emaciation. He again improved, but on the thirty-first day rigors again appeared. The epididymitis subsided, and the urethral discharge returned. He again improved, and got up. On the fortieth day he relapsed, with temperature of 104° , precordial pain and tumultuous action of the heart. After this slow improvement set in; the patient was markedly anæmic. He was sent to the seaside on the fifty-sixth day, suffering from gleet. The treatment was with quinine.

This very instructive case I hold to have been one of general infection by the gonococcus. The instrumentation of the urethra gave every facility for the invasion of the tissues, both by depressing the local resisting power, and by epithelial abrasion. It may be contended, of course, that the subsequent conditions were septic and secondary to the cellulitis of the foot, but this itself may have been due to gonococcal infection. Further, the cellulitis had ceased some eighteen days before the general infection developed, while the continued activity of the gonococcus was shown by the urethritis and epididymitis. The general symptoms also were more those of a gonococcal infection of the heart, than of a septic endocarditis. Anyway, this case strongly suggested to me the danger of favouring the generalisation of a gonorrhœa by applying to the urethra any measures calculated to injure or abrade the mucous surface, and so weaken its resisting power. Since then I have never permitted any instrument to be passed in the acute stage, nor have I employed high pressure injections or abortive antiseptics. Having realised the danger of causing the generalisation of the infection, I do not think such energetic measures wise, since through them a patient may be seriously imperilled or crippled for life. Consequently I believe, I have seen very few cases of gonorrhœal rheumatism in my out-patient practice. I cannot remember ever having seen a case of grave cardiac disease, or of the profound general toxic degenerations quoted by other observers. I have examined the records of 2,000 of my cases, and find 5 cases of gonorrhœal rheumatism on admission, and 7 occurring during treatment. Two others entered as "rheumatism" and "pain in the ankle" were considered to be true rheumatism, and were not specially treated. The remaining 12 were: Affection of knee 3, ankle 1, instep 1, plantar fascia 1, arthritis and scleritis 1, pains in joints 1, gonorrhœal rheumatism 4. This works out at 0.6 per cent. No prolonged or severe case occurred, but such a condition arising in an out-patient would probably lead him to seek admission to a hospital or infirmary, and the case would be missed.

The opportunity for error in statistics, drawn from the fluctuating population of the out-patient department, is very considerable, and only the broadest conclusions can safely be drawn from them. As the result of the policy of non-intervention, in the shape of energetic measures such as instrumentation, high-pressure injections, and strong abortive antiseptics, the fact remains, that only 12 in 2,000 cases of generalised infection occurred, and of these 5 were present when first seen. I may make a large allowance for error, and still contend that these results are better than those quoted by Besnier and Julien of 2 per cent., and Gresolle 2.8 per cent., or the statistics of Gricolle quoted by Neisser, in which he found 68 cases in 4,423, 1 in 63, or 1.5 per cent.

I venture to echo the words of Neisser, who writes: "It is surely beyond a doubt, that the frequency of complications depends on the method of treatment." I submit that the cases and observations I have brought forward clearly indicate that any local injury or irritation must favour the growth of the microbe, and increase the production of toxin, which is always absorbed. That this toxic absorption directly depresses the resisting power of the phagocytes, and favours the invasion of the organism by the gonococcus. In view of the extreme obstinacy of the generalised infection to treatment, we cannot afford to neglect any precaution calculated to minimise the danger of generalisation; and therefore it is of great importance to avoid any local injury of the mucous tract involved. Even in chronic gleet I have seen epididymitis once follow a too rapid dilatation of a stricture, and once too energetic use of the endoscope; and epididymitis is a frequent cause of sterility, which is no small matter. But with due care, my experience is that more vigorous treatment is both necessary and effectual in the chronic forms of gonorrhœa.

I have gratefully seized this opportunity of drawing the attention of the profession to the distinction between the

always generalised toxæmia of gonorrhœa and the rarer metastases, and the indications for the corresponding methods of treatment. If at the same time I have made evident the desirability of gentle local measures during the acute stage of gonorrhœa my labours will not have been in vain.

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A CASE OF CONGENITAL HEPATIC CIRRHOSIS WITH OBLITERATIVE CHOLANGITIS (CONGENITAL OBLITERATION OF THE BILE DUCTS).

BY

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The following case was under our observation in the Victoria Hospital for Children, Chelsea:

History.

A male child, aged 6 months, had been jaundiced since birth; it was treated as an out-patient with mercury and chalk, magnesium sulphate, and podophyllin. The jaundice varied from time to time, and the child's nutrition was fairly preserved. A fortnight before death the jaundice became more marked, and on May 28th, 1897, the child was admitted under Dr. Ridge Jones, to whom we are indebted for permission to publish the case.

Condition on Admission.

The child then had universal, but not extreme, jaundice. There was some erythema in the left axilla. The liver was much enlarged, and came down to the anterior superior spine of the ilium. The spleen was also enlarged, and projected three fingerbreadths below the costal arch. There was no ascites. The urine was bile-stained, and the motions clay-coloured.

On June 5th the temperature went up to 102° , and the child died after bringing up blood from the lungs.

The child was the first-born, and presented no signs of congenital syphilis.

Necropsy.

The necropsy was performed by Dr. Hayne. The body was thin, and all the organs and tissues were bile-stained. The œsophagus was normal, and free from staining by blood. The pleuræ were healthy. The trachea contained blood. Blood was found to have been aspirated into both lungs, which showed emphysematous bullæ and some small caseous masses, the latter were chiefly close to the surface of the lung. Microscopically these caseous areas showed broncho-pneumonia, with early caseation, but no definite evidence of tuberculosis. One of the tracheal glands was enlarged and caseous.

Condition of Liver.

The liver weighed 12 oz., or nearly twice the normal weight. Holt gives 7.5 oz. as the normal weight of the liver for a child of 6 months, while according to Birch-Hirschfeld 6 oz. is the average weight. It was much enlarged, yellow in colour, and manifestly cirrhotic. The common bile duct was small, and as its lower half was transformed into a slender fibrous cord considerable difficulty was experienced in finding it and in distinguishing it from the hepatic artery. The gall bladder was small, thickened, collapsed, and buried in adhesions; the cystic duct was represented by a thin fibrous cord. There were enlarged glands in the portal fissure suggesting the condition found in hypertrophic biliary cirrhosis. The liver cut like a cirrhotic liver and showed fibrosis.

Microscopic Examination.

Microscopic sections were taken from various parts of the liver, fibrosis was everywhere present, but the appearances varied in different situations. Where the fibrosis was least marked there was monolobular cirrhosis, the fibrous tissue being old and including a large number of newly-formed bile ducts; in other situations, where the cirrhosis was multilobular, there were areas of extensive fibrosis, including compressed liver cells and small bile ducts. Some of the latter were dilated and contained plugs of inspissated bile. The cirrhosis was everywhere old and not progressive. The liver cells inside the lobules were in a very fair state of nutrition, the trabecular arrangement was disturbed and the columns of liver cells were separated from each other by spaces, which, however, appear empty.

The appearances are, therefore, those of a mixed monolobular and multilobular cirrhosis. Sections of the common bile duct near its obliteration show very considerable fibrotic thickening of its walls, with complete alteration of its normal

appearance and absence of its mucous glands. In the lumen there is *débris* consisting of inspissated bile pigment and the necrosed remains of inflammatory tissue. No trace of any normal epithelial lining can be made out. The fibrous wall is infiltrated for some distance by globules of inspissated bile. In the accompanying section, drawn under a low power, the *débris* might at first sight suggest desquamated epithelium, but examination under a high power does not support this. The *débris* shows necrotic fibrous tissue, a few spindle-shaped nuclei and small masses of inspissated bile.

Fig. 1.—Transverse section of common bile duct close to its obliteration under a low power ($\times 35$) shows altered and fibrosed walls of duct, and absence of mucous glands and of the lining epithelium. The small black spots infiltrating the walls of the duct are microscopic masses of inspissated bile, not nuclei.

The spleen weighed $2\frac{1}{2}$ ozs., and was extremely diffident. The heart, pericardium, kidneys and other organs, except for bile staining, were normal.

REMARKS BY DR. ROLLESTON.

This case is recorded not only on account of its comparative rarity, but also in order to discuss briefly the nature of the morbid process.

Rarity.

In 1892 Dr. John Thomson¹ collected 50 cases; I have references to 9 additional cases, one of which does not appear to have been included in Thomson's 50 cases (H. Gibbs), while the others have been published since his monograph appeared (Giese, J. L. Steven, Kynoch, F. H. Hawkins, Putnam, Treves, Ross, and the present case).

Treves's case was successfully operated upon at the age of 19 years for jaundice of sixteen years' duration, and obliteration and absence of the lower end of the bile duct was found. It differs so markedly from all the other cases that it might be questioned whether it belongs to the same category. Jaundice did not begin till the age of 3 years instead of a day or two after birth. Possibly, though Treves does not suggest it, the obliteration of the duct was due to the effects of a calculus lodging in the duct at or about the time of the onset of jaundice. Thomson³ considers that the same morbid process is at work in cholelithiasis in infants as in congenital obliteration of the bile ducts, and supports this suggestion by quoting 2 cases of infantile cholelithiasis in which the biliary apparatus was abnormal (Cuffer, Bouisson). Treves's remarkable case may perhaps, therefore, be considered as allied to, if not a very slightly marked example of, the same class. It may be mentioned that two other cases have been operated upon, though unsuccessfully (Giese, Putnam).

Sex.

In Thomson's cases the sex was given in 34, and showed a preponderance of males—21 males, 13 females. In the 9

other cases 6 were females and 3 males, making in all 24 males to 19 females.

Pathogeny.

John Thomson, in his monograph¹ on the subject, believed that in the great majority of cases there was to start with, a congenital malformation of the ducts which narrowed the available lumen. This obstruction to the free exit of bile disposed to catarrh, blocking, and finally to obliteration of the ducts. As a result of the obstruction to the free passage of bile into the duodenum biliary cirrhosis was started. In a later article, contributed to Allbutt's *System of Medicine*,² this writer so far modifies his views as to omit any reference to a primary congenital abnormality as a factor in the condition. The process is regarded as a descending cholangitis set up by irritative bodies in the bile, compared to toluylendiamine; when the disease has gone so far as to interfere with the free passage of bile from the liver, biliary cirrhosis develops, as in Charcot and Gombault's experimental ligation of the bile ducts in guinea-pigs.

Ford, in a recent paper on obstructive biliary cirrhosis, has collected 24 cases since 1882, where cirrhosis of the liver was associated with, and as he believes due to, obstruction of the common duct. Of these 24 cases, no fewer than 9 are examples of congenital obliteration of the bile ducts. In fact, his statistical proof that biliary obstruction *per se* induces cirrhosis of the liver rests in some measure on cases of congenital obliteration of the ducts.

It is a point of significant interest that cirrhosis of the liver is comparatively rarely found in association with obstruction of the bile ducts in adults, and, when present, is usually associated with gall stones and infection of the ducts, while cirrhosis seems to be a definite accompaniment of congenital obliteration of the ducts. In J. Thomson's 50 cases a microscopical examination was only made in 10, and in all but one of these it is stated that cirrhosis was present; in 8 other cases that I have notes of, cirrhosis was present in at least 7. The omitted case is that described by D. Ross, to which further reference is made below.

The question therefore arises whether there is any evidence to support the theory that cirrhosis in these cases is dependent on the obliteration of the larger bile ducts. If it can be established that the change in the bile duct is older and more advanced than that in the liver, there is fair ground for regarding the hepatic lesion as due to the obstruction in the ducts. In a recently-recorded case Ross describes obliteration of the common bile duct near the duodenum in a female child, aged 3 months, whose liver showed small-celled infiltration around the bile ducts rather than fibrosis. In this instance it must be admitted that the evidence points to the change in the bile duct being the older. On the other hand, in our case, and, as far as one can judge, in the others, the fibrosis in the liver is quite as old as the lesion in the bile ducts. Thomson¹ refers to 7 cases of infantile jaundice with symptoms similar to those of congenital obliteration of the bile ducts, but with pervious ducts; they proved fatal at 17 days of age on an average instead of at $2\frac{1}{2}$ months, as in congenital obliteration of the ducts. "This suggests that they are merely earlier cases of the same condition—before the blocking has occurred."

The following hypothesis appears to be a reasonable explanation of the pathogeny of so-called congenital obliteration of the bile ducts: In the first instance, poisons pass by the blood from the placenta to the fetus by the umbilical vein; some of this blood at once passes through the liver, and, in virtue of the toxic effect of the contained body or bodies, induces ordinary portal or multilobular cirrhosis of the liver; the rest of the blood in the umbilical vein passes directly into the general circulation of the fetus by the ductus venosus, and subsequently, by means of the hepatic artery, will convey poison to the liver. By this means the toxic body, which, as Thomson suggests, may be analogous to toluylendiamine, is excreted into the small intrahepatic bile ducts, setting up cholangitis and monolobular cirrhosis, like that seen in hypertrophic biliary cirrhosis. In this way a mixed cirrhosis (portal and biliary) is induced. The cholangitis descends to the larger ducts, and gives rise to an obliterative cholangitis—a process analogous to obliterative appendicitis. The difference between this condition of congenital (umbilical) cirrhosis with obliterative cholangitis and other forms of

cirrhosis in post-natal life consists in the further change in the large bile ducts and gall bladder. An attempt to explain this additional lesion may be made as follows: The bile ducts are extremely small at birth, and any inflammatory change will, from the small size of the lumen, produce stenosis much more readily than later in life. An analogous effect is seen in the fact that laryngeal obstruction in diphtheria is more frequent in young subjects than in older patients, quite apart from the much greater frequency of the disease in the young. The opposed inflamed surfaces of the bile ducts will also come in contact more readily, and, as in catarrhal appendicitis, obliteration might result.

The following considerations bear on the hypothesis that the disease is primarily a congenital cirrhosis.

1. The almost constant occurrence of cirrhosis in these cases of bile duct obstruction in infants as compared with the infrequency and irregularity with which cirrhosis follows obstruction of the larger bile ducts in later life. The mixed character of the cirrhosis explains the discrepancy in the recorded cases, some authors speaking of biliary, others of multilobular, cirrhosis.

2. The large size of the liver—this resembles hypertrophic biliary cirrhosis. In simple obstruction of the larger bile ducts in adults, the liver, though swollen from retained bile in the early stages, is usually small after death.

3. The large size of the spleen—a phenomenon not met with in uncomplicated biliary obstruction. The large size of the spleen is best explained as the result of toxic bodies reaching the organ by the splenic artery. In hereditary syphilis, where it is probable that the poison reaches the liver by the umbilical vein and is derived from the maternal circulation rather than that the ovum is infected by a syphilitic spermatozoon, there is a similar splenic enlargement. In both conditions there is cirrhosis due to poisons arriving by the umbilical vein; the difference between the pericellular cirrhosis of hereditary syphilis and the mixed (monolobular and multilobular) cirrhosis of so-called congenital obliteration of the bile ducts must depend on a difference in the poisons in the two diseases. This is at one with Thomson's statistical proof that syphilis plays no part in the antecedents of so-called congenital obliteration of the bile ducts.

4. The fact that in some instances several cases of this rare disease have occurred in the same family. Hypertrophic biliary cirrhosis not infrequently occurs in several members of the same family, and has been thought by Boix to be a waterborne disease. Against the view that so-called congenital obliteration of the bile ducts is in reality a form of congenital cirrhosis, it might with reason be objected that the poison that sets up the change must pass through the mother, and that she should show evidence of its influence. It must be admitted that there are at present no data to provide a satisfactory answer to this argument. As bearing on this point, however, it may be mentioned that the extremely fatal biliary cirrhosis in Brahmin infants around Calcutta, which is also a family disease, has been thought to depend on the mother's milk. The mothers restrict themselves to a dry diet and take a decoction of black pepper. If this is the causal factor, it evidently affects the nurslings more than the nurses, and might justify the suggestion that in fetal life the infant's liver may be more susceptible than the mother to poisons tending to produce cirrhosis; while again the effects of syphilis may be, and usually are, much more manifest in the infant than in the syphilitised mother.

To sum up, it seems reasonable to believe that the disease is primarily started by poisons derived from the mother, and conveyed to the liver of the foetus, and that a mixed cirrhosis and cholangitis are thus set up. The cholangitis accounts for the jaundice, and by descending to the larger extrahepatic bile ducts induces an obliterative cholangitis analogous to obliterating appendicitis.

In some cases, especially those fatal early in life, the latter change has not been affected, and cirrhosis alone is found. Possibly in some instances this change never occurs, and in this way some of the cases of cirrhosis in very early life are accounted for. Again in exceptional instances the obliterative cholangitis might possibly be delayed, and come on much later; such an event might bring Treves's case, already referred to, into line with the others.

It is possible that there are several conditions at present

included under the title congenital obliteration of the ducts¹ and that some, such as D. Ross's case, are due to constriction of the duct by localised peritonitis, and deserve the title better than those cases that are intimately associated with cirrhosis.

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ON THE TREATMENT OF GLYCOSURIA AND DIABETES MELLITUS WITH SODIUM SALICYLATE.

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It is somewhat difficult to form a correct estimate of the action of drugs on the sugar excretion in cases of glycosuria and diabetes for many reasons. The occurrence of complications, such as phthisis for example, in the course of the disease may cause a diminution of the sugar excretion, which at first sight appears to be the result of medical treatment. Also in the treatment of diabetes the diet is usually restricted, more or less, at the same time that various drugs are prescribed; hence it is often impossible to say how much of the improvement which follows is due to the action of the restricted diet and how much to the drug. In the most severe form of diabetes it is usually easy to demonstrate that no drug has much influence on the sugar excretion. But in the milder forms of diabetes or persistent glycosuria, considerable care is necessary in forming an opinion as to the action of various drugs. Before attributing a diminution of sugar excretion to the action of any drug, it is important to show that such a diminution is not due to a restricted diet or to the occurrence of some complication. Also in certain rare cases of the mild form of diabetes there are periods in which the sugar excretion decreases markedly, quite apart from treatment (cases of intermittent diabetes).

Recently I have endeavoured to ascertain whether sodium salicylate has any definite influence on the sugar excretion in glycosuria and diabetes. This drug was strongly recommended in diabetes long ago by Professor W. Ebstein, of Göttingen, and though a number of papers have been since published both in English and foreign medical literature, recording its supposed favourable action, still it does not appear to be now prescribed very extensively for diabetes in England. About ten years ago I gave it a careful trial in several severe cases of diabetes, but only in small doses. I was never able to detect any definite diminution of the sugar excretion under its use in these cases; but often the patients stated that they felt better when taking the sodium salicylate than when other drugs were given. Recently I have prescribed the drug in large doses in a number of consecutive cases of diabetes and glycosuria, and in 20 of these I have been able to keep records of the sugar excretion from time to time. But I wish especially to record the observations which I have made in 1 case that has been under my care, both as an in-patient and an out-patient at the Ancoats Hospitals for twelve months. Altogether the patient was in the hospital for twenty-two weeks, and during this period I estimated daily the sugar excretion.

CASE 1.—The patient was a woman, aged 70, who had suffered from diabetic symptoms for 10 years. The case may be described as one of mild diabetes mellitus or persistent glycosuria. There were no complications, and the amount of sugar excreted was fairly stationary apart from medical treatment. I first saw her in 1894. At that time the urine had a specific gravity of 1032, and contained 24 grains of sugar to the ounce. In 1899 the specific gravity was 1034 and the amount of sugar 25 grains to the ounce before treatment was