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# The Antiseptic

A Monthly Medical Journal

Edited by

Dr. U. Rama Rau, M.L.C. & U. Krishna Rau, M.B., B.S.

## CONTENTS

|                                                                                                                                                                                                                                                                                                            | PAGE. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Original Articles.</b>                                                                                                                                                                                                                                                                                  |       |
| "THE ERYTHROCYTE SEDIMENTATION TEST" A CLINICAL AND EXPERIMENTAL STUDY.<br>By Rai Bahadur Capt. K. S. Nigam, M.D., B.S., F.R.C.S., D.T.M., Professor of<br>Surgery, Lucknow University, India, and A. M. Khan, M.S., M.B., B.S., From the<br>Research Laboratory, Surgical Department, Lucknow University. | 625   |
| THE EARLY DETECTION OF HIGH BLOOD PRESSURE. By Rustom Jal Vakil, M.D.<br>(Lond.) M.R.C.P. (Lond.), D.T.M. & H. (Lond.), F.R.F.P.S.G., Hon. Assistant Physician,<br>J. J. Hospital, and Tutor, Grant Medical College, Bombay, Sometime, First<br>Assistant, Heart Hospital, Liverpool.                      | 630   |
| INFANTILE BILIARY CIRRHOSIS. By K. R. Kini, M.B., B.S., Mangalore.                                                                                                                                                                                                                                         | 632   |
| CLINICAL APPLICATION OF X-RAY AND ELECTRICAL TREATMENTS IN MODERN MEDICINE.<br>By G. Ghosh, M.B., B.S., D.T.M., The Rontgen Clinic, Allahabad.                                                                                                                                                             | 650   |
| VITAMIN 'C' IN DIABETES. By D. N. Sharma, M.B., B.S., P.M.S., Medical Officer, Karwi,<br>(Banda).                                                                                                                                                                                                          | 659   |
| <b>Cases and Comments.</b>                                                                                                                                                                                                                                                                                 |       |
| SULFANILAMIDE AS DISINFECTANT IN PLEURAL EMPYEMA. By K. Eisenstaedt M.D.,<br>T.D.D. and A. U. Rindani, M.B.B.S., State Hospitals, Jamnagar.                                                                                                                                                                | 661   |
| CASE REPORT ON SEPSIS COMPLICATED BY DIABETES MELLITUS. By Bernadine Siebers,<br>M.D., D.N.B., Missionary Medical School Hospital, Vellore.                                                                                                                                                                | 665   |
| A CLINICAL REPORT OF A CASE OF SMALLPOX WITH UNUSUAL ONSET.—(THE CITY<br>FEVER HOSPITALS, BOMBAY). By T. B. Patel, M.B., B.S., B.Sc., B.Hy. (Bom.), D.P.H.,<br>(Eng.), Resident Medical Officer, City Fever Hospitals, Arthur Road, Bombay.                                                                | 667   |
| <b>Editorial:—</b>                                                                                                                                                                                                                                                                                         |       |
| THE OCCIPITO-POSTERIOR PROBLEM.                                                                                                                                                                                                                                                                            | 669   |
| <b>Gleanings from Medical Press.</b>                                                                                                                                                                                                                                                                       |       |
| SURGERY.                                                                                                                                                                                                                                                                                                   | 673   |
| MEDICINE & THERAPEUTICS.                                                                                                                                                                                                                                                                                   | 680   |
| <b>Book Review.</b>                                                                                                                                                                                                                                                                                        | 687   |
| <b>Preparations and Inventions.</b>                                                                                                                                                                                                                                                                        | 688   |
| <b>Corrigenda.</b>                                                                                                                                                                                                                                                                                         | 688   |

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Index to Advertisements, see page 34.



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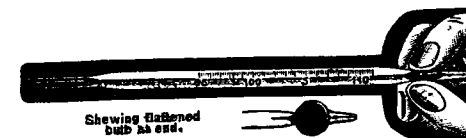
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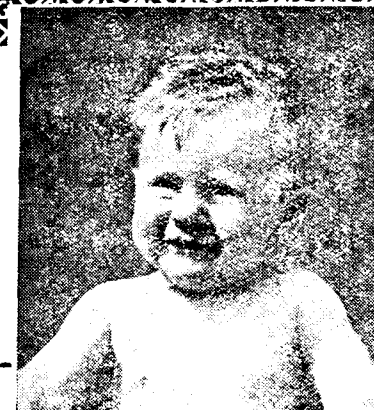
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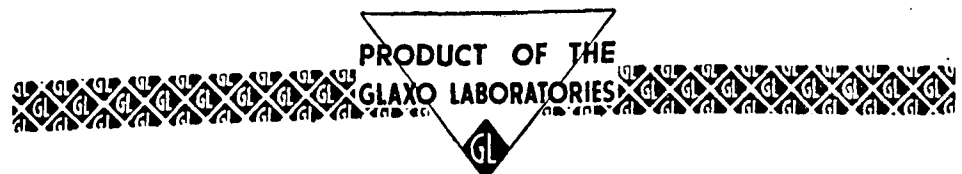


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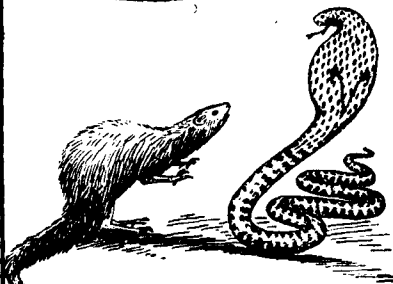
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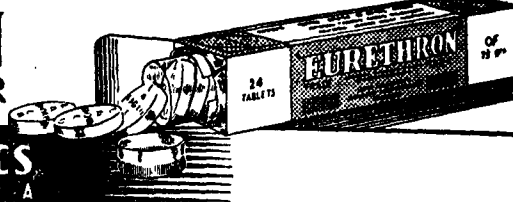


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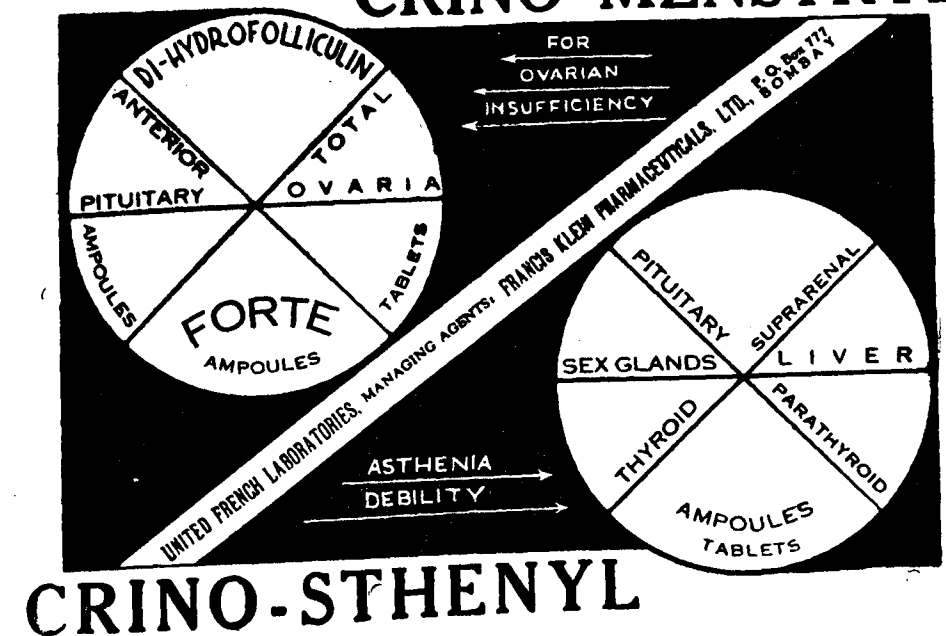
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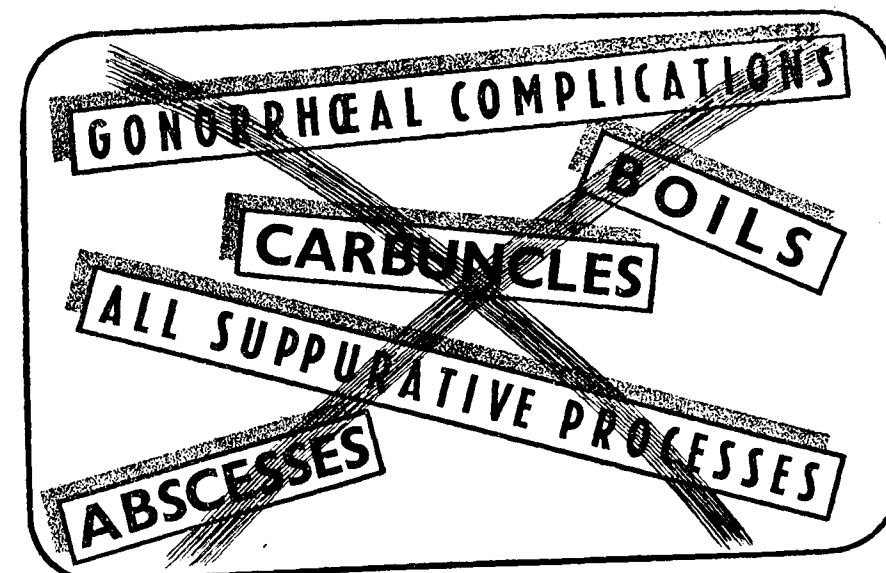
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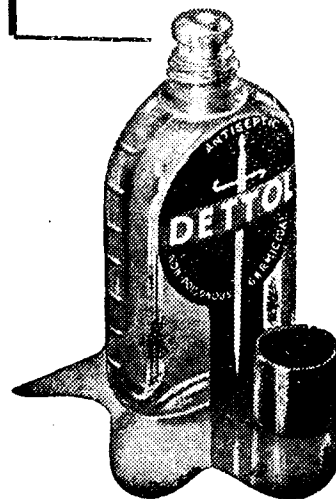
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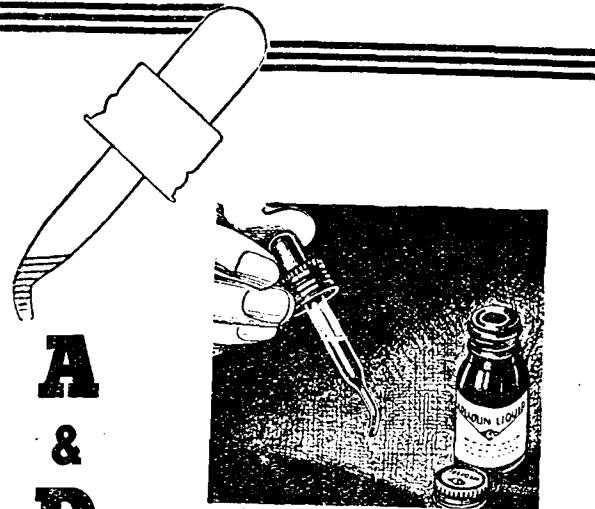
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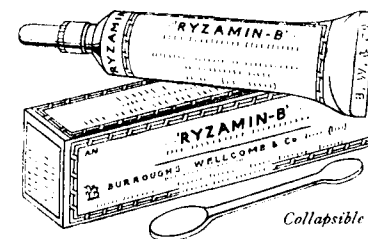
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## ORIGINAL ARTICLES

### "The Erythrocyte Sedimentation Test" A Clinical and Experimental Study\*

BY

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AND

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TWENTY years ago, FAHRAEUS first published his discovery of an increase in the sedimentation rate of citrated blood obtained from pregnant women. This "Test" for the pregnant state at first seemed to offer great promise and naturally attracted a great deal of attention from the scientific world. As the test became more widely used it soon became evident that many other conditions besides pregnancy could cause an increased S. R. (Erythrocyte Sedimentation Rate) for example, acute and chronic infections and malignant diseases.

**Technique.**—This involves the consideration of the tubes, the anti-coagulant used, the room temperature and the erythrocyte count of the patient.

1. *The sedimentation tube*:—Under this heading we include diameter, length and angle of inclination of the tube. It was found that when the tube is of very fine diameter, the upper layer of red cells is ill-defined, due to their irregular fall and a tube of less than 2 m.m. internal bore should not be used. The tubes employed by us possess an internal diameter of 3.6 m.m. and a height of 50 c.m.

\* Specially contributed to 'The Antiseptic'.

The tube must be held quite vertical during the process of sedimentation, for it has been discussed theoretically and demonstrated experimentally that the S. R. in inclined tubes is much increased over that in vertical tubes. In fact, in a 200 m.m. column a divergence from the perpendicular of only 7.5 degrees is enough almost to double the S. R.

2. *Use of anti-coagulant*:—We have used the most widely employed anti-coagulant *e.g.* Sodium Citrate. Previous workers have used the citrate solution in concentrations varying from 2–5 per cent. It is fairly obvious that when a solution of Sodium Citrate is added to the blood it should be employed in such strength and quantity that it will exert no appreciable osmotic influence upon the erythrocytes. Therefore, we have invariably used Isotonic (*i.e.* 3.8 per cent). We entirely agree that 1 c.c. of an Isotonic solution is quite sufficient to prevent 9 c.c. of blood from clotting but the dilution employed by us has been slightly different in view of the fact that the same technique has been employed before by other workers here and outside with satisfactory results.

We take 0.3 c.c. of Isotonic citrated solution in a 2 c.c. syringe and then fill up with the patient's blood upto 1.5 c.c.; thus 1.2 c.c. of blood is diluted with 0.3 c.c. of citrated solution which is freshly prepared and a dilution of 1–4 is obtained.

Having collected the specimen, it is introduced into the graduated tube, which has been freshly flushed with the same citrated solution, upto the topmost mark of the tube and then the latter is placed back in the rack for observation.

There can be two comparative methods of observation:—

- (1) To note the time taken by the precipitation of R. B. C. column to a fixed unit length on the tube and then calculate the extent of sedimentation within a unit time.
- (2) To note the fall in height of sedimenting column of R. B. C. in a fixed unit of time.

In our observations we have always noted at the end of one hour the height of clear serum on the top of sedimentating R. B. C. column and thus obtained the actual sedimentation rate directly.

**Total R. B. C. Count.**—The influence of total R. B. C. count on the S. R. has not yet been studied in detail but in the experimental records following (Column 6) mention has been made whether the patient was anæmic or otherwise. In our further observations this point will be studied in greater detail.

**Temperature.**—The influence of temperature on the S. R. cannot be ignored. Our observations have extended over 3 months, January to March and change in atmospheric temperature during these months is perfectly obvious from the following:—

|     |          |       | Mean Temperature, F. |
|-----|----------|-------|----------------------|
| (1) | January  | 1st.  | — 73.2               |
|     | "        | 15th. | — 72.5               |
|     | "        | 30th. | — 71.8               |
| (2) | February | 1st.  | — 74.4               |
|     | "        | 15th. | — 76.1               |
|     | "        | 28th. | — 78.1               |
| (3) | March    | 1st.  | — 80.0               |
|     | "        | 15th. | — 81.2               |
|     | "        | 30th. | — 83.8               |

We have tried to meet this difficulty by keeping a control on every occasion, the subject being one of our own sick attendants in the prime of health. His sedimentation rate has been varying between 3–4 m.m.—being 3 m.m. per hour throughout January and 4 m.m. during March.

Pitfalls or possible disturbing factors which may vitiate the results, have been avoided, on the following lines:—(1) Use of every piece of apparatus, syringe, needles, pipettes, tube etc. as far as practicable has been made after thorough sterilization. (2) Water for preparing the citrated solution has been distilled water. (3) Citrate solution has been freshly prepared and in no case it was older than four days. (4) The blood has invariably been taken in a resting phase from subcutaneous venepuncture and the tests have been mostly done immediately after collection. (5) Control with healthy ward orderlies has been maintained uniformly in each batch of blood specimen tested. (6) The observations have been recorded uniformly by the same observers personally throughout each individual observation without external distraction to minimise element of personal co-efficient of error, and thus the comparative value of the results need not be vitiated.

**Summary.**—1. The technique of estimating "Sedimentation Rate" has been described.

2. A record of a series of fifty cases, varying in description, is produced.

3. The S. R. varies a great deal in different diseases and in the same disease in its different phases.

4. The S. R. increases in all acute infections and in chronic infections, specially in cases of surgical tuberculosis.

5. The S. R. falls as the severity of the inflammatory process and toxæmia tend to subside. In fact the S. R. begins to fall before the pulse and temperature show any distinct change.

6. The S. R. shows only a slight increase over the normal (1–11 m.m.) in malignant diseases. This test is of no value so far as the differentiation between a benign and a malignant growth is concerned.

7. The S. R. varies with the room temperature as is brought out by our control whose S. R. varied during the month of January, February and March.

| CASES. |        |      |      | DISEASE (probable clinical diagnosis.)                                 | BLOOD PICTURE.                                               |
|--------|--------|------|------|------------------------------------------------------------------------|--------------------------------------------------------------|
| Name   | Caste. | Age. | Sex. |                                                                        |                                                              |
| L.     | H.     | 22   | F.   | Cervical adenitis.                                                     | —                                                            |
| R.     | H.     | 21   | F.   | T. B. Synovitis-knee and elbow.                                        | —                                                            |
| H.     | H.     | 20   | F.   | T. B. Ankle.                                                           | —                                                            |
| M P    | H.     | 28   | M.   | Fracture humerus.                                                      | —                                                            |
| P.     | H.     | 28   | M.   | Hydrocele and hæmatocele.                                              | W. B. C. 9000. P. 65%.                                       |
| R.     | M.     | 50   | M.   | Inguinal hernia.                                                       | —                                                            |
| S.     | H.     | 30   | M.   | T. B. Knee.                                                            | —                                                            |
| G L    | H.     | 50   | M.   | T. B. Sternum.                                                         | —                                                            |
| E.     | H.     | 30   | M.   | Inguinal hernia.                                                       | —                                                            |
| D.     | H.     | 35   | M.   | Ventral hernia.                                                        | —                                                            |
| C.S.   | H.     | 27   | M.   | Dislocation hip with haemoarthrosis.                                   | W.B.C. 9009. P. 70%.                                         |
| C.     | H.     | 35   | F.   | Cancer gall-bladder.                                                   | Anaemia +.                                                   |
| B R    | H.     | 50   | M.   | Septic amputation stump thigh.                                         | Anaemia + W.B.C. 15000. P. 75%                               |
| Z H    | M      | 30   | M.   | Elephantiasis scrotum.                                                 | Microfilaria detected. No anaemia.                           |
| K H    | H      | 35   | M.   | Acute appendicitis.                                                    | W.B.C. 14400. P. 80%.                                        |
| K L    | H.     | 30   | M.   | Chronic cholecystitis.                                                 | W.B.C. 12,000. P. 75%.                                       |
| B.S.   | H.     | 42   | M.   | Elephantiasis scrotum with epididymo orchitis and bilateral hydrocele. | —                                                            |
| S. N   | H.     | 34   | M.   | Elephantiasis scrotum.                                                 | —                                                            |
| H.     | H.     | 2½   | F.   | T.B. Adenitis.                                                         | —                                                            |
| M.     | H.     | 35   | F.   | Bilateral renal tumour with bronchitis.                                | —                                                            |
| B.     | H.     | 20   | M.   | Appendicular abscess.                                                  | W.B.C. 20,000. P. 88%.                                       |
| R R    | H.     | 45   | M.   | Endothelioma gum.                                                      | —                                                            |
| L.     | H.     | 39   | M.   | Cancer rectum. Operated case—3 months back.                            | Anaemia +.                                                   |
| B.     | H.     | 24   | M.   | Comp. Petts' fracture.                                                 | —                                                            |
| S.R.   | H.     | 12   | M.   | T. B. Sinus.                                                           | Anaemia +.                                                   |
| S.S.   | H.     | 45   | M.   | Fistula-in-ano.                                                        | —                                                            |
| M.     | H.     | 33   | M.   | Iliac abscess (Tubercular).                                            | —                                                            |
| R.     | H.     | 34   | M.   | Comp. fracture tibia.                                                  | —                                                            |
| B.     | H.     | 27   | M.   | Acute appendicitis and chronic osteomyelitis.                          | W.B.C. 16,000. P. 73%.                                       |
| J K    | M.     | 37   | M.   | Inguinal hernia.                                                       | —                                                            |
| R.     | H.     | 53   | M.   | Oesophageal stricture (cardiospasm).                                   | —                                                            |
| R. S   | H.     | 24   | M.   | Recurrent appendicitis.                                                | W.B.C. 17,000. P. 76%.                                       |
| BSS    | H.     | 20   | M.   | Acute appendicitis.                                                    | W.B.C. 16,000. P. 80%.                                       |
| M J    | H.     | 24   | M.   | Idiopathic hæmaturia and infected wound.                               | W.B.C. 11,000. P. 80%.                                       |
| B.     | H.     | 29   | M.   | Osteogenetic sarcoma humerus.                                          | H. B. O <sup>2</sup> 30%. R. B. C. 3 Mill.<br>W.B.C. 12,800. |
| L.S.   | H.     | 35   | M.   | Appendicular abscess.                                                  | W.B.C. 32,000. P. 84%.                                       |
| G.     | H.     | 31   | M.   | Acute appendicitis.                                                    | W.B.C. 20,000. P. 80%.                                       |
| Z H    | M.     | 24   | M.   | Abscess back.                                                          | W.B.C. 22,400. P. 72%.                                       |
| C.     | H.     | 39   | M.   | Elephantiasis scrotum.                                                 | No microfilaria.                                             |
|        |        | 20   | M.   | Osteomyelitis, Femur.                                                  | W.B.C. 13,000.                                               |
| L.S.   | H.     | 35   | M.   | Appendicular abscess.                                                  | —                                                            |
| R.     | M.     | 25   | M.   | Spasmodic torticollis.                                                 | —                                                            |
| C.     | H.     | 39   | M.   | Elephantiasis scrotum operated.                                        | —                                                            |
| W N K  | H.     | 20   | M.   | Spinal tumour with cysts.                                              | W.B.C. 12,000. P. 72%.                                       |
| R.S.   | H.     | 23   | M.   | Cold abscess chest.                                                    | —                                                            |
| S.N.   | H.     | 22   | M.   | Periostitis ribs.                                                      | W. R. + + +.                                                 |
| M L    | H.     | 62   | M.   | Enlarged prostate.                                                     | B. U. 66 mgm.                                                |
| S.A.   | M.     | 24   | M.   | T. B. Hip.                                                             | —                                                            |
| C.     | H.     | 35   | M.   | Epithelioma anus.                                                      | W. R. negative.                                              |

| Sedi-<br>menta-<br>tion<br>Rate. | CLINICAL PICTURE.                                                                                                             | Vegeta-<br>rian or<br>Non-vege-<br>tarian. |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| 43 m.m.                          | Matted glands. Sinuses.                                                                                                       | Non-Veg.                                   |
| 49 m.m.                          | Open sinuses. Extensive region.                                                                                               | Veg.                                       |
| 7 m.m.                           | —                                                                                                                             | Non-Veg.                                   |
| 5 m.m.                           | Plating done. General condition good.                                                                                         | Veg.                                       |
| 8 m.m.                           | Painful swelling. History of injury 3 days back. Temp.—99.                                                                    | Veg.                                       |
| 15 m.m.                          | Nil abnormal detected.                                                                                                        | Non-Veg.                                   |
| 6 m.m.                           | Multiple sinuses on the outer aspect of the knee.                                                                             | Veg.                                       |
| 25 m.m.                          | Temp. normal. X-ray positive.                                                                                                 | Veg.                                       |
| 8 m.m.                           | N. A. D.                                                                                                                      | Veg.                                       |
| 25 m.m.                          | —                                                                                                                             | Non-Veg.                                   |
| 16 m.m.                          | Temp. 100.8.                                                                                                                  | Non-Veg.                                   |
| 17 m.m.                          | Emaciation marked. Glands in left supraclavicular region.                                                                     | Veg.                                       |
| 60 m.m.                          | Temp. 102 + toxæmia.                                                                                                          | Veg.                                       |
| 1 m.m.                           | —                                                                                                                             | Non-Veg.                                   |
| 8 m.m.                           | Temp.—100.2. Pulse—109. Vague lump present in right iliac fossa.                                                              | Non-Veg.                                   |
| 12 m.m.                          | Temp. normal. Pulse—76. B. C. 150 mgm.                                                                                        | Non-Veg.                                   |
| 9 m.m.                           | Recurring attacks of pain and swelling in the testis and scrotum.                                                             | Veg.                                       |
| 5 m.m.                           | —                                                                                                                             | Veg.                                       |
| 16 m.m.                          | Matted lump of glands on both sides of the neck. Focus in lung present.                                                       | Non-Veg.                                   |
| 17 m.m.                          | Temp. normal. Anaemia. No hæmaturia.                                                                                          | Non-Veg.                                   |
| 22 m.m.                          | Pain and vomiting for 10 days. Temp.—100. Pulse—105.                                                                          | Non-Veg.                                   |
| 2 m.m.                           | A small nodule in the floor of the mouth.                                                                                     | Veg.                                       |
| 11 m.m.                          | General condition good.                                                                                                       | Non-Veg.                                   |
| 4 m.m.                           | Came after 12 hours yesterday; sterilised. Temp.—102 today.                                                                   | Veg.                                       |
| 12 m.m.                          | Two sinuses with pigmented margins.                                                                                           | Veg.                                       |
| 2 m.m.                           | Old standing fistula. No evidence of T.B. infection microscopically.                                                          | Non-Veg.                                   |
| 45 m.m.                          | Cold abscess of 3 months duration. Lesion of 4th L.V.                                                                         | Veg.                                       |
| 25 m.m.                          | Patient came to hospital 4 days after injury. Sepsis +.                                                                       | Veg.                                       |
| 7 m.m.                           | Patient being treated for chronic osteomyelitis. Temp. 100. P. 102.                                                           | Non-Veg.                                   |
| 3 m.m.                           | Well built adult. No other lesions detected.                                                                                  | Non-Veg.                                   |
| 12 m.m.                          | PA + + patient very thin. No evidence of malignancy.                                                                          | Veg.                                       |
| 1 m.m.                           | Tenderness at McBurney's point P and T normal. Patient operated upon 2 weeks after 10 inches long appendix removed.           | Veg.                                       |
| 1 m.m.                           | Frequent attacks of pain. Temp. 99. P. 110. Rectal tenderness.                                                                | Non-Veg.                                   |
| 24 m.m.                          | Temp. 101 to 103. Pus shows S. hæmolyticus. Toxæmia +.                                                                        | Non-Veg.                                   |
| 42 m.m.                          | Gradually increasing swelling of right arm for 5 months. Temp. 100 to 103 daily. X-ray shows destruction of shaft of humerus. | Veg.                                       |
| 55 m.m.                          | Symptoms for 7 days. Temp. 101. Pulse 120. Toxæmia +.                                                                         | Non-Veg.                                   |
| 3 m.m.                           | Pain for 28 hours. Temp. 99 P. 82.                                                                                            | Veg.                                       |
| 5 m.m.                           | Pain for 10 days. Temp. 99. P. 104.                                                                                           | Non-Veg.                                   |
| 10 m.m.                          | Recurrent attacks of lymphangitis for 10 years. General condition good.                                                       | Veg.                                       |
| 24 m.m.                          | Pain and tenderness in lower half of right thigh. P. and T. normal. X-ray shows bony lesion.                                  | Veg.                                       |
| 11 m.m.                          | Reference case 37. Abscess drained. Temp. 99. Pulse 86.                                                                       | Non-Veg.                                   |
| 11 m.m.                          | Posterior rhizotomy done. Still gets slight spasms.                                                                           | Non-Veg.                                   |
| 27 m.m.                          | Ref. case 40. T. 101. 3 days after operation. No evidence of sepsis in the wound.                                             | Veg.                                       |
| 45 m.m.                          | Paraplegia +. Temp. 102.4. Pulse 120.                                                                                         | Veg.                                       |
| 19 m.m.                          | Painful fluctuating swelling on the chest. X-ray negative for any lesion of rib.                                              | Non-Veg.                                   |
| 12 m.m.                          | Right half of chest studded with sinuses axillary & cervical glands +.                                                        | Non-Veg.                                   |
| 1 m.m.                           | Prostate frequent retention.                                                                                                  | Veg.                                       |
| 2 m.m.                           | Pain in left hip for three months. Limitation of movements. X-ray shows Demineralisation.                                     | Non-Veg.                                   |
| 8 m.m.                           | Painful nodular swelling at the inner margin. Inguinal glands +.                                                              | Veg.                                       |

## The Early Detection of High Blood Pressure\*

BY

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**T**HE high incidence and importance of high blood pressure in every day life are not sufficiently appreciated by the medical profession. In the United States of America, there are estimated to be about ten million sufferers from high blood pressure; and the loss of life from this dread disease ranges from 150,000 to 200,000 lives per year. In ASCROFT's opinion, high blood pressure is the commonest cause of death in the second half of life; after the age of fifty, one death in every four is due, either directly or indirectly, to high blood pressure. In India, with its low incidence of rheumatic heart infection, hypertension is perhaps the most potent cause of heart failure and "cardiac invalidism."

Much more important than a mere realization of the obvious or manifest symptoms and signs of high blood pressure, is an early detection of the disease in its "asymptomatic phase". If we could detect a hypertensive trend or tendency early in life, long before the development of symptoms or signs, we would be well on the way towards prevention of the disease in later life.

In this early, "latent", "asymptomatic" or "pre-hypertension" phase of high blood pressure, there are no clinical features to guide us; we cannot look for any diagnostic symptoms or signs; in fact, people in the latent phase of hypertension appear to be, paradoxically enough, in better health than their truly healthy friends; they appear "hale and hearty", have robust constitutions and exhibit "ruddy" or "weather-beaten" complexions. Is there no way, then, of detecting a tendency to high blood pressure in potential subjects? To my mind, the solution to this important problem lies in a routine investigation of the blood pressures and "blood pressure reactions" of children and young adults, as has lately been done in America and other countries. In India, students of schools and colleges are periodically subjected to routine medical inspection; would it not be good policy on the part of authorities, to make "blood pressure estimation" an essential part of such a proceeding?

For the last one year, I have been investigating the blood-pressure of normal school children, in one of the bigger boys' schools in Bombay. Certain interesting facts have emerged from this short investigation:—

(1) There is no doubt that a certain percentage of apparently normal children exhibit systolic blood pressures, well above the average

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normals for their ages. In more than 13% of school-children investigated, the systolic pressure was over 120 mm. Hg.

(2) An interesting feature was the excessive lability of the systolic pressure in some of these children. Enormous fluctuations of systolic pressure could be induced by emotion, exertion and other disturbing factors. To cite an actual example, a boy of twelve had a systolic pressure of 120 to begin with; within two minutes it had fallen to 104; the application of electrodes for electro-cardiography sent it up again to 124.

(3) Unstable diastolic pressures were also encountered, but in a much smaller number of children; there was a tendency for the diastolic pressure to vary from time to time; during estimation of the blood pressure in such cases, an appreciable difference was occasionally encountered between the diastolic pressure "on the upgrade" and that "on the downgrade". This phenomenon was observed, many years ago, by MACWILLIAMS, who termed the difference between the two diastolic pressure readings, the Diastolic Index; this index may attain 12 mm. Hg. or more and has been regarded as a good gauge of vasomotor instability. Whether a high diastolic index is indicative of future hypertension as well as vasomotor instability, it is difficult to say.

(4) Some children exhibit a "hyper-reactive type of response" to Hines' "cold pressor test". The latter test is an efficient attempt at assessing the reaction of the blood pressure to a standard stimulus, viz. the application of cold to the upper extremity. In practice, one hand of the subject is dipped in ice-cold water at 4° C. and blood pressure readings are taken after 30 seconds, 60 seconds and then every two minutes until the pressure returns to its previous basal value. A rise in children of more than 22 mm. Hg. in systolic and 18 mm. Hg. diastolic is interpreted by HINES as being a "hyper-reactive type of response". Out of four hundred children investigated by this worker, 18% were "hyper-reactors". Whether these "hyper-reactors" of today are hypertensives of tomorrow, one can hardly say in the present state of our knowledge. Recent work does suggest a tendency on the part of "subjects with excessive vasomotor reactions" to develop hypertension later in life.

It is a possibility worthy of consideration, that the above-mentioned groups of children with abnormal pressure reactions, may be in the "latent phase" of hypertension: these children with high systolic pressures, with "labile" systolic or diastolic pressures, with high diastolic indices and with excessive response to the "cold pressor test", are perhaps likely candidates for the development of high blood pressure, in adult life. This point can only be cleared up by an extensive and efficient follow-up of children with abnormal blood pressure reactions. If in future we find a way of "spotting" hypertensions before the development of symptoms or signs, then patients will stand a much better chance of cure and we shall be nearer to an understanding of this dreadful malady.

## Infantile Biliary Cirrhosis\*

BY

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IT is part of the General Practitioner's every day work, to treat quite a large number of children suffering from this dire disease which is taking a heavy toll among his patients. The fact that very little is known about its etiology, pathogenesis and causes, even after about half a century since it was first described by B. C. SEN in 1887, shows, that the medical public have not yet given enough attention to its ravages. The literature about the disease is so scanty, as can be seen from the bibliography at the end of this lecture, that it is high time we, medical men, took a keener interest in the study of the disease. The only connected and detailed descriptions of the subject are found in two publications *viz*: (1) S. K. MUKHERJEE's book on "Infantile Cirrhosis of the Liver" published in 1922 and (2) an article by N. G. PANDALAI of Vizagpatam Medical College, in the Indian Medical Gazette of April 1934. The other articles pertain mostly to aetiology and treatment. With regard to treatment, the lay press is so full of "reputed cures for enlarged liver and spleen" that it has been difficult for even medical men, to withstand the temptation of prescribing them, though the composition of the drugs is still a mystery. So, I felt that it is not a day too late, that a clear idea of the work on the subject up to date, should be placed before the Profession. This will, I hope, stimulate further work on the subject.

I have alluded to my own personal experiences, of the past nearly twenty years, with the hope that these will help in further elucidating any ideas on the subject. I have also discussed at length, the causation of the disease and have tried to give a plan of work for the future. I hope, members of this Association will co-operate and add their own quota, in unravelling the mysteries of the disease. The work that is being carried on in the Madras Medical College (Pathology Department), by DR. U. SRINIVAS RAO, has stimulated me in the choice of this subject.

**Historical.**—I cannot express this better than by quoting the following, from the article by PANDALAI. "No mention of the disease is made in any of the older writings. SEN (1887) first described and mentioned this disease as one of the causes of hepatic enlargement in infancy. In the following year, GIBBONS (1891) described in detail, the morbid anatomy and pathology of the disease. MUKHERJI's (1922) booklet on the subject is the next notable contribution. Since then, a few papers on the subject have appeared, mostly dealing with its aetiology and treatment."

\* A lecture delivered at the South Kanara District Medical Association on 30-3-1940, and specially sent to 'The Antiseptic' for publication.

The only reference to the subject in foreign literature is by three authors. CASTELLINI and CHALMERS in their book mention this disease and give Kala-Azar as its causation. P. MANSON - BHAR gives a very meagre account of the disease in his book. ROLLESTON and MCNEE have given a brief description in their elaborate book on 'Diseases of the Liver, Gall bladder and Bile ducts' and treat the disease as an entity by itself.

**Definition.**—Infantile Biliary Cirrhosis is a toxic disease, characterised by pyrexia, enlargement of the liver and spleen with jaundice, usually marked constipation, with dark or clay coloured stools, secondary changes in the heart, probably endocarditis, giving rise to generalised oedema and ascites, usually terminating fatally, in children between the ages of 9 months to 3 years.

**Ætiology.**—*Distribution*:—The disease has been endemic principally in India, the parts affected most being the Presidencies of Bengal, Madras, Bombay and United Provinces, and the States of Mysore and Travancore. Cases have been reported in other parts of the world, though the case reports are unconfirmed.

*Race*:—The largest number of cases have been reported among the Hindus, particularly Brahmins; Mohammedans come next in order. Though Indian Christians are reported to be immune, I have seen a few cases among them. GREEN ARMYTAGE reports cases among Anglo-Indian and European children. Statistics about the incidence of the disease are so far unsatisfactory and it is very difficult to know the exact distribution.

*Age*:—The usual age period is between 9 months and 2 years. Cases as late as 3 to 5 years have been found. The earliest cases reported are between 4th to 6th month of infant life. In my own series, the earliest age at which I have seen, is the 9th month of the child's life. But the majority of cases are seen between 12th to 18th month of infant life.

*Sex*:—The disease is fairly equally distributed between the two sexes, though a few authorities hold that the proportion of males to females is 2/3 to 1/3—thus the males predominating.

*Heredity*:—The disease runs in the family. If there is one fatality in the family from the disease, the parents are apprehensive of succeeding children. That children of the same mother are affected, sometimes in succession, is admitted by all authorities and is my own experience also. I have also observed that heredity is through the female line. The incidence of the disease is among the children of women who have had brothers or sisters suffering from the disease. The male line is not so susceptible.

*Surroundings*:—The disease is met with equally among the rich and poor. But the predisposition is greater in insanitary, ill-ventilated and overcrowded surroundings. It is said that it is prevalent more in urban than in rural parts, though I cannot entirely support this statement.

*Parental health and habits* :—Poor health in the parents, particularly among the mothers, predisposes the child, in a great measure, to the disease. I have generally found that the mothers of such children are poorly nourished, have bad teeth, and have gastro-intestinal troubles. These findings are confirmed by other observers also. Another factor of great importance is the succeeding early pregnancy in the mother, before the child is weaned properly. Pregnancy in the mother, by the time the child is six months old, throws a great strain on the mother's system. The quality and quantity of the breast milk is altered. Consequently, these children have to be artificially fed. Alcoholism and venereal infections have no definite relationship to the disease, beyond the fact that the vitality of the child is lowered.

*Diet* :—There is no definite relationship to the diet of the parents. The disease is found equally among vegetarians and non-vegetarians. The diet of the child has a great bearing on the incidence of the disease. These children are badly fed, as is usual in Indian dietary. The extremes of overfeeding to underfeeding have been found by me. The only conclusion I have so far arrived at, with regard to diet, is that the liver is over-worked and is thus predisposed to the disease. I shall discuss this question in detail later on.

*Climate* :—Has no bearing on the disease.

*Influence of other diseases* :—Kala-Azar, malaria and amyloid degeneration of the liver, have been variously put forward as the probable causes. CASTELLINI and CHALMERS, in their treatise on the subject, class it with Kala-Azar. But it has been definitely proved that none of these or any other disease, has any influence on its incidence, beyond the fact that the liver may be devitalised, thus adding to the susceptibility to the disease.

*Avitaminosis* :—With the isolation of the vitamins, as is usual with new discoveries, avitaminosis, particularly the absence of Vitamin C has been ascribed to be a dominating factor in the etiology of the disease. The experiments of NANDI and MUKHERJEE of Calcutta, on rabbits, have conclusively proved that this factor is not primarily responsible.

*Endocrines* :—An imbalance of these secretions has been said to be a predisposing cause. This may be hereditary or acquired. But the relationship has not been definitely established. The only mention is by GREEN ARMYTAGE who administers desiccated thyroid gland in treating these children. How far this serves any useful purpose, it is not possible to say.

*Causes*.—*Predisposing* :—Heredity is a prime factor in the causation of the disease. Any cause which devitalises the liver, like endocrine imbalance or vitamin deficiency, and want of essential constituents in the food, are factors that expose the liver to the disease.

*Exciting* :—It is agreed by all workers that diet plays by far the largest part in the causation of the disease. Heavy foods, rich in

fats and carbohydrates, throw an extra amount of work both on the gastro-intestinal tract and the liver of the child. The liver, thus overworked, is easily prone to infection and is attacked by the disease. Whether infection by bacteria, or their toxins, or products of ill-digested food material, or all the three bring about the changes in the liver, is a question yet to be solved. I shall put forward my own views on it later on. Suffice it to say that irritation—bacterial, toxic, or from products of ill-digested food, or any combination of these factors, acts in giving rise to the symptoms and changes in the liver.

*Pathology*.—The work of GIBBONS of Calcutta in 1895, being the result of post mortem and pathological observations on five cases, is classical and has since been confirmed by other workers.

In the early stages the liver, to the naked eye, shows only enlargement, a smooth surface and sharply defined edges. On section, the cut surface is pale, granular and rougher than normal. The gall bladder does not show any marked changes, except a little shrinkage, the ducts being patent. As the disease advances, the surface becomes granular, like Morocco leather, the liver becoming hard and firm in consistency, the edges being sharp and hard. In the late stages when the liver shrinks, these changes are marked. At this stage, the liver is very tough and fibrous, when cut into. The cut surface shows deep bile staining, the lobules are separated by fibrous tissue nests. The interlobular structure shows fibrotic changes, the liver cells being mostly replaced by fibrous tissue. Here and there, cell nests surrounded by fibrous tissue may be visible. Signs of perihepatitis or thickening of the capsule, are not seen at any stage. The gall bladder does not show any marked changes even at this late stage.

*Microscopic Appearances*.—In the early stages, the cells are found to be separated by intercellular strands of fine fibrous tissue. The cells are irregularly separated in small groups. The cells are found to be healthy in some places and cloudy, or from being granular to complete degeneration in other places. Majority of the cells contain two or three nuclei and pigment, the changes being uniform throughout the lobule.

The fibrous tissue is of two types. 1. Intercellular strands are seen, arranged around the cells in the lobules, consisting of fasciculi formed of several fibres with nuclei and distended capillaries. These alter the radiatory contour of the cells of the lobules, into one of columns. They are found in abundance in all the lobules.

2. Interlobular fibres are seen to be coarser in structure and found around the lobules. These are fewer in number, and do not entirely separate them. Only the beginning of separation is seen.

In the advanced stages the intercellular fibres are numerous and replace the liver cells. The cells are degenerated or completely destroyed, being replaced by fibrous tissue. The cell shape could hardly be recognised. The number of cells found is few and far between. In the liver cells, the protoplasm is granular, and the nuclei are not

visible. The cells are found stained with pigment and minute oil globules are seen inside the lobules. The inter-lobular fibrous tissue is now enormously increased and separates the lobules completely. The fibres are coarse, compact and contain well-marked nuclei. Numerous large blood vessels and new bile ducts are found among them. The original bile ducts are visible in the early stages only, in the inter-lobular spaces. But in the later stages, they disappear, giving rise to new formations, in numerous numbers at all stages of development. They are generally empty, except in the bigger ones.

The portal veins do not show any changes but are found intact.

The changes found in the lobules are uniform throughout, unlike those in hepatic cirrhosis, where the changes are found around the portal vessels.

The spleen is found to be passively congested. No marked microscopic changes have been reported.

The kidneys show granular degeneration of parenchymatous nephritis, only in the late stages.

From the above description of the minute anatomy, it will be seen that the changes show protoplasmic destruction of the cells, as a result of toxic irritation, with formation of fibrous tissue. The pathology of classical inflammation, with its sequelae, is seen. The freedom of portal veins from any changes is of great interest and significance.

**Bacteriology.**—From time to time bacterial infection has been suggested as a cause of the disease. There have been no references in the literature up to 1933, when LAHIRI of Calcutta published his results for the first time. Basing his work on the results of OPIE who produced experimental cirrhosis in dogs, by first devitalising the organ with small daily doses of Chloroform, followed by intraperitoneal injections of bouillon cultures of *B. coli* or streptococcus, he carried out similar experiments on puppies 1 to 2 months old. Excess of fat in the diet of children with cirrhosis has been known to upset digestion and derange the liver. So, these puppies were fed with a high fat diet for a long time, followed by intraperitoneal injections of gradually increasing doses of *B. coli* cultures. These animals developed pyrexia, enlarged liver, gastro-intestinal disorders, with clay-coloured stools. Sections of the liver from these animals, showed on microscopic examination, fatty degeneration, round cell infiltration, in many areas with delicate strands of fibrous tissue between the cells. In short, the changes produced tended to simulate the minute anatomy of infantile cirrhosis.

Encouraged by these results, he carried out certain bacteriological investigations, on the blood and urine of 25 consecutive cases. Blood culture was carried out early in the disease, in one case only and streptococcus hæmolyticus was found. *B. coli* and streptococci were found in 11 and 13 cases respectively and both the organisms in two cases. In one case, out of four cultures, two were found sterile. In five cases, the streptococcus was subcultured and in four, the hæmolytic

type was isolated, both from the blood and urine. So, he started treating some cases with auto-vaccines. The results were disappointing and disastrous. But starting with small doses of stock vaccines of *B. coli*, the results were good, the cases recovering. Cases with streptococcal infection and particularly of hæmolytic type, all ended fatally. There was no kidney disease, such as pyelitis or cystitis, found in all these cases.

The mother's milk of these patients was cultured in four cases with varying results. *B. coli*, *B. proteus*, and Gram positive cocci were found. The patients showed *B. coli* and streptococci in equal numbers. These mothers were found to be suffering from either pyorrhœa or constipation or cholecystitis or a combination of these.

From the above, it will be seen that investigations on the bacteriology of the disease will be fruitful in finding out the cause of the disease.

**Symptoms.**—The disease is insidious in its onset. Very often, it is recognised when the child is brought over for some other ailment. Yet, certain definite early symptoms are always seen.

*Prodromal* :—The child gets frequent attacks of gastro-intestinal colic, with or without fever, nausea, vomiting and diarrhœa. The child is irritable, cries constantly if not the whole day, has disturbed sleep, has capricious appetite, is easily tired and likes to sleep on its abdomen. In certain cases, the bowels are very constipated and in others, loose. The motion contains undigested food matter and is very foul smelling. It leaves behind a very white deposit, when removed from the place. Low evening fever, sometimes ranging up to 101 degrees or 102 degrees F. at nights followed by sweating, is seen. The fever will be occasional. The child gets frequent attacks of cold. The other very significant symptom, often complained of by the parents is, that the child passes very high coloured urine with a heavy odour. The urine leaves a white deposit when dried up. This happens very early in the disease.

*Definite* :—With the enlargement of the abdomen definite symptoms start. The abdomen, particularly the right side, gets progressively enlarged. There is a well-marked plexus of veins on the right side, seen early in the disease, in the majority of cases. Sooner or later, the left side also increases in size. The complexion becomes sallow, the eyes muddy and the child slowly gets emaciated. The fever is now a marked symptom, sometimes throughout the day, but definitely in the evenings. The temperature may be anywhere from 99 degrees F to 101 degrees F or 102 degrees F or more. The urine is getting scanty. The bowels are very often constipated, rarely loose. Motions are, in some cases, very dark and putty coloured and cannot be passed without the aid of a laxative or purgative or enema. In others, they are very white or clay-coloured. In all cases, they are very foul smelling. Oedema of the eyelids and a little puffiness of the ankles are seen early in some cases. This symptom, I have noted,

is always unfavourable, though it is not mentioned as such. Sooner or later, in unfavourable cases, ascites appears with swelling of the lower extremities. The urine becomes scanty, high coloured and bile stained. The skin and conjunctivae are bile stained, the staining becoming deeper with the progress of the disease. The tongue is coated and ulcerated. The child now becomes pale and waxy in hue. These symptoms are all very unfavourable and terminate in the death of the child. In favourable cases, the bowels improve, motions becoming more yellow and less foul. Urine clears up and is passed freely. The appetite which was capricious, gets better. The temperature stops. The child which was peevish becomes cheery and begins to play. The abdomen gets soft. No jaundice appears in these favourable cases. Complete cure is a slow process and takes a long time, during which period the diet has to be carefully adjusted.

**Signs.**—Examination of these children shows some definite signs.

*General* :—The child is not much emaciated in the early stages, but with the progress of the disease, emaciation is marked. At the stage at which the child is brought to the Doctor, the appearance is rather characteristic. The abdomen is enlarged, the extremities are proportionately lean, the child is peevish, a plexus of veins is seen on the lower part of the chest and abdomen, well marked on the right side, slight puffiness of the eyelids and feet are seen in some cases, the eyes are muddy and the complexion, sallow.

*Temperature* :—This is present in some degree or other in all cases, ranging from 99 degrees to 102 degrees F., in the evenings and nights.

*Abdomen* :—In the very early stages, the liver is felt enlarged, being 1 to 3 inches below the costal margin, soft in consistency, rarely tender. But at the stage at which the child is usually examined, both the liver and spleen are markedly enlarged and easily palpable.

*Liver* :—The liver which was soft in the early stages, becomes hard, the margin being definite and sharp like a board. The organ gets harder and the margin well-defined with the advance of the disease. In unfavourable cases, the hard liver gets smaller and becomes contracted progressively but not entirely. The enlargement and contraction are uniform. In favourable cases the liver gets hard, but gets smaller, though the process is very slow and tedious, the organ being palpable for over a year in some cases, but usually from 6 to 12 months.

*Spleen* :—In the early stages it is just palpable. But as the liver begins to get harder, the spleen is definitely palpable. Enlargement, with the progress of the disease, is marked sometimes extending to below the umbilicus, the organ remaining firm and enlarged till the child passes away.

I have always found the spleen enlarged simultaneously with the liver, in the majority of cases seen by me, though other observers

mention that the splenic enlargement is only in the later stages. This is soft in the early stages, but gets harder later on. The one point of great prognostic importance, which I have always noted is, that the spleen begins to contract very early, in cases that recover. Months before the liver comes to normal, the spleen completely disappears.

*Ascites* :—This is seen only in the later stages of the disease. It is first seen as a shifting dullness. Gradually the skin of the abdomen distends and gets shiny and a fluid thrill could be elicited. Even when the fluid is removed by tapping, it reappears quickly.

*Gastro-intestinal tract* :—The tongue is coated throughout. In the later stages, it is ulcerated with whitish patches here and there. Nausea and vomiting are seen early. Later, there may be occasional vomiting.

The bowels are usually constipated. The movements have to be aided with purgatives or enemas.

*Motions* :—These may be very hard, like balls. In some cases they are very black and small. Later, they become definitely clay-coloured and remain so in all unfavourable cases. They are very foul-smelling throughout. Under the microscope plenty of undigested fat granules are seen. This is very pathognomonic. The other food constituents are well digested.

*Heart* :—In the early stages, there is no abnormality in the heart. But as the disease progresses, the second sound is accentuated. One significant observation of mine is, that the first sound at the apex, begins to get soft almost simultaneously with the hardening of the liver. This is of grave prognostic importance. Very soon, a definite murmur entirely replaces the first sound, at the apex. When this happens, the case is beyond recovery. I do not find any mention of this sign in the literature, except by PANDALAI. This finding of mine has been constant in all cases. The pulse, as usual, is varying. There is nothing unusual about it.

*Blood* :—The changes in the blood have been studied from time to time. The results are very interesting.

There is well-marked leucocytosis. In the differential counts, the following results have been found by all workers :—Polymorphonuclears, 22 to 42 %; Lymphocyte—large and small, 44 to 60 %; Mononuclears 7 %; Eosinophils 2 %; Mast cells 1%.

The total count has been always high, being between 10,000 to 20,000 per c. mm. The R. B. C. count shows an anæmic condition, being between 3 to 4 millions per c. mm. The R.B.C. are very fragile; haemoglobin index has been found to be between 60 to 70%. Agglutination tests have shown, in LAHIRI's cases, negative for B. typhosus, Paratyphosus A and B. But in one case, it has been found positive 1 in 50 for B. coli.

No parasites of any variety have been found.

*Respiratory system* :—There is always a tendency for frequent

attacks of nasal and bronchial catarrh. As the disease advances bronchitis is very common. Pneumonia or broncho-pneumonia are usually terminal affections.

*Nervous system*:—Disturbed sleep to marked insomnia is common. Convulsions are seen only during high pyrexial attacks. At the later stages in fatal cases, tremors in the extremities are seen.

*Urinary system*:—The urine is high coloured from the very start and becomes scanty as the disease advances. It leaves behind a deposit on evaporation. This deposit has been identified as Triple Phosphates, though I have had no occasion to verify. The specific gravity is always high and the reaction is highly acid and it has a heavy odour. With the advent of jaundice, bile appears in the urine, sometimes even much earlier. Under the microscope, no casts or pus cells have been seen. Only the usual desquamated bladder and kidney cells have been seen, with plenty of bacteria in catheter specimens. Albumen is found in the last stages.

*Jaundice*:—This sign, when seen, is a grave warning of approaching danger. The earlier it is seen, the more acute is the case. But it usually appears when the liver begins to get hard.

*Hæmorrhage*:—This is not very common. When it takes place, it is usually terminal, being as a rule from the gastro-intestinal tract and rarely from the primary system.

*Coma*:—This is always terminal.

*Special tests*:—*Van den Bergh's Reaction* is always 'delayed direct'. The liver efficiency test shows damage to the liver.

**Diagnosis.**—The diagnosis of the disease at the stage at which the child is seen, is always easy. Diagnosis of the early stage depends upon a consideration of the following points:—

- (1) History of the disease in previous children and the age of onset.
- (2) Constant attacks of gastro-intestinal colic.
- (3) Peevishness in the child.
- (4) Disturbed sleep.
- (5) High coloured urine with deposit on evaporation.
- (6) Marked constipation and change in the colour of the motion with foul smell.
- (7) Enlarged liver and spleen, the latter when present, is with jaundice.
- (8) Capricious appetite.
- (9) High leucocyte count with marked lymphocytosis.
- (10) Progressive deterioration in the general health of the child with low evening temperature.

**Differential Diagnosis.**—The following are the diseases from which the condition has to be distinguished. (1) Rickets. (2) Kala-azar. (3) Malaria. (4) Congenital Syphilis. (5) Familial Acholuric

jaundice. (6) Hanot's biliary cirrhosis. (7) Amyloid degeneration of the liver. (8) Chronic infantile respiratory affection with enlarged liver and spleen. (9) Typhoid fever.

1. *Rickets*:—The classical type of rickets is rarely seen in our daily practice. Usually, cases seen are of a very mild type of Calcium deficiency. The symptoms are: slight enlargement of liver and spleen simultaneously, vomiting of curdled milk, diarrhoea in which motions are whitish yellow and the bones may be deformed. There is no jaundice. Temperature also is rare. Constant attacks of gastro-intestinal colic are not seen. The urine is not high coloured. The child shows symptoms of this disease below six months. Late dentition, late closing of fontanelles are found in later childhood.

2. *Kala-Azar*:—This disease is not seen on our coast. Moreover, a blood examination will settle the diagnosis.

3. *Malaria*:—I have seen enlarged spleen and liver of malaria, in two cases in my practice. Both have recovered. Blood examination confirms the diagnosis.

4. *Congenital syphilis*:—History of the disease, in one or both the parents, is present. Signs of the disease are invariably found in the skin and other parts of the body, such as nodes, eruptions, ulceration at corners of the mouth, snuffles, early dentition etc.

5. *Familial acholuric jaundice*:—This affects a number of members in the same family. Though there is well-marked jaundice, no bile is found in the urine. There are remissions in the disease which is chronic and continued over long periods. Personally, I have not seen any case so far.

6. *Hanot's biliary cirrhosis*:—This occurs in older children and young persons, and is a very rare disease. The disease lasts longer, there is no jaundice, the spleen is bigger than the liver.

7. *Amyloid disease of the liver*:—This occurs as a result of chronic suppuration or rickets. It occurs in older children. Other organs besides the liver are affected. The edge of the liver also is rounded and smooth.

8. *Chronic infantile respiratory affections with enlarged liver and spleen*:—I have met with two cases of this type. The child gets constant attacks of dyspnoea, almost asthmatic, cough with expectoration, sometimes pyrexia, the liver and spleen being enlarged enormously. The chest is deformed, the sides being drawn in and the sternum prominent almost approximating to the pigeon chest. During apyrexial periods, there is cough and slight dyspnoea. There is no jaundice or bile stained urine. The age of onset is more or less the same as for infantile cirrhosis. The disease becomes chronic, but generally disappears between 2nd and 3rd years of life, unless properly treated earlier. The liver and spleen both contract to their normal size without leaving any traces of the trouble. My first case is now a boy of 14 years and the other is a child of 3 years, who comes to me occasionally, for these lung attacks.

9. *Typhoid fever*.—Continuous fever lasting over three weeks, with temperature varying between 99 degrees to 102 degrees F., morning and evening respectively, in the early stages of the disease, may be mistaken for typhoid. But the condition of the urine, the presence of jaundice and progressive enlargement of the liver, will give a clue to the diagnosis. Moreover, typhoid fever is very rare in children under two years. I have seen only one case in my experience all these years.

**Prognosis.**—This depends upon a number of factors. With early recognition and with careful dieting and medication, chances of recovery are good. But once the liver has become hard, no treatment is of avail. As I have already pointed out earlier, if the spleen contracts first, the case generally recovers. But once a case is diagnosed as infantile cirrhosis, the prognosis is always grave.

**Treatment.**—This falls under five heads. (1) Prophylactic to the mother. (2) Hygienic. (3) Dietetic to the infant. (4) Medicinal. (5) Vaccines.

1. *Prophylactic*.—That the disease runs among the children of the same mother, is acknowledged on all hands. This fact gives rise to the idea that there is some inherited factor which devitalises the liver and thus makes it susceptible to the disease. It has also been noted that the health of the mother is not always good. So, it stands to reason that the mother should be treated during pregnancy or even earlier. GREEN ARMYTAGE, LAHIRI, MUKHERJEE and others who have worked at the problem, are all agreed on this line of treatment. Bad teeth, any latent infections, and the bowels of the mother are to be properly treated. The general health of the mother should be improved by suitable tonics, such as Cod Liver Oil and diet. Greens, fruits, good milk and properly balanced diet should be given. Hygiene of pregnancy should be carefully attended to. The quality of the breast milk should be improved. This will eliminate the most important predisposing cause.

2. *Hygienic*.—The sanitary condition of the dwelling places should be improved. These children must be kept clean, daily bathed with hot water. Splashing the liver region with salt water, with the child in a tub helps in keeping the liver active. GREEN ARMYTAGE recommends exposure of these children to sunlight from 6 to 9 A.M. and 3 to 6 P.M. or the Mercuric quartz lamp, for absorption of actinic rays. How far this will help in overcoming the disease, it is not possible to assess.

3. *Diet*.—This is by far the most important part of the treatment. The principle in prescribing a diet for these children, consists in giving the minimum amount of fat, until digestion improves, minimum of carbohydrates, enough of fresh fruit juices, two to three ounces a day, and enough of water. Avoid proprietary and rich foods. The only carbohydrates to be allowed is Glucose in some form. Where for some reason or other mother's milk cannot be had, a wet nurse may be tried. When either is not available, cow's, ass's or goat's milk, suitably

altered, should be given. GOTHOSKAR of Bombay has mentioned that the milk of Indian cows is poorer in quality than that of English cows. So, he recommends that she-buffalo milk could be used and he has found no harm. GREEN ARMYTAGE recommends the rearing of a goat, as its diet and milking can be properly supervised. The period of onset and the weaning period in susceptible children coincide, and it is at this time that the diet should be properly balanced. So, it is at this period that the medical man should give proper advice.

GREEN ARMYTAGE recommends that once the disease is diagnosed, the child should be given skimmed milk and fruit juice in graduated feeds for the first fortnight, along with plenty of water. The quantity recommended by him is more on the starvation side, than generous. He starts with  $1\frac{1}{2}$  ozs. for each lb. of body weight on the first day. Then gradually increases it by  $\frac{1}{2}$  oz. daily, until the child takes 6 to 7 ozs. per lb. of body weight. Water should be given freely. The best way of preparing skimmed milk is to pour the required quantity of fresh milk in an enamel douche can corked at its outlet, simmer it and not boil) for half an hour and then place the can in cold water until the milk becomes cold. The cream separates at the top and only fat free milk remains at the bottom two thirds. This can be drawn off by removing the cork. This should be further diluted. After the first fortnight, when the bowels and appetite have improved, whole milk is slowly added to the diet in regulated quantities, until the child, in the course of a month, takes only whole milk. Vegetable soups may now be added along with the fruit juices. This diet is to be continued as long as is necessary.

In my experience milk, fruit juices, vegetable soups and Glucose form the best diet, where the mother cannot breast feed the child. I have also added butter-milk in elderly infants. Rice, cereals and other farinaceous foods should be avoided. Fats, in the form of ghee or butter are to be withheld, until such time as the motions are normal in smell and consistency. I give milk diluted with equal parts of water in the early stages and gradually decrease the water with improvement in the condition. Proprietary foods are entirely eschewed. Fruits like orange, lemon, sweet-lime, papaya and pomegranates are freely given. The last two are for children who have cut their teeth. Vegetable soups and purrees are allowed early in the treatment. The diet is kept on for two months at least, after the disappearance of the spleen, and the liver has become soft and small. Then rice is added to the diet cautiously until the child can digest normal diet.

4. *Medicinal*.—There is no specific treatment. The use of vegetable cholagogues, saline purges, Hydrarg cum Creta, are our mainstay for the present. The advertised cures are far too numerous to be mentioned and I personally have no experience of these, nor have I any faith in them. Moreover, to use a drug whose composition and action are unknown, is safe, neither to the physician nor to the patient. But screaming advertisements of the lay press, have caught the imagination of the people in such a manner, that the medical man

is looked down upon, if he does not recommend them. How far these remedies have been useful in true infantile biliary cirrhosis, is difficult to assess, as I believe along with all authorities, that once the disease has come to the stage of hardening of the liver, no case has so far been reported to have recovered. If early cases of enlargement of the liver and spleen have been cured with these remedies, I am doubtful whether they are after all true types of the disease. I am only appealing to my medical friends, that they should be wary, before they recommend any of these reputed nostrums.

Of the vegetable cholagogues, Ext. Kalmegh Liquid, Extract Hedyotis Auricularia and some of the pharmacopœial preparations are quite useful. Of the salts, Sodii Sulphas is by far the best to relieve constipation and promote bile secretion. Hydrarg cum Creta in suitable doses, will act both as a cholagogue and an antiseptic to the intestinal canal. Urotropine has been found to be a general antiseptic. Alkalis, like Pot. Citras and Bicarb with Sodii Salicyl, may be used in the pyrexial stage. Beyond these, I have not found anything useful.

The principles that should guide us in prescribing for these cases, are the following :—

- (a) To disinfect the gastro-intestinal tract, if it is possible to do so.
- (b) To stimulate the liver to activity and overcome any infection.
- (c) To keep the bowels open by saline purgatives or castor oil or enemata.
- (d) To improve the digestion.

5. *Vaccines* :—Recently, LAHIRI has reported very favourably on the use of stock vaccines in this disease. His results have been good with B. Coli Vaccine only. Auto-Vaccines have proved dangerous. This is quite a useful field for investigation. If, as reported, there is recovery with vaccines, we have a powerful weapon to combat the disease.

**Discussion : Causation of the Disease.**—Various theories have been advanced from time to time, as to the causation of the disease. None of these to my mind, satisfactorily explain the pathology or the symptoms. I shall now consider these in detail.

1. *Heredity* :—From observations made by all workers so far, children of the same mother are affected. This clearly shows that some devitalising influence is inherited by the child from the mother. These mothers are usually in bad health, suffering either from some septic focus in the body or constipation. Their digestion is poor and bowels out of order. Recently, just a fortnight back, a case has come under my observation where the mother suffered from puerperal sepsis in her fifth delivery and lost the sixth child from infantile biliary cirrhosis. I can also quote many cases where the mothers have had some septic focus in the body like bad teeth. Then, can it be, that the

factor inherited, is intra-uterine infection of, or damage by toxæmia to the liver?

2. *Distribution, Climate, and Surroundings* :—The general belief among various workers so far, has been that the disease is confined to Urban areas only. But we in this Presidency have seen the disease in both urban and rural areas. The disease being restricted only to the Tropics, particularly to India, points to some influence of climate and sanitation. It is found equally distributed among the rich and the poor, probably a little more among the rich. Yet, the fact remains, that the sanitary conditions in our country are not yet what they ought to be. How far do these factors operate in the incidence of the disease?

3. *Diet* :—That bad feeding is responsible for the disease is admitted by all workers. Undigested fat particles have been found in the motion under the microscope. Drops of fat globules have been found in sections of the liver. The foul smell of the motions, points to decomposition of food products in the gastro-intestinal tract. It has been suggested that the liver is overworked by the absorption of fat. If diet alone is responsible for the disease, the incidence should have been very high. It is well known that the children of the lowest classes who live in dust and eat the lowest type of food, including table refuse, have not been reported upon so far, as suffering from the disease, though a survey has not been made. MUKHERJEE definitely reports, that the disease has not been seen in the aborigines of Bengal. That the diet of the majority of Indian families is certainly far below the average standard, is undoubted. The fact that, owing to deficient diet, the health of most of our women is very far below the average, is also indisputable. Then what exactly is the influence of diet in this disease?

4. *Toxæmia* :—What is the nature of the toxæmia? Is it from imperfectly digested food products or from micro-organisms or from both? That imperfectly digested food products act as toxins is accepted. What is it that brings about this impaired digestion? Is it primarily dysfunction of the liver or is there an alteration in the bacterial flora of the intestinal tract?

5. *Bacterial infection* :—The only authoritative work so far is that of LAHIRI. Pathology of the disease shows the changes of chronic inflammation. Symptoms of the disease point to a toxæmia of chronic infection, with exacerbations. The clinical changes in the heart, I have mentioned earlier, indicate endocarditis. A study of the urinary bacterial flora has yielded interesting results, in that bacteria have been isolated without derangement of the genito-urinary system. The only study that is yet to be done, is of the intestinal flora. Do not all these data point to a bacterial origin of the disease? If so, what is the offending organism?

From the above it will be seen that it is not one single cause but a combination of causes that operate. The immediate or exciting cause is a micro-organism. I shall explain my view. It is a well known

fact that the liver is the biggest storehouse for food. It is also the biggest detoxicating and anti-bacterial organ in the body, thus acting as a combatant to infection. When it is over-worked as a detoxicating and anti-bacterial agent, a stage is reached when its powers are exhausted. At this stage, this mechanism breaks down and changes take place, giving rise to symptoms of infantile biliary cirrhosis. The process may start from intra-uterine life, toxins or organisms or both being carried through the placenta from the mother. As is natural, the liver attacks them, and is thus partly devitalised. In the first few months of post-natal life, the child gets mother's milk only and thus not much strain is thrown on the liver. But, as it has been usually found, with the mother getting pregnant early, the quality of the milk is changed to a higher fat content and at this time, to supplement the same, improper artificial feeding is resorted to. This is the next set back to the liver. It is a well known fact that bile is necessary for the proper saponification of fats, before absorption. The devitalised liver is probably not able to secrete the required quantity of bile, and attacks of gastro-intestinal upset now begin. So, the unsaponified fat remains in the bowels, probably is partly absorbed, as could be made out from drops of fat in liver secretions, and acts as a good nidus for micro-organisms, the excess being passed out in the motions. Now infections come into play. *B. coli* and streptococci are two organisms which are always ready to avail of any fertile soil, to implant themselves. So, one or both or some other associated organisms now infect the bowels and the disease is ushered in. Toxin from decomposed food products are now formed and absorbed, as also the micro-organisms pass into the portal circulation to the liver. The liver combats them. In the struggle, secretion of bile is further diminished. Want of bile, which is a disinfectant to the intestinal canal, allows the infection to be firmly established. When the liver is over-worked in the fight, the changes noted pathologically are brought about and symptoms of the disease set in. The question now to be explained is, why is the portal system unaffected? This may be due to the fact that the infecting organisms and their toxins are of such a type that they have no action on the endothelial system of the blood vessels. This is proved by the fact that blood vessels distended with blood, are found in plenty, in the new fibrous tissue formed. We know that all intestinal diseases of the colon typhoid group, have an insidious onset, the first week of the disease being rarely recognised by the patient or his relatives. So, this disease being insidious in its onset, may be caused by one of the members of the colon group and if streptococci have been isolated, they are only secondary.

In the above, I have tried to put forward a view which I have always held, namely, that the disease is primarily an infection, and have discussed it at length. Further investigations will show whether this view is correct.

From the above explanation of the causation of the disease, I venture to suggest that the new Sulphanilamide compounds should be given a fair trial in the disease, along with vaccines. Recently, I have

read an article by ALEXANDER FLEMING of the Inoculation Department of St. Mary's Hospital, London, that vaccines aid the action of the new chemotherapeutic preparations. So, this line of attack, to my mind, presents a good field for investigation.

**Suggestions for Future Work.**—I shall now venture to put forth the lines on which future investigations may be carried out.

*Maternal* :—The health of the mother is to be studied. The possible sources of infection like bad teeth, puerperal infection, pyelitis which is more common among our women than we know of, and intestinal complaints should be investigated and removed. Wherever possible, bacteriological investigations should be carried out. A diet survey of the mothers, during and after pregnancy, will be very useful.

A study of the breast milk both with regard to the quality and bacterial content, at different periods of lactation, will give us some useful information.

*Infant* :—1. The chief infantile diseases prevalent among these children should be noted, particularly should it be noted whether they are of bacterial origin.

2. The diet of the child, particularly in the incidence period of the disease is to be studied. The influence of a change is to be noted. The factors deficient should be found out.

3. A thorough bacteriological investigation of the intestinal bacterial flora, both in healthy children and children suffering from disease, is to be carried out. Blood, urine and motion cultures in diseased children are to be carried out and results noted. This has not been done so far, in an organised manner.

4. Pathological changes in the gastric, intestinal and circulatory organs are to be studied. These studies will yield very useful information. Blood changes have to be studied at different stages of the disease.

From the above it will be seen, that both the specialist, as well as the general practitioner, will have to co-operate in the study of the disease.

I appeal to all the general practitioners, both in this district and outside, to take an active interest in the investigation of this dire disease which is claiming such a heavy toll of innocent lives. At the Madras Medical College, the work is being done by a research scholar. If both the general practitioners and he join hands, further knowledge could easily be obtained, about the disease. In this district, we have a large amount of clinical material. Shall we, members of this Association, take up the investigation? I have prepared a case sheet for your information. The Association, can print copies of the same after approval by you and distribute the same to any medical man who would like to work at the problem. Such of us, as have the necessary instruments like the microscope, may offer themselves in the

investigation. At the end of the year, the case sheets may be compiled and a report issued. We can also requisition the services of the research scholar, for such work, as we cannot do here. When an association like ours takes up the work, the necessary finance is bound to come. There are enough charitably minded persons who have lost a child or two from this fell disease, who may be persuaded to contribute their mite to the work undertaken by us. Moreover, a report of the work by an association like ours, will have great value, when published. So, shall we take up the work?

**Summary.**—1. A concise and complete account of the disease, consisting of the history, ætiology, causation, pathology, symptoms, signs, differential diagnosis, prognosis and treatment, has been given.

2. Three new signs have been mentioned :—

(a) Changes in the heart have been noted clinically ;

(b) Condition of the spleen, both from diagnostic and prognostic point of view, has been described ;

(c) A symptom complex of simultaneous changes in the liver, spleen, heart and the appearance of jaundice has been mentioned.

3. A possible view on the bacterial origin of the disease has been discussed at length.

4. Lines of future investigations have been suggested.

5. An appeal has been made to the research worker and the general practitioners to join hands, in the future investigations of the disease.

In conclusion, once again, I appeal to you to take up the investigation of the disease and help in unravelling its mystery. With the following lines from LONGFELLOW's "Psalm of Life," as our motto for the work ahead, I close :

“Not enjoyment and not sorrow  
Is our destined end or way.  
But to act that each to-morrow  
Find us farther than to-day.”

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# Clinical Application of X-Ray and Electrical Treatments in Modern Medicine \*

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**Introduction.**—The importance of the application of Electricity in modern medicine and surgery is becoming greater and greater year by year, not only in relation to the actual diagnosis of disease, but also in respect of the cure or alleviation of various diseases. The control of electric current has opened up, for modern medicine and surgery, a wealth of diagnostic and therapeutic possibilities, which a generation ago were practically unthinkable or considered impossible.

In its most varied forms, applied directly as electrical energy, or converted into heat, light or movement, the electric current is a willing helper, whenever help or healing is required. As electrical energy we use galvanic, faradic and undulatory or sinusoidal current for the most varied medical purposes. The usefulness of ultra-violet light therapy is now an established fact. Every medical man knows that the rays have a profound effect on those nutritional disorders which are a result of a deficiency of vitamins in the diet, *e.g.* rickets in children and osteomalacia in adults. Many skin diseases derive much benefit from ultra-violet radiation.

The use of X-ray is one of the most important applications of electricity to medicine and surgery. During the last forty years, since the discovery of X-ray, a new therapeutic science has grown up and become firmly established as an essential procedure in the treatment of human ills. At the present time, X-ray therapy has fully justified its status as an efficient modality of treatment on a par with other therapeutic agents. An attempt has been made in this article to enumerate the conditions for which this form of therapy is of value.

Of recent years, a rational use of electricity is that of the employment of high frequency currents for medical and surgical diathermy. More recently, great interest has been aroused in the uses of short waves in the treatment of various diseases. This constitutes one of the most important chapters of progress in medical electricity and opens up vistas of still greater possibilities for the future.

The following pages have been written for the guidance of the general practitioners in selecting their cases for the electro-medical treatment. It is necessary, however, at the outset to state definitely that electro-therapy is not a panacea for all ills.

The diseases which have been considered are those for which electrical treatment can be prescribed. In many of them, cure or relief can be expected in the major number of cases. The results that may

\* Specially contributed to 'The Antiseptic'.

be anticipated are mentioned under the headings of the various diseases. In stating these results, the various competent authorities under whose guidance these results have been achieved, have been quoted.

**Clinical Application of X-Ray Therapy.**—Owing to the limited amount of space in an article like this, it has been impossible to describe in detail all the conditions amenable to X-ray therapy. The description must, therefore, be limited to a brief outline of its use in connection with the treatment of the more important and more common diseases, which the radio-therapist is called upon to combat. There are many other conditions which respond favourably to X-ray therapy. But it may be pointed out that X-ray must not be regarded in the light of a panacea or cure-all. In many cases it does not cure at all, but merely inhibits the pathological cells, allowing the normal body forces to perform their normal functions, and sometimes merely affording relief. In some conditions, X-ray alone will effect a cure.

Generally speaking, X-ray has an unlimited field of usefulness in medicine and is one of the most valuable therapeutic agents which modern science has to offer. Its scope of usefulness is constantly increasing, and, with a better understanding of its value and closer professional co-operation, it presents unlimited possibilities for the future.

**I. Diseases of the Skin.**—In dermatology, X-ray has long been a routine measure, and it was in this branch of medicine that it had its first principal application. In some instances, it is curative where other methods have failed. In others, it is a valuable adjunct to medication. The advantage of cleanliness, convenience, and absence of pain, and the elimination of the use of irritating and offensive ointments, usually commend it to the patient.

1. *Eczema*:—Probably in no dermatological condition has X-ray a wider therapeutic range or greater value than in eczema, both in acute and chronic types. The response of eczema to the ray is usually very prompt, frequently being manifest after the first or second exposure. Among the early symptoms to be relieved is the intense pruritus.

2. *Psoriasis*:—The majority of cases of psoriasis will clear up under X-ray treatment.

3. *Pruritus*:—X-ray forms one of the most valuable weapons in the treatment of pruritus. The commonest sites of this condition are the perineum and the anal region.

4. *Acne vulgaris*:—To-day, the use of X-ray is the counsel of perfection in the treatment of acne vulgaris, and is one of the most reliable servants of the dermatologist in this disease.

5. *Erysipelas*:—X-ray treatment is stated by several authorities to be of great value if administered in the early stages of this disease.

6. *Chronic ulcers*:—Oriental sore or Delhi boil and Lupus vulgaris (vegetating forms) yield quickly to this form of treatment.

7. *Tinea Tonsurans* (Ringworm of the scalp) and sycosis (Barber's Itch)—In these diseases, it is the treatment "par excellence".

8. *Cheloid and Warts* respond well to X-ray treatment.

9. *Malignant conditions* of the skin, e.g., rodent ulcers and epithelioma—Radium is the treatment of choice if available. When radium is not available, they may be treated by X-rays.

II. **Diseases of the Blood.**—There are various blood conditions, e.g., splenic anæmia, myeloid and lymphatic leukæmias in which X-ray treatment is, in many cases, the only therapeutic weapon capable of giving a measure of relief. The object of treatment is to reduce the number of abnormal cells, circulating in the blood to approximately a normal level. The general condition of the patient is thus improved and in some types, life appears to be definitely prolonged by this treatment.

III. **Diseases of the Lymph Glands.**—The treatment of lymph glands forms an important section of X-ray therapy. In Hodgkin's disease, the glandular enlargement can be considerably reduced by X-ray treatment. Simple inflammations of the lymph glands respond well to small doses of X-ray treatment. Where suppuration has not occurred, X-ray treatment may prove very successful in dealing with tuberculous glands.

IV. **Tumours.**—Many kinds of tumours—both benign and malignant—of various parts of the body have been treated with benefit by X-ray. For fibro-myoma of the uterus, X-ray therapy is the treatment of choice, because it avoids operation with its attendant hospitalisation, disability and possible mortality which, though small, can hardly be called negligible. Uterine fibroids can confidently be expected to disappear or markedly diminish in size under X-ray treatment. The menorrhagia usually accompanying a fibroid is as a rule controlled after the first treatment.

Perhaps the greatest field for X-ray therapy is tumours and certainly the one that at present is holding the most widespread attention, is that of carcinoma. Many cases of carcinoma have been clinically cured by X-ray. In inoperable conditions, the use of the ray offers positive relief of the symptoms, probable prolongation of life, and perhaps regression and clinical cure.

V. **Miscellaneous Diseases.**—There are many other conditions where X-rays are recorded on good authority to have produced beneficial results. Thus, many forms of acute and chronic inflammations are eminently amenable to X-ray therapy. If treated at the proper stage, irradiation may either cause the process to abate at once or shorten the course of the disease by hastening the formation and absorption or spontaneous drainage of pus. These diseases may be considered under the following heads:—

1. *Inflammatory conditions*:—Among those which appear amenable to X-ray treatment are furuncle, carbuncle, cellulitis, erysipelas, phlegmon or abscess of the soft tissues, adenitis, onychia and paronychia, orchitis, epididymitis, mastitis and frontal and maxillary sinusitis. Cases of unresolved pneumonia have been treated with success. Parotitis yields readily to early exposure to Röntgen rays.

2. *Tubercular adenitis* responds well to X-ray treatment. Disappearance, or marked diminution in size, and subsequent calcification of the glands, can confidently be expected in this disease. In tubercular peritonitis also, X-ray irradiation, every three or four weeks, supplemented by daily exposure of the whole body to increasing doses of ultra-violet rays, is the most satisfactory method of treatment.

3. *Enlarged tonsils* of the infected type are benefited by X-ray treatment, their size being reduced to normal, the hypertrophied lymphoid tissue being destroyed, and the pus evacuated from all the crypts. The systemic diseases produced by infection from the diseased tonsils are greatly improved or cured. The reduction in size of the tonsils becomes apparent after the fourth to the sixth treatment. The shrinking continues after treatment has been completed, and it is not until after six months that they reach their ultimate size.

4. *Hyperthyroidism* (primary thyrotoxicosis):—The value of X-rays in this disease has been proved beyond doubt. The first improvement noted is a decrease in nervousness, reduction of pulse rate, and diminution of tremor. The patient begins to sleep better and there is less sweating. A gain in weight is usually noted early. The goitre is usually, but not always, reduced in size, sometimes disappearing altogether.

5. *Osteo-arthritis*:—Certain cases of osteo-arthritis respond to X-ray treatment when all other remedies have failed. The knee joints appear to respond better than hips. Treatment of the spines also gives good results.

6. *Neurological conditions*:—Having observed that pain was relieved when cancer was treated with X-ray, the early workers conceived the idea of utilising this analgesic effect in the treatment of neurological conditions. Neuralgias are frequently markedly relieved by X-ray treatment. Obstinate cases of sciatica may sometimes be relieved by irradiation of the nerve roots in the lumbar area.

A number of tumours of the nervous system are also radio-sensitive. A certain number of cases of pituitary tumours have been very successfully treated, but a great majority respond little, although in the majority of cases an improvement in the diabetic syndrome associated with the condition takes place.

7. *Diseases of the urogenital system*:—In no other field of gynaecology is irradiation more helpful and promising than in the treatment of functional disturbances of the ovary and in sterility. X-ray therapy is also used with benefit in a large number of conditions

where pathological changes have taken place in the pelvic organs of the female. The main indications for its use are:—

- (a) The production of an artificial menopause.
- (b) The control of excessive uterine hæmorrhage.
- (c) Uterine fibro-myomata (fibroids).
- (d) Malignant disease of pelvic organs.

In the males, prostatic hypertrophy requires consideration from the point of view of X-ray therapy. The early relief from the frequency of urination, afforded by the use of X-rays, recommends its use, especially in those cases which are poor surgical risks.

**Clinical Application of Electrical Treatments.**—*Abdominal diseases*:—Experience in this field though not plentiful, is still very promising. Thus, according to SCHLIEPHAKE, chronic appendicitis appears a very suitable indication for short wave therapy.

RECHOU has reported equally favourable results. In chronic peritoneal adhesions, short wave seems to work favourably. Pains which had persisted for years were cured in a few sittings. Cases of gastritis react excellently. Cholecystitis is generally relieved in a few sittings.

Various diseases of the liver appear to afford a suitable field for short wave. RECHOU reports very good results in the early cases of cirrhosis of the liver.

*Acne Vulgaris*:—Electrical treatment is frequently successful in cases where antiseptic lotions and ointments have failed (CUMBERBATCH). Ultra-violet radiation gives very good results in all forms of acne. (AUSTIN FURNISS). FINSSEN stated in the earliest results which he published, that he had cured thirteen out of 25 cases which had resisted ordinary measures.

CUMBERBATCH recommends diathermy and Salicylic iontophoresis.

SCHLIEPHAKE has treated Acne Juvenilis with short wave, with rapid disappearance of this long standing trouble.

This disease has also been treated with great success by X-rays.

*Alopecia*:—More particularly Alopecia Areata—is a condition in which the use of ultra-violet rays is specially indicated. (F. HOWARD HUMPHRIS).

*Amenorrhœa*:—In cases where amenorrhœa is not due to pregnancy or structural disease of the reproductive organs, the normal menstrual periods can be made to return by diathermy (CUMBERBATCH).

*Angina Pectoris*:—In this disease, excellent results have been obtained by treatment with diathermy by NAGELSCHMIDT, HAY and DYSON. Cases have been recorded in which the patient remained free from further attacks for one, two or more years after a course of cardiac diathermy.

*Arthritis*:—Milder cases of joint affection can often be successfully

treated by diathermy but short wave therapy appears to be much superior. This appears from the publication of PITZEN and others. Numerous cases of arthritis have also been treated with short wave by PFLOMM, RAAB and DAUSSET with good results throughout.

The results have been very favourable with gonorrhœal arthritis which were often cured in a few days. (SCHLIEPHAKE).

Both GRAF and NAGELL report equally good results.

The sensitiveness to the pain often abates after two or three sittings, which in this extremely painful disease means a great advance.

*Asthma*:—Considerable improvements have been obtained with short wave therapy even in severe cases which have resisted all the known remedies. (SCHLIEPHAKE).

The application of diathermy to the chest is successful in some cases of bronchial asthma by X-ray in reducing the frequency and severity of the paroxysms.

GILBERT SCOTT has treated asthma by X-ray irradiation with encouraging results. Out of 121 cases, he obtained good results in 89, slight recurrence in 10, slight improvement in 7 and no improvement in 15.

*Backache*:—Patients complaining of chronic pain in the lower portion of the back should be examined in order to ascertain whether cervicitis is present. Treatment of cervicitis by diathermy will bring the inflammation to an end and then the backache will also disappear.

*Boils and Carbuncles*:—See also skin conditions. Various sizes of carbuncles were repeatedly subjected to short wave treatment by SCHLIEPHAKE with good results in all cases.

*Climacteric*:—CUMBERBATCH has noted considerable improvement in patients suffering from symptoms such as flushing, headache, depression and even mental aberration by general pelvic diathermy. The hæmorrhage which is an occasional accompaniment of the climacteric should be treated by the same method and in all cases the bleeding has stopped by this treatment.

*Colitis*:—By means of the pelvic diathermy applied by the rectal route, CUMBERBATCH has been able to obtain apparent cures in cases of mucous colitis. The frequency of defæcation was progressively lowered until the normal was resumed.

In ulcerative colitis, Zinc Ionisation has more recently been used with success.

*Deafness and Tinnitus aurium* (noises in the ear), have been treated by Ionization by DYSON with great success.

CUMBERBATCH advocates the use of diathermy for defective hearing due to catarrh of the middle ear.

Deficient hearing due to oto-sclerosis does not appear to improve much under electrical treatment.

*Dysmenorrhœa*:—In cases of congestive dysmenorrhœa, the results

are very satisfactory with diathermy, relief always being obtained. (CUMBERBATCH).

*Endocervicitis*:—Diathermy is of value in the treatment of this disease. When the infecting agent is the gonococcus, diathermy can always be relied on to bring the infection to an end, either in acute or chronic cases. In non-gonococcal endocervicitis, diathermy is of equal value.

*Epididymitis*:—Gonococcal epididymitis with or without orchitis, responds in a uniformly satisfactory manner to diathermy. (CUMBERBATCH). Short wave treatment has been tried in this disease by SCHLIEPHAKE with equal success.

*Fibrositis*:—Is the inflammation of the white fibrous tissues of the body. This may be situated in the muscles, (muscular fibrositis, e.g. lumbago), in the joints, (arthritis), or in the nerves, (neuritis). According to DYSON, in the acute stage of fibrositis, ionization is the most successful method of relieving the condition and is usually rapid in its action. In the chronic stage, even the most severe and persistent cases are frequently seen to respond to this method, when all other forms of treatment have failed to produce any improvement.

According to CUMBERBATCH'S experience, diathermy treatment is very satisfactory for this condition.

*Gonorrhœa and Gonococcal infection*:—Diathermy is of great value in the treatment of infection due to gonococcus, (CUMBERBATCH). GUMPERT cites surprisingly favourable results with short wave.

*Hæmorrhoids*:—Diathermy is of much value in relieving pain and spasm when present in cases of internal hæmorrhoids. Internal hæmorrhoids can be destroyed by diathermic coagulation or by electro-desiccation.

*Myelitis*:—The weakness of the lower limbs, rectum and bladder that is left after an attack of myelitis can be considerably benefited by galvanic and sinusoidal currents.

*Nervous system*:—Diseases of the nervous system have been treated by various German, French and American workers with short wave. Cases of general paralysis of the insane have been treated with success. Tabetic troubles are also very favourably influenced by this treatment. Good results have been described in fresh cases of poliomyelitis, especially by RECHOU. In apoplectic lesions, rapid resolution is attained as long as the damage is not too severe.

Peripheral facial paralysis is often cured by short wave often 5 to 6 radiations.

Of diseases of the peripheral nervous system, neuritis is the most important. The pain of neuritis may be relieved by various methods or electrical treatment e.g. short wave, diathermy, iontophoresis and sinusoidal currents.

*Nocturnal incontinence*:—In cases of incontinence resulting from weakness of the sphincter, electrical treatment is usually successful. The surging sinusoidal or faradic current is used.

*Osteomyelitis*:—SCHLIEPHAKE treated a number of cases of osteomyelitis by short wave under the supervision of the surgical department of the Virchow Hospital, Berlin, and the results were very satisfactory. In early cases, there was complete remission of symptoms (fever, pain, swelling). In late cases, demarcation and sequestration were favoured.

*Otitis media*:—Chronic suppurative otitis media can be rapidly brought to an end by introducing zinc ions into the infected mucous membrane of the middle ear by means of the Galvanic current (CUMBERBATCH).

Acute cases of otitis media with initial suppuration of the mastoid have been treated by short wave with very gratifying results by DR. TREU.

*Respiratory tract*:—In many diseases of the respiratory tract, the effects of the short wave and diathermy are unique.

- (1) *Pneumonia (Lobar)*:—The use of diathermy in the treatment of lobar pneumonia has been widely practised in the United States. DR. H. E. STEWART has obtained remarkably uniform and good results.

In almost every case, the temperature began to fall by lysis directly after the first application of diathermy to the affected lobe, cyanosis disappeared and respiration became easy.

- (2) *Empyema of the nasal sinuses*.—Very good results have been claimed to have been attained by short wave in the treatment of empyema of the antrum of Highmore, the ethmoidal and frontal sinuses. Cases have been reported in which complete relief was given to patients who had suffered from empyema of these sinuses for many years.
- (3) *Catarrhs of the upper air passages*, e.g. colds, laryngitis, tonsillitis and bronchitis etc., have been successfully treated by short wave (SCHLIEPHAKE and RECHOU).
- (4) In pleural empyema, pleural effusion and pulmonary abscesses, SCHLIEPHAKE has obtained very impressive results, as has been demonstrated by X-ray photographs.

*Rickets*:—The improvement of sickly rickety babies, under the ultra violet treatment, is little short of marvellous. There are a number of other diseases of bone where general irradiation with ultra violet rays is helpful, namely, osteitis deformans, fractures with delayed union and osteomalacia. This last disease is very common in India owing to Purdah system and the poverty of the masses.

*Prostate*:—Enlargement—When the increase in size of the prostate is due to adenoma, there is no other form of electrical treatment that will reduce the new growth of the glandular tissue except X-rays.

However, in the congestive type of enlargement, good results can

be obtained by subjecting the prostate to diathermy. This relieves the oedema and reduces the frequency of micturition.

*Prostatitis*:—Infective prostatitis should be treated by diathermy. The best results are obtained when the infecting agent is the gonococcus. Prostatitis due to infection by Coliform bacilli also responds well to diathermy (CUMBERBATCH).

*Pruritus*:—This is a disease which, of all others, calls insistently and urgently for team work. Ultra-violet radiation will ease the hyperaesthesia and allay irritation (HOWARD HUMPHRIS). X-rays form one of the most valuable weapons in the treatment of pruritus.

*Puerperal fever*:—Remarkably successful results have been obtained by DR. C. A. ROBINSON at the West Middlesex Hospital, in the treatment of puerperal fever by general pelvic diathermy.

*Salpingitis* due to gonococci or other organisms, has been successfully treated by diathermy in the Electrical Department of St. Bartholomew's Hospital. Cures have been obtained both in chronic and subacute cases. The same result can be obtained with short wave therapy.

*Skin conditions*:—1. Furuncles, carbuncles, hidraadenitis (abscesses of the sweat glands in the axillae), whitlows and paronychia. The success of treatment by short wave therapy in these cases of acute inflammations of the skin is unchallenged. The same applies even to extensive phlegmonous processes, erysipelas and purulent infiltrations in the subcutaneous tissue, including that of numerous cases of erysipelas—always with good results.

2. Chronic ulcers, impetigo, herpes, eczema, psoriasis and warts—Many of these cases which have defied ordinary methods of treatment by ointments and lotions, can be successfully treated by ultra-violet rays.

*Sexual disorders*:—Impotence in male subjects, if unaccompanied by constitutional or local organic disease, may be treated by subjecting the prostate gland and the testes to diathermy.

*Tennis elbow* can be treated by diathermy with benefit. In some cases, it yields more readily to negative galvanism.

*Tonsillitis*:—As an alternative to its removal by the guillotine or by dissection, the chronically inflamed and infected tonsils can be removed by coagulation by means of diathermic current. In this method of treatment, the tonsil and the organisms that infect it are killed. At the same time, its blood vessels and lymphatics are sealed. The operation is done under local anaesthesia, and confinement in a hospital or nursing home is unnecessary.

During the last four years, the author has removed tonsils by this method in more than forty cases with very gratifying results.

*Ulcers*:—Iontophoresis (ionization) with the introduction of

therapeutic ions is an effective method of treating various kinds of ulcers e.g. corneal ulcer, indolent ulcer, varicose ulcer etc.,

*Warts* can be easily and quickly removed by electro-desiccation. They can also be successfully treated by ultraviolet rays and X-rays.

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## Vitamin 'C' in Diabetes \*

BY

D. N. Sharma, M.B., B.S., P.M.S.,  
Medical Officer Karwi, (Banda).

THE treatment of diabetes mellitus is still a complex problem in medical science. No curative medicine has as yet been discovered. Control of diabetes by dieting and insulin is inconvenient both to the patient and the doctor. The vitamin aspect of the diabetic diets has been totally ignored. Such diets are generally very much deficient in its vitamin C contents. They totally lack juicy and citrus fruit. I came to the same conclusion (that the patients put on such diets are not saturated with vitamin C), while working on the diabetic cases in the King George's Hospital at Lucknow.

When these patients were given large doses of vitamin C, they retained most of it. This vitamin was given in its natural form as citrus fruit juices, and in the synthetic form as Cetron (Merck) and Celin (Glaxo). A saturated person, on the other hand, excreted most of it in the urine at once.

\* Specially contributed to 'The Antiseptic'.

For the use of patients in the King George's Hospital, Lucknow, there are three routine diabetic diets. The first trial diet contains 300 grams of carbohydrate with 2100 calories food value, the second with 200 grams of carbohydrate and 1100 calories food value. Patients put on any of these diets excreted vitamin C less than the lower excretion value of 15 m. grams. (Worked out by me for Indians in urine).

The results obtained after saturating these diabetics with vitamin C were very interesting. In those receiving no insulin, there was no change in the sugar excretion in urine, but when insulin was injected, the results were different.

I kept them on standard trial diets and an insufficient quantity of insulin so as to make them excrete about 2% sugar in urine. Later, when this condition became stable, the patients were saturated by intra-muscular injections of synthetic vitamin C (Cetron and Celin). The amount of sugar came down to nil, and in all cases below 1%. But, as soon as vitamin was stopped, the sugar percentage in urine went up and could only be controlled by increasing insulin administration.

Few of my diabetic cases had secondary injections side by side. These patients were not put on regular synthetic vitamin preparation. Instead, they were given measured amounts of orange and tomato juices. These cases also behaved well, so much so, in some, the urine sugar completely disappeared on a standard diet and insulin, on which they were passing enough of sugar previous to the administration of fruit juices. The conclusive results in the cases were not as good as in pure diabetics, because the accompanying infective conditions increased the body need for vitamin C.

Now, two things are evident from the experimental data given above:

1. If a diabetic patient is fully saturated with vitamin C, he or she will require less units of insulin to keep the urine sugar-free, than on a diet deficient in vitamin C, when he is unsaturated. Hence, special care should be taken to see that diabetic patients receiving insulin should have a well saturated vitamin C diet.

2. Indian routine diabetic diets are generally deficient in this vitamin, hence those taking them are unsaturated with vitamin C.

My work is in close conformity with those of PRLEGER and SCHOLL, who have demonstrated the same relation of vitamin C to injected insulin. I am not yet in a position to give a concluding opinion as to how it works. Does it increase the capacity of the liver to store glycogen? Or, is it something else? The subject is open to further experimentation and discussion.



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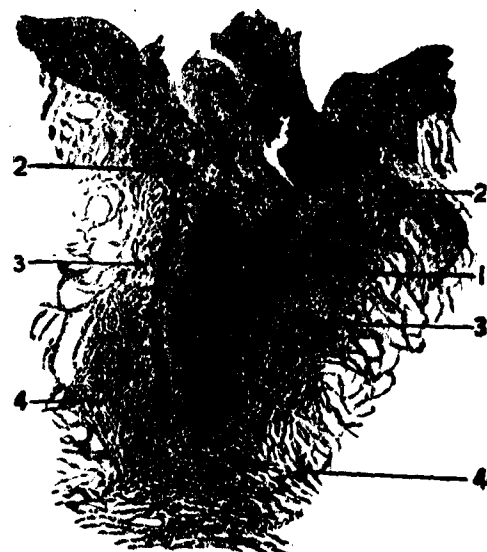
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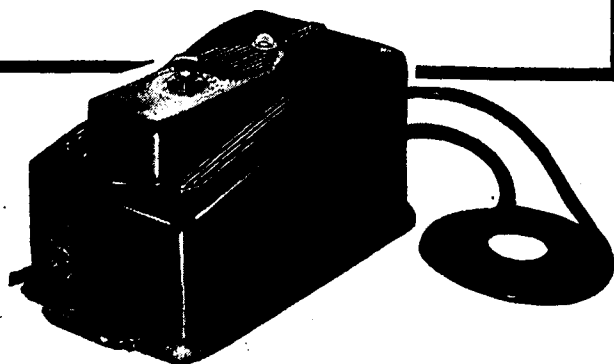
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**CASES AND COMMENTS**

**Sulfanilamide as Disinfectant in  
Pleural Empyema**

BY

K. Eisenstaedt M.D., T.D.D. and A. U. Rindani, M.B.B.S.  
*State Hospitals, Jammagar.*

THE main factor in treating a case of empyema has been, since olden times, evacuation of the pleural cavity. Empyema was considered since the days of HIPPOCRATES, as an abscess of the pleural cavity, requiring drainage. The means of this drainage underwent many changes as times rolled on.

Since the era of bacteriological research, principal discrimination of empyema is made out according to the nature of infections, e.g., pneumococcal, streptococcal, tuberculous etc. These empyemas respond favourably in their particular kind of reaction to the particular kind of drainage.

What are the different varieties of drainage?

- (1) Closed drainage with or without pneumothorax.
  - (a) Intermittent aspiration.
  - (b) Continuous aspiration.

- (2) Open drainage by rib resection.

Both kinds of drainage may be combined with irrigation. By these methods, our main aim is to gain the following points:—

- (1) Evacuation as in former times.
- (2) Early sterilisation.
- (3) Obliteration of the pleural cavity.

General principle for tuberculous empyema is closed method of drainage, whilst other kinds of empyema respond more favourably to rib resection.

With respect of our large experience of closed method of drainage with irrigation in tuberculous empyema, we adopted this method in a particular case of streptococcal empyema. The reason for going out of the way to adopt this method instead of treating such a case by open method was the extremely weak condition of the patient and his inability to stand the operative shock.

General technique for evacuation and irrigation used in our hospitals and also adopted in this special case, is as follows:—

- (1) Puncture of pleural cavity under local anaesthesia at the lowest possible point of the chest wall.

(2) Puncture needle is attached to a three way aspirator. The principle of this aspirator, indicated by TOURNANT is such that by simple turning of the piston the action of the aspirator can be changed from one way to the other, allowing very quick single-handed manipulation and avoiding taps and other complicated connections. It goes without saying that one way of the aspirator is connected with the patient, the second one to the evacuation bottle and the third one to the disinfecting fluid or open air or pressure recording manometer according to the necessity.

(3) After withdrawal of 50 to 100 cc. of the pleural effusion each time the corresponding quantity of air has to be filled in. This replacement of fluid by air is of great importance for two reasons. Firstly, after aspiration of a certain amount of the liquid, the negative pressure in the pleural cavity may become so high that subsequent aspiration would be hindered entirely. This phenomenon occurs especially in cases with thickened and rigid pleural covering. It is believed by beginners to be due to blockage of the tube or the puncture needle and they try hopelessly to remove the non-existing blockage risking the patient to un-called-for infection. Secondly, in cases with less rigid pleural covering, a fairly great amount of fluid might be evacuated, but it is not advisable to give in to this temptation without replacing air as the lung may expand suddenly to such a degree that the patient may collapse due to sudden circulatory disturbance. Before long, it was considered risky by the medical profession to withdraw pleural effusion more than 800 to 1000 cc., but nowadays, better knowledge of intra-thoracic condition of air pressure allows to remove any amount of fluid by careful replacement of air.

(4) Irrigation: After evacuating as much amount of fluid as possible, irrigation has proved to be a useful help in removing even the last residue of pus from the pleural cavity by mechanical lavage. Generally, mild disinfectants are added to sterilized normal saline for irrigation, *e.g.*- Chlorine solution (DAKIN), Iodine solution (JESSEN) Formaldehyde solution (MURPHY) etc. These disinfectants may destroy the germs existing in the remaining effusion and, to a certain degree, the surface of the surrounding affected tissues but, as a matter of fact, the disinfecting action of these various fluids is obviously a limited one, because the main way of overcoming the infection comes by natural process from within the body through increasing antibodies to secure immunity. Up till now we have known that all disinfecting fluids had merely local and superficial effect. On the other hand, there was no disinfectant which could be considered as producing general effect by absorption orally or parenterally.

A new aspect of anti-infection treatment has arisen by the outcome of chemical products on the bases of Sulfanilamide administered orally and parenterally. First investigations of this action in 1935 were on an azo dye (Prontosil) and its derivatives, but later several workers found these substances are transformed in the body to

Sulfanilamide, which is the effective agent. The reported results have often been brilliant. The drug has been declared very successful in acute infections specially by streptococci.

As the pleural covering is always a quickly absorbing membrane, we thought to try lavage in this particular case of streptococcal empyema by Prontosil-solution hoping that, unlike other disinfectants, this drug will act on the deeper tissues over and above its general action.

History of the case is as follows: Patient was a male child 6 years old. According to the report of the relatives, he had an attack of high fever with pain in chest on the left side and cough, about six weeks back before admission to the hospital. He was treated by the local practitioners on the line of pneumonia.

General signs and symptoms on admission to the hospital on 6th March 1940 were high fever from 101° to 104°, severe dyspnoea, short suppressed cough with pain on the left side, perspiration off and on, rapid pulse, restlessness, extreme weakness and exhaustion. Clinically, slight bulging of the left hemithorax and the left supra-clavicular fossa, unilateral respiratory movement of the right side, dullness on the entire left side, displacement of the heart towards right side, cardiac dullness extending up to right mammary line, fulness of the left jugular vein, absence of breath sounds on the left side, heart beats audible on the right parasternal line.

X-ray picture showed complete opacity of the left side of the chest and displacement of heart and mediastinum about 1 inch outside the right sternal border.

Exploratory aspiration showed purulent fluid. Laboratory examination: Blood—Marked leucocytosis. Pleural fluid—Streptococcal infection.

6-3-40. Injection Camphor in oil, 1 cc. every 6 hours. Injection Transpulmin, 1 cc. once a day. Glucose and Syrup Codeine orally.

7-3-40. Aspiration of 400 cc. pleural effusion and irrigation with Prontosil solution 1000 cc. (1 ampoule of 5 cc. in 1000 cc. distilled water). Last portions of irrigated fluid were almost clear. Terminal intra-thoracic pressure slightly negative (—4—2). Immediate effect of this treatment was: dyspnoea disappeared, pulse fairly good, remarkable relief in distressing cough, rise of temperature the same day only up to 101°, fairly good sleep, no restlessness. Same injection and oral medication continued.

8-3-40. Morning temperature normal. Aspiration of 300 cc. pleural effusion. It was more liquefied, less turbid and slightly red coloured evidently due to previous days' Prontosil irrigation. Again the aspiration was followed by pleural lavage with the same amount and strength of the Prontosil solution. Terminal intra-thoracic pressure was brought to (—10—6). Evening temperature 99° only, slight cough and first sign of appetite. Injections discontinued and Syrup Codeine given only at night; Glucose continued.

9-3-40. Morning temperature normal, condition of the patient well improved. On aspiration only 50 cc. of slightly turbid fluid came out. Pleural lavage with the same amount and strength of the Prontosil solution repeated. Intra-thoracic pressure brought to (—15—8.)

10-3-40. General condition very satisfactory. No more rise of temperature. Screening on X-ray showed: Left side pneumothorax free from fluid, the lung occupying half of the pleural cavity. Patient given ordinary food and Cod-liver oil in medication. No aspiration was done.

11-3-40. Condition improving. Control of intra-thoracic pressure showed (—15—8). Aspiration of 300 cc. of air was done. Terminal pressure brought to (—20—10). Cod-liver oil continued.

12-3-40. Nothing special. Cod-liver oil continued till patient was discharged.

15-3-40. Condition good. Screening on X-ray showed completely dry pneumothorax on the left side. Progress of re-expansion of the lung. Heart and mediastinum in normal position.

16-3-40. Control of intra-thoracic pressure showed (—20—10). Aspiration of air 200 cc. was done. Terminal pressure brought to (—25—12).

20-3-40. Control of intra-thoracic pressure showed (—25—12). Aspiration of air 100 cc. was done and terminal pressure brought to (—28—15).

24-3-40. Patient quite well. He was screened and there was pneumothorax one third of the pleural cavity without any fluid. He was discharged at relatives' request. Advised to bring the child for control once a week. Weight on admission on 6-3-40 was 25 lbs., on 25-3-40, the day of discharge, 28½ lbs. Since then we have screened the patient once a week and re-expansion of the lung has been slowly progressing without any further aspiration and without any reappearance of fluid.

**Conclusion.**—After giving this case report, we refer to our three points of empyema treatment, viz., (1) Evacuation. (2) Early sterilisation. (3) Obliteration of the cavity. Evacuation has been complete in our case. Obliteration of the pleural cavity is progressing. Special importance may be stressed on early sterilisation which, we are convinced, in this case, has been entirely due to Prontosil-lavage.

While completing this case report we have come across an article by DR. A. C. DEY, in the *Indian Medical Gazette* of March 1940, in which the author refers to some similar cases from the Continent. This fact encourages us the more to recommend to general medical profession the usefulness of Sulfanilamide in streptococcal empyema.

## Case Report on Sepsis Complicated by Diabetes Mellitus

BY

Bernadine Siebers, M.D., D.N.B.,

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THE following case history is reported as of interest because of the patient's recovery from severe sepsis complicated by a high grade of diabetes mellitus.

Bangarramma, a Hindu woman of 55 years, was admitted to the Hospital on 19-6-39 with the chief complaint of a large ulceration in the back of the neck, an abscess in the right axilla and inflammation in the left palm, onset 20 days prior to hospitalization. Past history revealed polyuria, polydipsia and increased appetite for several years with loss of weight during the past few months. Family history irrelevant.

Examination revealed a very toxic, edentulous, fairly well nourished elderly woman suffering from intense pain. Her tongue was furred in the centre and dry: beefy red at the edges. Her breath had an acidotic odor. The chest, abdomen, and reflexes were essentially normal. Local conditions showed a huge broken down carbuncle over the nape of the neck approximately 5" by 3", covered with slough and pus, with the surrounding tissue dusky red and swollen. In addition, there were smaller tender areas of induration in the left palm and the right axilla.

Laboratory examination was as follows:—Blood sugar 305 mg. 100 cc. blood. Urine: sugar+++acetone—, alb.—, sediment—. Kahn—, Hbgl. 64% (Sahli), W.B. C. 9,800.

For a few days before the patient's family was interviewed, she was given simply a restricted diet with empirical dosages of insulin and Sulfanilamide therapy. However, her condition became rapidly worse, the inflammation spread and on the morning of the 26th, she was very drowsy. Her blood sugar had risen to 335 mg. and 2 hrly. urine specimens were loaded with sugar and acetone. Impending coma was feared and the family was persuaded to cooperate in a controlled regime. Treatment was begun as for mild acidosis. Soda-bicarbonate 3 ii was given 2 hrly. until the urine became alkaline. Normal Saline 2 pints was given intravenously and an initial dose of insulin of 40 units administered without coverage. Following this at 4 hrly. intervals she was given 10 units of insulin with 20 gms. glucose in the form of skimmed milk and by evening we had our first sugar-free urine specimen. This 4 hourly schedule was continued during the night and day following until on 28/6 the blood sugar was down to 175 mg.; all urine specimens were sugar-free but acetone positive. To give the patient essential food elements to combat her sepsis, it was felt necessary to increase her diet as rapidly as possible and on that day a diet of 1,081 calories including protein 79 gms., fat 6 gms., and carbohydrate 177 gms. was begun—fat kept at a minimum to prevent further ketosis. Insulin dosage was 20-20-30 (total 70 units). She had also counter openings made to facilitate

drainage of the carbuncle in the neck and the palmar space was opened. On 30/6, insulin dosage was raised to 30-40-30 (total 100 units) and diet was increased to 1200 calories. The urine occasionally showed a trace of sugar and acetone, but patient's general condition was much improved; polyuria was less and the thirst diminished in intensity. Blood sugar 280 mg. gradually, fats were added to the diet while protein and carbohydrates were kept approximately at the early level, until by July 7, the patient seemed to be holding her own with all urine specimens free of sugar and acetone.

Because of the interest in Protamine Zinc Insulin, this drug was tried for a few days in combination with soluble insulin, but the patient's response was poor. It was found that higher doses of soluble insulin than were previously necessary had to be given with the combination and during this interval, the patient developed severe pain over her right shoulder. Subsequently an area of angry red inflammation was visible in this region and it was learned that the patient had broken her diet. These two factors might have been the cause for the higher insulin dosage, but unfortunately at that time the supply of Protamine Zinc Insulin gave out and we were forced to go back to the soluble preparation alone. An autogenous whole blood injection of 25 cc. was made around the indurated area over the shoulder on 14/7 and localization and fluctuation were noted. Incision and drainage was done under general Chloroform anaesthesia. About 6 oz. of pus poured out from the deep abscess cavity. Sloughs were removed from the adjacent tissue and the wound packed with Iodoform and Glycerine daily.

On 16/7, because of the expense to the family, the insulin dosage was reduced to 30-30-30 (total 90 units) and maintained at this level until 5/8 although the diet was increased gradually to 2000 calories during this interval. The blood sugar remained at a high level of 275-300 mgs. and an occasional urine specimen after a meal showed a trace of sugar.

On 6/8, the insulin dosage was reduced to 30-20-20 (total 70 units) with the diet maintained as above—average protein 85 gms., fat 100 gms., carbohydrate 180 gms. The blood sugars on three occasions 5/8, 12/8, and 19/8 all were less than 150 mgs. and all urine specimens remained sugar and acetone free in spite of the fact that the patient developed new abscesses in the right axilla and on the back, both of which subsided with whole blood autogenous injections at the site of the inflammation. With this good resistance and constancy of the diabetic condition, the insulin was further reduced to 20-20-20 (total 60 units) on 20/8. In 10 days' interval, two new abscesses developed in spite of autogenous whole blood injections, and the blood sugar began to rise to the 200 mgs. level. With the added sepsis, the insulin dosage was increased to 30-30-20 (total 80 units) and incision and drainage was done for the abscesses on 3/9.

On 6/9, with the sepsis clearing, the dosage was again reduced to 60 units total and on that day 1 cc. of another patient's autogenous vaccine (*Staphylococcal*) was given. This was followed on 12/9 by 3 cc. and on 19/9 by 5 cc. at which time all evidence of infection had

subsided, former wounds were all healed and the patient demanded discharge. During her last week of hospitalization, because of the prohibitive war cost of insulin to her family, she had been without the drug. Her blood sugar rose to 215 mgs. and morning urine specimens were showing slight traces of sugar. However, she was sent home, ambulatory, happy and sepsis-free, apparently well with advice regarding her diet. She was seen on the road-side by the ambulance Doctor several weeks later and was continuing well in spite of her lack of insulin.

**Discussion.**—It is of economic interest to know that in addition to the expense to the patient's family of the large doses of insulin, her special diet with its preponderance of vegetables and meat cost them Re. 1/- per day. Our greatest difficulty in working with the Indian diet was the excessive carbohydrate values of most foods and the lack of proteins. Only when the patient broke her vegetarian habit and consented to eat meat and eggs were we able to satisfy her and give her an adequate protein intake.

Her case history reveals again the necessity for absolute control of a diabetic with sepsis. Such a patient can tax the Physician's resources to the limit. Added treatments as autogenous whole blood injections, vaccine administrations and high vitamin intake in the form of yeast and Cod-Liver Oil were definite aids in the management of this particular patient.

## A Clinical Report of a Case of Smallpox With Unusual Onset

(The City Fever Hospitals, Bombay).

BY

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A BOY of 13 years was admitted as a suspicious case of smallpox on the morning of 27-2-1940 to the City Fever Hospitals.

On admission, he was suffering from intense toxæmia, drowsiness and was in a semiconscious condition. His pulse was 120, respirations 35, and had a temperature of 102.5° F.

His face was intensely flushed and there was a generalised red erythematous rash all over the body. His eyes were intensely red and there were sub-conjunctival hæmorrhages. There was bleeding from his gums and nose and in the evening he passed a stool of blood which was about  $\frac{1}{2}$  a pint. He became rather restless after this and he was given Morphia 1/6 gr. statum. He was also given Cal. Glucinate and Vit. C injections and also normal Horse Serum 20 cc. I. M.

On the 2nd day of admission, his condition remained the same, but he did not pass any stool and there appeared small patches of purpuric rash on the extremities and the trunk varying in size from 4" by 3" to  $\frac{1}{2}$ " by  $\frac{1}{4}$ " and were irregular in shape. They were more marked on the lower extremities. His temperature came down to normal in the afternoon but again went up to 101.5° at night. He had also developed cough and the throat was intensely congested on examination.

The boy was complaining of intense back-ache at this stage. He was given Pulv. Gardenal to keep him quiet while the treatment with Vit. C, Cal. Gluconate and also liver extract was continued. He was also given normal Horse Serum 20 cc. I.M. daily for 3 days.

On the 3rd day there appeared small raised but dark necrotic looking vesicles on both upper and lower extremities and face, which were very sparsely distributed and probably not more than 20 could be counted on one extremity. They were surrounded by an intense red zone of erythema all round. The temperature at this stage was only 99° F., but the boy was delirious, drowsy, and now and again restless. Purpuric patches became more distinct and these were also seen on the trunk in large areas in front and back.

On the 4th day of admission, there was visible on the lower extremities a fine, slightly raised, suppressed type of papular rash which was more easily palpated than seen. At this stage, a doctor friend from outside had come to see this case who suggested to us to take the blood for culture as he was not satisfied about its being a smallpox case and also requested us to do the Widal. We did, both with negative findings.

On the 7th day of admission or 11th day of disease, according to patient's history the rash became prominent and was more distinctly visible as a discrete papular type, both on the face and upper and lower extremities. The dark vesicles described above had now become brownish in colour and a few appeared like blebs with fluid inside. Purpuric patches were also fading away and appeared reddish brown in colour. Temperature was normal and the boy was much quieter and was able to answer questions.

Later still—that is on 10th day of admission, the papular rash became very bold and was seen changed into large vesicles with umbellication visible in many of them. These became pustular later and then gradually dried up and the boy made an uneventful recovery except for an attack of otitis media during convalescence, which was successfully treated by giving M & B 693 tablets given 2 as the first dose and then 1 tablet 4 hourly for 4 days.

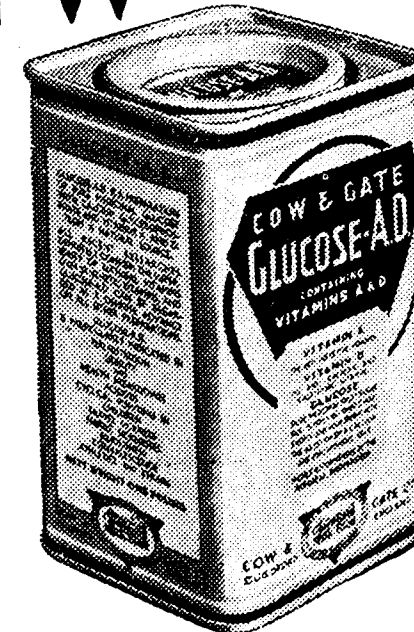
It may be noted that the boy's parents gave a history of 4 days' high fever at home before he was admitted to the hospital and that the first doctor had thought it as a case of typhoid fever first, and then when there appeared a blotchy erythematous rash all over the body i.e. one day before the admission to the hospital, as a case of measles. Then on the day of admission he was seen by another doctor who had a suspicion that it might turn out to be a smallpox case and so was sent to the hospital. The boy was unvaccinated.

The sister of this boy, who was also unvaccinated, got an attack of smallpox 3 days after him, but there was no such characteristic onset as above.

**Summary.**—(1) A case of smallpox is described with an unusual onset which could be mistaken as a case of measles in the beginning. (2) The prodromal rash was of the hæmorrhagic type with purpura, bleeding per rectum and subconjunctival ecchymosis, which was likely to be confused with other hæmorrhagic conditions.

I take this opportunity to thank the Superintendent, Dr. P. T. PATEL, M.D., M.R.C.P., (LOND.), etc., of City Fever Hospitals, for allowing me to publish this case note.

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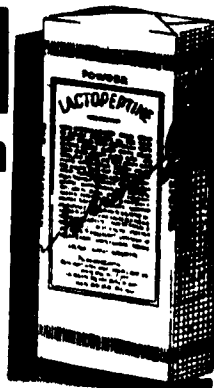
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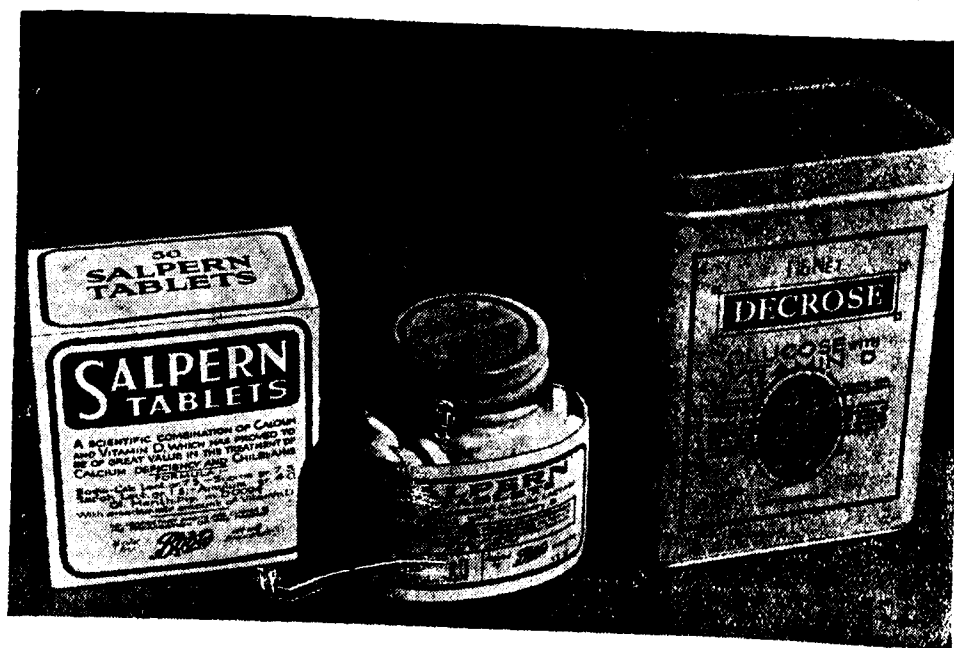
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## EDITORIAL

### The Occipito-Posterior Problem

THE problem of the occipito-posterior position and its influence upon delivery is one of the hardy annals of obstetric discussion and literature. It has been called the bugbear of obstetrics and, especially if unrecognised, may be a definite cause of maternal mortality and morbidity, and also of intra-and neo-natal foetal death.

In a study of occipito-posterior positions of the vertex, one should turn to the three fundamental branches of medicine-anatomy, physiology, and pathology, in order to obtain the foundation for the understanding of this complicating obstetric problem.

The anatomy should include the normal female pelvic measurements and the normal measurements of the foetal head. The physiology should give one the mechanism of the engagement of the foetal head in a maternal pelvis, and the pathology, the abnormal factors present when the foetal head tries to engage in the posterior position. It should explain how this position differs from the normal engagement of the occiput anterior.

The foetal head presents at the pelvic brim in a military attitude, sitting erect on the shoulders. The diameters opposing each other are the occipito-frontal of from 11 to 11.5 cm. and the sub-occipito-bregmatic of from 9 to 9.5 cm, while the normal pelvis presents at the inlet an antero-posterior diameter of 11 cm., a transverse diameter of 13.5 cm. and an oblique diameter of 12.75 cm. As the head presents at the pelvic brim, the anterior and posterior fontanels are in the same pelvic plane and meet equal resistance. The head and axis of the body at this time can be compared to a two arm lever, the fulcrum of which is at the junction of the spine with the occipital condyles. The anterior or sincipital end of the foetal head is normally longer than the posterior or occipital end. As the uterus contracts, the foetal spine

is straightened and the head descends. The sinciput and occiput meet equal resistance in the bony pelvis, the cervix and the levator ani muscles: the longer or anterior end of the foetal head is held back while the shorter or occipital end descends, and the result is flexion. This flexion changes the engaging part from an antero-posterior diameter of from 11 to 11.5 cm. into a sub-occipito-bregmatic diameter of from 9 to 9.5 cm. The occiput, the most dependent or leading portion of the foetal head, strikes the pelvic floor, made up mainly of the levator ani muscles, which hang like a sling to form a trough, the sides of which point downward, inward and forward, directing the occiput or leading part into the anterior position, where it escapes beneath the symphysis pubis.

In occipito-posterior positions, the mechanism is disturbed, and instead of the normal sub-occipito-bregmatic diameter of 9.5 cm., one has the occipito-frontal diameter of 11.5 cm. trying to get into the pelvic brim. When the occiput is anterior, the parietal eminences have sufficient room in the widely dilated anterior portion of the pelvis: but when the occiput is posterior, these eminences are impinged on by the promontory of the sacrum retarding and preventing engagement of the head.

The occipito-posterior position may terminate in one of two ways: First, the least frequent but the most formidable type of case is when pain continues, the cervix dilates but the head remains high. Progress comes to a standstill, deflection occurs and a brow may develop. The second, most common, but least formidable type of case is when the cervix dilates, partial flexion takes place, and the occiput descends to terminate in one of three ways: (1) if pain continues strong with forceful uterine and voluntary contractions of the muscles, the occiput strikes the pelvic floor and rotates downward, inward and forward, where it can be delivered in the normal position: (2) the occiput, taking the lead, descends into the pelvis but is arrested in the transverse position: (3) the occiput finds it easier to rotate posteriorly and passes into the hollow of the sacrum, where it is delivered as such.

The one constant finding in occipito-posterior positions of the vertex is deflection or failure of flexion of the foetal head. This presents the problem of the larger occipito-frontal diameter entering the pelvic brim rather than the shorter and normal sub-occipito-bregmatic diameter. There are many causes given in textbooks for this posterior position, the various authors enumerating anomalies of three groups: (1) anomalies of flexion, (2) pendulous abdomen and (3) primary brachycephalia, the latter, a condition in which the anterior and posterior ends of the foetal head are of equal length. The very frequent occurrence of this posterior position (from 25 to 35 per cent) would almost place it in a class of normal.

Those cases in which flexion and rotation fail to occur present another condition which is an anomaly of the pelvis. This distortion of the female pelvis is usually a contraction of the type designated as the simple flat pelvis in which the antero-posterior diameter of the

inlet is shortened, owing to the slipping downward of the promontory of the sacrum.

An occipito-posterior position is usually easily diagnosed by abdominal palpation, if the uterine and abdominal walls are not too tense. The foetal limbs are more easily felt than usual, and lie nearer the middle line of the body and on either side of the umbilicus; the head may not be engaged in the pelvis; auscultation reveals that the point of maximum intensity of the foetal heart sounds is generally in one or other of the flanks much lower and farther out than in an anterior position.

On vaginal examination, the presenting part may be found rather high: the sagittal suture is in one of the oblique diameters, with the anterior fontanelle in one or other of the anterior quadrants of the pelvis, while the posterior fontanelle is nearer the sacral hollow in the opposite posterior quadrant.

Owing to the delay caused and the greater amount of moulding and pressure to which the head is subjected in the course of labour, the prognosis for the foetus is more unfavourable than in an occipito-anterior position. The longer duration of labour, the increased frequency of vaginal examination necessary, the greater tendency for laceration of tissues, and the need for assistance and particularly instrumental delivery, all increase the mother's risks and make the prognosis a little more unfavourable. Consequent upon the delayed labour, postpartum hæmorrhage may occur and further increase the risk for the mother.

The treatment depends upon the stage at which the case is seen. Attempts should be made in the later weeks of pregnancy to promote a more favourable position. This can be done by abdominal manipulation and by the use of pads. If, however, the patient is seen after the onset of labour, the treatment will depend upon the stage of labour and the progress of the head along the birth canal. Preservation of bag of waters is important in occipito-posterior positions if the head is high and the presenting part broad, as contraction and retraction are inefficient compared with the normal acutely flexed anterior occiput. If the patient is seen early in labour and before the membranes have ruptured, anterior rotation may be favoured by postural treatment by asking the patient to lie on the side to which the occiput is pointing. An abdominal binder is sometimes useful with this postural treatment and in some cases pads may also be useful. Before proceeding any further, an investigation must be done to see that the position is not due to any serious disproportion between the head and the pelvis, or any factor causing obstruction to the advance of the head. Another important thing to remember at this stage is that in occipito-posterior position, the natural tendency is for the head to rotate anteriorly. Premature attempts at interference will only lead to a greater amount of difficulty in the extraction of the head and injuries to the child and the mother and must therefore be avoided. It is estimated that if sufficient time be given, in fully 75 per cent of these cases the occiput

will undergo long rotation and delivery occur normally. But time and patience on the part of the patient, the attendant and the anxious relatives are necessary, and this may be one of the most difficult practical aspects of the case.

• As soon as the membranes have ruptured, the method of treatment that has been found suitable in cases where the occiput is posterior and the head has not entered the brim of the pelvis, is to perform internal podalic version and extract the foetus if necessary. This method has been particularly found useful in multiparæ, where there is no relative disproportion between the head and the pelvis and where the cervix is fully dilated and the head is still above the brim.

If, however, the occipito-posterior position is met with at a later stage in labour when the head has partially descended into the cavity, the treatment will necessarily depend upon the position of the occiput in the pelvis and also upon any disproportion that may be present between the foetal head and the pelvis. If there be no disproportion, the occiput will rotate to the front in a majority of cases, if sufficient time is given. The patient should be kept at rest, given sedatives to promote a certain amount of sleep, after which the patient will be awakened refreshed and the uterine contractions will be more effective. If, however, internal rotation has not taken place, or if reverse rotation occurs in spite of the treatment mentioned, it may sometimes be necessary to interfere and help forward rotation of the occiput. This may be done in one of the following methods:—by favouring increased flexion, by pushing the occiput up or bringing the occiput down by means of fingers introduced into the vagina. Simultaneously with this, pressure is applied to the fundus towards the occipital pole so as to promote a greater degree of flexion. In cases where the uterine contractions are sufficiently strong, it is advisable to give a small dose of pituitary extract (1/6 cc.) particularly if the dilatation is nearly complete, as in such cases, the increased force of uterine contraction tends to sweep the occiput to the front: even if forward rotation is not complete, once the occiput tends to move forward, rotation can be helped by any of the manoeuvres to be suggested later. Anterior rotation of the occiput may be favoured by the introduction of the half hand into the vagina, with the patient under an anæsthetic, and forward rotation of the occiput attempted by grasping the head between the thumb and the fingers and gradually bringing it to the front. Simultaneously with this manipulation, it is desirable that the other hand should be applied to the anterior abdominal wall behind the anterior shoulder and the shoulder pushed in the same direction. An assistant may sometimes perform this manoeuvre while the operator is trying to rotate the occiput forward via the vaginal canal. If, however, these methods do not succeed, or if the occiput rotates backwards and the necessity for interference is urgent owing to the condition of the foetus or mother, the following mode of delivery may be attempted—Rotation with the half hand and the application of forceps.

Objection, however, has been taken to the use of forceps as a

rotator, and it has been rightly emphasised that the main function of the forceps is that of a tractor, and that if used for rotation, injuries to foetal head and to the vaginal walls are liable to occur. But those who advise the use of forceps for rotation advise it on different lines. They suggest that the forceps are intended only to help the occiput to rotate as a result of the head being brought down slightly and pressing upon the pelvic floor, thus imitating the natural mechanism of labour. The forceps are, therefore, intended to help gradual rotation after the head has been brought down to the pelvic floor. They suggest that it is unnecessary to rotate the occiput completely to the front with the forceps and are of opinion and probably correctly too that any slight degree of forward rotation will considerably help in the delivery of the head by steady, light traction. They suggest that if the forceps is used in the manner suggested above to help forward rotation, it is necessary to remove the forceps and to reapply them before continuing traction.

If, however, the foetal heart is not audible and the child is obviously dead, there is no advantage in submitting the mother to unnecessary trauma and in such cases, it is certainly better to perforate the head when it is found that traction with forceps is not followed by an easy delivery. Where, however, the condition of the occipito-posterior is complicated by contractions of the pelvis, the treatment must necessarily be modified and will depend upon the nature and degree of contraction. Operative procedures such as Cæsarean Section may have to be considered.

For a more detailed information as to the treatment portion of this subject, we would refer our readers to that section on Occipito-Posterior in DR. A. L. MUDALIAR'S very excellent book on "Clinical Obstetrics" from which we have taken the material for this article.

## GLEANINGS FROM MEDICAL PRESS

### Surgery

**A New Method of Incision for the Treatment of Whitlow.**—A new surgical intervention for use in the treatment of closed space infection of the distal phalanx of the finger is recommended and described by J. J. Weiner (*Annals of Surgery*, January 1940, 111, 126). The advantages of this method over the three surgical measures most usually employed, i.e. the midline incision, the fish-mouth incision, and the lateral hockey-stick type of incision, are (1) it provides adequate drainage; (2) it does not leave a deep, at times disabling, scar; and (3) the tactile sensation is not interfered with. The technique is as follows:—Under gas and oxygen anæsthesia detachment of the nail from the skin, the nail-bed, and matrix is carried out. An inverted U-shaped incision is then made close to the tuft of the bone and part of the distal phalanx shaft; the pulp is retracted, the closed space entered, and the abscess is exposed lying anterior to the

distal phalanx. Careful examination of the mushroom portion of the bone for osteomyelitis is carried out and if any signs of softening are present the tuft is removed. The abscess cavity is emptied, any necrotic tissue cut away, and the cavity is packed with iodoform gauze. Wet dressings of boracic acid are applied, and the patient is told to soak the finger in hot boracic acid solution for twenty minutes every two hours. After forty-eight hours the packing is removed. Several cases are described in which the method was used with complete success. In one case local infiltration with 1 per cent. novocain was used instead of gas and oxygen. X-ray examinations were made before and after the operation, and in each instance the later film showed regeneration of the nail, healing of the wound and, in one case in which destruction of the mushroom portion of the distal phalanx was present, complete regeneration of the bone. —*The Practitioner.*

**Retropharyngeal Abscess.** — Retropharyngeal abscesses, writes PHILIP F. BARBOUR, in *Medical Times*, for September, 1939, are far more frequent in the young than in adult life, the greatest number occurring in children under three years of age. The abscess lies under the mucous membrane of the pharynx in front of the body of a cervical vertebra and separated from the bone by several layers of muscles and fascia. It usually starts in one of the lymphatic glands which extend in chains on both sides of the central line of the pharynx from the basilar process down to the mediastinum. These glands receive lymphatics from the nose, the nasopharynx, the sinuses, the fossa lying above the tonsils, the eustachian tubes and adjacent structures. Infections in any of these areas may be carried to this chain of glands, just as they are so frequently transmitted to the anterior or posterior groups of cervical glands. These external glands are enlarged many times from infections in the area which they drain. Such glands do not always suppurate, in fact the greater number of adenopathies will gradually clear up after several weeks, without abscess formation. Any one having had experience with children recognizes the vulnerability of these lymph glands. It is probable that adults gradually acquire or develop immunity because of frequent submarginal infections. Children have not as yet elaborated their immune bodies so that with any lesion of the mucous membranes of the nose or throat there will be a reaction in the corresponding lymph glands with swelling and some pain. The retropharyngeal glands have also followed this rule and do not always suppurate, but this is rare. It is difficult to explain why these glands are not more frequently attacked as they lie in a vulnerable position. It is probable that they are usually overlooked unless the swelling has gone on to ulceration, and the frequency with which even an ulcerated gland is missed and a preventable death has occurred establishes a sad record of our inefficiency.

Retropharyngeal abscesses may lie deeper, under the fascia which covers the prevertebral group of muscles, and take their origin from

a tuberculous involvement of the bodies of the upper cervical vertebrae. Osteomyelitis other than tuberculous is not unknown in this location. Orthopedists meet such cases occasionally. It is possible that traumatic injuries to the neck can also produce these deep abscesses, and with the growing number of automobile injuries, such eventualities are bound to increase. Trauma of the pharyngeal wall by pins, tacks, glass, etc., may through perforation of the posterior wall of the pharynx result in a retro-pharyngeal abscess, or, if lower down in the oesophagus, cause a retro-esophageal abscess. It must be reiterated that such abscesses may develop without any evident injury to the mucous membrane of the pharyngeal wall.

The diagnosis of such an abscess is not difficult if its possibility is kept in mind. Three outstanding symptoms are dyspnoea, dysphagia, and a peculiar nasal voice. The dyspnoea is inspiratory as the swollen mass is sucked over the larynx by inspiration. It is lifted up by expiration and does not obstruct the outgoing air unless the tumor is below the level of the larynx. The dysphagia prevents swallowing, the food often being forced out through the nose as well as the mouth. Both dyspnoea and dysphagia are progressive. The nasal timbre of the voice and cry has been to me the earliest warning note of the nature of the trouble. One should easily recognize the toneless voice due to adenoids. The hoarseness of acute laryngitis is readily distinguished from the near-aphonia of a diphtheritic membrane in the larynx. These abscesses cause a cry which has a distinct nasal quality. Dean terms it a quack cry, which is not very accurate. Perhaps "quanck cry" is a better nomen.

When such symptoms are presented, one must palpate the throat and usually the mass is felt to one side, and, if the condition has not been recognized sufficiently early, fluctuation will be present. Later the swelling will extend clear across the pharyngeal space. There will also be some fever, a tilting back of the head, perhaps to one side, occasionally an external swelling below the angle of the jaw on the same side, and the evidences of a sick child. Tuberculous disease of the upper cervical vertebrae causes the neck to be held in a much stiffer posture.

Quinsy or peritonsillar abscess seems to cause much more pain from deglutition, and there will not be the delayed regurgitation after the fluid has passed the tonsils. It is difficult to get a patient with quinsy to open the mouth at all, but it is not at all hard to examine and to palpate the pharynx for a retropharyngeal abscess. An X-ray will show the characteristic displacement forward of the larynx and upper trachea, but the diagnosis should be clear without this added aid.

On account of the rapid, difficult respiration a false diagnosis of bronchopneumonia has often been made in cases of retropharyngeal abscess. So far as the sounds in the lungs are concerned, the transmitted rales over the lungs, the restlessness and distress of the sick child, the high fever and the accompanying lung symptoms make a proper diagnosis somewhat difficult for even a good internist.

The accidental fracture of the cervical vertebrae and a displacement forward of the body of a vertebra very rarely would produce a protruding forward of the postpharyngeal wall, but other symptoms should be present to insure a proper diagnosis.

The treatment should be evacuation of the pus at the earliest moment, by an accurate puncture with a guarded bistoury, or by puncturing with dressing forceps and spreading the blades. The child does not require an anaesthetic, but the head should be thrown far forward immediately upon the opening so that the pus will not be inhaled into the larynx, and into the trachea. Some surgeons advise that the operation be done from the outside by incision back of the sternocleidomastoid muscle. The objections to this are that the operation requires a prolonged anaesthesia, the field is surrounded by many important nerves and blood vessels, and there will be discharging sinuses for several weeks and a permanent scar left. This type of operation should be selected in case of tuberculous or other form of osteomyelitis where operation is indicated because the pus here is behind the rather dense layer of fascia covering the longus colli muscle.

Some surgeons have made the point that the pus which drains from the abscess when opened on the inside will be swallowed, and cause septic symptoms by absorption. Such has not been my experience. In fact in all cases of retropharyngeal abscess there has already been a mucopurulent discharge from the nose which has been swallowed apparently without injury.

The importance of the early recognition of these abscesses is emphasized by the severe if not fatal sequelae and complications. The projection of the tumor over the larynx may itself cause strangulation. The abscess may rupture suddenly during sleep, asphyxiating the baby, or it may discharge smaller amounts of pus which are inhaled into the lungs, causing a fatal bronchopneumonia, or an abscess of the lung.

Different types of organisms depending upon the original focus of infection will produce somewhat different destructive lesions of the adjoining tissues. Ulceration of the internal carotid artery with fatal hæmorrhage has been reported by DR. CLAUDE T. WOLFE and others. The lives of several of these cases have been saved by a prompt ligation of the internal or common carotid. Such a happy outcome is possible only when the child is in a well equipped hospital. Ulceration of the internal jugular, also with resulting hæmorrhage, has been noted.

The pus may burrow laterally and be discharged through the external auditory canal, very rarely into the middle ear. It has opened beneath the ear or through the parotid gland. Facial paralysis has been reported, and rarely a fatal meningitis. Oedema of the glottis is a very alarming and dangerous complication. Ulceration of various localized groups of muscles leaves a permanently scarred pharynx.

It is obvious that the pus may be carried down into the mediastinum. The more superficial ulceration will cause pus to flow along the anterior surface of the fascia, but if the pus comes from a diseased vertebra it will follow much deeper planes into the posterior mediastinal space. Either of these creates a very serious surgical problem for even an experienced thoracic surgeon.

Several deaths have been reported as due to forcing the mouth open with a gag for the purpose of examination and before any operation was attempted. The explanation of these sudden deaths is not very clear. Some have suggested the status thymolympathicus which is not convincing. Others believe that pressure upon the pneumogastric or other nerves is increased by the stretching of the throat. This explanation also is unsatisfactory, but the fact of the sudden deaths should warn us to approach these cases very cautiously.

When a retropharyngeal abscess is recognized promptly, and is properly treated the mortality will run as low as 5 per cent. The various sequelae and complications noted above emphasize the danger of the unrecognized case, and also of an unjustified postponement of surgical intervention.—*General Practitioner*.

**Surgical Closure of the Ductus Arteriosus.**—Patent ductus arteriosus, which is not rare as an isolated congenital lesion, acts in the same way as an arteriovenous aneurysm, and may throw a great additional load upon the heart, increasing the output of the left ventricle several times. In some cases cardiac failure eventually supervenes. In another and perhaps larger group death occurs from subacute infective endarteritis. Rarely the ductus ruptures. Artificial closure of the vessel would, therefore, be very desirable in properly selected cases, and this has been done successfully by R. E. Gross. Not all cases of patent ductus would be suitable, for the arteriovenous shunt which it provides may be a help rather than a handicap to the circulation when certain other defects are present—for example, aortic valve stenosis, coarctation or hypoplasia of the aorta, and pulmonary stenosis. The extent of the leak through the ductus is another criterion, and this is indicated by symptoms and the pulse-pressure reading and not by the loudness of the murmurs. Sometimes the ductus appears to be undergoing slow spontaneous closure, and if evidence of this were present radical treatment would not be called for. On the contrary, evidence that its size was increasing would make operation more desirable. In his paper Gross included as unsuitable for operation cases in which subacute bacterial endocarditis was already present, but in the following discussion he stated that it might be justified, chemotherapy being used subsequently. The operative procedure devised by Gross requires care and patience, and the location of the ductus and the neighbouring recurrent laryngeal nerve may take a long time. Nevertheless, in his four cases the post-operative reaction was remarkably slight and the convalescence short and free from complications. On closing off the ductus an immediate

increase of 30 mm. Hg or more in the diastolic pressure was observed in all four, and some months after the operation improvement in the general condition and gain in weight were observed. DR. GROSS's results represent a high technical achievement and constitute another step in the progress of cardiovascular surgery. Although the patients for whom the operation would be warranted might be very few, the benefit to the individual, if he is freed from the risk of fatal complications, is great.—B. M. J.

#### The Treatment of Arthritic Deformity by Lactic Acid Injection.

—W. GRANT WAUGH. *Rheumatism*, I, 15, 1939. This treatment is divided into three parts: lactic-acid injection into and around an affected joint, which excites a local phagocytic cellular reaction, followed by a process of proliferation and repair; a period of physiological rest to the joint during the stage of reaction; and, later, prolonged physical therapeutic measures.

As proof that tissues do respond to acid the facts are pointed out that hematomata about the ends of fractured bones excite brisk phagocytosis and mesoblastic tissue formation; that pus in granulating osteomyelitic cavities is acid; and that a lotion of zinc sulphate with a hydrogen-ion concentration of 6 promotes healing in sluggish wounds. In normal joints the contents are acid, whereas in chronic rheumatic joints the condition is reversed.

The affected joints are manipulated forty-eight hours after the lactic-acid injection. They are then immobilized for from ten to fourteen days. In three cases of bilateral arthritis of the knee joint only one knee of each patient was injected, although all other measures for the joints were identically the same. Recovery was obtained only in the injected joints.

The solution is made by combining 0.2 per cent. N/5 lactic acid with 2 per cent. novocain and 0.5 per cent. sodium chloride. The usual amounts injected into the joint are from three to five cubic centimeters and from ten to fifteen cubic centimeters into the adjacent soft tissues. The best results were obtained in rheumatoid arthritis; fifty such cases were treated, with resultant improvement in practically all of them.—Harold M. Childress, M.D., Jamestown, New York.—J. B. J. S.

**Acute Cholecystitis.**—In the surgical service at the Toronto General Hospital, emergency operations for acute cholecystitis are not advocated by the university staff. The continued publication of data by men of unquestioned repute, experience and sound surgical judgment, urging that patients suffering from acute cholecystitis be considered as suffering from a disease demanding as immediate surgical intervention, as though they were suffering from acute appendicitis, is so at variance with this practice that all patients admitted to the hospital, medical and surgical, from July 1926 to January 1934

were studied. The result of this study was such as to justify the continued conservative management of this group of patients. A further analysis, from January 1934 to 1936, of such material was made by GRAHAM. This last group is confined to the patients admitted to the First Surgical Division, together with the private patients operated on by the author. This entire series consists of 273 cases. There was a total of sixteen hospital deaths. This included patients who refused operation, patients for whom operation was not advised and those who were submitted to operation. This gives a gross mortality of 5.8 per cent. In an analysis of the ninety cases in which no operation was carried out there were six hospital deaths. Twenty-six patients were advised and refused operation, three were in a moribund state when admitted (at necropsy all had stones in the common bile duct) and three died from cardiovascular diseases, for whom it was never possible to consider operation. In the selection of the cases analyzed great care was taken to make sure that the diagnosis was definitely established. Of the ninety patients who either refused operation or for whom operation was not advised there were only six who died, and none of them, the author believes, would have been alive had urgent operation been carried out. That some of the remaining eighty-four patients not operated on may ultimately die from acute cholecystitis is possible, as twenty-six were advised operation. This leaves fifty-eight patients for whom, for various reasons, operation was not advised, and if they die subsequently it will be due to the frailty of human judgment, as their discharge without operation was considered in their best interest. That acute cholecystitis should be considered a disease parallel to acute appendicitis the staff members cannot bring themselves to believe. There were only three cases of general peritonitis, and of 164 patients in the surgical group having delayed operation there were eleven who had a perforation of the gallbladder with a pericholecystic abscess and no general peritonitis, none of whom died of original perforation or of the later operation. This tremendous difference between the localization and the diffuseness of the inflammatory reaction as seen in acute cholecystitis and in acute appendicitis, the author suggests, should of itself be sufficient to demand considering these two disease processes as presenting entirely dissimilar problems. It is not believed that acute cholecystitis in Toronto is any different from acute cholecystitis elsewhere. What, then, the author asks, can explain their apparent placidity in the face of a serious disease? It must resolve itself entirely into a question of terminology. The staff members of the Toronto General Hospital believe that there are three distinct pathologic entities that in many of the reported publications are called acute cholecystitis and thus confuse the real issue: (1) biliary colic, (2) acute cholecystitis and (3) acute cholangitis. Therefore it is concluded that many of the patients operated on within the first forty-eight hours from the onset of the pain are really being operated on for persistent biliary colic. That this procedure is unwise is not suggested, but it is concluded that it is not necessary to save life. Acute cholecystitis with infection presents a history of biliary colic, a palpable tender mass in the right

upper quadrant, increased temperature and pulse rate, leukocytosis and occasional jaundice. For such a patient urgent operation to save life is not wise. If, after the restoration of biochemical balance, pain is undiminished despite adequate sedation or if the pulse rate rises or remains persistently high, direct surgical intervention is indicated. The delay necessary to restore biochemical balance enables the occasional operator to marshal all available resources. In the 164 delayed operations there was a mortality of 4.2 per cent, leading to the conclusion that in such a serious disease this mortality is not forbidding.—*T. A. M. A.*

### Medicine and Therapeutics

**Proteins in Nephritis.**—Cameron in the *Edinburgh Medical Journal* (46, 1939) states that the general fear of protein administration in nephritis is partially unfounded since a patient suffering from nephritis is more apt to die from protein starvation than from protein excess. The limitation of milk, and the starvation diet, are not advisable. Experiments carried out showed that no deleterious action is affected on the kidney by proteins and that the urea content of that organ is not increased, by intake of 1 pint of milk per day. In nephritis cases proteins affect favourably the general condition of the patient with no abnormality in the urine or rise in blood pressure. In addition the restriction of proteins in the diet causes a lowering of the body's resistance to infection and does not relieve the kidney of its function of excreting the urea.

The author suggests the following diet: Restrict the fluids ingested in the beginning of diet to 1 pint of glucose, 1 pint of fruit-juice, and a pint of milk daily. When the acute symptoms (such as blood casts and hæmaturia) have diminished and diuresis sets in, increase the caloric value of the diet with fats and carbohydrates. At this point conduct a renal efficiency test to determine the urea concentration range. If the range is below 2.5% begin a 50 gm. protein intake; increase it to 75 gms. when the range has a maximum ability of 2.5%; to 95 gms. when 3%, and 120 gms. when 3.5% is attained. Treat the second stage of nephritis and nephrosis, whether there be œdema or not, with a high protein diet of 100 gms. or over, daily. It is not necessary that salt be forbidden, as this step is required only when there is œdema. The patient may be ambulatory. A high protein diet may also be given in the third stage of nephritis where renal failure appears—95 gms. being given at first and then regulated according to the urea concentration range (never dropping below 70 gms., however) until the terminal stage is attained.

The author suggests the following proteins: Cheese, eggs, fish, meat (white and red) and milk, the high nucleoproteins being unnecessary.—*General Practitioner.*

**Nicotinic Acid for Atypical Psychotic States With Malnutrition.**—Cleckley, Sydenstricker, and Geeslin, in *The Journal of the American Medical Association* (112, 1939), give a summary of their treatment of nineteen patients in whom the usual criteria for the diagnosis of pellagra were largely absent, but all of whom presented the symptom of stupor, and who showed remarkable improvement after treatment with nicotinic acid. A majority of the group were elderly, with advanced arteriosclerosis and presented a clinical picture commonly attributed to arteriosclerotic encephalopathy.

In the group studied, the presenting symptoms were: Hebetude grading to profound stupor, a feature so prominent as to lead to diagnosis of frontal-lobe tumor in 3 cases, lethargic encephalitis in 1 case, and chronic subdural hæmatoma in a third. Delirium was present three times, agitated depression and central neuritis were each present once. It was difficult to determine whether or not the deafness present in 5 cases and which disappeared under treatment was due to impairment of the auditory mechanism or lack of attention.

Glossitis in the form of undue redness of the tongue with or without papillary atrophy was present in all but 2 of the group. Stomatitis appeared once, nonspecific vaginitis twice, and diarrhoea once. The incidence of gastric anacidity was irregular; in many instances, gastric contents could not be secured. In all, the complete syndrome and history of pellagra was absent although inadequate nutrition was evident in each case. A majority were aged and had organic disease to which the mental symptoms might have been attributed. Eleven had advanced arteriosclerosis, 2 had cerebrospinal syphilis, and 2 were chronically alcoholic.

This coincidence of stupor and glossitis in malnourished patients suggested the use of nicotinic acid empirically since incomplete or "cerebral" pellagra was thought to be a contributing factor to their dilapidation. Rigid control of diet was not attempted. Profoundly unconscious patients were given Thiamin Chloride intramuscularly and intrathecally; one took adequate amounts of this vitamin by mouth. Nicotinic Acid was administered after other forms of treatment failed to produce desired results. In all but 1 case it was given intravenously as Sodium Nicotinate, prepared by neutralizing a saturated solution of Nicotinic Acid with Sodium Bicarbonate, Phenol-Sulphonaphthalein being used as the indicator. The solution was then diluted to a standard volume representing 0.5 mg. of Nicotinic Acid per cc. sterilized in pyrex flasks and stored in a refrigerator until used. Dosage varied from 100 to 300 mg. daily; the treatment period from 3 to 10 days. The usual peripheral vasodilatation occurred during the injection of the solution, but no untoward reactions were observed.

The response to treatment was a great improvement in 4 cases, and dramatic "cure" in the rest. By cure is meant the eradication of the glossitis and stupor; associated chronic diseases were uninfluenced. A control group presenting stupor of demonstrable organic origin, made up of patients with frank cerebral vascular

accidents, brain tumors, or bromide intoxication, was treated with equal or larger amounts of the therapeutic agent with no improvement.

The results of treatment demonstrated that these patients presented a common but seldom recognized form of pellagra. Emphasis must be placed on the fact that stupor as the only presenting symptom was not sufficient to make a diagnosis of pellagra. The glossitis noted was typical of pellagra in only 4 instances; the rest had dry red tongues of the "toxic" or "dehydrated" type. Gastro-intestinal symptoms and dermatitis were absent in all cases.

It is significant that the proportion of elderly arteriosclerotic patients was high, since these persons, often without the means of livelihood, are apt to be undernourished through neglect or indifference. Consequently, they are frequently inadequately diagnosed "cerebral arteriosclerosis" or "cerebromalacia," hospitalized, and perfunctorily treated until they die from bronchopneumonia. We are certain that the therapeutic test with Nicotinic Acid was life saving in practically all of the group, and equally certain that many persons are allowed to die because of failure to recognize the cerebral symptoms of pellagra when other evidences of the disease are absent. We are in accord with the suggestion of Jolliffe that cerebral manifestations may be the first evidence of severe or complete depletion of Nicotinic Acid.

It is not to be supposed that we suggest that all stuporous conditions of unknown aetiology are manifestations of pellagra. We have, however, been impressed by the dramatic improvement obtained in this series of cases, and are convinced that a therapeutic test with nicotinic acid is justified in unexplained cases of hebetude or unconsciousness.—*The General Practitioner*.

**The Treatment of Threadworms.**—Infection of the intestinal tract by *Enterobius vermicularis*, of the threadworm, is an acknowledged causal factor in appendicitis, and especially in children. This fact was recently demonstrated by T. W. BOTSFORD, et al (*New England Journal of Medicine*, December 14, 1939, 221, 933), who in a survey of a ten-year period (1929—1939) at the Children's Hospital, Boston, during which 1,343 appendices were removed, found threadworms present in 5.3 per cent. of cases. A simple and successful method of treatment by Ether and liquid Petroleum jelly (Ether 20.0, vaselin. liquid. 100.0) enemas is described by S. Mindlin and A. Urribarri (*La Prensa medica argentina*, August 1939, 26, 1603. Abstract, *Schweizerische medizinische Wochenschrift*, March 16, 1940, 70 239). Two to three enemas daily were given for one week then after a week's interval a second course. The interval was introduced so that the parasites absorbed at the beginning of the treatment might be attacked—these are found in the rectum after fifteen to eighteen days. The results obtained were good; the treatment was harmless, and only in very sensitive patients did a slight transient inflammation of the mucous membrane of the rectum occur. No medicaments were given by mouth during the treatment, and no local ointments

were used. A further contribution to the treatment of oxyuriasis is made by W. H. WRIGHT and F. J. BRADY (*Journal of the American Medical Association*, March 9, 1940, 114, 861), who have used Gentian Violet in the form of tablets, administered orally, with marked success. Before beginning treatment, diagnosis was made by means of a cellophane-tipped anal swab, and stool samples were examined for other helminth ova. The patients were treated on the familial basis, i.e., each member of the family being examined for worms and all infected members being treated simultaneously in order to eliminate infection in the entire household. The dosage used was two 32-mgm. tablets, t.d.s. before meals, for adults, and 10 mgm. daily for each year of apparent (not chronological) age, divided into three doses, for children up to the age of sixteen. In a series of one hundred and seven patients treated with enteric coated tablets for a period of ten consecutive days, checking by post-treatment swabs, taken from ten to twenty-one days after end of the treatment showed negative results for threadworms in 91 per cent. In another series of patients, to whom enteric coated tablets were given for eight days, followed by seven days' rest and then resumed for a further eight days, a 90 per cent negative post-treatment swab was obtained; in a third series a negative rate of 58 per cent. was recorded, and in a fourth series of patients, to whom Gentian Violet tablets provided with water soluble coating for disintegration in the small intestine were administered, a negative rate for threadworm infection of 79 per cent. was obtained. Secondary reactions in the form of nausea, vomiting, diarrhoea and abdominal pain occurred in some patients; the symptoms, however, were of a transient nature. The treatment, which possesses the advantages of being relatively cheap, easy to administer, and satisfactory for eliminating familial infestation, is contraindicated when *Ascaris lumbricoides* infestation is a concomitant factor, and also in cardiac, renal, hepatic, and gastro-intestinal diseases, and in alcoholic subjects.—*The Practitioner*.

**Putrid Lung Abscess.**—Rosenblatt studied the records of ninety-four cases of putrid pulmonary abscess discharged from the medical, surgical and pediatric wards of the city hospital between 1920 and 1938. Abscesses occurring in bronchiectasis, a putrid necrosis complicating pneumococcal pneumonia, Friedlander pneumonia or miliary abscesses following bacteremia were not included. Tuberculosis was ruled out in all instances by sputum examination, guinea pig inoculation or necropsy. The cases were divided into those following operation (fifteen) and nonpostoperative (seventy-nine). The fifteen cases followed operation on the tonsils, teeth, jaw or nose, an appendectomy, herniotomy or mastoidectomy. Among the seventy-nine there were isolated instances which followed aspiration of a staple and of ammonia, submersion, hemiplegia and acute ulcerative tonsillitis. But in 94 per cent the abscess was not preceded by any known disease, accident or operation. However, the teeth and gums of sixty-two patients, 80 per cent, presented caries and gingival infection. This percentage was the same for the operative and nonoperative cases.

The aspiration of septic tartar into the lungs as a cause for the development of putrid lung abscess deserves serious consideration. The frequent association of tonsillectomy, dental extraction and gingivodental infection strongly supports the aspiration theory. Routine smears and cultures of sputum or aspirated pus in about one third of the cases showed streptococci, both aerobic and facultative anaerobic, fusiform bacilli, spirochetes and unidentified gram negative bacilli. The earliest symptoms were usually those of an infection of the upper part of the respiratory tract and consisted chiefly of productive cough with foul mucoid expectoration and slight fever. Many patients in the nonoperative group gave a definite history of exposure to inclement weather the day before the onset of these symptoms. The foul expectoration usually appeared within two weeks of the onset of illness and occurred suddenly after a severe coughing paroxysm. In the majority of cases the sputum was also blood streaked, and not infrequently there were moderately severe pulmonary hemorrhages. The location of the abscess by physical signs was rendered difficult because of sibilant rales in apparently uninvolved portions of the lung. Bronchoscopy and x-ray examination were of the greatest assistance in diagnosing the exact source of suppuration. In all but two cases the abscess was localized to a single lobe, in sixty-one in the right upper, middle or lower lobe, and in thirty-five in left upper or lower lobe. Most of the lesions in the lower lobes were situated in the apical segments. About 10 per cent of the patients had syphilis, and an equal number had hypertensive or arteriosclerotic cardiovascular disease. Three patients had diabetes. Various complicating conditions occurred in individual instances. The most important complication of the abscess itself, in 12 per cent, was perforation into the pleural cavity with production of a putrid empyema. Cerebral metastases and bronchopneumonia and pulmonary extensions were other complications. Bronchopleural fistulas were present in all the surgical cases. Of the ninety-four cases, seventy-two were treated medically and twenty-two surgically. The medical procedures included postural drainage, bronchoscopic aspiration and irrigation, artificial pneumothorax, intravenous injection of Arsphenamine and of Guaiacol, rectal injection of Ether in oil and oral administration of Potassium Iodide and Sulfanilamide. The duration of illness in the medical cases ranged from sixteen to 3,217 days but was less than 150 days in the majority. The condition on discharge of the seventy-two medically treated patients was as follows: Four were cured, twenty-two improved, twelve unimproved and thirty-four dead. However, only three patients had no symptoms or x-ray evidence of abscess. Study of the other nineteen cases showed that seventeen were discharged with x-ray evidence of either a stationary or a progressive lesion and that two were discharged with characteristic symptoms of abscess. Most of the patients discharged as unimproved have frequent exacerbations of the abscess and they eventually die of the disease. The cause of twenty-three deaths was progression of the abscess, cardiac failure in three, pulmonary hemorrhage, cerebral metastases and bronchopneumonia in two each and toxic hepatitis and gangrenous

esophagitis in one each. Of the twenty-two patients treated surgically the operative procedure of one consisted of bronchoscopic removal of a staple, which resulted in a cure. The duration of illness in the other twenty-one cases ranged between three weeks and ten years. External drainage with evacuation of the cavity was the procedure used in all instances but one in which closed thoracotomy was done. Two patients were cured, four improved, three unimproved and twelve died. Four deaths occurred within twenty-four hours of operation and were due either to shock or to pulmonary oedema, two occurred within two weeks of operation and were apparently due to emboli, and the remaining causes of death were progression of the disease in three, cerebral metastasis in one, bronchopneumonia in one and asphyxia due to a mucous plug in the trachea in one. The poor results of conservative treatment are obviously its indictments. Early excision and aeration of the abscess appears to be the rational solution to the problem. When this procedure has been followed, the percentage of cures is maximal and the mortality rate negligible.—*J.A.M.A.*

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**The Treatment of Otorrhœa by Argyrol Displacement.**—This simple and effective method of treatment of chronic otorrhœa is described by W. OGILVY REID (*British Medical Journal*, December 30, 1939, 2, 1271). The ear is first thoroughly cleansed; then the patient lies with the affected ear upwards, and the ear is filled with 10 per cent. Argyrol up to the lower level of the tragus. A Siegle speculum is fitted into the meatus with bulb compressed and, when the connexion between the speculum and meatus is air-tight, the bulb is gradually expanded. The procedure is repeated three times. If an air-tight connexion between the speculum and the meatus cannot be obtained, tragal pressure is resorted to. A piece of cottonwool on the top of the finger is held in front of the tragus which is pressed forward over the meatus to obtain complete occlusion; a little extra pressure forces the temporary "cork" slightly into the meatal opening; gradual release is then allowed and a sensation of suction is experienced. This procedure also, is repeated three times, and the fluid has then passed into the middle ear, displacing the air. The outer ear is packed with cotton-wool and the patient is allowed to stand up. The treatment is carried out daily, and about the sixth day the discharge becomes more abundant and purulent. The next phase may not occur until two weeks later and is manifested by a diminution of the discharge which has gradually become more mucoid in character. When the ear is only moist the Argyrol is stopped and the ear cleansed daily, dried with spirit, and insufflated with Boric powder. Cure was obtained by the author in seventy-two out of one hundred and sixteen cases so treated; some of the failures were due to non-completion of treatment. No claims of a definite method of cure are put forward, but the results obtained, and the simplicity of the method, commend its use.—*The Practitioner*.

---

**The Use of Honey as a Carbohydrate in Infant Feeding.**—In *The Journal of Pediatrics* for October, 1938, F. W. Schlutz, M.D., and Elizabeth M. Knott say that, in view of the fact that honey contains two monosaccharides most acceptable to the organism, it is strange that it has not been more widely employed in feeding of infants and children.

**COMPOSITION.**—Brown has reported the composition of honey to be 17.7% water, 1.9% sucrose, 40.5% levulose, 34.02% glucose, 1.51% dextrin, and 0.18% ash. Schuette and Remy state that it contains iron, copper and manganese in amounts large enough to be of value in infant feeding. It is a disputed point as to whether vitamins, A, B, C, and D are present in appreciable amounts. It may be that different sources of honey affect its vitamin content.

**EARLIER EXPERIENCE.**—Lahdensuu reported twenty cases in which honey was alternated with saccharose as a supplement of milk. The honey feedings gave better weight gains than did the saccharose, because, in his opinion, the sugars in honey enable the body cells to bind water to a better advantage. Muniagurria has pointed out that honey, because it is easily and completely digested, is able to overcome constipation in infants without producing diarrhoea. Stancanelli and others have reported satisfactory results in the treatment of dystrophy when honey was added to the diet. Farioli, while confirming the reports of others, studied chiefly the faecal flora and observed a shift during the administration of honey from a gram-negative to a gram-positive bacteria.

To investigate the suitability of honey in infant feeding, 10 normal infants were studied for the first six months of their lives.

**PROCEDURE.**—Throughout the study the infants were fed either evaporated, one-half skimmed dried milk or one-half skimmed lactic-acid powdered milk. The carbohydrates used as supplements were either honey or Karo corn syrup. In addition, solutions of minerals and crystalline vitamin D were used in the formulas at different levels. The response of the infants to honey as compared with the response to Karo corn syrup has been made on the following basis:—

(1) *The number of stools per day* is one indication of an infant's well-being. In general all of the infants studied maintained an average of less than two stools per day. The chief exception being those infants of less than two months of age who sometimes averaged between two and three stools per day. In two cases definite diarrhoea developed, but was overcome by the use of boiled skimmed milk without omitting honey from the diet. Honey was well tolerated by these infants, but there was little difference in the number of stools per day between those receiving the honey and those receiving Karo corn syrup.

(2) *The daily weight records* of both groups of infants were kept. The only weight loss of consequence occurred in the two infants who had a short period of diarrhoea. There was a tendency for a slightly greater gain in weight per day on a lower caloric intake in those infants receiving honey instead of karo. This was most

noticeable when these two carbohydrates were compared as supplements to evaporated milk. Out of a total of 37 periods during which infants averaged less than 30 Gm. gain per day, honey had been fed in 65% of the cases, but where the average gain was greater than 30 Gm. per day honey had been fed in 71% of the cases. When evaporated milk with honey or karo as a supplement is considered alone, honey was fed in 100% of those infants gaining more than 30 Gm. per day, and in only 62% of those gaining less than 30 Gm. per day. Therefore, it seems that honey, at least to a moderate extent, favourably influences weight gains.

(3) *Blood sugar tolerance tests* were conducted on these infants using the common sugars employed in infant feeding. Honey, with the exception of dextrose, was absorbed more quickly during the first fifteen minutes following ingestion than the other sugars tested. It maintained a steady, slow decline in blood sugar until the fasting level was again reached. This response to honey is presumably due to the two monosaccharides, dextrose and levulose, which it contains. The dextrose is quickly absorbed, while levulose, being more slowly absorbed, maintains the blood sugar. Honey has an advantage over other sugars which contain a higher level of dextrose in that it does not raise the blood sugar to higher levels than can be easily carried for by the body. It would seem, therefore, that honey is a carbohydrate well suited for infant feeding. It is easily digested, is well tolerated, it produces no diarrhoea, and it may facilitate weight gains.  
—*The General Practitioner.*

## BOOK REVIEW

**Common Mistakes of Surgery in India**—By Lt. Col. A. N. Palit, O.B.E., F.R.C.S., (EDIN.), M.R.C.O.G., I.M.S., (Retd.). 1940, 1st Edition, 382 pages, The Book Company Ltd., College Square, Calcutta. Price: Rs. 5/—.

The author's intention in writing this book is to enable others to profit by his mistakes and to give hints and tips to enable the junior surgeon and the novice in surgery to wade through his practice with safety and with success. A knowledge of the standard text books is not enough for the general practitioner. The little hints and knowledge of what to do, how and when, are usually gained from experience alone and sometimes at a little sacrifice. If some one with the experience of Lt. Col. Palit were to tell them the dangers and pitfalls ahead, then young practitioners can profit by them and do well and cause less damage to their patients. A certain amount of dogmatism and criticism of others is unavoidable in a work of this nature and we hope they will be accepted in the same spirit with which it is offered. Anæsthesia, Antiseptics, Carbuncles, Wounds, Burns, Gonorrhoea, Fractures, Head-injuries, Eye-diseases, Ear, Nose and Throat diseases, Chest-surgery, Appendicitis, Acute-abdomen, Hernia, Rectal

surgery, Genito-urinary diseases are some of the subjects dealt with in this useful little book. We recommend it whole-heartedly to the rising young general practitioner and junior surgeon.

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### CORRIGENDA

“The Antiseptic” Vol. XXXVII, No. 6, page 584.

line 4 for ‘diabates’ read ‘diabetes’.

line 6 after ‘opacities’ add ‘need not be described here, except to mention that these lens changes can be fairly rapid, and I have even seen some of the lens opacities’.

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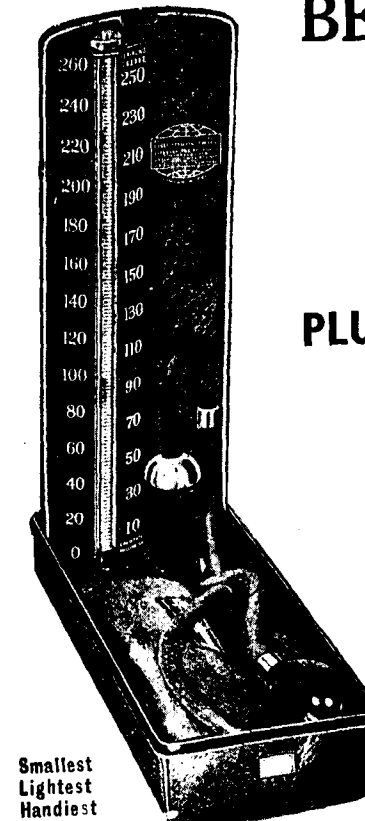
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## INDEX TO ADVERTISERS, JULY '40.

|                                           | PAGE.                |                                       | PAGE             |
|-------------------------------------------|----------------------|---------------------------------------|------------------|
| Alembic Chemical Works Co. Ltd.           | 1, 27                | Hewlett C. J. & Son Ltd.              | 9                |
| Allen and Hanburys Ltd.                   | 5                    | Horlick's Malted Milk Co.             | 12               |
| Antiseptic Press                          | 38                   | Indian & Eastern Chemist              | 36               |
| Astier Laboratories                       | 37                   | Lister Antiseptics & Dressings Co.    | 10               |
| Atlantis (East) Ltd.                      | 18                   | Jamiat Singh Dr.                      | 33               |
| Banerji P.                                | 18                   | Jammi Venkataramanayya                | 14               |
| Bench T. C. & Co.                         | 30                   | Journal of Indian Medical Association | 38               |
| Bengal Chemical and Pharmaceutical Works. | Inside of back cover | John Wyeth & Brother Ltd.             | 4                |
| Boots Pure Drug Co., Ltd.                 | 32                   | Martin & Harris Ltd.                  | 6                |
| Brahmachari Research Institute            | 17                   | Martin H. Smith Co. N. Y.             | 9, 17            |
| Brand & Co. Ltd.                          | 35                   | May & Baker Ltd.                      | 24               |
| British Drug Houses Ltd.                  | 22                   | Narayanan P. P. Dr.                   | 37               |
| Burroughs Wellcome & Co.                  | 23                   | Parke Davis & Co.                     | Last cover page. |
| Calcutta Medical Journal                  | 30                   | Petrolagar Laboratories Ltd.          | 2                |
| Carnrick G. W. Co.                        | 14                   | Rendell W. J. Ltd.                    | 8                |
| Ciba Ltd.                                 | 39                   | Research Laboratory                   | 36               |
| Coleman & Co., Ltd.                       | 3                    | Rosbay & Co.                          | 37               |
| Cow & Gate                                | 29                   | Scientific Instrument Co.             | 33               |
| Crookes Laboratories Ltd.                 | 13                   | Seller L. H.                          | 37               |
| Denver Chemical & Mfg. Co.                | 26                   | Sri Krishnan Bros.                    | 34, 37, 38       |
| Eli Lilly & Co.                           | Inside Front Cover   | Stephen Smith & Co., Ltd.             | 16               |
| Frank Ross & Co. Ltd.                     | 17                   | Thacker Spink & Co. Ltd.              | 36               |
| Galleno Pharmaceutical Works              | 10                   | Thakore T. M. & Co.                   | 19, 31           |
| Glaxo Laboratories Ltd.                   | 7, 15, 20, 21        | Union Drug Co. Ltd.                   | 19               |
| Govt. Industrial & Testing Laboratory     | 27                   | United French Laboratories            | 11               |
| Hering & Kent                             | 11                   | Victor X-Ray Corporation (India) Ltd. | 28               |
| Health                                    | 40                   | Zeal G. H. Ltd.                       | 1                |

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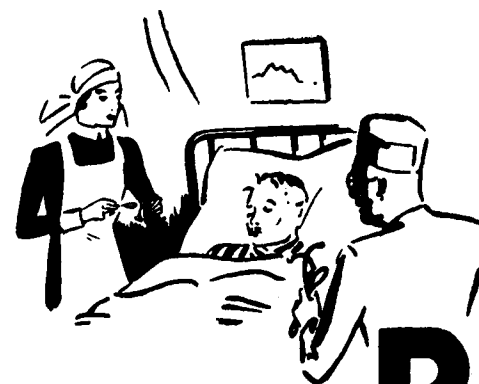


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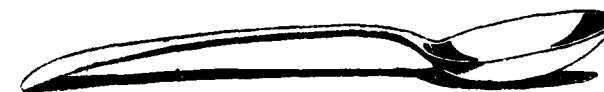
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## CONTENTS.

| Original Articles.                                                                                                                                                                                                                    | PAGE. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| DISABILITIES OF THE BLADDER DUE TO SPINAL INJURIES AND THEIR MANAGEMENT.<br>By R. Mahadevan, M.S. (Mad.), F.R.C.S. (Edin.), F.R.C.S. (Eng.), Surgical Registrar,<br>Andhra Medical College and King George Hospital, Vizagapatam. ... | 689   |
| OBSERVATIONS ON TUBERCULOUS DISEASE OF THE SPINE IN MADRAS. By N. S.<br>Narasimhan, L.R.C.P. (Lond.), F.R.C.S. (Eng. & IRELAND), Orthopaedic Surgeon,<br>General Hospital, Madras. ...                                                | 698   |
| TREATMENT OF AND OBSERVATIONS ON 200 CASES OF PNEUMONIA. By K. K. Bhoumick,<br>L.M.P. (Assam), Koomsong Tea Estate, Doom Dooma, Assam. ...                                                                                            | 705   |
| TRACHOMA AND SPRING CATARRH. By P. D. Giridhar, Ophthalmic Surgeon, Kishanlal<br>Jalan Free Eye Hospital, Bhiwani, Hissar. ...                                                                                                        | 711   |
| HYPERTROPHIED TURBINALS AND POLYPI AS A CAUSE OF NASAL OBSTRUCTION AND<br>THEIR TREATMENT WITH ELECTRIC-COAGULATION. By Captain N. Ahmed,<br>M.B.B.S., F.R.F.P.S., Divisional Medical Officer, E. I. Railway, Cawnpore. ...           | 714   |
| CONTRIBUTION TO THE ETIOLOGY AND TREATMENT OF AMENORRHOEA. By L. M.<br>SZAMEK, M.D. (Vienna), (Former Director of the Frauenkrankeninstitut "Charite")<br>in Vienna, Calcutta. ...                                                    | 721   |
| CHARACTERISTIC TONGUE IN THE DIAGNOSIS OF DISEASES. By S. K. Roy, Dantan,<br>P. O., Midnapore. ...                                                                                                                                    | 723   |
| <b>Cases and Comments.</b>                                                                                                                                                                                                            |       |
| A CASE OF THE LEAKING ANEURYSM OF THE CIRCLE OF WILLIS. By Trilok Raj Shah,<br>L.C.P.S., Sir Lakshajiraj Road, Rajkot. ...                                                                                                            | 725   |
| <b>Editorial:—</b>                                                                                                                                                                                                                    |       |
| TOXIC GOITRE. ...                                                                                                                                                                                                                     | 727   |
| <b>Gleanings from Medical Press.</b>                                                                                                                                                                                                  |       |
| SURGERY. ...                                                                                                                                                                                                                          | 732   |
| MEDICINE & THERAPEUTICS. ...                                                                                                                                                                                                          | 737   |
| RADIOLOGY. ...                                                                                                                                                                                                                        | 749   |
| OPHTHALMOLOGY. ...                                                                                                                                                                                                                    | 750   |
| <b>Proceedings of Societies, Associations Etc.</b> ...                                                                                                                                                                                | 751   |
| <b>Preparations and Inventions.</b> ...                                                                                                                                                                                               | 752   |
| <b>Corrigendum.</b> ...                                                                                                                                                                                                               | 752   |

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Index to Advertisements, see page 42.



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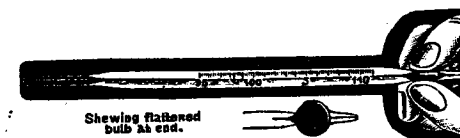
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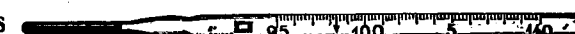
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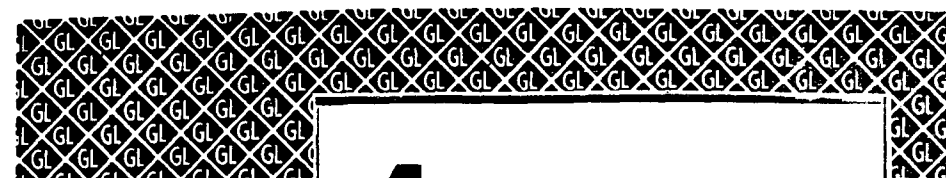
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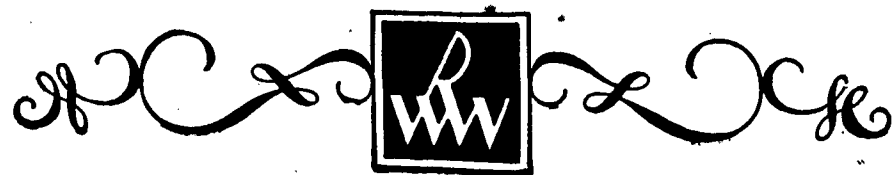
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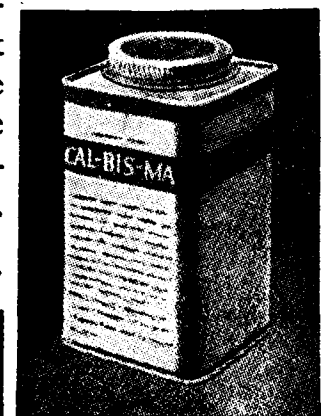
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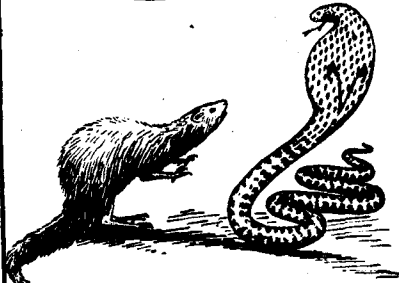
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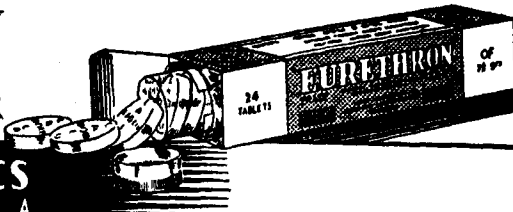
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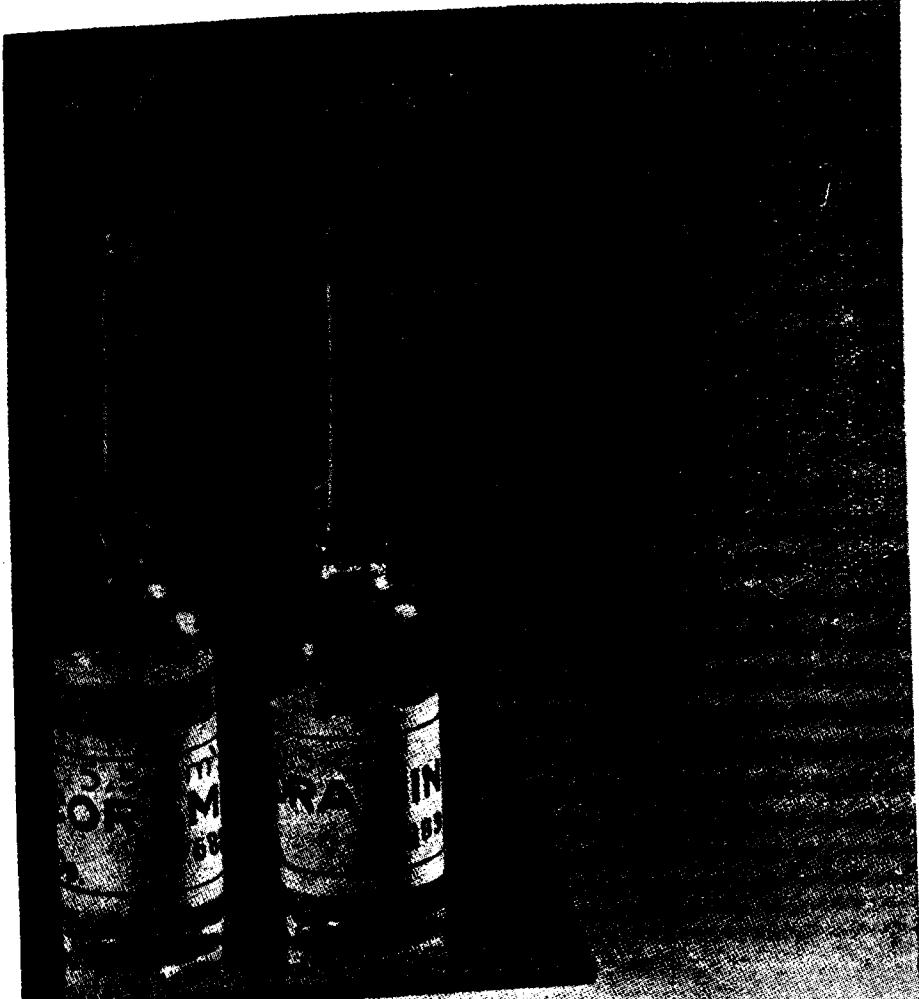
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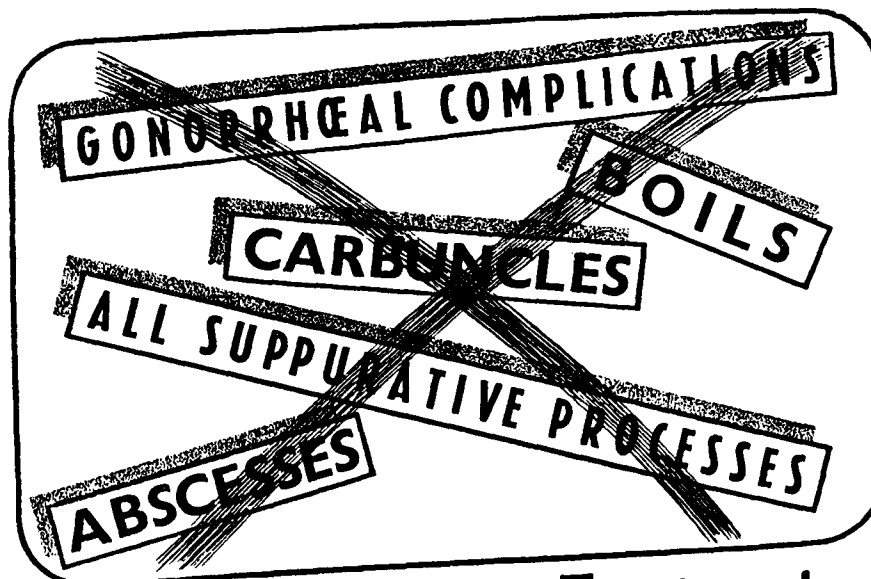
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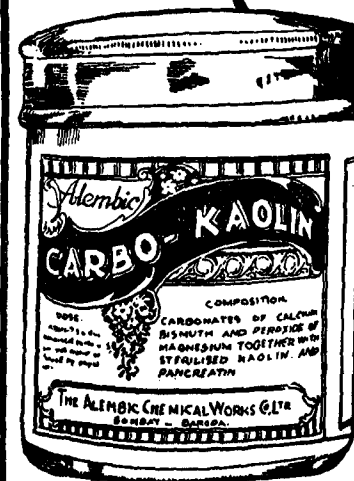
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# The Antiseptic

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### ORIGINAL ARTICLES

## Disabilities of the Bladder due to Spinal Injuries and their Management\*

BY

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It is a matter for great admiration that, like many other things in the human body, the spine and the spinal cord are so constructed that the important nerve cord can escape many dangers and accommodate itself to the various movements of the spine. Indeed, it is a wonder how the spinal cord escapes damage even in the presence of severe injuries to the spine. BRADFIELD, BARNARD and I (1928) reported a consecutive series of compression fractures of the spine in all of which the cord completely escaped damage. Strangely enough, however, I have recently met with a more or less consecutive series of injuries of the spine in which the cord has been severely damaged. In these patients the difficulties in treatment have been many, the most trying of which has been in attending to the bladder. Admittedly, such cases usually find their way to an institutional treatment. But the role of the general practitioner is a very responsible one; for, even in the few cases that he may have to manage till the patient gets to a hospital, the attention to the bladder should be great. If I point out, that during the last war, 80% of the deaths in spinal injuries was due to septic catheterisation and consequent ascending pyelonephritis (WALKER, 1936), the importance of proper attention to the bladder can be understood. Further, some of these cases become chronic, and require treatment and continued attention

\* Specially contributed to 'The Antiseptic'.

to bladder after discharge from hospital; they will then be under the care of the general practitioner.

**The Physiology and Nervous Control of the Bladder.**—A very brief consideration of these aspects is necessary for the proper understanding of the subject. The efferent nerve supply of the bladder is from three sources (*See Fig. I.*). (1) The sympathetic: the connector cells of these probably lie in the 1st and 2nd lumbar segments of the spinal cord and reach the bladder through the "pre-sacral nerve" (also called the hypogastric plexus, hypogastric nerve, nerve of Latarjet). Stimulation of this nerve is inhibitory to the detrusor muscle and motor to the internal vesical sphincter; hence this nerve is also called the "filling nerve of the bladder"; (2) The para-sympathetic: arise from the 2nd sacral and possibly 3rd and 4th segments also and pass in the "*nervi erigentes*" to the bladder. Stimulation of this nerve causes relaxation of the internal vesical sphincter and contraction of the detrusor muscle, thereby emptying the bladder. Hence this nerve is also called the "emptying nerve of the bladder." (3) The external vesical sphincter (sphincter membranaceæ urethrae) encircling the membranous urethra receives efferent somatic fibres from the perineal branch of the pudendal nerve.

The sensation and degree of distension of the bladder and pain sensibility is carried both in the pre-sacral (sympathetic) and *nervi erigentes* (para-sympathetic).

**Postural Activity of the Bladder.**—"In the living bladder, the intravesical pressure is about 15 c.m. of water and is quite independent (within limits) of the volume of the fluid in the bladder. The bladder wall adapts itself to the contents in such a fashion that the internal pressure is always about the same. The posture of the body of the bladder is always adapted to maintain the same tension with varying volumes of urine."

"But when the urine accumulates in large quantities and the pressure reaches 18 c.m. of water, afferent impulses reach the higher centre and are translated into a desire to micturate." (WRIGHT, 1937). If convenient, the individual micturates, otherwise he withholds. Both are made possible through impulses passing down from the cortical yet established and micturition occurs entirely reflexly from stimulation of the *nervi erigentes*.

From a consideration of these facts, it can be postulated that the function of the bladder can be interfered with in one of the following ways: (1) If the injury to the cord is above the lumbar and sacral centres, cortical control is lost and the bladder empties reflexly, i.e., an "automatic bladder" develops. (2) If, through the lumbar centre, the sacral centre control remains, and therefore, the internal vesical sphincter relaxes and the detrusor muscle contracts, resulting in constant dribbling of urine and a contracted bladder. (3) If, through

# Disabilities of the Bladder due to Spinal Injuries and their Management

By R. Mahadevan.

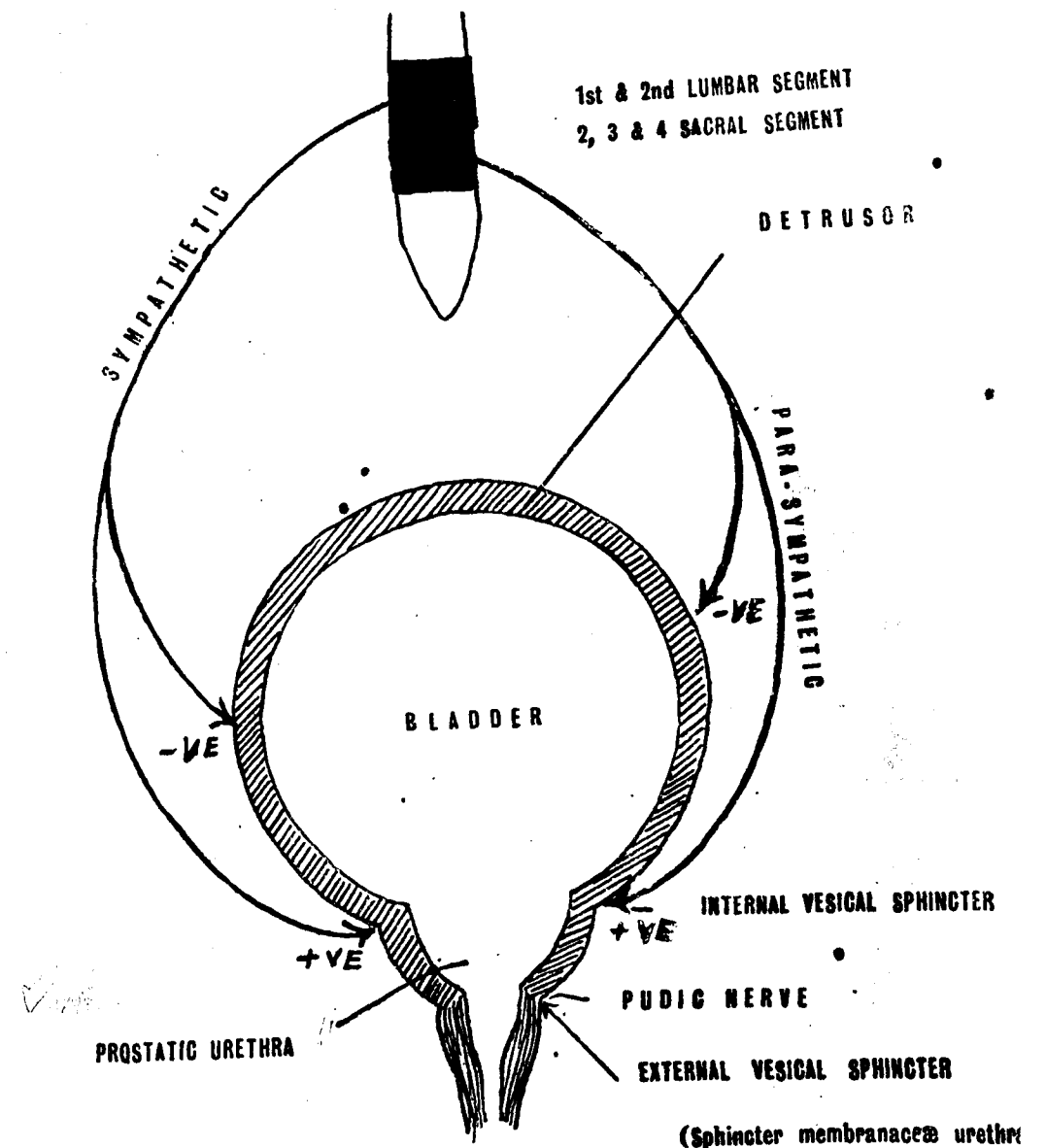


FIG. I.  
INNERVATION OF BLADDER. (DIAGRAMMATIC).

the sacral centre, and the lumbar centre functions, the bladder must get distended as the sphincter remains contracted and the detrusor is inhibited. A stage comes when the sphincter is forced open by the increasing intra-vesical pressure and incontinence with overflow occurs.

In practice, however, soon after injury to cord anywhere, there is first retention of urine. If this is not relieved, overflow incontinence results. This is the type most commonly met with. Conditions of injury described in (2) are not common possibly because the lumbar and sacral centres are so near each other that an injury in the region often involves both. When the nature of the injury is such that the development of "an automatic bladder" can be expected even then, it usually takes 2 to 3 weeks before it is established. In cauda equina injuries, it usually takes a very long time before an automatic bladder develops.

Where retention occurs due to one or other reason, the bladder must be emptied periodically and all precautions taken to prevent cystitis. Stagnation of urine is as potent a factor as the introduction of infection itself, in the occurrence of cystitis. An anaesthetic bladder, when allowed to get overstretched, falls an easy prey to infection. Ulceration quickly occurs even as a bed-sore rapidly develops at pressure points in an anaesthetic area of skin. Moreover, if stretching of the detrusor is allowed, it will delay or even prevent the onset of "reflex micturition".

The bladder can be kept emptied by one of the following methods:—

- (1) Periodical catheterization.
- (2) Tying in the urethra a catheter.
- (3) Suprapubic drainage.
- (4) Manual pressure. This need be mentioned only to be condemned. Rupture of bladder has occurred by adopting this method.

One or other of the above methods has to be continued :

- (1) Where injury is incomplete and of such a nature that the bladder can recover its natural function, till such a recovery occurs.
- (2) Where bladder is not expected to recover its normal function, till an "automatic bladder" is established. •

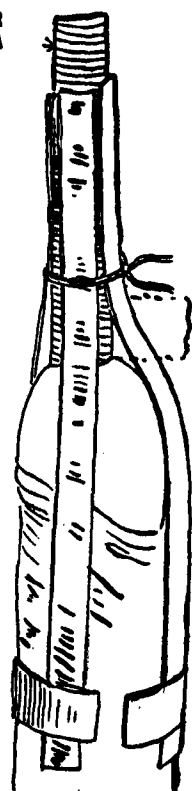
If, on the other hand, from the nature of the injury or due to complications, even an "automatic bladder" is not expected, modifications of these methods may have to be resorted to.

Now to discuss these methods one by one—

1. *Periodical catheterisation*:—The area of the lower abdomen, penis, scrotum and perineum are shaved, cleaned and prepared as carefully as for a major operation. Particular attention is paid to clean the preputial sac and glans penis. The surgeon washes his hand

with equal care and puts on sterile gloves. Dry sterilised gloves are much cleaner and less messy than putting on wet gloves. The area around the penis is draped with sterile towels. A towel with a central hole as is used in the arrangement for cystoscopic examinations is a convenient one. The anterior urethra is washed with Oxycyanide of Mercury lotion (1 in 8000 to 1 in 4000 strong) or aqueous solution of Acriflavine (1 in 2000). Now, a well lubricated sterile soft catheter of the maximum size that the external meatus will admit is passed and the bladder emptied. The process has to be repeated every 8 hours *viz.*, in the morning, at night and once during the day—and oftener if the bladder fills more rapidly. After removing the catheter, the meatus must be kept covered in sterile dressings. The bladder must be washed out once in every 24 hours with one or other of the antiseptic solutions and an ounce or two of it left in at the end. The disadvantage of the method is its laboriousness, and what is more important, the fact that repeated catheterization carries with it a greater chance of introduction of sepsis. The alternative that naturally suggests to oneself is to tie a catheter in the urethra—method 2.

● SOFT CATHETER  
TIED IN URETHRA



FREE SPACE BETWEEN MEATUS AND WHERE THE STRAPPING COMES ON TO CATHETER TO ALLOW FREE ESCAPE OF URETHRAL AND PREPUTIAL SECRETIONS.

→ DALMOPLAST STRAPPINGS.

Fig. II.

A good method of retaining an indwelling catheter.

2. *Indwelling catheter*:—A good method of tying in a catheter is shown in Fig. II. I have found the method one of the best, and the catheter does not slip out as it often does with various other methods. It is important that the 3 strips of dalmoplast shown in the figure, come off from the penile skin on to the catheter at a distance away from the meatus. Otherwise, the preputial and urethral secretions do not get free escape and get dammed back into urethra round the catheter. Where the preputial skin

goes back without causing any constriction behind the corona glandis, it is better to keep it retracted. Otherwise, the preputial collection is a potent source of sepsis. The cross strip of plaster used must come only partly round the penis and must be away from the peno-scrotal junction. Otherwise, oedema and ulceration of the skin occur.

To prevent urethritis and cystitis, an arrangement as shown in Figure III is connected to the indwelling catheter. Every two hours or so, the Clips B and C are released, thus emptying the bladder. Then, with Clip C closed, A and B are released when the bladder fills with antiseptic lotion. By releasing again B and C, the bladder is washed out. An ounce or two of the solution is always again run into the bladder, so as to keep the tip and lumen of the catheter constantly bathed in the lotion. All the connections shown, including the receptacle or bottle receiving the outflow, must be scrupulously sterilised before connection. In spite of all care, an indwelling catheter is always accompanied by a certain amount of urethritis. The catheter must be changed every 48 hours. Every time the catheter is removed, the urethra is well washed out, before a fresh catheter is introduced.

In the cases where I have adopted this method, I have found it to work satisfactorily. In one case, automatic bladder was established and urine began squirting by the side of the catheter. Consequently, the catheter was removed and reflex micturition occurred every three or four hours. This case had a fracture of the first lumbar vertebra, with injury to the cord. Partial recovery occurred

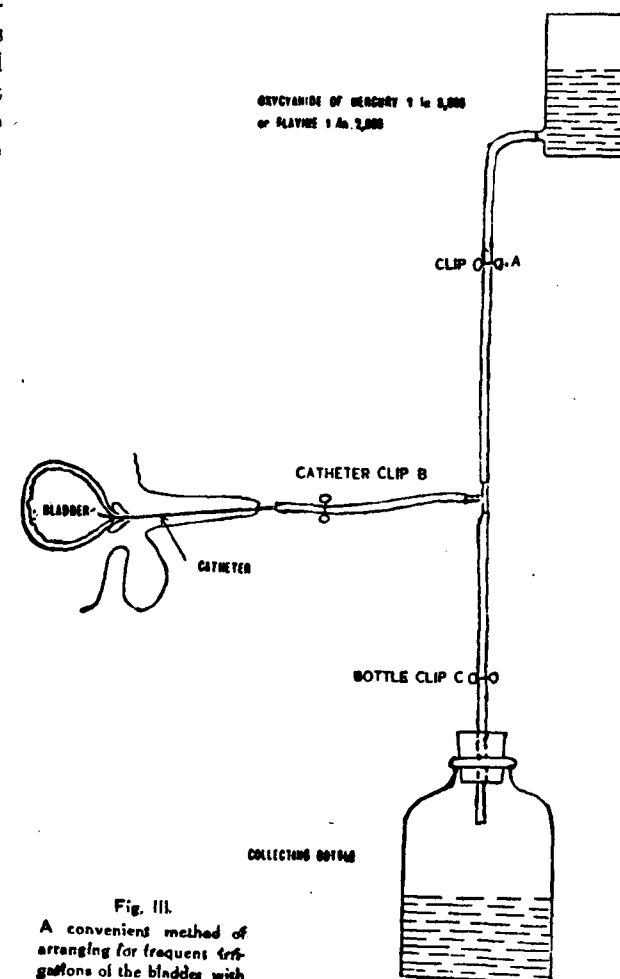


Fig. III.

A convenient method of arranging for frequent irrigations of the bladder with an indwelling catheter.

and the patient was conscious of micturition, only when the stream of urine came in contact with his thigh. He was discharged with a "clean" bladder emptying reflexly.

The disadvantages of an indwelling catheter are: (1) urethritis, (2) danger of sloughing of the urethra at the peno-scrotal junction with the formation of a fistula. This is a very real danger. This occurred in one case. However, in this particular case, the patient came 11 days after the injury, had several catheterizations outside and had cystitis and urethritis when he came. Further, he had improvised an arrangement to prevent wetting his clothes by leading the urine through a cycle-tube to a bottle. This had caused an ulceration at the peno-scrotal junction. All these I think were greatly if not entirely responsible for the fistula that resulted.

However, unless scrupulous cleanliness can be exercised, it is perhaps safer to depend on intermittent catheterization.

One or other of the above methods can be adopted until automatic bladder develops. Even after that, the bladder has to be catheterized now and again, for with reflex micturition the bladder is not completely emptied but some residual urine always remains. If the residual urine is 8 to 10 ounces, the bladder must be catheterized once a day; if less, once or twice a week will suffice, when the bladder is also washed out.

3. *Supra-pubic drainage by a self-retaining catheter*:—The indications for this method are: (1) as an alternative to the method already described, especially when cystitis has also set in necessitating free drainage of the bladder; (2) when automatic bladder does not develop even after a long period of trial with other methods; (3) before discharging patients from hospital in whom periodical catheterization is not possible because of economic or other causes.

The contra-indication to the method is chiefly when the lesion is high up, and the abdominal muscles are paralysed and the supra-pubic skin anaesthetic. If supra-pubic cystostomy is performed in such cases, urine is liable to leak round the catheter and cause rapid and extensive ulceration of the abdominal wall. On the other hand, in injuries at lower levels with functioning abdominal muscles and normal skin, supra-pubic drainage does very well. The area of supra-pubic puncture should be just below mid-way between umbilicus and symphysis pubis. The bladder must be distended with lotion as required, if it is not already distended. Under local anaesthesia, a half to three-quarter inch incision is made down to and inclusive of the anterior rectus sheath, and through a Kid's trocar and cannula a big-sized self-retaining catheter introduced into the bladder. The catheter is either connected to a bottle or clipped and periodically emptied. The bladder can be washed out as required through the tube.

One patient had cauda-equina injury in whom automatic bladder did not develop even after four months. All this time he was kept

comfortable by an indwelling catheter. Later, periodical catheterization was tried for a few days. Prior to discharging him, a self-retaining catheter was introduced supra-pubically. He is attending now as an out-patient, every week, for changing the catheter. This periodical change of catheter is necessary. Otherwise, phosphatic deposits occur on the intra-vesical portion of the catheter and secondary vesical stones form. The patient mentioned is quite comfortable now; no leakage of urine occurs. A skiagram showed no evidence of secondary stone formation. At the time of changing the catheter, the bladder is also well washed out. On the last occasion when the bladder was being filled there was a forcible contraction of the bladder and urine escaped through the urethra. I have now advised him to try and pass urine per via naturales and to remove the spigot only when he fails.

Sometimes as an alternative to sending a patient home with a supra-pubic drainage, he could be taught catheterizing himself. For economic reasons this is not possible in many cases in our country. Where the economic conditions permit, now that boilable silk-wove rubber catheters are available, which stand repeated boiling, the patient can be taught proper methods of catheterizing himself.

In cases where there is constant dribbling of urine and supra-pubic cystotomy is not considered desirable, fitting up a "urinal"—a receptacle between the thighs—is the best possible procedure. It may be here remarked that patients with complete lesion of the cord develop sooner or later a "mass-reflex". By tickling the sole of the foot or some such trivial procedure, the "mass-reflex" can be elicited when the bladder also is emptied. In such unfortunate patients, this fact may be utilised to empty the bladder though catheterization may be required sometimes to draw off any residual urine.

All these patients should be given plenty of fluids to drink. As a precautionary measure against cystitis, Acid Sodium Phosphate grains 20 to 30 should be given 3 times daily. Hexamine is unnecessary. Its administration upsets the stomach in many. As regards a choice of bladder-wash solution, 1 in 2000 solution of Acriflavine is very good and least irritating. Oxycyanide of Hg. (1 in 8000 to 1 in 4000) is also a good solution to use especially in alkaline cystitis. In acid cystitis, Silver Nitrate solution (1 in 12,000 to 1 in 6000) is found beneficial.

The mechanical flushing effect of the wash is perhaps equally if not more important than even the antiseptic action of these solutions. If there is frank cystitis, the wash must be done till the return fluid is clear. If culture of urine shows *B. coli* or streptococci, Prontosil may be administered, keeping a watch for onset of toxic symptoms. Proper attention to general health, the rectum, and skin are essential. While leakage of urine and motion favour the occurrence of bed sore, conversely a bed-sore, a loaded rectum and leaking anus, all increase the chance of cystitis. The onset of any infection causes a severe setback on the chances of recovery of the nervous condition. "Distant

infections are extremely important in cases of spinal injury on account of their power of depressing function of the spinal cord through the general toxæmia. An intercurrent attack of pyelonephritis, cystitis, bronchitis or pneumonia may in a few hours abolish the improvement in spinal function that has been laboriously boarded through months of careful nursing, and such relapses are but very slowly recovered from". (TROTTER and TAYLOR, 1932).

**The Place of Pre-Sacral Neurectomy.**—In some cases, there is evidence of a partial paralysis of the bladder, where the weakened detrusor is prevented from contracting by the "break-action" of an over-acting sphincter. In these cases, the balance between sympathetic and para-sympathetic has been upset in favour of the sympathetic. In such cases, by doing a pre-sacral neurectomy, the sphincter is thrown out of action, enabling the detrusor to contract down and empty the bladder.

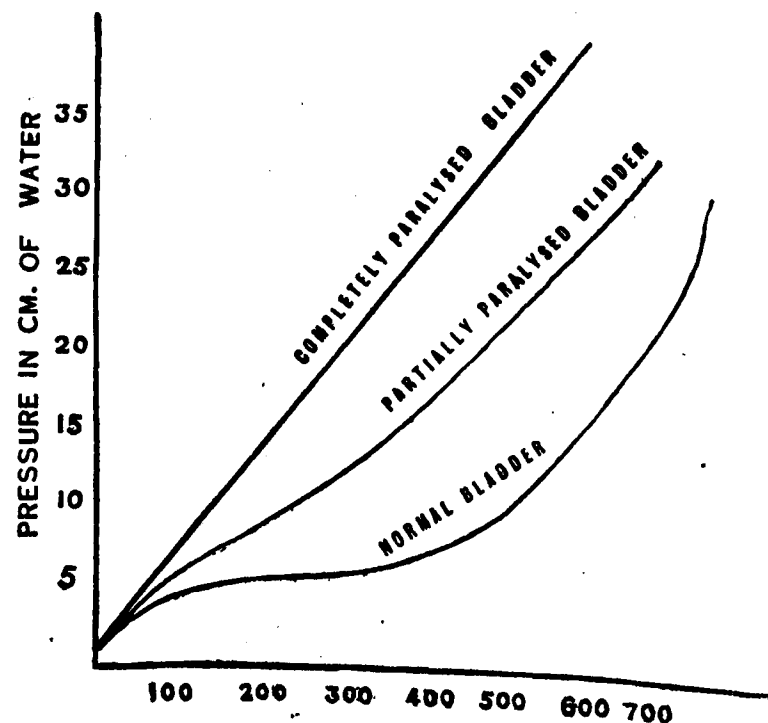


Fig. IV.  
Volume of bladder contents in c. cm. cysto-  
metrogram in different conditions of the bladder. (Schematic).

The evidence that the bladder is partially paralysed has to be got from (1) a study of the nature of the injury, (2) from cystometry where the intra-vesical pressure changes, when the bladder is filled with increasing quantities of fluid, are recorded. In a normal bladder, when increasing quantities of fluid are run in 50 c.c. at a time, little

change in pressure is caused up to 400 c.c. "On the other hand, when the bladder is completely paralysed, it behaves simply as an inert elastic bag showing no tendency to respond to an increase in tension upon its walls or to adapt itself to its contents. When successive quantities of fluid are introduced, the curve of intra-vesical pressure runs along a perfectly smooth line". (BEST and TAYLOR, 1937). When the bladder is partially paralysed, it behaves in an intermediate manner. (See Fig. IV.)

In the presence of such evidence, pre-sacral neurectomy may be tried. The abdomen is opened through a left paramedian incision, and with the patient in Trendelenburg's position the intestines are packed out of the way. The parietal peritoneum is divided in vertical direction in front of the 5th lumbar vertebra and promontory of the sacrum. The underlying tissue which contains the pre-sacral nerve is removed from the surface of the left common iliac vein and lower part of the aorta. The recorded results of this operation are too few to dogmatise on its value.

In conclusion, I may say that the distress due to loss of bladder control in the unfortunate patients with spinal injuries can be greatly minimised by adopting one or other of the methods described.

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# Observations on Tuberculous Disease of the Spine in Madras\*

BY

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**Incidence.**—Tuberculosis of the spine is not only the commonest but also the most serious of tuberculous infections of bones and joints carrying with it, as it does, a high mortality rate varying from 40 to 50%. To show that the vertebrae are the commonest bones to be affected, it is enough if we quote WHITMAN's figures which speak for themselves. WHITMAN cites 4299 cases of spinal caries as against 3329 of tuberculous hip and 3222 of all the other joints put together. Our figures in this department are 188 cases of spinal caries as against 195 cases of tuberculosis of all other joints in the past three years.

**I. Age.**—It is commonly seen in children under ten with a maximum incidence between 2 to 5 years. It is rare over the age of 35 and before the age of 1 but no age is exempt. In children, both sexes are equally affected while in adults, males predominate.

**II. Site, Age and Sex incidence in Madras General Hospital, Orthopaedic Department.**—

1. *Cervical*:—30 M.C.—(Male Child) ... 8  
F.C.—(Female Child) ... 0  
M.—(Male) ... 18 Of whom, 11 were over 35 and amongst these 11, there were 3 over 50.  
F.—(Female) ... 4

## DISLOCATION OF ATLAS FROM AXIS—20 M.

| No. of vertebrae. | 1    | 2 & 3 | 3 & 4 | 3 to 5 | 3, 4, 5 | 3 to 6 | 4 & 5             | 2, 4, 5 | 5     | 5 & 6          | 4, 5, 6              | 6 & 7     |
|-------------------|------|-------|-------|--------|---------|--------|-------------------|---------|-------|----------------|----------------------|-----------|
|                   | 12 M | 38 M  | 35 M  | 7 MC   | 60 M    | 9 MC   | 16 F              | 23 M    | 10 MC | Age not noted. | F with 2 chil. dren. | 50 M      |
|                   |      | 38 M  | 25 M  | 60 M   |         |        | Adult F 16 F 40 M |         |       |                |                      | 4 MC 60 M |
|                   |      | 35 M  | 37 M  | 55 M   |         |        |                   |         |       |                |                      |           |
|                   |      |       | 5 MC  |        |         |        |                   |         |       |                |                      |           |
|                   |      |       | 5 MC  |        |         |        |                   |         |       |                |                      |           |
|                   |      |       | 25 M  |        |         |        |                   |         |       |                |                      |           |

**Summary.**—Dislocation of Atlas from Axis—1.

## VERTEBRÆ AFFECTED.

No. 1—1 M  
 „ 2 and 3—3 M  
 „ 3 and 4—4 M and 2 Children  
 „ 2, 4, 5—1 Male  
 „ 3, 4, 5—3 M and 1 Child  
 „ 3, 4, 5, 6—1 Child  
 No. 4 and 5—1 Male and 3 Females  
 „ 5—1 Male and 1 Child  
 „ 5 and 6—1 M  
 „ 4, 5, 6—1 F and 2 Children  
 „ 6 and 7—2 M and 1 Child

\* Specially contributed to 'The Antiseptic'.

2. *Dorsal*:—91 M. C. ... 20  
 F. C. ... 11  
 M. ... 48  
 F. ... 12  
 Of the males, there were 3 over 50 years of age and of the females, lower 50.

## NUMBER OF VERTEBRÆ AFFECTED.

| 4 and 5 | 5 and 6 | 4 to 6 | 4 to 7 | 4 to 8 | 4 to 9 | 5 to 7 | 7 to 10 | 7    | 5 to 9 |
|---------|---------|--------|--------|--------|--------|--------|---------|------|--------|
| 5 M     | 2 F     | 2½ M   | 15 M   | 8 M    | 39 F   | 60 M   | 40 M    | 12 M | 38 M   |
|         |         |        |        |        | 6 M    |        |         |      |        |
|         |         |        |        |        | 5 M    |        |         |      |        |

| 6 and 7 | 6    | 7    | 8 to 10 | 9 and 10 | 9 to 11 | 7 to 9 | 7 to 10 | 8    |
|---------|------|------|---------|----------|---------|--------|---------|------|
| 5 M     | 3 M  | 13 F | 4 M     | 4 M      | 25 M    | 6 M    | 40 M    | 22 F |
| 24 M    | 20 F |      | 3 F     | 5 M      | 21 M    |        |         |      |
| 3 F     |      |      |         | M        | 27 F    |        |         |      |
|         |      |      |         | 5 M      |         |        |         |      |
|         |      |      |         | 13 F     |         |        |         |      |

| 10   | 9 to 12 | 10 and 11 | 10 to 12 | 11 and 12 | 11   | 12   |
|------|---------|-----------|----------|-----------|------|------|
| 7 F  |         | 3 M       | 91 F     | 13 M      | 22 M | 3 M  |
| 30 F |         | 30 M      | 40 F     | 1½ M      | 11 M | 28 M |
|      |         | 4 M       | 3 M      | 3 M       |      | 32 M |
|      |         | — M       | 24 F     | 4½ M      |      | 30 M |
|      |         | 11 M      | 22 F     | 15 M      |      | — M  |
|      |         | 6 F       |          | 55 M      |      | 32 M |
|      |         |           |          | 7 M       |      | 9 M  |
|      |         |           |          | 25 M      |      | 3 M  |
|      |         |           |          |           |      | 28 M |
|      |         |           |          |           |      | 4 F  |
|      |         |           |          |           |      | 20 F |

3. Lumbar :—70.

|       |     |    |
|-------|-----|----|
| M. C. | ... | 9  |
| F. C. | ... | 9  |
| M.    | ... | 32 |
| F.    | ... | 20 |

## NUMBER OF VERTEBRÆ AFFECTED.

| 1      | 1 & 2    | 2       | 2 & 3 | 3 & 4 | 1 to 3 | 1 to 4 | 2 to 4 | 2 to 5 |
|--------|----------|---------|-------|-------|--------|--------|--------|--------|
| 32 M   | 4 F      | 11/12 F | 30 M  | 42 F  | 13 M   | 31 M   | 18 F   | 10 F   |
| 30 M   | 14 F     | 20 F    | 28 F  | 37 M  | 6 F    |        | 10 F   | 16 M   |
| — M    | 5 or 6 F |         | 30 F  | 30 F  | F      |        | 17 M   |        |
| 14 M C | 40 F     |         | 40 M  | 30 F  | 30 M   |        |        |        |
| 4 F    | 4 F      |         | 14 M  | 2 F   |        |        |        |        |
| 20 F   | 4 M      |         | 21 M  | 55 M  |        |        |        |        |
| 7 M    | 55 M     |         | 40 M  |       |        |        |        |        |
| 3 M    | 25 F     |         | 30 F  |       |        |        |        |        |
| 25 M   | Adult M  |         |       |       |        |        |        |        |
| 45 M   | 5 M      |         |       |       |        |        |        |        |
| 15 M   |          |         |       |       |        |        |        |        |

| 3 and 4 | 3 to 5 | 4    | 4 and 5 | 5         | 1 to 5 |                  |
|---------|--------|------|---------|-----------|--------|------------------|
| 28 M    | 25 F   | 19 M | 20 F    | (Adult) M | M      | Lumbodorsal 25 F |
|         |        |      | 25 M    | 27 F      |        | Lumbar 30 F      |
|         |        |      | 19 M    | 15 M      |        |                  |
|         |        |      | 30 M    | 25 F      |        |                  |
|         |        |      | 18 F    | 13 M      |        |                  |
|         |        |      | M       | 50 F      |        |                  |
|         |        |      | 6 M     | 5 F       |        |                  |
|         |        |      | 24 M    | 15 M      |        |                  |
|         |        |      | 15 M    |           |        |                  |

## 4. Lumbodorsal :

| 11 & 12 IL. | 12th & IL.                                  | 12th DV & 2 LV. | 10th & 12D-12D 2 LV. | 11 & 12 DV 2, 3 & 5 LV. | 12th DV | 10, 11, 12 and IL. | 2L   | 6, 7 DV & 3 & 4 LV. |
|-------------|---------------------------------------------|-----------------|----------------------|-------------------------|---------|--------------------|------|---------------------|
| 9 M         | 9 M                                         | 30 M            | 14 M                 | 5 M                     | 5 M     | A M                | 14 M | F with Spondylitis. |
| 14 M        | 30 M<br>60 M<br>20 M<br>30 M<br>A M<br>25 F | 40 M<br>F       |                      |                         |         |                    |      |                     |

## 5. Lumbar Vertebrae:—

|                            |     |     |
|----------------------------|-----|-----|
| Total number of cases      | ... | 88. |
| Number of cases in females | ... | 34. |
| " " in males               | ... | 54. |
| " " above 35 years         | ... | 11. |
| " " above 50 years         | ... | 4.  |
| " " below 10 years         | ... | 21. |

| LUMBAR 67. |        |        |           | LUMBODORSAL 19           |        |        |           |
|------------|--------|--------|-----------|--------------------------|--------|--------|-----------|
| Vertebrae. | Total. | Males. | Fe-males. | Vertebrae.               | Total. | Males. | Fe-males. |
| L 1        | 11     | 9      | 2         | 10 DV to 1 LV            | 1      | 1      | —         |
| L 2        | 2      | —      | 2         | 10 DV to 2 LV            | 1      | 1      | —         |
| L 1 & 2    | 10     | 5      | 5         | 11 & 12 DV to 1 LV       | 2      | 2      | —         |
| L 3        | 1      | 1      | —         | 12th & 1 LV              | 7      | 6      | 1         |
| L 2 & 3    | 8      | 5      | 3         | 12th 2 LV                | 3      | 2      | 1         |
| L 1 to 3   | 4      | 2      | 2         | 9th DV to 2 L            | 1      | 1      | —         |
| L 4        | 1      | 1      | —         | 12th to 4 LV             | 1      | 1      | —         |
| L 3 & 4    | 6      | 2      | 4         | 10th DV to 1 & 2 LV      | 1      | 1      | —         |
| L 1 to 4   | 1      | 1      | —         | 11 & 12 DV to 2, 3, 5 LV | 1      | 1      | —         |
| L 5        | 7      | 3      | 4         | 10th DV to 3 & 4 LV      | —      | —      | 1         |
| L 4 & 5    | 9      | 7      | 2         |                          |        |        |           |
| L 1 to 5   | 1      | 1      | —         |                          |        |        |           |
| L 2 to 4   | 4      | 1      | 3         |                          |        |        |           |
| L 2 to 5   | 2      | 1      | 1         |                          |        |        |           |
|            | 67     | 39     | 28        |                          | 19     | 16     | 3         |

## III. Incidence of disease in this series (191) according to age in Madras :—

|                           |     |     |              |     |
|---------------------------|-----|-----|--------------|-----|
| 1. Below 1—age 11 months  | ... | 1.  | SEX.         |     |
| 2. Between 1 and 2 years  | ... | 5.  | Male child   | ... |
| 3. Between 3 and 5 years  | ... | 32. | Female child | ... |
| 4. Between 6 and 10 years | ... | 19. | Male         | ... |
| 5. Between 11 and 20      | ... | 43. | Female       | ... |
| 6. Between 21 and 50      | ... | 63. |              |     |
| 7. Between 31 and 50      | ... | 20. |              |     |
| 8. Over 50                | ... | 8.  |              |     |
|                           |     | 191 |              | 191 |

79737

27. 788

## IV. Incidence of complications and new Bone Formation.

| Number of Cases |                                         | Cervical. |    | Upper Dorsal. |    | Low Dorsal. |    | Lumbar. |    |
|-----------------|-----------------------------------------|-----------|----|---------------|----|-------------|----|---------|----|
|                 |                                         | M.        | F. | M.            | F. | M.          | F. | M.      | F. |
| 43              | Abscess                                 | 1         | —  | 2             | 12 | 19          | 4  | 2       | 3  |
| 8               | Paraplegia                              | —         | —  | 2             | 3  | 1           | 2  | —       | —  |
| 20              | Scoliosis                               | —         | —  | 3             | —  | 10          | 3  | 3       | 1  |
| 22              | New bone formation noted in radiograms. | —         | 1  | 1             | —  | 3           | 3  | 10      | 4  |
|                 | Lumbar 14                               |           |    |               |    |             |    |         |    |
|                 | Dorsal 6                                |           |    |               |    |             |    |         |    |
|                 | Cervical 2                              |           |    |               |    |             |    |         |    |
| 22              | Kyphosis                                | 1         | 1  | 1             | —  | 6           | 3  | 6       | 4  |
| 6               | Kypho-scoliosis                         | —         | —  | 1             | —  | 1           | 3  | —       | 1  |
| 121             |                                         | 2         | 2  | 10            | 15 | 40          | 18 | 21      | 13 |

## V. The following had Lesions in other parts of the body in addition to Tuberculosis of the Spine.

|                                      |                                                         |
|--------------------------------------|---------------------------------------------------------|
| 25 M —12 DV and Shoulder L.          | 4 MC—2, 3, 4, DV. Hip and ankle pain.                   |
| 6 MC—9, 10, 11 DV and Hip L.         | 30 M —Dorsal vertebrae multiple lesions in other bones. |
| 6 FC—4 to 10 DV with lungs.          | 30 M —Dorsal vertebrae Lungs, Epididymis, Kidney.       |
| 8 FC—LV and Focus in Rt. Acetabulum. | 30 M —Dorsal vertebrae with Epididymis.                 |
| 8 FC—Cervine - Dorsal.               | 12 of whom 6 children—all below 30.                     |
| 12 M —C 1 and 2 - Lymph glands.      |                                                         |
| 5 MC—CV do                           |                                                         |
| 25 M —L 4 and 5 and Hip disease.     |                                                         |

## NEW BONE FORMATION AROUND THE SIDES OF THE VERTEBRÆ.

|                                                                                      |
|--------------------------------------------------------------------------------------|
| 30 F. noted in L 3 and 4                                                             |
| 56 M. noted in L 3, 4, 5 (No spondylitic change in other bones.)                     |
| 17 M. noted in L I and II.                                                           |
| No new bone in lumbar region after 4 years.                                          |
| 2 and 3 C. V. child 4 F. C. was seen after 1 year.                                   |
| C and upper dorsal—F was seen after 2 years. Complete recovery of bones was noticed. |

## VI. Types of Lesions in 141 Cases of the present series.—

| (1) Central :—                | Male. | Female. | (4) Appendiceal :—                         |   |
|-------------------------------|-------|---------|--------------------------------------------|---|
| Cervical                      | 15    | 2       | Ribs                                       | 9 |
| Dorsal                        | 39    | 20      | Ala of sacrum                              | 1 |
| Lumbar                        | 26    | 6       | Transverse process (dorsal 1 and lumbar 2) | 3 |
| (2) Central and Periosteal :— |       |         | Spinous process (Cervical)                 | 2 |
| Cervical                      | —     | —       | Spondylolisthesis                          | 2 |
| Dorsal                        | 2     | 2       |                                            |   |
| Lumbar                        | 4     | —       |                                            |   |
| (3) Periosteal :—             |       |         |                                            |   |
| Cervical                      | 1     | —       |                                            |   |
| Dorsal                        | 3     | 1       |                                            |   |
| Lumbar                        | 3     | 0       |                                            |   |
|                               | 93    | 31      |                                            |   |

The following specimens are available in the Madras Medical College Museum and are noted here, with the kind permission of the Professor of Pathology.

1. P. 4349—Child. There is affection of the vertebræ from the 12th D. V. to the 1st sacral V (both inclusive). There is collapse of the 1st, 2nd and 3rd L. V. with kyphosis. Posterior longitudinal ligament is stripped up to the 10th D. V. There is pressure over the cord. The dura is thickened.

2. J. 237—Adult—Lumbar caries—Wedging of the 1st and lumbar vertebrae. Dense bridges of bone on the sides and anterior aspect of the 2nd and 3rd, 3rd and 4th and 4th and 5th lumbar vertebrae, and also between 11th and 12th D. V. Intervertebral spaces diminished. Albee Graft is in position but looks fractured in its upper part. It has consolidated. This specimen was re-examined by the Professor of Pathology and the bodies of the vertebræ were histologically tuberculous.

3. J. 163—Bodies of 8th to 12th D. V. affected. Marked kyphosis with apex at 10th D. V. Abscess seen.

4. J. 34—7th, 8th, 9th and 10th D. V. affected. There is collapse and wedging of the 8th D. V. Extreme angular curvature sequestrum inside the spinal canal. Pressure on cord. Heads of 7th to 10th ribs affected. Calcification on the lateral aspects of 8th to 10th D. V. Calcification anteriorly on the bodies of 8th and 9th D. V. Dislocation of the 8th D. V. 11th and 12th D. V. show sub-periosteal foci.

5. J. 150—Tubercular caries with angular curvature. Erosion and nearly complete destruction of the 4th dorsal V. Heads of ribs also eroded. Intervertebral spaces encroached.

6. J. 8—7th to 10th D. V. (both inclusive) affected. Periosteal in type. Shows sub-periosteal multiple foci in the anterior and lateral aspect of the body.

**Conclusions.**—According to WHITMAN, of 1259 cases, 85% of the cases occurred under ten years of age and the incidence appears to be the commonest at the age of five. Of 180 cases by LANDELONGUE 50% occurred between 2 and 5 years and 89% before 10 years.

There is a marked discrepancy in the age incidence in Madras: 57 cases out of 191 occurred before the age of 10; there is a high incidence between the ages of 3 and 5, but there is a level of high incidence between 11 and 20 and between 21 and 50. On account of the very high infantile mortality in this country, it is possible that many weaklings die before the age of 1; there is again a high mortality before the age of 5 from pyrexias—a high percentage of which may be tuberculous. This view cannot be corroborated from autopsy findings as there are very few autopsies done here.

**Sex.**—Boys are more affected than girls.

## LOCALISATION OF THE DISEASE IN THIS SERIES.

|                                                                     |     |    |
|---------------------------------------------------------------------|-----|----|
| Cervical                                                            | ... | 30 |
| Dorsal                                                              | ... | 91 |
| Lumbar                                                              | ... | 70 |
| Sacro-dorsal                                                        | ... | 2  |
| Disease in two regions                                              | ... | 19 |
| Disease in two regions separated by<br>a number of healthy vertebræ | ... | 6  |

Although the dorsal region of the spine is the part most frequently affected, the proportion in the lumbar region is very high. I am not able to offer any explanation to this discrepancy. Of 1355 cases analysed by WHITMAN, 100 were in the cervical region, 854 in the dorsal region and 317 in the lumbar region.

8th to 12th dorsal vertebræ are those most often involved in the tuberculous process; the maximum number is at the 12th dorsal vertebra and in this series 12th dorsal vertebra was involved singly or in combination in 45 cases.

**On the formation of New Bone.**—It is often remarked that there is practically never any subperiosteal new bone laid down except in the later stages. New bone was noted in one-sixth of the cases and in 2 museum specimens. The museum specimens corroborate the clinical findings that multiple affections of the vertebrae are common, that the articulations of the heads of ribs are more often involved than are thought to be.

Regarding the type of lesions, there are more cases of central types, than the periosteal even in the adult. The spread under the anterior longitudinal ligament does occur, but there are more cases of multiple foci in many vertebræ, with probably more destruction in one or two bodies. This is an important finding as absolute immobilisation is essential in all cases during the early stages and only suitable cases should be selected for internal fixation treatment. I have seen spread of the disease to other vertebræ when the patient had an internal fixation graft with absolute immobilisation in plaster bed under the best hygienic conditions.

I am indebted to LT. COL. G. R. MCROBERT, I.M.S., Superintendent, Government General Hospital, Madras, for his kind permission to publish this article.

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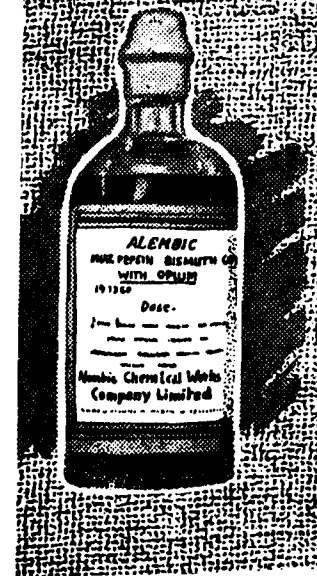
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form of a Lioness.  
XXII Dynasty.

M285

## Treatment of and Observations on 200 Cases of Pneumonia\*

BY

K. K. Bhounick, L.M.P. (ASSAM.),

Koomsong Tea Estate, Doom Dooma, Assam.

PNEUMONIA is one of the diseases that maintain a high figure in the daily Sick-Register. It is also one of the most dreaded maladies that prevail in medicine due to its high percentage of death rate. When we were trying with every known remedy to cure pneumonia, M. B. 693 appeared before us with its all-round qualities as a boon to the medical profession and the suffering humanity. Before the appearance of M. B. 693, many a drug came into use as cure for pneumonia and allied diseases, happened to get a strong foot-hold, either due to the cleverness of advertisement or people trying with one that was near at hand in the absence of better ones, disappeared after some time with the discovery of another so-called better cure. As we all know, pneumonia is a self-terminating disease, prognosis depending upon the type of infection, extent of involvement etc., the milder the infection, the better being the prognosis. So, it is quite natural that a false conception was made by trying a remedy in a number of cases of mild infections, when the same result was unobtainable when tried in a group of severer ones. We, as medical practitioners, caught hold of every remedy that gained ground as a drowning man catching at every straw. We were probably hopeful at the outset getting fairly good results in a few cases only to be disappointed in a subsequent group. I had to treat 200 cases within the last 2½ years when I tried almost all the remedies known and possible to be tried in this place and here I will try to enumerate their respective values. It might seem useless to know the result of other drugs when such a drug as M. B. 693 is available now, and no one is supposed to gamble with the life of a man with a remedy of doubtful value. But, I am sure, it will be interesting to note the relative efficacies of the different remedies used.

The death percentage from this disease is somewhere between 20 to 30% in tea-garden hospitals. In other, better equipped hospitals, the death rate will undoubtedly be somewhat lower where good nursing is available which plays such an important part in the prognosis of pneumonia. In tea-garden hospitals, we have to depend mainly on drugs as nursing available is negligible and the class of people with whom we have to deal are quite in the dark about the value of nursing. "Log-wood rest" which is the principal "treatment" in the management of pneumonia is absolutely impossible to be impressed on coolie patients or their attendants, the so-called nurses. It is the usual experience of all the tea-garden practitioners that the

\* A paper read on 20.4.40 at a meeting of A. F. and B. B. Medical Society Doom Dooma, Assam, and specially sent to 'The Antiseptic' for publication.

patient or the attendants of badly ill patients do exactly what they are told not to do. It is this lack of knowledge and ignorance that make the death figures look so bad in all diseases specially bowel diseases and pneumonia and things will never improve if trained and responsible nurses are not provided for this unfortunate class of mankind. I am sure my friends would be one with me when I say that many lives are lost due to the patients sitting up or trying to go out, the attendants probably helping them to do so in cases with very weak failing heart and the inevitable consequence is known to all.

In my cases, I have used S. U. P. 36, Omnadin, Iodine, Mercurochrome, Prontosil and M. and B. 693, Artificial Pneumothorax Vaccine therapy from culture of sputum from different cases; serum treatment was abandoned as it is impossible to do it here. Intravenous injection of alcohol was not tried by me. It would be convenient to take them one by one.

S. U. P. 36 was used in a majority of my cases—either alone or supplemented by other remedies. S. U. P. 36 was discovered possibly in 1923 and for a number of years had been exhaustively used by almost all practitioners in cases specially complicating the chest. It became the favourite, nay, the hobby of many practitioners as one of the best in chest diseases and as such maintained its position for such a long period. It is not that it is useless now, but is less effective than drugs of the Sulphanilamide group discovered recently. It is still very efficacious in cases of acute bronchitis of children, where it is still matchless, working wonders—but here we are concerned only about its value in the treatment of pneumonia. The result of S. U. P. 36 used alone along with the routine medicines such as pneumonia mixture etc., are shown in Table I, where in a series of 119 cases, 37 deaths occurred, the percentage of mortality being 31%. Where it was considered that S. U. P. 36, used in the routine way i.e., 1 c.c. intramuscularly on 1st, 2nd and 4th days made no appreciable improvement—toxæmia increasing, general condition becoming worse, causing more anxiety—recourse was taken by supplementing it with Iodine, Omnadin or Iodine and Omnadin and M. B. 693. The results are shown in Tables II, III, IV, V respectively. In Table II, 7 cases were treated with S. U. P. 36, and were supplemented by Omnadin; we had only one death, percentage of death being 14.2%. In Table III, Iodine was used as a supplement, the number of cases and deaths being 16 and 7 respectively, making a death percentage of 43%. In Table IV, S. U. P. 36 was supplemented by Iodine and Omnadin, one being used after the other, making no appreciable improvement—cases and deaths being 5 and nil, percentage of mortality being 0%. In Table V, S. U. P. 36 was supplemented by M. and B. 693, with 25% death rate—the cases and deaths being 4 and 1 respectively. The death occurred in a very bad case admitted in the 11th hour.

So, S. U. P. 36, was used as the 1st treatment in 119 cases, and other drugs were supplemented in 32 cases. The death rate was 31% and 21.1%—average being 30% in 151 cases with 46 deaths. Though it is claimed by the manufacturers that perfect restoration to health is

ensured within 3 days of beginning of the treatment, temperature coming down immediately—no such surprising results were obtained—there being much doubt whether it could cut short the duration of the disease i.e. pneumonia. Here, in my series of S. U. P. cases, temperature came down mostly on the 9th day, rarely on the 7th day—secondary rise being almost inevitable, when Omnadin, Iodine etc. were used with fairly good results—Omnadin being more efficacious. Omnadin acts by its antigenic properties which effect a rapid mobilization and increase of the natural defensive forces of the body. It always gave good results in the secondary rise of temperature in all cases of pneumonia. Omnadin was never used as the first thing in the treatment of the cases of pneumonia in my series. It was used in 2. cc. doses, given by intramuscular routes for 4 consecutive days.

Iodine was used as the first thing in only one case successfully, its action probably being of the same nature as Omnadin. It was mostly used in cases with secondary rise, in cases with delayed resolution or cases complicated by cellulitis, abscess formation etc., with fairly good results. The route was intravenous. Lugols' solution was used in all cases. The dose used was 15 ms, 20 ms, 30 ms, 30 ms, 30 ms. in 10 cc. distilled water. The maximum injections were six, given daily. Variation of dosage was made for difference in age, sex and general condition.

One case was treated in the old way of treatment without using any of the so-called specifics with success. The temperature ranged between 103° to 105° F. during the whole course of 9 days—but toxæmia being minimum and general condition being satisfactory, no special medication was called for.

Then comes the group of 4 cases treated with Mercurochrome, the results being shown in Table VIII. It has probably come into use very recently and was tried in 4 cases with 3 deaths. An article appeared in *The Antiseptic*, August '38, contributed by DR. S. A. MALIK, L.M.S., who claimed cent per cent cure with this drug given in 5 c.c. doses of a 5% solution—intravenously. Pot. Perm. douching every other day, ½ gr. in 2 pints of lukewarm water. There was no mention about the number of cases treated or variety of cases or complications. Out of the 4 cases in my group, 2 died within 24 hours as the cases were admitted in a moribund condition and the 3rd had very grave toxæmia with deep jaundice. Even then, it did not make any impression and so was given up. About the douching, I could not make out its rationality.

Then come the much applauded drugs of the Sulphanilamide group, Prontosil being the first of the series to come out in the market with its all-round curative values in various surgical affections and sepsis, special value being made about its action on streptococcus hæmolyticus, and no direct claim being made about its action on pneumococcus. But, on clinical trials, its value was confirmed and it gained its popularity as such. We treated 7 cases with Prontosil and some other supplements with only one death—the percentage being 14.2%.

The results are shown in Tables IX to XII. The case which died had encephalitis and was supplemented by S. U. P. 36, Omnadin, and M. and B. 693. It was a very grave case with a number of complications. Prontosil is still very valuable and its results in the treatment of pneumonia are encouraging. The dosage used was 5 daily injections of 10 c. c. along with 6 tablets a day followed by 1 tablet three times a day if required.

Then comes the series of cases treated with M. and B. 693, the last of my group. M. and B. 693 exerts its action directly on the cocci causing their capsular degeneration. It is excreted very rapidly through the kidneys; hence, wants watching in cases with impaired function of the kidneys. After being administered, it reaches its maximum concentration within about 4 hours which should be maintained by regular and sufficient doses. The longest effective interval of the action of M. and B. 693 is 4 hours. Hence, when no night nurses are available, double the maintenance dose should be given before going to bed. The dose should not be stopped after the temperature and pulse rate have dropped but should be continued for some time more. Relapses respond equally on resuming the treatment. Here, we have treated a series of 35 cases with no deaths shown in Table XIII which shows its wonderful value in the treatment of pneumonia. We have used 6 (3, 2, 1), 3 (1, 1, 1), 3 (1, 1, 1), in mild cases, 7 (3, 2, 1, 1), 4 (2, 1, 1), 3 (1, 1, 1), 2 (1, 1), in more severe cases. In very severe cases, 12 (4, 4, 2, 2), 8 (3, 2, 2, 1), and 4 (2, 1, 1),—there being very much doubt whether such a large dose is required or not. Though our idea is that 26 tablets is rather a big dose, others who tried it at the beginning advocate the use of 50 tablets in a severe case. We give our last dose at about 7 p. m. at night—the hypnotics, if required, being given at bed time sometime between 8 and 9 p. m. During the use of M. and B. 693, a few complications were noticed which require mentioning. Vomiting—which was not severe enough to call for its stoppage; urticaria—which subsided on Calcium by mouth and Adrenalin Chloride solution by injection; lassitude, langour and depression in one case.

The manufacturers and those who made clinical trials forbid the use of any other drugs with M. and B. 693 as useless. Notwithstanding these remarks, we had other medications as well, to be mentioned later. The temperature generally came down on the second day, rarely on the 3rd day—the chart looking like the chart of an acute malarial drop. In one case, there was secondary rise without any accumulation of fluid or pus—where 56 tablets of M. and B. 693 were used. Eventually, we had to take recourse to 4 daily injections of Omnadin which brought about the drop. Among the 35 cases we had, there was no secondary rise—resolution being rapid and complete.

In addition to these, in all our pneumonia cases mentioned in this series of 200 cases, a mixture containing Ammon. Carb, Spt. Ammon. Aromat, Tinc. Digitalis, Tinc. Strophanthis, Tinc. Scilla and Camphor was given. The dose of Tinc. Digitalis varied from dr. i. to ms. xv.—the dose varying accordingly as the pulse rate came down or increased. In most of the cases treated with M. and B. 693, Tinc. Digitalis was not

required in doses more than ms. xv. Paraldehyde was used as hypnotic in the majority of my cases in dr. iii to dr. vi doses, according to severity, with no bad effects during or after treatment. In my opinion, it is the best and the safest, if it can be administered. It was always given per mouth—no case requiring rectal administration. Bromides and Chloral least used. Medinal tablets  $7\frac{1}{2}$  gr. each were used in  $1\frac{1}{2}$  tablets in moderately severe cases. Ortol and Bromidia were used in milder cases. Allonal in cases with pain was used in the same dose as Medinal. Purgatives or douches were rarely required as a majority of my cases suffered from diarrhoea, due probably to the attendants giving them some food in our absence or unmindful moments. Sponging was done in cases with high temperature in a few cases. Barley water, Sago and diluted or citrated milk, Benger's food were freely given. In cases without diarrhoea or tympanites, Horlick's malted milk and ovaltine were given. Glucose drink 25% was given in all cases *ad lib.* Antiphlogistin was very rarely used. Lint. Camph. Co. was given to be rubbed slowly over the chest in all cases. As a stimulant, Bengal Rum in dr. ii doses every 4 hours was given in the ordinary mixtures. Solution of Adrenalin Chloride 1 in 1000 was given in 10 m. dose in most of my later cases. It is the present day idea that death from pneumonia is due to circulatory failure and not heart failure. Adrenalin is the best in keeping up circulation by its vaso-constricting action. But there is a little draw-back in that its vaso-constricting action is transient and is followed by vaso-dilatation which can be counteracted by the addition of  $\frac{1}{2}$  gr. Ephedrin Hydrochloride. This was done in most of my cases. In my former cases, Atropine  $\frac{1}{60}$  gr., Strychnine  $\frac{1}{60}$  gr. and Adrenalin  $\frac{1}{2}$  cc. were given every four hours, if required. Atropine was used for profuse perspiration and heavy secretion of the lungs in doses even up to  $\frac{1}{10}$  gr. Oxygen was not available.

Convalescence was managed by Pot. Creosote mixture and Cod-Liver oil.

The following complications were met with during the course of my group of cases.

(1) Jaundice—treated with fractional doses of Calomel and liver tonics with 50% cure.

(2) Thrombosis—in one case, treated with 3 daily injections of 10 grs. of Sodii Salicylas given intravenously in 10 c.c. of distilled water with success—the nature of its action being unknown to me. We have treated other cases of thrombosis coming on in the course of anaemia in the same way with more or less success.

(3) Laryngeal Paralysis—treated with Strychnine Sulph. injection  $\frac{1}{60}$  gr. B. D.

(4) Encephalitis with one cure and 2 deaths.

(5) Insanity—cured.

(6) Parotitis—cured.

(7) Synovitis—Knee joint—cured.

(8) Ulcers—Mouth, uvula, tongue and fauces—died.

(9) Abscess—Pharyngeal abscess—cured.

(10) Dysentery.

(11) Tuberculosis.

(12) Anæmia.

I have had help from *Digest of Treatment*, January and February issues 1939, from the articles, 'M. and B. 693 in the Treatment of Pneumonia' and 'The last word about Sulphanilamides.'

| I.<br>S.U.P. 36. |         | II.<br>S.U.P. 36<br>+ Omnadin. |         | III.<br>S.U.P. 36<br>+ Iodine. |         | IV.<br>S.U.P. 36<br>+ Iodine.<br>+ Omnadin. |         | V.<br>S.U.P. 36<br>+ M & B 693 |         | VI.<br>Iodine. |         | VII.<br>No injection. |         |
|------------------|---------|--------------------------------|---------|--------------------------------|---------|---------------------------------------------|---------|--------------------------------|---------|----------------|---------|-----------------------|---------|
| Cases.           | Deaths. | Cases.                         | Deaths. | Cases.                         | Deaths. | Cases.                                      | Deaths. | Cases.                         | Deaths. | Cases.         | Deaths. | Cases.                | Deaths. |
| 119              | 37      | 7                              | 1       | 16                             | 7       | 5                                           | Nil.    | 4                              | 1       | 1              | Nil.    | 1                     | Nil.    |
|                  | 31%     |                                | 14.2%   |                                | 43.7%   |                                             | 0%.     |                                | 25%.    |                | 0%.     |                       | 0%.     |

Cases with S. U. P. 36 as principal treatment—151 cases, 46 deaths—death-rate 30%.

Cases with M. & B. 693—35 cases, no death—death-rate, nil.

| VIII.<br>Mercurochrome. |         | IX.<br>Prontosil. |         | X.<br>Prontosil<br>+ Omnadin. |         | XI.<br>Prontosil<br>+ Iodine<br>+ Omnadin. |         | XII.<br>Prontosil<br>+ S.U.P. 36<br>+ Omnadin<br>+ M & B 693. |         | XIII.<br>M & B 693. |         | XIV.<br>M & B 693<br>+ Omnadin. |         |
|-------------------------|---------|-------------------|---------|-------------------------------|---------|--------------------------------------------|---------|---------------------------------------------------------------|---------|---------------------|---------|---------------------------------|---------|
| Cases.                  | Deaths. | Cases.            | Deaths. | Cases.                        | Deaths. | Cases.                                     | Deaths. | Cases.                                                        | Deaths. | Cases.              | Deaths. | Cases.                          | Deaths. |
| 4                       | 3       | 2                 | Nil.    | 3                             | Nil.    | 1                                          | Nil.    | 1                                                             | 1       | 35                  | Nil.    | 1                               | Nil.    |
|                         | 75%.    |                   | 0%.     |                               | 0%.     |                                            | 0%.     |                                                               | 100%.   |                     | 0%.     |                                 | 0%.     |

Cases with Prontosil as main—7 cases, 1 death—death rate 14%.

Total cases treated by other drugs than M. & B. 693—164 cases, 50 deaths—death-rate 30%.

Total cases treated by all drugs—200 cases, 51 deaths—death-rate 25.5%.

My sincere thanks are due to DR. D. M. BERTRAM, my Chief, without whose help, guidance and interest, it would have been impossible for me to write this paper.

## Trachoma and Spring Catarrh\*

BY

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THE daily experience of our Eye Hospital reveals that spring catarrh is generally and very commonly missed for trachoma, by general practitioners, because of similarity of a few subjective symptoms in both the diseases. The form of spring catarrh, if treated for trachoma with 'Silver' and 'Copper', becomes so much spoiled and confused that sometimes it becomes difficult even for experts and specialists to come to a definite conclusion.

The similar symptoms which confuse spring catarrh for trachoma are the following :

Chronic course of both the diseases, recurrence of attacks, involvement of both the eyes in both the diseases, itching, photophobia, lacrimation, both being associated with symptoms of conjunctivitis, presence of the papillæ on the surface of the tarsal conjunctiva in both the diseases, and spring catarrh being not very uncommon in tropical countries.

Before going over to discuss the points of differential diagnosis between the two diseases, I think it worthwhile to give here in brief, the signs and symptoms of spring catarrh.

This is a disease of chronic course, the acute symptoms of which continue during warm weather and disappear considerably or entirely in winter, but in advanced stages a little difference between the severity of the symptoms in two seasons is discernible. The disease occurs chiefly in children, frequently in boys, very infrequently in females and very rarely it is found after the age of forty. The disease goes on for several years, finally becomes extinct and leaves no trace behind.

**Subjective Symptoms.**—Feeling of heat, lacrimation, photophobia, and itching which sometimes becomes worse at night. Spring catarrh is of two varieties, palpebral and bulbar, or rarely both are combined.

In palpebral form, there occur flattened, polygonal, irregular papillæ on the tarsal conjunctiva, the fornix being free from implication, with the thickening of the epithelium over it—making the hue of the conjunctiva milky-bluish white.

In bulbar variety, there is a hard, thickened, gelatinous infiltration all round the limbus. This infiltration begins from the outer and inner sectors of the limbus and goes on involving the whole of the limbus with the advancement of the disease, extending into the cornea for some distance in very advanced stage. There is a typical brownish congestion of the conjunctiva in it.

\* Specially contributed to 'The Antiseptic'.

**Ætiology.**—The definite cause of the disease is yet unknown but various authors have advanced various theories like 'auto-intoxication', infection, disturbance of the function of the glands and reaction of actinic rays etc.

We now come to the discussion of the points of differential diagnosis between the two diseases.

1. An accurate history of the patient will prevent all from committing such a diagnostic mistake. Even in an advanced stage of spring catarrh, when there remains slight difference between the severity of the symptoms in hot and cooler months, the history of the patient as to its characteristic recurrence in hot weather and entire subsidence of the symptoms in winter, leads to a definite diagnosis. That spring catarrh occurs chiefly in children, frequently in boys and rarely in females, is the second factor of the history to assist diagnosis. Trachoma occurs equally in both the sexes and at all stages of the life.

2. The other most important point is that in spring catarrh, the cornea is always free from complications like pannus, ulcers of the cornea and opacities of the cornea, which are very common in trachoma.

3. Severe itching is one of the chief and typical subjective signs of spring catarrh. It is severe and induces constant rubbing of the eyes to attract attention. This itching sometimes becomes worse and worse. The severity of this itching subsides in cooler places or in cooler months of the year, while in trachoma, the itching is neither so prominent nor so severe and does not subside, if present, at any time of the year.

4. It is generally the palpebral spring catarrh which causes a confusion of diagnosis because of the presence of papillæ on the tarsal conjunctiva in both, but there are four important points of distinction between the two which facilitate diagnosis :

- (a) The papillæ in tarsal spring catarrh are flattened, polygonal and there are pavement-like cuttings in the conjunctiva, while, in trachoma, the granules are round, regularly arranged in rows and raised, not flattened. The papillæ in spring catarrh are much larger, broader, harder and paler than in trachoma.
- (b) Due to thickening of the epithelium over the flattened papillæ in spring catarrh, the appearance of the tarsal conjunctiva assumes a milky bluish white hue which is typical in this disease. In fact, if palpebral form is typical, it can never be mistaken.
- (c) Fornix fold of the conjunctiva is absolutely free from spring catarrh papillæ, only the tarsal conjunctiva is implicated while the trachoma papillæ are more prominent on the fornix.
- (d) The palpebral conjunctiva in spring catarrh is not markedly congested, as it always is, in trachoma.

5. In bulbar spring catarrh, the congestion of the conjunctiva assumes a typical brownish tinge. There are brownish patches on the outer side and inner side of the limbus and this tint is so typical that it can sometimes be recognised even from a distance. The congestion of the conjunctiva is homogeneous red in trachoma.

6. There is watering only in spring catarrh and practically no discharge from the eye, while in trachoma, there is presence of discharge even in mild cases.

7. There are no serious complications in spring catarrh while in trachoma, except in very mild type, there are always serious complications present.

8. Trachoma is one of the most contagious diseases while the spring catarrh is absolutely non-contagious.

9. The final and the important clinical sign of the tarsal form of spring catarrh is that eosinophile leucocytes are present in the papillæ in a great number and are even found in secretion. DR. HERBERT has given a valuable mean for arriving at a positive diagnosis. Evert the lid and keep it exposed to air for one minute. Ten minutes later, the lid is again everted and the epithelium is scraped and stained with Eosin, counterstained with Methylene blue. There will be found a great number of eosinophiles.

**Treatment of Spring Catarrh.**—The ætiology of the disease being yet unknown, there is no known cure for it. The treatment is purely symptomatic. Subjective symptoms can be made less annoying by some local remedies and internal use of some medicines.

Smoked goggles or Crooke's B-2 lenses should be given to prevent photophobia and protect eyes from strong light, wind and dust. Correction of errors of refraction if present, is important. Locally, Acetic Acid solution, dilute Acetic acid 10 drops to an ounce, Cocaine 4% solution with Adrenalin Chloride solution relieve the acuteness of the subjective symptoms. Various other drugs have also been advocated as Guaiacol ointment and Salicylic ointment 1%.

Arsenic given internally does some good in some cases but Calcium with Ostelin has given good results, especially in weak patients. Prolonged use of Calcium Phosphate with Calcium Carbonate 3 grains each twice daily with Colloidal Calcium injections has shown encouraging results.

Favourable results are reported in some cases with Radium radiations.

Shifting the patient to a cool place with local and internal treatment gives definite good results.

**Surgical Treatment.**—Combined excision of the tarsus in pure palpebral form gives nice results.

Removal of enlarged tonsils and adenoid if present, helps the treatment favourably.

# Hypertrophied Turbinals and Polypi\*

As a Cause of Nasal Obstruction and their Treatment  
with Electric-Coagulation

BY

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**H**YPERTROPHIED turbinals and nasal polypi as causes of headaches, altered local conditions of ear, nose and throat, and general ill-health do not receive the attention that is due to them. My experience of railway and private work has convinced me that those who have chronically enlarged and congested turbinates and polypi are more susceptible to frequent cough, cold, coryza and headaches and report sick oftener than those who are free from them. I have come to the stage of definitely believing that this condition of the nose should always be looked upon with suspicion and if other signs and history point to their being the likely offenders they should be given particular attention, at least, in the case of a candidate recruited for the running and other duties entailing frequent exposures and interrupted night-rest.

In a batch of 23 young and healthy-looking men for Assistant Station Masters' job on E. I. Railway, no less than 11 were found by me to have this condition in one or both sides. They were sent for treatment before being declared fit. They visited various hospitals, general practitioners and specialists in Calcutta, Chinsurah and Chandernagore and came back with the following result:—

- (1) Some got certificates that they were perfectly fit and that there was nothing wrong with their noses.
- (2) Others got Adrenalin and other drugs of similar nature applied to their nasal mucosa, the effect of which lasted a few hours or so.
- (3) A few had their turbinals and polypii cauterised with galvano-cautery and some other unheard of appliances which resulted in so severe a pain and inflammation that they preferred to lose the job rather than go for a repetition of the treatment.
- (4) Only one man had electro-coagulation done. I examined the parts and found that the surface of the turbinal was fulgrated and not coagulated. Probably the specialist did fulgration. It, of course, needed some more application for obtaining the desired result.
- (5) The case of one robust looking candidate who got a certificate that there was nothing wrong with his nose is illuminating. He desired to go to his home in Howrah district

\* Specially contributed to "The Antiseptic".

AUG. '40] HYPERTROPHIED TURBINALS & POLYPI—CAPT. N. AHMED 715

for treatment. He came back within two days to prove what an ordinary exposure could do in such cases. The candidate lost a near relation, attended his funeral in the night, was exposed and in obedience to a religious rite took a bath on return from the cremation ground. He immediately caught cold and rushed to me with headache, red-eyes, blocked nose, sore-throat, slight cough and a temperature of 99.8°F. We examined him and found his inferior turbinates acutely congested, red, swollen and almost blocking the air passage. The man admitted getting frequent cold and coryza specially after exposures. This case was a timely demonstration of my views on the subject.

The condition looks so unoffending and is so commonly found in India that an inexperienced and casual observer would not pay much attention to it. The deviation of septum is often blamed for the trouble. The problem rightly becomes complicated by the fact that when both the conditions exist, as they generally do, it is hard to decide whether deviation is the cause or the effect of the enlarged turbinals. Whatever may be the case, it is definite that once the enlargement of the turbinates occurs or a polypus exists for some time, it exaggerates the mischiefs and aids the ill-health of nasal origin to persist indefinitely. It is a known fact that in a congenital deviation, the inferior turbinate on the side of convexity atrophies while that on the concavity hypertrophies. On the other hand, I have known cases where shrinkage of hypertrophied turbinals had brought about the correction of the deformity which was noticeable even externally. In such cases submucous resection of septum is a neat and comparatively easy and safe method in the hands of experts but electro-coagulation, of at least inferior turbinal, is safer and easier and should be tried before the septum is blamed and tackled for the obstruction of natural drainage of the nasal cavity and its sinuses and for the general deficient aeration of the system due to interfered breathing.

**CASE:—**A very pretty looking girl aged 16 years had difficulty of breathing and frequent colds and coughs. She was diagnosed as having "weak lungs" and treated as such without relief for months. It was then noted by herself that her nose was getting deformed—the bridge tilting to one side and the soft part spreading. A doctor was consulted for that new trouble. He detected a big polypus on the right side and removed it with a snare. The bleeding was so severe that the patient had to take to bed and took a month and half to recover her former health. The polypus grew again and she lost her power of smell on the right side. I was consulted. Electro-Coagulation was done. She could smell with the right nostril within 48 hours of the removal of the polypus and with a little daily manipulation her septum was coaxed into normal position and her nose on the whole regained its former shape and look. This is only one of the very many typical cases that illustrate the above point.

It is significant to note that some people with huge hypertrophied turbinates and polypi are found apparently in good health and complain of no trouble, while others have serious disturbances of local as well as general nature. Obscure headaches, frequent and obstinate attacks of cold and coryza in and out of season, sneezing and watery nasal discharge, epistaxis, lachrymation with headaches at definite times and intervals, mouth-breathing, tonsillar sepsis and pharyngeal inflammation, the catarrh of the Eustachian tube and middle ear, anæmia, loss of appetite and an anxiety state are all found to be associated with the polypoid growths of the turbinals. Those who have them suffer at one stage of their life or the other, with the sequelæ of the nasal obstruction, the nature and cause of which often remain undiagnosed and unattended to. The symptoms, at least, in the initial stages are, in all probability, due to physical blockade, partial or complete, of normal sinus and nasal drainage which in turn causes the congestion and state of subacute inflammation of the nasal mucosa which further blocks the free passage of breathing and the ducts and cavities of the paranasal sinuses. Repeated occurrence of rhinitis excited by the blockade, in time, gives rise to sinusitis which may not cause actual suppurations for years.

CASE:—I have recently met a case in a woman of 26 years of age who suffered from morning frontal headaches for the last 12 years which used to get relieved by a positional flow of a good quantity of warm, yellowish, thin fluid from the nose. Of late, the headache made its presence felt day and night and her general health got seriously disturbed. A local doctor suspected it of nasal origin and referred the case to a hospital attached to a teaching institution. They advised for observation, X-ray and if necessary, an operation and a stay as an indoor patient for at least a month. Another doctor suggested the removal of polypoid growth by a snare but warned the husband of the resulting bleeding. They consulted me. I found chronically congested nasal mucosa and enlarged inferior turbinate. The left one was bigger than the right. An investigation showed infection of antrum but no frank pus in the sinus. I coagulated the left one first. Six hours after, she had an attack of sneezing and felt coryza coming on. She, then, began to get plenty of nasal discharge at intervals. The stormy sort of cold subsided within 24 hours and with it the headache disappeared. I coagulated the right and then fulgurated the middle turbinal as well. She is a changed woman. She has no headache now. The anxiety state is gone. She is regaining her appetite and lost health and is at present taking a course of Ultra-Violet Rays. This lady also had severe pain in her teeth specially in left upper bicuspids and molars for which the dentist could give no explanation except declaring the presence of slight pyorrhœa. Her severe toothache also disappeared after the coagulation though the pyorrhœa is still present.

This typical case is described to show:—

- (1) that hypertrophied turbinals can and do cause a serious

- (2) that the interference to the drainage of the paranasal sinuses and to the free breathing and consequent congestion of the nasal mucosa caused by them may give rise to prolonged and obstinate headaches and other mischiefs but may not give frank pus in the sinus for years (in my above case for 12 years)
- (3) and also that when looking out for obscure causes of a more serious nature to treat a case of nasal obstruction one should not miss this apparently simple and innocent looking nasal condition.

The anatomy of nose and its sinuses with their relations to the surrounding parts is a complicated affair but its knowledge is very essential for an intelligent understanding of the symptom-complex originating from the common nasal obstruction and diseases. Suffice it here to mention that,

- (1) the continuity of the nasal mucosa with that of ostia and cavities of the para-nasal sinuses makes it easier for the infection to spread from one part to the other.
- (2) the complicated anatomy of the whole region makes it possible for the infection, once started at a point, to be kept up unless very adequately treated.
- (3) the nervous impulses from the mucosa of the nasal cavity and its sinuses reach the brain and get continually reflected and referred to definite regions of the body and the pain combined with the local mischief produces first the anxiety state of a type in which the patient feels neither ill nor well but always ails and suffers, but later on the existing pathology gets the upper hand and the patient feels definitely ill.

**Treatment.**—Frank pus in the sinuses needs efficient and permanent drainage but the subacute or chronic inflammation of the mucosa caused by the kind of lesion under discussion needs:—

1. Interception of impulses reaching from it to the brain as a symptomatic treatment and,
2. Removal of the cause of inflammation, if possible, as a radical cure.

The interception of the impulses is easily carried out by the surface anaesthesia to the sensory nerve endings in the mucosa but the removal of the cause needs varied treatments.

Electro-coagulation meets both the conditions for the treatment of the cause that we are discussing. The process entails anaesthetization of the mucous membrane of the nose and shrinkage of the obstructing mucosa of the turbinals or/and removal of offending polypus, if any, by coagulation. The objection to electro-coagulation with its destructive effects on the nasal mucosa is a genuine one but its importance is not the same in actual practice as it appears in

theory particularly when the case is in the hands of a careful and experienced man. The electro-coagulation for these nasal conditions as I practise it is as follows :—

**Pre-operative Preparation.**—Some receive alkaline nasal washes for a few days, others Calomel at night and Saline in the morning to relieve their pharyngeal and post-nasal congestion. The majority need no preparation.

**Anæsthesia.**—I used 5% Cocaine till 1935 but for the last 4 years I am using 2% Pantocaine and find it in no sense inferior to 5% Cocaine. The patient sits in a comfortable chair. I put a small cotton swab on a stick soaked in the lotion inside the nose right above the inferior turbinate and ask the patient to throw the head as far back as possible. This swab is kept in place from 5 to 10 minutes. I then give a general surface application with the same swab before taking it out. This process is repeated thrice. The patient becomes ready for operation in about 15 to 20 minutes from the start.

**Equipment.**—I use a vulcanite nasal speculum made to my own design, a head-band electric bulb operating on ordinary mains, a sheet-lead plate 8"x6"x1/12" as an indifferent and a single needle as an active electrode, and a treatment table made and wired to my own design and Siemens Thermoflex, D. model diathermy with an attachment made to my order by Siemen's at their Calcutta shops for fulguration and desiccation.

**Method.**—(1) I make the patient sit on the indifferent Electrode placed on the table. A relation is requested to stand behind the patient to keep the head steady if necessary. I find that all the patients when showing the nose invariably throw their heads backwards which is not a convenient and safe position for coagulation. I, therefore, always request patients to keep their heads in a normal erect position and to let me move their heads up and down as I wish. I plug the forehead light to one of the sockets on the table. The machine is started and the controlling switch is kept on zero. I pass the speculum in the nostril and hold it with my left hand. I take the active electrode in my right hand and pass the needle in the nostril and place it on the part. I steady my right hand by placing the little and ring fingers on a convenient part of the patient's face. I, then, signal to my assistant to slowly increase the current. As soon as a greyish colour of the mucosa appears I signal to stop the current. I do not like a foot switch for this work. The whole process takes a second or two. I take the needle out and if the coagulation is of correct degree the needle comes out easily without showing any sign of sticking to the tissues. Some coagulated blood or debris may be formed on the needle and should be scraped out. The patient takes a breath and the process is repeated thrice. One or two such applications are enough to cause shrinkage of the inferior turbinate of one side. The second application is given after the first crust separates and the mucosa assumes the normal colour. This takes from 2 to 7 days.

(2) I thrust the needle inside the mass if it is rather big or polypoid in nature. I do not coagulate the pedicle of a polypus as it causes early separation of slough and if not fully coagulated may give rise to some bleeding. I coagulate the polypus first and then deal with its root.

(3) I avoid touching the middle turbinate if possible, but, when necessary, I use fulguration as it is less painful at the spot and gives lesser amount of inflammation of the surrounding parts than the coagulation does. This avoids the risks that so frequently attended the interference with middle turbinals in the past. I do not use electric snares for the polypii attached to middle turbinals but desiccate them first and fulgurate whatever remains behind.

(4) For the papillomas and fibromas I use coagulation. I have had only a few cases of nasal neoplasms in my practice. In two cases, one of fibroma and the other of papilloma, the whole of the nostril was blocked, nose was deformed and the patients could breathe through the mouth only. In another two cases, the angiomas or bleeding polypii, as they are called, arising from inferior turbinates were protruding outside the nostril when the patient saw me. They needed several sittings for complete removal.

(5) In dealing with angiomas and other bleeding growths, I avoid passing the needle into the mass before-hand. I just prick it and pass the needle in when the coagulation is producing. It needs a certain amount of dexterity of hand and experience to avoid bleeding from such nasal growths when coagulating them. A hæmorrhage started before actual coagulation begins renders the process difficult and sometimes impossible as all the energy is rapidly used up in coagulating the outpouring blood instead of coagulating the growth.

**AFTER-TREATMENT.**—As no special care is required, it is not worth the attention. A little Adrenalin plugging or an Aspirin snuff may occasionally be required.

**Results.**—Every method of treatment has its limitations. Electro-coagulation, being a destructive process, demands great attention to the proper selection of cases and to the necessary details of actual operation. I am very particular in the selection of my cases. I tackle mostly those cases who have had Argyrol packs, Adrenalin applications, Glucose-tampoons and washes and in some cases even surgery unsuccessfully practised. I also take those cases who totally refuse ordinary surgery when clearly indicated. During the treatment I avoid unnecessary destruction of nasal mucosa as far as practicable. My results are, on the whole, very encouraging and are summarised below :—

- (1) No appreciable inconvenience or pain has been noticed by patients during and after the coagulations.
- (2) No hæmorrhage occurred in any case except in one of fibroma which needed an Adrenalin plug.

- (3) Headaches have invariably disappeared where complained of previously.
- (4) Relief of obstructed breathing was noticed in all cases after the very first application. Some patients remarked that they really did not know the normal breathing before the treatment as they had obstructed breathing from their childhood.
- (5) Power of smell which was diminished or altogether absent in some cases returned immediately after coagulation. In the case of the young lady with polypi in both the nostrils, she could smell with the left one which was treated first and not with the right which was not treated by that time.
- (6) The frequent recurring cold and sinusitis disappeared in almost all the cases and hearing where deficient improved in time.
- (7) The conditions of sinuses generally improved after the establishment of natural drainage and the tonsillar and pharyngeal conditions also got benefited.
- (8) The shape of the nose which appears to be flattened in a double sided affection and the bridge inclined to one side in a single one invariably improved to normal, though in a few cases, I had to perform "reconditioning of septum" by digital method as described by Col. Sir Roberts of Diwas (C. P.)

I wish to particularly draw the attention of my colleagues on Railways in India to this condition and its importance in our work.

My thanks are due to DR. S. C. CHATTERJEE, the Chief Medical Officer, East Indian Railway, for his kind permission to let me refer to my Railway cases as well in this professional discussion.

## Contribution to the Ætiology and Treatment of Amenorrhœa

BY

L. M. Szamek, M.D. (VIENNA.),

(Former Director of the Frauenkrankeninstitut "Charite" in Vienna), Calcutta.

**A**MENORRHŒA has its cause in various factors. It is obvious, that no menstrual bleeding can occur, if the uterus has been removed surgically or the generative tissues of the ovaries destroyed by X-rays. Apart from these so-called pseudo-amenorrhœic cases, the genuine forms of amenorrhœa may be brought about by various diseases of the internal organs, such as of the heart, the blood vessels, lungs, liver, kidney, and acute or chronic infections, general systemic toxæmia etc. But the most important factor in amenorrhœa is alteration in the function of the endocrine glands.

Considering the intimate mutual correlations of these glands, which assist or antagonise each other, it has been theoretically known and has even been practically proved for some time, that the cyclic-generative proceedings of the ovaries may be influenced by disorders of any one of these glands. Thus, the various forms of amenorrhœa may be due to functional disturbances of the thyroid gland, the pituitary gland, the Islands of Langerhans and others.

Among these aggregate causes we find another, that is, change in the mode of living—particularly changes in climate.

While working in Vienna, I treated a great number of amenorrhœa cases due to various causes, but almost never came across one in which climatic conditions could be considered the only factor. I became conscious of this factor when starting practice in India. I observed that women who had their regular menstrual periods in Europe, complained of different menstrual troubles, chiefly of oligo-hypo-amenorrhœa very soon after their arrival in the tropics. I quote one case only within my practice as an instructive example of this theme:

Mrs. E. G., 39 years of age, married, an European. Arrived in India at the end of April last. First menstruated, when about 15 years old, periods always regular, at four weekly intervals, flow normal. No pregnancies, no abortion. No previous illness. In June and July, the menstrual periods were irregular, and scanty. She menstruated last between the 9th to 15th August.

26-9-39. Examination:—Nullipara deflorata, uterus retroverted, mobile, of normal size and consistency, nothing particular in the adnexa or in the parametrium, no discharge.

**Diagnosis.**—Retroversion of the uterus, amenorrhœa. The patient was kept under observation and asked to come again in a month's time. 25-10-39.—No change. 6-11-39.—No change. Diagnosis as above.

**Treatment.**—Sexual Hormones. 26-11-39.—Hormone treatment finished. 28-11-39.—Normal menstrual flow. 7-3-40.—Since the treatment, regular menstruation every month.

\* Specially contributed to 'The Antiseptic'.

I have selected the above out of a group of many similar cases in my practice, because of the striking coincidence of the onset of amenorrhœa with the change in climatic conditions. The amenorrhœa was complete. A good number of other patients have had oligo- or hypo-amenorrhœa only, one woman had her worst troubles during the monsoon season.

It is not easy to give an explanation of this observation. I shall investigate these cases further by examining the basal metabolic rate. In the meantime, I suppose the thyroid gland to be at fault. It has been conclusively proved, that the thyroid gland and the ovaries are inter-related and that the thyroid gland is influenced by climatic conditions. I may just mention some cases of hypo- and hyperthyroid disorders (simple goitre, Grave's disease, etc.) which improve on being sent to a hill station. In this connection, I quote another case which illustrates the association between the thyroid gland and the ovaries.

Miss S. J., 20 years of age, of Jewish race, citizen of Calcutta, first menstruated when 10 years old, and has had a normal, regular flow every month. During the last few years, she had suffered from abnormal increase in weight. In order to reduce her weight, the patient was treated by a doctor. She was given Elithyran injections and Incretone tablets (both thyroxin products). In the course of the treatment, the weight dropped from 17 to 15 stones, but at the same time, the till now normal menstruation ceased altogether. For this reason she came to me.

26-11-39. Examination:—Obesity, probably of constitutional character, adnexa and parametrium normal. Morphological blood test—nothing particular. I advised the patient to come again in January. 3-1-40.—The patient lost 2 more stones without any medication but had no bleeding. Sexual Hormone treatment was suggested and carried out. 6-2-40.—Immediately after the last Progesterone injection, she had a menstrual flow, which was followed by another regular menstruation on the third March '40.

In this case, the amenorrhœa followed the administration of Elithyran and Incretone. There is no doubt that this was not only a temporary but a real causal consequence. Such a fact is undeniable, the supposition being that the changed basal metabolism caused consumption of superfluous fat and at the same time also the disorders in the cyclic generative function of the ovaries, producing a complete amenorrhœa. Amenorrhœa is a successful field for the practitioner.

By the fundamental researches of ASCHHEIM-ZONDEK and others, our knowledge about the composition of the sexual hormones is almost complete. We know that the gonado-trophic-non-sex-specific sex hormones which are produced in the anterior lobe of the pituitary gland induces the production of oestrogenic hormone and progesterone in the ovaries. The first is responsible for the proliferative, the latter for the secretory or menstrual phase of the endometrium.

Nowadays, the hormones are manufactured synthetically. This has led to a more accurate dosage for therapeutic purposes. Due to the remarkable work of KAUFMANN and others, we are now in a position to activate even a long standing amenorrhœa; also to procure a new

ovulation, since in one case of KAUFMANN, a woman known to be suffering from amenorrhœa of 2 years' duration, even became pregnant. It is, however, substitutional treatment, which may have to be repeated, but there are cases, and I was lucky enough in all those I had to treat, in which the obtained result was a lasting one after one course of injections only.

To avoid failures, a certain schematic prescription should be strictly adhered to. Injections of 250000 up to 300000 M. U. of oestrogenic hormone divided into 5-6 injections over a period of about 14 days to be followed by about 200 R. U. of progesterone, the last of which to be given 8 days after the oestrogenic injections are finished, is the scheme. With the above treatment, bleeding occurs almost every time. It is real menstruation which can be proved by histological examination. There is only one point against such a treatment on a large scale, this is, the cost, particularly in times of war; but this may improve as the products become easier to procure and produce.

Much is at stake, in the fight against an insult which often procures an inferiority complex, an insult which affects a woman more than one can imagine and for which, I believe, so costly a sacrifice may be excused.

To summarise my conclusions, I have tried to contribute to the ætiology of amenorrhœa as being due in some cases to climatic conditions and to suggest the thyroid gland as responsible for many disorders in the cyclic function of the ovaries.

Secondly, I have tried to stress the necessity of a combined treatment with both the oestrogenic hormone and the progesterone, in order to imitate the physiological state of the endometrium, by which the practitioner may be saved from failures, which cause both his patient and himself many disappointments.

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## Characteristic Tongue in the Diagnosis of Diseases\*

BY

S. K. Roy,

Dantan, P. O., Midnapore.

IN many human ailments, the tongue assumes characteristic changes; hence, tongue plays an important role in the diagnosis of many diseases. There are some physicians and surgeons who do not put much stress or importance in the examination of tongue while examining a patient. But, to all intents and purposes, amongst other things, examination of the tongue as a routine method, should form an important item in examining and diagnosing a case. There are also

\* Specially contributed to 'The Antiseptic'.

some who believe that characteristic changes in the tongue are only peculiar to alimentary diseases, but in reality it is not so. It manifests changes not only indicative of alimentary condition but also of diseases of other systems and organs such as, respiratory, circulatory, nervous systems etc. Hence, while making a systematic examination of a patient, we should scrutinisingly try to find out any changes from its normal condition as regards (i) colour, (ii) secretions, (iii) furring or coating; (iv) movements, (v) size, (vi) scars, fissures or ulcers and (vii) temperature.

It is not possible to describe in full details, within this small space, all the pathological characteristic changes of tongue which occur in diseases, but I should try to confine myself in describing briefly certain kinds of pathological tongue, which are particularly helpful in diagnosing certain diseases.

1. 'Blotting paper' tongue:—Characteristic of advanced ankylostomiasis (hook-worm infection) due to grave anæmia; and sometimes found after profuse bleeding.
2. 'Raw beef' tongue in advanced stage of diabetes mellitus in which the tongue becomes much red and dry looking like raw-beef. This characteristic appearance is due to exfoliation of the superficial epithelium of the tongue because of its drying up owing to polyuria.
3. Blue tongue peculiar to cyanosis as in pneumonia, congenital heart diseases and asphyxia.
4. Yellowish tongue found in jaundice indicative of liver diseases.
5. Black-pigmented tongue peculiar to Addison's disease.
6. Typhoid tongue—In typhoid fever, the tongue becomes dry and coated with creamy fur but its tip and margins look very much red.
7. 'Dyspeptic' tongue—In dyspepsia, the tongue is wholly or partially coated, sometimes with longitudinal fissures here and there on the surface, and the margins are indented.
8. 'Constipation' tongue—In habitually constipated persons, it develops a thick dirty white coating.
9. Toxic tongue, markedly red and dry, sometimes heavily coated and dry and, when protruded, shows tremors.
10. Tongue in stomatitis—In stomatitis, tongue becomes red, profusely moist, ulcerated and painful but in thrush, found in very weak infants, it is at first covered with dry, greyish-white membrane which, when detached, leaves the surface ulcerated and bleeding.
11. In various nervous diseases, movements of the tongue are mainly affected; they become either defective and irregular or lost as in paralysis.

Methinks, it will not be out of place to mention here that from the condition of the tongue, we may get some clue as to the prognosis of a disease. Let me give a few practical points in this respect.

1. If, at the onset of a disease, the tongue gets a dirty coating and is moist and then gradually becomes dry and blackish in appearance, it indicates a serious condition.
2. When, in the course of disease, the tongue gradually becomes moist and clear, it indicates a favourable progress towards recovery.

3. If the central portion or root of the tongue gets devoid of the furring, which was originally present, and becomes bright red instead, it shows a prolonged course and that recovery is not likely to occur soon.

4. If, during the course of a disease, the tongue gets once clear to some extent and then again becomes covered up with a dirty coating, it is expressive of re-inforced infection; or, if the fur of the tongue disappears soon and its surface becomes fissured, glistening and blackish, then it shows a very bad prognosis.

Thus we see, that in a patient, a close examination of the tongue plays the most important role in helping us to form an idea about the diagnosis and prognosis of the disease.

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#### CASES AND COMMENTS

### A Case of the Leaking Aneurysm of The Circle of Willis

BY

Trilok Raj Shah, L.C.P.S.,  
Sir Lakhajiraj Road, Rajkot.

**A** MALE patient, aged 12, Jauriddin Mohadalli, was brought by his father to the hospital and was admitted in the medical wards under DR. R. B. MEHTA's care.

**Complaints:**—(1) Inability to stand. (2) Severe headache.

**Previous history:**—A month and a half back, one day, while he got up in the morning from sleep, he found left side of his face paralysed. 5 days back, he became cold and unconscious in the evening.

**Family history:**—N. A. D.

**Physical examination:**—Inspection: patient was in a semi-conscious condition. Pupils were unequal. Obliteration of the naso-labial fold on the left side and the face. Patient was rousable and answered questions intelligently. Slight retraction of the neck.

**Central nervous system:**—Paralysis of the 3rd and 6th nerve producing unequal pupils and ptosis on the left side. Paralysis of the 7th nerve, obliterating the naso-labial fold on the left side.

**Reflexes:**—Biceps, Triceps, Supinator—all are normal on both the sides. Knee and ankle—absent on both the sides; Ankle-clonus—absent

on both the sides; Cremasteric—present on the left side, absent on the right side. Muscle power—right side upper and lower extremity lost. Muscle tone—right side upper and lower extremity flaccid. Sensation—all normal. Alimentary system—N.A.D.; Respiratory system—N.A.D. Circulatory system—N.A.D.; Genito-urinary system—N.A.D.

**Extra Aids.**—1. *Ophthalmic*:—R. E. veins very much congested. Patches of fresh hæmorrhages near the margins of the discs at 11 O'clock. Discs were oedematous and hazy (acute papillitis) and inflammatory. L. E. everything like the R. E. except the hæmorrhages. No tubercles on the choroids. Ulcers on the lower part of the cornea in the left eye.

2. *C. S. F.*:—No organism detected by Gram's or acid fast method. Negative for Kahn's Test. Chlorides 73.3 %.

3. *Blood*:—Negative for Kahn's Test. Positive for B.T. parasites.

**Differential Diagnosis.**—*T. B. Meningitis*:—In C. S. F., no organisms were found. Free blood was present. Chlorides were increased. Retinal changes (papillitis) and ptosis. All against T. B. meningitis.

*C. S. meningitis*:—C. S. F. shows no Gram-positive cocci; free blood was present, and increased chlorides were against.

*Embolism*:—No lesion of the cardio-vascular system.

*Thrombosis*:—Generally, there is no loss of consciousness and slowly the symptoms begin to abate. There are never remissions of symptoms.

*Cerebral hæmorrhage*:—If it is a pure hæmorrhage that has occurred once, it will have no remissions and exacerbations of symptoms. Fresh hæmorrhages were found on the discs, continuous headache. Retraction of the head. All these points were in favour of leaking aneurism.

*Encephalitis*:—No previous history of fever. Five months back, he developed paralysis of the left side. The present attack started suddenly and with loss of consciousness. No previous history of diplopia. No giddiness or sleeplessness.

*Polio-encephalitis*:—C. S. F. remissions of symptoms. Free blood and increased chlorides were the points against it.

**Treatment.**—We put him on

|                       |     |                      |
|-----------------------|-----|----------------------|
| R Pot. Iodide         | ... | gr. 5.               |
| Liq. Arsenicalis      | ... | m. 3.                |
| Tr. Hyoscyamus        | ... | m. 3 ss.             |
| Add Mist. Pot. Citras | ... | 3 3. 1/3 t. d. s.    |
| 2. Urotropine         | ... | gr. 15. 1/3 t. d. s. |

**Progress**:—Patient was getting well gradually; he was able to move his limbs slowly. On 7-10, again he had two vomits and he was not well. We injected 10 c.c. of Calcium Gluconate. The vomits stopped, and he was slowly getting better, but unfortunately his father took him away on 12-10, and so we were at a loss to follow up the case up to the last.

(With kind permission of Dr. R. B. MEHTA, M.R.C.P., D.T.M. & H., D.M.B.E.)

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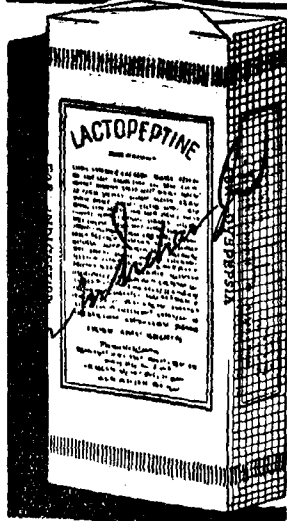
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## EDITORIAL

### Toxic Goitre \*

THE term "toxic goitre" is applied to a disease complex dependent on a deranged activity of the thyroid gland with the consequent production of one of the following states:—(1) an excess of normal secretion; (2) a perverted secretion; (3) a combination of both. The above definition is certainly open to criticism, since it merely implies that an abnormal thyroid gland is an essential condition, but does not rule out the possibility that the cause of the disease is of extra-thyroid origin. It is believed by some that there are two different types of toxic goitre. But, the majority of clinicians, pathologists, and biochemists dispute this and are of opinion that there is no solid ground for this distinction.

It is at present impossible to give any figures of the actual incidence of toxic goitre in any country. Mortality rates are not available in many countries. But, there is no doubt that during the last twenty years there has been a notable rise in mortality. The sex incidence, however, is claimed to be more in females than in males.

With regard to ætiology and pathogenesis, it is well to admit that we do not know the cause of toxic goitre. The older school of physicians regarded thyrotoxicosis as a disease of the central nervous system activated possibly by the adrenals. There is, however, no evidence worth the name to prove which is correct. Other workers have believed that the ductless glands have some relation to pathogenesis. Suppression of the cortex of the adrenals, and adrenal overactivity, thyrotrophic hormone of the anterior pituitary, have all been cited as causes. We have yet no real knowledge of ætiological significance of the other ductless glands in toxic goitre.

\* A summary of the three lectures delivered by CECIL A. JOLL, M.S., F.R.C.S., at the British Postgraduate Medical School and published in the *British Medical Journal* of August 26th, 1939.

Infectious diseases such as influenza precede thyrotoxicosis and a direct ætiological significance has been attached to this fact. There are others again who believe that the thyroid is itself a source of the disease, though whether merely as a result of an excessive formation of the normal hormone, or on the other hand, a dysthyroidism is still unproven. The outstanding fact is that without an abnormal thyroid gland thyrotoxicosis does not occur.

In some forms of thyrotoxicosis, the percentage of iodine content may be reduced to a mere fraction of the normal, but in a few others, the total iodine content may be raised, while in some, the iodine content is within normal limits. Pathological changes in other organs have also been found in thyrotoxicosis. Changes in the pituitary, increase in size and in vascularity of the adrenals, fatty changes, subacute necrosis and simple atrophy in the liver have all been reported.

We shall next consider the clinical features of toxic goitre. The Merseburg triad—namely, goitre, exophthalmia and tachycardia—though usually present at some stage in a majority of the cases of primary thyrotoxicosis, by no means always appear simultaneously. The presence or absence respectively of any one of the common clinical features must not be accepted as proving the existence or absence of thyrotoxicosis.

In primary thyrotoxicosis, the gland is slightly or moderately enlarged. It is usually smooth, such irregularities as exist being due merely to intensification of the normal surface irregularities. The consistence of the gland suggests solidity. Occasionally, however, in the early stages, it has a soft doughy character; while, in old-standing cases, it is sometimes tough or hard. The main arteries of the neck are thrust backwards by the goitre, but even in the hardest gland there is no obscuration of the carotid pulse. The presence of bruits and thrills over the thyroid is significant but not pathognomonic.

The ocular signs are numerous, but their significance can easily be exaggerated. The "staring" eye is seen more often and at an earlier stage than in exophthalmia. The retraction of the upper lid, exposing the sclera above the cornea, described by DALRYMPLE, has some diagnostic importance. Extreme proptosis may occur. NAFFSIGER and BRAIN, who attribute this proptosis to the thyrotrophic hormone, believe that it may occur independently of thyrotoxicosis. But, this may not be completely correct, in view of the fact that in certain cases after thyroidectomy this rapidly recurs. The mechanics of the condition are still obscure. There are many other ocular signs, most of them secondary to the exophthalmia and they have, therefore, little importance individually.

Tachycardia is not a constant phenomenon. It may be purely paroxysmal for months before it becomes persistent, so that at any given examination, a normal pulse rate is not unusual. The extremely high persistent rates are usually of bad significance. Palpitation may

be an early symptom, but yet many patients may deny it, even though their forcible apex beats can be observed at a distance. There is a tendency for fibrillation to develop sooner or later in all toxic goitres and it is more frequent in men than in women. It is a matter of doubt whether there is a true myocarditis in toxic goitre, the consensus of opinion being that there is no change in the heart muscle. It is quite probable that the cardiac lesions are of functional character and based on the abnormal demands on the heart muscle necessary to maintain the increased blood-flow in toxic goitre. In uncomplicated thyrotoxicosis, cardiac hypertrophy is not met with but characteristic forms of hypotonia and dilatation do occur. Cardiac failure, both congestive and anginal, eventuate in a large percentage.

Blood changes described by certain workers as having diagnostic and prognostic value have not proved helpful. It is claimed that there is an absolute and a relative increase of monocytes in primary toxic goitre.

A number of nervous and muscular phenomena are also found in this disease. Excessive fatigue is complained of by many patients. This is due to the increased cost of muscular work in thyrotoxicosis.

Tremor is also common. It is usually fine with a frequency of about 8 to 9 per second. Each finger may have its distinctive rhythm. The tongue may show tremor when the fingers do not. Muscular incoordination is sometimes revealed. Nervousness may be extreme, though many patients deny it though it is obvious. Emotionalism sometimes accompanies this nervousness. At the end, the signs are not uncommon. Myopathies have also been described.

Among the distinctive disturbances noticed in patients suffering from toxic goitre may be mentioned enhanced appetite. Diarrhoea, sometimes constipation and occasional jaundice and ultimate wasting are often seen.

Metabolism of food stuffs is unaffected in toxic goitre in relation to carbohydrates. There is diminished creatine tolerance. The B. M. R. is constantly raised.

There are many clinical types of toxic goitre. There is the hyperacute type which usually progresses without remission to a fatal termination, sometimes rapidly. They do not respond to iodine and succumb in a crisis or in delirium or coma. Great restlessness and diarrhoea and vomiting, are features of this type, signs of cardiac failure except at the end being rare. There is the progressive type which gradually tends to destroy life after a period of years, usually as a result of cardiac complications. The relapsing type is confined to the primary form. The rise and fall in the intensity of the toxæmia may occur regularly, but there is the usual periodism. This type eventually merges into the chronic type. The chronic type is one in which there is persistence of toxic symptoms at a low ebb. It is said that these forms tend to merge into myxœdema. An apathetic type is also described. Lastly, the masked thyrotoxicosis is one in which there

is an association of certain thyrotoxic phenomena with little or no obvious thyroid enlargement. This type is poorly defined owing to the difficulty of deciding sometimes whether a goitre is or is not present.

Prognosis is extremely difficult to discuss divorced from particular methods of treatment. There is no reliable evidence as to the likelihood of spontaneous cure. Many cures regarded as examples of natural cure may be shown to be still chronic thyrotoxics. The prognosis in untreated cases is bad, and sooner or later, cardiac decompensation of a congestive or anginal form eventuates.

We shall next consider the treatment. The best way of treating toxic goitre is by pooling all resources and not by the individualistic clinician. It is better to be treated in special clinics. Rest is the time-honoured method of reducing the activity of the symptoms by relieving all unnecessary strain on the organs. Under rest, the B.M.R. may fall as much as 2.5 per cent for a time.

With regard to Iodine Therapy, it is doubtful if it is ever necessary to exceed a dose of 20 minims of Lugol's solution thrice daily. An equivalent amount of Iodine given as Tincture or as Potassium or Sodium Iodide acts as well. In regard to diet, there is no justification for modifying the diet appreciably. Some believe that vitamin B has a special value in relation to its action in cardiac muscle metabolism. Sedatives are useful. Chloral Hydrate is believed by some to be more effective than Luminal or the Barbiturates. Objection has been taken by some to the use of Chloral Hydrate because of the rather vulnerable liver. Digitalis is used for tachycardia, though indicated in cardiac failure complicating thyrotoxicosis. It is also useful in auricular fibrillation. Quinidine is useful in restoring cardiac rhythm in nearly all cases of arrhythmia, but its real value is post-operatively, where it will regularise and maintain a cardiac rhythm. Blood transfusion is seldom indicated in toxic goitre. Intravenous therapy by the continuous-drip method with 5 per cent glucose in distilled water is of great value in emaciated cases, especially those with marked diarrhoea and vomiting. The various "sera" are without beneficial action. The same may be said of anti-thyrotrophic hormone. X-ray therapy and Curietherapy are said to be able to reduce thyroid activity to any degree. Its disadvantages are its unreliability, the high mortality and the long interval before success is achieved or failure admitted. These, however, should be reserved for cases in which surgical treatment has been refused.

Surgical treatment has many advantages. The high proportion of cases which can be restored quickly to economic efficiency, the low mortality, the rarity of relapses and recurrences are the advantages of surgical treatment. The disadvantages are sequels such as, myxoedema, tetany and damage to the vocal apparatus—all, except the first, being rare with non-surgical treatment. Phase at which operation should be undertaken is an important point. Since all except fulminating cases and those of minor degree come within the scope of surgery, the prime necessity is to decide when the risks are

at a minimum. It is difficult to lay down any definite rule. Speaking generally, however, operation is advisable when Iodine therapy etc. have produced their optimum effect. Restlessness and persistent excitability, combined with diarrhoea and vomiting, are the main danger signals.

With regard to the choice of operation, the objective is to reduce the activity of the gland to a normal level and to prevent subsequent reactivation. This necessitates the removal of about seven-eighths of the gland—the actual proportion depending on the features presented by individual cases. Equally important is the simultaneous control of the arterial blood supply, so that the possibility of recurrence of glandular activity is reduced to a minimum; failure to achieve this accounts for relapse. Preliminary arterial ligation involves much risk and little real advantage. The variation in the size and position of the inferior arteries makes formal ligation a difficult and sometimes an almost impossible feat. Many surgeons of eminence believe that the mortality in "bad risk" cases can be reduced by operating in two or more stages. Subtotal symmetrical thyroidectomy is the procedure of choice. If all the arteries are ligated, it is sufficient to preserve in diffuse goitres about one-sixth to one-eighth. If the main inferior arteries are not tied, a larger fraction of thyroid tissue should be removed and a higher percentage of recurrences faced.

The question of Anaesthesia is also very important. The indications are for an anaesthetic which is non-toxic, avoids anoxæmia in all stages and induces tranquility. Morphine and its derivatives are valuable in moderate doses. Hyoscine may cause uncontrollable excitement in certain patients. Avertin is used extensively in certain clinics and is possibly useful in highly excitable patients. It, however, sometimes induces anoxæmia which cannot be fully controlled. The peculiar anaesthetic problems of the thyrotoxic patient are best met with by a combination of basal, local, and general anaesthesia. The most generally useful series is Morphine or Avertin as a basal anaesthetic, local infiltration with 0.5 per cent Novocaine and Adrenalin, and gas-and-oxygen intra-tracheally.

The primary mortality should not exceed 1 per cent in a well-organised clinic; the recurrence rate should be no greater and the incidence of laryngeal paralysis should be considerably less than that figure. The patient should be able to resume his work within three months. In the case of women, there is no reason why they should not marry and bear children, though pregnancy is usually better postponed for two years after operative treatment. Patients with auricular fibrillation regain normal rhythm in at least 80 per cent of cases with or without the aid of Digitalis or, in certain cases, of Quinidine. In cardiac failure, compensation is restored in most cases, but full compensation is not so likely to follow when rheumatic or syphilitic cardiac lesions complicate the problem.

## GLEANINGS FROM MEDICAL PRESS

## Surgery

**The Importance of keeping Cool a Limb in which Gangrene is threatened.**—MR. DICKSON WRIGHT points out that when a limb has no circulation the only way to stop metabolic processes and the onset of putrefaction is to cool it as quickly as possible, and if there is an open wound the multiplication of bacteria is also kept down. A dog's hind leg will stand a tourniquet for two days if the leg is kept just above freezing-point, and the leg will be undamaged and do all that is required of a dog's leg. If the leg is kept "nice and warm" the usual stinking gangrene develops and the leg is lost. This refrigeration of the tissues is comparable with the refrigeration of blood, which survives three weeks at temperature of  $4^{\circ}\text{C}$ .

MR. NORMAN LAKE when working on the growth of tissues *in vitro* had to determine the survival times of living protoplasm at various temperatures. With isolated tissue growing *in vitro* the side-effects of nervous reflexes, hormones, etc., are entirely eliminated, and it is therefore possible to obtain an accurate curve to represent the survival period. MR. LAKE found that the survival period does not steadily increase with fall of temperature, but that down to about  $15^{\circ}\text{C}$  diminishes rapidly, while from then on to about  $+5^{\circ}\text{C}$  it again increases. After that the period of survival remains fairly constant until  $-5^{\circ}\text{C}$ , when complete disruption of the protoplasmic colloidal structure occurs and the tissue dies suddenly.

The metabolism of any cell consists of a delicate balance between the building up and energy-absorbing process called anabolism, and the breaking-down and energy-liberating process called catabolism. Of these two processes anabolism is more readily affected by the withdrawal of heat, so that at temperatures in the region of  $15^{\circ}\text{C}$ , anabolism has probably ceased entirely while catabolism slowly continues. Below this temperature, however, catabolism slows down until at the zero point it has practically ceased; living tissues can be preserved at this temperature for long periods. At this temperature as six weeks without any signs of diminution of vitality when again incubated.

These results seem to indicate that a limb should be kept cold rather than cool when its blood supply is jeopardized, the cooling appliance being slowly withdrawn down the limb as the circulation returns (if it is a case where recovery is expected). Prejudice against this teaching dies hard; as a junior officer in the last war, MR. LAKE was reprimanded by his superiors for attempting to keep limbs in which the blood supply was depleted by gunshot wounds or ligature of vessels cold, and saw such limbs become gangrenous shortly after heat treatment had been substituted.—*Clinical Journal*.

**Penetrating Wounds of Abdomen Inflicted by Firearms.**—RITTER declares that the severity of gunshot wounds of the abdomen is determined by the degree of visceral damage, the amount of hemorrhage and the time elapsed before surgical intervention. Visceral damage includes contusions, abrasions, penetrations, perforations and lacerations. The factor of the degree of visceral damage is out of control of surgery; therefore certain injuries will always carry a high mortality rate. Damage to a hollow viscus is more serious than to a solid one. A perforation of the stomach or small intestine is not as dangerous as one of the large bowel. The greater the number of perforations the more difficult and time consuming is their isolation and suture. Hemorrhage is partially under surgical control. MASON has suggested that shock in these cases is the direct result of hemorrhage. The time factor is under control of the surgeon to a much larger degree. The mortality rate increases with the time elapsed between the occurrence and operation. The course of a bullet through the abdomen may be almost fantastic, and because many of these patients appear to be in most excellent condition on admission, laparotomy is deferred. Roentgenographic and fluoroscopic study in showing the position of the bullet is often a definite aid. These facilities may also aid in tracing the course of the bullet when there is no point of exit and may give an indication as to what viscera were probably injured. Laparotomy remains the only sure method of diagnosing perforations and this should be done at the earliest time possible. Too early operation when shock exists may be just as disastrous as delayed operation in cases of hemorrhage. The two main causes of death in these injuries are extensive hemorrhage associated with shock and peritonitis. The use of blood transfusions is of paramount importance. Perhaps the best time to begin the transfusion is immediately after the abdomen has been opened and the bleeding points have been secured. Spinal anesthesia is to be avoided because it may produce shock. Ether is the most widely used because it is neither time consuming nor inadequate for exploratory laparotomy and gives the maximal relaxation. The author used Pentothal Sodium in only two cases and the results were so satisfactory that he is tempted to encourage its use. The necessity for speed (the operative time should not be longer than one hour) should not result in hasty exploration. Drainage of the peritonium is not advocated. Postoperative treatment is most important. It should include all or most of the following measures; antitetanic and gas bacillus serum, external heat, carbon dioxide plus oxygen insufflations, prone position until shock is recovered from, sedation, nothing by mouth until normal peristalsis is restored, venoclysis and hypodermoclysis (governed by careful water balance consideration and blood chemistry determinations), blood transfusions and the control of distention and vomiting by rectal tube, gastric lavage and duodenal drainage. Gunshot wounds of the abdomen inflicted from a distance should be treated expectantly.—J. A. M. A.

**Whole Blood as a Means of Preventing Adhesions and Peritonitis.**—On the basis of the results obtained in Jerusalem in 1936, when many patients were admitted to hospital with severe abdominal wounds, and when it was observed that there were many recoveries from emergency coeliotomy even although in a number of cases the bowels were torn open, and faecal matter floated freely in the peritoneal cavity, E. G. JOSEPH (*Annals of Surgery*, April, 1940, 111, 618) has carried out experiments in rabbits and dogs to test whether or not it was due to the presence of blood that so many serious cases escaped infection and peritonitis, whereas so often after a systematic resection of the bowel carried out in a perfectly dry field these complications do occur and terminate fatally. The experimental animals were divided into three groups:—(1) The abdomen was opened and some faeces inserted into the peritoneal cavity, and the wound closed; (2) the same procedure was followed as in group 1, but in addition the sigmoid colon was incised transversely and closed with two rows of catgut sutures, and (3) the same procedure as in group 2 was carried out, but fresh blood was inserted into the peritoneal cavity—in the case of dogs, 50 c.cm. The blood was administered in the following manner:—a catheter was left at the angle of the wound when it was being sutured; a suture was inserted at this site but not tied; blood was taken from the animal and mixed with citrate solution, and injected through the tube; the catheter was then withdrawn and the suture tied. The results show that in the first group one rabbit out of the experimental ten developed peritonitis, and neither of the two dogs; in the second group peritonitis developed in 100 per cent. of the rabbits and in 85 per cent. of the dogs, and in the third group, in which only dogs were used, peritonitis occurred in 25 per cent. On the basis of these findings the author has used the method in human beings, and cites among other cases that of a young man with a perforated duodenal ulcer—the abdominal cavity was filled with gastric contents and intense inflammation was present. After coeliotomy 200 c.cm. of blood was withdrawn from the patient, mixed with 30 c.cm. of a 2 per cent. sodium citrate solution, and run into the abdominal cavity. The patient made an uninterrupted recovery.—*The Practitioner*.

**Transverse Abdominal Incisions.**—The first requirement of an incision in abdominal surgery is that it should give a free exposure of the field of operation, and this is of especial importance in war surgery. Speed and gentleness, the criteria of good operating, cannot be achieved if the surgeon is working in a confined space. But the anatomy and physiology of the abdomen must be respected if no permanent damage is to be done to it. For general purposes the mid-line and paramedian incisions are deservedly popular, particularly the latter, but there are two objections to them. They depend on deep muscular relaxation if the lateral parts of the abdomen are to be reached: and the tendinous and fascial sheets are divided at right angles to the direction of maximum strain so that there is a strong

tendency for disruption of the wound during healing. Why not open the abdomen through a transverse incision? The idea is not new but has never become popular. A recent account by HUNTER of a series of cases in which transverse incisions were used for pelvic operations raises the question whether this approach might not be used for general abdominal surgery and particularly for wounds. The rectus muscles were not cut across but were merely retracted in most of HUNTER's cases and these are of small interest to the surgeon because such an incision cannot give a sufficiently free exposure for an exploratory laparotomy. In 27 cases, however, the recti were divided. The exposure was excellent and the ultimate result apparently very satisfactory, although incisional hernia seems not to have been avoided completely. HUNTER says that it is unnecessary to sew the rectus to its sheath before cutting it since there is very little retraction, and when closing the wound it is sufficient to suture the sheath alone in order to obtain satisfactory union of the muscle. Such an incision has great advantages. It is made along the lines of stress in the abdominal fasciæ and because the rectus is divided the wound falls open easily. It can be extended into the loin on each side by cutting the oblique muscles parallel with the nerves, and the fixed parts of the colon would thus be freely exposed, a point of importance in war surgery. The main disadvantage of this incision is that it is slow to make because of the free hæmorrhage from the cut muscles.—*The "Lancet"*.

**The Z-Incision for the Relief of Scar Contractions.**—J. S. DAVIS and E. A. KITLOWSKI (*Annals of Surgery*, June, 1939) report the use of a Z-plastic operation in the treatment of scar contractures. The outline of the incision is roughly that of a Z. The central line of the Z incision is made "along the most prominent part of the bridge or web" of scar tissue; the arms of the Z, are parallel to each other and at angles of about 60 deg. to the central line; with this type of incision two broad based triangular flaps result, with the bases opposite each other. The flaps are fully mobilized and all "binding scar tissue" underneath them removed as completely as possible. These flaps are then transposed "so that their outer margins approximate and the tips of the flaps touch the outer corners of the bases of the opposite flaps"; the flaps are sutured without tension with a few one-end mattress sutures of fine black silk "at strategic points"; the rest of the closure is made with horsehair. By this procedure the central line of the incision is elongated, the angles are blunted (to approximately 90 deg.), and the central line lies "transversely across the scar pull."

Scar contractures with bridles or webs, the authors note, follow the healing of extensive burns or tissue losses, as a rule, and they may occur in spite of careful treatment of such conditions. They occur most frequently in the axilla, where the extremities join the trunk, in the region of joints, on the hands and feet, in the mouth and on the face and neck. Plastic operative work on such contracted scars should not be undertaken for at least six months after healing

has occurred; even a longer delay may be desirable with physical therapy "of one sort or another" in the interval. When operation is necessary, the authors have found that the Z-plastic procedure gives results that compare favourably with those obtained by other methods, without "additional scarring of unscarred areas"; the method can be used also in some cases in which skin grafting would be difficult or impractical.—*The General Practitioner*.

**Carbamide (Urea) Treatment in Wound Healing.**—Carbamide is a potent agent for dissolving protein substances, such as dead tissues, and possesses a mildly bactericidal and non-irritating action. Its successful use has been demonstrated in the treatment of chronic otitis media and in the dressing of wounds and fistulae. The substance can be used either in the form of a saturated, aqueous solution, or in the crystalline state, depending on the state of moisture of the wound. The chief disadvantages of the crystals, however, are their tendency to dry up and cake, and the difficulty of maintaining them in contact with some wounds. For these reasons a urea paste has been compounded, and its preparation is described by H.G. HOLDER and E. M. MACKAY (*Annals of Surgery*, July 1939, 110, 94); 500 gm. of carbamide (crystal urea, DUPONT) is dissolved in 300 c.cm. of hot water—half of the solution is then placed in another container and 25 gm. of powdered first-grade gum karaya (India gum) is dissolved in it with vigorous stirring. The resulting paste is then autoclaved for sterilization. To the other portion of the original solution 5 gm. of eucupin dihydrochloride is added and this is mixed with the autoclaved carbamide and gum karaya solution, and made up to a final volume of 1,000 c.cm. On cooling, the paste is ready for use. The object of adding the eucupin is that in some cases pain occurs with the use of carbamide, and eucupin (iso-amyl-hydro-cupreine) possesses bactericidal and local anæsthetizing properties. When the carbamide solution or crystals are used eucupin can be mixed in a concentration of 0.4 to 0.5 per cent. if pain is caused by the application of the carbamide. The authors, who have used carbamide in the treatment of all infected and in some relatively fresh wounds containing dead tissue, state that the granulation tissue produced thereby is healthier and more highly vascularized than that produced by other forms of treatment, and being pink and flat is ideal for grafting.—*The Practitioner*.

**Dried Plasma for Transfusion.**—EDWARDS and his co-workers point out that the formation of blood banks has made available a considerable supply of plasma. It is the plasma protein element of a blood transfusion that produces the desired effect; the erythrocytes play a secondary part. Plasma will keep indefinitely as compared with stored blood and no grouping of the recipient is necessary. Blood may be taken from donors for the purpose of obtaining plasma, in which case the stored blood should be kept undisturbed for a period of from three to four days to allow the maximal separation of plasma

from the erythrocytes. Most of the plasma the authors used has been obtained from bottles of citrated stored blood about fourteen days old. If these bottles have not been disturbed since the erythrocytes have settled, practically clear plasma can be withdrawn without any disturbance of the layers in contact with the erythrocytes. A slight discoloration by hemoglobin is of no disadvantage and its administration seems to be innocuous. Although administration of pure plasma has been satisfactory, if the plasma could be dried, storage and transportability would be greatly simplified and the possibility of bacterial growth greatly reduced. The authors devised a continuous feed plasma drier. The plasma is suctioned over in a thin stream into a special container and there dried. It is removed later under aseptic conditions and stored in ampules. About 8 Gm. of the dried product is obtained from 100 cc. of citrated plasma. The dried plasma is dissolved in the ratio of 8 Gm. to 100 cc. of warm distilled water; dissolving 20 Gm. in 250 cc. of distilled water gives the plasma protein value of 1 pint of citrated blood. The administration of the dried plasma by dissolving it in double the quantity (500 cc.) of 5 per cent dextrose solution in distilled water, so that the fluid factor is increased for cases of shock, has been tried and found satisfactory. The ideal plasma for administration is group AB (1) plasma, but the plasma of any group may be given to any patient up to 500 cc. Group AB (1) plasma can be administered in any amount. Dried plasma can be stored at room temperature. It apparently remains effective indefinitely. The authors state that their experience is not great enough to assess the full value of the method, but its anti-shock property appears to be comparable to that of whole blood. It seems to be ideal for use in emergencies, when no supply of blood is easily available, and in war surgery. Its effects in wound shock and postoperative shock have been equal to those following a blood transfusion. In the treatment of severe burns and scalds their results confirm the already established claims of the efficiency of plasma infusions. In view of the possibilities of extensive demands being made on the resources of those who have to treat wound shock, the authors believe it imperative that any line of treatment claiming to be of value should be fully evaluated at the earliest opportunity.—*J. A. M. A.*

### Medicine and Therapeutics

**The Ever Perplexing Thymus.**—RAMSAY MOORE, M.D., Dallas, Texas, writes:—

The purpose of this paper is to call attention to what seems to be a definite relationship between the symptom-producing thymus and allergic reactions as seen in infancy and early childhood.

Limitation of space will not permit presentation in detail many of the theories and a few of the proven facts concerning the physiology and functions of the thymus gland. This organ with its anatomy, functions, physiology and pathology has caused no small amount of

controversy among physicians for many years. For example, some are of the opinion that it is a ductless gland, while others contend that it is part of the general lymphatic system. Its enlargement has been given credit for many symptoms, varying from cyanosis to sudden death, while some observers contend that the gland is functionless and never causes trouble. There is an excellent discussion of the thymus with complete references written by A. GRAEME MITCHELL in BRENNEMAN'S Practice of Pediatrics. So with prominent authorities differing so markedly in their opinions it seems unwise for me to attempt to present any definite conclusions. I shall rather leave my findings open for further study and discussion.

The thymus has had many functions assigned to it but few have been definitely proven. It has been credited with influencing bone development, increasing coagulability of the blood, regulating blood pressure, specific action on the genitals, specific action on the nervous system, influencing body growth, producing a toxin that causes sudden death, and of being functionless.

There are, however, certain rather definite symptoms that seem to be produced by or to accompany thymic enlargement, and some of these symptoms are so consistent that they might be termed classical. Listing these symptoms in order of their consistency I would place:

1. Cyanosis, varying from a slight blueness of lips, face and head to deep cyanosis, intermittent in type, lasting from a few seconds to as many minutes and then clearing. Any cyanosis in infancy that is constant, suggests to me some other condition than thymic enlargement, such as congenital heart disease or atelectases.
2. Impaired or disturbed respiration ranging from a mild irregularity to real dyspnea. This, too, is intermittent in character, and at times wheezy in type, giving rise to thymic asthma so-called.
3. Stridor, varying from an unusual noisy respiration to real stridor and frequently accompanied by a brassy cough. The stridor is more or less continuous, though at times intensified.
4. Choking, suffocating or so-called "breath holding" attacks, frequently occurring during or shortly after feedings.
5. Gastro-intestinal distress in the form of gaseous distention, twisting, squirming, spitting, occasional vomiting, and a generally irritable and fussy baby. This group of symptoms seems to be associated with feeding and is frequently referred to as thymic colic.

Several theories have been advanced as to the cause of this entire group of symptoms. Pressure on the trachea and surrounding organs has been offered to explain the symptoms, and JACKSON and PANCOAST have demonstrated this pressure possibility. It has been suggested that the thymus produces a toxin which causes a vagotonia, which in turn could produce these symptoms. It is my contention that the symptoms are secondary to some as yet unrecognized pathological condition, and the thymic enlargement is simply a part of that

condition or accompanies it. Certainly it may be said without fear of contradiction that the last chapter in this particular phase of the thymus is yet to be written.

Diagnosis of a symptom-producing thymus with our present knowledge depends upon the symptoms I have mentioned and a very thorough differential diagnosis with confirmation by X-ray of glandular enlargement.

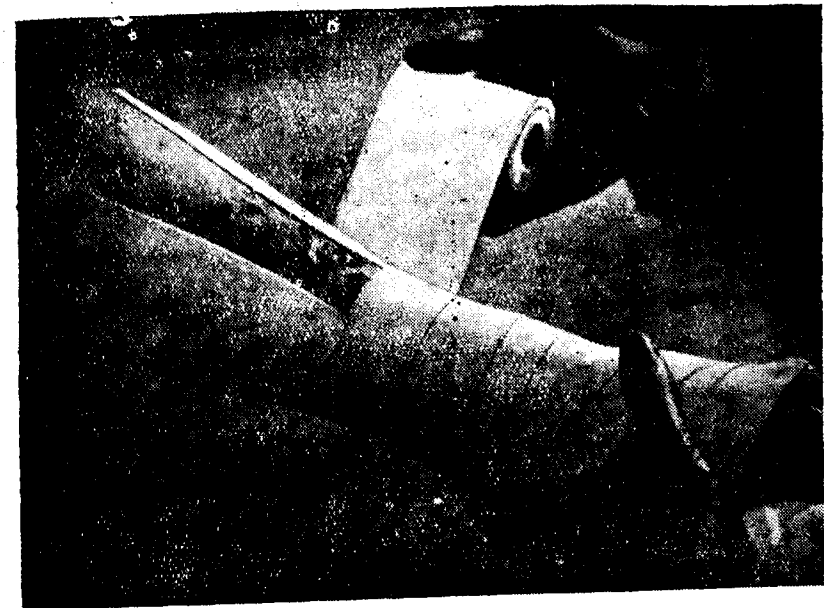
Differential diagnosis is of extreme importance, ruling out very carefully such conditions as congenital heart disease, cerebral hemorrhage, atelectasis, a foreign body in the trachea, spasmophilia, pneumonia, catarrhal laryngitis, laryngeal diphtheria, and so forth.

Treatment, at present, seems to depend entirely on radiation with either X-ray or radium, with X-rays being by far the treatment of choice.

**Gentian Violet for Threadworms.**—New remedies for the cure of threadworm infections are liable to enjoy but a brief popularity since relapses are frequent, and, what is less recognised than it should be, familial infestation leads to early reinfection. Unfortunately the most efficient remedies so far suggested have involved long courses of enemas which are in many ways undesirable for children, difficult to carry out on a large scale in the family circle or in institutions, and if Hexyl-Resorcinol is used (certainly the most reliable rectal medicament to date) definitely expensive. For some time past the United States Public Health Service has been issuing a series of valuable studies on oxyuriasis, and the National Institute of Health anal swab for diagnosis and for checking cure has featured in many of these. Armed with this weapon WRIGHT and BRADY now bring forward evidence that in gentian violet there has at last been found a relatively cheap, safe and practical method of getting rid of threadworms without the use of enemas. Four methods have been tested. In the first  $\frac{1}{2}$ -grain "enteric-coated" tablets of gentian violet were given to adults three times a day before meals for ten consecutive days. Children received smaller doses, based on a general rule of gr. 1/6 per day for each year of apparent age, divided into three doses. In a series of 107 patients 91 per cent. gave negative swab results ten to twenty-one days after the completion of treatment. Since the life cycle of the threadworm may be as long as twenty-one days a second group of patients were given the tablets for eight days, then rested for a week and given the tablets again for eight days. Of 30 patients treated in this way 27 were negative in swab examinations made between the fourteenth and twenty-first day after the end of treatment. A third method involved similar dosage but examination was deferred until between the forty-second and the forty-eighth day after the end of treatment; here only 58 per cent. were negative. It was felt that the efficiency of gentian violet might be improved by varying the coating of the tablets so as to ensure complete disintegration. A fourth group of patients were therefore given tablets with

a water-soluble coating an hour before meals for the sixteen-day course with a week's rest in the middle. Here 79 per cent. of patients were negative for threadworm ova on seven consecutive daily swabs taken from the forty-second to the forty-eighth day after the end of treatment—a rigorous test it will be agreed. Some of the positive results may have been due to reinfection in the environment from which the patients came, so that if all infested individuals in the patients' families were treated at the same time better control might be obtained. A small proportion of the patients treated suffered from nausea, vomiting, diarrhoea and abdominal pain but these complications quickly disappeared when the dosage of gentian violet was reduced or omitted for a day or two. The drug should not be used where there is concomitant infection with the round worm (which must be got rid of first), moderate to severe cardiac, hepatic or renal disease, Alcoholism, or diseases of the gastro-intestinal tract. WRIGHT and BRADY conclude that gentian violet is "eminently superior to some and superior to all the other methods of therapy tested under similar conditions." Previous publications have shown that such conditions, including the use of the anal swab, are strict, so that "because of its relative cheapness, its ease of administration and its relatively high degree of efficacy" gentian violet appears to hold the field for the treatment of threadworms, especially when familial infestation is present. The sixteen-day course with a week's rest in the middle is the method of choice and tablets with a water-soluble coating should be used.—*The Lancet*.

**Another Test for Obstructive Jaundice.**—The name of biochemical tests intended to distinguish between obstructive and toxic or infective jaundice is legion. Most of them are based on some recognised function of the liver. Those in most common use are probably the van den Bergh reaction, the tests for bile in stool and urine, the galactose-tolerance test, and lately the estimation of plasma phosphatase. The rationale behind these tests is fairly well understood. A new test emanating from France is not so well founded in theory, but it claims such a sharp differentiation between obstructive and toxic jaundice that it may prove a useful adjunct to the investigation of these cases. The blood-serum is heated with Sulphuric Acid and then Phosphoric Acid and Vanillin are added. A colour develops which is very intense with the sera of cases of obstructive jaundice and much less intense with those of toxic jaundice. The authors are not certain what substance or substances are responsible for the reaction, but they are in no doubt as to its clinical usefulness. So many claims have been made in the past, however, for tests for obstructive jaundice, that more information will be required, with trials by other investigators, before the "reaction sulpho-phospho-vanillique" can be regarded as of established value in the differential diagnosis of jaundice.—*The Lancet*.

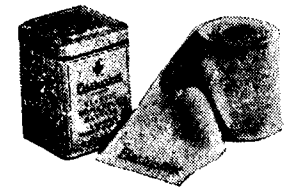


## 'Elastoplast' in the treatment of Varicose Ulcers

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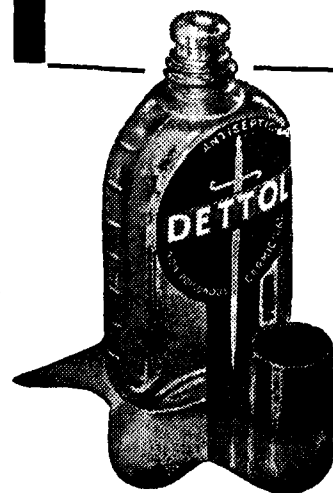
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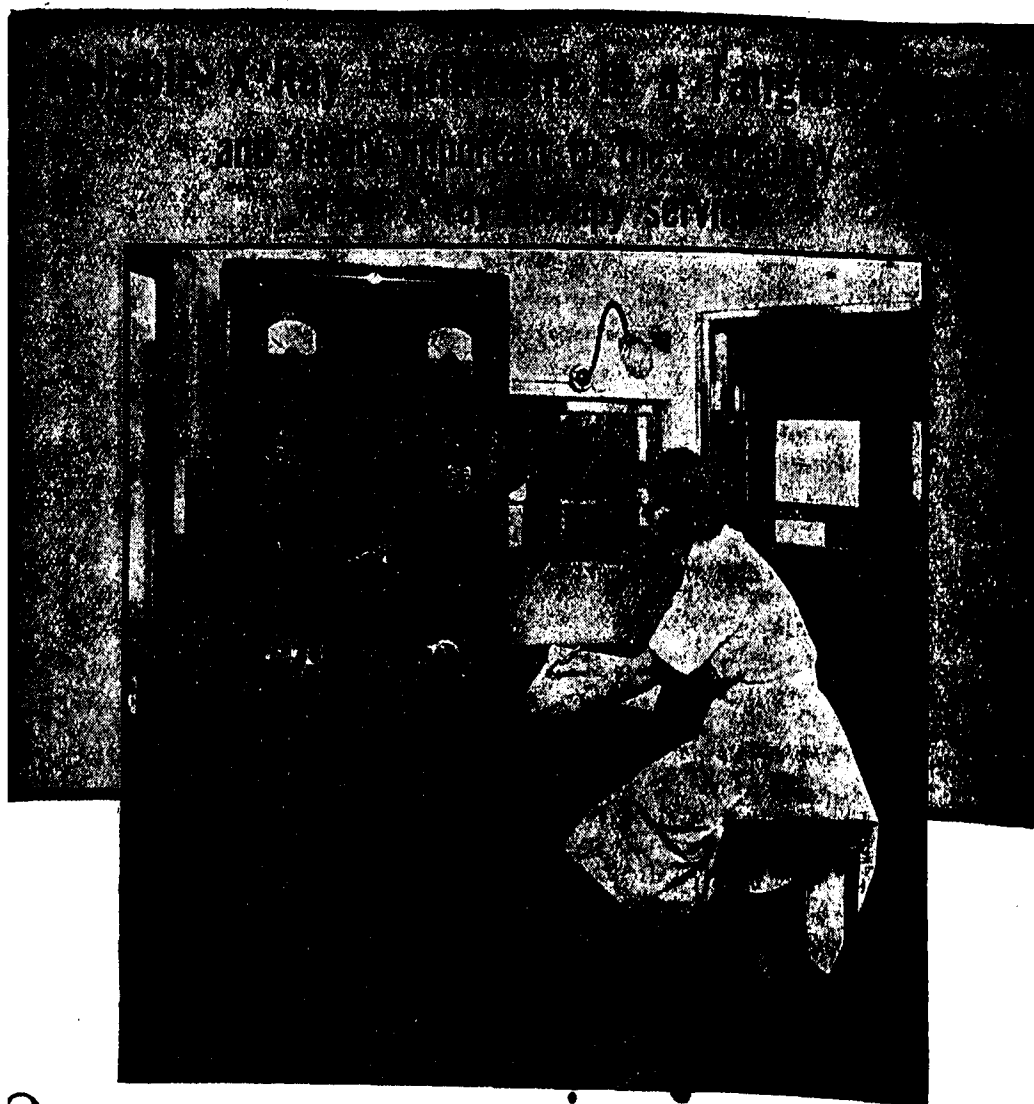
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### The Use of Drugs in the Treatment of Essential Hypertension.

—The use of drugs in the treatment of essential hypertension is directed (1) to the relief of symptoms and (2) to the lowering of the elevated blood pressure. However, writes DAVID AYMAN in *The Journal of the Connecticut State Medical Society*, June, 1939, the relief of symptoms may often be obtained without lowering of the blood pressure, and conversely, the blood pressure may be lowered without relief of symptoms.

The symptoms associated with essential hypertension may be divided into the early and the late group of symptoms. The late group of complaints such as shortness of breath, nocturia, angina pectoris, paralysis and difficulties in vision, are due to severe vascular damage. The early symptoms are probably of spastic and psychoneurotic origin and include flushing, cold hands and feet, dizziness, headaches, weakness, palpitation, sweating, insomnia and irritability.

The early symptoms, which may last for years, can be relieved by the suggestion inherent in any enthusiastically given drug, by the use of sedatives, by direct psychotherapy. The best drugs are the simple sedatives such as Phenobarbital and Sodium Bromide given in adequate doses for weeks at a time. The common factor in all is the enthusiastic giving or doing of something to the patient. It is "treatment" regardless of its nature.

If we turn to the drug treatment directed to the lowering of the blood pressure, it is clear that at present there is no specific drug or method that cures essential hypertension. Using careful methods of control, I have studied during the past 10 years the effect of many of the numerous drugs reported as effective. I have found Potassium Iodide without the slightest effect upon the blood-pressure level despite its age-old usage. In view of the possible relationship of the menopause and ovaries to essential hypertension, I have used the ovarian estrogenic hormone by injection in large doses without any effect. Bismuth Subnitrate I have found of no value after giving it as long as 6 months. Potassium Sulphocyanate has a definite hypotensive effect but it is so toxic that I consider it very unwise to use unless one can obtain at least weekly blood-cyanate determinations. For general practice, therefore, it is dangerous. The nitrites definitely lower blood pressure but only in a transient way. Further, in a very high percentage of cases their use is followed by very severe headache.

This leaves us with the sedatives as a means of lowering blood pressure. If, for example, Sodium Amytal is given to patients with essential hypertension until they are so soundly asleep that they do not awake while the blood pressure is being taken, one finds often that even with levels such as 260/140, that not infrequently the blood pressure drops to normal. Such results are challenging in the sense that they indicate the possibility that the blood pressure can be lowered. However, the dosage of sedatives ordinarily used does not produce more than slight drowsiness and, therefore, does not lower blood pressure more than a minimal amount. Their greatest

effects are upon the symptoms. It is obvious, therefore, that the definition of essential hypertension is still that of a disease of unknown ætiology and unsatisfactory treatment.—*The General Practitioner*.

**Potassium Chloride in Allergy.**—Hay-fever, nasal allergy, asthma, and sinusitis in children and adults were treated by the administration of Potassium Chloride dissolved in distilled water in teaspoonful doses well diluted in orange juice before meals. The dilution of the medicament is important so that the symptoms of abdominal distress and epigastric pain may be avoided. Syrup or other vehicles should be avoided, and the Potassium Chloride should not be given in capsule, tablet, or any undiluted form, and Sodium chloride intake should be limited during the period of treatment. The individual dosage of the drug varied according to age—adults received as a rule 5 grains, t.i.d., children of ten years and over 4 grains, and children from two to ten years from 1-3 grains according to age. A. F. ABT (*American Journal of the Medical Sciences*, August 1939, 198, 229) states that in children suffering from hay-fever combined with asthma the response to the treatment was striking—one dyspnoic and cyanotic child of two years, with a wheezing and continuous cough, was free of all symptoms twelve hours after the administration of 1 grain of Potassium Chloride every four hours—and adults with hay-fever showed marked improvement within twenty-four to seventy-two hours of the institution of treatment. Good results were also obtained in sinusitis and allergic rhinitis. No toxic effects were noted in the series of treated cases, but treatment with Potassium salt is contra-indicated in patients suffering from renal disease with diminution of Potassium Chloride excretion, and in those with adrenal insufficiency.—*The Practitioner*.

**The Treatment of Coronary Thrombosis.**—G. F. STRONG (*Canad. Med. Ass. J.*, October 1939, 41, 291) emphasizes more important practical points in connexion with the treatment of coronary thrombosis. In the early stage the patient should be disturbed as little as possible; he should not be undressed or moved until he has been relieved from pain and has recovered from the initial shock. Stress is laid on the necessity for adequate doses of Morphine; in a well developed adult an initial dose of  $\frac{1}{2}$  grain, repeated in 1 or 2 hours, or more, may be required to relieve pain. The author has seen patients suffer serious consequences from too little Morphine; they are often restless and this is harmful; he has never seen bad results from large doses, and regards Morphine for the relief of pain as more valuable than stimulants. Inhalation of oxygen is valuable in the relief of pain and shock. Glucose given intravenously in small quantities, 150 c. cm. of a hypertonic solution containing 50 per cent. glucose, may be useful every 12 to 24 hours. If there is evidence of dehydration larger quantities of a less concentrated solution—500-700 c.cm.—with 5 to 10 per cent. of glucose may be employed.—*The Practitioner*.

**Developments in the Treatment of Leprosy.**—In his address to the meeting of the British Empire Leprosy Relief Association on May 6, DR. ERNEST MUIR, the medical secretary of the association, referred in a sentence to results obtained at the leprosy institution at Chiangmai, N. Siam, from experiments on leprosy along entirely new lines. More details are now available about this work which although still in the early experimental stage seems full of promise. One part of the work consisted in the injection of diphtheria antitoxin into patients during an exacerbation of the disease. This had the effect not only of immediately clearing up the reaction but also of causing what seemed to be a permanent improvement of the leprosy condition. A natural sequel to this finding was the injection of patients with diphtheria formol-toxoid, and again encouraging results are reported. DR. COLLIER, of the American Presbyterian Mission at Chiangmai, concluded after a survey of 400 treated cases that in general the activity of the disease was brought to a halt almost immediately and healing began. If the disease was already regressing a few doses of toxoid seem to accelerate healing; if it were actively progressing larger doses and a longer period of treatment were required, but in almost every case there was a response, though he admits it may only be temporary. DR. MAUFRED OBENDORFFER has been able to produce leprosy in monkeys by injecting them first with sapotoxins from colocasia plants, and then with leprosy material; injection of either sapotoxin or leprosy alone had no effect. The difficulty of infecting laboratory animals with human leprosy has always been a great stumbling-block to the study of the disease and its treatment, and in this connexion it will be remembered that Prof. S. ADLER of Jerusalem lately reported the infection of Syrian hamsters with human material. It is important in animal experiments to distinguish mere survival of the organism at the site of inoculation from the spread of infection to other tissues. In the Siam work it is claimed that a true leprosy infection has been produced in monkeys, and we may therefore look forward to more extensive and controlled work on the treatment of the experimental disease with diphtheria toxoid and antitoxin. The relationship of the mycobacteria to the corynebacteria suggests that this line of treatment is not wholly empirical.—*The Lancet*.

**Treatment of Deafness with Prostigmine.**—T. C. DAVIS and J. C. ROMMEL (*Archives of Otolaryngology*, 29:751, May, 1939) report the treatment of deafness with Prostigmine; the best results were obtained when the 1:2000 solution of Prostigmine Methylsulphate was used by hypodermic injection. Injections of 1 c.c. each were given at weekly and at three day intervals, usually the latter. The oral administration of Prostigmine tablets was tried, but had no definite effect on the hearing. Prostigmine was used in 28 cases of acute blocking of the Eustachian tube with tinnitus aurium and deafness. Most of these patients were entirely relieved of symptoms and normal hearing was restored by five injections. Catheterization of the Eustachian tube and massage was carried out in all but two of these

cases. In these two cases, in which the condition was of one week's duration, all tinnitus disappeared after three and four injections of Prostigmine respectively. Prostigmine has also been employed in 24 cases of chronic deafness and tinnitus; in most of these cases hearing was definitely improved and tinnitus completely or greatly relieved. In chronic cases treatment should be continued "indefinitely" the authors believe, as progress may be slow. In some of the cases treated improvement was finally obtained by persevering with the treatment "when hope seemed to have fled." In chronic cases such conditions as sinusitis, Eustachian tubal catarrh and nasal obstruction must be treated in order to prevent relapses. Prostigmine was not given in sufficiently large doses to have toxic effects; untoward symptoms occurred in only two patients (both women) with hypertrophy of the thyroid; and the drug was discontinued in these cases.—*General Practitioner*.

**Treatment of Severe Bronchial Asthma.**—KEENEY believes that the treatment of patients with severe bronchial asthma is simplified by classifying the disease into three groups severe, acute bronchial asthma, intractable asthma (status asthmaticus) and severe chronic bronchial asthma. Patients with severe acute asthma should first receive from 0.3 to 0.5 cc. of Epinephrine Hydrochloride (1:1,000). Such a dose should be repeated every fifteen minutes until four doses have been administered or until relief is apparent. To prevent recurrence of asthma, an intramuscular injection of from 0.75 to 1 cc. of Epinephrine-in-oil should follow. One of the Barbituric Acid derivatives may be given as a sedative. An injection of from 0.3 to 0.5 cc. of Schlesinger's solution (0.000125 Gm. of Scopolamine Hydrochloride, 0.01 Gm. of Morphine Hydrochloride and 0.015 Gm. of Ethylmorphine Hydrochloride) is permissible if the patient is badly in need of rest. Epinephrine therapy is best for hypertensive patients with severe asthma. Patients with intractable asthma fail to obtain relief from the usual Epinephrine preparations. They are not "Epinephrine fast." The intravenous injection of 100 cc. of a 50 per cent. solution of Sucrose to which has been added 0.5 cc. of Epinephrine Hydrochloride (1:1,000) or the injection of 0.48 Gm. of Aminophylline diluted in 10 cc. of physiologic solution of Sodium Chloride may give temporary relief. The continuous or intermittent inhalation of an atmosphere of 100 per cent. oxygen or of 80 per cent helium and 20 per cent. oxygen is a physiologically sound therapeutic measure. To improve the cardiac action, digitalization should be carried out in from twenty-four to forty-eight hours and then a maintenance dose should be provided until the patient is free from asthmatic symptoms. From 60 to 120 cc. of a mixture of equal parts of ether and olive oil may be instilled rectally to induce sleep. Patients with severe chronic bronchial asthma require frequent daily and nocturnal injections of Epinephrine Hydrochloride (1:1,000). Epinephrine-in-oil intramuscularly requires fewer injections and is followed by longer symptom-free periods. The value of intratracheal injections of iodized oils is generally overrated.—*J.A.M.A.*

**Saccharin.**—The reduction of the sugar ration is leading to an increase in the use of saccharin, and as a result, the question of the toxicity of saccharin is once more being aired in the lay press. The history of this problem is as follows: Saccharin was discovered by FAHLBERG in 1879. He developed a process of manufacture, and the popular demand for the substance increased at such a remarkable rate that the sugar industry became alarmed. A campaign against saccharin was launched, and one of the obvious lines of attack was the accusation that it produced all kind of subtle toxic effects. The German health authorities made extensive investigations, and LEHMANN concluded fifty years ago that saccharin was an exceptionally harmless substance, since quantities far greater than the normal consumption could be taken daily for long periods without any measurable ill effects. In spite of this conclusion the use of saccharin was forbidden in Germany about 1900, and most other countries either forbade its use or imposed a very heavy tax. Saccharin has continued to be used regularly as a sweetening agent by diabetics, while its popular use increased greatly during the war years of 1914-18 and once again is likely to increase. Echoes from the controversy of last century still persist, and every now and then saccharin is accused of having various toxic properties, such as interference with gastric digestion, irritation of the kidneys, and production of gastric carcinoma. The saccharin controversy was reviewed by NEUMANN and LEHMANN. These authors recorded that human beings had taken huge quantities for short periods (For example, 520 grammes in nine days) and large quantities for long periods (for example 5 grammes a day for five months) without suffering any demonstrable ill-effects. LEHMANN admitted that a few cases of intoxication had been recorded, but suggested that these were instances of idiosyncrasy such as occurs with the majority of drugs and foodstuffs. LEHMANN carried out experiments on mice over a period of two years. Animals were fed on amounts of saccharin corresponding to more than 10 grammes a day for a man, while control animals were given large quantities of sugar. There was no difference between the two groups as regards number of offspring, weight of offspring, or death rates. NEUMANN carried out metabolism experiments on man to determine whether saccharin interfered with protein metabolism to any measurable extent. The authors concluded that experience of the last fifty years had confirmed the opinion expressed in 1890, that there was no scientific evidence to prove that saccharin had any toxic properties. Saccharin appears, indeed to be almost unique among aromatic compounds, in that it has a single powerful physiological action namely, on the taste buds—but lacks any other pharmacological or toxic action that is demonstrable.—*Brit. Medl. Joul. June 15, 1940.*

**Intravenous Injection of Sodium Salts in Sciatica.**—SUTTON (*Lancet*, Dec. 2, 1939) finds in his small series of cases, that the intravenous injection of Sodium Salicylate and Sodium Iodide is of far

wider value than is generally realized. It can, he says, rapidly cure uncomplicated cases of sciatica, but is little effective in secondary sciatica. In 20 cases of primary sciatica, pain ceased usually after about ten minutes of injection. If pain returned, it usually did not do so until after eighteen hours or more. If a second injection was necessary, the result was better than that of the first injection. In the 12 cases of secondary sciatica, due to some extraneous pathological condition, pain was diminished, but not abolished usually after about 20 minutes or longer. A second injection tended to produce less effect. Any improvement in secondary sciatica is, he says, probably due to the analgesic action of the Sodium Salicylate, but in primary sciatica, in all likelihood "rheumatic," the effect of the drug appears to be specific rather than symptomatic. Each injection, which the author gave, consisted of 20 c.c. of an aqueous solution of Sodi Salicylate and Sod. Iodide, 15 grs. each.—*The General Practitioner*.

**The Prescribing of Ergot.**—Since the outbreak of war shipments of Ergot to this country have been irregular and the wholesale price of good-quality Ergot has increased approximately 300 per cent. It is unlikely that the position will become easier for some time, and it is important, therefore, that in the prescription and administration of preparations and alkaloids of Ergot the strictest economy compatible with adequate treatment should be exercised. The indications for prescribing Ergot should be carefully examined. Its chief use is for promoting a prompt and firm contraction of the womb after childbirth and preventing post-partum bleeding. It is the practice of many practitioners to give Ergot twice daily to every puerperal woman for a week or more after delivery with a view to promoting the involution of the uterus. Recent observations and the analysis of statistics bearing on this matter have failed to show any difference in the rate of involution of the uterus as the result of prolonged Ergot therapy. While, therefore, it is wise to give a single dose of the drug after delivery, and a case can be made out for two or three doses, there is nothing to be gained by further administration, unless a definite abnormality has arisen. Continued administration is needless in the case of normal women and may indeed be harmful. Ergot is also used for certain cases of menorrhagia, but it is of no value for non-uterine forms of bleeding. Ergot is best administered in the form of prepared Ergot (Ergota praeparata B.P.), which is powdered Ergot deprived of its fat and standardized. Prepared Ergot is more economical than liquid extracts of Ergot, investigation having shown that all forms of liquid extraction of Ergot are complete and wasteful. Moreover, the liquid extracts lose their activity more rapidly than the defatted powder. Prepared Ergot may be prescribed in 5-grain tablets or 5-grain capsules.—*Brit. Medl. Journal*. June 15, 1940.

**Vitamin B<sub>1</sub> for Irradiation Sickness.**—IMLER and WAMMOCK cite the results of oral or parenteral synthetic vitamin B<sub>1</sub> (Thiamin chloride) therapy for the control of severe symptoms of radiation sickness in twenty-one cases. They find that daily injections of 3,000 international units will, in the majority of cases, give rapid and complete relief. Infrequently a recurrence of symptoms requires increase in the dosage. One patient receiving roentgen therapy to the left side of the neck required a temporary increase to 4,500 international units daily by hypodermic injection to control the recurrent nausea and another required 10,000 to eliminate nausea and vomiting. The results obtained with the hypodermic administration are definitely superior to those following the peroral use. The treatment of outpatients presents a problem in that radiation sickness cannot be satisfactorily relieved by the oral administration of large doses of vitamin B<sub>1</sub>. It is difficult for these patients to retain their confidence and cooperation, with the result that they fail to continue the medication as prescribed and occasionally refuse to follow the course of radiation therapy. This undesirable factor can be overcome by requiring the patient to return for daily injections of vitamin B<sub>1</sub>. Smaller daily doses are more effective than are massive doses given on alternate days. Daily or twice daily estimations of the Vitamin B<sub>1</sub> content in the blood serum, beginning two days before radiation therapy is started, might indicate a possible direct relationship between the actual level of vitamin B<sub>1</sub> and the onset of radiation sickness.—*J. A. M. A.*

**Oxalic Acid to Check Bleeding.**—The discovery that Oxalic acid makes possible the rapid coagulation of the blood was announced and demonstrated at the meeting of the Federation of American Societies for Experimental Biology. The report was given by DR. A. STEINBERG and DR. W. R. BROWN of the research foundation of the Kensington Hospital for Women in Philadelphia. Applied clinically in several hospitals, the Oxalic acid treatment was reported successful in almost 1,000 cases of unchecked bleeding resulting from a variety of causes, in which all formerly known means had proved of no avail. With no exception, it was stated the intravenous injection of three milligrams of Oxalic acid, dissolved in distilled water, stopped the hæmorrhages in periods of five minutes down to as low as forty-five seconds.

The clinical cases included six cases of hæmophilia. The usual clotting time in these cases was from 30 minutes to 2 hours. The injections of Oxalic acid reduced this time to 5 minutes, which is about the usual clotting period for normal persons. The treatment was applied "with gratifying results" to a wide variety of cases of excessive bleeding, including post-operative post-partum and uterine hæmorrhages, hæmatemesis, bleeding gastric ulcers, jaundice, hæmoptysis, hæmaturia, epistaxis, melena neonatorum and other types of hæmorrhages and hæmorrhagic dyscrasia. The normal human blood contains 5.5 to 7.5 milligrams of Oxalic acid per 100 cubic centimetres.—*General Practitioner*.

**Blood Transfusion in Lukemia.**—CORELLI and GAETANO gave repeated blood transfusions to nine patients with chronic myeloid or lymphatic leukemia. In addition, roentgen therapy was given in the majority of the cases. The amount of blood for each transfusion varied from 200 to 300 cc. The number of transfusions, the intervals and the duration of the treatment were determined by the course of the disease. Repeated blood transfusions alone brought about improvement in the general condition of the patients. The blood picture was not modified. Both the latter and the former were improved by transfusion combined with roentgen therapy. The combined treatment gave better results than roentgen treatment alone. All the patients were followed up. Improvement was moderate. In one grave case it was transient. Two patients lived in a satisfactory condition for eight months after discontinuance of treatment. Two other patients lived in a satisfactory condition for two and four years, respectively. They developed fatal bronchopneumonia. Four patients are alive and in a satisfactory condition at the present (from eight months to four years after discontinuance of the treatment). Two of the patients resumed work. The patient living four years after discontinuance of the treatment is the only one to have an occasional blood transfusion.—*J.A.M.A.*

**Small Doses of Copper in Bronchial Asthma.**—The fact that heavy metals administered in small doses increase the activity of the reticulo-endothelial system and thereby influence the allergic condition suggested to SCHIMERT the rationale of treating bronchial asthma with small-doses of copper. He chose copper because its oral administration has been found helpful in spasmodic conditions of the smooth muscles, particularly the bronchial muscles. In the majority of cases the cutaneous administration of 10 micrograms of colloidal copper twice weekly proved most effective after the initial reaction had subsided. In some the weekly dose had to be reduced to 1 or 2 micrograms and in other it had to be increased to from 50 to 100 micrograms. The treatment was begun with a subcutaneous injection of 0.5 cc. (containing 5 micrograms). If no severe reactions followed (in the form of greater frequency and intensity of attacks), the same dose was given three days later by intravenous injection. If the attacks were intensified, the subcutaneous injection was resumed. It was possible, as a rule, to establish the intravenous mode of injection at the sixth or eighth injection. At this time it was also possible to increase the dose to 1 cc. The initial exacerbation should not be regarded as a reason for abandoning the treatment, for after twelve to twenty days improvement sets in as a rule. The treatment is continued for from six weeks to six months. It is advisable to continue the injections for some time after the cessation of the attacks. In some cases the injections must be continued at ten day intervals in order to maintain the patient free from symptoms. The author reports observation on fifty patients, twenty-one of whom were completely freed from attacks, seventeen were greatly improved, five had relapses and seven were not improved.—*J. A. M. A.*

## Radiology

**Radiography in Placenta Prævia.**—The presence or absence of placenta prævia is not always easy to establish, and a simple way of locating the placenta without risk to patient or foetus would often be welcome. Amniography in skilled hands will decide the position of the placenta in a fairly high percentage of cases, but this examination should not be embarked on lightly since injection of an opaque medium directly into the liquor amnii may introduce infection and may also bring on labour. Radiological examination of the relative positions of the presenting foetal part and the urinary bladder filled with opaque fluid also has technical disadvantages and may cause irritation to the bladder wall. BROWN and DIPPEL describe a procedure by which they are able to localise the placenta in at least 85 per cent. of cases. The method consists of two separate examinations. First, a lateral radiogram of the uterus is taken, using a technique designed to demonstrate the maximum of soft-tissue detail. This film is then examined, a concentrated light being needed for viewing the anterior uterine wall. Where the placenta lies there is an increase in the thickness of the structures between the outer uterine wall and the periphery of the foetal soft tissues. The outer uterine wall can nearly always be seen in a properly exposed radiogram and the cutaneous outline of the foetus is represented by a thin dark line, probably due to subcutaneous foetal fat. In this preliminary examination BROWN and DIPPEL consider that a lateral view is sufficient since the placenta is rarely implanted other than on the anterior or posterior surface of the uterus. Even if it is implanted on the lateral walls it should be seen in the lateral view, for the average placenta covers at least a quarter of the internal uterine surface and therefore extends far enough over the anterior or posterior wall to be visualised. The common causes which hinder localisation of the placenta by this method are excessive obesity, hydramnios, the absence of the dark line outlining the foetal soft tissue because of insufficient foetal subcutaneous fat, and multiple pregnancy. Where the results are doubtful and in cases where there is strong clinical evidence of a low implantation of the placenta the bladder is filled with 100 to 150 c.cm. of air and anteroposterior and lateral radiograms are taken. The thickness of the soft tissue between the presenting part and the postero-superior portion of the air-filled bladder is then measured; normally this is not more than 2 cm., whereas in a central placenta prævia it may be increased to 5 or 6 cm. With a marginal placenta the increase in thickness is found either anteriorly or laterally. Certain factors may lead to errors in diagnosis by this method, such as air or faeces in the rectum, or blood-clot in the region of the internal os resulting from premature separation of a normally implanted placenta, and some experience is necessary to interpret the findings accurately. BROWN and DIPPEL certainly make out a good case for the more extensive use of soft-tissue radiograms in obstetrics, and their method seems to be relatively simple to perform, devoid of risk to the patient and foetus, and according to their figures highly accurate.—*The Lancet.*

## Ophthalmology

**Ophthalmic Manifestations of Tuberculosis.**—TRAQUAIR declares that apart from maldevelopments, injuries and external infections there are no diseases of the eye in the sense that the disease originates and is limited to the eye. Ocular lesions other than injuries, external infections and maldevelopments are manifestations in the eye of some general condition frequently based on an inadequate power of resistance, which, in its turn, is often the result of defective nutrition. Tuberculosis of the eye affects it in two ways: as an allergic response and as an actual infection by the tubercle bacilli. In the first the tissues of the eye can be sensitized as part of a general sensitization and also locally and may give a violent allergic response. In actual infection by tubercle bacilli, the bacilli usually enter the body by the alimentary or respiratory channels. Ocular tuberculosis usually occurs clinically as a blood infection in previously infected persons who are potentially allergic to tuberculo-protein. It is uncommon in patients with active and gross tuberculous foci, such as inmates of sanatoriums, but is typically found in patients who show apparently healed pulmonary tuberculosis and tuberculo-adenitis. Tubercle bacilli may be present in the blood in some cases. It is characteristic of all forms of tuberculosis in association with the eye that the patient does not present gross manifestations of an active tuberculous infection elsewhere. The patients frequently show little, if any, outward evidence of tuberculous infection but, on careful search, glands in the neck, roentgenograms indicative of affected glands in the hilus or mediastinum or x-ray signs in the lungs themselves may be found. The diagnosis is based on the careful examination of the eye, including the clinical picture as a whole. If cutaneous tests with old tuberculin are used, great care should be taken to avoid a local reaction. Treatment is both local and general. Local treatment consists of remedies applied directly by the ophthalmologist to relieve symptoms and local ocular complications. The only treatment of real importance is the general treatment, which is the treatment of tuberculosis. It is essential to recognize that the patients are primarily suffering from tuberculosis and secondarily from a disease of the eye. Tuberculin in carefully graduated doses is of some value and may be used in all cases except scrofulous ophthalmia.—J.A.M.A.

**Ophthalmia Neonatorum.**—LESLIE C. DREWS, J. MISSOURI, M.A., ST. LOUIS. Sept. 1939, 36: 366.

The etiology, diagnosis, clinical course, prophylaxis, treatment, prognosis, and complications of ophthalmia neonatorum are discussed.

Prophylaxis should include antenatal treatment of infected mothers with possibly the use of antiseptic vaginal washes at the onset of labor. As soon as the baby is born the external portion of its eyelids should be gently cleansed with 1:10,000 Mercury Bichloride or with plain water. A drop of 2 per cent Silver Nitrate, freshly prepared or used from sealed wax ampules, should be instilled into

the conjunctival sacs and after 5 or 10 seconds the sacs should be washed thoroughly with normal saline solution.

Treatment is designed to remove bacteria by mechanical washing, increase the patient's resistance, avoid or relieve excessive swelling of the lids or conjunctiva, and destroy the bacteria. Irrigation with a nonirritating solution, such as 2 per cent Sodium Biborate, should be repeated often. Mild antiseptics such as Neosilvol (20 per cent) and Metaphen (1:2,500) should be used alternately every 2 to 4 hours. Silver nitrate ( $\frac{1}{2}$  to 2 per cent), which was formerly used freely, is now reserved for cases in which the period of virulent secretion is protracted, and the cornea must be protected from the drug. The use of nonspecific protein therapy (such as boiled milk given intragluteally) is reliable and effective. Striking results with Sulfanilamide and Neoprontosil by mouth have been reported. Free canthotomy should be performed to relieve the pressure of the swollen lids upon the cornea. Scarification of the bulbar conjunctiva has been advised to relieve severe chemosis. Other operative procedures are sometimes advisable.—V.D.

## PROCEEDINGS OF SOCIETIES, ASSOCIATIONS, ETC.

## The Krishna District Medical Association, Masulipatam.

(The Krishna District Branch of the Indian Medical Association.)

Minutes of the 15th monthly meeting held at Masulipatam on Saturday the 20th July 1940:—Dr. K. Venugopal Rao Naidu, L.M. & S., in charge of Government Head Quarters' Hospital demonstrated several interesting cases in the Hospital and, the doctors in charge of the patients explained in detail practical points about diagnosis and treatment of the following cases:—

(1) Aortic Aneurysm; (2) Acute Leprosy; (3) Hæmato Colpos simulating uterine fibroma; (4) Vesicular Mole; (5) Pelvic Abscess simulating Uterine Fibroma; (6) Phosphatic deposits of stone in bladder removed by Lithotripsy; (7) Huge Lipomata over and inside Deltoid and calf muscles; (8) Case of Gastro-Enterostomy with Angiomata of Mesenteric Vessels in the Right Iliac Region; (9) Two cases of Osteomyelitis.

The following were some of the resolutions unanimously passed:

- (1) A resolution was moved from the chair to place on record the appreciation of services rendered by Col. T. S. Shastry, I.M.S., to the Association.
- (2) Dr. K. Venugopal Rao Naidu L.M.S., Assistant District Medical Officer, incharge, Krishna, was unanimously elected President of the Association in the vacancy caused by the transfer of Lieut-Col. T.S. Shastry, I.M.S., (Military Duty, Jubbulpore).
- (3) Dr. K. S. Ray M.A., B.Sc., M.B., Ch.B., (EDIN.) was nominated as the President and Dr. D.S. Ramachandrarao, M.A., M.D., Bezwada, Dr. K. Krishnamurthy, L.M.P., Chodavaram, and Dr. B. Tirumalrao, L.M.S., F.R.C.S. etc., Superintendent, King George Hospital, Vizagapatam, were nominated as Vice-Presidents to the All-India Medical Association.

### The Indian Chemical Manufacturers' Association, Calcutta.

The Committee of the above association met Raj Ratna Kapilram H. Vakil, Technical Director, Tata Chemicals Ltd. and Dr. S. S. Bhatnagar, Director, Board of Scientific and Industrial Research on 30-7-40 at the premises of the Indian Chamber. Dr. H. Ghosh presided. Raj Ratna Kapilram H. Vakil who was here en route to America explained briefly the progress of the factory of Tata Chemicals which is being installed at Mithapur near Port Okha. He stated that the factory would start work in May or June, 1941 and would produce some of the important basic chemicals like Soda Ash, Caustic Soda, Bleaching Powder, etc. The manufacture of other salts and compounds would also be taken up. Dr. S. S. Bhatnagar outlined the work that was being done by the Board of Scientific and Industrial Research.

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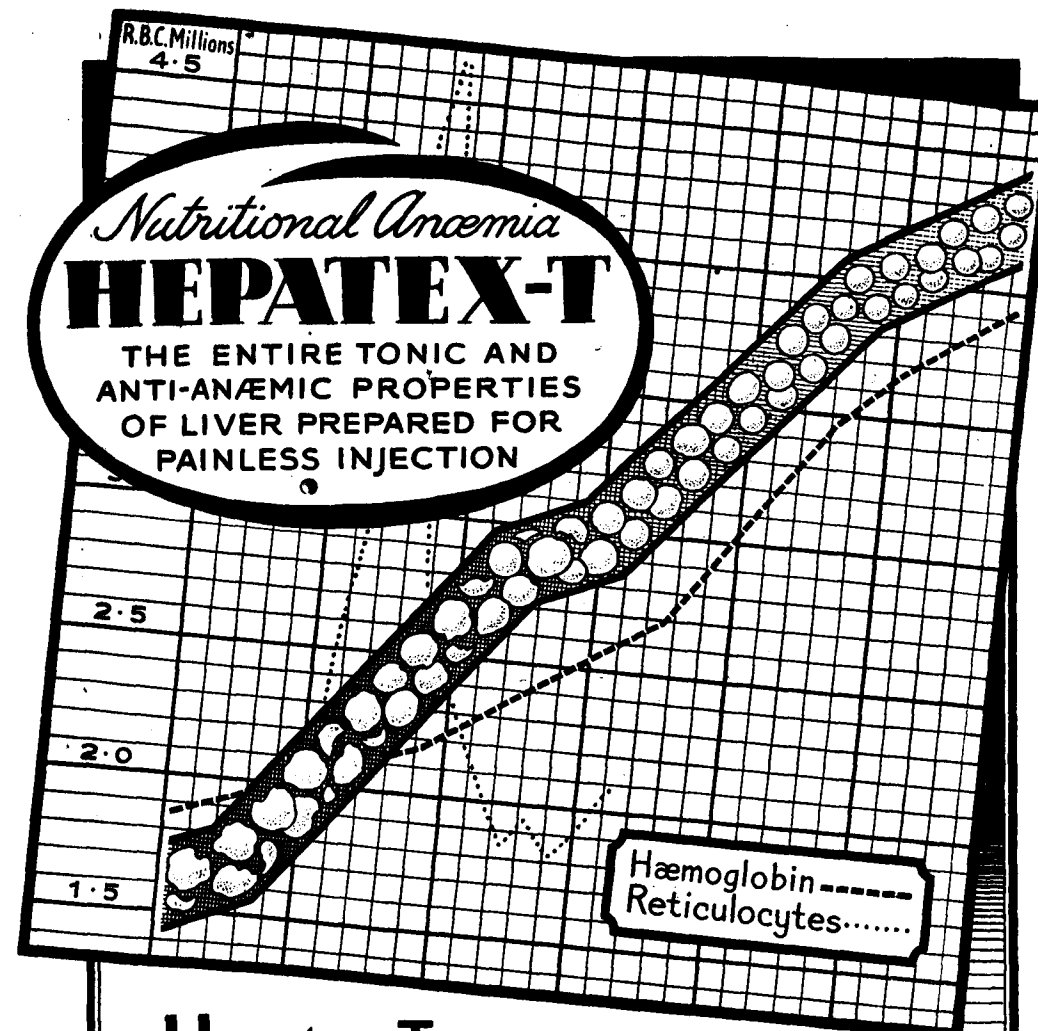
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### CORRIGENDUM

"The Antiseptic", Vol. XXXVII, No. 7, July '40 issue, page 627, under "Book Review" lines 31 and 32 for the sentence, "The author's intention in writing this book is to enable others to profit by his mistakes," please read "The author's intention in writing this book is to enable others to profit by mistakes."



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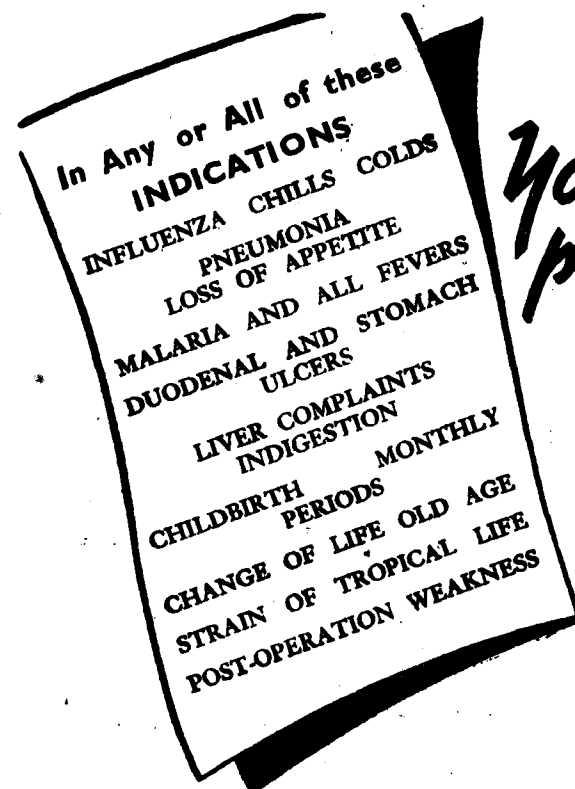
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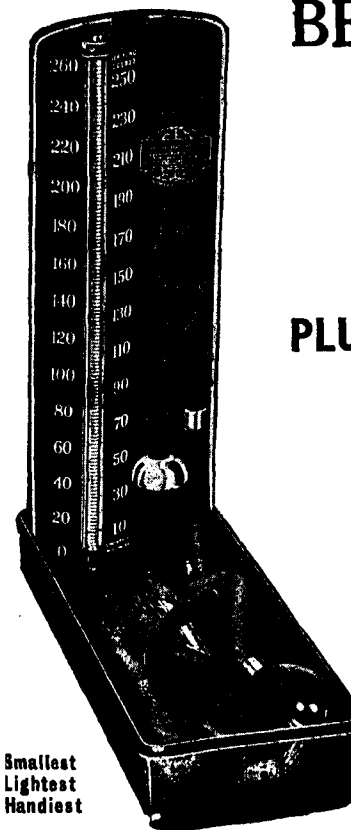
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## INDEX TO ADVERTISERS, AUG. '40.

|                                           | PAGE.         |                                       | PAGE       |
|-------------------------------------------|---------------|---------------------------------------|------------|
| Alembic Chemical Works Co. Ltd.           | 19, 27, 48    | Hewlett C. J. & Son Ltd.              | 38         |
| Allen and Hanburys Ltd.                   | ...           | Horlick's Malted Milk Co.             | 13         |
| Astier Laboratories                       | ...           | Indian & Eastern Chemist              | 44         |
| Atlantis (East) Ltd.                      | ...           | Jamiat Singh Dr.                      | 41         |
| Banerji P.                                | ...           | Journal of Indian Medical Association | 47         |
| Bench T. C. & Co.                         | ...           | John Wyeth & Brother Ltd.             | 4          |
| Bengal Chemical and Pharmaceutical Works. | ...           | Kushmol Pharmacy                      | 14         |
| Boots Pure Drug Co., Ltd.                 | ...           | Lister Antiseptics & Dressings Co.    | 10         |
| Brahmachari Research Institute            | ...           | Martin & Harris Ltd.                  | 6          |
| Brand & Co. Ltd.                          | ...           | Martin H. Smith Co. N. Y.             | 9, 17      |
| British Drug Houses Ltd.                  | ...           | May & Baker Ltd.                      | 24         |
| Burroughs Wellcome & Co.                  | ...           | Ophthalmological Books Publishing Co. | 47         |
| Carnrick G. W. Co.                        | ...           | Parke Davis & Co.                     | 2          |
| Ciba Ltd.                                 | ...           | Petrolagar Laboratories Ltd.          | 1          |
| Coleman & Co., Ltd.                       | ...           | Research Laboratory                   | 45         |
| Corn Products Co. Ltd.                    | ...           | Rosbay & Co.                          | 41         |
| Cow & Gate                                | ...           | Scientific Instrument Co.             | 45         |
| Crookes Laboratories Ltd.                 | ...           | Seller L. H.                          | 45         |
| Denver Chemical & Mfg. Co.                | ...           | Silten Ltd.                           | 39         |
| Dhansuklal & Co.                          | ...           | Smith T. J. & Nephew Ltd.             | 33         |
| Eli Lilly & Co.                           | ...           | Sri Krishnan Bros.                    | 42, 45, 47 |
| Evans Sons Lescher & Webb Ltd.            | ...           | Stephen Smith & Co., Ltd.             | 16         |
| Frank Ross & Co. Ltd.                     | ...           | Thacker Spink & Co. Ltd.              | 44         |
| Galleno Pharmaceutical Works              | ...           | Thakore T. M. & Co.                   | 31, 34     |
| Gillanders Arbuthnot & Co.                | ...           | Union Drug Co. Ltd.                   | 43         |
| Glaxo Laboratories Ltd.                   | 7, 15, 20, 21 | Victor X-Ray Corporation (India) Ltd. | 36         |
| Hering & Kent                             | ...           | Wander, A. Ltd.                       | 28         |
| Health                                    | ...           | William R. Warner                     | 8, 9, 22   |
|                                           | ...           | Zeal G. H. Ltd.                       | 1          |

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