An Address ON CHRONIC INTESTINAL STASIS.

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You have done me the honour to ask me to speak about chronic intestinal stasis. In the time at my disposal it is obviously impossible to deal with this vast subject in all its aspects, and I will confine myself to stating as briefly as possible the conditions which result, both directly and indirectly, from it.

By chronic intestinal stasis I mean that the passage of the contents of the intestinal canal is delayed sufficiently long to result in the production, in the small intestine especially, of an excess of toxic material, and in the absorption into the circulation of a greater quantity of poisonous products than the organs which convert and excrete them are able to deal with.

In consequence there exist in the circulation materials which produce degenerative changes in every single tissue of the body and lower its resisting power to invasion by deleterious organisms.

Perhaps the best scientific confirmatory evidence I can put forward of the harmful effect of defective drainage, both of the body as a whole and of the several tissues which constitute it, has been afforded recently by the remarkable experiments of Carrel in the growth of living tissue, in which he has shown that tissues are immortal, and grow to the greatest advantage if the drainage of their toxic products is carried out effectually.

I have so frequently described the mechanical factors that bring about the intestinal stasis that I will refer but very briefly to them in this communication.

Owing to unsuitable diet in infancy and to the habitual assumption of the erect position, delay of faecal material takes place in the large bowel, or cesspool, of the gastro-intestinal tract, or, as it can be best described, the "general drainage system of the body." In consequence of this, new membranes or resistances to downward displacement are formed by the crystallization of lines of force upon the surface of the peritoneum along which strain is specially exerted.

The first membrane which usually forms is that fixing the large bowel on the left side to the pelvic brim. This tends to reduce the freedom of the passage of material through this section, and is a frequent seat of cancer later in life. I applied the term "the first and last kink" to the locality of this obstruction in the intestine, since it is usually the first to form, and it is the lowest obstruction that develops in the intestinal canal. This membrane frequently attaches the left ovary, and later may enclose it, rendering it cystic and producing an ovarian tumour.

Similar evolutionary membranes are developed on the surface of the peritoneum, which is reflected outwards from the caecum, ascending and descending colon. These are much exaggerated at the splenic and hepatic flexures. Membranes develop also between the transverse colon when prolapsed, the adjacent ascending and descending portions of the large bowel transmitting through them much of its weight. The acquired membrane which runs outwards and upwards from the caecum may anchor the appendix at some point in its length, frequently producing a kink or obstruction of its lumen. In such circumstances inflammatory changes ensue, which are comprised under the term "appendicitis." Obstruction at any part of the large intestine may result in inflammatory or cancerous conditions.

The accumulation of material in a large prolapsed caecum may result in great delay in the evacuation of the contents of the ileum, and considerable accumulation of material in the small bowel.

Or the obstruction of the ileum may be still further exaggerated in a more definite manner in two distinct ways, which may act separately or in association. If either affords a secure grip on the bowel the other is absent; but if one is only partially efficient both may be present, dividing between them the function of supporting the caecum directly and indirectly. I refer to the development of a membrane in the under surface of the mesentery attaching the small intestine at varying points on its surface and obstructing its lumen, producing what I called the "ileal kink." Or the end of the ileum may be controlled by a fixation of the appendix to the under surface of the mesentery of the ileum by acquired adhesions.

Both these developments are evolutionary, and are not inflammatory.

The accumulation of material in the small intestine drags upon and obstructs the duodeno-jejunal junction. In consequence, the duodenum is elongated and dilated, and especially in its first portion, where it is free and surrounded by peritoneum. Later the pylorus becomes spasmodically contracted because of the constant necessity of preventing regurgitation of the duodenal contents into the stomach. As a result the stomach becomes dilated by the accumulation of its contents.

The delay of the contents of the small intestine, and also of the duodenum and stomach, results in their infection by organisms and in the development of chemical changes in the stagnating material.

These changes, in addition to the mechanical effects already described, bring about an engorgement of the mucous membrane of the first part of the duodenum, which may end in ulceration and perforation; or a similar change in the mucous membrane about the pylorus and along the lesser curvature of the stomach, which may terminate in ulceration, perforation, and later in cancer; or an infection of the ducts of the pancreas, which may produce degenerative inflammatory changes and their consequences. Later, cancerous changes may result in the damaged organ, or it may produce infection of the ducts of the liver and of the gall bladder, which may determine the development of gall stones, cholecystitis, and later cancer; or it may be the source of acute or chronic diseases of the liver.

Associated with this condition of the gastro-intestinal tract there is occasionally a spasm of the orifice of the oesophagus which causes the accumulation of the contents of this tube. This has been described as cardio-spasm by Dr. Plummer, the distinguished physician of Rochester. The symptoms that result directly from the autointoxication of chronic intestinal stasis are:

1. Loss of fat.
2. Wasting of the voluntary and involuntary muscles.
3. Degenerative changes in the skin associated with alteration in its texture and colour, the development of pigmentation, especially in certain localities, and a more or less offensive character of the perspiration. The pigmentation is so marked in some cases as to leave little doubt that the patient is suffering from Addison's disease.
4. The temperature of the body in cases of uncomplicated stasis is subnormal, and that of the extremities is particularly so. In some cases the condition of the extremities is such that they become bloodless, so that no blood can be obtained by pricking the hand or foot. In such circumstances the patient seems to lose common sensation in the part more or less completely. There is no abrupt line of separation between this condition and so-called Raynaud's disease, of which it would appear to be a stage. Stasis always exists in Raynaud's disease. Occasionally the hands may be quite bluish in colour. Sometimes this blueness of the skin is more widespread, when the term "microbic cyanosis" is applied to it.
5. The mental condition is one of apathy, stupidity, or misery. This may become exaggerated into a state of melancholia, or even apparent imbecility. These patients are very liable to commit suicide. They sleep very badly, and awake feeling they have derived no benefit from their night's rest. Neuralgic symptoms and so-called neuritis are frequently present in varying degrees of severity. Epileptiform tic is not infrequently the result of intestinal stasis, as evidenced by its disappearance after colectomy. Headache is a very frequent feature, and may render the patient's life unendurable. One of the most serious symptoms which results from the damage to the nervous tissues by toxins is the want of control over the temper, which makes the sufferer very difficult to live with, and

leads to much misery and crime. It is a much more frequent cause of serious crime than is generally imagined.

6. The patient complains of so-called rheumatic aches and pains in the muscles and joints, and often in the skin.

7. The thyroid gland wastes, so much so that in marked cases no evidence of its presence can be detected by the finger.

8. The blood pressure may be raised or depressed.

9. The breasts show very definite degenerative changes. These are most marked in the upper and outer zone, and especially in the left breast. Cancer readily develops in this condition of the breast.

10. The several organs prolapse and alter in shape, partly because of the loss of fat, partly because of the wasting of muscle fibre. These changes are illustrated very well by the acquired mobility of the kidneys and the prolapses and bends of the uterus.

11. The patient becomes breathless on exertion. This may be so marked as to be regarded as asthma, while it may also be produced by the distension of the stomach or intestines interfering with the action of the heart.

12. Most of the degenerative changes that affect the muscle of the heart appear to be due to autointoxication. An examination by the *x* rays shows frequently a dilatation of the left heart and of the aorta with degenerative changes in its coats. Dr. Jordan has demonstrated this condition very clearly, while Dr. James Mackenzie has elaborated the clinical aspects in his remarkable work on the heart which has revolutionized our knowledge of cardiac conditions. Associated with the atheromatous degeneration of the large vessels there are similar changes in all the smaller vessels.

13. The kidneys are liable to become affected by the abnormal strain thrown on them, and degenerative and inflammatory changes result which are roughly grouped under the term "Bright's disease."

14. The hair of the head loses its colour early in life and tends to fall out. A strange fact is the influence which the colour of the hair has upon most of the changes just described. The darker the hair, the more marked is the tendency to degeneration under the influence of autointoxication. In the case of red hair the objective symptoms are but slightly marked. It would seem to be a great advantage to have red hair, and this varies with the brightness of the colour and with the extent of its distribution. While the hair of the head tends to degenerate, hair grows excessively on places in which it is usually absent or inconspicuous, as on the cheeks, chin, upper lip, forearms, about the nipple and along the middle of the back. It becomes occasionally a source of much annoyance and distress to the patient.

15. The pancreas becomes infected directly by extension from the stagnating contents of the duodenum. This results in chronic induration, inflammation, and, finally, cancer of this organ. Pancreatic diabetes may also ensue.

16. In a similar manner the ducts of the liver and gall bladder are infected, and gall stones, cholecystitis, and cancer may be produced, besides many acute or chronic diseases of the liver.

17. Those diseases of the eye which are degenerative in origin are produced by and vary with the degree of autointoxication.

The indirect changes, or those that result from the lowered resisting power of the tissues to the invasion of organisms produced by autointoxication, can hardly be separated abruptly from all those conditions described as being caused directly by it.

The most obvious are:

(*a*) Infection of the gums causing the condition commonly described as pyorrhoea alveolaris.

(*b*) Tuberculous infection, when not produced by direct inoculation.

(*c*) Rheumatoid arthritis. This, like tubercle, cannot develop except in the presence of defective drainage of the gastro-intestinal tract.

(*d*) Infection of the genito-urinary tract, either directly or indirectly, through the blood stream, by organisms other than tubercle, producing nephritis, cystitis, pyelitis, endometritis, salpingitis, etc.

(*e*) Development of changes in the thyroid gland, whether as adenomatous tumours, general enlargement of the thyroid, or exophthalmic goitre.

(*f*) Still's disease.

(*g*) Infections of the skin of a pustular nature.

(*h*) Infection of the large intestine by organisms which produce the several varieties of mucous and ulcerative colitis.

(*i*) Ulcerative endocarditis.

I have chosen, then, merely a few obvious, typical, indirect results of the autointoxication of chronic intestinal stasis. The point of practical interest in connexion with these indirect results of stasis is that if the drainage scheme be made to work efficiently, or if, in other words, the delay of material in the small bowel be met effectually by mechanical means or by operative interference, the resisting power of the tissues of the body is such that they can destroy the organisms or the poison which produces these conditions if not too advanced or if cancer has not developed. For instance, nothing is more remarkable in the whole range of surgery than the result of removal of the large bowel in a case of rheumatoid arthritis. The transition is so abrupt as to be startling. The rejuvenation of the body and of all its constituent parts after such operative measures as render the drainage scheme efficient is the most satisfactory result of surgery known to us at the present time.

The treatment of chronic intestinal stasis and its results must vary somewhat with the stage which the condition has reached, and also with the nature and degree of the superadded indirect result should such be present also.

The treatment, other than operative, of the defective drainage scheme consists in the use of paraffin before each meal. This precedes the food in its passage along the canal, and facilitates the effluent. As it cannot be absorbed it renders the motions fluid, and ensures one or more evacuations daily. Its action as a lubricant is so remarkably efficient that it can meet many of the troubles that arise directly or indirectly from chronic intestinal stasis. Associated with the use of paraffin a spring support which presses on the abdomen below the umbilicus acts very effectually in stimulating the intestines to pass on their contents, in preventing the puddling in the ileum which produces distension of the duodenum and stomach, in keeping up the transverse colon, caecum, and other viscera which prolapse, and in exerting a constant pressure upon the veins in the splanchnic area, so preventing the accumulation of blood in this situation and keeping the brain well supplied with blood.

It is also advisable to put into the stomach as little food as is likely to decompose and become poisonous if it is delayed in its passage through the intestines, such as butcher's meat, etc.

Should these measures fail to afford relief of the objective and subjective symptoms, recourse must be had to operative measures. In those cases in which the delay in the ileum is due to an interference with its lumen by the pressure exerted by an appendix which, passing up behind it, is anchored to the mesentery of the ileum, the removal of the appendix at once restores complete freedom of passage to the contents of the ileum into the caecum.

It is because of the subsequent cure of the symptoms of duodenal ulcer from the relief of the effluent by the removal of a controlling appendix that it has been supposed that duodenal ulcer was produced by an infection of organisms from the appendix, as it is erroneously supposed to result from infection from the gums, etc. If the end of the ileum is controlled by the membrane which develops on the under surface of its mesentery in some cases, the freedom of passage of the ileal contents may be obtained by dividing this band.

It is in just such cases that much experience is required. When the controlling band is very narrow and very tense its division allows of the complete restoration of the mesentery to its original length. If after this operation the patient takes paraffin habitually and wears a spring support no recurrence of the band may take place—one must remember that the mere division of the band is of little service if the mechanical conditions which were originally responsible for its existence are allowed to persist.

My experience of this condition is that if the band is not very limited in its breadth and not very tense it is much wiser to short-circuit the patient by dividing the ileum and by putting it into the pelvic colon. This is particularly true of women. If the colon is loose and pendulous I always remove it down to the junction. I know that

regurgitation upwards from the ileo-colic junction is very likely to take place when the large bowel is loose and pendulous and easy of removal, while it very rarely does so if the large intestine is fixed fairly high in the abdomen, in which case its removal would naturally be more difficult. My rule is, therefore, to be satisfied with ileo-colostomy if it is difficult to remove the large bowel, and to remove it if it can be effected easily. This is a very practical and convenient rule.

I never perform gastro-enterostomy for duodenal distension even if there be ulceration, as it is both unnecessary and harmful. If, however, the ulceration has resulted in a considerable reduction of the lumen of the bowel, either by the great extent of the ulceration or because of its cicatrization, I employ a gastro-enterostomy, having first freed the ileal effluent by an ileo-colostomy, or by the other means already referred to. If the stomach be much dilated, because of chronic spasm of the pylorus, to such an extent that, after short-circuiting, the spasm cannot be met by washing out the stomach for several days, I perform gastro-enterostomy.

If the stomach be ulcerated and there be no suspicion of cancerous infection, in addition to a short-circuit, with or without colectomy, I do a gastro-enterostomy, in order to take the strain off the lesser curve by draining the stomach very effectually.

The only risk presented by the operations of short-circuiting and colectomy is that of adhesion of the intestines to one another, or to the abdominal wall, in such a manner as to produce a varying degree of obstruction. This is a risk common to all abdominal operations, and can only be reduced to a minimum by avoiding any unnecessary exposure or damage of the intestine, and by suturing the cut surfaces of peritoneum accurately together.

CASES.

The following cases were shown:

Case I.

O. M. B., spinster, aged 40, came under Dr. Murray Leslie's care suffering from general debility of four years' standing, accompanied by symptoms of mucous colitis with alternating constipation and diarrhoea. She had been treated with Plombières douches at Harrogate and elsewhere, but with no permanent benefit. There was marked yellowish-brown staining of the skin, which in association with the asthenia suggested the possibility of Addison's disease. There was definite pain and tenderness in the left iliac fossa over the sigmoid colon. Menstruation was irregular, and the patient complained of coldness of the extremities. She had suffered from indigestion since the age of 25. An *x*-ray examination was made by Dr. Jordan on March 29th, 1912. There was marked dropping of the stomach and transverse colon. The duodenum was elongated; there was considerable stasis in the colon, while the caecum appeared to be impacted in the pelvis. Cultures of *Streptococcus faecalis* and of *Bacillus coli* were made, and a course of vaccine treatment was given, with slight general benefit, but no permanent improvement. On June 12th, 1912, the ileum was short-circuited into the pelvic colon.

The patient had a somewhat tedious convalescence, but is now perfectly well. There is no pain, no constipation, and the patient is able to walk many miles without fatigue.

Case II.

R. B., spinster, aged 38, had for some months been under Dr. R. Murray Leslie's care for chronic constipation and extreme asthenia of eight years' duration, which had gradually increased in severity; seven years before coming under observation an appendicostomy was performed, but without permanent benefit. Her physician felt that, unless her condition was improved in some way, her unhappy life could not be prolonged materially by further medical treatment. In September, 1905, the large bowel was removed to the splenic flexure. She gained in weight, being 8 st. before the operation and 9 st. 4 lb. some months later. After a time the dilatation of the stomach, which had not previously been apparent, gave trouble, and in December, 1906, the pylorus was freed from the under surface of the liver. She improved for a time, but the dilatation of the stomach was soon as bad as ever. In March, 1907, gastro-enterostomy was performed, with complete relief of the stomach symptoms. After a time the descending colon and sigmoid gave trouble and were removed in October, 1907.

The patient is now (eight years after the first operation) perfectly well. There is no constipation or abdominal discomfort, she is able to walk long distances, and can play as many as five sets of tennis without undue fatigue. She has required no medical attendance for the last two years.

Case III.

G. H., aged 11 (male), had had tuberculous disease of the hip since the age of 3. Two operations had been performed; he had had a discharging sinus for over a year. Six months before admission a large abscess was opened, swabbed out, and packed with gauze. There was on admission three inches shortening and marked flexion, adduction and internal rotation. He had much constipation and well-marked toxic signs. Ileo-colostomy was performed on April 28th, 1911, and marked evidences of stasis were found in the abdomen.

Improvement after the operation was rapid and continuous. His hip is now well and he has no pain or other disability. He is rapidly putting on weight and can walk long distances without discomfort.

Case IV.

K. H., spinster, aged 37, had been constipated since birth. She had attended several different hospitals during the last eight years. She was said to have mucous colitis, and appendicostomy was done. She had been in the habit of taking 6 minims of croton oil twice a week, and said that this usually opened her bowels once. She had well-marked toxic symptoms, and was very pigmented. *X* rays showed a five days' delay in the colon. She had been bed-ridden for some time. The operation of ileo-colostomy was performed in 1910. (No note of what was found.)

Now she looks and feels very well, and has worked as a general servant ever since her operation, by which she says she has been greatly benefited. Her bowels are open every day without an aperient. She is rapidly putting on weight.

Case V.

F. M., spinster, aged 34, underwent laparotomy in 1904. She had been constipated since 1903. Every sort of medical treatment had been tried, and she had been in the medical wards at Guy's Hospital twice. There was swelling of the ankles and feet. The bowels were open six times in five weeks while in the medical wards. She complained of abdominal pain, but toxic symptoms were not very well marked. *X* rays showed a delay of eleven days in the transverse colon.

The operation of ileo-colostomy and colectomy was performed in 1909. Very dense bands were present, and the right ovary was cystic.

Within three months of this operation she had two further operations to free adhesions. She had severe whooping-cough, and in February, 1910, developed a faecal fistula. An operation to close the fistula was performed in 1912. She is now doing her work as a hospital nurse; she has no discomfort of any sort, and says that in the opinion of her friends she looks ten years younger.

Case VI.

A. E., a married woman, aged 30, had been constipated ever since she could remember. She had been treated at five different hospitals. She had suffered severe abdominal pain for the last eighteen months. Toxic signs and pigmentation were well marked. The operation of ileo-colostomy was performed in May, 1911. She had abdominal pain at the beginning of 1912, and was then found to have a tender and full caecum. Colectomy was performed in March, 1912. The colon was found full of hard masses. She made a good recovery.

She feels and looks very well: the bowels are quite regular every day; she eats well, and has no sickness. She feels much more cheerful than for years. She has gained 16 lb. in weight. She is very impressed with the difference in her hands and feet, which are now always comfortable and warm.

Case VII.

W. C., spinster, aged 24, had been constipated for many years. She had severe abdominal pain, and rheumatoid arthritis of both knees which was getting worse, and there was wasting of the right thigh. *X* rays showed extreme stasis in the large bowel. There was much tenderness over the right rectus and slight toxic symptoms. Ileo-colostomy was performed in December, 1911. There was a well-marked kink of the ileum and appendix.

Her general health is much better. She still has some pain in the knees, but the condition, according to her, has definitely ceased to progress. The bowels are open daily with paraffin.

CASE VIII.

A. F., spinster, aged 34, had suffered from slight constipation for ten years, and from severe abdominal pain for the last year. Toxic signs were not very well marked, but the patient had noticed the various symptoms getting worse for the last few weeks. Ileo-colostomy was performed in March, 1911. (No note of what was found.)

She was very well after the operation until about August, when she began to have some pain. A further operation was performed, and an adherent coil of small intestine freed. The patient was relieved. She now looks and feels perfectly well, and says she has no discomfort of any kind.

CASE IX.

H. C., male, aged 15, had had severe constipation needing enemata since he can remember. His general health was fairly good, but he had mild toxic symptoms. The tongue was very foul. *X*-ray examination showed a delay of forty-eight hours in the ileum. Large masses of faeces were felt in the caecum and ascending colon, which were only removed after five enemata. A diagnosis of ideopathic dilatation of the colon was made. At the operation, on June 9th, 1911, an enormously distended colon was found, together with a marked ileal kink, and masses of evolutionary adhesions. Ileo-colostomy was performed, and the patient made a rapid recovery.

He has enjoyed excellent health ever since, and has played football continuously during the last two winters.

CASE X.

T. I., male, aged 22, had had constipation, flatulence, and heartburn for seven years, and much mental depression. For the last six months he had experienced attacks of severe epigastric pain and distension. A swelling under the left costal margin appeared five months before admission, and had increased in size. Toxic signs were marked. *X*-ray examination showed some delay in emptying the stomach and a stasis of eighty-one hours in the colon. At the operation, on August 8th, 1912, a large tuberculous mass was found in the omentum, to which coils of intestine were adherent. The duodenum was dilated, and there was an ileal and duodenal kink. Ileo-colostomy was performed, and within two weeks of the operation the mass in the abdomen was no longer palpable. The patient has been following his employment since discharge, and is now in perfect health.

CASE XI.

C. F. J., male, aged 56, had begun two years earlier to have epigastric pain after food, accompanied by vomiting. These attacks occurred about twice a month. Dieting proved of no avail, and the attacks became more severe. For the last six months before admission he had been losing a good deal of flesh, and the total loss in two years had been 28 lb. Examination showed a dilated stomach and tender ileum. *X*-ray examination showed pyloric stenosis, ileal obstruction with a delay of thirty-six hours, and a stasis of ninety-six hours in the colon. At the operation, on March 18th, 1912, an old duodenal ulcer causing obstruction was found, and gastro-enterostomy was performed; at the same time, as there was an extremely well-marked ileal kink, ileo-sigmoidostomy was done.

The patient made an uninterrupted convalescence. He has been carrying out his work as a commercial traveller without a day's intermission since leaving the hospital.

CASE XII.

A. P., a married woman, aged 54, had been constipated for six years, and always had indigestion. She also had attacks of vomiting, and for the last few weeks severe pain in the abdomen. The skin was very pigmented, and toxic symptoms were well marked; *x*-ray examination showed duodenal distension and ileal stasis. After eighty hours bismuth had only reached the splenic flexure. At the operation, in August, 1912, the duodenum was found distended, and there was a marked ileal kink. Ileo-colostomy was performed. She now looks twenty years younger, feels very well, eats well, has no pain or vomiting, and is doing her ordinary work.

CASE XIII.

K. C., spinster, aged 44, when 7 years old had a tuberculous knee which discharged for eleven years. From 15 to 25 years of age she was able to do a little work, but was never strong. At 25 she went abroad owing to a breakdown in health, and she had phthisis, for which she was sent to Ventnor. She had very severe diarrhoea, and when 26 had to have an eye removed on account of an old injury. She began to have severe abdominal pain, diagnosed as due to ulcerative colitis, for which she was in bed many weeks. When 29 she had a severe pain in the right loin, and was given a belt for movable kidney. All this time she was passing large casts of the colon. When 37 she developed a goitre with exophthalmos, tremor, and severe palpitation, which continued for four years. Two and a half years ago she had another attack of colitis and was in bed four months. Last June she had another attack necessitating a long stay in bed. On admission she weighed 7 st., had a very tender colon, and the toxic signs were well marked. *X* rays showed very little, owing to the diarrhoea. At the operation, on December 16th, 1912, a marked ileal kink was found and extensive adhesions of colon. Ileo-colostomy was performed.

She made a rapid and complete recovery, and has been quite well since her discharge from hospital.

CASE XIV.

K. M., spinster, aged 44, had had severe constipation since the age of 14. Six years ago she was said to have colitis. She has had recurrent eczema, some vomiting and nausea, and suffered much misery. There was old arthritis of the right knee, and toxic signs were well marked. Blood pressure, 143 mm. Hg. *X* rays showed marked colonic stasis and considerable delay in the ileum. Ileo-colostomy was performed on April 15th, 1913. Great distension of the duodenum and an ileal kink were present.

The blood pressure one month later was 90 mm. Hg. Taken at the meeting, when the patient was considerably excited, it was 110 mm. Hg. Her general health is excellent and she has no discomfort.

CASE XV.

R. W., married woman, aged 45, had had severe attacks of constipation, abdominal pain and vomiting for two years, and had been much worse for seven months, during which time she had taken no solid food. There was marked pigmentation and much complaint of coldness of hands and feet. *X* rays showed a very dilated stomach and much colonic stasis. At the operation, on June 6th, 1913, the stomach and duodenum were found extremely distended, and there was marked ileal kink. Gastro-enterostomy and ileo-colostomy were performed. Convalescence was uninterrupted, and she is now perfectly well, doing her work, eating well, and putting on weight.

CASE XVI.

E. A. F., spinster, aged 42, had always suffered from constipation, which had been more troublesome for the last three years. She had severe indigestion, flatulence, and epigastric pains, some vomiting and some melaena. She had lost 1 st. in weight during the last six months. *X* rays showed pylorospasm and marked colonic stasis (eighty hours). At the operation, on March 11th, 1913, a dilated duodenum and an appendix controlling the ileum were found. Ileo-colostomy was performed.

After the operation the patient had pleurisy, which somewhat delayed convalescence. She is now perfectly well and has no discomfort of any kind.

CASE XVII.

M. H., spinster, aged 28, began to suffer from pain and swelling in the joints when 12 years old. She had chorea when 6, and again when 17. The arthritis spread to the large joints. She went to Harrogate and had baths and massage, with no benefit. She had typhoid fever when 19. She received electrical treatment and a nine months' course of Balfour treatment, but experienced no relief. Ten months ago the uterus was curetted, and she was given a course of vaccine treatment with *Staphylococcus aureus* obtained from the urine. She had a course of thyroid treatment, but continued to get worse. She had had considerable abdominal pain and vomiting, and had marked toxic symptoms. The finger-joints were stiff and in marked ulnar adduction, and the knees, elbows, and shoulders also were affected. She had not been able to sew for eighteen months. Pain in the joints lessened if no protein food was taken. *X* rays showed a delay in the colon of over 104 hours. Ileo-colostomy was performed on January 3rd, 1913. There was a marked ileal kink. As some regurgitation into the ileum occurred, colectomy was performed on May 12th, 1913.

Marked improvement in the joints followed the operation, and the patient was able to sew within three weeks of the ileo-colostomy. She is now doing her work and earning her living. She is rapidly putting on weight, and has no pain in any of her joints.