

fluids. In the remaining cases of stone in the common duct a small catheter was sutured into the opening of the duct and removed in five to seven days.

After Treatment.

I must emphasize the necessity of careful medical treatment after operation in these cases. The infection of the gall bladder is often associated with a secondary disturbance of the stomach, pancreas and other organs which do not disappear immediately after removal of the cause.

CONCLUSIONS.

1. Further investigation of the comparative anatomy and the physiology of the gall bladder is necessary to determine the functions of this organ.

2. It is important to recognize the occurrence of cholecystitis without stone formation and in some cases without much external evidence of gall bladder disease. These patients, if there is no improvement after medical treatment, should be treated by cholecystectomy.

3. The fact that complications had occurred in 37% of gall stone cases is an indication that the importance of early operation is not sufficiently recognized.

4. The increased incidence of recurrence after cholecystostomy is shown by the Melbourne Hospital figures.

5. Attacks of pain of a spasmodic type are not uncommon after cholecystectomy. In some cases these can be cured by medical treatment, but in others a second operation is necessary. The cause of these recurrences merits further investigation.

6. The incidence of malignant disease was 4.5%.

7. The best incision is by reflection of the rectus muscle; drainage should be adopted in all cases of cholecystectomy; the drain should be as far as possible extraperitoneal.

I trust that a study of the cases and figures upon which these conclusions are based will absolve me from the charge of being the careless advocate of ill-considered opinions.

ACKNOWLEDGMENTS.

I am indebted to Dr. Wright Smith, surgical registrar at the Melbourne Hospital, for his help in investigating the case histories of carcinoma of the gall bladder and to Miss Maudsley, of the Walter and Eliza Hall Research Institute, for the microphotographs.

REFERENCES.

- ⁽¹⁾ F. C. Mann: "The Functions of the Gall Bladder," *Physiological Reviews*, 1924, Volume IV., page 251.
⁽²⁾ Pedro Belou: "Anatomia de los conductos biliares y della arteria cistica," 1915.
⁽³⁾ E. R. Flint: "Abnormalities of the Right Hepatic, Cystic and Gastro-duodenal Arteries and the Bile Ducts," *British Journal of Surgery*, 1922-1923, Volume X., page 509.
⁽⁴⁾ E. A. Graham: *The Lancet*, July 31, 1926, page 233.
⁽⁵⁾ A. S. Hurst: *The Lancet*, July 31, 1926, page 234.

⁽⁶⁾ S. H. Mentzner: "A Clinical and Pathological Study of Cholecystitis and Cholelithiasis," *Surgery, Gynecology and Obstetrics*, June, 1926, page 782.

⁽⁷⁾ James M. Andrew: "A Case of Acute Gangrenous Cholecystitis," *THE MEDICAL JOURNAL OF AUSTRALIA*, April 21, 1923, page 447.

⁽⁸⁾ L. Aschoff: "Lectures on Pathology," 1924, page 447.

⁽⁹⁾ H. Skipton Stacy: "Gall Bladder and Allied Infections," *THE MEDICAL JOURNAL OF AUSTRALIA*, August 23, 1926, page 277.

⁽¹⁰⁾ W. J. Mayo: "A Short Discourse on Surgery of the Gall Bladder," *Surgery, Gynecology and Obstetrics*, July, 1926, page 46.

⁽¹¹⁾ George Syme: "Gall Stones," *THE MEDICAL JOURNAL OF AUSTRALIA*, October 11, 1924, page 365.

⁽¹²⁾ A. J. Walton: "A Textbook of the Surgical Dyspepsias," 1923.

⁽¹³⁾ J. Sherren: "A Comparison of Cholecystostomy and Cholecystectomy," *British Journal of Surgery*, 1922-1923, Volume X., page 135.

⁽¹⁴⁾ J. M. H. Campbell: "Cholesterol in the Blood in Cases of Gall Stones," *Quarterly Journal of Medicine*, October, 1924, page 123.

⁽¹⁵⁾ Berkeley Moynihan: "Abdominal Operations," 1926.

CHOLECYSTOGRAPHY.

By J. G. EDWARDS, M.B., Ch.M.,

Honorary Radiologist, Sydney Hospital.

DURING the past year much work has been carried out by radiologists in the investigation of diseases of the gall bladder by what is known as Graham's method. Certain drugs particularly sodium tetrabromphenolphthalein and sodium tetraiodophenolphthalein are excreted by the liver and stored in the gall bladder with the bile. When a radiogram of such a gall bladder is taken definite shadows are cast on the film. Dr. Graham first used the bromine salt, but Dr. Whitaker and Dr. Milliken, of Boston, suggested the use of the iodine salt, as it has twice the specific gravity of the bromine salt and so only half the quantity is necessary for a dose. Moreover as both salts have equal toxic qualities, weight for weight, the liability to disturbance is less with the iodine salt. We therefore find that the sodium tetraiodophenolphthalein is almost universally used. The drug may be administered either intravenously or by mouth. The intravenous method is more accurate, but this method is not practicable in private practice and must be reserved for hospital use.

Oral administration is safe and can be used without confining the patient to bed. The technique employed in the intravenous method is similar to that used in administering "Salvarsan."

For individuals weighing over fifty-six kilograms (one hundred and twenty-five pounds) the dosage of the iodine salt is 3.5 grammes dissolved in thirty cubic centimetres to forty cubic centimetres of freshly distilled water (that is about 0.4 gramme per kilogram of body weight). The solution is filtered and sterilized by fifteen minutes' boiling in a water bath.

The gravity apparatus is used and the solution introduced into the median-basilic vein, great care being taken to prevent the escape of any of the

solution into the subcutaneous tissues; such an escape leads to painful sloughing.

The secret of success in making this injection is to make it very slowly and if fifteen to twenty minutes are taken over the injection, no ill effects are produced. A too rapid injection is followed by an alarming collapse, but this may be counteracted by giving a subcutaneous injection of adrenalin chloride.

No food should be taken for four hours before injection nor for about ten hours after injection.

Nausea may be complained of, but this can be relieved by the drinking of copious draughts of water containing small quantities of sodium bicarbonate.

Oral administration is a simpler method.

The sodium tetraiodophenolphthalein is administered in "enteric-coated" pills, that is, pills coated with a material which resists gastric digestion but which breaks down in the intestine. A proprietary pill, made by a Boston firm, called "Piliophen," is used and each pill contains 0.3 gramme of the salt and one pill is given for each 5.5 kilograms of weight. The patient should have the bowel well opened on the day previous to the operation by a mild laxative and enemata. A light evening meal without meat is taken at 6 p.m. and commencing at 8 p.m. four pills are taken every half-hour until all are consumed. Copious draughts of water are allowed and if nausea is complained of, sodium bicarbonate may be added to the water. No food is allowed until after the first X ray examination at 9.30 a.m. the following day.

The patient must be warned against breaking the pills and no aperient is to be taken on the day of examination.

The first radiogram is taken at 9.30 a.m. and the patient rests for a couple of hours and then another is taken. If the gall bladder shadow is well defined, a meal containing fat is allowed and if the gall bladder retains its elasticity it should be found empty after this meal.

In cases of cholecystitis and in cases of cystic duct blockage it will be found that none of the dye enters the gall bladder. When gall stones are present, the gall bladder shadow frequently has a mottled appearance and the translucent gall stones show as dark or "negative" shadows in the radiogram with the dye shadow between their facets.

Great care is necessary in interpretation as a collection of the dye in the hepatic flexure is confusing, while kidney stone shadows and calcifications of the rib cartilages are very deceptive.

Direct antero-posterior and oblique skiagrams are usually taken through the gall bladder region and thus it is possible to exclude many of the confusing shadows seen.

The administration of an opaque meal in addition is also of great value in the investigation of gall bladder conditions, as by its means abnormal conditions of and adhesions to the stomach and duodenum and to the colon may be demonstrated.

Illustrations accompanying this paper indicate some of the appearances met with in this class of work.

PARAGONIMIASIS: ITS FIRST RECORDED OCCURRENCE IN THE TERRITORY OF NEW GUINEA.¹

By R. W. CLENTON, M.D., B.S., D.T.M. & H.,
Director of Public Health;

AND

T. C. BACKHOUSE, M.B., B.S., D.P.H.,
Bacteriologist, Commonwealth Health Laboratory,
Rabaul, New Britain.

THE discovery in a native of New Britain, Mandated Territory of New Guinea, in circumstances indicating local endemicity, of a trematode parasite which in other countries causes grave effects over wide areas, is a matter of considerable interest and concern.

In 1919 one of us (R.W.C.) while stationed at Kavieng, observed appearances suggestive of paragonimiasis in the lung of a labourer dead of pneumonia. As this incident occurred during the first days of a violent epidemic of respiratory disease which destroyed 3% of the population, on a day on which several natives died at the small local hospital and several hundred natives reported "sick," the specimens were in the general confusion thrown out by the native morgue attendant.

The subject was not lost sight of, however, during a five years' absence from the Territory and reference to the possibilities in this regard was made in 1923.⁽¹⁾ When in 1925 circumstances permitted a return to New Guinea in the capacity of Director of Public Health with adequate laboratory facilities, the question of paragonimiasis was listed among many others for early investigation.

The actual case here reported, however, was unsuspected and undiscovered and was discovered in the *post mortem* room during the routine examination which is made of all natives dying in the Rabaul Native Hospital.

On August 13, 1926, one of us (T.C.B.) was called to perform a *post mortem* examination on a male native who had died after amputation undertaken for chronic ulcer of the leg.

The case notes which have been handed in by the surgeon in charge of the patient (Dr. H. Champion Hosking), are to the following effect:

The patient was admitted to hospital on July 15, 1926, with a large ulcer on the inner side of the left leg. The upper portion of the ulcer about 2.5 centimetres by 2.5 centimetres (one inch by one inch) in extent, was a sub-acute excavated ulcer with a relatively healthy margin and a pink, granulating base. The lower portion had a diameter of 3.75 centimetres (one and a half inches) and was filled with a black, gangrenous slough. Apparently this was due to an acute attack on an older ulcer. There was a subsequent history of failure to respond to treatment and extension by burrowing up the leg. On August 12, 1926, amputation of the thigh was performed and death occurred on the same day.

The report of the bacteriologist (T. C. Backhouse) was to the following effect:

External examination revealed no extensive emaciation. No skin eruptions, localized swelling or edema were present. On the recent amputation stump of the left thigh, clean, opposed flaps were seen without suppuration. *Rigor mortis* was present.

¹ Received for publication October 27, 1926.