little or no improvement. Should no improvement be noted within two months, surgical treatment, such as excision with the diathermy knife and subsequent skin grafting, should be considered. In the more advanced cases it is exceptional to obtain a cure, but a large proportion show improvement with temporary arrest of the disease.

REPETITION OF IRRADIATION TREATMENT.

There is no doubt it is best to give a maximum dose at the first treatment, for after each successive dose a rodent ulcer becomes more refractory to treatment. It is supposed that repeated treatments cause some degree of radio-vaccination. On the other hand, a growth which has proved refractory to beta radiation will often respond to gamma radiation. A second exposure in those cases in which no healing has been obtained is usually of no use, and may only aggravate the condition. If, however, complete healing has not occurred, but a definite improvement is noted and there is still some induration left, a second treatment with a thicker screen may be required to affect the deeper limits of the lesion. Previous treatments produce an avascularity of the tissues, rendering them more susceptible to radium necrosis.

Radium should never be employed within six weeks of any previous treatment. When it is decided to give a renewed treatment, it is important to know whether a patient has had previous x-ray treatment. The age of the patient, the details of the previous dose, and its subsequent reaction, must all be taken into consideration. It is important to estimate the dose so as to avoid a "radium burn." Infection readily takes place, and an intractable ulcer forms which may take months or even years to heal. The term "radium burn" is often used incorrectly, being applied to the simple vesication and ulceration which follow upon an unscreened radium exposure, and which are an essential part of the reaction. In these cases a destructive reaction has been deliberately produced for a definite purpose, and satisfactory repair can be anticipated. The term "radium burn" should be reserved for the few instances in which the dosage has been excessive. The resultant ulceration may be extreme in degree; pain is severe and persistent, and repair is always slow.

PROGNOSIS.

This depends on the age of the patient, the type of growth, its position, and the extent of the disease when treatment is commenced. In old people there is less resistance offered by the surrounding tissues to the advance of the disease. Ulcers of the hypertrophic group usually respond exceedingly well to irradiation. The flattened cicatrizing type shows a tendency to recurrence, and ulcers of the deeply ulcerative group are not so suitable for treatment; in fact, the value of radium in very advanced cases is doubtful, the patient's resistance to the disease is poor, and the power of repair is deficient. When the lesion is small radium treatment is usually successful. It is only when the disease extends to the deeper tissues, and infiltrates underlying bone or cartilage, that the prognosis becomes grave.

Ulcers in certain situations, such as the forehead, ear, and inner canthus, have a serious prognosis. When a mucous membrane is implicated, the condition also proves more resistant, and is often only eradicated by free excision. When an ulcer becomes secondarily infected it often responds poorly to radium. In some cases the sepsis appears to be aggravated by treatment, thereby only adding to the patient's discomfort.

SQUAMOUS EPITHELIOMATA.

Squamous epitheliomata of the skin differ from rodent ulcers in their more rapid growth, and in their formation of metastatic deposits in the neighbouring lymphatic glands. These lesions are susceptible to the rays of radium, although not to the same degree as the basal-celled growths. The warty type in particular may be readily destroyed by irradiation, whereas ulcerative lesions prove more resistant. In the early stages of the disease, the results of excision are so good that radium should be reserved for the more extensive cases. In patients treated

with radium a high percentage of cures has resulted; nevertheless the growth should be excised in operable cases, and this should be done with the diathermy knife.

When radium treatment is considered advisable gamma radiation must be used, interstitial radiation being the method of choice. Needles of low content should be employed with walls of 0.6 mm. of platinum, and containing 0.5 mg. of radium element for each centimetre of active length. They should be introduced into the healthy tissue in the immediate vicinity of the growth, and allowed to remain in position for a week. By the end of six to eight weeks the resultant reaction subsides, and the growth gradually disappears, leaving a smooth scar. The primary growth should not be regarded as apparently cured unless the treated area is perfectly soft. Any residual induration should be excised, as this may be the nucleus of a rapidly growing recurrence. Prophylactic doses of radium to the neighbouring lymphatic areas are of doubtful value.

When the glands are definitely invaded, the prognosis is very grave. In these cases needles or Columbia wax plaques may be employed. The immediate result is often encouraging, but the permanent disappearance of infected glands is exceptional. Much can be done to relieve symptoms and prolong life, but in its later stages the disease proves resistant to all forms of treatment.

THE TREATMENT OF LATE SYPHILIS.

BY

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DURING the past six years I have made increasing use of bismuth preparations in the treatment of late cases of syphilis. It had been my usual practice to treat such cases with bismuth intramuscularly, and with mercury and iodide orally, during the first three months, continuing thereafter with combined bismuth and arsenical therapy. Finding that in a considerable number of cases the Wassermann reaction became negative after the first three months' course, I decided to try the effect of more prolonged bismuth treatment instead of exhibiting the arsenicals.

The bismuth preparation used in this series of cases was neotropol, of which 1 c.cm. is equal to 0.08 gram bismuth; 2 c.cm. of it were given weekly, so that in the normal three months' course each patient received 2.08 grams bismuth, together with 1,260 grains potassium iodide and 210 grains hydrarg. cum cret. One month's rest was given between each course, and the number of courses given ranged from two to six.

Records are available of 45 consecutive cases treated on this plan. The Wassermann reaction of 24 of these had proved resistant to previous arsenical treatment, while 22 had had no previous treatment whatever.

Clinically, the results were striking. Only two cases—one of central nervous system syphilis, and the other an advanced heart lesion—failed to respond, and the amelioration of symptoms was so marked that it was difficult to persuade many of the patients of the need for further treatment.

The influence of treatment on the blood Wassermann reaction, if less dramatic, was notable. In 30 cases (65.2 per cent.) the Wassermann reaction was rendered negative; in 13 cases (26.1 per cent.) the strength of the positive reaction was reduced, and in only 4 cases (8.7 per cent.) did it remain unaltered. Of the 30 cases in which the Wassermann reaction became negative, 9 did so after the first course, 7 after the second, 4 after the third, and 4 after the fourth. Of the 13 cases in which the strength of a positive Wassermann reaction was reduced, 5 received only two courses of treatment and 5 had three, while of the 4 cases in which the Wassermann reaction was uninfluenced, 2 had two courses and 2 had three.

The results in the cases which had resisted arsenical treatment differed little from those obtained where no

treatment had previously been employed—62 per cent. of the former became negative and 68 per cent. of the latter.

Of the 46 patients dealt with, 12 presented no symptoms when referred for treatment, although several of them were mothers of children showing clinical evidence of congenital syphilis. The Wassermann reaction in 11 of these cases was made negative; in the other it remained unaltered. Sixteen showed tertiary syphilitic lesions which had been present for over a year; the Wassermann reaction was made negative in 7 of these and remained unaltered in 2. In the remaining 18 cases the lesions, though tertiary, were of more recent appearance; in 12 of these the Wassermann reaction was made negative, while in 1 it remained unchanged.

In only 22 of the cases was the approximate date of infection known. In 12 the disease was of less than ten years' standing, and of these the Wassermann reaction was made negative in 7; the other 10 were of longer duration, and 4 of them became sero-negative. It was noted that the clinical and serological results in cases of late skin lesions were particularly good. Three of the cases in which serological improvement occurred were at one stage of their treatment sero-negative, but subsequently relapsed. One of these patients attended for treatment very irregularly, and only received three courses in two and a half years.

The patients tolerated the treatment well, though in three cases it was necessary to suspend it for a few weeks, twice on account of gastro-enteritis, and once on account of severe stomatitis. One other case developed a fine scarlatiniform rash, which came up within twenty-four hours of each bismuth injection and gradually faded away during the remainder of the week. It caused her no inconvenience, and her treatment was not interfered with.

The average patient will stand three such courses during the first year of treatment and two during the second, and, if the patient can be given five such courses, the Wassermann reaction will be rendered negative in about 70 per cent. of cases. Many will be sero-negative much earlier; in this series over 80 per cent. of the cases began to show serological improvement by the end of the second course.

It must be remembered that these are cases of old-standing disease, often occurring in elderly subjects; for recent infections arsenical treatment is essential. I am convinced that in many of these old cases bismuth is even more efficient than arsenic, and that the safety, ease, and rapidity of administration, and its relative cheapness, render it of great practical value.

PUERPERAL SEPSIS.*

BY

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THE strict measures adopted at the Princess Mary Maternity Hospital, Newcastle-upon-Tyne, to prevent contagion produced vastly improved results; some details of these were published in the *British Medical Journal* of May 3rd (p. 814). It would not be fair to attribute all the improvement to the new routine; a "scare" regarding sepsis has a tonic effect on nursing in general.

There should be a larger proportion of fully trained nurses on the staff of maternity hospitals, especially for the nursing of suspect and septic cases. Clean and suspect cases cannot be nursed together; the former are endangered, and the latter tend to be neglected. The problem of isolation is one of great anxiety, as many maternity hospitals are quite unequal to the demand made on them. They were designed before the notification of puerperal pyrexia produced such an influx of febrile cases requiring hospital treatment, which at times tends to convert them into fever hospitals.

* Summary of a paper read before the Edinburgh Obstetrical Society.

The following would appear to be the minimum requirements of a modern maternity hospital: (1) an admission room for preliminary classification; (2) examination rooms and wards for (a) clean, (b) suspect cases, (c) cases of genital sepsis, (d) cases of extragenital sepsis. Each of the four units should have its own labour ward and nursing staff.

The present method of recording morbidity in maternity hospitals is largely valueless owing to the indiscriminate grouping together of cases. The only reliable record is that made of clean cases that are delivered in hospital.

The periodic pyrexial wave among suspect cases admitted to hospital was studied from 1925 to 1930. When compared with clean cases (Group B), which have similar complications, but for whose safety from sepsis the hospital is primarily responsible, it will be seen that the outside cases have a higher sepsis curve, but that there is a degree of sympathy between the curves.

CHART 1.

Thick black line = percentage sepsis in suspect cases sent into hospital. Dotted line = percentage sepsis in Group B clean cases delivered in hospital.

In looking for the cause of these pyrexial waves, it seemed reasonable to exclude the hospital because, with its admitted defects during some of the years in question, there was no reason why its own cases should not follow a similar curve. The possibility of periodic overcrowding was excluded, as the numbers admitted, especially of suspect and septic cases, were remarkably constant.

Since the pyrexial waves occurred during the winter months, I wondered if, during periods of epidemics, doctors were perhaps too rushed to devote sufficient time to maternity work. This theory was investigated by studying certain types of cases which were sent in during the four months of highest pyrexia and the four months of lowest pyrexia for the years 1926, 1927, and 1928. Cases of "failed forceps," haemorrhages, abnormalities, and eclampsia were studied.

Suspect Cases.

	High Sepsis.		Low Sepsis.	
	No. of Cases.	Percentage Septic.	No. of Cases.	Percentage Septic.
Failed forceps ...	18	33	24	15
Haemorrhages ...	57	21	54	13
Abnormalities ...	50	32	77	10
Eclampsia... ..	18	39	22	10

The results of this investigation completely exonerated the profession. Not only did it reveal that the septic factor is one which is general and not selective, but—still more important—that a larger number of cases of failed forceps and abnormalities were sent in by doctors during periods when they were slack and when the sepsis rate was low than when they were busy and the sepsis rate was high.