effusion. The area of cardiac dullness extended upward and to the right and left, with muffling of heart sounds, small and rapid pulse, and collapse of the lower lobe of the left lung. Exploration excluded pleural effusion, and after fluctuations in the severity of the symptoms and failure of local applications, Mr. Raymond Johnson tapped the pericardium on October 6th, far back on the left side, and drew off 18 oz. of sero-fibrinous fluid, which during withdrawal showed the characteristic pulsatile stream.

The fluid was centrifugalized, and both free and in still greater numbers taken up in the leucocytes, were demonstrated numerous minute diplococci.

Recovery was remarkably rapid, the temperature falling to normal four days later—after a course of irregular fever lasting five weeks, and reaching at times to 103° F. The pulse-rate, which had reached to 156 in the minute, fell to 112, and the impulse of the heart became well defined and forcible in character. A wave of severe influenza then spread through the ward and the patient was attacked—needless to add, to the general dismay. From October 14th to the 22nd there was fever, which on two occasions touched 103.8° F., but the attack was passed through without serious pulmonary complication or cardiac dilatation. From that date onward she made uninterrupted progress, leaving the hospital for Christmas, with a well compensated mitral lesion. A month later improvement was maintained, but two months later the thyroid, which had diminished greatly in size during her acute illness, together with all the other signs of Graves's disease, had commenced to enlarge again, coincident with an exacerbation of the exophthalmos—and it was apparent that there was a relapse of the hyperthyroidism—for which she is again under treatment.

There is no doubt that there is much quiet scepticism as to the reality of the diplococcus, due in part to the difficulties in demonstrating its presence, the infrequent opportunities afforded, and its minute size. It may be said to hold among bacteria the position of the famous Mrs. Harris of Sarah Gamp fame. Such being the prevalent attitude of mind, it is obvious that *post-mortem* contamination is a ready explanation for the results which have been obtained from cultures, for few can spare the time to sift the detailed evidence to the contrary which, at best, makes dull reading. This case, however, presents, I think, a clear issue. A patient, the victim of acute rheumatism, with a heart injured by a previous attack, passes through a second most severe one while under observation in hospital. A general pericarditis with copious effusion develops, and the fluid withdrawn by paracentesis shows numerous minute diplococci, some in the fluid, many more carried up in numbers by the polynuclear leucocytes.

The stage of the illness is one in which the acute phase is subsiding, but death is threatened from mechanical embarrassment. This patient does not die, the effusion does not return, the temperature falls, and eventually the recovery is so good that she leaves the hospital able to walk short distances, and with a compensated mitral lesion.

Some years ago Dr. Paine and I recorded the isolation of the diplococcus from the blood stream and synovial fluid during life, and we have repeatedly emphasized the rapid destruction of the diplococcus in animal tissues by leucocyte and tissue cells. Now we have once more the proof of its presence in the fluid from the pericardium of a patient who is living, and we have gained a further step in its life-history in man, and further light upon the process of recovery in rheumatic pericarditis. Clearly the cells in the exudate are busy destroying the diplococci in great numbers, and we are not surprised that cultures may not prove invariably successful, for we have always to bear in mind that if the process of their destruction is already in progress, the sudden transfer to a culture medium which can but imperfectly represent the living human medium may give the final death blow to the harassed micrococci.

This has been the first case in which I have been fortunate enough to obtain a living pericardial exudation in man in this particular phase, and it completely supports the results of experimentation.

This result also serves to strengthen the extreme probability that in the human cases of rheumatic pericarditis in which there is little effusion but great thickening of pericardial tissues, the diplococci are shut in the necrotic areas but imperfectly destroyed; and, lurking there, flare up into virulence from time to time, and thus cause the intractable relapsing examples met with in childhood. Lastly, we can realize how difficult it must be to determine, when once a patient has been infected, whether a renewal of symptoms is evidence of a fresh attack or the recrudescence of latent disease, and we are confirmed in

the faith that rheumatism must if possible be prevented, and failing this, be most persistently guided to as complete a recovery as possible.

FOUR YEARS' WORK AT AN ANTE-NATAL CLINIC.

By ARTHUR CROOK, M.R.C.S., L.R.C.P.

In this account of the work of the ante-natal clinic at the Norwich Maternity Institution during the four years 1915-18 I shall endeavour to indicate, not results, but some lines on which future work may profitably be pursued.

The patients were drawn from those who went to the institution for attendance in their homes in the surrounding district, supplemented by patients sent by the M.O.11. and a few by private doctors and midwives. The total number was 308 (151 primiparae and 157 multiparae).

The notes of the cases were filed on a card index system, and the figures and statements here given are based on these cards, and the corresponding labour and puerperium cards kept by the attending midwife.

All the primiparae were required to attend the clinic as a matter of routine, and such multiparae as complained of symptoms which might indicate abnormality as well as those who in the judgement of the "booking" midwife at the institution showed by their previous history or symptoms that there might be some abnormality.

The examinations were made at all stages of pregnancy; the women were encouraged to book early, but if they did a further examination was made at the end of the seventh month or afterwards, to decide, if possible, the factors not previously ascertainable, namely, the relative size and position of the fetus to the pelvis.

A physical examination was made of all the primiparae; it included mouth (teeth), throat, neck (thyroid), chest, abdomen (greatest girth), pelvis and limbs (oedema and veins). An examination of the urine was made at least monthly, from specimens sent to the institution. The blood pressure was estimated in many cases (Riva-Rocci instrument). The same routine was followed in multiparae when previous history or symptoms indicated it.

Pelvic Measurements.

Two cases of contracted pelvis were found. One with 2½ in. conjugate, was admitted, and Caesarean section performed with success. The other, with a conjugate of a little less than 4 in., and giving a history of several difficult breech labours, with death of the child in all instances, was unfortunately, owing to pressure of work and depletion of staff, lost touch with; she did not come back for further examination at a later date as instructed, and was not seen again by me till well advanced in the second stage of labour, at least a month over her calculated date; a rapid delivery with forceps of an overgrown stillborn child did not save her in the profound state of collapse in which she then was; undoubtedly if the clinic had been able to keep in touch with her through a visiting nurse this bad result would not have occurred.

In a large proportion of primiparae (63) the interspinous (anterior superior) measurements were 9 in. or less to as low as 7½ in. in one case; of these only six were recorded as having any abnormal prolongation of labour, thus confirming Bourne's statement.¹ In many of these cases the estimated conjugate was not more than 4 in., indicating a small type of pelvis, but with a child not above the average size trouble need not be anticipated. "Whites," meaning by this discharge abnormal in quantity or quality, occurred in 48 women; the proportion of cases with "whites" rose steadily from 10 per cent. in 1915 and 1916 to 20 per cent. in 1917, and to 25 per cent. in 1918. In all these cases treatment was given during the pregnancy, and on the card for the attendant midwife was a prominent notice directing her, if in time, to give a douche before labour, and to instil protargol into the eyes of the infant. It is satisfactory to record that not a single case of severe ophthalmia occurred in the four years. No case of syphilis either in the first or second stage was met with.

There were seven cases of heart disease with some breakdown in compensation; all except one got through labour

without help, beyond the internal administration of strychnine and digitalis during the last weeks of pregnancy; the exception, not apparently a bad case, was found dead in her bed a few weeks before full time; she had been taking the drugs mentioned. This case illustrates the extreme difficulty of treatment and prognosis in cases of heart disease with pregnancy—a difficulty which should, however, be largely removed if a sufficient number of cases could, after careful examination, be watched at ante-natal centres through pregnancy and labour and afterwards.

The so-called physiological enlargement of the thyroid gland in pregnancy was not met with; not more than two or three of the patients showed any signs of thyroid hypertrophy, and in them it was of old standing.

A comparison of the maximum girth of the abdomen during the eighth or ninth month of pregnancy and the weight of the children immediately after birth was made in 148 cases; excluding 5 cases noted as fat, and one of hydranmios, the results seem to indicate that with a girth not exceeding 36 in. the child will not weigh more than 7 lb.; this confirms the rule laid down, I believe, by Ayres in America and quoted by Herman.

The blood pressure in normal pregnancy seems to be unaltered. An abnormal blood pressure may be due to an abnormal pregnancy or some disease complicating normal pregnancy.

Among the cases found with albumin in the urine, one, a primipara, came in 1916, late in her pregnancy, with a large amount of oedema and urine almost solid on boiling; she was immediately admitted and labour induced. She still (January, 1919) has a heavy trace of albumin in her urine and morning headaches. This failure of complete recovery after delivery, seen in some cases of albuminuria in pregnancy, should receive more attention. Is it due to the intensity of the initial attack, to the length of time the kidney complication exists, or to a renal lesion in existence previous to the pregnancy? If the last be the explanation, can treatment from the commencement of the pregnancy prevent or keep it in abeyance sufficiently for a living child to be delivered without undue danger to the mother? The records of some cases of chronic renal disease with pregnancy point somewhat to this last possibility.

Cases of excessive venous engorgement of the veins of the lower limbs were treated by bandaging to just below the knee, and in many cases the patients given aperients combined with strychnine and digitalis internally. The etiology of this complication of pregnancy is by no means clear; it cannot all be due to mechanical causes, for a woman in two successive pregnancies under equal conditions may in one pregnancy have distended veins and in the other no signs of them. I am at present inclined to consider it a question of circulatory power.

Multiparae who presented no detectable sign of disease or abnormality of the pregnancy, but came complaining of "feeling faint," "bad feelings," or a history of an early slight loss of blood in pregnancy, showed by an examination of their labour cards a great liability to give birth to stillborn or premature non-viable children, and the unknown cause of this fetal mortality leaves a valuable field for future research work. I am not here including cases whose history is typical of an old syphilitic infection with pregnancies terminating later and later in gestation, but rather cases giving the impression of a frail constitution, possibly the future victims of tubercle, heart failure, or renal disease.

In conclusion, one rare curiosity was observed—the patient had advanced disseminated sclerosis and pregnancy; her labour was normal, but she died some weeks later of her nervous disease.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, January 18th, 1919.

THE American Congress of Physicians and Surgeons will be held in Atlantic City this year on June 16th and the two following days. It was to have been held in Washington, but owing to the uncertainty of hotel accommodation there the place of meeting has been changed.

A CONGRESS on the history of medicine is to be held at Antwerp in 1920, on the occasion of the golden jubilee of Dr. Broeckx, the first medical historian of Belgium, and of the third centenary of the foundation of the Antwerp Medical Club in 1620.

The Milroy Lectures ON HALF A CENTURY OF SMALL-POX AND VACCINATION.

DELIVERED BEFORE THE ROYAL COLLEGE OF
PHYSICIANS OF LONDON.

BY

JOHN C. McVAIL, M.D., LL.D.

CONTROL OF SMALL-POX IN THE PRESENT DAY.

HAVING discussed small-pox as it was and is, and vaccination as it was and is, we now come to the important practical question of the control of small-pox in the present day. In considering this subject it is necessary to take account alike of the attack and of the defences. As to the former, small-pox in this country is, broadly speaking, a less fatal, a less infectious and a less prevalent disease, than it was fifty years ago. The diminution (which first appears definitely in the 1892-95 epidemic), while irregular, has been fairly continuous and has been very specially notable since about 1904.

Other factors in respect of attack are that the disease is not infectious in the incubation stage, that its infectivity is limited in the pre-eruptive stage and does not reach its maximum until vesiculation and pustulation, that it is not conveyed by water supply nor by drainage, that milk epidemics are unknown, and that there are no chronic carriers. Epidemics also often begin slowly, and when that is the case there is an appreciable period within which urgent measures may be carried out by a vigilant public health authority. The several weapons in the armoury of communal defence have now to be considered.

I. VACCINATION.

Vaccination and revaccination at once claim the first place. On the one hand, owing to increasing neglect of systematic infantile vaccination an increasing proportion of the population is not immune to small-pox, but on the other hand the calf lymph system of the Local Government Boards is of the first importance as a measure of defence. In the old days, as I have already pointed out, all that could be relied on in presence of the most extensive epidemic was the exiguous supply of humanized lymph which could be obtained once a week from the arms of infants under the routine of primary vaccination at the age of three months in England and six months in Scotland. Now a huge stock of half a million tubes of glycerinated calf lymph is kept in constant readiness, fresh material being regularly added to replace material which, through lapse of time, is regarded as of doubtful efficacy. Also the vaccinal process runs a shorter course than the incubation stage of small-pox, and if the protective operation be performed within two or three days after infection, vaccinia gets home first, and variola, when it comes along, usually finds the fortress barred against its entrance. The position, however, has its disadvantages. There is always the possibility that the operation of revaccination may not be successful, and this is a risk which has to be run by the individual who has previously neglected to protect himself. Other things being equal, the work of vaccination should be done leisurely and systematically. In revaccination the convenience of the youth or adult concerned should be considered, especially with regard to the opportunity for taking a few days' rest from any heavy manual labour, to prevent inflammation around the vesicles on the vaccinated arm. Even under a system of emergency or panic vaccination this rest should be obtainable if required, especially because experience indicates that there is more likelihood of an inflamed arm in the adult than in the child. But there should be little incapacity if the vaccination has been done in cleanly fashion and is covered up with cotton-wool and boracic acid whenever it is seen that a marked reaction is to follow.

Recent Vaccination.

Vaccination or revaccination in presence of an epidemic has the supreme advantage of recency. The immunity obtained is of the highest degree. The outstanding example of the effect of recent revaccination on a large