with by morrhuate injections. During the whole period of treatment the patient had complete freedom from the pain which for twelve years had made her life a misery.

CASE II.

A man, aged 52, developed typhoid fever complicated by femoral thrombosis thirty years ago in the Boer war. An ulcer appeared as soon as he got about. Since then this never healed, but slowly grew to encircle the leg and measure 31 square inches in area. His total hospitalization over the thirty years amounted to seven and a half years. Every treatment, including skin grafting, was tried; amputation had been repeatedly refused, and the pensions committee had awarded him a lifelong pension of £2 per week. A most conservative estimate of the cost of this ulcer to the patient and State gave a figure of over £5,000! With twenty-one weeks of the treatment outlined previously he was completely cured. During the whole period of treatment he followed the most unfavourable of occupations, that of a house painter, earning £4 to £5 per week. He stated that during the treatment he had less pain than at any time in the course of the disease. There were no varicose veins at all in this case, so the patient is now wearing an elastic support to prevent recurrence.

These two illustrative cases, by no means the most severe, are taken from a series of 324 cured patients (478 ulcers) with a total area of 1,480 square inches, or rather more than 10 square feet of ulcer surface. The average rate of healing was 1 square inch in 5.1 days. In two years I have only traced three patients who did not continue treatment, ~~and only one~~ who did not respond to it—a woman who died shortly after from an abdominal malignancy. Of these 324 patients no fewer than 33 had refused amputation at some time or other; it is thus seen that we can, with this method, retrieve some of these derelicts from what Mayo has described as the "surgical dust heap."

CHRONIC ULCER OF THE LEG TREATED BY THE METHOD OF DICKSON WRIGHT.

BY

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We have thought it worth while to publish our first results in the treatment of chronic ulcer of the leg by this method. The number of ulcers having an area of more than five square centimetres bears a small proportion to the total number of ulcers treated. In nearly every case, however, the healing of the ulcer was a relatively minor episode in the restoration of comfortable function to the affected limb. We have only recently devised an apparatus for measuring the reduction in size of the swollen and brawny legs on which ulcers and chronic dermatitis occur, and so we are not in a position to produce numerical evidence of the improvement we have been able to obtain in what formed the bulk of our material. As regards the restoration of painless function, we can only say that our patients have been unanimous in their appreciation of what this treatment has done for them; the comfortable theory which we used to hold, in view of our failure to relieve—that such patients preferred to enjoy their disability—has been almost completely abandoned. There seems to be little doubt that the results previously obtained in out-patient work have always been inferior to those obtained by the individual doctor. Whenever we have discussed this method with our colleagues in general practice we have generally found the latter fairly well satisfied with their own results, and unwilling to regard our present results as worth the very little extra trouble that they involve.

It is, of course, probable that with rest in bed many of these ulcers would have healed, but, as already stated, by the Dickson Wright technique an important further

advance is made in that the leg is reduced to its normal size, cured of its tendency to swell, and in many cases, we believe, secured from the possibility of further trouble. Moreover, with this method the patients are able, and are indeed encouraged, to go about their work during the whole of the treatment. Pain disappears during the first forty-eight hours; with treatment by rest in bed it is generally aggravated. Healing of the ulcer can practically be guaranteed, and the duration of treatment, for this part only of the cure, can accurately be calculated by the formula:

$$\frac{\text{Area of ulcer in square centimetres}}{5} + 3 = \text{time in weeks.}$$

As regards the cost of the treatment, one case may be quoted:

Attendance at out-patient department, including roll of lint, 4 oz. ointment, 1/2 lb. wool, and two open-weave bandages every week for six years	£52 10 0
In-patient treatment—five months at £2 per week	£40 0 0
	£92 10 0

This contrasts with treatment by us:

Twelve special adhesive bandages at 2s. 3d.	£1 7 6
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We understand that under the "panel" the provision of these special bandages is refused on account of expense.

We do not describe our technique in detail, because we have found that in cases where this procedure has been attempted on the strength of a bare description—perhaps imperfectly understood—the results have been poor. We have had many visitors, however, and, so far as we can learn, results quite as good as ours have been obtained subsequently by those who have actually seen the method demonstrated practically. Briefly, however, the principles are as follows.

Any morbid condition which occurs exclusively on the lower extremity is produced wholly or partly by stagnation in the venous circulation, and the exchange of tissue fluids, due to the dependent position of the limb, and/or the varicosity of the superficial veins. We take this broad view on account of the remarkable results we have had with diseases other than chronic ulcer—namely, eczema, lichen planus verrucosus, Bazin's disease, and chronic dermatitis in every clinical variety. The object, therefore, is twofold. In the first place the limb is emptied of its oedema fluid, the dilated tissue spaces being kept closed until they shrink to their normal capacity. Secondly, the centripetal flow of venous blood is restored, at first by the action of the muscles on the deep veins, and later by blocking the varicose superficial veins. Our procedure is roughly as follows.

The ulcer is measured by means of a piece of celluloid (an old x-ray film) ruled into squares, and the figure recorded on a chart. The girth of the limb may be taken with a tape measure, or its volume may be measured by the displacement of water in a tank we have had constructed for the purpose.

If any varicose superficial veins are accessible they are injected at once with 5 per cent. sodium morrhuate, beginning at the highest point. The bandage is then wound on the leg, starting at the metatarso-phalangeal joints and ending just below the knee. This bandage, which is a proprietary article manufactured in England, is made of an elastic fabric, and is coated with an adhesive material similar to that on ordinary strapping. It is three yards long and three inches wide. The tension is varied according to the amount of oedema present, and in extreme cases may be great enough to endanger the continuity of the bandage. It has been found convenient to wind it from without inwards—that is, in the reverse direction to the normal. It is then dusted over with talc powder to prevent it adhering to the stocking, and the patient is instructed to walk home. It is replaced in a week's time. The patient is also instructed to do as much walking as could possibly be done if the leg were healthy.

No fear need be entertained as to the danger of imprisoning the septic secretions of the foulest ulcer. It has invariably been found, on removing the bandage after a week, that such an ulcer is no longer foul, but has become a clean bright carpet of healthy granulations, surrounded by the pale-bluish margin of advancing epithelium. *There is no real danger of putting the bandage*

on too tightly. Disaster only occurs from this cause if the patient takes it on himself to cut the bandage instead of coming to have it reapplied. As a matter of fact, it is when the bandage is not applied tightly enough that any complaint is heard; in such cases the pain is not relieved, and the leg is apt to itch.

As already stated, the healing of the ulcer is a foregone conclusion; compression treatment, however, should be continued until the leg is reduced to its natural size. If "steps" are cut in the leg they give no pain, and they are a clear indication for maintaining the previous tension. While this is going on the remaining varicose veins are treated as they are revealed by the disappearance of the oedema.

Eventually the leg regains its pristine form; the bandage then need only be applied firmly enough to maintain it until the time has elapsed for the shrinkage of the dilated tissue spaces.

Clinical Histories.

Clara B., aged 59, first attended the County Hospital in March, 1929, with chronic ulcer of the leg, which she had had for eight

or nine years. The varicose veins were treated during 1929 by the surgeon in charge of the out-patient department, and on April 29th, 1930, the ulcers being rather worse than they were before the commencement of this treatment, he advised amputation. The patient demurred, and was referred to us, and on May 2nd I found ulcerations over the internal malleolus of 23 sq. cm., and over the external malleolus of 14 sq. cm.; they were both at least 2½ cm. deep. The girth of the ankle at the level of the ulcers was 13 inches, and at the highest level of discoloration of the skin 16 inches. After one week's treatment the girth at the level of the ulcers had been reduced to 11½ inches, and the combined extent of the ulcers reduced to 26 sq. cm. The ulcers were soundly healed at the end of nine weeks, and through all this time the patient has been able to get about her business in comfort.

Mary L., aged 42, had had ulcers on both legs for ten years. There were a number of deep linear ulcers resembling the fissures in the bark of a tree, and the total area was calculated as 27 sq. cm. This unfortunate woman had suffered severe pain from the condition, but was more concerned with the limitation of her activities which it entailed. At the end of five weeks both legs were soundly healed, and it may be said that the patient experienced a complete freedom from the disadvantages of her condition within three days of the treatment having been instituted.

Elizabeth P. had an ulcer of the leg of twenty years' standing. When first seen on March 4th, 1930, there was an ulcer on the left leg of 22 sq. cm., and on the right leg another of 8 sq. cm.; the latter was cured in four weeks and the former in six weeks. At that date the legs were still swollen and hard, but four weeks' subsequent treatment has nearly reduced them to normal size and consistency.

Mrs. C. attended the out-patient department at the Sussex County Hospital for the first time six years ago with an ulcer on the right leg. Six months later she was admitted to hospital, and was kept in bed for five months. On discharge the ulcer was still incompletely healed, and rapidly resumed its previous dimensions, in spite of treatment in the out-patient department. Treatment has continued uninterruptedly there ever since. When first seen the ulcer measured 128 sq. cm. At the end of the fourth week nine small pieces of skin—taken from the anterior surface of the thigh—were embedded in the floor of the ulcer. Six of these grafts took, and in three weeks' time were repre-

sented by areas of growing epithelium 1 cm. in diameter. At the end of ten weeks the ulcer was soundly healed, and the patient was allowed to go away for her holiday with a bandage on the affected leg. Although this was nearly three months ago the patient has not been seen again, and in view of her record of constant attendance we feel entitled to assume that the ulcer has remained healed. (See chart below.)

Alice B., aged 54, had an ulcer of many years' duration which was treated by injections of the varicose veins alone during 1929. In January, 1930, the patient was advised that the only way of healing the ulcer was complete rest in bed. This advice was taken, and the ulcer partly healed, but while the patient was still in bed it broke down again, and became larger than ever. On May 13th she had an ulcer of 20 sq. cm. This was soundly healed at the end of six weeks' treatment.

Sidney M. had an ulcer of twelve years' duration; he was treated from October, 1928, to January, 1929, by injections of the varicose veins with quinine urethane, and ordinary dressings. The ulcer healed, but broke down again early in August, 1930. On August 19th the ulcer measured 53 sq. cm. It was soundly healed in two weeks.

Albert W., aged 55, was the least favourable of the present series of cases. He is a zinc worker, who has been out of work for twelve months on account of ulcerations of the legs. Last year his varicose veins were treated, but the ulceration became worse; there was an ulcer on the left leg of 33 sq. cm., and on the right leg of 8 sq. cm. (There was no oedema of the legs.) The former was reduced to 7 sq. cm. in five weeks, but at the end of nine weeks is still incompletely healed. The latter was practically healed after five weeks, but neither ulcer can be said to be soundly healed at the present moment, although the patient has been able to return to his work, and is, of course, very substantially benefited by the treatment.

Charles M. came under observation on May 15th, with the history of an ulcer just above the right internal malleolus, which had been present for ten years. He suffered severe discomfort and loss of rest at night, with "shooting pains." This ulcer was 27 sq. cm. in area, and was soundly healed in three weeks' time. It is worthy of note that whereas before treatment was commenced the girth of the limb above the malleoli was 11 inches, and at the highest level of discoloration 14½ inches, at the time of the healing of the ulcer these measurements were reduced to 9 inches and 12½ inches.

George C. had an ulcer of twelve months' duration. When seen on August 1st, 1930, the ulcer measured 25 sq. cm. It had soundly healed in three weeks.

STATISTICAL SUMMARY OF THE TREATMENT.

Of 54 cases treated in the way indicated cure resulted in 31, the mean duration of treatment being 11.8 weeks. One patient (Albert W.) was much improved, and there remain 22 cases still under treatment, the mean duration of which is 10.4 weeks.

In 10 cases of eczema, etc., without ulcer, the mean duration of treatment was 17.5 weeks; in 23 cases of ulcers less than 5 sq. cm. it was 3.5 weeks for healing ulcer only; in 16 cases between 5 and 50 sq. cm. it was 6 weeks; and in 5 cases where the ulcer was larger than 50 sq. cm. it was 10 weeks, an average of 8 sq. cm. a week. The total area of ulcers healed was 970 sq. cm., and the rate of healing of all ulcers larger than 5 sq. cm. was 5.65 sq. cm. a week. The percentage of ulceration not responding to treatment was 0.63.

The total cost of bandages used was £78, the equivalent of a charge of £2 10s. for each patient cured. The cost of healing the ulcer alone for each patient was £1 15s.