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.

The seasonal character of the waves suggested that they might correspond to periods of general lowering of the individual resistance to infection. Dr. H. Kerr, medical officer of health for Newcastle, provided a list of deaths of both sexes occurring from influenza and pneumonia during the years 1925 to 1930. There is a marked similarity between the death curve and the sepsis curve (see Chart 2).

CHART 2.

The difference between the sepsis curve of cases sent into the hospital and cases of a similar character which have been under the care of the hospital remains to be explained. If the seasons or the hospital were entirely to blame, then the curves should have been identical. The following difference existed between hospital and outside cases.

High Sepsis.

	Hospital.		Others.	
	No. of Cases.	Percentage Septic.	No. of Cases.	Percentage Septic.
Haemorrhages ...	25	16	57	21
Abnormalities ...	59	9	50	32
Eclampsia...	8	Nil	18	39
<i>Low Sepsis.</i>				
Haemorrhages ...	21	8	51	13
Abnormalities ...	82	16	77	10
Eclampsia...	4	Nil	22	10

With only one exception the hospital cases showed better results. This suggested that under existing conditions many patients of the industrial class do not get as good medical and nursing supervision as they obtain in hospital. It will be readily understood by anyone with a practical knowledge of the subject that cases sent to hospitals by doctors are not necessarily "doctors' cases, and, even when they are, the doctor in charge has too frequently been without skilled nursing assistance.

Conclusions.

1. The liability to puerperal sepsis is greater at certain seasons than at others.
2. Its incidence can be considerably modified by proper medical supervision and adequate nursing attention.

RESPIRATORY COMPLICATIONS FOLLOWING SURGICAL OPERATIONS DURING A FOUR-YEAR PERIOD.*

BY

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THE subject of respiratory complications following surgical operations has been a source of worry to all concerned, while endless controversies have arisen as to the part inhalation anaesthesia plays as a causative factor. There was a time when almost every post-operative complication except haemorrhage was put down to the latent influence of the anaesthetic. The whole of the anaesthetic vapour necessary to produce anaesthesia passes through the lungs to the patient, while 90 per cent. is excreted by the same route; any abnormal post-operative lung trouble was so easily ascribed to "irritation" from the ether. "Time heals all things," and during the last decade the etiology of respiratory complications has changed; the extensive use of novocain for major surgical procedures, with subsequent pulmonary lesions, has brought forcibly to mind the realization that other factors besides ether irritation enter into respiratory complications.

"I have flowers from many gardens, but only the string which holds them together is my own." In the following analysis of lung lesions following a four-year period in a large general hospital, the only claim I make for originality lies in the compilation of data peculiar to this hospital and geographical situation, and I can only touch upon a few of the salient features.

Series of cases giving the pulmonary complications following surgical operations vary widely in the ratio to numbers of operations, so much so that comparisons are of limited value. An extensive review of the literature dealing with the subject varies in the interpretation of the end-results, yet there is agreement upon some points. Thus, for example, patients who undergo upper abdominal operations and those with gross sepsis have a high ratio of post-operative pulmonary trouble, as compared with patients free from gross sepsis and not submitted to abdominal operations. Considering the magnitude of modern surgical procedures it is remarkable that respiratory lesions are not more frequent.

STATISTICAL RETURNS FROM OTHER HOSPITALS.

For comparative purposes I am including a limited number of reports from other hospitals. These comparisons are not invidious, since such factors as climate, surgical technique, and the type of operation suggest a wide variation in the end-results.

Silk,¹ in 1897, reported 5,000 operations, 13 with respiratory complications. Of these 13 cases, 5 followed operations upon the tongue or jaws. Thirty years ago laparotomies were not entered upon so lightly as at the present day. Mikulicz and Henle² record that of 1,787 upper abdominal operations 143 (8 per cent.) were followed by lung lesions. Mikulicz asserts that as many respiratory complications follow after local as after general anaesthesia; Armstrong³ in 2,500 major operations in Montreal reports 55 cases (2.2 per cent.), and Featherstone,⁴ in a most exhaustive review of the literature, quotes 222 gastric cases from Birmingham, with a morbidity of 10.81 per cent. Whipple,⁵ at the Presbyterian Hospital, New York, reported upon 3,719 patients, of whom 97 (2.3 per cent.) developed post-operative lung lesions. Elwyn,⁶ from the wards of the Mount Sinai Hospital, New York, states that in 299 operations under some form of local anaesthesia 11 patients (2.7 per cent.) contracted some form of pulmonary trouble. In 1922 I published a brief survey⁷ of 7,000 operations followed by 19 respiratory complications.

* A paper read in opening a discussion in the Section of Anaesthesia at the Annual Meeting of the British Medical Association at Winnipeg, 1930.