and 2 with arsacetin, all followed by amblyopia varying in severity from actual blindness to marked contraction of the field of vision. Paderstein's patients were Europeans. Those of Beck and Gray were natives of Uganda.

On the other hand many others have employed the arylarsonate salts without any ill effects and with conspicuous advantage. In the same article from which the above is quoted, Major Ward is reported to have given 18,000 grains of soamin to more than 100 syphilitic patients during the last two years without any ill effects. Colonel Lambkin, so zealous a worker in this field, has treated 308 cases with arylarsonates without any bad effect. During 1909 he gave over 2,000 intramuscular injections of soamin and arsacetin with no ill consequence; and he attributes the toxic symptoms that have been described to the liability to decomposition that occurs when these salts are kept in solution. Beck, however, regards the eye symptoms as due to chronic poisoning dependent on idiosyncrasy, as many patients receiving larger quantities of similarly prepared arylarsonates escape eye symptoms.

Colonel Lambkin is the pioneer in treating early syphilis intramuscularly with the arylarsonates in combination with mercury. He related his earlier results at the Belfast Meeting of the British Medical Association, 1909.² Since then he has recorded an interesting series of cases treated with a preparation of atoxyl and mercury made for him by Messrs. Greef of Charlottenburg, Germany, and named mercury atoxylate. He has already treated a large number of cases with remarkable success and without the slightest toxic effect. He gives about 9 grains in eight injections, with three to seven days' interval between each, and repeats the course after one month's rest.³ Through the courtesy of Colonel Lambkin I was privileged last December to see the technique and effect of this treatment at the Rochester Row Military Hospital. His results were very striking.

Only in exceptional cases have I felt justified at this stage in employing the remedy, but I have done so in 5 cases, in 4 of them with marked benefit. The fifth case is one of general paralysis, and this, too, shows improvement.

The first is one already alluded to (H. G.) in speaking of relapsing chancre. This recurred notwithstanding intramuscular treatment with grey oil, but the chancre disappeared under one course of injections of atoxylate of mercury.

The second case, also already mentioned, was a man (A. B.) with a coppery squamo-papular eruption all over his body, throat implications, and enlarged glands; about to marry. He is improving most strikingly under a course of mercury atoxylate.

The third case is that of a gentleman under treatment by intramuscular injections of grey oil for eight months, who developed a very extensive papulo-squamous eruption on the back, which neither potassium iodide nor Fowler's solution given at the same time as the injections appeared to benefit. It cleared up entirely during one course of mercury atoxylate.

The fourth case is one of very severe secondary syphilis, in which the throat was sloughing, an angry spreading sore existed, and the patient was cachectic and ill. He has improved rapidly under a course of the mercury atoxylate.

The mercury atoxylate* has a wonderful immediate effect on intractable symptoms, and so far I have noticed no ill effects. Further experience will show if it confers equal future benefits. These new remedies should not be abandoned because of untoward accidents alone. The early employment of mercury caused many calamities, but it has outlived opposition. We should rather redouble our efforts and caution and strive to appreciate the class of case in which these new drugs can be administered with additional benefit, and how they can be given without harm.

My experience with the intramuscular injection of the soluble salts of mercury is limited to their administration to patients temporarily resident in Manchester, but under the care of foreign specialists. They appear to cause more pain and depression, and to be less effective in the removal of symptoms, than the methods already described.

Mercurial inunctions alone and in combination with potassium iodide have often served me well, especially in "melting away" those large abdominal masses (called

tuberculous, but which I regard as oftener due to hereditary syphilis) so frequently seen in children. It is, however, a dirty and, if skilfully carried out, an expensive performance.

Potassium iodide is a drug we could not do without. Numbers of cases of secondary syphilis respond to its influence which resist mercurial treatment when given alone. Its value in the absorption of large specific masses is incontestable.

In 1898 I saw a young man, aged 22, who had been in the Royal Infirmary under the late Dr. Thomas Harris and discharged as incurable with a growth in the right chest. He was breathing almost entirely with his left lung—the right percussion note in front and behind being absolutely dull—with almost inaudible breath sounds, and no fluid. His right arm was oedematous and veins engorged. In a few months, under rapidly increasing doses of potassium iodide and mercury, the whole malady disappeared. He had not had syphilis himself, but there were reasons to assume hereditary syphilis.

I showed this man subsequently to Dr. Harris, and he was much impressed. Many other successful cases could be cited, especially one of large liver gummata, and another lung mass, which responded to treatment by iodide. In some cases the potassium or sodium iodide agrees badly; in these iodipin, an iodized oil, is a valuable substitute. It is prepared in two strengths—10 per cent. and 25 per cent. It can be given intramuscularly—or by the mouth in the form of capsules, tablets, or in milk. It is well tolerated, and my results justify the reputation that it has earned in other hands.

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THE SURGICAL TREATMENT OF
GASTROPTOSIS.

BEING AN ANALYSIS OF A SERIES OF TWENTY CASES, WITH
SPECIAL REFERENCE TO THE RESULTS OF
OPERATIVE TREATMENT.*

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THE symptoms sometimes associated with gastroptosis are those common to several other affections of the stomach. Hence the diagnosis rests on physical examination and on a process of exclusion, the culminating point of which is in some cases an exploratory laparotomy.

The patient suffers from severe chronic dyspepsia, often of long standing. In two of my cases the symptoms have lasted twenty years, in one for twelve, and in two for ten. There is flatulent distension, a sense of fullness, and pain after food referred to the epigastrium and sometimes radiating under the right costal margin and to the scapula. The pain comes on at various periods after food, usually early, but occasionally after a longer period, even up to three or four hours. Vomiting is often present, and, in exceptional cases, is incessant. The symptoms may be more or less persistent, but commonly the sufferer is subject to periodic attacks or exacerbations of the symptoms which lead to their admission to hospital on several separate occasions. The pain is prone to be made worse by standing or walking about after a meal. During the exacerbations there is in some cases superficial and deep tenderness over the epigastrium. The diet is usually, by force of circumstances, restricted. Meat is often avoided and the worst cases restrict themselves to milk, eggs, and such light diet in small quantities. Haematemesis is present frequently; it existed in nine, and perhaps ten, out of my twenty cases. In seven of these it was considerable in amount—a teacupful or more; exceptionally, it was frequent and small in quantity. The following cases are good examples:

Mary C., aged 46, suffered from pain, usually four hours after food, which was relieved by vomiting. She had repeated attacks of haematemesis "in large amounts" twenty years, seven years, and one year and nine months before admission respectively.

Emily S., aged 23, dairymaid. In 1907 she began to suffer after food with attacks of pain, which passed through to the back, also with nausea and flatulence. Six months later she

* Messrs. Oppenheimer and Son have procured the mercury atoxylate from the German firm and put it up for me in asepticules ready for use with Lambkin's cream basis. They assure me that if the asepticules are not tampered with, and if they are kept in a dark place, there is no fear of decomposition.

* Read before the Medical Society of London.

brought up blood, and next day the motions were dark. In January, 1909, she brought up a teacupful of blood; in May, 1909, she vomited a tablespoonful of blood on several occasions. Free HCl 0.07 Total acidity 56.

I cite this case as the haematemesis was verified by her medical attendants. Another patient, aged 32, informed me that on two occasions she had vomited as much as a quart of blood. The free HCl in this case was 0.05 per cent. Total acidity 23.

The cause of the haemorrhage I do not pretend to explain. Possibly in some cases it is toxic. In others due to rupture during vomiting of minute dilated capillary veins in the mucous membrane of the stomach; for on two or three occasions, on examining the interior of the stomach with a speculum, I observed small red points (looking like dilated venules) towards the cardiac end which bled readily on being touched with a sponge. Possibly when the stomach is prolapsed the venous return is slightly impeded, for the course of the coronary vein is rendered more vertical. I feel tolerably certain that the haemorrhage in these cases did not depend on ulceration, for in 8 of the cases with haematemesis not only were the external surfaces of the stomach carefully examined, but its interior was also examined with a speculum and sometimes with the finger. In no case was an ulcer found—except, perhaps, in that of a man aged 42; at a point on the lesser curvature a small, very superficial erosion $\frac{1}{8}$ to $\frac{1}{4}$ in. in diameter was observed. It looked as if a portion of the sodden mucous membrane had been detached by the speculum; and this is the more likely as he had had no definite haematemesis or melaena. On occasions, however, the vomit had been of a chocolate colour.

In the later stages of the malady the stomach may become dilated. Among my cases dilatation was noticed in three, and in one of these lavage showed definite gastrectasis. Evidence of delay in emptying the stomach was obtained by the use of iodopin, but this was only employed in a few cases. For example, in one case the reaction after administration of iodopin was obtained in three hours before the operation; and sometime after the operation in one and a half hours. In another case, before operation no reaction was obtained after an interval of three hours, and shortly after operation in one and a half hours. The bismuth test I have not yet tried.

At the operation the pylorus appeared in several instances to be suddenly bent upon itself, or kinked. The mechanism of this can be readily understood. The immediate cause of the gastroptosis is stretching and thinning of the gastro-hepatic omentum. This yielding is least at its right edge where it is thicker and reinforced by the common bile duct, hepatic artery, and portal vein lying within it. Consequently while the stomach sags down the pylorus is held up nearly in its normal position, and a sudden bend occurs on the inferior surface of the pylorus. The mechanical disability in emptying itself, entailed by the altered position of the stomach, is in some cases accentuated by spasm of the pylorus, which I have observed on the operating table in at least 3 cases. It is, therefore, not surprising that in long-standing cases the stomach walls yield and become atonic, and the organ dilates.

It may be noted that in some cases the stomach, in contradistinction to being dilated, is of an elongated tubular shape. This is perhaps one reason that many patients with gastroptosis can only take a very little food at a time.

Differential Diagnosis.

It is not my intention to enter fully into the differential diagnosis of gastroptosis, which offers many difficulties owing to other abnormal conditions being often associated with it.

Gastric Ulcer.—Anything like a full consideration of the differential diagnosis of gastroptosis from gastric ulcer would occupy much time, and in the end would, I venture to think, be unsatisfactory. For the symptoms associated with gastroptosis are in some instances so like those of gastric ulcer that the latter can only be excluded by a laparotomy. Allusion has been made to the frequency of haematemesis—that is, in nearly 50 per cent. of my cases. Pain and vomiting after food, superficial and deep tenderness over the epigastrium, and hyperaesthesia of the skin to the right of the lower dorsal spines may in exceptional

cases be present. An important point of distinction is that the acidity in gastroptosis is rarely increased, and is sometimes low. Free hydrochloric acid was in one or two cases of long standing entirely absent. When a youngish woman is referred to me with suspected gastric ulcer whose acidity is at or below normal, I always examine carefully for gastroptosis, especially if the lower part of the thorax is elongated and narrow. These cases form a distinct type.*

Movable Kidney.—Mobility of the right kidney was present in three of my cases—that is, 15 per cent.

One patient, with indigestion of twenty years' standing, haematemesis to a pint and a half, and melaena, had gastroptosis performed first. Her stomach symptoms were relieved, but she returned later with right kidney pain. Nephropexy was followed by a complete return to health, which has lasted to the present time—that is, four years.

A second patient has been relieved of stomach symptoms by gastroptosis. The right kidney was examined at the operation, but could not be moved. Now, eight months after the operation, she has definite renal pain, and the fingers can be insinuated above the right kidney.

A third case had suffered with indigestion for three years, and, on account of pain, her diet had been reduced to eggs and milk. The right kidney was freely movable. She has been cured by gastroptosis. The kidney is still movable, but produces no symptoms.

When movable kidney and gastroptosis are associated it is advisable to attack first the organ causing apparently the most trouble. If necessary the second organ can be dealt with later.

Cholelithiasis.—This was suspected in a not inconsiderable proportion of my cases, but in only one of the series were gall stones actually found. To clinical observers the ready simulation of cholelithiasis by the gastric symptoms of gastroptosis will at once become apparent by reference to the altered form and position of the liver as a result either of contraction of the thoracic walls or of yielding of the abdominal muscles. A Riedel's lobe is frequently present, which may be mistaken for or be supposed to cover a distended gall bladder. The liver itself may be displaced downwards owing to stretching of its suspensory ligaments. Evidence of tenderness over the gall bladder on deep inspiration is of course absent.

Jaundice may, however, be caused apart from cholelithiasis. It may be due to a gastric catarrh spreading to the duodenum or apparently to stretching of the common duct by the drag on the gastro-hepatic omentum. The following case is an example:

Matilda R., aged 30, suffered with epigastric pain twenty minutes after food. Early in 1909 she had several acute attacks of abdominal pain, with vomiting and either constipation or diarrhoea. A second attack which lasted three weeks was accompanied by icterus. She subsequently had several attacks lasting two to three days each with icterus. A diagnosis of gastroptosis with (?) gall stones was made by my colleague Dr. Bertrand Dawson, and in this I concurred. The edge of the right lobe of the liver was prolonged downwards, and the pancreas could be felt above the lesser curvature. At the operation the lesser curvature of the stomach was found at a level with the umbilicus, and the gall bladder and bile ducts were natural. A Riedel's lobe was present.

In such a case of extreme gastroptosis it is quite possible that the common duct was narrowed as well as elongated by stretching. Nine months after gastroptosis she stated that she "felt very well; just a little pain and indigestion, but nothing to speak of." There had been no return of icterus.

Hepatoptosis.—In only two cases was the liver so low that it was thought necessary to fix it by sutures. One patient on whom Beyer's modified gastroptosis was performed was quite well four years later; in the other case Duret's operation was done.

Physical Signs.

The position of the stomach is recognized by the fullness at and just below the umbilical region, flattening of the epigastrium, and by palpation and percussion, with or without inflation. In well-marked cases the pancreas is easily felt above the lesser curvature. It may be noted that gastroptosis may be overlooked and mistaken for dilatation of the stomach owing to prolongation downwards of the free edge of the left lobe of the liver. The

* Writing of the virginal type, Rovsing says: "It is this characteristic group of cases of gastroptosis (exhibiting innumerable stomach symptoms) which come to me with a diagnosis of ulcer or of carcinoma ventriculi."

lesser curvature in such a case may be situated just above this free edge, and it is assumed erroneously that the dullness above this point—that is, in the costal angle below the ensiform cartilage—is entirely liver dullness, whereas the stomach is not lying deep to the liver, but is really considerably lower than natural. I have traced the source of this error on the operating table.

Fig. 1.—First stage. Condition on opening abdomen with liver in position. A, Liver; B, small omentum; C, stomach; D, umbilicus.

is produced by alteration in form and constriction of the lower part of the thorax and waist by pressure of the corset and of waistbands.

The second type occurs in multipara whose abdominal walls have become relaxed and hanging by pregnancy, and in whom the intra-abdominal tension is diminished. "The symptoms in the latter group are mostly insignificant, and as a rule can be completely relieved by a

Fig. 2.—Second stage. Condition when liver is turned up. Liver held up and partially covered by gauze. A, Round ligament; B, quadrate lobe; C, gall bladder; D, umbilicus; E, liver—left lobe; F, transverse fissure; G, small omentum, very much thinned; H, pancreas seen through small omentum; J, stomach; K, lesser curvature 1 in. above umbilicus; P, pancreas.

Nephroptosis or movable kidney exists alone, seldom gastroptosis alone, and still more seldom nephroptosis and gastroptosis. Gastroptosis is always associated with falling of the colon, seldom with hepatoptosis."

The causes of splanchnoptosis are well known to British surgeons, especially by the writings of Arthur Keith.

Surgical Treatment.

Terrier and Hartmann and Rovsing recommend the employment of trusses or belts in certain cases. The latter orders them in cases of gastroptosis occurring in older women from stretching of the abdominal parietes by repeated pregnancies. I have only prescribed trusses in one or two cases, and therefore have little experience of their utility.

It may here be noted that Rovsing¹ draws an absolutely sharp line of distinction between two types of enteroptosis, or, as he rightly prefers to call it, splanchnoptosis. One type he terms virginal, since it occurs in women who have not been pregnant, and whose abdominal walls are strong. It

But Rovsing deserves the credit of having pointed out the clinical importance of the differentiation into types. For convenience I have treated the subject mainly from the point of view of gastroptosis, and have made no attempt to separate my cases into the two groups. In fact, the preceding portion of this article was compiled from the notes of my cases before I had read Rovsing's exhaustive article. As far as can be judged from the data of the notes, among my 20 cases 12, and probably more, were of the virginal type, 6 the multiparous type, 1 doubtful, and 1 patient was a male. It is, however, difficult to draw a hard and fast line of distinction, for a woman with nascent or partially developed virginal gastroptosis would almost certainly be made worse by pregnancy; and I have seen such cases.

Operative Treatment.

The stomach is suspended by its suspensory ligaments, the gastro-hepatic omentum and the gastro-phrenic ligament, attached below respectively to the lesser curvature and to the left of the oesophagus. The remainder of the organ is practically free. Any operation for the cure of gastroptosis should not violate this condition of freedom, otherwise the motility, together with the expansion and contraction, of the stomach are likely to be impaired; or the patient may suffer inconvenience from adhesions resulting from the operation. Many of the operations devised have for their actual object the formation of adhesions between either the anterior wall of the stomach or the lesser or greater omentum and the anterior abdominal wall. They are therefore to a greater or lesser degree open to the above mentioned theoretical objection.

Duret, of Lisle, first performed the operation of gastroptexy in 1894, suturing the lesser curvature of the stomach to the anterior abdominal parietes just below the ensiform cartilage. This procedure would be impracticable in many cases owing to the position of the left lobe of the liver. Davis modified this by attaching the lesser omentum to the parietes. Coffey suspends the stomach by attaching the great omentum, 1 in. below the greater curvature, to the abdominal parietes by a series of chromicized catgut sutures.

Fig. 3.—Third stage. Sutures in position. A, Liver; B, junction of gastro-hepatic omentum with liver.

Fig. 4.—Fourth stage. Liver turned up. Sutures shown in Fig. 3 now tied.

Rovsing's operation aims at attaching the anterior wall of the stomach to the anterior abdominal wall. Three silk sutures, running parallel to each other in a horizontal direction, are carried through the serous coat of the anterior wall of the stomach; the highest is 1 cm. below the lesser curvature, and the other two are placed below it 2 cm. apart, so that the greater curvature and the lowest one-third of the anterior surface of the stomach remain free. The ends of the threads are carried on both sides through the whole thickness of the abdominal wall and fixed over glass plates. After three or four weeks the sutures are removed. By this means an "extraordinarily sure, solid and wide fixation of the stomach" to the parietes is obtained. Notwithstanding this wide adhesion the results of his operations have been very satisfactory.

Theoretically the procedure of Beyea complies with the required indications. Briefly, it consists in shortening the gastro-hepatic omentum by means of reefs; three rows of interrupted silk sutures are introduced so as to form a series of three plications in this membrane. Unfortunately the practical carrying out of Beyea's procedure is rendered impossible owing to the extreme tenuity of the gastro-hepatic omentum in the great majority of cases.

I can only call to mind one case in which the operation as described by Beyea could have been carried out. The membrane is usually so thin in its lower two-thirds that it will hardly bear touching with forceps, much less suturing. Even if the membrane were capable of being sutured in the manner prescribed it would almost certainly yield subsequently. Rovsing's experience coincides with my own in regard to the thinness of the gastro-hepatic omentum.

Since 1905 I have in suitable cases performed a modification of Beyea's procedure, which can be carried out without difficulty, and which has given satisfactory results. It was described by me in a clinical lecture on the surgical treatment of gastroptosis.²

Return of the displacement certainly does not occur after it, for I have examined a good many of my cases at considerable periods after the operation, and have never found the greater curvature of the stomach at a lower level than two fingerbreadths below the costal margin in left nipple line.

The operation is performed as follows:

A sandbag is placed beneath the lower part of the thorax as for operations on the liver; the abdomen is opened to the left of the middle line (Fig. 1), and the liver well raised and held up by an assistant, the lesser omentum being thus fully exposed (Fig. 2). If the thorax is very long and narrow a head lamp is advisable. The stomach is suspended by four or five interrupted silk sutures passed above through the upper part of the gastro-hepatic omentum and below through the lesser curvature (Fig. 3).

Advantage is taken of the fact that the gastro-hepatic omentum close to its attachment to the diaphragm and transverse fissure of the liver is much thicker than lower down near its attachment to the stomach; but if the whole membrane is equally thin the sutures are passed above through the liver substance itself, just anterior to the transverse fissure. This is rarely necessary. Below, the sutures are carried through the serous and muscular coats of the stomach just in front of the attachment of the lesser omentum, the vessels, of course, being avoided. The suture furthest on the right is not placed quite up to the pylorus, in order that when the sutures are tied (Fig. 4) the pyloric end of the lesser curvature may be on a slightly lower level than the portion on the cardiac side. A very long needle-holder is required in passing the sutures above under the diaphragm.

Posterior gastro-jejunostomy has also been performed for gastroptosis. It is not, in my opinion, a suitable operation for uncomplicated cases. In the absence of ulcer or stricture of the pylorus, the indications for the formation of an artificial opening between the stomach and the jejunum do not usually exist in gastroptosis; and the operation of gastro-jejunostomy is certainly a more severe one than that of gastropexy.

Nevertheless, I have selected the operation of gastro-jejunostomy in cases of gastroptosis where the stomach showed considerable dilatation and atony; and also in

certain cases where repeated haematemesis and incessant vomiting were marked features.

Up to the end of February this year I have operated on 20 consecutive cases of well-marked gastroptosis. In 11 cases the method of gastropexy described above was performed. This may be termed a modified Beyea's operation. In 7 cases gastro-jejunostomy, and in the 2 earliest cases Duret's operation, were carried out. All recovered from the operation.

RESULTS.

Gastropexy.—Of the 11 cases 2 have only recently been operated on, but were relieved of their symptoms while in the hospital. One was quite well twelve months after the operation, but must be excluded because calculi were removed from the common bile duct at the same time that gastropexy was performed, and the symptoms were probably largely due to cholelithiasis.

Another patient became melancholic shortly after the operation, was sent to an asylum, and has since been lost sight of. This leaves 7 cases. Of these, 6 were completely cured; 3 of them reported themselves between one to four years after operation, and 3 between three and nine months afterwards. The remaining patient, operated on thirteen months ago, was a neurasthenic maid servant, aged 32. She was quite well for some time after the operation, but returned to hospital at the end of a year owing to occasional vomiting and return of pain; but her symptoms entirely subsided while she was in the hospital, and she was able to take ordinary food. Before the operation the iodopin reaction was obtained in three hours, and twelve months after the operation in one hour and a half, indicating that the motility of the stomach had improved.

Gastro-jejunostomy.—Seven cases were treated by this method, and they were mostly my earlier ones. In 3 of them there was dilatation of the stomach in addition to gastroptosis, and 2 of these had also haematemesis. In 3 other cases haematemesis was a conspicuous symptom. Three of the patients were definitely neurasthenics, but gastro-jejunostomy was performed because in 1 case there was distinct dilatation and in the 2 others incessant vomiting with haematemesis. Of the 7 cases 4 were cured; of these, 2 reported themselves twenty months and seven years respectively after the operation, and 2 eight and three months respectively. The 3 remaining cases (all neurasthenics) were slightly improved. None of the cases with haematemesis had any recurrence. In fact I have not yet seen recurrence of haematemesis after gastro-jejunostomy. The stoma of the gastro-jejunostomy probably acts as a safety valve and prevents the distension of the stomach by flatulence, which is one of the chief causes of the haemorrhage. The 2 cases treated by Duret's method were improved at first, but ultimately relapsed more or less completely. In 1 of them gastropexy was subsequently performed with excellent results.

My conclusions are, that an operation on Beyea's plan, as modified above, is indicated in the majority of cases of gastroptosis which are not amenable to medical treatment. Gastro-jejunostomy should be avoided, but may be necessary in certain cases of gastroptosis with dilatation and atony, and when haematemesis is present.

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LORD BEACONSFIELD once, speaking in a political sense, sounded to all voters the trumpet call, "Register, register!" We seem to be nearing a time when the same cry will be addressed to every one whose occupation may have any possible influence, however slight and indirect, on the public health. An ordinance is said to have been recently introduced before the Board of Aldermen of Atlanta, Georgia, providing for the registration and regular physical examination of all laundresses and washerwomen in the city. Any person doing laundry work without a certificate of such examination will be liable to fine or imprisonment. By this means it is expected to diminish the transmission of tuberculosis, small-pox, and other infections from house to house. A similar provision is reported to be working well in Macon, Georgia. But if laundresses are to be registered, why not seamstresses, tailors, and hairdressers?