Fig. 7.—Case II; biliary cirrhosis; *a*, remains of lobule replaced by connective tissue; *b*, lobules infiltrated with fine connective tissue and cells becoming atrophied; *c*, more healthy lobule, but even in this one there is fine connective tissue between the cells; *d*, vessel compressed by contracting new growth. A Zeiss oc. 3.

REFERENCES.

¹ American Edition. ² Vol. xxxviii, p. 124. ³ See again Cornil and Ranvier, p. 545; and cases by Dr. Symonds (*Path. Soc. Trans.*, vol. xxxvii), and Dr. Penrose, *ibid.*, vol. xxxix. ⁴ Wilks and Moxon, *Lectures on Pathological Anatomy*, Third Edition. ⁵ *Transactions of Pathological Society*, vol. xi, p. 137. ⁶ *Atlas of Pathology*, New Syd. Soc., Fasc. iv, pp. 18, 19. ⁷ Saundby, *Path. Soc. Trans.*, vol. xxx. ⁸ *Lectures on Children's Diseases*, New Syd. Soc. Trans., vol. ii, p. 114. ⁹ BRITISH MEDICAL JOURNAL, 1890, vol. i, p. 1090. ¹⁰ *Leçons sur les auto-intoxications dans les maladies.*

HAGAR'S WELL AT MECCA.

By E. H. HANKIN,

Fellow of St. John's College, Cambridge; Chemical Examiner to the North-West Provinces and Oude, India.

[From the Government Laboratory, Agra.]

IN view of the widespread attention that has been conferred on Mr. Ernest Hart's recent articles on waterborne cholera, and the great importance of the Meccan infection as a source of the extension of cholera, I think the following analysis of water from the holy well at Mecca may be of interest to the readers of the BRITISH MEDICAL JOURNAL.

I was enabled to make this analysis by the kindness of Dr. George Ranking, the well-known Arabic scholar, who placed a sample of this water at my disposal. It had been given him by a "hadji" of repute and position, who brought it himself from Mecca. The water was contained in a vessel made of tin known as a "dibia," and was hermetically soldered up. The vessel was shaped like a watch, and held about 200 c.c. of water. Owing to the small quantity of the water at my disposal, the analysis was only carried out with difficulty, and the results are no doubt somewhat inaccurate. They are as follows:—

Total solids in grains per gallon	...	...	259
Chlorine grains per gallon	...	...	51.24
Free ammonia parts per million	...	...	0.93
Albuminoid ammonia parts per million	...	...	0.45

The figures for ammonia are no doubt without value owing to the very good reason that at least eight months elapsed between the collection of the sample and its coming into my possession. The amount of chlorides is not necessarily an indication of pollution, as it would generally be regarded in

England. In India, at all events, chlorides in well water are I believe more often an indication of the presence of saline matter in the soil than of contamination with organic matter. The quantity of total solids is, however, far greater than I have ever found in any well water reputed to be fit for potable purposes.

I learn that it is a universal custom for the pilgrims to bring away with them these tin vessels, or dibias, of Zem-Zem water. Rich pilgrims may bring away one or two hundred of these dibias to distribute to their friends on their return to their native country. Poor pilgrims are, however, content with one or two. The Zem-Zem water is put into the dibias by the Mecca traders during the time of the year when no, or few, pilgrims are present; and it is very probable that the Zem-Zem water is often diluted, as this does not diminish its sanctity, and the supply of water in the well is by no means equal to the demand.

RESEARCHES ON VACCINIA AND VARIOLA.

By M. ARMAND RUFFER, M.D.,

AND

H. G. PLIMMER, M.R.C.S.

THE literature of research which has appeared during the last ten years contains numerous references to the etiology of vaccinia and variola. Many observers have thought that the two diseases were caused by a micro-organism belonging to the vegetable kingdom, whilst others—Renault, Pfeiffer, Van der Loeff, Guarneri, Monti, Ruffer and Plimmer—have described protozoa in vaccinia and variola pustules. It is not to be denied, however, that many of these so-called protozoa were nothing but anatomical elements more and less altered, and Renault was the first to show that the epithelium cells, covering the vaccinia and variola pustules, often contained a peculiar body which he regarded as parasitic, whilst Guarneri demonstrated the fact that, when vaccinia was inoculated, this body again appeared in the fresh pustules. Thus, on inoculating vaccinia on the cornea, these protozoa appeared in the epithelium cells covering the cornea. Monti, as well as Ruffer and Plimmer, confirmed some of Guarneri's results, and at the International Medical Congress at Rome one of us compared some of our specimens with some kindly exhibited by Professors Guarneri and Monti, and established the identity of the bodies described as protozoa by Guarneri, Monti, and ourselves.

During the last year we have studied a fair number of vaccinia pustules taken from man, the cow, monkey, and rabbit; and in all, provided the disease was not too far advanced, we found this peculiar parasitic structure. The fresh tissue was placed in a saturated solution of sublimate and then hardened in 30 per cent., 60 per cent., 90 per cent., and absolute alcohol. After embedding in paraffin, the sections were passed through tincture of iodine, in order to remove the excess of sublimate, and stained with hæmatoxylin or with carmine and lichtgrün, or with the Biondi-Ehrlich mixture, or with some other staining reagents.

The parasite in question is a small round body, which sometimes appears to have a more darkly-staining centre. It is about four times the size of an ordinary staphylococcus and generally lies in a clear vacuole in the protoplasm of the epithelial cell. It occasionally indents the nucleus, though we have never seen it enclosed in the latter structure. It appears to multiply by simple division into two or multiples of two, but we have not yet satisfied ourselves as to the formation of spores.

When examined fresh it shows slight amoeboid movements, and may be observed in tissues which have been kept for several days or weeks, even though no antiseptic precautions have been taken.

It stains easily with both nuclear and protoplasmic dyes, but it appears to have a preference for the latter class, as it retains them after the nuclei of the cells of the body have yielded them to alcohol or other reagents. With Biondi's reagent, for instance, it stains red with the acid fuchsine, often exhibiting a central green part. Carmine stains it intensely, but if lichtgrün or indulin be used as a counter stain it retains these stains after all traces of them have left the

nuclei of the cells, and in this way a very beautiful differential coloration is obtained.

When vaccinia is inoculated on the skin, these parasitic bodies occur in the stratum of Malpighi, and after a few days are found at the edge of the pustule only, though they are probably present in the interior of the pustule also. Owing to the number of leucocytes and degenerated epithelium cells which obscure the picture in that situation, they are extremely difficult to recognise with certainty, whereas they stand out with extreme clearness in the protoplasm of the cell. The epithelium cells in their neighbourhood not only undergo marked degenerative changes, but also invade the connective tissue below, the whole picture greatly resembling some of the early stages of cancer. The epithelium cells, moreover, present certain inflammatory alterations which are identical with those already described by others and ourselves in cancer. One may see, for instance, all the cell inclusions, vacuolisations, etc., so often present in cancer, and which have been erroneously described as parasites by so many observers. And it may be added that appearances similar to these may be experimentally produced in epithelium cells without the intervention of any living micro-organism whatever.

We have found the same organisms in sections of skin of small-pox patients and in the pustules of the larynx and trachea. Owing to want of material, however, we have not studied them in the fresh epithelium cells of such patients, as this will require a stay in a small-pox hospital. In both diseases the leucocytes may be seen to penetrate into the epithelium cells and to take these parasitic bodies into their interior.

No conclusion can be drawn from our observations at present, and we simply wish to draw attention to the fact that in all cases of vaccinia and variola in man and in three distinct species of animals, the same parasite is met with in all; and that it differs in many particulars from the parasite of cancer.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

RHEUMATIC PERITYPHLITIS AND GOUT OF THE INTESTINES.

I SHOULD like to point out, with reference to Dr. Burney Yeo's very interesting case of rheumatic perityphlitis,¹ that I have recorded several very similar cases under the name of gout of the intestines,² and have drawn special attention to the fact that they at once clear up under salicylate of soda. Further, my experience differs very greatly from that of the authors quoted by Dr. Yeo, as it has led me to believe that gouty perityphlitis is extremely common, or, in other words, that nearly all perityphlitis owns this origin, and that if all cases were at once treated by salicylates further troubles requiring surgical procedures would be rare.

Since I first wrote on the subject I have heard from many people of similar cases, and have seen several more myself. I have also recorded in my book a case in which salicylates cured completely in a few days a peritonitis which had been under other treatment for months with the only result that a morphine habit was added.

I have also extended the same reasoning to explain inflammations of other fibrous structures in the abdomen and pelvis, as well as to lead colic and other forms of colic, all of which react in the same way to salicylates; and in a case of pelvic cellulitis, recently under the care of one of my colleagues at the Royal Hospital for Children and Women, salicylates produced a change in the temperature chart almost identical with that in Dr. Yeo's case.

Brook Street, W.

ALEXANDER HAIG.

¹ BRITISH MEDICAL JOURNAL, June 16th.

² Practitioner, January, 1893; and Uric Acid, 2nd Edition, 1894.

A PASTEUR Institute was opened at Tunis on June 19th, by Dr. Loir, a nephew of M. Pasteur.

AN OVARIAN TUMOUR GROWING WITH GREAT RAPIDITY.

It is well known that tumours of the ovary sometimes grow with great rapidity, but it is seldom that increase is so rapid as was the case in a patient seen with Dr. Simpson at Tunbridge Wells on February 10th. The patient was aged 54, and, although she had not been in good health for about a year, she had noticed that the abdomen was enlarging for only two or three months. Dr. Simpson was sent for partly on account of the swelling, but principally because there was great discomfort and abdominal pain. An ovarian tumour was diagnosed, and a few days afterwards I saw the case in consultation. On that day the tumour, composed chiefly of a single cyst, extended into the abdomen to within 1 inch of the umbilicus. On vaginal examination the uterus was found to be fairly movable and in its normal position, the tumour being felt posteriorly.

The operation was performed as soon as it was convenient to the patient, on February 25th, fifteen days after the examination. Instead of barely reaching to the umbilicus, the tumour now filled the abdomen, raising the ribs on both sides. After separating parietal adhesions from the whole of the anterior surface and emptying the large cyst with the trocar, it was found that the right broad ligament was extensively opened up, and that the uterus had been drawn entirely out of the pelvis, being closely incorporated with the left side of the tumour. The enucleation was easily and rapidly effected, and a drainage tube was left in. Convalescence could not have been more easy, and Dr. Simpson removed the drainage tube at the end of forty-eight hours. The tumour weighed with its contents 27 lbs. If 5 lbs. be deducted—and this is a liberal allowance for the tumour as first seen—we find that the increase in fifteen days was 22 lbs., or almost 1½ lb. a-day.

Charles Street, W.

GEORGE E. KEITH, M.B., C.M. Edin.

SEPTIC CATHETERS.

As is well known, one of the troubles after all abdominal sections used to be the occurrence of acute suppurative inflammation of the bladder in cases where the catheter had to be employed. I have seen it so bad as to be nearly fatal.

It occurs so rarely now that it may be said to be banished, and the simple method of success has been to use catheters with no receptacle beyond the eye, and to keep the catheter always under water save when in use. I also have the understanding on the part of all my nurses that this complication means culpable neglect on their part, and involves summary dismissal.

Birmingham.

LAWSON TAIT.

SCARLET RASH AFTER ENEMATA.

IN the BRITISH MEDICAL JOURNAL of June 2nd Dr. Suckling draws attention to the importance of excluding the possibility of a rash resembling scarlet fever being due to an aperient enema. I think this rash is often met with, not only after an enema, but after a brisk aperient has been given by the mouth in cases of chronic constipation, and also in the later stages of acute intestinal catarrh when peristalsis of the paralysed gut is again established. In all these cases indican is present in the urine, and may be separated from it in the form of indigo by Jaffé's method, that is, by adding an equal quantity of strong hydrochloric acid (free from chlorine) to the urine and then one drop of a solution of chlorinated lime.

Many theories have been advanced as to the signification of indican in the urine, but apparently all we can at present take for granted is that it does point to some intestinal irritation being present and that the absorption of some faecal constituent is going on. I regard the presence of indican as a valuable aid in the diagnosis of these doubtful rashes. Indican is rarely present in early cases of scarlet fever, and then only when the patient has been previously troubled with intestinal irritation. Another important point is that there is rarely much itching during the onset of scarlet fever rash, but the eruption in these intestinal cases is attended with intense tingling and itching, even when its character is by no means urticarial.

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