of the thrill and the lower limits of the murmur. There is also a much softer, fainter diastolic murmur, whose area is shown in Fig. 2. When I first saw the patient this diastolic murmur was heard with difficulty with the double stethoscope, a little better with the straight stethoscope, and surprisingly easily by the ear laid directly on the chest. It is interesting to note that Dr. Gallivardin made the same observation on one of his cases. When a deep breath was taken and held the diastolic murmur disappeared, which I think indicates a very slight degree of regurgitation. The femoral pulses are normal and Duroziez's sign is absent. A skiagram shows a fairly normal-sized heart, but with a rather dilated aorta, and with the screen this aorta is seen to pulsate actively—a condition which, Vaquez and Bordet consider, suggests congenital aortic stenosis.² The second sound is audible over the right clavicle.

FIG. 2.—Area of diastolic murmur. *d, d.* in upright position; *e, e.* in recumbent position.

There is no clubbing of fingers or toes. The right tonsil is chronically enlarged, a fact of which the patient was unaware. The other organs, including the ocular fundi, are normal.

The diagnosis of an aortic stenosis with regurgitation is here so plain that no discussion is needed. The actual degree of stenosis cannot be great, judging by the pulse, the size of the heart, and the symptoms, although the murmur is what might be suitably called "extravagant." The regurgitation must be very slight, judging by the pulse, the presence of the aortic second sound in the neck over the right clavicle, the size of the heart, the characters of the murmur, and the symptoms. No other cardiac lesion has been detected.

I do not think we can reasonably consider that the valve defect is in this case post-rheumatic. It clearly is not traumatic or syphilitic. So the question to decide becomes, Is the condition of congenital origin, or has it arisen between birth and 11 years of age from some unknown form of valvulitis? I would venture to suggest that it is of congenital origin, and that the whole group, to which it seems to belong, has a similar etiology.

First, clinically when one finds what I have called an "extravagant" murmur with little cardiac enlargement or disturbance, one thinks of congenital heart disease. And this is reasonable, for in such cases an undamaged muscle is driving the blood through sharply defined orifices or against clean-cut obstacles. The stenotic murmur in this group is, in Dr. Gallivardin's words, "intense, rude, râpeux," even "énorme," and is much louder and more widely audible in this boy than in the cases of acquired aortic stenosis of later life to which one is accustomed. The only comparable aortic stenotic murmur I have met with was in another young male of 19 who had recently been passed as a first-class life on account of his healthy appearance and freedom from symptoms.

Secondly, there seems to be a series of similar cases reported in children, and these have been generally diagnosed as congenital. My patient's lesion was detected at 11. One of Dr. Gallivardin's cases was declared to have heart trouble at 7 or 8. MM. Queyrat and Mouquin describe an apparently identical condition in a boy 5 years and 8 months old which they call congenital, and in the discussion upon it M. Barié recalled a case observed in a child by himself, and quoted another which had been reported on at 4 years of age.³

Thirdly, lesions capable of causing such signs, though rare, are known to morbid anatomists. Apart from coarctation of the aorta and aortic hyperplasia, which do not concern us here, there are three forms of congenital aortic narrowing—namely, (1) subvalvular aortic stenosis, a few millimetres below the valves, which, unless endocarditis supervenes, allows of survival to adult life with few or no symptoms, but with the physical signs of aortic stenosis; (2) stenosis due to prenatal valvulitis, seldom surviving birth, although, as Hirschfelder suggests, "probably many of the milder cases escape detection";⁴ and (3) stenosis due to valvular malformation, which, if valvulitis does not follow, is compatible with many years of life. Peacock says: "I have seen only two valves at the aortic orifice occasionally in persons who have died in advanced life, and frequently in middle age, without the segments having presented any appearances of more recent disease; and similar facts have been noted by others."⁵ Such a condition (two valves only) would seem capable of accounting for a loud systolic murmur, a retained second sound, and a much slighter diastolic murmur, as in the case before us. It is less easy to imagine the same picture being presented by the result of post-natal valvulitis.

Lastly, although in my case I cannot prove that the lesion is congenital, I can find no history of any condition known to produce valvulitis. The enlarged tonsil might be held to indicate some chronic infection, but we have no evidence that it antedated the murmur. The glands in the neck were probably tuberculous, seeing that his mother and brother died of phthisis. In Dr. Gallivardin's cases I can find no proof that the murmurs described had not dated from birth, and it seems safer to assign a known origin than to invoke an unknown one.

The question is by no means merely academic. If chronic valvulitis is responsible for the condition we must fear its continuance. If a malformation is the cause, provided valvulitis does not supervene, we may hope for many years of life. Although at the moment we cannot come to any final conclusion, it seems worth while raising the point, in order that our congenital aortic stenoses may perhaps be more persistently followed, and that, in the rare opportunities of autopsy, attention may be more closely directed to the possibility of congenital defect.

REFERENCES.

- ¹ "Rétrécissement aortique non-rhumatismal des jeunes sujets," par L. Gallivardin, Médecin des Hôpitaux de Lyon, *Presse Médicale*, 19 Mars, 1921.
- ² Vaquez and Bordet: *The Heart and the Aorta*, Translation, Yale University Press, 1920, p. 131.
- ³ *Bulletin et Mémoires de la Société Médicale des Hôpitaux de Paris*, 21 Juillet, 1921, p. 1152 et seq.
- ⁴ *Diseases of the Heart and Aorta*, Philadelphia and London, 1918, p. 556.
- ⁵ Peacock: *Malformations of the Heart*, London, 1866, p. 187.

OBSERVATIONS ON TWO AND A HALF YEARS' ANTENATAL WORK.

BY

MARY E. WESTON, M.B., B.S. LOND.,

ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER,
COUNTY OF LEICESTER.

My object in recording these observations is to show the great value of the antenatal clinic as an educational factor and its possibilities from the point of view of preventive medicine. My remarks are directed to such cases of pregnancy as are commonly classed as normal, for the value of the antenatal clinic in the early diagnosis of gross abnormality has already been sufficiently emphasized in current medical literature. It has been estimated that 40 per cent. of women out-patients suffer from some form of ill health directly or indirectly due to child-bearing. My experience has convinced me that a large part of this ill health is due to neglect of the so-called minor maladies of pregnancy, and that its prevention is largely a matter of patient individual teaching such as can be carried out at antenatal clinics. Of 138 cases 42.8 per cent. suffered from constipation, 36.5 per cent. from flatulence and heartburn, 31.7 per cent. from varicose veins (severe), and 52.38 per cent. from vomiting. The milder degrees of vomiting were not always entered. Out of 300 mothers whom I personally interrogated, 67, or 22.3 per cent., had never once vomited during pregnancy.

All these women received detailed teaching on hygiene—principally on clothing, diet, and exercise; no medicines were advised except such as can fairly be called "domestic remedies," in order that the antenatal clinic might retain its character as a teaching centre and not encroach in the slightest degree on the province of the general practitioner. Had any case not responded to these simple measures she would have been referred to her own doctor; but out of over 200 cases seen during two and a half years this necessity did not arise, though in some the vomiting was severe enough to interfere with sleep and materially to affect nutrition. In marked numerical contrast to the above figures are the more serious disorders which were treated apart from the clinic and exclusive of venereal disease—namely, there were four cases of contracted pelvis and one of albuminuria.

But apart from improving the health of individual mothers and babies, we are all keenly aware of the need for research in antenatal physiology and pathology. We need statistics on conceptional rate, on intrauterine death rate (both foetal and full-term), and on still-birth rate, as well as what has been called intranatal and neonatal death rates. We need, too, both analytical and experimental statistics on the effect of different toxins, x rays, etc., on the germ cell or on the foetus at all stages of its development. Clinics efficiently equipped

and staffed for such work can be founded and carried on only at great financial cost. Moreover, were such an institution built and endowed in every large town in the country it is only a very small percentage of pregnant women who would see any advantage to themselves in attending, and they very naturally would decline to submit themselves for examination or leave their homes to enter the wards for prolonged observation from altruistic motives. In short, women will never regard themselves or their unborn children as material for scientific research, and the large number of those who attended would be the grossly abnormal.

But an educational centre run on some such lines as I have described can be organized and maintained almost as easily as an infant welfare centre, and if there were enough of them they would serve a useful purpose in providing opportunity for collecting valuable figures on many points besides the few I have referred to—such, for instance, as the effect of different occupations and of the number and frequency of pregnancies on labour and on lactation, and the relation between various menstrual disorders and fertility. Finally, they would form invaluable collecting centres from whence special cases could be sent to the larger and more fully equipped clinics.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

THE AXIS OF ASTIGMATISM AND ITS LOCATION.

SOME time ago, in the *BRITISH MEDICAL JOURNAL*, there was a discussion on the difficulty of finding the axis of astigmatism and on the trouble required to locate it exactly in children and in those on whose answers one could not rely. The simple apparatus here described works well, looks neat, and adds very little to the weight of the trial frames. It will turn the cylinder while the operator is some distance from the patient, and the adjustment is so fine that this can be done five times for each division on the scale. It can be fitted to any trial frame which has a vertical bar for the nose-piece, and can be attached or removed instantly.

The attachment is on the Bowden wire principle, and consists essentially of a flexible wire moving through the centre of a flexible tube formed of a long coil of fine wire. The latter is shorter than the flex, and this difference regulates the amount of movement which can be obtained afterwards. The tube is fastened to the screw of the nose-piece, from which it takes its fixed point, and its end, near the operator, terminates in a collar which is gripped between his first and second fingers. The near end of the flex is kept projecting from the coil by a weak spring, and terminates in a flat piece to take the pressure of the thumb. The distant end of the flex is joined to a clip, which grips the rim of the cylinder firmly, and this joint is really an axle, as the clip must turn over to deal with the other eye.

In subjective testing I use it to rotate the final cylinder, when the axis has been approximately found, and the rotation obtained with my present attachment—which has a movement of three-quarters of an inch—is 30 degrees. This is ample, as it allows for 15 degrees on either side of the approximate axis, while at the same time the patient is not disturbed nor his judgement biased by any manipulation of the trial frame. The movement is smooth, and can be reversed at any time, simply by releasing the pressure of the thumb, when the reversing takes place immediately, there being no back-lash, such as occurs in rotation produced by means of a milled wheel.

It is in retinoscopy, however, that its greatest advantages appear. Here one corrects the meridian of least refraction, and, noting the band of light which shows the axis approximately, cylinders are placed with their axes over that until correction is attained. This last cylinder is removed, and a weaker one substituted. If now this cylinder has been placed with its axis over the original bright band, the latter will appear to be in exactly the same place as before, and the mark on the glass will indicate the axis exactly. If the axis has not been placed exactly over the bright band the latter will appear to be considerably displaced to one side or the other, and a small error in placing the axis produces a much greater displacement of the bright band. For instance, an error of, say, 5 degrees in the axis of this cylinder will change the band from, say, 90 to 75 or 105. This setting of the axis is the tedious part, and has to be done by trial and error; it often requires three or four attempts before satisfaction is attained, the chief cause of trouble being the loss of the bright

band as one stoops forward to rotate the cylinder, and the fact that it is no longer sharp and well defined. It is here that the mechanical rotator is so useful, as one clips the cylinder, and, sitting back at the full distance, rotates it first one way, then the other; and, as one never loses sight of the band, one can follow its displacement very rapidly, and quickly find the right position. It is best to clip the cylinder with the spring half compressed, as release will then rotate the glass in one direction, while further compression will do so in the opposite.

JOSHUA KEYMS, M.D.,
Late Ophthalmic Surgeon, Expeditionary Force, Aden.

Southampton.

FRACTURE IN OSTEITIS DEFORMANS.

THE case of osteitis deformans reported by Drs. Lindsay and Gordon in the *JOURNAL* of April 29th (p. 678) reminds me of a patient seen by me about four years ago. A man aged 51, with well-marked osteitis deformans of the right tibia, slipped whilst walking on a greasy road. At the time he had a stout stick between his legs, which probably acted as a lever, for when picked up he was found to have fractured his right leg. The line of fracture was through the thickness of the head of the tibia just below the tuberosity, and was as horizontal as if it had been done by an osteotome. There was little or no displacement. The leg was put up in a back splint, and after six or seven weeks showed no signs of uniting. It was then put in a Croft plaster splint and massaged, and at the end of six weeks union seemed firm enough to suggest careful trial of the leg. About three weeks later he was showing me what he could do in the way of standing when I heard a loud snap, and it was clear that the union had given way. The leg was again immobilized for several weeks, and as the union still seemed doubtful I asked the late Sir Alfred Pearce Gould to see the patient; he thought that unless union could be induced amputation might be necessary. Meanwhile the leg was put in a calliper splint on the advice of Mr. Gordon Taylor, who said that union in this class of case might take a year and still be possible, and we hoped for the best. Fortunately union did eventually occur, and the man is now going about without apparatus, but with a stiff knee.

The left leg and both forearms were slightly affected by osteitis deformans, but there was no sign of that condition in the skull. There was no history of syphilis. For some years he had suffered from night blindness and retinitis pigmentosa, and most of his life he had had extensive psoriasis, which at one time took on an acute pityriasis form (he had not a square inch of normal skin) and kept him bedridden for about ten weeks. Otherwise he had had no serious illness. Not many cases of osteitis deformans are met with in general practice, but the few I have seen all seemed to have uncommonly hard stout bones—bones which one would never expect to break, and least of all through the thickest part. I suppose the pathological condition of the bone explains the delayed union in my case, but for the comfort of anyone else who happens to have to deal with such a case and gets despondent over the long delay, it seems worth while to report mine.

Brondesbury, N.W.

J. ANDERSON SMITH, M.D.

FRACTURE OF TERMINAL PHALANX OF FINGER.

IN the *BRITISH MEDICAL JOURNAL* of January 21st, 1922, which has just reached me, I notice a memorandum (p. 101) by Dr. J. N. Laird on the subject of fracture of the terminal phalanx of a finger. As he states that he is unable to find any previous description of such a condition, I feel constrained to place on record my own case.

In 1915, while effecting a tackle at Rugby football, I sustained a sudden injury to my left middle finger, which became swollen and painful in the region of the distal interphalangeal joint. As I thought that only the soft tissues had sustained trauma, I took little notice of it, and, in fact, played golf the next day. Finding there was little improvement at the end of a week I had a skiagram taken and the condition shown was almost precisely similar to that described by Dr. Laird, the only difference being that in my case the fragment of bone was slightly larger.

Treatment, as advised by Mr. Harold Wilson, consisted in wearing for three weeks a glove on the palmar aspect of which was sewn a narrow piece of cane running from the tip of the middle finger to near the wrist, an effective splint being thus formed. Save for a slight overgrowth of callus and a very little loss of flexion at the joint concerned the result was perfect.

Kakamega, Kenya Colony.

C. VINEY BRAMBRIDGE.