

effect, and (2) if the user has any definite error of refraction he must of course wear his own correcting glasses at the same time.

Dr. Berger's lenses are made in varying strengths according to the frame or carrier in which they are mounted. Glasses of + 10 D. are standard in the spectacle frames. The focal length of 4 inches is, however, too short for convenience in ophthalmic practice and when ordering them, lenses of + 5 D. should be specified. Such lenses have a focal length of 8 inches, and afford a distance of roughly 10 inches between the observer's and the observed eye, which is a convenient distance. The visual field is also somewhat larger with the weaker glasses. The degree of convergence they afford is equal to that of a prism of 2 degrees placed before either eye, or 4 degrees in all. They are equally useful to the dermatologist though for this purpose higher powers are preferable.

Berger's glasses mounted in *spectacle frames* are obtainable from Messrs. Stichling et Cie, 29, Quai de Bergues, Geneva, Switzerland, for 12 francs (Swiss) or say Rs. 9, which should cover postage, etc.

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THE SURGICAL TREATMENT OF CHRONIC DYSPEPSIA.

By E. W. C. BRADFIELD, M.S., F.R.C.S.,
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A paper read before the South India Branch of the British Medical Association.

In January 1922 with the approval of the Superintendent and the Senior Physician it was arranged that all patients suffering from symptoms of chronic dyspepsia should be referred to and seen by me in the Out-Patient Department and when advisable admitted direct to the Surgical wards. During the past 11 months a very large number of patients have been seen by myself and by Mr. Mathew, the Surgical Registrar of the Hospital, to whom also I am very much indebted for help in preparing this paper.

Excluding a number of chronic dysenteries, patients suffering from the effects of intestinal parasites, and others who refused hospital treatment, the surgical work which has been done in my wards is shown in the table. The results are neither especially good nor bad, but as I hope to show are very similar to those which have been reported from other clinics. Many cases have been admitted under the other surgeons of the hospital but have not been included as I have no personal experience of them.

The list only includes appendix and other lesions where symptoms have been mainly gastric, and where the operation has of necessity included exploration of the stomach and duodenum for a possible ulcer.

The fact that more than 80 cases of chronic

ulcer of the stomach and duodenum have been treated surgically during the last ten months is evidence that these are very common diseases in

	Cases.	Deaths.	Operation mortality.
Gastro-enterostomy—			
For Pyloric ulcer ...	16	0	0
For Duodenal ulcer ...	61	6	9.8
For Gastric ulcer ...	1	0	0
For Perigastritis ...	2	1	50%
Total ...	80	7	8.5%
Gastrectomies—			
Partial for ulcer ...	2	1	50%
Do. for carcinoma ...	1	1	100%
Do. for sarcoma ...	1	1	100%
Excision of ulcer (Balfour's) ...	2	1	50%
Chronic appendicitis—			
Appendectomy ...	8	0	0
Do. with division of bands ...	5	0	0
For Mobile colon—			
Colopexy with appendectomy ...	8	0	0
For Gall Stones—			
Cholecystotomy ...	1	1	100%
Cholecystectomy ...	2	0	0
Hydatid disease of liver—			
Excision of hydatid ...	1	1	100%
Stricture of ileo-caecal valve—			
Colectomy ...	1	0	0
TOTAL ALL CASES ...	112	13	11.6%

Madras and suggests that a review of the special features which they present is worth while.

The symptoms of duodenal ulcer may be so definite that the diagnosis can often be made upon the history alone and with more accuracy than in any other abdominal disease which comes under the care of the surgeon. The patient has more or less typical attacks of pain, usually of two or three weeks duration and separated by intervals of perfect health, often for months. Exposure, overwork or indiscretion in diet, precipitate these attacks. Pain comes on two or three hours after food, lasts till the next meal and is relieved by it; often it is very severe and troublesome at night. Physical examination may reveal rigidity and tenderness of the right rectus, or nothing, and there may be no delay in the emptying of the stomach.

In other cases the pain is not so typical, especially if the ulcer is on the posterior surface. Pain may begin an hour after food suggesting a gastric ulcer, or may be very irregular, even simulating biliary colic, or a chronic appendicitis. The recurrent nature of the attacks is important, and the X-ray picture after the bismuth meal will give great help, but often it is impossible to arrive at a true diagnosis except at the operation, which in cases of almost identical symptoms may reveal in one a chronic duodenal ulcer and in another chronic appendicitis only.

With the onset of complications, extension on the posterior surface, stenosis, the result of contraction of the scar or of adhesions, there may be no remissions, pain is almost constant, especially at night and aggravated by food, while the presence of visible peristalsis may render the diagnosis easy.

Few of our patients come under the first two groups; two showed more or less typical attacks of recurring pain; while the difficulty of diagnosing the second group is shown by the number of operations included in the table for other conditions. A very common history for these patients to give is that they had attacks of pain, extending over many years, but that for the last three or six months it had been worse, and quite prevented them from following their occupation. Out of 51 patients in no less than 31 was active peristalsis visible on inspection of the abdomen, showing either that actual stenosis was present, or that there was marked spasm due to the presence of an advanced ulcer. 42 said that they relieved their pain by inducing vomiting, but vomiting relieves pain in many dyspeptic conditions. The duration of symptoms in all cases is shown in the following table, and though it has been of great value in diagnosis I would never wait for such long periods before advocating surgical measures, which in early cases give an operative mortality of less than 2 per cent., but entail a greater risk when the patient is weak and debilitated from the chronic starvation of a stenosis.

Duration of Symptoms.

	Number.	Average duration.	Maximum.	Minimum.
		Yrs.	Yrs.	Yr.
Pyloric ...	16	4.2	10	$\frac{1}{2}$
Duodenal ...	53	4.1	20	1
Gastric ...	5	2.8	5	$\frac{1}{2}$
Cancer ...	1	...	1.5	...
Mobile colon	7	4.4	10	$\frac{1}{2}$
Appendix	13	2.3	12	$\frac{1}{4}$

The important characteristic of gastric ulcers is the absence of symptoms during long intervals. Though we have been able to elicit epigastric tenderness in practically all our cases, its position seemed to bear no definite relation to the site of the ulcer and I think the finding of tenderness, either superficial or deep gives very little real diagnostic help. With the onset of complications, a chronic perforation or the formation of a stricture, symptoms become constant and the disease more obvious. Visible peristalsis was present in 13 out of 15 pyloric ulcers and in 3 out of 4 ulcers of the stomach. Flint (1) of Leeds in a recent paper writes "it is true that a clinical diagnosis of gastric ulcer is wrong in nearly two cases out of three. It is computed that 60 per cent. of gastric disturbances owe their origin to a source outside the stomach and Sir Berkeley-Moynihan's epigram that the commonest site of

a gastric ulcer is in the right iliac fossa, should be constantly in the mind of every one who thinks rashly that he can diagnose one in the stomach."

There are only two ways in which a certain diagnosis can be made during life (1) by a positive X-ray finding or (2) by operation.

In all our gastric work we have had very valuable help from Capt. Barnard and the now up-to-date Radiology department at the hospital. I have not summarised these results but briefly X-rays may show either—

1. Delay in the passage of the bismuth meal.
2. A demonstration of the ulcer cavity.
3. The indirect sign, or the spasm caused by the ulcer.

The bismuth meal must be given on an empty stomach and though the emptying time of the normal stomach varies considerably, we estimate that if over one-third of the opaque material is left in the stomach at the end of six hours, it is definitely abnormal. If an ulcer has penetrated the stomach wall, or perhaps further into the liver or pancreas the ulcer cavity can be seen filled with the bismuth. In duodenal ulcer the duodenal cap or first part can often be seen to be irregular, while sometimes actual stricture of the pylorus can be seen. A notch on the greater curvature due to gastric spasm may be seen but may also occur in disease of the appendix, caecum, or gall bladder.

The notch, which is due to spasmodic contraction of the circular fibres of the stomach, occurs usually opposite the ulcer and causes an indentation of the greater curvature. Its presence is strongly suggestive of gastric disease and if a projection on the lesser curvature is also evident a diagnosis of gastric ulcer is practically certain. A negative X-ray does not exclude the presence of an ulcer.

The site of the ulcer in the cases under review was as follows:—Duodenum first part 54, second part (really at junction of first and second parts) 7, pylorus 15, lesser curvature of stomach 3, posterior surface of stomach 1. In two patients two separate chronic ulcers were found, an ulcer of the first part of the duodenum being combined with an excavated ulcer of the lesser curvature in one and an ulcer near the pylorus in the other. That is of 82 ulcers, 69 were situated at or in the region of the pylorus. A remarkable specimen is shown from a patient too ill for operation and who died shortly after admission from acute dilatation of the stomach, in which there is a large ulcer on the lesser curvature, multiple ulceration of the first part of the duodenum, and a dense stricture, due to ulcer, which hardly admitted a probe just below the opening of the common bile duct. All except one of our ulcer patients were males.

Appendix. Chronic diseases of the Appendix may produce symptoms practically indistinguishable from gastric disease, the so-called appendix dyspepsia. All except three of our patients have

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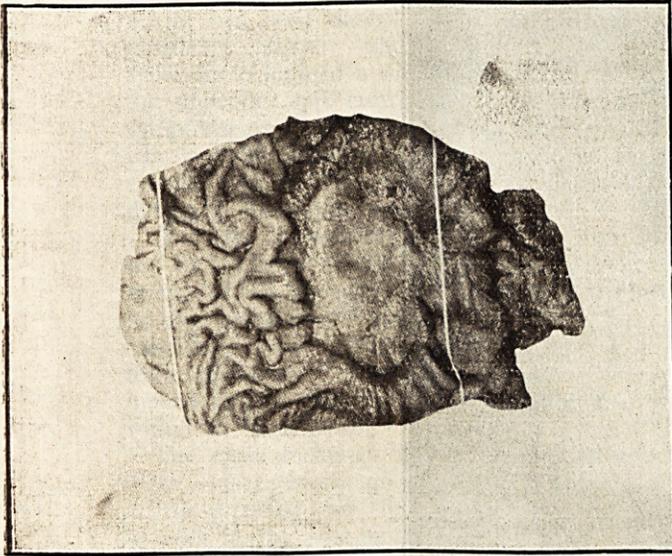


Fig. 1.—Carcinoma of pylorus. Large crateriform ulcer with hard raised ulcerated edges. Duration of symptoms 18 months. Partial gastrectomy. (Pylorectomy.)

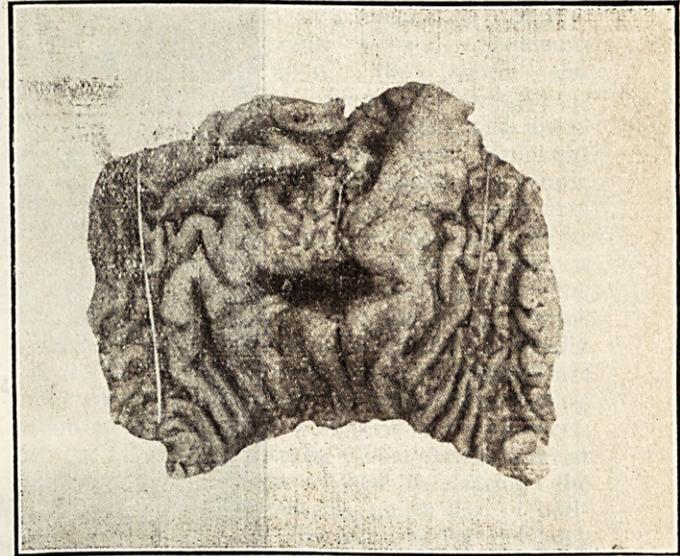


Fig. 2.—Chronic ulcer of posterior surface of stomach. Duration of symptoms 5 years. Partial gastrectomy.

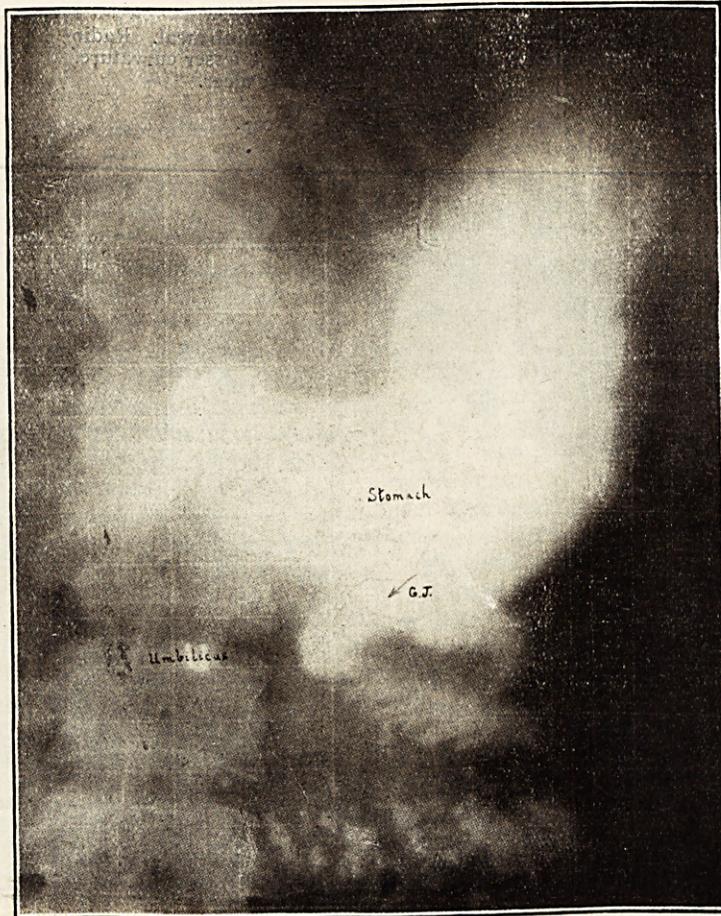


Fig. 3.—Patient operated on 6 months previously for Duodena ulcer. Gastro-jejunostomy performed. Examination $\frac{1}{2}$ hour after the Bismuth meal. Radiograph shows the Bismuth passing through the Gastro-jejunostomy opening. Nil passing through pylorus. G. J. = Gastro-jejunostomy.

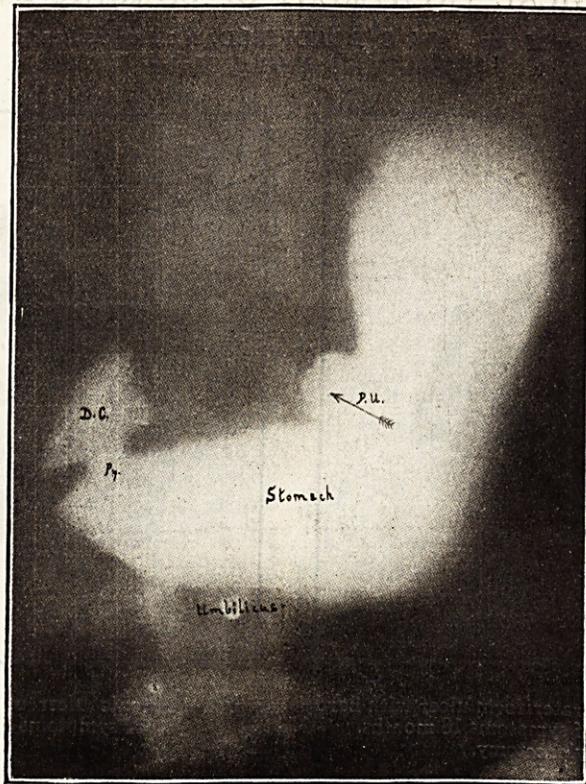


Fig. 4.—Examination $\frac{1}{2}$ hour after Bismuth meal. Radiograph shows a penetrating ulcer on the lesser curvature.

P. U. = Penetrating ulcer.
Py. = Pylorus.
D. C. = Duodenal cap.

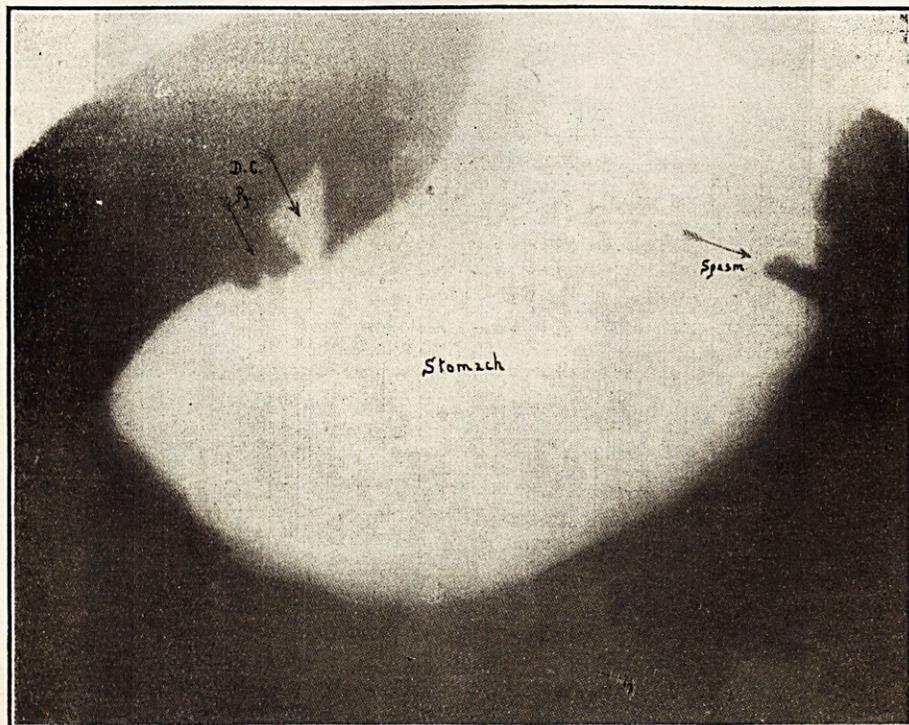


Fig. 5.—Examination 6 hours after the Bismuth meal. Radiograph shows (1) practically no Bismuth had passed out of the stomach (2) a spasm on the greater curvature (which was present at the first three examinations) (3) an irregular Duodenal Cap and Pylorus.

Duodenal ulcer found at operation.
D. C. = Duodenal cap.
Py. = Pylorus.

been Indians and the pathological condition found has been described as chronic catarrhal, ulcerated, fibrous and obliterated while one appendix contained a thread-worm. Removal of the appendix has entirely relieved the gastric symptoms of all, except two very much improved who are still under observation and who are extremely neurasthenic, the result of symptoms of dyspepsia extending over many years.

One case is remarkable. This was referred to me by Colonel Elwes, and in this patient removal of an appendix had an immediate effect on the temperature and the patient's general condition, which rapidly improved and lost its toxic character. Only the appendix was removed and on microscopic examination this was found to be normal!

The exact meaning of these diseased appendices, which rarely go to acute appendicitis is a little puzzling, for similar conditions can often be seen in the post-mortem room, where apparently there have been no symptoms. That they do cause symptoms is shown by the effect of their removal, and it is possible that they constitute a latent source of infection in the same way as the focal abscesses which we so often find in connection with the teeth. The influence of the thread-worm among a population, 60-70 per cent. whom are infected, is also a subject for discussion.

Associated with diseased appendices in 5 cases were definite bands which were divided, another abdominal condition which may cause obscure gastric symptoms and the description of which we owe primarily to Lane's work on intestinal stasis.

A diagram is shown of a common band, the ileal or Lane's kink. Another frequent band runs over the ascending colon, often in connection with a Jackson's membrane (membranous pericolicitis).

This latter is a thin membrane or vascular veil spreading from the parietal margin over the ascending colon, often containing thin blood vessels, and looking something like an oedematous arachnoid. These bands and membranes are now considered to be congenital in origin, formed as folds of a peritoneum during the rotation of the primitive mesentery. It is not certain how they produce symptoms; possibly by twisting the gut or actual stenosis or they may cause interference with the ileo-caecal mechanism.

Mobile Colon.—Waugh, discussing the effects of a mobile colon points out that abdominal diseases are largely grouped in the right upper abdomen and considers that their incidence is largely caused by an over-loaded ascending colon.

The normal ascending colon has no mesentery and when full its weight is in consequence diffused over a wide area. In a certain number of people its primitive mesentery persists, and in consequence the colon, the only part of the alimentary canal which has to force semi solid-fluid upwards against gravity, is working at a disadvantage and there is great mechanical inefficiency. The weight of an overloaded colon is then distributed

along a narrow line of the posterior attachment of the mesentery and in consequence strain is thrown upon the right kidney, duodenum and by radiation, upon the pyloric end of the stomach. The colon may even prolapse into the pelvis, causing sudden and unexplained attacks of pain. The pain produced though constant in type and location is erratic and irregular in its time of appearance, and may be gastric, duodenal, renal, or right iliac in its character. The appendix is often involved, it seems to me, by the constant back pressure of a chronic constipation. We know that some patients with chronic appendicitis, especially where the symptoms are mainly dyspeptic, are not cured by its removal. Fixing the ascending colon to the posterior wall seems to give excellent results in these cases. The procedure at operation is to prepare a bed by clearing the psoas and quadratus muscles, and a flap of peritoneum is closed over the colon to fix and bury it.

The results of our treatment, and the condition found at operation form the most interesting part of this investigation, and give us I think hints as to the possible causation of gastric and duodenal ulcer and suggestions for future treatment.

Operation Mortality.—The operative mortality, 8.5 per cent. for gastro-enterostomy, at first sounds very high when compared with the recent figures of Moynihan and other famous surgeons. Their statistics are, however, based on the treatment of patients seen earlier and which have not reached the desperate condition of many of our patients, to whom the surgical risk is a big one. Our figures should be more fairly compared with the earlier days of gastric surgery when it was a big adventure for the patient to have his stomach opened and when gastric ulcers were handed over to the surgeon late. The only recent figures I have been able to find which can be compared with ours (*i.e.*, operation for stenosis) in India are a comparative study by Hartmann². Of 36 cases of stenosis sent him by two physicians, who were partisans of early interference there was only one death, a mortality of 2.8 per cent.; whilst of twenty-four patients referred to him by other physicians, who had temporised, there were nine deaths, a mortality of 37 per cent.

The cause of death in the cases under review was as follows:—

Gastro-enterostomy
for Ulcer.

6. Pneumonia 4, on the 3, 5, 6 and 8th day after operation.
- Heart failure 1, a man aged 70, who was doing very well but died suddenly on the 5th day of heart failure while talking to his relatives. Tubercle of lung 1.

Gastrectomy ..

3. Shock 2, in both malignant cases.

Excision of Ulcer ..

1. Peritonitis with pneumonia 1.
- Shock 1. A desperate case.

Perigastritis	.. Abscess of liver 1. Died suddenly on the 25th day. Abscess of the liver was never suspected at the operation or after and a gastro-enterostomy had entirely relieved his symptoms.
Cholecystotomy	.. A single gall stone which had caused severe gastric symptoms in an Indian and who died some 20 days after operation from tubercle of lung.

That is death was due to pneumonia in 4 cases, tuberculosis 2, peritonitis 1, shock 4, heart failure 1. These results are, I think, not discouraging but rather an argument for earlier surgical treatment. All the duodenal patients who died had very advanced stenosis, so advanced that the stricture would not admit an ordinary lead pencil, while the gastrectomy patients were all very ill and very bad surgical risks. It is difficult to refuse surgical treatment to this type of patient, for they are suffering from a mechanical obstruction which nothing but surgery can relieve.

The following table shows the principal post-operative complications which occurred.

	Gastric cases.	Gall Bladder.	Colo-pexy.	Appendicectomy.
Total cases ... 104	80	3	8	13
Acute Bronchitis ...	3	..	1	3
Pneumonia ...	11=13.7%	..	..	..
Heart failure ...	1	..	..	..
Orchitis (Result of catheterisation) ...	1	..	..	1
Malaria ...	3	..	..	..
Gastro-jejunal ulcer	1	..	..	..
Acute dilatation of stomach ...	1	..	..	..
Post-anæsthetic paralysis ...	1	..	1	1

The frequency of pneumonia after operations on the upper abdomen has caused us very considerable anxiety. I risked the health and temper of the staff by operating without fans in the hot weather, and we obtained some real improvement with this and when we did away with the mechanical punkas of the post-operation ward. Keeping the patient warm and dry during the operation is a most important precaution, but pneumonia to which these patients are very liable is a real danger. Some of these lung complications are probably tuberculous in nature.

The anæsthetic is another dread and the use of chloroform adds to the risks of operation. The use of a chart on which the pulse, respiration and blood pressure is noted, is of great help, and gives one timely warning, but until we get rid of the idea that any one can give an anæsthetic, and until the anæsthetist's appointment ceases to be a stepping stone to others, the anæsthetic will always be a source of anxiety to the surgeon. In most operations novocaine has been injected locally with a minimum of general anæsthesia and I hope we

will soon be able to substitute the safer gas and oxygen method for chloroform.

One case of acute dilatation of the stomach nearly ended in tragedy, but we opened the abdomen again and rectified the cause of obstruction; though the pulse went up to 160 he made a rapid and uneventful recovery. Jejunal ulcer is said to occur after about 2 per cent. of these operations. In one of our early ones the opening was smaller than I generally make; since enlarging the stoma and removing the appendix at a subsequent operation the patient has done very well.

It is too early to determine the permanent results of these operations. Though all our patients have left hospital extremely pleased with themselves and apparently cured, I must be content to quote the figures of other surgeons. In duodenal ulcer, gastro-enterostomy is followed by a cure in at least 80 per cent. Sherren³ says 90 per cent., and great improvement in 80 per cent. of the remainder.

In gastric ulcer, the cures vary from 75 per cent. to 80 per cent. while the rate is even higher after partial gastrectomy.

We wrote to 50 of our patients who have been operated on more than 6 months previously and 17 replies have been received.

Appendicectomy	.. 1 quite well; cured.
Gall stones	.. 1 completely cured.
Gastro-enterostomy with appendicectomy.	9 completely cured, very happy and can do any work; 2 no pain or trouble but not yet strong enough to do heavy work.
Colopexy	.. 3 completely cured.
Excision of ulcer	.. 1 died 3 months after operation. No cause given. Left hospital very well and apparently cured.

The operation where symptoms are of long standing acts like a charm, and since these patients are frequently decoys for other sufferers it becomes very necessary that we should make an accurate diagnosis during the operation, for the results of gastro-enterostomy where no ulcer is present are lamentable. Many of these patients have a very dilated stomach which has completely lost its tone, and takes some time to recover. We are trying electrical massage on several now with very promising results.

The appendix has been removed as a routine, except in desperate cases where very rapid operating was necessary. The pathological report of 68 of these appendices is as follows:—

Normal 23, chronic inflammatory 21, catarrhal inflammation 10, obliterative appendicitis 7, ulcer 1, thread-worm with chronic inflammation 4, round-worm 1. That is, there is a pathological lesion in 66 per cent., while of 23 normal appendices 9 were noted at the operation to be retro-cæcal and kinked.

The condition of the ascending colon, and the presence of bands has been noted at operation in 47 cases. A mobile colon, with mesentery was present in 30 cases; 63 per cent. (21 duodenal,

9 pyloric), a Jackson's membrane in 7, an ileal kink in 4, and a band over the ascending colon in 8.

All recent theories of the causation of gastric ulcers tend to show that it is an infective lesion secondary to a focus elsewhere. Rosenow's experiments in this respect are more than suggestive. He isolated streptococci from the base of a gastric ulcer and found that when he injected them into the blood stream of another animal of the same species similar lesions were produced. Diseases of the gall bladder and appendix can be reproduced in exactly the same way, but his experiments have gone further for he found that by altering the virulence of the organisms, streptococci obtained from a diseased appendix and injected into the blood stream could produce not an appendicular lesion, but necrosis of the gastric tissues.

Experimentally produced ulcers tend to heal rapidly but healing can be delayed by increasing the acidity of the gastric juice and by inducing an artificial pyloric stenosis, though no extension of the ulcer results. Gastro-enterostomy overcomes both these faults.

In 66 per cent. of our patients the appendix was diseased. It is possible that the mobile colon with its accompanying chronic constipation is a cause of this and that both together by causing first passive congestion and then infection in the pyloric region and stomach cause the gastric ulcer?

Teeth are another source of infection and frequently cause gastritis as we all know. In 66 patients or 82 per cent. the teeth were definitely noted as being infected with pyorrhœa or so dirty as to be a source of infection.

I think we are all agreed that medical treatment should first be attempted in the early stages of these ulcers and that with it many patients will be cured, if they will take the time and necessary trouble. Medical treatment is, however, often inefficient, and few patients will carry out the restricted diet and rest that is necessary. Moynihan says of medical cure "for the rich it is possible, for the poor it is hardly to be attained." The question when to recommend operation is largely an economic one. When symptoms, however, are continuous and suggest the onset of complications, operation is the only treatment that can really bring relief. In other and earlier cases, if medical treatment fails to bring relief within reasonable time, or if relapses, a feature of these ulcers, occur then operation is indicated, and if performed early the mortality rate will be negligible.

Treatment must in all cases include careful attention to the mouth and pharynx and the appendix is an organ which requires our careful consideration. The hang-at-sight policy or removal whenever an opportunity presents itself, is one to be followed.

I am much indebted to Captain Barnard,

Radiologist, General Hospital for the photographs and X-ray photographs.

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A SHORT NOTE CONCERNING A NEW METHOD OF TREATMENT FOR INOPERABLE CANCER.

By Dr. S. MALLANNAH, M.D.,
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Hanau in 1889 transmitted cancer from one animal to another and Morau in 1894. It was Jensen, however, who proved conclusively in 1903 that cancer is communicable to mice and that the infective material is the living cell itself.

Many attempts have been made to produce immunity against cancer in animals. Bowdon in 1905 ligatured the vessels supplying the tumour and obtained necrosis of such growths but it had no effect on other tumours in the same animal. In 1906 Schone used injections of emulsions of normal foetal and adult animal tissues without success. In 1908 Bashford, Murray and Cramer used injections of normal blood corpuscles into mice and produced temporary immunity, but later found these injections useless, as the immunity quickly disappears and as it does not increase by repeated injections. Coca and Gilman in 1909 used emulsions and extracts of cancer growths for the cure of cancer but in some cases tumours formed at the site of injection. In these experiments tulol, chloroform and phenyl were used as preservatives. Haaland, 1910, has proved that the mechanical disintegration of tumour cells does not produce immunity when injected. In 1910 Contamin showed that inoculation of tumour material exposed to X-rays produces immunity in some cases, and excessive radiation on the other hand does not produce immunity. In 1914 Wedd, Morson and Russ produced immunity in mice against sarcoma with tumour material exposed to radium, when injected. Kellock, Chambers and Russ between November 1920 and June 1921 treated 12 cases of malignant growths with tumour material exposed to the lethal dose of X-ray radiation and obtained successful results in 5 cases out of 12, but tumours formed at the site of injection in 5 other cases out of 12. It is fair to mention here that in all these successful cases, the primary growth was removed by operation, leaving only the axillary glands behind. After the removal of the breast tumour, the wound was closed and dressed. Two fan-shaped pockets were made in the abdominal wall on each side of the median line with the narrow end upwards. The