SURGERY OF THE BLEEDING ULCER

The problem of the bleeding ulcer is one of undoubted difficulty. Whether and when active surgical intervention should replace expectant therapy is a question to which no dogmatic answer can be given. There is a general but false belief that bleeding from a peptic ulcer is very seldom fatal. Bulmer found that of a total of 249 cases of haematemesis due to chronic peptic ulcer, death occurred in twenty-nine (11.6 per cent.); out of eighty-nine males fifteen died (16.8 per cent.). My practice has been to advise medical treatment for the first haemorrhage, and at the second to wait for ten days and then operate. To my chagrin I have seen three patients die during this period of waiting.

When a second haemorrhage occurs in males an immediate operation, preceded and followed by a blood transfusion, should be seriously considered. When the ulcer is gastric, excision or ligation of the main blood vessels, followed by gastro-enterostomy, should be performed; when the ulcer is duodenal, narrowing of the pylorus and gastro-jejunostomy should suffice. The after-results of operation for bleeding ulcer are not altogether favourable. In one-third of my cases there has been a return of bleeding, in one case as long as six years after operation.

After-treatment.—Many of the unsatisfactory results following the surgical treatment of ulcer are traceable to a neglect of after-care. Hyperacidity in the immediate post-operative period may determine the onset of jejunal ulcer, and any evidence of it in the shape of discomfort

and heartburn must be rigidly controlled by alkalis and belladonna. A regulated diet excluding all spices and salt-cured articles of diet must be persevered with for six months, and smoking should be regulated. Care at this period will be well repaid.

SUMMARY

1. Peptic ulcer would appear to be an increasingly common disease.
2. It requires constitutional rather than local treatment.
3. Surgery must supplement and not replace medicine in its treatment.
4. Stenosis, intractability, recurring haemorrhage, and associated abdominal lesions are the indications for surgical intervention.
5. For gastric ulcer, ablation of the ulcer, preferably by partial gastrectomy, is desirable in view of potential malignancy.
6. For duodenal ulcer with stenosis and low gastric acidity, posterior gastro-jejunostomy gives uniformly good results.
7. For recurring duodenal ulcer, with high acidity and no stenosis, gastro-duodenostomy should be preferred.
8. Associated duodenal ileus should be relieved by duodeno-jejunostomy.
9. Lesions in the appendix and gall-bladder should be looked for and, if found, dealt with radically.
10. Recurring haemorrhage in a male subject may call for immediate operation, preceded and followed by transfusion.
11. After-care with a rigid control of acidity is essential.

THE TREATMENT OF ARTHRITIS*

BY

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To attempt to deal exhaustively with the many methods for the treatment of arthritis which have been put forward would occupy far more time than can be given to a single lecture. I shall therefore deal only with such as appear to be of practical value or which have a popular vogue; even then I may be guilty of omissions due to lack of personal acquaintance with some methods or failure to put others to a sufficient test.

CLASSIFICATION

Some definition of the limits of my subject is necessary, and for this purpose three heads may be adopted.

1. *Rheumatoid Arthritis.*—This is a crippling disease affecting many joints, predominantly those of the extremities, and varying in the degree of acuteness; in some cases it is mildly pyrexial and rapidly progressive; in others, apyrexial and chronic. Once it attacks a joint it rarely leaves it without irreparable damage, even if slight, differing in this respect notably from rheumatic fever or subacute rheumatism. While many varieties are described, it is not necessary to detail them, since the treatment of all proceeds upon the same lines. There is usually a septic focus, and the disease commonly begins in the first half of adult life.

2. *Metabolic Arthritis.*—The two chief forms are: (a) climacteric arthritis, which mainly affects the knee-joints of women at the menopause; and (b) gout, which is outside our present subject.

3. *Osteo-arthritis.*—This is a chronic disease of later years, degenerative in character, which may be limited to

one joint, and never attacks many unless an infective or metabolic factor is also present. It usually involves large joints and is commoner in men. Climacteric arthritis, if untreated, will develop into osteo-arthritis, and some clinicians hold that malum coxae senile is climacteric in nature.

INFECTIVE FACTORS

Rheumatoid arthritis is the product of three aetiological factors which may be defined as the seed, the soil, and the environment. Treatment, to be logical, should be directed to one or more of these factors, except in so far as it is required for the relief of symptoms such as pain and deformity.

As I have already said, a septic focus is present in most if not all cases, from which is derived the seed of the disease, and to look for and deal with foci is the first step in treatment. Such a focus may be easy to recognize—for example, septic teeth or tonsils—or it may be difficult, calling for radiological examination of the tooth sockets or expert investigation of the tonsils, pharynx, and nasal sinuses, though some indication of the probable source will usually be found in the course of an ordinary clinical examination. I have seen a few cases in which the source of infection was a small septic lesion in the extremities, such as a septic nail-bed. Where there has been a long continuance of septic conditions in the mouth, nose, or throat, it is almost inevitable that there will be secondary foci established in other parts of the digestive tract—the gall-bladder, the appendix, or the colon—which will be more difficult to deal with. Where a definite focus is found and eradicated the results are sometimes very striking, and the patient is cured, though possibly left with one or more joints crippled in a minor degree. Apart from gonorrhoea it is uncommon, in my experience, for the uro-genital tract to provide the focus of infection, but it must not be overlooked in the course of examination. It may prove very difficult to find a focus, and there is a form of arthritis recognized by some

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authorities as "primary," to distinguish it from the cases in which the joint symptoms are clearly secondary to a known source of infection. The two are, however, difficult to differentiate clinically, and it is not unlikely that, as our knowledge extends, it will be discovered that these so-called primary forms are secondary to some infection as yet unrecognized.

The microbe most commonly found in septic foci associated with arthritis is the strain of streptococcus termed "*viridans*" from the greenish colour of its growth on some media. It must be noted, however, that some workers regard a staphylococcus allied to, if not identical with, the common epidermal coccus as the more common cause of rheumatoid arthritis, and the streptococcus as causing osteo-arthritis; while others incriminate the *Bacillus coli* and other intestinal flora. These conflicting views, associated with the fact that all microbes accused of causing non-specific arthritis may be met with in normal individuals, suggests that the infecting agent is more or less universal, but becomes pathogenic only in special circumstances. The effect of shock, anxiety, long spells of nursing (especially relatives), work under unfavourable conditions, and the like, will be familiar to all as predisposing to the onset of arthritis as well as of many other diseases. There is also another important consideration which has of late come into prominence. It is held that the effect of a septic focus anywhere in the system is to permit the absorption of minute doses of toxin continuously for long periods. These long-continued toxæmias are believed to sensitize the tissues, lowering their resistance to microbic invasion until breakdown occurs. It may be that in such circumstances the joints or other tissues are attacked by microbes which are harmless to those in normal health, such as the skin micrococci or the strains of streptococci commonly met with in the alimentary tract or elsewhere; or even that microbes growing under exceptionally favourable conditions may acquire a pathogenicity which they do not normally possess.

VACCINES

Such a process of sensitization is met with in other diseases of allergic type, and there is already some evidence that rheumatic fever may be allergic and that arthritis comes in the same category. If this is accepted, it must add to the perplexities already met with in vaccine treatment, where the object is to immunize by the administration of repeated doses of bacterial toxin. It will be admitted by those who have had much experience of vaccines in arthritis that it is very easy to overstep the mark in dosage, and, instead of evoking an increased resistance, to meet with the reverse—sensitization, a result which may be disastrous. Vaccine treatment has, however, given very good results in the hands of experienced workers, but it is by no means invariably successful. The vaccine used may be made from a septic focus found in the patient and thus be autogenous, or it may be a mixture of a number of strains from different cases. While the autogenous vaccine is generally preferred, some find better results from mixed stock vaccines.

The initial dose must always be small and the effect carefully watched. The results will differ according to whether the septic foci have been effectively treated or still remain active; in the latter case dosage must be smaller than in the former, lest auto-inoculation be stimulated. It is often wise to give three or four small doses of a suitable vaccine before proceeding to the operative treatment of septic foci—extraction of teeth, enucleation of tonsils, etc. In most cases I prefer to begin with a dose of 50,000, and to double it every fourth or fifth day until there are indications of a reaction, when

the dose may be reduced a little or maintained at the same level for a few doses until reaction ceases to be evoked, and then gradually to increase the dose again. A course may continue for a year or longer. The response to a vaccine will vary; there may be a definite sense of relief with a slight return of pain and stiffness after three or four days, or an immediate exacerbation of symptoms, local, general, or both. In the first case the dose should be increased steadily, the aim being to secure the same type of response to each dose; in the second the dose should be diminished until no more symptoms follow, and then be increased again very cautiously. Whenever possible, a chart should be kept recording morning and evening temperatures and all variations of symptoms. Vaccine treatment along these lines is reasonably free from risk and likely to produce improvement in cases of arthritis associated with a focus of infection, and even in long-standing osteo-arthritic conditions, by raising the immunity of the body to the toxins; but improvement in the damage to bone or cartilage which may already have taken place is not to be expected. Since physical methods of treatment may cause auto-inoculation it is better to omit them on the day of inoculation and the two following days. The question of an autogenous or stock vaccine is of less importance than care in dosage and administration.

PHYSICAL METHODS OF TREATMENT

These methods are of great importance in the treatment of arthritis, but vary widely in their efficacy and in their suitability for any particular case. They are designed to improve the general health and thus to raise immunity both by direct action and indirectly by causing auto-inoculation; to relieve pain; to reduce swelling; and to correct deformity, etc. They comprise the various forms of hydrotherapy, massage, electricity, light, heat, etc.

Hydrotherapy

Hydrotherapy might with advantage be employed to a much greater extent in ordinary practice. For example, baths may be given at home, though ordinary water will not by any means produce the same result as suitable mineral waters. The soothing effect of a bath about body temperature for ten or fifteen minutes is well known. At a higher temperature it will dilate the capillaries and improve the circulation, which is a matter of much importance owing to the capillary stasis in and around arthritic joints and to the cold extremities and general sluggishness of the circulation in such cases. The cautious application of cold water by means of a sponge at the end of such baths will, by contracting the arterioles, add a stimulating and tonic effect. Rest in bed should follow, when relaxation will take place and the tissues again be flushed with blood. Precision in adapting the temperature, duration, and frequency of such baths, and the amount of rest, will be essential if the best results are to be obtained.

Similarly, local baths will be useful, and especially the contrast bath. This is given with two basins or tubs, one containing hot water and the other cold. The limb to be treated is immersed in each alternately. The details must be varied to suit the case, but useful temperatures are 50° for the cold and 100°–105° for the hot bath, with immersion in the latter for forty to sixty seconds followed by ten to twenty seconds in the former; this may be repeated five to ten times. I have found this a very useful procedure for the hands and feet. Vapour baths are also easily given at home, and may be used alone or as a preliminary to an immersion bath. At the spas these methods are enhanced by the nature of the mineral water, and by douches, packs, and massage in the water.

Heat

Heat may be applied generally by vapour baths or by radiant heat apparatus, which is available in many large towns. Such treatment must be employed with great caution, if at all, in rheumatoid arthritis, as the patients are often already debilitated and may be weakened further; but for climacteric arthritis and osteo-arthritis it will often be found beneficial. Local applications are, however, free from this objection, and may be made by poultices, etc., or by simple apparatus. Infra-red rays, which are the most penetrating, can be applied by various patterns of lamps for electricity, gas, or paraffin, and a portable apparatus of this kind is a very useful addition to the armamentarium of a country practitioner. The effect of such measures is to increase the circulation, and thus to remove toxins and improve the nutrition of the joints. Diathermy, if available, is sometimes of help; it heats the interior rather than the exterior of the joint or limb if skilfully administered, but except for osteo-arthritis—more particularly of the hip—I find it less useful than the other methods I have referred to. Heating treatments must not be overdone or they will do more harm than good. Ultra-violet light has not proved of value in my hands in the local treatment of joints, but if care is taken to avoid overdosage, to which rheumatoid patients are very susceptible, it may as a general application be advantageous in raising the level of bodily resistance. The same considerations apply to exposure to natural sunlight.

Ionization

This is also a method which may readily be employed in private practice, and it is of great value in the relief of pain and stiffness of the joints. Many substances have been tried, but the best are salicylate of soda for the relief of pain, and potassium iodide, or chlorine ions in the form of "T.C.P.," for effusion into the joints or tendon sheaths or for periarticular thickening. It is most effective in the wrists, knees, and shoulders, the hip being too deeply seated to be reached by this method. How far the effect is due to the actual ions of the drugs applied, and how far to the action of the current on the tissues and tissue fluids, is open to question, but I think there is no doubt that the latter is important. The negative electrode is the active one with the drugs mentioned, and should be applied with as large a pad as is convenient for the joint under treatment, with the positive over a pad at a distance or in an arm or leg bath of weak saline. If potassium iodide is used it is a common practice to paint the joint with tincture of iodine before applying the pad soaked in the solution of the iodide. The colour of the iodine disappears during the passage of the current, which gives rise to the idea that the iodine has been absorbed; but not infrequently considerable irritation of the skin is set up, rendering it necessary to stop the treatment for a time. It is probable that any advantage to be derived from the use of the iodine is limited to the counter-irritation, and chemical action is just as effective with potassium iodide alone.

Massage

Massage is a method of treatment often abused. In arthritis its application should generally be limited to the muscles, to restore tone and maintain circulation. Where there is any active inflammation in a joint it is futile to expect to improve the wasted muscles by this means, and rest is indicated till the inflammation has subsided.

The second group of physical measures are those designed to prevent or correct deformity. This group necessarily also includes many of the procedures already referred to in the first group.

Rest

Rest is one of the most important points, though it may seem surprising to regard it as a method of physical treatment. During the acutely painful inflammatory stage, a joint should be kept at rest and, if necessary, light splints applied to prevent the development of deformities. In dealing with painful knee-joints, especially those with a tendency to flexion, which may easily go on to more or less posterior subluxation, weight extension with rest in bed may be necessary for a time. Light stroking massage to help the circulation may be used. In osteo-arthritis of the hip special attention is required to prevent contraction of the capsule and limitation of the range of movement from this cause or from the formation of osteophytes round the joints. In such a chronic condition, rest in bed with weight extension, while it might relieve, is obviously undesirable for many other reasons. If it can be borne, a light walking calliper splint is the most useful method of relieving pressure on the irritated joint surfaces in both knee- and hip-joint cases. At the same time care must be taken to retain as wide a range of movement as possible by active and passive movements. Where there is laxity of the knee-joint, often due to damage to the crucial ligaments, or if the joint tends to give way, a Howard-Marsh knee splint is often of very great assistance and may be worn for years.

Movements

Movements are another important part of treatment. They may be active or passive, but the former are generally to be preferred, and may be started as soon as active inflammation has subsided. An increase of pain after the movement, or a lessened mobility, is an indication for further rest; such symptoms will often be associated with some degree of auto-inoculation and consequently general symptoms; pain at night may be due to over-exercise during the day. In carrying out movements of the knee, elbow, and wrist, particularly, attention should be given to securing extension, since it is possible to obtain an apparent greater range of movement and to find that this is due to increased flexion only, while extension is lessened: in such a case further rest, combined with suitable splinting to correct the tendency, may be indicated. Forced movement, with or without anaesthesia, may be required in later stages to break down adhesions and to restore mobility, but must on no account be attempted until all signs of active mischief have subsided.

Counter-irritation

Counter-irritation may be applied locally or at a distant point along the spine or nerve trunks. The latter method has had enthusiastic exponents and is sometimes useful, though how it acts is less easily explained. The usual method is to apply a blister or a cautery point over a small area, generally over the cervical or lumbar spine, thus stimulating the posterior nerve roots: this is carried on for many weeks or months. By similar methods local counter-irritation is applied over the joints themselves. It serves to promote the absorption of effusions and exudates. Firm bandaging over a layer of cotton-wool should be used in conjunction if there is much fluid in the joint. Bier's bandaging, producing congestion of the distal portion of the limb, is sometimes beneficial—if maintained for half an hour or an hour there is generally a subsequent small rise of temperature, suggesting that it causes a slight auto-inoculation.

GENERAL MEASURES

Since our object is to raise the constitutional resistance of the patient, attention to the general health is of

importance, and the first step is to improve, where possible, the general conditions of life. Dampness of site or dwellings, sunless rooms, and deficient ventilation must all receive such attention as can be given, and this is more important, or at least more practicable, in most cases than change of climate. It is a great mistake to think that a warm climate is necessary; the optimum climate is the one which stimulates the latent powers of resistance of the patient within the limits of his capacity.

Diet

Diet is a subject upon which there is a great diversity of opinion, and error is extremely prevalent, especially among patients' friends and the popular press. In rheumatoid conditions the first essential is an adequate diet of simple digestible food, and there is no justification for forbidding any article of food which the patient finds easy of digestion and to which there is no idiosyncrasy. This question of idiosyncrasy is important, and careful inquiry should be made. Some patients appear to suffer more pain, etc., after articles of food termed "acid"—certain fruits and wines—and sometimes after malt liquors, though these effects are more usual in fibrositis than in arthritis. Others do well on them, and stout, for example, is usually well borne and found beneficial in asthenic subjects of arthritis. No general rule can be laid down. If there is a tendency to put on weight, as in climacteric arthritis and osteo-arthritis, carbohydrates must be kept within limits.

Importance has of late years come to be attached to vitamins in diet; they have a practical application in arthritis, and the best rule is to see that the diet has its due proportion of these substances. Where it is readily assimilated milk is of great service, both for its nutrient value and for its vitamin content. Fresh fruit and vegetables are also important, and not always easily obtained by the poorer classes. Attention should be given to the supply of vitamin B—brown bread, wheat germ, legumes, etc. Vitamin A can be added in the form of cod-liver oil or its derivatives, to raise the resistance to infection, and vitamin D is indicated very strongly in rheumatoid arthritis, since the osteoporosis which is shown in the rarefaction of the bones indicates calcium wastage, due not so much to deficiency of calcium in the food as to inability of the tissues to assimilate it. Thus the diet in rheumatoid arthritis should comprise milk, butter, cheese, eggs, fish, and meat, easily digested, and including liver and some fats; whole-meal bread and yeast extract in the form of marmite, bemax, or the like; fresh fruit and vegetables, raw or cooked, and including peas, beans, lentils, etc., and, in season, young carrots and turnips. Foods outside this list are not necessarily prohibited, and may be taken to gratify taste or appetite so long as adequate amounts of the more important foods are included.

Constipation

In many cases constipation is probably a contributory factor in the production of arthritis. The long retention of putrefactive matter in the colon leads to irritation of the epithelial lining, reducing its protective functions and facilitating absorption of toxins which tend to lessen tissue resistance. It is therefore essential to treat it by attention to diet and by inculcating regular habits. The dietetic treatment demands a sufficient amount of bulky residue, such as is supplied by the cellulose of fruit and vegetables, and an adequate supply of vitamin B. It is important to ensure that a sufficient amount of fluid is taken—not less than three pints of total fluids per day.

When constipation has become chronic or there is clear evidence of toxic absorption, undue fermentation, etc., lavage of the colon is often helpful if not carried too far. It should be given by means of a douche can and with a pressure never exceeding two feet, the quantity of fluid injected being usually one and a half to two pints. The technique is described elsewhere and need not detain us now. Simple saline solution or a very weak permanganate are the most useful fluids for injection. From three to six treatments on alternate days should suffice in one course, and may be repeated after an interval.

DRUGS

I have left this part of the subject till the last, the place it should always occupy in the doctor's mind when called on to treat a case of arthritis, though the patient is apt to put it first and foremost. A patient whose arthritis is being treated chiefly or entirely by drugs is a reproach to his physician. This is not to say drugs should not be employed in their proper place, but they have no specific action in these diseases.

In the more acute forms, especially in younger subjects, I regard cod-liver oil as a sheet-anchor in treatment, and I believe its action is due to its high content of vitamins A and D, which raise resistance and improve calcium metabolism and general nutrition. Where it cannot be tolerated in the ordinary form its place may be taken by the many derivatives or compounds now on the market. If the patient does not take enough milk, it may be well to administer calcium in an assimilable form to endeavour to make good the wastage of this element. The addition of arsenic is beneficial for its tonic effect, and iron may also be useful. The syrup of iodide of iron is an old-fashioned remedy in arthritis which has something in its favour. Iodine is of value, especially in the more chronic forms, possibly by stimulating thyroid action. I prefer a saturated solution in rectified spirit, beginning with one drop in milk three times a day and increasing gradually to five drops. Occasional intervals should be allowed. Thyroid is of help in arthritis of the climacteric type and wherever there is a tendency to put on weight unduly; it also seems to act beneficially in some cases of osteo-arthritis. Sulphur sometimes exercises a favourable influence, especially when there is constipation; but it is more frequently indicated in fibrositis than in arthritis.

Intestinal antiseptics have been much given, and guaiacol carbonate is probably the best. It must be administered over a long period, and may be prescribed in conjunction with iodine or other remedies. A combination of 5 grains of guaiacol carbonate with 5 grains of aspirin or calcium acetyl-salicylate is often very useful. In my experience other salicylates are of no service.

For the relief of pain aspirin is of great value, and its action in unstiffening the limbs is often remarkable though unfortunately transitory. It is essential to remember that habit-forming drugs should be avoided. If aspirin alone is insufficient it may be combined with phenacetin and caffeine. The opium derivatives, as well as the barbiturates, are to be avoided, but in very severe cases codeine may be prescribed with aspirin and phenacetin, and this combination is often very helpful. Protein shock therapy has been extensively tried, and sometimes yields strikingly good results, though the cases generally relapse after a short time unless the effect can be followed up by other and more lasting methods. It is usually given by means of intramuscular injections of sterile milk, peptone, or colloidal sulphur, or by a non-specific vaccine (T.A.B. being generally preferred) injected intravenously. The method is not entirely free from risk, and the reaction may be alarming.

SPA THERAPY

I have referred to spa treatment briefly when discussing physical measures, and do not propose to go deeply into this aspect of treatment, although in many cases it proves to be very advantageous. Few patients can give the time or afford the expense of a long stay at a spa, and long treatment is essential in arthritis. At the same time the effect of rest and change to a healthy and stimulating climate even for a short period, combined with the treatment only to be obtained at a well-equipped spa, is often of the greatest value, and may start the patient on the road to recovery. Many considerations will influence the choice of a spa: a bracing and stimulating effect is to be sought rather than a relaxing one. The kind of water is less important than the efficiency with which it is adapted to the particular patient, and there is a real risk in too strenuous treatment.

Time has not permitted of an exhaustive examination of the subject, but I hope the general principles and indications I have outlined will prove of some assistance to you in dealing with the different problems which arthritis presents to the practitioner.

HIGH GASTRIC ULCER

A SUGGESTED OPERATION

BY

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(With Special Plate)

This short paper is to introduce an operation which, so far as is known, has not previously been described, and which from the results obtained seems well worth while bearing in mind as a possible solution when the surgeon is faced with the problem of dealing with a really high and difficult gastric ulcer. Briefly, the proposal is to perform a partial gastrectomy below the level of the ulcer.

SURGERY IN THE TREATMENT OF ULCER

An attempt to summarize the literature was soon abandoned on account of the enormous bulk of work which has been contributed to the subject of the treatment of gastric ulcer. All that seems possible is a comparatively bald statement of what would appear to be the most widely and commonly accepted views on the matter—namely, (1) that medical and surgical treatment should be complementary, but (2) that a recent ulcer, wherever situated, is not suitable for surgical treatment except there be cause to suspect malignancy, whilst (3) in the present incomplete state of our knowledge a chronic ulcer, wherever situated, is best treated surgically.

The third of these statements requires a little amplification. It seems unlikely that the surgical treatment of ulcer will survive the test of time. The condition must be preventable, and when the aetiology is a little better understood the rational means of avoiding its occurrence will in all probability appear, and the surgery of the upper abdomen will to a large extent disappear. Until that time, however, surgery will probably hold the field, because its methods, though crude, give good, quick, and permanent results. The question naturally arises as to how these results are obtained, and, disregarding detail, it seems arguable that there are two broad factors—the mechanical and the chemical. *Mechanically*, all the operations in which the stomach is anastomosed to the

duodenum or jejunum lead to a more rapid emptying of the stomach, and the ulcer is either removed entirely or side-tracked from the main food stream. Partial gastrectomy removes the ulcer, and the surviving stomach empties rapidly. *Chemically*, all these operations tend to diminish gastric acidity by the free admission of the alkaline contents of the small gut. In addition, gastrectomy in all its forms also removes part of the acid-secreting mucosa.

THE PROBLEM

For a chronic gastric ulcer the majority of surgeons favour, whenever possible, a partial gastrectomy. The alternatives are excision and gastro-enterostomy or cauterization and gastro-enterostomy; but in whichever direction the surgeon's choice may lie *all* these procedures are easy when the ulcer is accessible. The operation and the

FIG. 1.—Partial gastrectomy; the standard operation. The shaded portion between the lines A and B is removed. The jejunum is anastomosed at B.

problem become difficult only when the ulcer is high. Gastro-enterostomy alone is looked upon with disfavour because, despite statistics to the contrary, surgeons in general are dissatisfied with the results obtained. It may be that the drainage and the chemical change are too far removed from the ulcer. The combination of excision or cauterization with gastro-enterostomy when dealing with extremely high ulcers is most difficult and not a little dangerous. Gastrectomy *can* be done, but needs to be almost or quite "total." This is not impossible, and cases have been reported where a complete gastrectomy has been done for simple ulcer. The only total gastrectomy the writer has done himself was for a leather-bottle malignant stomach. The patient survived two years, but was quite miserable for the whole of that time. Complete gastrectomy is probably never worth while, and is certainly not justifiable for simple ulceration. As regards the danger of unrecognized malignant disease, a growth in the position under consideration cannot be successfully removed and is better not attempted. This possibility therefore does not justify complete gastrectomy. As a compromise it has been suggested elsewhere that, in performing the partial gastrectomy, the general level of resection should be below that of the ulcer, but that a tongue of tissue should be taken up the lesser curve to include the ulcer itself. This operation resembles excision and cauterization in that it is difficult, dangerous, and shocking.

THE PROPOSED OPERATION

The solution suggested is simply to perform a standardized Polya-Moynihan partial gastrectomy below the level of the ulcer. The technique requires very little description. The pyloric end or the duodenum is divided and the stomach turned up in the usual way. It may be only at this stage that the surgeon discovers that to complete his operation as it was first intended would