obscure anatomic landmarks rendering surgery difficult. Prompt operation eliminates protracted pain and makes possible early economic rehabilitation.

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PSYCHOSIS DUE TO CEREBRAL-ARTERIAL SCLEROSIS AND ITS TREATMENT*

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DURING my stay in 1953-1954 in U.S.A., I had a good opportunity of studying Ch. brain syndrome associated with cerebral arterial sclerosis which accounts for about 20% of the population in Mental Hospitals. Because of the social and cultural demands most of the elderly people in India suffering from such syndrome are kept at home, rather than in mental hospitals. As the general span of life in India is short as compared to U.S.A. there cannot be such a high percentage of sufferers in India.

This paper is based on my observations on twelve cases of psychosis due to cerebral arterial sclerosis. Though the number is very small for detailed description and discussion, I present this report just to create interest among the general practitioners who are likely to come across such cases and whose observations are likely to enable the collection of more data on the efficacy of the treatments. With a view to helping them in diagnosis, I give here in detail the pathology and the symptomatology of the condition.

Pathology.—The term arteriosclerosis may still be used in a genetic sense applied to a group of vascular diseases characterized morphologically by a hardening of the vessel wall. It does, however, place undue emphasis upon the hardening aspect of the changes that occur with age in the walls of blood-vessels. It is now known that the hardening *per se* is a relatively benign process which produces little if any interference with the flow of blood. On the other hand, the process known to the pathologist as atherosclerosis is vastly more serious since it is characterized not so much by hardening of the vessel wall as by the narrowing or obliteration of the lumen. It is an occlusive disease that affects the nutrient vessels of the brain, heart or kidney, and by progressively choking off the flow of blood leads to functional alteration and even to disability or death. When, therefore, the term arterio-sclerosis is used it should be borne in mind that the real nature of the pathological vascular process is an atherosclerosis with its distinctive morphological feature of a stainable lipid within the atheromatous lesions.

SYMPTOMS:—Memory failure is a capricious one, the same name being recalled at one time and forgotten at another.

1. The memory defect becomes more general, and gradually extends from recent to remote events. Sometimes the gaps in

* Specially contributed to the ANTISEPTIC

memory are supplied by confabulations. Emotional instability is also an early symptom; the patient's eyes readily fill with tears, and he laughs without sufficient cause. Irritability increases with outbursts of morbid anger, often to the patient's distress. As the condition advances, suspicions arise which may develop into delusions of jealousy. Periods of clouding of consciousness are not infrequent, and in these partially disoriented states with their poorly connected thinking, episodes of violence, *e.g.*, against the patient's wife, may readily occur. Restlessness, both at day and night, and sleeplessness are common. States of morbid apprehension may sometimes culminate in a panic, usually with clouding of consciousness, in which the patient believes himself about to meet some terrible fate. The personality is fairly well-preserved, but with the increase in the mental symptoms there is a gradual deterioration in the patient's appearance. He becomes slovenly, allows his clothes to become stained, and has to be reminded to wash. Insight is usually good at first, the patient being distressed by his condition, but it gradually fades.

In the case of sclerosis of the large cerebral vessels the first gross symptom may be an apoplectic stroke, aphasic attack or other focal disturbance. Vertical headaches, worse in the morning, vertigo, short periods of confusion, and fleeting loss of power in arm or leg, or momentary aphasias or apraxias usually give warning of subsequent more serious focal lesions. The gait is wide-base, short-step and apastic. Coarse tremors may appear, and the patient may finally experience much difficulty in feeding himself. Cardiovascular disease in the form of cardiac hypertrophy, coronary sclerosis or chronic valvular disease is common. Numerous paralytic lesions appear—evidence of focal destruction of nervous tissue by occlusion or by rupture of vessels of considerable size. Upper motor neuron paralyses and various aphasias and apraxias are most frequent. Paraphasias or confusions of words may occur. Deterioration and dementia are hastened by these focal lesions, especially by those that result in serious speech disturbances. Certain intellectual functions may be much impaired while others remain comparatively intact. Epileptiform attacks, either Jacksonian or general, may occur due, as some believe, to temporary anæmia or œdema.

TREATMENT:—Recently great progress has been made in the treatment of psychotic reactions in the aged, for which there was no treatment previously owing to the belief that senile organic changes, both progressive and irreversible were the sole causes of the mental symptoms. Recent studies have however, shown that there is no direct correlation between the intensity of mental symptoms and the severity of the pathological changes.

The significance of anoxia in disease, particularly in elderly arteriosclerosis patients is now recognized. As the brain is particularly sensitive to oxygen deficiency, anoxæmia leads to impairment of normal brain functions. A direct relationship between the degree of anoxæmia and the extent of mental disturbances can be demonstrated by oxygen metabolism at the capillary level of function.

Many drugs like Tolozoline (Priscoline), steroid hormones, Di-amphetamine sulphite (Dexidine), caffeine, and ephedrine, various vitamins and proteins were tried by different people with varying results. But Metrazol and nicotinic acid are widely used nowadays over the continent and so I will discuss in some detail these two drugs and an Indian herbal drug that I have tried.

During the last few years the analeptic Metrazol has been the subject of several clinical studies on fatigue and in the field of geriatrics. Metrazol has been used in the treatment of senile confusion and psychosis and other depressed states in which the normal physiological oxygen balance is impaired and anoxæmia is a primary factor to be considered in diagnosis and treatment.

Metrazol exerts a stimulating action on the cerebral centres and particularly on the respiratory and vasomotor centres although all parts of the cerebral spinal axis are affected in some degree.

On the basis of these facts, one might expect that Metrazol by stimulating the respiratory centre in the aged would improve pulmonary ventilation and indirectly the circulation and so help to overcome the anoxia frequently present in the aged, the depressed and the fatigued. At the same time the analeptic action of the drug and its ability to increase nerve impulse transmission should act as a general tonic so that the patient might well have an increased sense of well-being, be less depressed and perhaps also less confused.

Owing to the successful use of nicotinic acid in relieving mental symptoms of pellagra, this drug was soon applied in the treatment of a number of psychiatric syndromes, particularly organic psychosis of varied ætiology. Nicotinic acid is of value in the treatment of organic psychosis attributed to cerebral arterio-sclerosis or senility. The rationale of this treatment is based upon the now generally accepted hypothesis that nicotinic acid may produce its beneficial effect in many confusional states by means of cerebro-vasodilation. Nicotinic acid is most beneficial in confusional states and psychosis of recent onset, and it must be administered promptly because reversible changes in cellular function are followed quite rapidly by irreversible structural changes. Thus, on the basis of this study, nicotinic acid may be of benefit more in prophylaxis than in cure.

Before the introduction of the oral treatment with Metrazol and nicotinic acid, such patients had only symptomatic treatment. Because of the high cost and temporary effects of these drugs, I was interested in trying some Indian herbal drugs which may help the poor population of our country. The herbal drug selected for these studies was SILEDIN (Alarsin).

The ingredients of SILEDIN and their therapeutic actions are discussed by Dr. Hakim in a paper read at Sixth Gujarat and Saurashtra Provincial Medical Conference at Baroda and by Dr. S. R. Soni in a paper read at 32nd All India Medical Conference at Jaipur. This drug is still under research so far as its pharmacology is concerned.

Dose:—Because of the immediate vasodilation by nicotinic acid I used 2 tablets of Pelonin (Glaxo) *t.d.s.* with SILEDIN also 2 *t.d.s.* Pelonin was given for one month, and then it was discontinued. Then only SILEDIN was given for a period of three months. After three months the dose was reduced to 1 *t.d.s.* for a further period of six months, to one year. The patients belonged to 55 to 88 years age-group. One patient with 210 B.P. and hemiplegia, showed improvement, but died after one month's treatment due to a fresh attack of apoplexy. Two patients who had severe secondary cardiac failure did not show much improvement with about 1½ (one and half) months' treatment and the treatment was discontinued. Two patients showed very good improvement but discontinued the treatment—one after one month's treatment and the other after 2½ months' treatment and there was no follow-up.

Of the remaining 7 cases two did not improve. The period of abnormal symptoms observed by the relatives was 1½ years and 3 years respectively. In 5 patients the duration of the symptoms observed was from 2 to 14 months. The results achieved were excellent, regarding the mental symptoms and physical health; with regard to the action of SILEDIN, till the results of the pharmacological research under progress are published, I will only quote Moore *et al.* "We believe intravenous histamine-nicotinic acid dilation therapy actually improves the function of physiologically impaired or non-functioning brain cells. Whether this is a result of increased cardiac out-put, increased vasodilation of cerebral vessels, increased capillary permeability, or an actual physiological action on the cells, we do not know."

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with pigmented periphery and itching is the only symptom. The lesion is usually on the malar region. Not infrequently



Fig. 1

The scales on the lesion are very adherent and when picked off, follicular plugs are seen on the under surface of the scales and the dilated mouths of hair follicle on the erythematous lesions become visible. Depigmentation may occur when scarring takes place (See Fig. 4, p. 273).

L. E. of the chronic discoid type changes to the chronic disseminate type but may also change to the acute type.

DIAGNOSIS :—(1) Clinical examination shows the typical situation of the lesions with their peculiar erythematous-atrophic nature having pigmented periphery and with a history of itching; (2) blood examination for total count of W.B.C., R.B.C. and haemoglobin should be done as a routine in the tropics; (3) examination of urine for albumin and casts; (4) blood vitamin A and blood vitamin C which have been found to be low in chronic discoid and lower still in chronic disseminate and blood proteins estimation showed normal total protein values, lower albumin and higher globulin values to ascertain the change from chronic discoid L.E. to chronic disseminate L.E.; (5) blood WR test is done as a routine and be repeated from time to time; in discoid

lesions appear on both the malars which extend peripherally until they join on the bridge of the nose giving the shape of a butterfly (See Fig. 1) the chest and the extremities. On the scalp it produces permanent baldness (See Fig. 2, below). The mucous membrane of the L.E. has been found to occur on the lips (See Fig. 3, p. 273). L.E. of the conjunctivæ may occur but very rarely.



Fig. 2

chronic L.E. Wassermann test is negative while in chronic disseminate it may be doubtful but in acute L.E. it is pseudo-positive;



Fig. 3

(6) erythrocytic sedimentation rate (ESR) should be repeated monthly throughout the course of the disease. ESR is slightly higher or normal in chronic discoid L.E. In chronic disseminate L.E., the ESR is moderately raised while in acute L.E. the ESR is high; (7) a study of the histopathology is essential in every case for confirmation of the diagnosis. In the epidermis the changes are characterized by hyperkeratosis of the stratum corneum with keratotic plugging, atrophy of the rete malpighii and liquefaction degeneration of the stratum basalis. Intraepidermal bulla may sometimes be found. (See Fig. 5, p. 274). In the dermis a patchy perivascular lymphocytic infiltration is characteristic; (8) "L.E. cell" phenomenon has been said to be diagnostic for acute L.E. (Barnes *et al*, 1950), but the phenomenon has been observed in other skin conditions also, as in drug rash (Mieschr and Deleretaz, 1953), in chronic viral hepatitis (Joske and Kind, 1955) etc.

Differential diagnosis.—(1) Seborrhœic dermatitis, (2) pemphigus erythematodes, (3) sarcoidosis, (4) syphilis, (5) senile keratosis, (6) drug rash and (7) acne rosacea.

Complications :—Squamous cell carcinoma was seen to develop at the site of the lesion (Holtzman, 1953; Banerji, 1955). Erythematous plaques sometimes change colour into leucodermic areas (Lahiri, 1955).

TREATMENT :—Prophylaxis is avoidance of exposure to sunlight by those who generally get sun-burnt. Quinine gr. v may be taken orally every day for a week each month. Para-amino benzoic acid (PAB) gr. 15 may be taken orally for prophylaxis together with application of a 10 p.c. ointment of PABA before



Fig. 4

going out in the sun. Symptomatic treatment has been advocated by Russell (1956).

Specific curative treatment for L.E. is not known though several drugs have been tried. Anlay (1953) thinks that gold, bismuth, arsenic and quinine should be used for chronic L.E. and ACTH and cortisone for the acute form. Gold has been tried in small doses but has not been popular because it gives rise to dermatitis. Bismuth in a dose of 0.2 g by I.M. injection twice weekly has been found useful for patients in the tropics; after a total of 2.0 g., the patient is allowed rest for a couple of months. For severe itching Vitamin B in doses of 100 micrograms or more has been quite useful. Cordero (1953) has treated 14 patients of chronic L.E. with vitamin B₁₂ in dose of 50 to 100 microgram bi-weekly injections and has observed response in 3 to 5 months in 80 p.c. cases. Atebrin tablet by mouth in dose of 1 tablet thrice daily for a long time has a curative value but atebrin dermatitis and atebrin psychosis are great drawbacks for its use in the tropics. Valanova (1953) has treated cases of chronic L.E. with 1 to 2 p.c. atebrin musonati injections locally. Crude liver extract injections, 2 cc. biweekly or vitamin C (500 mg.) injections daily are good supportive measures as well as a high protein diet.



Fig 5

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BALDNESS*

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BALDNESS is one of the commonest subjects with which the general medical practitioner must be well acquainted.

Loss of hair on the scalp or alopecia may be due to a variety of causes.

Alopecia areata.—Bald patches appear without warning.

Actiology:—Sex:—Equal distribution. Age:—Between five and 25 years. Causes may be infective, toxic, endocrinal and nervous.

Septic foci, in teeth or tonsils may be a contributory factor. Dr. George Thin has isolated a bacillus called *Bacterium decalvans*. The disease has been attributed to the stress and strain of life. Another possible explanation given is the contraction of superficial capillaries due to autonomic imbalance. Syphilis is no longer regarded as a cause of alopecia, though at one time every case of alopecia areata was subjected to a routine serological examination.

SYMPTOMS:—There may be one or many circumscribed oval patches limited to the scalp and sometimes to the beard region. Vague neurotic sensations may precede the hair loss. The hairs at the periphery of the patches are normal, but at borders where there is a spread, the hairs are loose, fragile, broken near the surface leaving short stumps with spade like extremity or attenuated points. Crocker likens it to an exclamation point!

The course of the disease is variable and may persist for months without any apparent change or new patches may form. The prognosis is better in the younger age group.

The variants are:—(1) Alopecia totalis. (2) Alopecia in streaks or bands.

Histopathology of the skin in alopecia areata:—The hair follicles and bulbs are reduced in size; the hair bulbs are quite up in the dermis. A mild inflammatory exudate of lymphocytes is seen in the dermis. The sebaceous sweat glands are normal.

II. Pseudopelade of Brocq.—In this condition there are circular, oval and irregular patches associated with atrophy of the skin unaccompanied by subjective sensations and terminating in permanent baldness.

The disease affects the upper part of the scalp, and is insidious in its onset and of slow evolution. The scalp in this area presents a rose pink appearance. The skin is thin, atrophied and translucent suggesting the term onion-skin. There are no exclamation marks. The loosened hairs show a thickened pulpy sheath. There is well marked atrophy of the area and brush-like relics of the original covering at points.

*Specially contributed to the 'ANTISEPTIC.'

Aetiology :—Attempts at culture in Sabourad's medium have proved negative. The patients are nervous and impressionable. No *raison d'être* has been possible.

Histopathology :—There are perifollicular infiltrates of lymphocytes and histocytes. The infiltrate is found in the upper and middle third of the hair follicles. Follicular hyperkeratosis may occur.

Complications :—The disease may be complicated by seborrhœa, anæmia and nail changes.

III. Folliculitis decalvans.—Or scar-leaving alopecia : During the early stages the disease resembles ecocogenous sycoosis. The lesions are irregularly disseminated about the scalp. The scalp becomes thin, atrophied and cicatriform.

Aetiology :—Due to staphylococcus aureus infection.

Histopathology :—Pustular lesions in the follicular orifices. There is a picture of minute abscess-formation. The destruction of hair follicles and sebaceous glands is more rapid.

IV. Alopecia due to scar formation may also occur due to injury and neoplasm,

Differential diagnosis of alopecias :—(1) Tinea tonsurans : In this condition if the scalp is examined by a magnifying glass, the picture resembles a rich meadow to which a cow is tethered to a pole in the centre. The appearance will be that of ringworm, when the cow has finished with it. The hairs are bent and twisted in all directions. (2) The alopecia occurring in skin diseases of scalp as lupus erythematosus, fevers and the late stage of syphilis will produce scarring. Other evidences of these lesions may also be found.

TREATMENT :—(1) Freedom from anxiety and worries ; (2) removal of septic foci ; (3) prevention of the occurrence of trauma ; (4) treatment of any local sepsis ; and (5) measures to stimulate hair growth. The various stimulant lotions used are :

- | | | | |
|-------------------------|------------------|------------------------------|-------------------|
| 1. R Hyd: perchlor | gr. i. | 3. R Resorcinol | |
| Rect. spirit. | 3 i. | Chloral hydras | 2.0. |
| Rect. turpentine | 3 i. | Corrosive mercuric chloride. | 0.00. |
| | 3 i. Ft. Lotion | Castor oil | 6.0. |
| 2. R Liq. episapasticus | 3 ii. | Alcohol | 90.0. Ft. Lotion. |
| Tr. jaborandi | 3 ii. | Tr. cantharidis | 12.5%. |
| Oil citronella | 3 ii. | Acetic acid | 20.0%. |
| Spirit rosemarini | 3 ii. | Glycerine. | 12.5%. |
| Rect. spirit. | 3 i. Ft. Lotion. | Distilled water. | 30.0%. |
| | | Ethyl alcohol | 25.0% Ft. Lotion. |

Adrenal Cortical steroids in alopecia :—A.C.T.H., Cortisone and Prednisolone have been found beneficial in alopecia when given systemically.

Treatment of Alopecia with Ammoidin-ammidin :—A solution containing 7.5 mg. of ammoidin and 3.75 mg. ammidin per c.c. in alcohol to each patient once a week and irradiated with U.V.R. An intra-muscular injection of Folic acid 10 mg. and Vitamin B₁₂ 60 mgm. in crude liver extract is given once weekly. Hairs have been found to grow in the areas treated with ammoidin-ammidin.

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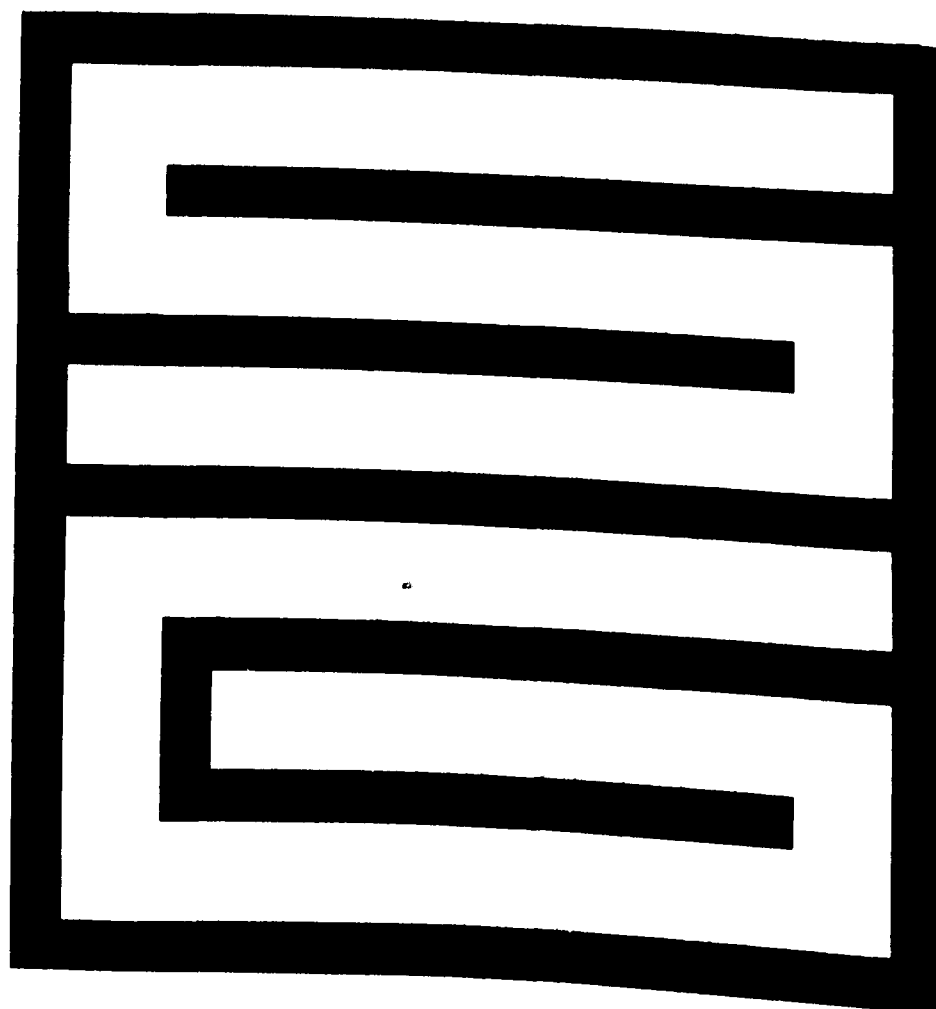
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Cases and Comments

USE OF PROCAINE PENICILLIN AS SUB-CONJUNCTIVAL INJECTION

MANMOHAN MALHOTRA, F.R.C.S. AND N. C. SINGHAL, D.O.M.S.,
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THE use of procaine penicillin for subconjunctival injections has not been mentioned so far in literature. Till recently crystalline penicillin was used in this hospital for subconjunctival injections in the treatment of corneal ulcers and hypopyon. After local surface anaesthesia the use of subconjunctival novocaine is essential before crystalline penicillin can be injected. In the absence of the prior use of novocaine, injection of crystalline penicillin causes severe and prolonged pain and therefore, the patients as a rule are quite unwilling to take the second injection.

Therefore, it was decided to use procaine penicillin for sub-conjunctival injections instead of crystalline penicillin. Reports of some of the instructive cases which received sub-conjunctival injections of procaine penicillin are given below :—

Case reports.—CASE 1 :—B. S., aged 30, attended the Eye Department of the Willingdon Hospital on 2-8-'56 complaining of pain, redness and watering in his right eye for past 3 days. On examination there was a central corneal ulcer about 2 mm. in diameter. He was given atropine 1% drops *b.d.*, penicillin eye ointment and procaine penicillin 4 laes mixed with 1 cc. distilled water subconjunctivally and bandaged. Surface treatment was continued daily, but the injections were given on alternate days. He had 2 injections and the ulcer did not show stain 2 days after the second injection. There was no whitening or thickening and possibly no necrosis of the conjunctiva. Patient did not complain of pain after the injection.

CASE 2 :—B. A., aged 35, attended the Eye Department on 8-8-'56 complaining of pain and watering in the right eye for 3 days. On examination he had a foreign body stuck deep in the epithelial layers and infiltration as revealed by slit lamp. The foreign body was removed. He was given atropine 1% drops *b.d.*, penicillin eye ointment *b.d.* and one injection of procaine penicillin four laes in the sub-conjunctival space. After 48 hours the eye was examined. There was no stain of the ulcer. Conjunctiva at the site of the injection was healthy. The patient did not complain of pain after the injection.

CASE 3 :—B. K., female, aged 35, attended the Ophthalmic Department on 27-8-'56 complaining of pain in the right eye for 6 days. On examination there was a fairly deep ulcer, about 4 mm. in diameter a little eccentric from the pupillary area.

[277]

There was a history of injury by the finger of a baby. She was put on atropine and penicillin eye ointment *b.d.* Procaine penicillin 4 lacs was given sub-conjunctivally on alternate days on four occasions. Three days after the last injection, there was no stain of the ulcer. The patient did not complain of pain after the injection. Injections were given at different sites of the conjunctiva. There was no whitening or thickening of the conjunctiva.

CASE 4:—T.R., male, aged 72, attended the Ophthalmic Department on 3-9-'56 complaining of severe pain in the left eye which developed overnight. On examination there were three marginal ulcers between 5 and 7 o'clock. The tension was high. He was admitted in the hospital. Paracentesis was done and was repeated daily for four days. No atropine was used. Chloromycetin and hydrocortisone eye-ointment was applied. Procaine penicillin 4 lacs mixed with 1 cc. distilled water was given sub-conjunctivally at intervals of three days on two occasions. Irgapyrin 5 cc. I.M. was also given twice a week. Ulcer healed and showed no stain 5 days after admission. On the 7th day the patient was discharged. He did not complain of pain after the injection. Conjunctiva appeared healthy.

CASE 5:—G. M., male, aged 30, attended the hospital on 8-9-'56 complaining of redness and watering in the left eye for past 15 days. There was a history of injury by a twig sixteen days previously, and of treatment somewhere outside. On examination there was marked circumcorneal injection and a linear scar about 8 mm. long in the centre of the cornea. On staining it was revealed that there was no superficial stain but deep stain with epitheliolysis was present. He was put on atropine and given procaine penicillin 4 lacs on alternate days sub-conjunctivally on three occasions. The eye became quiet. There was no more watering and redness and trace of the ulcer. Patient did not complain of pain after the injection. Conjunctiva was healthy.

CASE 6:—S. K., male, aged 15, attended the Ophthalmic Department on 18-9-'56 complaining of pain and watering in right eye for one day. There was history of injury by a pen. On examination there was a linear ulcer of the cornea in the central part, and some hyphæma. Tension was normal. He was put on atropine and penicillin ointment *b.d.* Procaine penicillin 4 lacs was given subconjunctivally on two occasions at an interval of 3 days. Ulcer healed uneventfully, in 10 days' time. Patient did not complain of pain after the injection. Conjunctiva was healthy.

CASE 7:—S. S., male, aged 78 was admitted in this hospital on 28-9-'56 for cataract operation of both eyes. Intracapsular

cataract extraction was done on both eyes at one sitting. 48 hours after the operation the right eye appeared quiet but the cornea of the left eye was very hazy and the eye showed a lot of discharge. Atropine and cortisone eye-ointments were used *t.d.s.* in this eye. Six days after the operation the cornea became slightly clear and hypopyon could be seen. He was given procaine penicillin 4 lacs subconjunctivally on alternate days on four occasions and cortisone 0.8 cc. (0.4 cc. subconjunctival and 0.4 cc. into Tenon's Capsule with the same prick) on two occasions at intervals of 5 days. Pus in the chamber decreased very much but a small amount still persisted. There was also exudate in the pupillary area. Cornea became quite clear. Anterior chamber was then washed with crystalline penicillin lotion 50 thousand units per cc. daily for three days. Exudate in the pupillary area was pulled out by forceps on the first day. After this no more pus was seen in the anterior chamber. Patient did not complain of pain after the injection. Conjunctiva was healthy.

CASE 8:—P.D., female, aged 60 years, attended the Eye Department on 29-9-1956 complaining of pain and watering of right eye for 7 days. On examination there was a circular corneal ulcer about 3 mm. in diameter in the lower part of the cornea. Tension was normal. She was put on atropine and penicillin eye ointment *b.d.* daily. Procaine penicillin 4 lacs in 1 cc. of distilled water was given subconjunctivally on alternate days on three occasions. The ulcer did not show signs of healing. On the 7th day paracentesis was done and was repeated daily for four days. Ulcer healed thereafter. No pain after the injection. Conjunctiva was healthy.

CASE 9:—R. D., male, aged 25 attended the Eye Department on 8-10-1956 complaining of pain in the right eye for two days. There was history of injury by a twig in a corn field. On examination there was an oblique ulcer on the inner part of the cornea about 4 x 2 mm. in size. He was put on atropine 1 percent drops and procaine penicillin 4 lacs subconjunctivally on alternate days on three occasions. Ulcer healed uneventfully. Patient did not complain of pain after the injection. There was no thickening or whitening of the conjunctivæ.

CASE 10:—S.K., a female child, aged 5, was brought to the Eye Department on 22-10-1956 with a complaint of sore left eye for 5 days. On examination the whole of the bulbar and palpebral conjunctiva was covered with a white membrane. Cornea was healthy. The child had a temperature of 100°F. severe toxæmia and was markedly dehydrated. Tongue was heavily coated. Microscopic examination of the membrane revealed pus cells ++, very scanty organisms (cocci) seen on gram stain, nature uncertain—both gram-negative and gram-positive.

Culture revealed growth of *Staphylococcus pyogenes* (coagulase positive). Child was put on penicillin drops 10,000 units per cc. every 5 minutes and procaine penicillin 4 lacs was given I.M. daily for 5 days. In 3 days the membranes disappeared completely.

The cornea started clearing up leaving behind a corneal abscess in the lower part. The general condition of the child improved greatly. Now procaine penicillin 4 lacs subconjunctivally was given at intervals of three days on three occasions along with atropine and Neo-Cortef eye ointment. The abscess cleared leaving behind a scar.

CASE 11 :—B.R., male aged 25, attended the Eye Department on 23-10-1956 for irritation and pain in the right eye. On examination there was a small foreign body in the cornea which was removed and Penicillin eye ointment applied. Next day the patient reported with swelling with irritation of the lids and conjunctiva. He was treated with antihistamine drugs orally and also adrenaline drops locally. Next day the allergic condition subsided to a great extent. It was decided to try sensitivity to Penicillin after its subconjunctival injection. He was given procaine penicillin 1 lakh unit subconjunctivally in one eye and watched for any untoward symptoms for 2 hours and then asked to report after 48 hours. This time the patient did not develop and swelling of the lids or irritation. He was then given 2 lacs of procaine penicillin subconjunctivally and this time too there was no reaction, when seen after 48 hours.

CASE 12 :—S.T., male, aged 28, attended the Eye Department on 5-11-1956 with eczematous patches on the body but chiefly on the forehead and eye lids. There was conjunctival congestion also. Two days prior to this he had two procaine penicillin injections I.M. for acute bronchitis. On inquiry he revealed that he had developed similar trouble a year ago after an I.M. injection of procaine penicillin. This was a case of general penicillin sensitivity. He was given 1 lac of procaine penicillin subconjunctivally in one eye and zinc calamine lotion for the eczematous patches. Injections were given on alternate days in alternate eyes on four occasions increasing the dose gradually to 4 lacs. During this course he did not develop any general or local reactions and the skin lesions also cleared.

Discussion.—Only a dozen instructive cases have been mentioned for the sake of brevity. We are now fully convinced that the use of procaine penicillin subconjunctivally has great advantages and henceforth its use has completely replaced crystalline penicillin subconjunctival injections in the routine practice of Willingdon Hospital, New Delhi.

The most obvious advantages which convinced us to use procaine penicillin subconjunctivally in preference to crystalline penicillin were :—

1. *Freedom from pain during and after the injection* :—The majority of patients do not complain of any pain but only two in this series did complain of a slight dull ache lasting for a short while. This slight ache was similar to the one complained by some individuals after subcutaneous injections.

2. *Less frequent pricks forming holes through which the injected drug tends to regurgitate back into the conjunctival sac* :—Only a single prick is needed as compared to the older technique of giving novocaine followed by crystalline penicillin.

3. *Dose* :—Large doses of procaine penicillin as 4 lacs units may be given safely even to children.

4. *Little pathological changes in overlying conjunctiva after heavy dose* :—Large doses of procaine penicillin do not cause whitening, thickening and possibly necrosis of the overlying conjunctiva as is quite common after the use of crystalline penicillin. After several injections of procaine penicillin a little thickening of the conjunctiva does occur but nothing more.

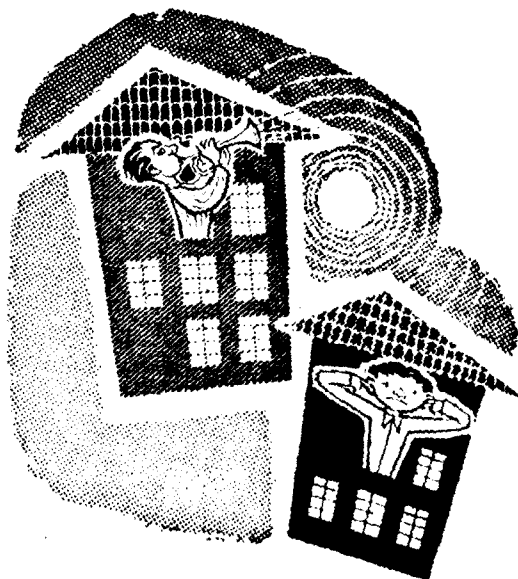
5. *Repetition of the injections is easier.*

6. *Duration and the height of antibiotic concentration* :—With the usual doses of 4 lacs units injection at one sitting and even less, both the factors attained are much higher.

7. *Allergy* :—(a) Local allergy or sensitivity to penicillin drops. Case 11 was sensitive to local penicillin applications in conjunctival sac. Procaine penicillin injections were given subconjunctivally in increasing doses starting with 1 lac units. No allergic reaction was recorded either locally or generally.

It is argued that development of sensitivity in this case and many others may be due to the interaction of procaine penicillin with mucoproteins of the goblet cells i.e., similar to atropine irritation. It may be that by the subconjunctival route such a combination does not occur and hence no allergic reaction results.

(b) General sensitivity to penicillin injections. Case 12 was sensitive to procaine penicillin intramuscular injections manifesting as allergic dermatitis. In this case subconjunctival procaine penicillin administration did not cause any general or local reaction. May it be conjectured that it may be due to (i) non-entrance of procaine penicillin into the most minute subconjunctival blood vessels? (ii) the very small amount of lax tissue available in the subconjunctival space and non-liberation of histamines etc., or subconjunctival tissue may be biochemically different; (iii) allergic reaction may have something to do with the muscle or injury to the muscle itself.



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CHRONIC HÆMOLYTIC ANÆMIAS OF CHILDHOOD WITH SPECIAL REFERENCE TO COOLEY'S ANÆMIA

(With Case Reports)

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CHRONIC intravascular destruction of red blood corpuscles during childhood produces two groups of symptomatology:— (1) hæmoglobin liberated from the destroyed red blood corpuscles is dealt with by the reticuloendothelial system with resultant jaundice, latent or overt, rise of hæmato-bilirubin in the blood, indirect positive van den Bergh reaction, high coloured stool and urine-darkening on exposure to light, due to increased amount of urobilin; (2) anoxæmia due to the reduced hæmoglobin content of the blood stimulates the bone-marrow which in a child, being unstable and working at the utmost,¹ sends forth a good proportion of immature cells (reticulocytes, normoblasts and erythroblasts) as well as cells which vary in their shape and size, in an attempt to meet the increasing demand. Till the end of the first year of life, the whole of the bone-marrow of the child is red; thereafter yellow bone-marrow begins to appear and increase.² Therefore, a child endowed with such a meagre reserve-power of bone-marrow has to depend upon extramedullary blood formation, when called upon to produce more red blood corpuscles and the spleen and the liver, being the latest to be deprived of such a function, begin to manufacture the red cells with consequent enlargement. Enlargement of the spleen and the liver in hæmolytic anæmia is to some extent contributed by the fact that these organs act as the prime grave-yards of the red blood corpuscles. The bone-marrow in its turn, due to the hyperactivity "from prolonged overstimulation as a result of a chronic hæmolysis beginning before the cortex is too firm to permit the over-growth of marrow,"³ enlarges the bone-marrow cavity at the expense of the cortex and the bones while enlarging, undergo osteoporotic changes—obvious in chronic hæmolytic anæmias.⁴ As the erythroblastic tissue is working at a high speed, the adjoining leucoblastic tissue also gets 'irritated' or the leucoblastic tissue becomes hyperplastic as a part of the hyperplastic changes of the marrow as a whole⁵ and begins to produce the white blood corpuscles at an enhanced rate, some of which are immature viz., myelocytes and myeloblasts.⁶ A child suffering from chronic hæmolysis will therefore, be a pale child with an icteric tinge, enlarged liver and spleen, reduced red blood corpuscles and hæmoglobin, reticulocytosis with normoblasts and occasional erythroblasts, leucocytosis with myelocytes and some myeloblasts, high bilirubin content, positive

indirect van den Bergh reaction and some osteoporosis of bones.

In 1889-90 von Jaksch drew attention to such a symptom-complex without age limit and for a time the condition was regarded to be a disease of unknown origin. Subsequent workers with better laboratory equipment and improved bio-chemical techniques indicated that such a symptom-complex is the natural outcome of chronic hæmolysis in children and the causes of hæmolysis are many. Recent trends tend to hold that von Jaksch's anæmia as a distinct entity is non-existent and that, it is but a symptom-complex produced by factors which cause chronic intra-vascular destruction of the red blood corpuscles in children.^{7, 8, 10, 12} British pædiatricians like Parsons and Hawksley, (1933) Poynton, Thursfield and Paterson, (1922) Hampson and Warner, (1930) think that such a symptom-complex of unknown ætiology is still seen in children between the ages of six months and three years and that these are the cases of von Jaksch's anæmia.¹⁰

Chronic hæmolytic anæmia may be due to known (extrinsic or secondary variety) or unknown causes (intrinsic or primary variety). In the extrinsic variety the red blood corpuscles are either directly destroyed by some known factors or the factors may so change the red blood corpuscles that they are easily destroyed by the reticuloendothelial cells of the body. Hyperplasia of the bone marrow and out-pouring of the red and white cells are but compensatory phenomena. The causes may be infective and toxic factors like septicæmia, syphilis and malaria, chemicals like sulphonamides, phenyl-hydrazine, benzedrine or lead and deficiencies like rickets. In the intrinsic variety increased destruction of the red cells may be due to a dysfunctioning of the erythroblastic tissue with the resultant production of cells of abnormal shape or of abnormal hæmoglobin *e.g.* sickle-cell anæmia. Cooley's anæmia and hæmolysis constitute but a secondary mechanism brought about by the reticuloendothelial cells; or the extensive hæmolysis may be the primary factor and hyperplasia of the bone-marrow is but a compensatory phenomenon. Attempts have been made to find out the intrinsic factors responsible for this destruction of red cells. Hæmolysin of the immune type (iso-hæmolysin) has been demonstrated in some cases of hæmolytic anæmia like the acquired variety of familial hæmolytic icterus; auto-agglutinins which produce clumping of erythrocytes have been seen in a few cases and lysolecithin, which can be demonstrated in normal people, is increased in a few cases and is responsible for the destruction of the red cells. Since these findings have not been consistent in all cases of hæmolytic anæmias of the intrinsic variety, no generalization regarding the causation can be made. An attempt has been

made to sub-divide the primary hæmolytic anæmias into a number of separate clinical entities. "The barriers which have been created to delimit the various entities are arbitrary and artificial. Many of them will undoubtedly be altered and removed entirely as our knowledge of diseases increases."⁴ However on the basis of the congenital anomalies of the red blood corpuscles, the intrinsic or primary variety has been considered under three types and "the particular abnormal red cells peculiar to the type is the diagnostic feature."¹⁰

1. Congenital hæmolytic anæmia:—the diagnostic feature of which is microspherocytosis which accounts for increased fragility of the red blood corpuscles. It is a familial condition.

2. Sickle-cell anæmia in which the blood picture reveals crescentic-or sickle-cells specially when examined under diminished oxygen tension.¹ This accounts for some resistance of the red blood cells to hypotonic saline. It is heredo-familial.

3. Cooley's anæmia or target-oval cell syndrome, the characteristic feature of which is target-cells, elongated cells and oval-cells which are very thin and appear to be pale discs.^{11, 12} In a few cases some initial hæmolysis has been noted in 0.54% saline, more often fragility is decreased. Hæmolysis may not be complete in 0.2% saline and sometimes not in water¹². The condition is familial.

Cooley's anæmia occurring during infancy and early childhood is of grave prognosis. Wintrobe and his associates first drew attention to the blood picture of a boy of eighteen, which was similar though in a minor degree, to that of Cooley's anæmia; the prognosis was good. Subsequently Wintrobe, on a study of the blood-picture of the parents of a few patients with Cooley's anæmia in several Italian families, demonstrated that the parents showed the same type of abnormalities in the red blood corpuscles to a lesser degree and with a better prognosis. These people had but a slight degree of anæmia and often had no disability due to the condition.¹² The conception of Cooley's anæmia has therefore, been enlarged and the anæmic state is held to be only one of the many manifestations of the disease. The condition as a whole is designated as 'Thalassæmia.' If the patient inherits the abnormality or trait from both the parents *i.e.*, if he is homozygous, the disease manifests itself during infancy and childhood with grave prognosis and is called classical Cooley's anæmia or Thalassæmia major. If the patient is heterozygous the disease is mild and the examination of the blood reveals a few of the abnormalities of the red cells; the prognosis is good and the condition goes by the name of Thalassæmia minor. The disease was thought to be a racial characteristic confined to the people of the Mediterranean stock but since the introduction of such a broad conception many cases of Thalassæmia have been reported

belonging to diverse stocks.^{8 10 12} Since 1938, sixty-eight cases of Cooley's anaemia have been recorded from India³ and the following are two additional cases of Thalassaemia major admitted and studied in the Assam Medical College Hospital.

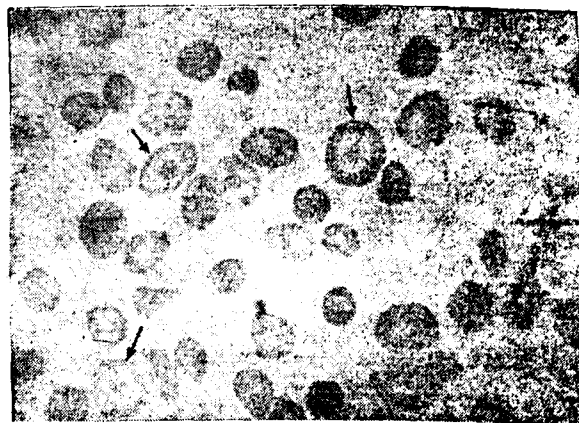


Fig. 1. Blood smear stained with Leishman stain showing the target cells (indicated by arrows), poikilocytosis, anisocytosis, polychromasia and oval cells.

particular. *Family history*:—Out of 8 siblings, her next younger brother (*vide infra*) is suffering from a similar disease; one maternal uncle and one aunt (mother's brother and sister) died of similar ailments while they were 13 to 14 years of age. Parents from East Bengal stayed for sometime in Rangoon and afterwards settled down in Assam. Examination revealed an extremely anaemic emaciated girl with retarded growth, flat nose and prominent frontal bone and a protuberant abdomen. Jaundice was not detected. *P*: 110/min., *R*: 20/min., *B.P.*: and 90/40 mm. Hg., *Temp.*: low irregular throughout her stay in the hospital going up to 100°F. or so, not responding to streptomycin or aureomycin. *Heart-sound*: muffled with soft systolic murmurs. *Liver*: 4"; *Spleen*: 6½" below costal margin, smooth but not tender. *Other systems*: N.A.D.



Fig. 2. Blood smear stained with Leishman stain showing target cells fragmenting and fragmented (indicated by arrow).

Case Reports.—CASE 1:—A., female, aged 12, admitted into hospital on 6-8-'55 with the complaints of (1) irregular fever of eight years' duration coming at intervals of 15 days to a month—each bout lasting for 3 to 4 days and occasionally responding to anti-biotics; (2) gradual weakness; (3) protuberant abdomen gradually increasing in size during the last 4 years. Past history:—Nothing

Laboratory examination:—Hb: 1.45 g.%; RBC.: .76 mil/cmm.; C.I.: .7; M.C.V.: 71.0 micron.; M.C.H.: 20 micromicrogramme; M.C.H.C.: 29%. Quite a large number of normoblasts present, reticulocytes: 1.7%, anisocytosis, poikilocytosis, polychromasia. Target cells some of which showed fragmentation. (See Figs. 1 and 2, p. 286). *Fragility test*:—starts at 0.42% of sodium chloride solution and complete at 0.30% Wassermann and Kahn tests: negative; *Blood bilirubin*: 0.5 mg.%, *Icteric index*: 12; *van den Bergh*: direct negative, indirect: weakly positive:



Fig. 3. X-ray of the skull of a normal child of about the same age.

Blood group B, C.F.T. for K.A. and T.B.: negative; W.B.C.: 5,200 cmm.; *P*: 65%; *L*: 31%; *M*: 2%; *E*: 2%, few myelocytes. *Bone-marrow*: normoblastic. *Total protein*: 5.5 g.%; *albumin*: 2.4 g.%; *globulin*: 3.1 g.%; *Urine*: Trace of albumin; *culture*: *B. pyocyaneus*. *Stool*: N.A.D., *F.T.M.*: Mucus and starch in all samples, no blood or bile. *Total and free acid*: normal;

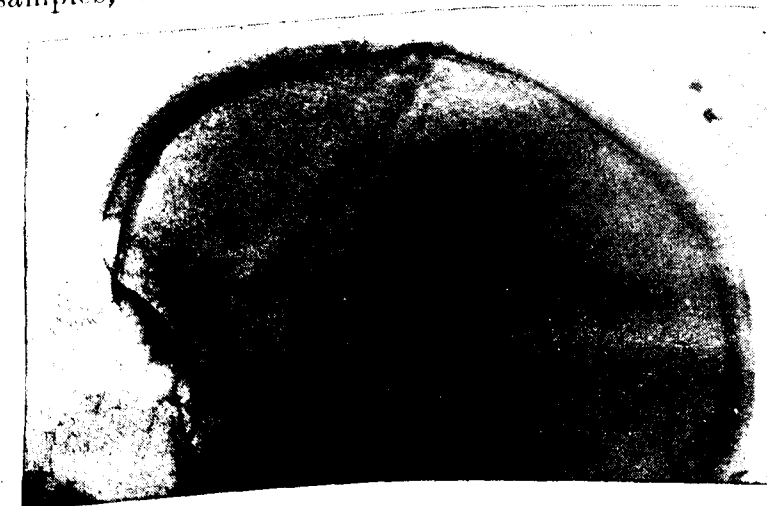


Fig. 3(a). X-ray of the skull of Case No. 1 showing the thickening of the bones, prominent diploe, thinning of the tables, specially the outer one and some osteoporosis.

X-ray of the bone: Skull: Enlarged diploe with vertical striation; thinned outer and inner tables. Long and short bones: Coarse trabeculation and rarefaction. (See Figs. 3 and 3(a).)

CASE 2:—S., male, aged 10, hospitalized on 6-8-'55 with complaints of: (1) irregular fever of 8 years' duration at

intervals of about a month, each bout of 2 or 3 days' duration, occasionally responding to antimalarial drugs; (2) gradual weakness; (3) gradual enlargement of abdomen. *Past history*: Nothing particular. *Family history*: (as in case No. 1). *On examination*: an anæmic (?) jaundiced emaciated boy of retarded growth with protuberant abdomen. *P*: 104/min.; *R*: 30/min.; *Temp.*: low irregular showing some response to streptomycin for

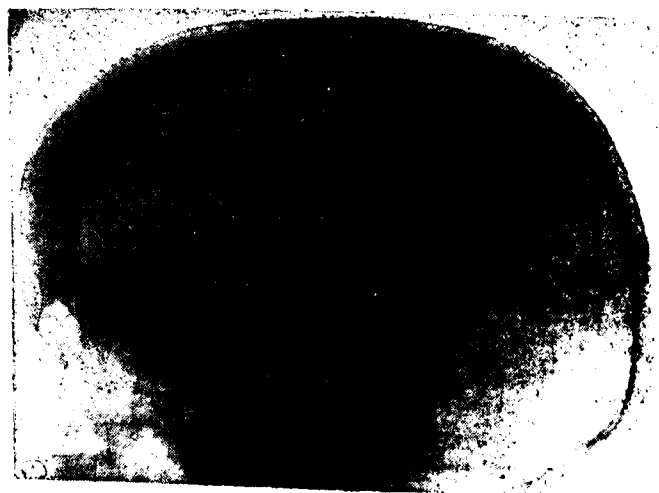


Fig. 3(b). X-ray of the skull of Case No. 2 showing marked thickening of the bone, prominent diploe, thinning of the tables, especially the other one, some osteoporosis and "hair standing on end" appearance of the occipital bone.

a few days only. *Heart-sound*: distant, soft systolic murmur in all areas. *Liver*: 3 fingers. *Spleen*: up to umbilicus; smooth not tender. *Other systems*: N.A.D. On discharge from hospital the patient had a minor fall with resultant fracture of left arm.

Laboratory examination:—Hb: 5.8 g.%; R.B.C.: 2.5 mill/cmm.; C.I.: 8, M.C.V.: 72 c. micron, M.C.H.: 23 micromicrogramme, M.C.H.: 31%; Reticulocytes: 4.2%; Normoblasts, anisocytosis, poikilocytosis, polychromasia and target-cells present. Fragility started at 0.42% and completed at 0.32% of sodium chloride solution.

Blood bilirubin: 0.65 mg.%; *icteric index*: 15; *van den Bergh*:



Fig. 4. X-ray of the elbow joint: (A) being that of a normal child of about the same age, (B1) of Case No. 1, (B2) of Case No. 2.

irect-negative; indirect weakly positive.

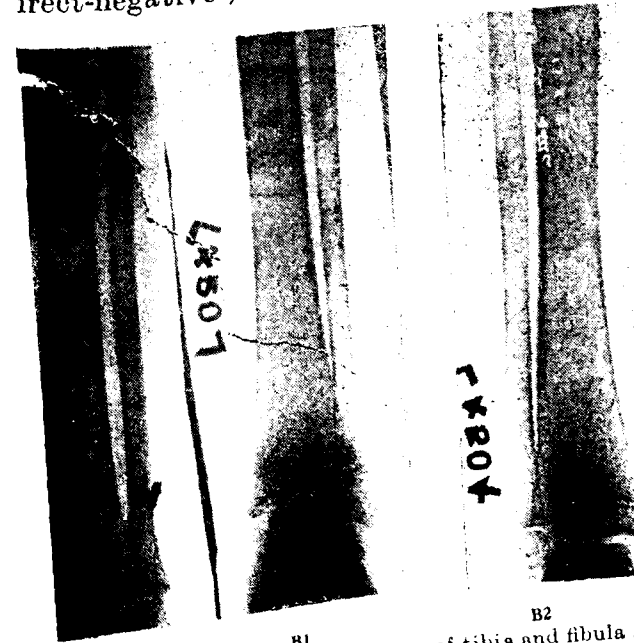


Fig. 5. X-ray of the lower parts of tibia and fibula: (A) being that of a normal child of about the same age, (B1) of Case No. 1, (B2) of Case No. 2.

ed with iron, liver extract, vitamin B₁₂, and multivitamins; there was no appreciable change in hæmoglobin level.

Blood picture of parents: No abnormality except some anæmia of microcytic hypochromic type (Father: Hb. 80% (Hellig), Mother: Hb. 70%). *Fragility test*: normal.

Discussion.—These two cases, siblings of the same parent, show all the clinical features for the diagnosis of Thalassæmia major. Their maternal uncle (mother's brother) and maternal aunt (mother's elder sister) died during their childhood after a protracted ailment consisting of enlarged abdomen, pallor and peculiar facies. The relatives who had seen them, liken their faces to that of the boy under report who has definite mongoloid features.



Fig. 6. X-ray of the wrist joints including metacarpal bones: (A) being that of a normal child of about the same age and (B) of Case No. 2.

Long and short bones show coarse trabeculation and rarefaction, the metacarpal bones are also enlarged.

Bone marrow: normoblastic. *Blood-group*: B. W.B.C.: 14,400 cmm.; P: 56%; L: 38%; M: 4%, E: 2%; few myelocytes; C.F.T.: for kala-azar and T.B.—negative, W.R. and Kahn test—negative. *Blood protein*: total 6 g.%, alb.: 3.8%, globulin: 2.2 g.%, *Urine*: N.A.D., *Culture of urine*:—growth of B. coli; *Stool*: N.A.D.; *F.T.M.*: Mucus and starch in all the samples otherwise normal, X-ray bone: as in previous case.

Both the patients had blood transfusion and were treat-

They might as well have been cases of Thalassæmia major. Family history on the paternal line did not reveal anything significant. Blood examination of the parents did not show any characteristics of Thalassæmia minor, like target-cells anisocytosis, poikilocytosis, basophil siblings, polychromesia and immature red cells. These cases being examples of Thalassæmia major, it is expected that they should be homozygous inheriting the thalassæmic trait from both the parents. Such was, however, not the case. Case No. 2 had slight leucocytosis but No. 1, did not have any; both of them however, showed the target cells some of which were fragmenting as well as fragmented, a feature noted also by Wintrobe¹¹ (1947). The cases ran a temperature and Cooley's anaemia may be associated with pyrexia.¹² The parents were born in East Bengal, stayed for some time in Rangoon and then moved to Assam. As far as could be gathered their ancestry belongs to the Bengali stock and there is no racial intermingling.

Nature of the disease:—There is a lack of unanimity regarding the nature of the disease. Whitby (1953) thinks that it is an anomaly of the erythron¹¹ but the anatomic picture does not afford adequate explanation of the nature of the disease.¹² A few observations with regard to Cooley's anaemia deserve attention. (1) Life-span of the red cells is shorter.¹³ (2) Erythropoiesis is not proportionate to the release of the cells from the bone marrow, into the circulation.¹³ (3) Degree of hæmolysis is lower than that of erythropoiesis.¹³ (4) Singer and Rich demonstrated unusual retention of foetal hæmoglobin and Itano postulated that the genes interfered with the production of normal hæmoglobin but Wolff (1953) does not agree with this conception.¹³ (5) The iron-containing pigment consequent upon excessive destruction of the red blood corpuscles is not deposited in the reticulo-endothelial system in the liver and spleen exclusively unlike that in congenital hæmolytic anaemia and sickle cell anaemia but the pattern of deposit follows that of hæmochromatosis wherein derangement of pigment metabolism exists and Whipple and Bradford think that disordered pigment metabolism is the underlying cause. It appears that the fundamental anomalies are concerned with iron metabolism resulting in inadequate hæmoglobin synthesis associated with defect in the release phenomenon of the red cells from the bone marrow and with defective matrix formation of the red cells resulting in a diminished life-span of the red cells or with alteration in the plasma bringing about these changes rather than the anomaly of the shape and size of the red cells being the underlying cause. With such an array of diverse hypotheses and observations, one has still to wait for a crystallised opinion to form with regard to the nature of the disease.

Is Cooley's anaemia a disease entity.—Whitby thinks that the peculiar abnormal cells—target cells, elongated cells, and oval cells—the outcome of the anomaly of the erythron, constitute the necessary diagnostic criterion.¹¹ In the absence of such cells in the blood, cases cannot be justifiably diagnosed as cases of Cooley's anaemia.⁷ But the target cells are not peculiar to Thalassæmia alone; these cells may be seen in the hypochromic anaemia, sickle-cell anaemia and may occur in association with jaundice and dehydration.¹² Although the cells are “almost invariably present”¹⁰ there are cases of Cooley's anaemia without such cells.¹² Again Cooley opined that there are no absolute criteria for the recognition of the disease; diagnosis of the disease depends upon “the summation of several characteristics.”¹⁰ He emphasized certain characteristic features, mainly bone changes.⁶ But such changes are also found in other forms of hæmolytic anaemia in childhood. Cooley mentioned that splenectomy effects a clinical cure in congenital hæmolytic anaemia though the abnormality of the red cells persists; in sickle-cell anaemia, splenectomy is associated with the disappearance of the immature red cells from the blood while in Cooley's anaemia the nucleated cells increase in the blood and the treatment does not improve the condition of the patient. “This picture is therefore, offered with the suggestion as made by Cooley and others that erythroblastic anaemia may be a separate disease entity.”¹⁰ The symptomatology of Cooley's anaemia is common to all varieties of chronic hæmolytic anaemia in children, being itself a chronic hæmolytic anaemia and the target-cells are not absolutely necessary for diagnosis. As such it is well nigh impossible to pick up the “several characteristics” to sum them up for diagnosing a case as Cooley's anaemia and when one remembers that splenectomy can scarcely be resorted to, for diagnostic purposes, since such a procedure is not only associated with a certain percentage of mortality but also does not improve the condition of the patient. As any disease must have its diagnostic criteria for the recognition as an entity, one wonders if Cooley's anaemia, divorced of any such diagnostic criteria, should not be regarded, at least clinically, as a symptom complex analogous to von Jaksch's anaemia until agreed diagnostic criteria are clearly laid down; also there is the danger of making Cooley's anaemia an omnibus for all chronic hæmolytic anaemias of unknown origin in infancy and childhood.

Summary.—1. Two cases of Cooley's anaemia or Thalassæmia major of Bengali stock are recorded.

2. Cases of Thalassæmia major are said to inherit the thalassæmic trait from both the parents—homozygous—and the parents on examination of their bloods should show the thalassæmic trait. The parents of these cases did not reveal any such trait in the blood, though from the history, the mother presumably belongs to a thalassæmic stock.

3. The nature of the disease and its recognition as a disease entity have been discussed.

Our thanks are due to the Superintendent, Assam Medical College Hospital for permission to report these cases, to Dr. G. B. Young, F.R.C.S., P.M.O., Jokai Assam Tea Co., Ltd. for kindly referring the cases to us and to Mr. B. Bhattacharjee, Librarian of the College for his valuable help in the preparation of this article.

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DAMAGING EFFECTS OF STRENUOUS EXERCISE

Hess and Fultz think that the present Army physical training programme should be revised to fit the reduced physical capacities of men over thirty, as judged by the results of a study of 107 healthy men subjected to a standard daily physical fitness testing programme for two weeks, in order to observe the effect on the heart rate, blood pressure, and electrocardiogram. Of the 36 men in the over-thirty group, four developed abnormalities, three so soon that they could not complete the testing programme. The authors add that planning of the physical training programme should give full recognition that such training does not fundamentally affect cardio-circulatory functional fitness, although it may greatly improve specific motor skills. The authors think that the Harvard step test may be used as a reliable screening guide in selecting men over thirty who are good prospects to withstand strenuous physical activity without endangering their cardiocirculatory systems.—(U.S. Armed Forces Med. Jour., March 1956).

REHABILITATION OF THE TUBERCULOUS

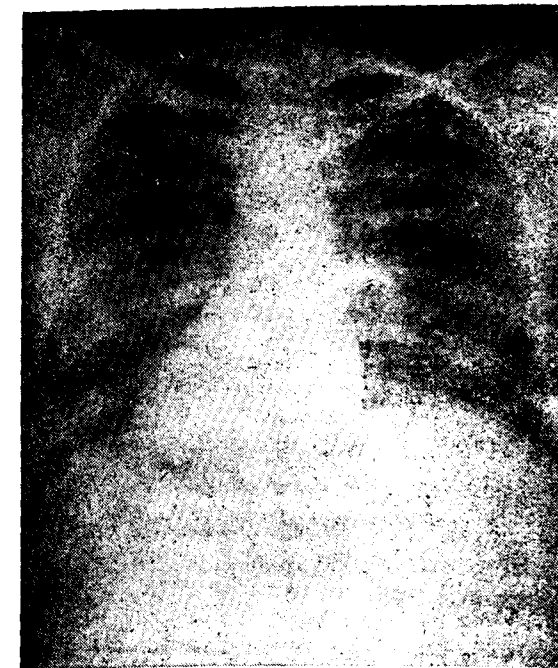
This must take into account the psychological reactions to the diagnosis of the disease, to the hospital stay and treatment, and to the readjustment necessary after discharge. The key to the proper management of situations at these three stages lies in expecting, and anticipating different kinds and degrees of emotional upset and in understanding what is behind them. In order to cope with these problems, the patients should be encouraged to speak freely and to express their doubts and fears suspicions and prejudices and also their destructive thoughts. When these have been dispelled by tactful catharsis, reassurance should lead them to constructive possibilities for total rehabilitation.—(Tuberculo (16: 2., 1956).

A CASE OF SITUS INVERSUS WITH PULMONARY TUBERCULOSIS

L. R. SARIN, M.B.O.P., AND R. K. BHARGAVA, M.B., B.S.,
S.M.R. Medical College and Hospital, Jaipur.

Situs inversus is defined as a condition in which there is a complete transposition of viscera. Its incidence varies from 1 in 4000 to 1 in 35,000, as mentioned by various authors.

Kuchenmeister, mentioned by Wood and Blalock¹ was the first person who in 1824 recognized this condition in living persons. About a thousand cases have been reported so far in the literature, though the condition seems to be much more common. Its cause is unknown. Cockayne² however points out that so far as the data go, transposition is autosomal, not partially sex-linked, but genetically determined by one gene rather than a series of allelomorphic genes, and is inherited as a recessive trait. The age incidence varies from still-birth up to 76 years. It is compatible with the normal life-span, provided other serious congenital malformations do not co-exist. The case now reported relates to a 45 year old asymptomatic woman patient admitted to the hospital for minor chest complaints, which were found to be due to a healed left apical tubercular lesion.



SKIAGRAM:—Postero-anterior view of the chest showing dextrocardia with healed lesion at the left apical region.

Case Report.—The patient, a middle-aged woman of about 45 years, was admitted to this hospital on 24th October, 1956, complaining of low fever, dry cough and vague pain all over the body of about 1½ years' duration. To start with, the fever was continuous for about a month during which time she had hæmoptysis once. Since that time she was having fever off and on along with a dry cough.

There was no history of any severe pain in chest or abdomen. She never had any dyspnoea, oedema of the feet or any sinus infection. There was

no history of any loss in weight. She had six children all alive and healthy.

Physical examination revealed a well-built and fairly nourished middle aged woman who showed no dyspnoea, cyanosis, clubbing or glandular enlargement. The chest on the whole was slightly emphysematous with a centrally placed trachea. Left apical region showed slightly diminished air entry with occasional crepitations. Apex beat could not be felt, and percussion was not of any help in mapping out the cardiac borders. Heart sounds were heard best in the right fourth intercostal space about 3" from the lateral sternal border. Resonance of the Traube's space could be distinctly marked out on the right side. Spleen and liver were not palpable. Other systems were normal.

Blood counts were normal with an erythrocytic sedimentation rate of 38 mm. per hour. Sputum was positive for acid-fast bacilli by concentration methods. Roentgenography revealed dextrocardia with a healed tubercular lesion at the left apical region (vide *skiagram*, p. 293). Barium-meal studies showed the stomach on the right side and the caecum on the left. A skiagram of the paranasal sinuses did not reveal any abnormality.

Summary.—A case of *situs inversus* with tubercular infiltration at the left apical region in a woman, 45 years of age is reported.

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ADDISON'S DISEASE AND PREGNANCY

Four patients with Addison's disease (adrenal cortical hypofunction) each successfully carried her child to term and the offspring were normal in all respects. One woman, who was quite ill and had to stay in bed throughout her pregnancy, was delivered by caesarean section before the onset of labour. Pregnancy is in no way a rarity among women with well-compensated hypofunction, nor is it a cause for alarm. Essentially, it consists of two periods of stress for the patient: the first three months (depending on the presence and severity of vomiting) and childbirth itself. The latter should be considered equivalent to a surgical operation and should be treated accordingly, hormone therapy in large doses being continued through the third day after delivery. In the intervening period, adrenal cortical function improves and the patient experiences a sensation of unwonted well-being. Her maintenance therapy can usually be reduced by half and sometimes discontinued altogether at this time. Careful surveillance is indispensable. The patient will not usually be able to breast-feed her child. It seems clear that the improved adrenal cortical function is *not* the result of stimulation of the maternal or foetal adrenal cortexes. The corticosteroids responsible come from the placenta, which is capable of producing hormones of this type just as it can produce oestrogen and chorionic gonadotropin.—(*Presse Med.* 64 : 689-692, April 14, 1956 via; *J.A.M.A.*, 7-7-'56).

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Editorials

THE DUTY OF SCIENTISTS AND THE IMPORTANCE OF RESEARCH

INAUGURATING the 44th session of the Indian Science Congress at Calcutta on the 14th January 1957, Prime Minister NEHRU sought the sympathy and co-operation of scientists in the great task of maintaining world peace, tolerance and compassion. He rightly stressed the fact that if science divorced itself completely from the realm of morality and ethics, the power man possessed and derived from researches might be used for evil purposes. The right way would be for people to be a little humble and to feel that "truth may not perhaps be entirely with us and that others may also possess it." We have to "think in terms of progress even in the context of the present-day conflicts, individual, national and international" said he. West Bengal's Chief Minister, Dr. B. C. ROY, the Doyen of the Medical Profession there, appealed to the scientists to contribute their share to the development of a human society in which man may live in peace and harmony with nature and with his fellow beings."

Miss. PADMAJA NAIDU, the Governor of West Bengal, who opened the session asked scientists to pledge themselves individually and collectively that never shall the knowledge that comes to them through research be used in any part of the world to violate the sanctity of life. The duty of scientists engaged in researches of various kinds was thus made convincingly clear by three distinguished persons from three different angles, all calculated to advance the cause of ordered human progress. The scientist can continue to be the seeker after truth, but as NEHRUJI said "no man can live in an ivory tower cut off from

the results of his own work, especially when it so powerfully affects the destinies of mankind."

It is our considered opinion that men of science should be more actively associated with important decisions of policy; an important step towards the ideal of world knowledge of scientific advance was taken at the atomic conference held at Geneva sometime ago, which was attended by eminent scientists from all over the world, who discussed in a calm atmosphere the peaceful uses of atomic energy.

In the context of the above observations the inauguration by our Prime Minister of the Institute of Post-Graduate Medical Education and Research at the Karnani Memorial Hospital at Calcutta on the morning of the 16th January 1957, has added significance in the matter of striking a balance between applied medical research and pure medical science.

Prime Minister NEHRU called on medical men not to get into grooves but always to keep an open mind and view all problems dispassionately and in an enquiring frame of mind. Mr. NEHRU said one could not live in a kind of isolation doing some amount of work, which had no relation apparently to world problems. It is true that most of the great discoveries have come from researches unrelated to a particular problem. It is just out of a passion for research. "But we want both (researches unrelated and related to definite problems) for the benefit of humanity." It is by trials, errors and experiments that one can achieve abiding results of value that will be acceptable and useful to the people at large. Neither medical education nor the practice of medicine can be expected to progress unless research is undertaken in a concerted manner and along right lines.

Dr. B. C. Roy explained the genesis of the Institute for Research which was a new venture in affording training in post-graduate research. We wish to bring home to our readers the fact that research does not necessarily mean or require impressive palatial buildings and regal equipment and that it can progress satisfactorily and successfully in small rooms with modest essentials. Dr. Roy's observations in this regard is well-worth reproducing: "It was in a small room, only ten by twelve feet, representative of this same building, that Major RONALD ROSS had discovered the mosquito which carried the malarial parasite. He also recalled how Dr. ALEXANDER FLEMING had discovered penicillin in a room of a similar size. When Dr. ROY asked him how he had done it in such a confined space, Dr. FLEMING replied: "It was my mind which worked and not the room." We heartily endorse his appeal to the students to emulate his example and not worry about where they were working, so long as their minds were working all right.

TREATMENT OF EYE DISEASES

THE Eighteenth All-India Ophthalmic Conference was inaugurated on the 21st of February, 1957 at Bangalore by the Governor of Mysore. Dr. D. G. PATWARDHAN of Poona presided over the Conference which was attended by a few eminent ophthalmologists from foreign countries, besides delegates numbering over 200 from all parts of India.

Dr. B. K. NARAYANA RAO, the veteran eye surgeon of Mysore, welcomed the delegates and referred to the appreciable amount of service to the country in various ways done by the All India Society of Ophthalmologists. The Society had been emphasizing the great value of medical inspection of students both boys and girls, at every stage of education thus helping the prevention, to some extent, of myopia with its handicaps and complications. The Ophthalmic Society of Mysore had endeavoured to make scientific ophthalmic diagnosis, advice and relief available to the poor in distant rural areas considered as priority areas, on the finding of a very valuable survey of blindness and eye diseases conducted by the Public Health Department of the State. Members of the Mysore State Ophthalmological Society, have so far conducted 12 rural ophthalmic relief camps in the erstwhile Mysore State, attending to 12,453 patients and conducting 2,424 major operations free of charge.

Dr. NARAYANA RAO pleaded for the establishment of laboratories in various centres, for the creation of a non-practising cadre of professors and other specialists in special hospitals and for the enactment of measures of public health for the effective prevention of certain diseases of the eye.

Sri JAYACHAMARAJA WADIYAR, Governor of the Mysore State, in his very instructive inaugural address emphasized the importance of ophthalmic services and said that, "Recent advances have opened up new vistas in the diagnosis and treatment of diseases like glaucoma, detachment of the retina, and in corneal grafting. Implantation of acrylic lens after cataract extraction apparently requires some more experimental work. Corneal grafting is unfortunately not being done as extensively in India as one would desire, due to non-availability of grafting materials." We would point out here that suitable modifications of the legal enactments on anatomy law for the whole of India and the properly equipped eye banks under the efficient control and supervision of properly trained personnel in various parts of the country, would alone enable corneal grafting to be done more extensively, restoring sight to a considerable number of patients suitable for this type of surgery.

Dr. PATWARDHAN in his fairly comprehensive presidential address touched upon many of the problems which faced Indian Ophthalmologists and the entire nation. Thus ophthalmic

education needed a fresh approach in the country in view of the new planning of medical education undertaken by the Government at the Centre and the impact of the attempt by the universities to reduce the burden of studies on the undergraduates by deleting the study of ophthalmology! This, we consider, is an unwise step, in view of the high incidence of eye diseases in India. The problem of ophthalmic education according to Dr. PATWARDHAN was a four-fold one, *namely*:—the training of the undergraduate, training of post-graduates, training for the cadre of good teachers and the training of general practitioners by means of special refresher courses.

After emphasizing the importance of post-graduate training in the methods and art of refraction, Dr. PATWARDHAN suggested that Universities in India having facilities for teaching post-graduates in ophthalmology should form an Inter-University Board of Studies and arrange for an interchange of post-graduate students for a period of two months in a year. We quite agree that during the course of 3 years for qualifying for M.S., every student should visit, for three to six months, places outside his own *alma mater*. It would be a sort of change-cum-study tour, affording benefit to himself and to his university. An exchange of teachers for short periods on similar lines would also improve teaching considerably. The importance of Research was stressed by him as well as by others who took part in the proceedings. "The Governments were slow in taking active measures," said Dr. PATWARDHAN, "for prevention of blindness. Industrial eye injuries, glaucoma, cataract and other blinding diseases required an expert handling by the Governments at the Centre and the States. In spite of the offer from WHO the trachoma problem has remained in cold storage for some years with the result that other countries which took advantage of such facilities, have made tremendous advances during recent years in the study of the trachoma problem, its control, treatment and prophylaxis. It is certainly regrettable that those at the helm of affairs in our country have not chosen to take the All India Ophthalmological Society, the Indian Medical Association and similar influential responsible bodies into their confidence and discuss with their accredited representatives such important problems and the rational approaches to be made in the light of the vast experience gained by the members of those associations through their constant extensive contacts with the sufferers. As Dr. PATWARDHAN rightly put it, the powers-that-be, by their deliberate omission to do so, stand to lose a wealth of information that would be theirs for the asking, on which their decisions, may be correctly based.

The proportion of cases of preventable blindness is more than two-thirds of the total of the blind in the country, accord-

ing to Dr. PATWARDHAN; others have claimed that 90% of the incidence of blindness can be prevented or cured. Among the blind a great many, not being trained for any occupation, are compelled to remain idle, a burden on their relatives or on the community. Despite the example of products of the schools for the blind (though a limited number comparatively) who honourably earn their living, it is not recognized sufficiently widely that blind persons *can* perform any job for which eyesight is not essential, and can be made self-supporting, self-respecting members of society. There are only 50 to 60 teaching institutions for the blind in the whole country, and their strength hardly exceeds 2,000. Many more schools should be established.

The prevention of blindness requires a more vigorous campaign of combating malnutrition and diseases like small-pox which affect the victim's eyes. Eye diseases are widespread and the number of hospitals for treating them are comparatively few. In the State of Madras in 1954 (the latest year for which statistics are available) the hospitals treated 9,71,346 persons for eye diseases, and they had only 638 beds for ophthalmic cases. The need for more is therefore, only too very obvious. But that alone is not sufficient. It is necessary to organize domiciliary services, more especially in villages. Mobile clinics, based on hospitals, should be organized. Such units are required in nearly all districts and not only for eye diseases, but also for dealing with various other conditions. It is good that the Mysore Ophthalmic Society is giving advice, and providing relief camps free to the poor in rural areas. It is our considered opinion that with more planned co-operation from the Government, and the general public more effective ophthalmic help to the rural areas could be made available. As Dr. NARAYANA RAO and Dr. MEKHRI said the other day in Mysore, the most important help which Governments could render would be to "permit Government doctors in the various areas to participate in the work of relief camps on a voluntary basis." Particularly is this necessary now and until sufficient funds and an adequate number of trained personnel become available to undertake this work exclusively.

THE DEVELOPMENT OF DENTAL SCIENCE

INAUGURATING the XII All India Dental Conference at Bombay on the 26th of February 1957, Mr. SALEBHOY ABDUL KADER, Mayor of Bombay, said that the common man was unable to obtain the services of qualified dentists due to the heavy charges which were beyond his means. The neglect of teeth ailments in their early stages leads to serious illnesses which manifest themselves in several parts of the human system. Proper attention to dentition and the care of the teeth are therefore most essential

not only in childhood, but at all levels in the formative stages of human life.

It is a well-known fact that, in the past, dental education had not received the same advantages as were given to other aspects of medical education, but considerable progress has since been made in this direction during the last 10 years. Both the Central and State Governments have undertaken many schemes for the progress of dental education. The Planning Commission has also considered this important aspect and allotted a sum of Rs. 1.5 crores for dentistry in the Second Five-Year Plan. There are at present only seven Dental Colleges in India, and two of these are in the City of Bombay and one is shortly to be set up in Delhi. The University of Bombay has set up a Faculty of Dentistry. Dr. DESAI, the Principal of the Municipal Dental College is the Dean of the Faculty. In the Madras State, Dental Science is now receiving special attention, at the hands of Government and the medical profession.

In his presidential address Dr. V. M. DESAI, the President of the All India Dental Association, said that persons with proper education, who had character, ability, sound health and aptitude for the profession should alone be selected for undergoing the dental course. The objective of education during the course should be to provide the student with a sound foundation in the fundamentals of dentistry on which he could build a general or special practice. "He should have acquired such habits of mind and thought that in addition to profiting by his professional experience he would continue to educate himself throughout his life" said Dr. DESAI and stressed the importance of research work which should be encouraged both in the teacher and the taught. We agree with Dr. DESAI that this would enrich their knowledge, inspire and stimulate the students, make them find out things for themselves and make education more objective, scientific and realistic.

More dental colleges should be established, or at all events, provision for the teaching of dentistry in existing medical colleges should be greatly augmented and the departments of dentistry should be up-graded in the more important centres. There should be a dental faculty in all dental colleges who should be charged with the task of framing suitable programmes for the teaching and practice of dentistry and its members must be included in the University Boards of Studies and Faculties of Medicine.

We earnestly hope that the Central and State Governments will encourage the development of dental science, so as to ensure freedom from avoidable dental troubles that insidiously poison the system and ruin the general health of the people.

GLEANINGS FROM THE MEDICAL PRESS

MEDICINE AND THERAPEUTICS

Effect of reserpine on gastric secretion.
— (Med. Times, 84: 4, 1956).

Many investigators have reported the effectiveness of reserpine in the presence of conditions in which anxiety, tension and aggression are prominent. Experimentally it appeared that the drug increased more activity of the intestinal tract as well as volume and hydrochloric acid content of the gastric juice. One investigator believed that reserpine had a potent effect on the parietal cells of human gastric glands. J.A. Rider of San Francisco, (*Proceedings of the Society for Experimental Biology and Medicine*, 90: 636, 1955) conducted a study of reserpine to determine what effects therapeutic doses of the drug had on gastric secretion. Twenty unselected patients with various types of gastrointestinal disorders were given 0.25 mg. of reserpine orally four times daily from seven to 210 days. None received any other medication during the test which would have effected gastric secretion. Results of the tests were compared with corresponding pre-treatment values. Maximum free gastric acidity rose in six instances, fell in 13 instances, and was unchanged in one. Patients with peptic ulcer did not appear to react differently from those with other digestive disturbances. Also, the average volume, free acidity and output of hydrochloric acid of residual specimens and of the four 15-minute basal specimens during reserpine administration showed no significant change from control values. Side-effects were minimal. It is possible that large doses of reserpine administered over a short time might increase gastric acidity. It is also possible that the tranquilizing effect of well-tolerated doses of reserpine may bring about a secondary decrease in gastric acidity, and thus aid in the management of the patient with peptic ulcer.

Clinical study of a geriatric drug with hypocholesterolaemic action.—(Schw.

Med. Woschen, 86: 417, 21-4-56, via I.M.D.).

In the mechanism of ageing a large number of causes have been invoked including dehydration, diminution of the fermentative exchanges in the tissues, lowering of the resistance and capillary permeability, modifications of the structures of the vessels, reduction of the cellular permeability, atrophy of the endocrine glands, slowing of the metabolism with retention of waste products, modifications of the plasma proteins in the direction towards a relative increase of the globulins, hypovitaminoses, and an increase of blood lipids.

Arteriosclerosis has been considered for a long time as the main cause of death of the aged, and all therapeutic measures aim at preventing or combating the fatty deposits in the arterial intima. Atheromatosis is associated with modifications of the plasma lipids, including hypercholesterolaemia, a diminution of the *alpha* lipoproteins, an increase of the *beta* lipoproteins, an increase of the ratio between cholesterol and phospholipids, and the presence of abnormal lipoproteins.

Garrone *et al* experimented with tablets containing 0.2 gm. of phenyl-ethylacetamide, vitamin B complex, vitamin C, rutin, a minor cardiotonic and a sweet laxative. Thirty-five individuals above the age of 65 with a clinical diagnosis of cerebral arteriosclerosis and an elevated cholesterol blood level were treated; their diet was moderately rich in fats and the caloric requirements were essentially met by carbohydrates. Patients with hepatic or renal affections were excluded. The patients were advanced psychotics. Their condition was such that an effect on their general condition could not be detected and no conclusions could be drawn concerning subjective modifications or improvement of their mental status. The study was strictly limited to the effect of the preparation on the cholesterolaemia. The patients were divided into three groups which received 0.6, 0.8

and 1.2 g. of phenylethylacetamide respectively. Before instituting drug treatment weight, number of erythrocytes, hæmoglobin level, capillary resistance, paper electrophoresis of the serum proteins, free and total cholesterolæmia and the phospholipid level were determined. The weight generally remained stationary. Only 3 patients were anæmic at the onset and their anæmia was partially corrected during treatment, but no importance is given to this fact; no patient became anæmic during treatment.

Only the total cholesterolæmia was considered. It was found during treatment that the fluctuations of the free and esterified cholesterol were parallel and that the diminution was proportional for both. Before treatment the cholesterolæmia was remarkably constant in all patients on three controls at intervals. The level was above 210 mg. per cent in all cases, and equal to or above 220 mg. per cent (the value taken as the upper limit of normal) in 80 per cent. The cholesterol level was markedly reduced in almost all cases and returned to normal in about half the cases. The level diminished after institution of treatment in the majority of cases, then showed a certain tendency to rise again between the first and second months of treatment in the majority of cases, and then diminished again appreciably until the end of five months when the study was concluded. Starting with a daily dosage of 0.6 g. of phenylethylacetamide the lowering of the cholesterolæmia seemed to depend on the duration of treatment rather than on the amount of drug administered. The cholesterolæmia was reduced in all but 5 patients, and the more so the higher the initial values.

The reduction of the ratio is the more marked the higher the ratio initially. The dosage produced no appreciable differences except that at most, the fall was more sudden with a dosage of 1.2 g. The ratio was reduced in 93 per cent, and became normal in 87 per cent. The new drug is of definite interest, and the absence of toxicity makes it feasible to administer it for months without hazard.

Antibiotics.—(*Practitioner*, 177 : Oct. 1956).

Penicillin opened a new field in the treatment of skin diseases and syphilis and a case of syphilis is now a rare entity in private practice. Although thousands of antibiotics have been isolated in the last decade, penicillin is still the most efficient, the least toxic, and the least expensive. It is highly sensitizing when used locally and there is therefore, no justification for its use in minor local infections. An initial oral dose of 800,000 units of penicillin G, followed by 400,000 units every eight hours for six doses, and then 200,000 units every eight hours is usually sufficient for most cutaneous infections.

Streptomycin is useful in cutaneous tuberculosis and is of some value in tularæmia, granuloma inguinale, lymphogranuloma venereum, and chancreoid. It is of little value in sarcoidosis. It causes vestibular damage and deafness and may damage the liver and brain. It should never be used topically.

Chloramphenicol has been recommended in herpes zoster, especially the ophthalmic type, but it is of dubious value in this or any other cutaneous infection. It is a dangerous drug and should be used with great care.

Chlortetracycline, oxytetracycline and tetracycline have a great similarity in action and effect on infections of the skin. Their antibacterial spectrum is broad, including even the larger viruses. Tetracycline is the most valuable of the group; it is the least toxic and is more effective in smaller dosage. In acute local pyogenic infections such as furunculosis, carbuncles, or rapidly spreading cystic acne, oral doses of 1 to 3 g. daily are effective. In severe infections an initial intravenous or intramuscular dose may be advisable. Eruptions of the skin about the genito-crural area and mucous membrane are a common untoward reaction, but they respond readily to local soothing therapy and vitamins.

Erythromycin has little or no value

in the treatment of cutaneous infections. It may be of occasional value in impetigo or sycosis vulgaris, but other drugs that are not used systemically are just as effective. Its systemic use in persistent staphylococcus infections of the skin resistant to penicillin may be indicated for a brief period.

Up to now neomycin, bacitracin, and polymyxin, being limited in systemic use, have been the topical antibiotics of choice. Neomycin has the broadest antibacterial spectrum; it not only inhibits bacteria, it kills them. It is very soluble and stable in solutions and can therefore be used as a compress or an ointment. Although it has a low index of sensitization, it does sensitize occasionally, despite the fact that patch tests made on the sensitized individual may be negative. It is effective against *M. pyogenes*, and is valuable in septic ulcers, infectious contact dermatitis and pyodermas. Polymyxin is effective against cutaneous infections due to *Ps. aeruginosa* and *E. coli*, which are rapidly increasing due to the prolonged use of antibiotics. It is also valuable in burns. Bacitracin is valuable for its activity against streptococci both hæmolytic and non-hæmolytic, and for all staphylococci when used in solution (500 units per cc.) or in ointments (500 units per g.). It is valuable for impetigo contagiosa, burns, furuncles, and carbuncles. In the latter, it can be injected (1000 units per cc.) into the centre of the lesion.

Collapse therapy in pulmonary tuberculosis.—(*Journal of the Mount Sinai Hospital*, New York, July-August, 1956).

Although artificial pneumothorax probably can be induced with greater safety in conjunction with antimicrobial drugs, it is being used less and less in America. It still is being used to a fair degree abroad. Extra-pleural pneumothorax is advocated and practised if the intra-pleural route is inadvisable or already has failed. Phrenic crush combined with pneumoperitoneum has been abandoned by

most workers except for very limited indications. Closed pneumonolysis, although safer with antimicrobial drug protection, is employed rarely. Cavity drainage is limited in its use and usually is followed by thoracoplasty or other surgical procedure.

Plombage with the newer plastics has become very popular. The extra-pleural placement has been discarded in most cases for an extra-periosteal location of the plombe. There is still a considerable difference of opinion as to whether the plombe should be temporary or permanent. The combination of plombage with delayed modified thoracoplasty is frequently used in various clinics. The specific material to be used in plombage varies with individual preferences and whether the procedure is to be temporary or permanent. Infections following plombage have been reported and long term follow-up permanent plombage is necessary to evaluate this problem accurately.

The Paulino procedure of suture constriction requires more cases and more long term follow-up before definite conclusions concerning its efficiency can be stated.

Thoracoplasty for pleural indications has a real place in the surgical treatment of tuberculosis. With the more universal use of antimicrobial drugs, and the use of pleurectomy, decortication and pleuro-pneumonectomy, the necessity for thoracoplasty may be decreased in future years. The reports on conventional thoracoplasty for pulmonary indications show that this procedure is being replaced by resection of extra-periosteal plombage combined with a modified type of thoracoplasty. Although long term follow-up studies show clearly how effective and permanent thoracoplasty can be, the disadvantages have forced most surgeons to abandon this procedure in favour of other surgical measures. In the next few years after the long term studies of newer methods (resection, plombage with or without thoracoplasty) are compared with the results of thoracoplasty, one will be able to evaluate better the comparative methods.

Definitive collapse measures have been successful in the older age-groups and one should not withhold surgery merely because of age. A "good chronic" is a constant source of tubercle bacilli and should be converted by surgery if possible.

SURGERY

Ligation of œsophageal varices.—C. Stuart Welch, *New England J. Med.*, 255: 677-683, 1956 via *Modern Medicine*, Jan. 1, 1957.

Almost all patients with œsophageal varices and portal hypertension have cirrhosis of the liver. Bleeding, which is fatal in two-thirds of instances, must be stopped immediately to prevent not only exsanguination but also hepatic coma. The cirrhotic liver cannot metabolize the great amount of protein nitrogen that digestion and absorption of the large amount of blood in the intestinal tract demand. The result is a rise in the ammonia nitrogen in the blood with encephalopathy and coma from ammonia intoxication.

Preoperative study:—Tests to detect cirrhosis of the liver should be made for all persons with massive bleeding from the upper gastrointestinal tract. If cirrhosis is diagnosed or suspected, tamponade should be instituted.

Tamponade generally controls bleeding from œsophageal varices and, therefore, is a useful diagnostic test. However, since hemorrhage usually recurs and is fatal within a few days, operation should be delayed only long enough to replace blood and corrects fluid and electrolyte deficiencies. Barium and œsophagoscopy studies are unnecessary.

Operation:—Ligation of œsophageal varices is probably the only certain method to control bleeding and should be done if liver function is fairly good. Patients with ascites and pronounced icterus may be beyond salvage, though early operation may be successful.

Transabdominal ligation is probably more applicable than an approach through the thorax. Celiotomy is

technically easier and faster than thoracotomy, exposes an area familiar to all surgeons, and interferes little with pulmonary function. The abdominal approach is especially useful when the source of bleeding is not definitely established because gastric or duodenal lesions are also accessible.

With the Sengstaken-Blakemore tube in place, the upper midline incision is made and the xiphoid process is removed. The left tube of the liver is mobilized by incision of the suspensory ligament and the terminal œsophagus and stomach are exposed.

About 8 or 9 cm. of œsophagus is mobilized and brought down into the abdomen. To block the upward flow of portal blood, a 16F catheter is placed around the œsophagogastric junction and, after the gastric balloon is deflated, snugged up to act as a tourniquet.

The œsophagus and stomach are opened longitudinally for about 9 cm. Opening the stomach a short distance is imperative as gastric varices are frequent. The edges are sewed with a running stitch if bleeding is brisk, and the œsophageal balloon is withdrawn upward.

Ligation of the varices is begun cephalad as high as possible, using continuous locking suture of No. 000 chromic gut. The œsophagus and stomach are closed longitudinally.

Ligation of œsophageal varices is not a definitive operation for portal hypertension. A portacaval shunt of some type is required as soon as the patient can be prepared for the elective procedure.

Report concerning the therapy of 500 cases of cancer of the lungs.—(Langenbecks Arch. u. Deut. Zschr. Chir., 1955, 282: 498, via *Internat. Abst. Surg.*, July 1956).

In the course of 5 years, 500 patients with cancer of the lungs were treated in the surgical department of the University of Frankfurt. Ninety-four per cent were in the fourth, fifth, sixth, or seventh decades of life. The ratio of male patients to females was 13 to 1. The average duration of the

symptoms in the entire series was 8.5 months, in the operable cases, 5 months, and in the inoperable cases, 10 months.

Of the diagnostic methods the author puts bronchography in first place and bronchoscopy in the second. The cytologic examination corroborated the diagnosis in 80 per cent, while in 20 per cent the findings were negative although the subsequent histologic study confirmed the diagnosis of malignancy. Kymographic studies of the œsophagus filled with an opaque medium suggested inoperability in 83 per cent of the cases, which subsequently at exploration or postmortem examination proved to be inoperable.

The so-called middle lobe syndrome was found in 10 per cent. of the entire series.

Among 500 patients, the lesion was operable in 189 or 37.8 per cent, including 43 patients in whom only a palliative resection could be performed.

Whereas the mortality within 6 weeks after the operation was 14.2 per cent following lobectomy, it rose to 33.5 per cent after pneumectomy. Palliative pneumectomy and operations on patients over 65 years of age are included in the statistics.

Squamous cell carcinoma was found in 74 per cent of the entire series microcellular bronchial cancer in 20 per cent and adenocarcinoma and atypical carcinoma, each, in 3 per cent.

The author concludes from his observations that a radical operation for a non-differential bronchial carcinoma is useless and that middle lobe tumors are very seldom operable. Age up to the eighth decade forms no contraindication to pulmonary resection. Postoperative irradiation is poorly tolerated and does not improve the prognosis.

Untoward effects of spinal anesthesia on the spinal cord and its investments.—(*Current Res. Anaesth.*, 1955, 34: 313; via *Int. Abst. Surg.*, July 1956).

Evidence has accumulated over the years which seems to demonstrate that serious and ultimately lethal damage

to the spinal cord and its investments may occur as a direct consequence of spinal anesthesia. This evidence favours the idea that these effects are due directly to exposure to a concentration of the anesthetic agent, although final proof on this point is not yet available. As yet there is a wide divergence of opinion as to the incidence of these complications. Many large series of cases have been reported without complications, yet a critical review of certain specific series has disclosed a rather high incidence of subjective symptoms as well as signs of obvious physical lesions. This difference must be resolved before the questions which these complications provoke can be satisfactorily answered.

The present study is concerned only with those syndromes which have been verified at operation or at autopsy. The most common complication is manifested clinically by the so-called cauda equina syndrome, and pathologically by congestion of the leptomeninges, spinal cord, and nerve roots in the early stage and by arachnoiditis and adhesions subsequently. Degeneration of the nerve fibres composing the spinal roots is observed microscopically. Chronic adhesive spinal arachnoiditis with more widespread involvement of the spinal subarachnoid space appears to be a less acute but more disseminated form of the meningeal inflammatory reaction. Changes in the spinal cord itself may be either acute (peripheral myelopathy softening of the central grey matter) or chronic (more extensive demyelination, softening of the cord and cyst formation). The late lesions are apparently the result of secondary vascular changes.

A series of five verified cases personally studied, as well as a survey of verified examples reported in the literature, serve as the basis for discussion of the pathogenesis and pathology of the various lesions disclosed at operation and at autopsy.—(*Surgery, Gynecology & Obstetrics*, July 1956).

Carcinoma of the rectum and rectosigmoid.—(*Surgery, Gynecology & Obstetrics*, July 1956).

The radical surgical extirpation as the treatment of choice for the majority of carcinomas of the rectum and rectosigmoid is the generally accepted concept. However, controversy does arise concerning the optimal type of surgical procedure to be employed.

Considerable difference of opinion exists concerning the surgical attack on those lesions in the region of the rectum and rectosigmoid between 6 and 20 centimetres from the dentate margin. Some surgeons consider that one stage combined abdominoperineal resection is the treatment of choice for all malignant lesions in this zone. Others believe that a pull-through type of procedure gives just as satisfactory results from the standpoint of survival and is much more acceptable to the patient. Some surgeons contend that the majority of lesions in the upper part of the rectum and the rectosigmoid, including those situated at the 6 to 10 centimetre level as estimated by proctologic methods, can be extirpated adequately by low anterior resection with or without proximal colostomy. For technical reasons, a procedure that sacrifices the sphincter must be selected in some cases. We think that colostomy with a permanent stoma rarely need be performed when safe and adequate resection and direct anastomosis can be accomplished without tension.

The final selection as to the type of operative procedure to be performed in the surgical treatment of carcinoma of the colon can be made only by the surgeon. No criticism can be made of the selection of a sphincter-sacrificing technique for lesions in the region of the anus and in the distal 5 centimetres of the rectum. Decision as to whether a one-stage or two-stage operation should be performed will depend largely upon the condition of the patient at the time of operation.

A comparison of the survival rates of 1,146 patients with the carcinoma of the rectum and rectosigmoid treated by anterior resection, by one stage combined abdominoperineal resection, or by posterior resection is presented. The influence of metastasis to the regional lymph nodes, of the grade of

malignancy of the lesion, of the proctoscopic level of the lesion, and of the location of the tumour in relation to the peritoneal reflection is analyzed and a comparison made among the 3 operative procedures.

The results of these survival studies in the controversial groups, that is, patients whose lesions are located between 6 and 15 centimetres from the dentate margin, indicate that a sphincter-preserving procedure, such as anterior resection, is as curative as is one stage combined abdominoperineal resection or two stage posterior resection.

The level of the lesion in relation to the peritoneal reflection has little influence on the survival rates.

OBSTETRICS & GYNÆCOLOGY

The treatment of imminent eclampsia.—(*Obst. Gyn. Brit. Empire*, 62: 683, 1955, via *Int. Abst. Surg.*, July 1956).

The obstetrician confronted with a patient suffering from imminent eclampsia must attempt to prevent at all costs the onset of convulsions and he must try to return the patient to a state of moderate or mild pre-eclampsia. The use of hypnotics and narcotics can only be regarded as a very temporary measure. Unfortunately, there remain those patients whose maturity is below thirty-six weeks, and in whom termination of pregnancy by any means carries with it a considerable foetal mortality. It is in the management of this type of case that we have turned to the possible role of drugs which are capable of effecting a reduction of the blood pressure. The mere lowering of the blood pressure is insufficient, for the drug used must also improve the circulation of the brain, the kidneys, and the choriodetachoid space. A mere fall in blood pressure without dilatation of the spiral arterioles of the placenta might lead to further anoxia of the chorion and of the foetus. The secretion of urine might be further depressed if renal blood-flow did not increase. The combination of the veratrum alkaloids and apresoline has

much to commend it. The powerful hypotensive effects of the veratrum alkaloids are combined with the improvement in renal and cerebral blood flows produced by apresoline.

The state of imminent eclampsia is a grave emergency of obstetrics and unless there should be a very dramatic change in the patient's condition most obstetricians would decide to terminate the pregnancy within a day or two of the patient coming under their control. The induction of labour at or near term is usually a straightforward affair and simple rupture of the membranes is all that is required, but it is the patient, usually a primigravida, whose pregnancy has not reached term that forms the real problem of induction. The practice of the author at present is to try the effect of the pitocin drip over some hours and then, if no progress is being made, to perform caesarean section. We must remember that we are discussing imminent eclampsia and that leisurely methods of induction will in most cases simply not be adequate.

Results obtained by preoperative radiation in 343 cases of breast carcinoma.—(*Tumori. Milano*, 41: 406, 1956, via *Int. Abst. Surg.*, July 1956).

Three hundred and forty-three patients with histologically proved or clinically obvious carcinoma of the breast were treated by radiation from 60 to 70 days prior to radical mastectomy.

A total dose of at least 6,000 roentgens in air was administered through supraclavicular and subclavicular, mediastinal and axillary portals.

Follow-up results are presented year by year in detailed tables according to the extent of disease at the time of treatment.

In summary, 53 per cent of entire group was free of disease after 5 years, and 37 per cent after 10 years. The percentages for those without nodes were 65 and 48, respectively, and for those with evidence of metastatic disease, 24 and 10 respectively.

Recurrence after 5 years was almost always in the form of distant metastases rather than local recurrence.

OPHTHALMOLOGY

Outline of treatment for eye injuries.—(George M. Haik, *Chicago M. Soc. Bull.*, 59: 49-56, 1956, via *Modern Medicine*, Oct. 1, 1956).

Superficial and apparently minor damage to the eye may be the only visible evidence of exceedingly serious injury to deeper structures. Great harm may be done by incorrect treatment or ill-advised manipulations that add surgical trauma to the original injury.

Eyelid injuries.—Eyelid injuries must be treated within twenty-four to thirty-six hours if good results are to be obtained. Horizontal lacerations of the eyelids can be closed by simple suturing. Vertical lacerations require accurate repair to assure good healing and acceptable cosmetic results. Chief objectives are perfect apposition of lid margins to avoid notch formation, increase of raw surfaces brought together to create a broad adhesion, and over correction of lid avulsion to ensure approximation and to restore the level. Debridement is essential, but must be as limited as possible.

Contusions and concussions.—Contusions and concussions are a deceptive group of injuries. Slight trauma may need no special treatment, but rupture of the globe may end in complete loss of vision. In some cases, the initial injury, though slight, may result in blindness from enophthalmitis, uveitis with sympathetic ophthalmia, secondary glaucoma, and retinal detachment. Serious consequences of globe perforation include prolapse of intraocular contents, intraocular haemorrhage, cataract formation, retinal detachment, rupture of the choroid, and avulsion of the optic nerve. Since the consequences of any of these injuries are unpredictable early, complete bed rest in the hospital for ten to fourteen days is justified. The eyes are completely occluded for a week;

pinhole goggles are employed subsequently.

Abrasions and lacerations:—Corneal abrasions usually heal promptly. Treatment includes instillation of an antibiotic and application of pressure dressings. The repeated use of local anæsthetic agents is avoided, because such treatment retards corneal healing.

Small lacerations of the conjunctiva may heal by natural processes, but lacerations of the cornea require suturing. An intraocular foreign body should always be suspected in these instances.

Foreign bodies:—Removal of foreign bodies from the conjunctiva, epithelial layer of the cornea, and Bowman's membrane is usually simple. Good light, cotton swabs, and irrigation are all useful. Very small particles can be stained and identified with fluorescein or mercurochrome. A sharp foreign body spud or a pointed hypodermic needle often aids foreign body removal. Iron objects left in the eye over twelve hours form a rust ring; the foreign body and ring must be removed as completely as possible. All intraocular foreign bodies should be extracted by an ophthalmologist.

Burns:—Irradiation cataracts are likely to occur in survivors of atomic bombing. Flame or flaming gasoline usually does not cause great ocular damage because of the winking reflex. Treatment includes rest of the eyes, topical antibiotic ointment, and cortisone to prevent secondary iritis and scarring. In severe cases, with ectropion, skin grafting and corneal transplantation may be necessary.

Burns from intensive ultraviolet light are managed by bed rest in a darkened room, ice compresses, and therapy designed to keep the patient comfortable. Topical anæsthetics are sometimes helpful. Non-progressive burns are caused by some acids; hydrofluoric and sulfurous acids and those containing heavy metals cause progressive burns. Progressive burns are also caused by alkalis, Lime, slaked or unslaked, is particularly dangerous. All lime particles embedded in the cornea must be removed; the added

trauma is less than the damage done by continued corneal burning.

Chemical burns are treated by copious water irrigation with the lids held wide apart. The patient is never allowed to close or rub the eyes during treatment. Simple solvents require ten minutes of irrigation; strong alkalis and acids require at least thirty minutes, preferably more. Except for the treatment of injuries from vesicant war gases and lewisite with BAL, no specific therapy of chemical burns is of value. Local antibiotics to prevent infection, lubricants to prevent adhesions between denuded surfaces, and cortisone to alter the inflammatory reaction are all employed as needed. Continued use of local anesthetics is avoided.

Antibiotics for use in the eye.—(J.A.M.A., 7-7-1956).

The penetration of antibiotics into the eye depends on the condition of the eye and the route of administration. In general, an inflamed eye will absorb the drugs more readily than a non-inflamed eye. Many drugs will not penetrate an intact cornea; however, if the corneal epithelium has been abraded, almost all of the antibiotics will penetrate it well. Subconjunctival injections will usually penetrate better than topical applications. Penetration into the posterior segment of the eye is best accomplished with systemic administration. Chloramphenicol (Chloromycetin) penetrates the non-inflamed eye better than any other antibiotic, regardless of route of administration. It will even penetrate fairly well topically. Oxytetracycline, chlortetracycline, and tetracycline penetrate poorly. Topically they will enter the eye in effective doses only if the corneal epithelium is not intact. Even then, they do not penetrate much more than the cornea itself. They are slightly more effective in subconjunctival injections but are fairly irritating. There is evidence that systemic administration of 3 gm. per day will give therapeutic intraocular levels. Tetracycline is said to give higher intraocular levels for a given dose than the oxytetracy-

cline or chlortetracycline derivatives. The sulphonamides fall between the tetracycline drugs and chloramphenicol in their ability to penetrate the eye. The pyrimidine derivatives of sulphamamide are most effective in this respect. Gantrisin and sulphacetamide are not as effective but are less likely to cause untoward reactions. Penicillin is moderately effective. It does not penetrate the posterior segment well. Therapeutic doses of 4 million units intramuscularly per day give therapeutic intraocular levels. Streptomycin requires high doses to be effective. Therefore, subconjunctival injections of 200 mg. four times a day have been suggested. This gives high levels if administered with epinephrine. However, untoward reactions are fairly common, and its use for anything but tuberculosis is not recommended. Antibiotics that are not commonly used systemically such as polymyxin, bacitracin, and neomycin are advised for topical use.

procedure should be performed prior to operation in all those patients in whom there is disease of the structures of the neck which could conceivably involve the innervation of the larynx.

In addition, a history of hoarseness makes such an examination mandatory. Disease of the thyroid gland frequently causes encroachment on the airway, either directly or through its effect on the recurrent laryngeal nerves. When this happens, endotracheal anaesthesia provides a method of safe management of a patient.

Prophylactic tracheotomy should always be considered in the face of vocal cord paralysis, especially if it is bilateral. Excessive secretion, glottic oedema, and drug depression can all precipitate a respiratory crisis under these circumstances. Preoperative evaluation of the airway in such cases is necessary for the exercise of good judgment. The anæsthesiologist can readily estimate airway status by the simple procedure of direct laryngoscopy.

OTOLARYNGOLOGY

Diagnostic laryngoscopy and the anæsthesiologist.—(New York State Journal of Medicine, October 1, 1956).

The successful management of inhalational anaesthesia requires not only constant vigilance on the part of the anæsthesiologist during anaesthesia, but also an awareness and knowledge of pathologic abnormalities which may affect respiratory activity. Acute observation of the manner in which the patient breathes can yield much information. On the other hand, familiarity with the anatomy of the pharynx and larynx is also essential, particularly in those diseases where abnormalities may be present, such as thyroid disease.

Preliminary examination of the larynx is essentially a simple procedure which can be performed under topical anaesthesia without much discomfort to the patient. Whether this be done by indirect or by direct laryngoscopy is a matter of individual preference and custom. However, this

DERMATOLOGY

Chronic urticaria.—(The Guthrie Clinic Bulletin, July 1956).

"Chronic urticaria is a vexing problem." Chronic urticaria is a problem not only for the allergist; for while allergy may be implicated in acute urticaria, it is not often so with the chronic variety, where one is often hard put to find the criteria for a diagnosis of allergy.

Acute urticaria comes on suddenly, and usually disappears within a few hours, but it may last for days or even for several weeks. Chronic urticaria, on the other hand, has a gradual onset and may occur over and over again and may last for months and years.

The urticaria may take on many forms from a nettle rash to the deep-seated lesions of angioneurotic oedema.

In both urticaria and angioneurotic oedema there is dilatation of the cutaneous arterioles and capillaries. With the increased dilatation, there is increased permeability of the vessels

leading to local oedema of the tissues and hence to wheal formation.

The diagnosis of urticaria is usually quite simple. One sometimes must differentiate this lesion from erythema multiforme, lymphangitis, or urticaria pigmentosa.

Management is not simple. An allergen may be wearing one of many disguises. It may be an ingestant, contactant, inhalant, or injectant. In addition, one must be on the lookout for infection, endocrine disturbances, nutritional deficiencies and disturbing psychic and physical stimuli.

All foods suspected by the patient should be noted. Skin testing to foods has not been satisfactory, but, may be used to test those foods which are to make up the original diet.

The emotional background of the patient certainly warrants a thorough investigation.

Infection being an important factor in most cases, all systems should be investigated for a possible focus of infection. At least one stool specimen should be obtained for examination for parasites.

Giant lesions appearing primarily on the trunk are often due to drugs. With infection, one often sees deep lesions, with the individual lesions lasting for days at a time. Cholinergic urticaria is often manifested by small wheals with a large flare. Those secondary to emotional factors have a tendency to occur daily at a particular time, particularly in the evening.

Steele and Silliman studied seventy-eight cases of chronic urticaria which were seen and hospitalized at the Robert Packer Hospital between 1945 and 1956. The average hospital stay of these patients was six and a half days.

Forty of the 78, were females and 38 were males. Chronic urticaria has been reported as slightly more common in females, and our figures reveal a slight but not a significant difference.

The average age of onset of urticaria was 40 years in females, and 41 years in males.

The average length of time that these patients had been suffering with

urticaria before presenting themselves to the clinic for study was twenty-four and a half months. The range was anywhere from three weeks to more than 30 years.

There was a positive family history in 12 (15 per cent), and a positive past history in 14, or 18 per cent.

The presence of eosinophils in the peripheral blood smear was noted in only 35 patients. The average eosinophilia for this group was 3.6 per cent.

The history alone was found to be responsible for determining the etiologic diagnosis in 19 cases. Of these, 14 developed their initial lesions following the administration of penicillin. Five of the 14 had a full-blown serum sickness. One case followed the continued use of sulphathiazole. Another was definitely proved to be secondary to aspirin. These 19 cases were the only ones in whom the etiologic diagnosis was definitely established.

The urticarias due to drugs represented our largest group of 17 cases. In 13, psychic or emotional stimuli were suspected; in 12, foods; and in nine, infection was felt to be either a primary or contributing factor.

TREATMENT:—Therapy may be considered under four headings; (1) elimination of offending factors; (2) desensitization; (3) drug therapy; (4) psychotherapy.

The first, of course, though the most important, is not always possible and we must satisfy ourselves with less direct measures.

Desensitization may be necessary in those cases where drugs, otherwise important for a patient's welfare, have been incriminated, e.g., insulin and penicillin. Desensitization may also be of value if the allergen is one that the patient cannot avoid, as insect bites and certain inhalants.

On the whole, we depend primarily on drug therapy. We have many valuable drugs at our disposal. Among these are:

(a) *The antihistamines* which appear to act by presenting a barrier to the antigen-antibody combination.

(b) *The adrenergic drugs* which act directly on the capillaries to inhibit the alteration of the same and hence

prevent the increased permeability of the vessels and the transudation of fluid. Although the transient effect of these drugs plus their undesirable side effects speak against their long-term usage, they are very valuable in emergencies where angioneurotic oedema and particularly laryngeal oedema threaten the patient.

(c) *Steroid therapy* which has been limited to the more severe reactions secondary to drugs. It is of particular value in the serum sickness type urticaria where there is danger not only of angioneurotic oedema, but also of polyarteritis and allergic vasculitis.

Other drugs of limited or questionable value are: intravenous procaine, aminophylline, nicotinic acid, ascorbic acid, vitamin K, hydrochloric acid, Piromen, heparin and even snake venom.

Patients with psychogenic urticaria should be referred for psychotherapy.

RADIOLOGY

Roentgen diagnosis of abdominal disease.—(Marcy L. Sussman, and Leo Reich, *Am. J. Roentgenol.*, 76: 127-131, via *Modern Medicine*, Oct. 1, 1956).

Some patterns on roentgenograms are characteristic of such conditions as primary volvulus of the small or large intestine, strangulation before complete obstruction, and simple obstruction of the large or small intestine.

Distention of single small intestinal loops with collapsed large intestine. Volvulus is the most frequent cause of a roentgen finding of distention of one or two dilated loops of small intestine, with comparable fluid levels, combined with a collapsed colon. The colon contains only a small amount of faeces and gas. Early strangulation before obstruction or peritonitis causes a similar pattern, but fluid levels are less common and faecal material is more frequent in the large intestine. In addition, the prestenotic loop may present as a tumour, and peritoneal fluid is often noted between the loops or in the flanks or pelvis.

The pattern with acute gastrocn-

teritis is a collapsed colon containing faeces, combined with isolated loops of distended small bowel that appear rather stiff and have no fluid levels.

Staircase distention of small intestine with collapsed large intestine. The roentgenologic pattern with simple obstruction or secondary volvulus with obstruction is staircase distention of loops of small intestine with a completely collapsed colon or one that contains a small amount of faeces and gas without fluid levels. Barium enema is necessary in some instances to establish which intestine is dilated.

By fluoroscopic examination, fluid appears at different levels in the loop and rises and falls irregularly. Peritoneal fluid is often not evident and usually is associated with infarction or strangulation.

Distention of both small and large intestines. An abdominal film showing distended small intestine in staircase loops, sometimes with fluid levels; moderate colon distention; and evidence of peritoneal fluid is associated with mesenteric vein or artery occlusion, intestinal oedema and mesenteric haemorrhage without definite infarction, or strangulation complicated by peritonitis. With peritonitis, fluid may be found in one loop but not in another. Coincident perforation may outline the bowel with gas.

A similar pattern is seen in many patients, with adhesive peritonitis with chronic partial obstruction. Fluid levels are not striking and are not apparent in all loops. The colon contains gas and faeces but is not particularly distended. The distended loops of ileum are not arranged in a staircase fashion, and a barium enema is usually necessary to distinguish the loops from redundant sigmoid.

The small intestine may become distended from causes other than primary abdominal disease. This may occur during pycnographic study or passage of a urinary stone; after vagotomy or heavy sedation; or with chronic cardiac failure, hypoproteinaemia and disturbances in potassium metabolism, air-swallowing, or alcoholism. Carcinomatosis peritonei causes

generalized distention, sometimes with isolated loops of small and/or large intestine containing fluid levels.

Primary distention of large intestine. Large intestinal obstruction is characterized by primary colon distention with fluid levels. Single-loop distention is due to volvulus. Enlargement of the small intestine with less prominent fluid levels is frequently observed.

The apparent end of the colonic gas column does not always correspond to the actual point of obstruction, and distal faecal content is frequently noted, although the obstruction is thought to be completed.

The accuracy of roentgen chest examination—(*Bull. Guthrie Clinic*, October 1956).

Littleton and Feist in a comparative study of 254 cases record their findings as follows:—

The accuracy of roentgen examinations of the chest was appraised in comparison with autopsy findings in 254 cases with gross chest disease who died within a reasonably short time after filming. The objective phase of roentgen interpretation, or rate of demonstrability of intrathoracic lesions was found to vary proportionately to the diversification of examination techniques from 63% adequacy for frontal projections only through 73% for projections in two or more planes to 100% for fluoroscopy combined with assorted films. When all films of unsatisfactory technical quality were excluded, the adequacy rates increased to 68%, 87.5% and 100% respectively. The subjective component or personal equation was then investigated and failed to improve with greater adequacy of examinations. However, the most objective possible reinterpretation of the original reports disclosed that in 52 cases a correct diagnosis should have been but was not made from the available films. The original rate of accuracy of interpretation was 44% but became 65% when correction was made for errors in initial interpretation of adequate examinations. Ninety-two per cent of all examinations consisted of frontal projections only, one-fourth

of which were bedside films, and the majority of patients were too ill to permit adequate roentgen studies. Finally, the effect of the nature and location of 432 lesions upon their demonstrability by various types of examinations was reviewed, confirming that demonstrability varies essentially in proportion to the complexity of filming techniques. The ideal examination should consist of fluoroscopy followed by individually prescribed roentgenograms.

A satisfactory routine method of chest roentgenography should permit demonstration of all gross lesions. In our series, fluoroscopy combined with assorted films selected according to individual circumstances alone fulfilled this requirement, confirming the experience of others (Garland *et al.*, Sosman, Rigler and Editorial in *J.A.M.A.*, of Sept. 24, 1949). However desirable, such an extensive procedure is not feasible in many instances. A more practical compromise for large volumes of chest examinations, as recommended by many of the above quoted authors, is a basic routine of films permitting three-dimensional visualization, preferably in more than one plane of projection, supplemented liberally by fluoroscopy and films in various projections as each particular case may require. Only few of the patients, failed to respond apparently as the result of their precarious physical condition. The value of such examinations has been well documented in many cases who survived and whose treatment depended on the most accurate possible definition and localization of the disease.

The problem of the personal equation appears less easily soluble than that of achieving better demonstrability of lesions. The interpreter's education, experience, ability and knowledge, or simply his competence are, of course, of paramount importance. In addition, a knowledge of the principal pertinent clinical and, at times, laboratory findings is essential to proper roentgen diagnosis. Lack of adequate clinical information will contribute a significant share to the rate of original diagnostic failures. Many authors

advocate routine dual readings of roentgenograms containing borderline or obscure suspicious features, either by the same individual on different occasions or by two individuals.

Fracture of the femoral neck following irradiation of the pelvis.—(*Surgery, Gynaecology and Obstetrics*, July 1956).

Although certain aetiological factors leading to necrosis or pathologic fracture of bone following roentgen irradiation are now better understood and controlled, this condition still remains a complication of treatment in a few

cases.

A study of the results of treatment in a group of nine cases of femoral neck fracture indicates that methods of treatment of this complication can be improved.

This incidence is high enough to suspect any person who complains of hip pain following such treatment to have a fracture of the femoral neck. The fracture may not be apparent on the first roentgen examination and be seen a few weeks later. So considerable caution and circumspection should be exercised in dealing with such complaints.

REVIEWS OF REPORTS

Peaceful Uses of Atomic Energy—Vol. 14—General Aspects of the Use of Radioisotopes: Dosimetry.

The most important by-product of the nuclear age is the artificially produced radioisotope. Radio active isotopes are made in large quantities in reactors now and are being used with increasing importance in medicine, agriculture, technology, and industry. A radioactive isotope of a stable element is not distinguishable from the stable element by its chemical behaviour. However, very minute quantities of the radioisotope may be detected by nuclear radiation detectors. The tracer technique has developed from this characteristic property. The gamma radiation from radioisotopes has proved to be a useful tool in industry. Examination of welded joints or the continuous measurement of thickness and density is more economical by this method than by any other. The most common radiation sources are cobalt-60 and caesium-137. The radiation from such and other sources are also used for producing changes in material structure. This broad category includes the sterilization of food and drugs, the treatment of cancer, and catalytic processes in chemistry. Much research is being done on these processes.

As the first part of the book shows radioisotopes are being used in quantity all over the world. The main producers are the USA, USSR, Canada, Gr. Britain, and France. The problems associated with the handling, processing, and the distribution of these lethal materials are very important and are described in the first half of this volume. The paper on the Copenhagen isotope separator seems of doubtful relevance here, but may have been put in because it would have been of even less relevance in any of the other 15 volumes. The second half of the book deals with papers read on the measurement of the irradiation dosage received by materials and their surroundings. When dealing with radioisotopes, this knowledge is essential. Research workers using radioisotopes for their work will find this a very useful reference book.

N.S.

Peaceful Uses of Atomic Energy—Vol. 12—Radioactive Isotopes and Ionizing Radiations in Agriculture, Physiology, and Biochemistry.

The 1955 conference on the peaceful uses of atomic energy was the first occasion when there was a free exchange of information on this subject among scientists on both sides of the

Iron Curtain. For what it claims to be, a mere report of the proceedings of that conference relating to the role of nuclear physics in agriculture, physiology, and biochemistry, this book is an excellent publication. Nuclear physics is advancing at such a rate that most books on that subject are out of date by the time they are published; to prevent such an occurrence, editing of the material has been kept down to a minimum. This prevents the book from being anything but a reference book. It is doubtful whether it succeeded in being completely up-to-date at the time of publication. It must be admitted that it gives a specialist in the subject first hand information about the advances made up to the time of the conference and shows what lines of research are being pursued in the

various countries.

Most of the research carried out using radioactive isotopes have been tracer studies. Little seems to be known about the long term genetic changes in animals and plants induced by radioactivity; the effects of radioactive fall-out from nuclear explosions are therefore, still unknown. In a few cases, e.g., the eradication of the screw-worm fly (P 114) and the storage of carrots and potatoes (P 889), the known effects of irradiation have been usefully applied. The first two papers, reviews of the use in biological research of radioisotopes by the USSR and the FAO are very good and should be read by all who are interested in the subject.

The series of sixteen volumes would form a valuable addition to any library.

S.S.

REVIEWS OF BOOKS

Pulmonary Carcinoma, Pathogenesis, Diagnosis and Treatment—Edited by EDGAR MAYER, M.D., and HERBERT C. MAIER, M.D., (1956), New York University Press, New York, Messrs. Pitman Medical Publishing Co., Ltd., 45, New Oxford Street, London W.1., Price £ 6/- nett.

The recorded increase of bronchogenic cancer in the last 50 years is "the most violent phenomenon in the history of cancer and no non-infectious disease has ever increased so rapidly." The publication of a text-book summarizing the essential knowledge concerning the aetiology, pathology, symptomatology, diagnosis, management and control of lung cancer at this juncture should be welcomed by all physicians and students of medicine, particularly the post-graduates. The editors of this excellent text book have taken elaborate steps to secure the services of clinicians and specialists to contribute articles on the different aspects of lung cancer and the result has been a predominantly practical text-book covering over 500 pages, with beautiful and profuse illustrations, coloured plates and skia-

grams of the chest. The book contains 20 chapters each written by a specialist dealing with the modern concepts of cancer research, the biology of cancer, the influence of environmental and occupational factors, the pathological and clinical aspects, the X-ray diagnosis and bronchoscopic examination. On the vexed and much debated question of "smoking and carcinoma of the lung," the results of numerous studies set forth in this book establish beyond doubt that cigarette-smoking is associated with lung cancer and that the association increases with the amount of smoking. Cigarette smoke condensate has also been shown to produce cancer on the skin of mice.

Differential diagnosis has been very clearly discussed; treatment by surgical and medical methods of chemotherapy with illustrative case records deserves special mention. The value and limitations of radiotherapy and radioisotope therapy in lung cancer have been critically examined. The psychological aspects of bronchogenic cancer and the relationship between the patient and his family during any

phase of the illness and the doctor-patient relationship have indeed been very ably dealt with. The outlook for cancer is stated to be not as gloomy as in the past and cancer need no longer be regarded as a riddle or mystery. The gradual replacement of mouse, rat and fowl tumours now employed in cancer research by cultivated human neoplasms in the near future is visualized. Human cancer for test *in vitro* can be to the cancer problem what the cultured bacterium has been to the control of infectious diseases.

An appendix—a really very valuable one—at the end contains an atlas of case-presentations of 25 typical cases with skiagrams, the pitfalls in diagnosis and the lessons learned in retrospect which add considerably to the value of this well-collated symposium on lung cancer. The book has been very neatly printed on art paper and the general get-up leaves nothing to be desired. We can confidently recommend the book to all physicians and post-graduate students —T.N.S.R.

An Outline of Bacteriology and Immunity—By RONALD HARE, M.D., Prof. of Bacteriology in the University of London and Hon. Consulting Bacteriologist to St. Thomas's Hospital, 1956. Longmans Green & Co., London, New York and Toronto, Sent by Messrs. Orient Longmans Ltd., 36-A, Mount Road, Madras 2. Price 35/- shillings nett.

This text-book is based on the lectures given by Dr. Hare to the students at a London Medical School and has incorporated all that has become vastly important in the modern teaching of bacteriology and immunology to students of medicine. To this end, viruses and fungi figure in this book as of equal importance to bacteria. The main emphasis is laid on the basic principles involved in the relationship between micro-organisms and man rather than on the

minute details of bacteriological and cultural techniques. The introduction of modern chemotherapy, with all its implications and the spectacular advance that has been made in our knowledge of viruses have greatly widened the narrow and one-sided approach which was a feature of bacteriological diagnosis and treatment of diseases during the preceding years. Much that has since been learned and developed with regard to detecting the sources and methods of transmission of respiratory and wound-infections, to the behaviour of micro-organisms in the community and to the part played by bacterial antigens in infection and immunity and to mass immunization against infectious diseases, constitute a body of new knowledge of great importance to the student of disease; this would enable him to assess and apply the newer methods of diagnosis and treatment in his daily practice. Systematic and diagnostic bacteriology is therefore, relegated to a separate and distinct section, where it is treated in a brief and concise manner just sufficient for the general practitioners' needs.

The importance of endemic and epidemic infection to the individual and to the community has been discussed at length. Immunity is treated more from the medical point of view than from that of the immunologist or systematic bacteriologist.

The important changes in taxonomy have been incorporated in this book which were suggested by an 'International Committee on Bacteriological Nomenclature.'

The chapter on viruses gives a thoroughly exhaustive and up-to-date information relating to the six main groups of viruses, the diseases they produce and the laboratory tests found useful in their diagnosis.

The book is well got-up and suitably illustrated so as to be very useful to students and general practitioners. —T.N.S.R.

NEWS AND NOTES

BOOKS AND PERIODICALS RECEIVED

- Annual Report of the Chemical Examiner's Dept. for the Year 1955**—Published by the Government Press, Madras 1956. Price 10 annas.
- The Kasturba Medical College Magazine**—Vol. IV, No. 1 January '57. Published by the Student Editor, Kasturba Medical College Magazine, Mangalore.
- Punjab Medical Journal**—Special Number on Cardiovascular and Respiratory Diseases, Pt. I, Novr. '56 and Pt. II, Feb. '57. Soda Rd. Jullunder City. Price Rs. 4/-
- Reports of the Working of the Assam Medical Relief Committee for 54/55 and 55/56**—Published by The Assam Medical Relief Committee, Gauhati.
- Instructions for Diabetics**—Published by Indra Laboratories, Pp. 63 127 Mahatma Gandhi Rd., Bombay.
- Barnes Care of the Expectant Mother**—By JOSEPHINE BARNES, D.M., F.R.C.S., F.R.C.O.G. Pp. 270, Illustrated. Published by Pitman Medical Publishing Co. Ltd., London. Price 30/-
- Modern Treatment Yearbook 1957**—By Sir CECIL WAKELY. Pp. 312, plus viii. Illustrated. Published by Bailliere Tindall & Cox Ltd. 7 and 8 Henrietta St., London, W.C.2. Price 25 s.
- Whitla's Dictionary of Medical Treatment**—By R. S. ALLISON, V.R.D., M.D., F.R.C.P., D.P.M., and T. H. CROZIER, M.D., B.Sc., F.R.C.P. and others. Published by M/s. Bailliere Tindall & Cox Ltd., Pp. xix + 854.
- 7 and 8 Henrietta St., London, W.C.2. Price 52s 6d nett.
- 3 **Pamphlets**:—(i) **Defence of B.C.G. Vaccination Against Tuberculosis**—By KONRAD BIRKHAUG, M.D., F.A.C.P.; (ii) **B.C.G. Vaccination**—(Extract of a lecture delivered before the Madras Branch of the Indian Medical Association on 15th June 1955) by Dr. K. S. RANGANATHAN, M.R.C.S. L.R.C.P., Director, B.C.G. Vaccine Laboratory, Guindy, Madras; and (iii) **Facts about B.C.G. Vaccination**, all three issued by the Tuberculosis Section, Directorate General of Health Services, Ministry of Health, Government of India, New Delhi.
- Indian Journal of Public Health January 1957**—Vol. 1, No. 1, 110, Chittaranjan Avenue, Calcutta 12. Annual Subscription Rs. 8/- Single Copy Rs. 2.8/-
- Britain**—An Official Handbook. Received from B.I.S., (India) 6, Armenian Street, Madras 1. Pp. 477. Price Rs. 7.2 (After 1st April Rupees Seven and twelve Naye Paisa).
- Health Education**—A selected bibliography. Pp. 45. Published by UNESCO. Available from Orient Longmans Private Ltd. 36a Mount Road, Madras 2. Price 2 sh.
- An Atlas of Anatomy**—By J. BOILEAU GRANT, M.C., M.B., Ch.B., F.R.C.S., Pp. xii + 554 with 714 illustrations. Published by M/s. Bailliere Tindall & Co Ltd., 7 & 8 Henrietta St., London, W.C.2. Price 120s. nett.

PREPARATIONS AND INVENTIONS

Nisone

Ranbaxy & Company (Private) Limited, New Delhi, have pleasure in announcing that Messrs. Lepetit S.p.A. Milan, Italy, have introduced "Nisone" (prednisone), the new and the most potent corticosteroid, four to five times as potent as cortisone or hydrocortisone on a weight to weight basis and free from undesirable side effects.

In rheumatoid arthritis, it causes

disappearance of symptoms in 1 to 2 days; also valuable in rheumatic fever, asthma, nephrosis, allergies and lupus erythematosus.

Nisone is available in scored tablets in 1 mg., 2.5 mg., and 5 mg. strengths.

Further details regarding literature, price, etc., can be had from the sole distributors in India—Messrs. Ranbaxy & Co., Private Limited, New Delhi, or their branches at Calcutta, Bombay, Madras, Kanpur and Delhi.

[316]

A Prosthetic Dental Clinic

This was opened at the St. George's Hospital, Bombay, on the 27th of December 1956. It is intended to serve the middle and poorer classes primarily, as we learn that a full set of upper and lower dentures will be supplied at the absurdly low cost of Rs.10 only. *This would be the lowest charge anywhere in the world.* We have no doubt this clinic will be extremely popular. We learn also that post-graduate courses in dentistry will be organised shortly in Bombay and this clinic will serve a very useful purpose in that direction.

Nobel Prize for Medicine for 1956

This award of the value of £31,000 will be shared by Dr. Werner Forssmann of Brad Kreuznach (West Germany), Dr. Andre F. Cournand (born in France) now in New York and Prof. Dickinson W. Richards of Columbia University. These three research workers have, each in his own way, helped to develop fundamental methods of measuring and recording the action of the heart, with the help of suitably designed catheters.

The Ninth International Congress on Rheumatism

The 7th Cancer Congress will be held at Ontario, Canada from 23rd to 28th June 1957 under the auspices of the Canadian Rheumatism Association.

Contributions are invited by the Programme Committee to the Scientific Session of the Congress dealing with current clinical or basic research on any aspect of rheumatic diseases. All correspondence should be addressed: The Secretary of the Congress, Post Office Box 237, Terminal "A" Toronto, Canada.

The Seventh International Cancer Congress

This will be held in London from 6th to 12th July 1957 under the presidency of Sir Stanford Cade. Congress headquarters will be the Royal Festival Hall. It is sponsored by the Interna-

tional Union Against Cancer. Special emphasis will be placed on Hormones and Cancer, Chemotherapy, Carcinogenesis and Cancer of the Lung. Details can be had from: The Secretary General at 45, Lincoln's Inn Fields, London W.C. 2, England.

Expansion of the Paediatrics Dept. of Madras General Hospital

The Government has decided to upgrade the Paediatrics Department of the Government General Hospital. It is to be made an All-India Centre for Post-graduate education and research.

Pending the establishment of an All-Indian Medical Institute, it is learned the Government of India has agreed to this proposal. On similar grounds, four departments in the State—the Venereal Diseases Department of the Government General Hospital, the Barnard Institute of Radiology, the Anatomy Department of the Stanley Medical College and the Obstetrics and Gynaecology Department of the Government Women and Children's Hospital, at Madras have all been upgraded. Candidates from all States would be eligible for admission in these upgraded departments, without payment of any capitation fees.

Training of 'Dais'

Social Welfare Board's Plan

Training of *dais* for employment in primary health centres in Welfare Extension Projects is proposed to be taken up shortly by the Central Social Welfare Board.

This Board, in a communication to the State Social Welfare Advisory Boards, has asked the latter to collect and furnish necessary information on the total requirements in each State of trained *dais* by the end of the Second Plan period, the number of *dais* already working in the projects, the number of *dais* trained under the scheme recognized by the State Governments and the number of *dais* available for employment in the projects or for short time employment while the existing untrained *dais* are sent for training.

[317]

In considering their requirements State Social Welfare Advisory Boards have been asked to take into account the consideration that by the end of the Second Plan, four projects would have been started in each district and that where maternity services are provided in the projects, provision up to five *dais* per project can be made.

Arrangements for recruitment and training of candidates for *dais* will be finalized in consultation with the Ministry of Health as soon as replies are received from the various State Boards.

Society for the Study of Industrial Medicine, Madras State Branch

The Annual Conference of the Society for the Study of Industrial Medicine will be held on the 12th, 13th and 14th April 1957, at Calcutta.

In the Scientific Sessions the following symposiums are arranged: (1) Influence of Industrial Health Service in the Second Five Year Plan; (2) Employees' State Insurance Scheme *vis-a-vis* Industrial Health Service.

If you would like to participate in any of these symposiums or read any other papers at the Conference, please write to:—Dr. C. K. Ramchandrar, Hon'y. Secretary, Madras State Branch, Ranipet.

T.B. Conference

The NAPT Commonwealth Chest Conference will be held in London next year from the 1st to 4th July '58. Important subjects such as the World Anti-tuberculosis campaign, the Management of Asthma in Childhood, Tuberculosis and Leprosy, Thoracic surgery in respiratory tuberculosis, Lung cancer—prevention and treatment, and many other important items will be discussed. An exhibition will be organized in this connection and arrangements will be made for delegates and members to visit hospitals and other important clinics in England.

For further particulars please write to the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C. 1.

£500 Benger Prizes for 'Original Observations in General Practice'

Prizes totalling £500 are being offered to general practitioners "anywhere in the world" for written reports on original observations in general practice. The prizes, established by Benger Laboratories Limited, will be known as the "Benger Prizes for Original Observations in General Practice" and will consist of three annual prizes of £250, £150 and £100 respectively.

Entries will be judged by the Awards Committee of the College of General Practitioners and the decisions of this Committee will be final.

The object of the Prizes is to publicize, for the benefit of all, any means of diagnosis or any mode of treatment discovered by a general practitioner and proved in his own experience to be valuable.

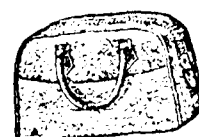
Reports may be submitted in any form—as an essay, a report, or as a conventional medical paper, with or without illustrations, diagrams or tables.

The prizes are limited to general practitioners actively engaged in medical practice anywhere in the world. Reports must be typewritten and two copies must be submitted. Every entry must bear a *nom-de-plume* in the top right-hand corner of the first page and under no circumstances must the entrant's name and address appear on any part of the manuscript. Every entry must be accompanied by a sealed envelope containing the entrant's name and address: this envelope must bear plainly on the outside the entrant's *nom-de-plume*.

Closing date for entries will be July 31st of each year, for the award of that year. The first award will be made in 1957. Entries must be addressed to:—

The Chairman of the Awards Committee, The College of General Practitioners, 54, Sloane Street, London, S.W. 1.

Prize winners will be advised by post towards the end of October in each year, and the Prize results will be announced in the November issues of the leading medical journals.



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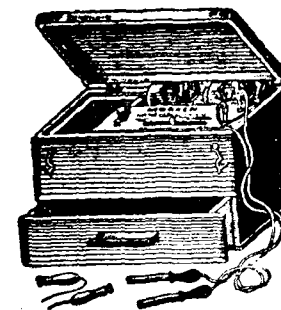
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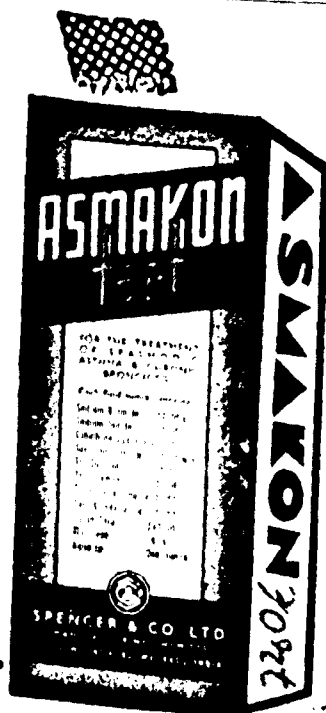
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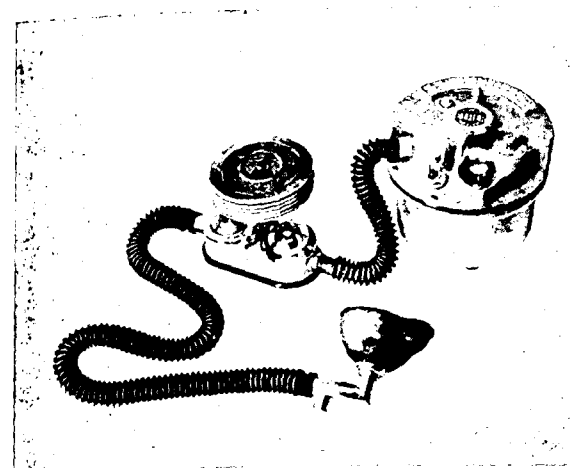
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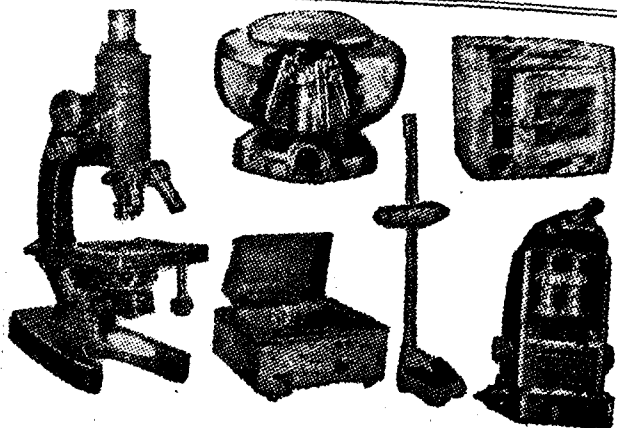
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1. "The Role of Ayurvedic Medicines in the
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Feb, 1952, pp-117-136.
2. "Review of Diabetic Cases Treated with
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tic Number" of the Indian Medical Review.
3. Journal of the Indian Medical Profession,
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2, No. 8, pp. 870-879, November, 1955

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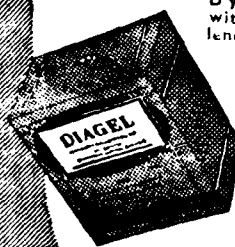
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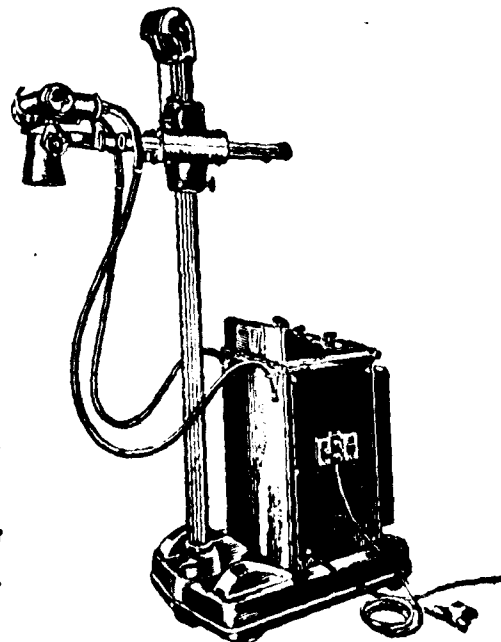
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" C 2cc 10A 1-2 50A 4-12		Emetine 1 gr 12A	10-0	Needles Stainless Steel:	
" C 5 cc 10 A 2-0; 50 A 8-12		Irgapyrin 5A 7-6; 60A 88-0		Eng. 3-4 Down 4-4 doz Record	
" D2 6x1cc 1-4		Milk with Iodine 5 cc 100,	7-0	" 3-8 " 4-8 " All Glass	
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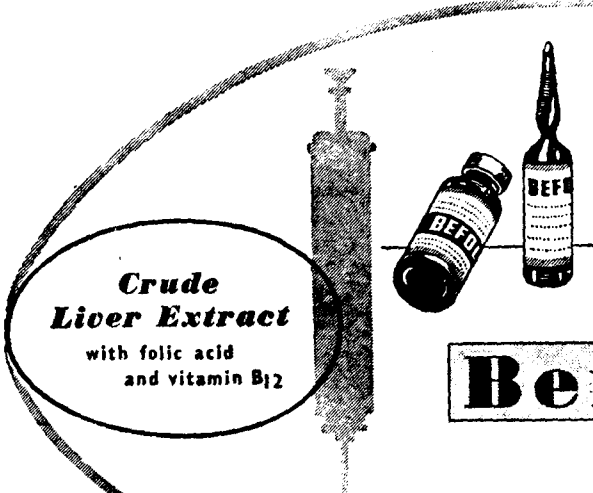
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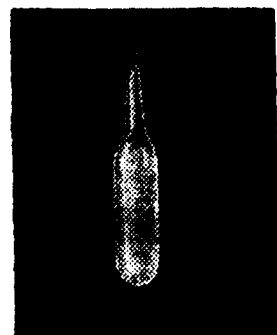
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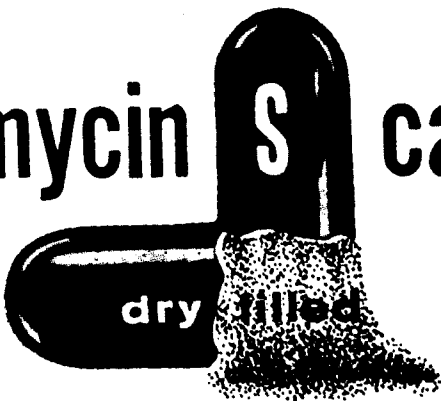
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