spread of the stimulus to both controlling centres, preventing change or even slightly augmenting the vagal inhibition. The same may be said of the vasomotor phenomena; the reciprocal innervation of vascular areas and their intimate adjustment by the principal and subsidiary centres in the medulla and lateral horn of the spinal cord would tend to prevent great extremes of vascular tone. In some cases the great variations in the volume flow of blood through the arms during a crisis, especially in the left, are well shown by plethysmographic tracings. With respect to the other nerve paths excessive sweat excretions and pupillary changes have been reported; these were specially noteworthy in Gibson's case, where the left pupil dilated and the eye became more prominent during an attack; and in the case Allbutt records, where "profuse sweating always preceded the attacks by half an hour." In several instances increased tonicity of the skeletal muscles is recorded; in Hunter's the attacks commenced with rigidity of the facial muscles. Alterations in muscle tone are especially interesting in view of the recent evidence relating this with the nerve terminals of Boeke and Agduhr, which are sympathetic in origin, possessing trophic cells in the sympathetic ganglion of the lateral chain.

IV.

Certain other concomitant symptoms are distinctly favourable to a neurological theory. The sense of cardiac oppression common to anginal attacks is reported by Lauder Brunton as being voluntarily produced in the case of Professor Cernak, who could compress his vagus against a cervical exostosis, when he experienced a sense of "Beklemmung" (oppression) in the chest. Several instances of pathological compression are recorded by Skoda, Allbutt, and others. Closely allied to this symptom is the sense of impending dissolution, the *angor animi*. Its affinity to angina has been noted by writers who support the aortic theory, and the rarity of this psychical phenomenon in other heart conditions, accompanied by lesions just as grave, is a singular fact. Mott records a case of cerebral tumour, accompanied by this feeling; does not this suggest that its anginal incidence is the result of irritation of higher cerebral centres?

Salivation is another symptom frequently encountered. The secretion of an abundant watery saliva is dependent on impulses passing through the chorda tympani, the geniculate ganglion, pars intermedia, to the nucleus of the fasciculus solitarius; there is a connexion thence with the upper part of the glosso-pharyngeal vago-accessory nucleus. The occurrence of salivation is readily intelligible if we suppose a nervous lesion in the lower cervical region sending irritant impulses to the medullary sympathetic and vagal centres. The occurrence of gastric disturbance is likewise to be expected in many cases; just as it has been shown that different sympathetic paths are stimulated so also are the vagal. Again, the relief of gastric distension by the passage of an oesophageal tube, as Verdon practised, would tend to prevent a vicious cycle of increased irritation from that region.

V.

The association of angina with mental irritation is a well known fact; the effects of nerve irritation on non-nervous structures have been described—what might be the effects of irritant impulses from the cerebrum on similar structures or on lower nerve centres?

VI.

Lastly, two cases may be mentioned illustrative of the relation between the nerves and the heart here propounded. In the first, reported by Tenier, a man sustained injury to the cervical spine, spondylo-arthritis developed and coincidentally the right heart became dilated, there was arrhythmia and a loud systolic murmur, all of which disappeared as the vertebral trouble subsided. In the second case, reported by Klippel, a man developed cyphoscoliosis, and gradually there came on complete hemiparesis of the left side, with sweating and dilatation of the capillaries, and loss of thermal sense on the right side of the body. During these changes there were four definite attacks of angina distributed over two years.

CONCLUSIONS.

Evidence has been given from the clinical side in which it has been shown that there are reasons for supposing the anginal syndrome to be principally the sum of irritation of several nervous paths, and that certain features indicate direct organic interference with those paths. From experimental pathology it has been found that a primary irritation of the cardio-aortic nerves is capable of exciting in the region they supply pathological lesions identical with those commonly found in angina. Finally, pioneer work in surgery has proved that complete extirpation of the left cardio-aortic sympathetic nerve and connexions may abolish the anginal syndrome.

It is therefore concluded that angina pectoris is probably due to a nervous lesion located in the region of the lower cervical or upper dorsal cord, the associated ganglia or their connexions, exciting secondary pathological changes in the cardio-aortic region; and lastly, that surgical intervention in suitable cases is justifiable from the theoretical standpoint.

BIBLIOGRAPHY.

- Agduhr. See Wilson, *Brain*, xlv, 234.
Allbutt: *Angina Pectoris*, vol. ii.
Bretschneider: *Berl. klin. Woch.*, 1911, No. 19.
Daniélopou: *BRITISH MEDICAL JOURNAL*, September 27th, 1924.
Gibson: *Brain*, vol. xxviii, 1905, p. 53.
Graham Steell: *Medical Chronicle*, May, 1905.
Jonnesco: *Presse Médicale*, March, 1921, p. 193. V. Martinet: *Les Angines de Poitrine*, p. 67.
Klippel: *Revue Neurologique*, 1908, p. 170.
Lauder Brunton: *Therapeutics of the Circulation*.
Mackenzie: *Angina Pectoris*.
Manouélian: *Annales de l'Institut Pasteur*, T. 27, 1913.
Salvini: *Riforma Medica*, March, 1907, p. 322.
Shaw: *Lancet*, March, 1924; *Quart. Journ. of Med.*, vol. 19, 1926.
Stopford: *Lancet*, April 1st, 1916; and March 30th, 1918.
Tacchi. See Allbutt, *Angina Pectoris*, vol. ii, p. 374.
Tessier. See Osler and Macrae, vol. iv, and *Gaz. Hebdomadaire de Méd. et de Chir.*, 1884.
Todd: *Anatomical Record*, vol. 8, 1914.
Verdon: The Gastric Origin of Angina Pectoris, *BRITISH MEDICAL JOURNAL*, March 18th, 1911.
Willius: *Angina Pectoris*, *Arch. Intern. Med.*, February 15th, 1921, 27, No. 2.

CHRONIC RHEUMATISM.*

BY

A. T. TODD, M.B.ED., M.R.C.P.LOND.,

HONORARY ASSISTANT PHYSICIAN, BRISTOL ROYAL INFIRMARY;
DEMONSTRATOR OF PATHOLOGY, BRISTOL UNIVERSITY.

By chronic rheumatism is meant the presence of aching pains and stiffness affected by changes of the weather. Excluding the subacute arthritis of young adults and children, with sudden onset, some pyrexia, and, as a rule, an obvious septic focus, and also the relatively rare cases of primary myositis and neuritis, we are left with three clinical types: (1) arthritic, osteo-arthritic, or rheumatoid; dominant; (2) muscular, with latent arthritis, commonly termed fibrositis; (3) neuritic, with latent arthritis, commonly termed neuritis.

Transitions are presented from case to case, and in any given case, so that they may be considered to be different manifestations of one disease. Exception may be taken to this classification—neuritis is regarded as a common disease. The non-arthritic neuritis is eased by rest and made worse by warmth and congestion; in secondary, or arthritic, neuritis the converse holds. Nine of every ten cases diagnosed as neuritis show latent arthritis. The same is true of the muscular type, and in both the most effective treatment is directed to the joints. In an arthritic case examination will frequently show that some of the joints are of the rheumatoid and others of the osteo-arthritic type.

It may occur in young subjects; patients aged 17 and 19 are being treated at present. It is more common in women, probably on account of their larger infectable surface and more rapid endocrine upheavals. A family history of gout or rheumatism is frequent. In the personal history contact with lead, hard work, exposure, poverty diets, humidity, and damp houses appear important, but are inconstant and therefore have a secondary value.

* A paper read before the West Dorset Division.

Basal causes are (a) some toxin or toxic substance acting adversely on the joint and its surroundings; (b) some factor permitting selective action on these structures.

THE TOXIC FACTOR.

This at present is thought to be sepsis. Such a cause is seen in gonorrhoea; a case recently seen, diagnosed as and completely simulating rheumatoid arthritis, very rapidly cleared up when the infection was eliminated. In Malta fever arthritis and spondylitis very similar to those of rheumatism occur¹ and disappear when the sepsis is conquered. Experimentally 58 per cent. of rabbits infected with streptococci from various sources showed a varying type of arthritis.²

The facts that little sepsis may be found at the examination and that removal of sepsis is often disappointing, have been taken as evidence against its importance. It may be that the sepsis has done its work. Cases seldom recover if sepsis is not removed; when a patient fails to make good progress it is well to look again for a missed focus. Evidence for the presence of sepsis when none is apparent is elicited by an Arneth count of the blood.

Septic foci are most commonly found in the mouth, especially dental. The area of the teeth sockets is estimated to be about 20 square inches. In many of the patients a large proportion of this is a suppurating surface. Judging from the great pressure required to squeeze pus from a socket, it is not wise to expect drainage to be perfect, and even if it were, we cannot say that swallowed pus is innocuous. Apical infection may be present without much periodontitis, and may be missed by x rays if there is no rarefying osteitis.² In chronic rheumatism a suspicious tooth should not be given the benefit of the doubt. The nose and accessory sinuses are not uncommonly infected. The genito-urinary system is frequently involved, and pyelocystitis, endocervicitis, etc., with leucorrhoea in women and prostatitis in men, are common. Cholecystitis is not uncommon. Gastro-enteric infection occurs in many cases. A large proportion show hypochlorhydria or achlorhydria and infection of the small bowel. The opposite condition, "hyperchlorhydria" from faulty pyloric action, with subsequent hurried gastric evacuation, is also common. From these and reflex hepatic causes dyspepsia is almost constant in elderly patients, and extracted molars must be replaced or the dyspepsia is aggravated. Evidence of the bowel infection is to be obtained from bacteriological examination of the stools and from the amount of indican and urobilin in the urine. Unfortunately multiple foci are the rule rather than the exception.

THE SELECTIVE MECHANISM.

Here we are dealing with theories as well as facts.

The work of Rosenow³ showing that an organism from a certain focus will usually attack that same focus in the experimental animal is suggestive. Probably the affinity is chemical, like that of tetanus toxin for the nervous system, and the toxin depresses joint defence and regeneration. The functional resemblance of the periodontal and synovial membrane is significant. There may be local anaphylaxis; arthritis has been produced experimentally in this way.⁴ The hereditary influence is so marked that the possibility of functionally hypoplastic joints is raised. Injury is occasionally a localizing factor.

A factor of apparent importance, not previously noted, as far as my knowledge goes, is the occurrence of some vasomotor disturbance preceding the onset of the arthritis. Though proof is lacking, it may well be that variations in the nutrition of the joint and lowering of defence and repair are thus produced. The frequency of the condition at the menopause and the occurrence of painful cramps in the neuritic type are significant. In fully 50 per cent. of the total cases vaso-neuroses, chiefly of the Raynaud type, are found. The patients have suffered from "dead fingers" in cold weather. Less commonly there has been local asphyxia. Three of my patients had been diagnosed as cases of true Raynaud's disease some years previously. In two cases the opposite condition, a degree of erythromelalgia followed by coldness, was found. As these symptoms usually disappear before the onset of the rheumatism their occurrence is not often volunteered.

As adjuvants to these two basal causes there are probably more secondary causes than are yet recognized. Heat loss by damp appears to be important. Thyroid defect, for which evidence is obtained from blood films—relative lymphocytosis—is common.

The importance of hepatic defect is difficult to assess; it is found in a large proportion of cases if all the functions of the liver are tested. Whether defect is primary or secondary cannot be determined, but recognition of its presence and modification of the diet to meet the defect appear to help. The occurrence of rheumatic pains in hepatitis led me to suspect an hepatic factor in rheumatism.

In this connexion the metabolism of sulphur, a drug widely used in rheumatism, is of interest. Meyer Bisch first recommended sulphur injections, and claimed good results.⁵ A different explanation from the one he gave has recently become possible. Cawadias noted that sulphur excretion was abnormally high in these cases,⁶ and I have confirmed both this and the fact that this excretion is markedly reduced after sulphur injections. This sulphur loss would appear to operate by leading to depletion of hepatic glycogen,⁷ which renders the liver less able to detoxicate toxic substances carried to it in the portal and systemic blood. Secondly, the amount of hepatic glycogen has an important bearing on carbohydrate metabolism, which is found to be abnormal in a large proportion of these cases; a low carbohydrate tolerance associated with hyperglycaemia is found. In all the cases tested I found that the tolerance increased and the glycaemia was reduced after sulphur injections. A sulphur compound, glutathione, is indispensable for metabolism; with the sulphur wastage found in rheumatism it is possible that there is a diminution of this substance—for all the treatments of use will be seen generally to stimulate metabolism.

EXAMINATION OF THE JOINTS.

The x-ray picture shows advanced stages only. Limitation of movement and pain are important in all, but especially in the vertebral joints, which are frequently diseased. Tenderness of the periarticular structures is found in the superficial joints, and is especially marked in the seldom examined sacro-iliac joints. Tender points around a suspected joint often throw light on an obscure pain and raise suspicion of active arthritis. The common point for the shoulder-joint is one of the supraclavicular nerves emerging at the lower border of the trapezius about 1½ inches from the outer end of the spine of the scapula. Other tender joint points will be readily learned by practice. Careful palpation of a joint on passive movement will reveal moderate and coarse friction; auscultation during passive movement, after practice enables elimination of muscle sounds, reveals finer friction.

TREATMENT.

Gout, gonorrhoea, syphilis, and tuberculosis must be excluded. The latter is usually easy, for, if carefully examined, most cases of rheumatism are found to be poly-articular, whereas tubercle usually affects one joint only.

Sepsis must be removed. Where surgical removal is not possible, antiseptic lavage may help, as in nose and vagina. For pyelo-cystitis hexamine with acid in small doses, for cholecystitis hexamine with alkali in large doses may be tried. Alimentary sepsis is best combated by diet. A high carbohydrate diet, consisting mainly of fruit and vegetables and cereals, with a strictly moderate amount of red or white meat, increases the acidity of the bowel contents, and the growth of streptococci is reduced. This can be observed from the study of faecal films. Lactic or *acidophilus* cultures assist. This diet also aids by reducing constipation and possible toxic absorption, as the greater bulk of indigestible debris leads to more frequent evacuation.

Fats should be cut down at first, especially where hepatic defect is at all marked, for the metabolism of fats would appear to make too large a demand on hepatic glycogen. The withdrawal of the fats must be compensated by an increase of carbohydrates. The exception to this dietary is the small group of cases following poverty diets; in them a rich diet is more efficacious.

The use of wines and spirits is a difficult matter to settle; the experience of the patient appears to be the

best guide. Some take cider without harm, others of the same type find that pain is increased. If it can be taken without increase of pain, a little sound wine appears to help digestion and nutrition.

Attention to the secretory activity of the stomach is usually necessary, but must vary with the anomaly found. The flatulent, vague dyspepsia of the hepatic improves with the liver-sparing diet. Where there is achlorhydria or marked hypochlorhydria a mixture of hydrochloric and phosphoric acids with food should be given; for complete achlorhydria in an average-sized adult, 20 minims, rapidly increased to 1 drachm, of each in a tumbler of water flavoured with sugar and orange juice, should be sipped with each full meal. In the rapid emptying type belladonna before, or a little olive oil with, meals is helpful.

Drug Treatment.

Laxatives are frequently needed. The diet, supplemented by agar-fig and prune jellies, helps. Abdominal massage along the colon, applied by means of a weighted croquet ball, is useful. Sulphur confection (though sulphur by the mouth has no action on carbohydrate metabolism), podophyllin, calomel, and blue pill all are useful in stimulating bile flow.

Sedatives are often needed, especially at the menopause, when bromides are indicated. Salicylates associated with podophyllin, and administered at the beginning of the meal, often appear to ease the pains of rheumatism; unless given at this time they may intensify the dyspepsia. Phosphorus, given as phosphoric acid when the gastric acidity permits, has a sedative action; it may also be given as phosphorus pills in 1/100 grain doses thrice daily, but not for too long, as it has a marked toxic action on the liver. The same is true of phenacetin.

Thyroid extract often helps, but should be reserved for the cases which show increasing adiposity, constipation, and a relative lymphocytosis. It acts as a stimulus to metabolism and indirectly increases repair and immunity processes. The thyroid-manganese compound would appear to act in this way, though the combination of the two probably reduces the activity of both—as thyroid is often given in far too large doses, the reduction may well account for the good results reported. Manganese acts by increasing immunity responses, especially antibody formation.* It may be given by injection of the colloid, or as permanganate in lavages and in vaginal douches in cases presenting leucorrhoea. The value of iodine is well recognized; it appears to give the best results in the neuritic type, especially in younger subjects. It may be given as the French tincture, without iodide, 5 to 15 drops in milk, after food. Caffeine tri-iodide in freshly made pills of 2½ grains may be used; the caffeine may act as a vasodilator. Iodine may also be given as lipiodol injected deeply once weekly in doses of 7 minims, increasing to 30; many patients improve rapidly, but the effects do not often last long. There is little reaction to lipiodol. If it is well warmed and poured into the barrel of the syringe it is easy to inject. Severe old-standing cases of the arthritic type do not respond to iodine.

Protein Therapy.

Vaccines should be reserved for the recent cases in younger subjects with marked septic foci. Vaccines may be combined with manganese, for the reason given above. In the old-standing cases non-specific protein therapy gives better results. In cases of this kind, where pain, rather than limitation of movement, is the complaint, good results frequently follow intramuscular injections of foreign protein—caseosan, novoprotein, or any of the many kinds on the market. The larger the dose and the greater the reaction, the better the result.

In the rheumatoid type intravenous protein treatment affords a large proportion of rapid results, and should be given at the outset. Any vaccine, but preferably an old one consisting of *B. coli* or the *typhosus* group, may be used. It is well to commence with a dose of 50 million, and increase or diminish as needed to obtain pyrexia of about 101°. As the course proceeds an increase of the dose is usually necessary. The reaction is unpleasant, but the

patient may be consoled by being told that the result is proportional to the degree of reaction. Salicylates are useful in the control of the reaction.

Sulphur Treatment.

Sulphur injections are of special help in the old-standing cases of the osteo-arthritic type with pain and marked limitation of movement. It may give good results in other types, however. The treatment should not be used in feeble or very querulous patients. If pain is not marked it should only be given if there is an earnest desire for increase of motility.

The injection should be given deeply into the trunk muscles or thigh. The best form is the sulpholein of Egger of Buda, or a saturated solution of sulphur in poppy-seed oil, or any non-mineral thin oil, may be made and sterilized by heat. The initial dose should be about 6 minims, and the early reactions, usually severe, noted. Three days after the reaction has passed should be allowed before repeating injection, and, as reaction permits, the amount should be rapidly increased until the patient is receiving from 30 to 45 minims. I usually give ten injections and repeat after an interval of three months.

The reaction is alarming. The site often appears to be on the point of suppuration, but only once have I seen this follow, in a rather dirty out-patient. There is a good deal of pain locally, and increase of pain in the joints. There is also fever and sometimes vomiting. The patient must be warned and should be kept in bed until it has passed. Some patients react little. The days following, before the subsequent injection, are often passed with diminished pain, even in the early days of the course. Most of the patients state that they lose their night pains and find that motility is increased. A sceptical house-physician was convinced that the treatment was a good one, because the patients were so constant in attendance for a remedy which produced such a reaction. Sometimes the sum total of pain is increased until the course is finished, but this is the exception. One course is seldom sufficient.

When the starting and night pains are lessened the methods presently to be described for restoring motility should be begun; before this the tone of the muscles may be improved by massage. The method has yielded a fair number of moderate, and some striking, successes, but the choice of patients is not easy. Colloidal sulphur is too weak to give constant results. At present I am trying a form of sulphur paste much stronger than the oily solution; with it the reaction is less, proportionately to the amount of sulphur injected, but at present it is not certain that the results are better. I have to thank Mr. A. L. Taylor and the dispensing staff of the Bristol Royal Infirmary for much help in the preparation of these compounds.

Physico-Therapeutics.

Ultra-violet radiation, if judiciously applied, stimulates metabolism and immunity processes, and appears to have some sedative action. Its value seems to be greatest in the muscular and neuritic types, but is difficult to assess, for the psychic element is considerable at present.

Diathermy is especially useful for deep joints and active arthritis. The heat produced by the passage of the current causes increased vascularity, analgesia, and the hope of better regeneration; in addition, the heat is sufficient to destroy many micro-organisms. In muscular types of long standing it should be applied cautiously, as there appears to be a risk of increasing fibrosis. Some encouraging results are claimed from pelvic diathermy,* which is thought to stimulate prostatic and ovarian secretions. Whether it really has this action or whether the result is due to antiseptic action is uncertain, for, in the cases with marked leucorrhoea, very good results often follow hot permanganate douchings, if applied in the dorsal position and a large amount of fluid used.

Ionization acts in the same way as diathermy, but the action is less powerful; it is of most use for superficial joints. A fair number of my patients ionize themselves after a little training, and obtain a sufficient number of treatments without a very long bill. The ions used have little importance, but sodium thiosulphate or sulphide for

the negative pole, and quinine hydrochloride for the positive pole, give good results. Sulphides are very irritant, and many skins will not stand them. After diathermy or ionization passive and active movements should be practised.

Massage is mainly of value for restoring muscle tone before more active methods can be applied. Passive and active movements at first, later followed by gymnastics, should not be practised until the starting pains of active arthritis have disappeared. Where there is much limitation of movement the joint should be carefully broken down under anaesthesia; it should be remembered that the bones of old-standing cases are fragile. Useful local treatments are the application of irritant liniments, and turpentine with capsicum. Iodine applied as frequently as the skin will stand without vesication is of value chiefly in neuritic types of young adults. A well applied Scotch dressing is often very soothing for superficial joints; it is a remedy much less widely used than it deserves; unfortunately only about 80 per cent. of skins will stand it without vesication.

Treatment of arthritics is best started in the spring or summer; in winter changes of weather cause confusion. If possible, palliative treatment and residence in a more equable climate should be considered until the winter has passed.

The value of spa treatment is difficult to estimate; there appears to be little proof that the metabolism and infections of these patients are modified by any natural mineral water, apart from the flushing, which can be practised at home. The successes of spa treatment may well be due to the more energetic treatment given. As a mental stimulant I advise Vichy water to those patients who have a belief in the efficacy of mineral waters.

REFERENCES.

- ¹ Roger, H.: *Presse Méd.*, 1926, 59, p. 929. ² Haden, R. L.: *Amer. Journ. Med. Sci.*, 1926, clxxii, 6, p. 885. ³ Rosenow, E. C.: *Surg., Gynecol. and Obstet.*, 1921, 33, 19; and *Journ. Infec. Dis.*, 1923, 33, 3, 248; also cf. ⁴ Danyasz, M.: *Origine, évolution et traitement des maladies chroniques non contagieuses*, Ballière et fils, 1920. ⁵ Meyer Bisch, R.: *Klin. Woch.*, 1922, 12, 575. ⁶ Cawadias, A.: *BRITISH MEDICAL JOURNAL*, 1925, ii, 602. ⁷ Bürgi, E., and Gordonoff, T.: *Klin. Woch.*, 1926, 11, 465; and Campanacci, D., and Balducci, R.: *Ibid.*, 1926, 46, 2166. ⁸ Pico, C. E.: *Compt. rend. Soc. de Biol.*, 1924, 91, 1049. ⁹ Cumberbatch, E. P., and Robinson, C. A.: *BRITISH MEDICAL JOURNAL*, 1926, i, 612.

CHRONIC FIBROUS EPIPLOITIS.*

BY

R. CHARLES B. MAUNSELL, M.B.DUBLIN,
F.R.C.S.I.,EX-PRESIDENT ROYAL COLLEGE OF SURGEONS IN IRELAND, SURGEON TO
MERCER'S HOSPITAL.

I WISH to record briefly a pathological condition which I have never previously seen and about which I cannot find anything in surgical or pathological literature.

An ex-soldier, aged 54, was admitted to Mercer's Hospital on February 18th, 1927, suffering from intestinal obstruction, which was temporarily relieved by enemata. He gave the following history. In 1916, while serving in Gallipoli, he contracted an illness which was characterized by severe colicky pains in the abdomen, diarrhoea, and the passage of blood. He says that he was told that he was suffering from dysentery and that this diagnosis was written on his chart. It is not easy to reconcile this diagnosis with his further statement that he was "operated upon for the cure of haemorrhoids" about a month after the onset of his illness. From that time until February, 1926, his bowels remained free, with occasional attacks of diarrhoea, but he does not think that he passed any blood. From February, 1926, he became constipated and took salts constantly. If he allowed the constipation to persist for a few days he suffered from severe gripping pains and could feel "hard lumps" in his abdomen. On six occasions during the past twelve months he developed symptoms of subacute obstruction and was treated, in various hospitals, by enemata as he always avoided operation. He thinks that he has lost weight during the past three months.

The patient is a thin, pale, but hardy looking man. When

I saw him he was in pain and it was quite easy to see two prominent swellings in an otherwise flat abdomen. One swelling was in the region of the caecum and the other was almost symmetrically placed on the left side. These swellings were resonant on percussion and almost disappeared, with much gurgling, when massaged. Examination of the rectum gave no help, neither did an x-ray examination. The urine was normal and the blood was negative to the Wassermann test.

He was treated by dieting, purgatives, and enemata until March 11th, when I opened the abdomen by a right paramedian incision. When the peritoneal cavity was exposed no intestines were visible; nothing could be seen except a smooth pearl-white membrane with slight prominences where the intestinal swellings had been felt during clinical examination. The membrane was continuous above with the peritoneum covering the stomach, was adherent to the parietal peritoneum on either side outside the colon, and was attached below along the lines of Poupart's ligament and in front of the bladder. At no point was there any adhesion to the anterior abdominal wall, the peritoneum covering which appeared normal in colour and texture. There was no free fluid. The distribution of the membrane was as if a towel had been laid over the intestines and carefully glued at the bottom and sides to the parietal peritoneum.

An opening was made through the membrane, in the mid-line, when it was found to be adherent to the intestines, but separable from them by careful dissection and sponging. It soon became evident that there were three strong fibrous bands incorporated in the membrane: one was adherent deep down in the pelvis and constricted the upper part of the rectum, one compressed the lower part of the descending colon, and the third constricted the ascending colon, just beyond the caecum. When these bands were divided gas could be felt gurgling through the intestines. The membrane was now removed in sections as far as the greater curvature of the stomach, over which viscus the peritoneum appeared whiter and felt thicker than normal. The intestines, when freed from the membrane, were found to be universally adherent to one another, but could be separated by sponging just as an adherent prepuce, in a child, can be separated from the glans. Here and there drops of blood oozed from the surface of the intestines and mesenteries, but on the whole the peritoneum appeared intact. No trace of anything like omentum was found.

I cannot give a description of the peritoneum covering the liver and spleen nor a detailed description of the stomach, as the operation lasted so long that I did not feel justified in enlarging the incision for the purpose of exploration. The appendix, which was very much kinked and bound down to the caecum, was removed and the abdomen was closed.

The patient made an uneventful recovery; he is now free from discomfort of any kind and does not need aperients.

Several portions of the membrane were sent to the pathological laboratory in Trinity College, and Dr. John Lait made the following report:

"On microscopical examination these fibrous-looking membranes are found to be composed on the surface of dense hyaline fibrous tissue, while in the deeper layers the tissue is softer and contains many vessels, similar to those found in a late granulation tissue. There is no covering layer of cells on the surface. It is possible that these membranes may be the result of a fibrinous exudate organized into dense fibrous tissue, or else they may represent a chronic inflammatory condition of the omentum, but there is no histological evidence to show that the tissue is omentum."

The portions of membrane were about the thickness of a sheet of Morocco leather.

I have not seen a description of anything similar to the above condition, so I have provisionally named it "chronic fibrous epiploitis." My reasons for thinking that the tissue was originally omentum are the position in which it was found and the fact that no other structure was discovered to represent the omentum.

The conditions most closely allied to this are the thickening of the capsule of the liver or spleen which is sometimes found at a post-mortem examination, and the thickening of serous membranes which occurs in those rare cases called polyserositis.

There is no evidence that the condition was tuberculous in origin, and the Wassermann test negatives syphilis. It is hardly conceivable that the condition arose from an acute or subacute inflammation, due to dysenteric or other forms of ulceration, as there were no adhesions to the anterior abdominal wall and there was no fluid present which might prevent such adhesions.

The only conclusion which can be come to is that the process was very gradual and may possibly have arisen in a similar manner to the gauze-like membrane, known as Jackson's membrane, which is so commonly found over the ascending colon.

* Communicated to the Section of Surgery of the Royal Academy of Medicine in Ireland on May 13th, 1927. A report of the meeting will be found at page 1059.