Consequently its side of the splint must be turned out more than the other by 10 degrees or so.

The splint should be cut out of some fairly stiff metal (14 gauge hard aluminium is very suitable), and till the designing of it becomes familiar it is best to make a stiff cardboard model first. The base should first be sketched, the heels being placed with about an inch between their inner borders, and with a broad strip connecting them. Then from the position of the heels each foot-piece is marked out at the correct angle to the base, and finally at right angles to this is drawn the part to be folded up along the legs (Figs. 6 and 7).

To apply the splints, each foot is bandaged in separately

has mastered the idea of the figure-of-eight bandage, which automatically pulls the foot into position.

5. It is almost impossible to wriggle out of it. It is interesting to see the powerlessness of the child when held in this way. The jiu-jitsu effect of preventing the preliminary inward turn in freeing the foot can only be appreciated by applying a splint of this type to oneself.

6. It really does maintain the outward bending of the foot gained by manipulation, with surprisingly good secondary effects on the equinus and varus.

7. The child can kick freely with the splint in position, so exercising the muscles of the calves and thighs. This is of the utmost importance in developing both these

FIG. 6.—Hobble splint for moderate degree of left talipes, marked out on the flat.

FIG. 7.—Hobble splint for double talipes, completed except for padding.

FIG. 8.—Hobble splint applied by figure-of-eight bandages.

by a figure-of-eight bandage of coarse flannel, the meeting of the folds over the instep driving the heel down into position (Fig. 8).

I would claim the following advantages for this splint.

1. It is easily made and cheap.
2. One size of it has a very wide range of fitting, so that it does not need to be continually changed as the child grows.
3. The pressure on the foot is applied by soft material over wide areas, and not by hard surfaces to bony points. Consequently there is little tendency to chafing.
4. It is easily applied by an untrained mother once she

muscles and the bony points to which they are attached, more especially the heel.

In conclusion, I would say that I am fully conscious of the drastic simplifications which I have made of extremely complicated problems. I believe, however, that these simplifications are correct as far as they go. Their disproof lies in the production of cases in which the "twisting in" has been corrected, but in which crippling persists: for their proof I can only ask for a trial of the splint.

I have to thank Dr. C. A. Keogh for that help which only an illustrator who understands the argument can give.

BACTERIAL ENDOCARDITIS IN AN INFANT 13 DAYS OLD

BY

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When Finkelstein¹ suggested in 1905 that the endocardium of the infant was possessed of definite immunity against infection, it is obvious that acute endocarditis in infants was considered to be impossible. Considerably later the opinion was definitely held that, if not non-existent, the condition was certainly very rare. In successive editions of Still's *Common Disorders and Diseases of Childhood* the view is reiterated that "under the age of 3 years it is extremely rare, and under the age of 2 years it is almost unknown." In Ashby and Roberts (1922) it is stated that "endocarditis occurs at all periods of life, it may even attack the foetus: it is met with only rarely under 4." It is stated in Griffith's *Diseases of Infants and Children* (first edition) that "the inflammation may occur in foetal life and thus be one of the causes of congenital cardiac abnormalities. It is uncommon in infancy." Griffith reports that Steffen observed five cases under 1 year, and that Sutiagin reported eleven in the first year, but he considers that such numbers are certainly unusual. Lees

and Poynton report one case under 3½ years, and Poynton, in his recent address at the Invalid Children's Aid Association, gave as his impression that about 12 per cent. occur under the age of 5. Bass (*Abt's Pediatrics*, iv, 362) states:

"Acute endocarditis occurs during foetal life, as a rule, on the right side of the heart and in conjunction with developmental defects. Of the post-natal infections, one of the youngest cases is that reported by Czerny in an infant of 1 month suffering from septic endocarditis. Such a case, however, is very exceptional, since endocardial inflammation is rare in children under 2 years of age. In 1,000 post-mortem examinations Holt found no case of acute endocarditis in children under 3 years of age. Steffen (quoted by Lempp), in tabulating forty-five cases of endocarditis in children, found five in children under 1 year; von Dusch, in the same number of cases, reports five in children between the ages of 8 months and 5 years. Lempp reports seven definite cases from Finkelstein's clinic. All of these are in infants, and the mitral valve was shown by autopsy to have been involved in every case. Finkelstein reports fifteen cases of endocarditis in infants, and believes that even at this early age two-thirds of the cases are due to rheumatism, the other third being a manifestation of sepsis. After the second year, and thereafter as the age of the child increases, endocarditis becomes more frequent."

Czerny's case has not been verified.

Later observations tend to show that infantile bacterial endocarditis is not quite so rare as has been considered.

Three cases were reported last year, and I here present another case, the youngest yet on record, the patient being only 13 days old at death.

HISTORY OF THE CASE

A male baby, born on September 19th, 1930, was admitted on October 1st on account of haemoptysis. He was a full-time baby, and only weighed 2,950 grams, and had been fed on Nestlé's milk, supplementary to the breast. When admitted he was slightly cyanosed, and twenty hours after admission had a profuse nasal haemorrhage of bright red and frothy blood, and died almost immediately (October 2nd).

The post-mortem findings were as follows. The urachus contained a little pus just within the umbilicus. The trachea and bronchi contained frothy blood, the lining walls being normal. The lower lobes of both lungs showed numerous peripheral areas of consolidation, dark red, almost black, well defined, and raised above the surface of the aerated lung. The upper lobes were aerated, but had a few discrete areas—similar to those found in the lower lobes—much smaller and more clearly defined. These were undoubtedly small infarctions, but the actual source of the terminal haemorrhage was not discovered. An area of endocarditis was discovered on the posterior wall of the right ventricle, about 1/4 inch proximal to the pulmonary valve. This area, 3/4 inch by 1/8 inch, consisted of dark-coloured fibrinous exudate, which stripped easily from the endocardium, leaving a roughened surface. The heart valves were normal.

The microscopical examination of the fibrinous material loosely attached to the endocardium below the pulmonary valve had the appearance of acellular decolorized clot deposited from the moving blood stream. In sections stained for bacteria staphylococci were present in large numbers. There was no microscopical evidence of disease of the heart muscles.

CONCLUSIONS

The appearances in the upper lobes of the lung were due to pulmonary infarction, and in the lower lobes to insufflations of blood. The primary focus was the septic condition of the cord, followed by a secondary infective (staphylococcal) endocarditis, which gave rise to multiple pulmonary infarction.

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RAPID LABORATORY TEST FOR PREGNANCY

BY

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During the last few years, and particularly since the introduction into general use of the Zondek-Aschheim test for pregnancy, numerous investigators have attempted to find a test which is as reliable and which would give more rapid results. The great advantage of rapid diagnosis in cases of ectopic gestation or fibroids and pregnancy is obvious.

Zondek and Aschheim¹ showed that the urine of pregnant women contained a substance which produced certain characteristic changes—namely, corpora haemorrhagica and corpora lutea—in the ovaries of the immature female mouse. They also showed that, with few exceptions, this ovary-stimulating substance was peculiar to the urine of pregnancy. Friedman,² in 1929, appears to have been the first to have studied the mechanism of ovulation of the rabbit by injection of urine of pregnant women. He showed the advantage of using the rabbit instead of the mouse to test for substances which produce ovulation. In the rabbit, ovulation³ does not occur until the age of 5 months in the summer and 6 to 8 months in the winter; ovulation is dependent on copulation, and following copulation ovulation occurs in eight to ten hours. Ovulation is easily recognized by inspection of the ovaries; either fresh corpora lutea or projecting corpora haemorrhagica can be seen on the surface. In a series of twenty-two rabbits in which Friedman had injected 5 c.cm. of urine intravenously, positive results were obtained from the urine of eighteen pregnant, and negative results from the urine of fourteen non-pregnant, women. Nine of the positive results were noted twenty-four hours after the injection. Friedman suggested that the test might be useful in the diagnosis of pregnancy.

Adèle Brouha,⁴ in the early part of this year, described a similar test for pregnancy. She used virgin rabbits weighing about 1 kilogram, and, with a single intravenous injection of urine, obtained results in fifteen to twenty-

four hours. Brouha⁵ carried out the test in nearly two hundred cases in which the diagnosis was in doubt, and in each case the laboratory findings agreed with the clinical.

Reinhart and Scott,⁶ Schneider,⁷ Magath and Randall,⁸ and Friedman and Lapham⁹ have used a similar method for the diagnosis of pregnancy. Their techniques varied, but their results have been as good as those of the Zondek-Aschheim test. Reinhart and Scott used adult female non-pregnant rabbits weighing not less than 4 lb.; they gave a single injection, and obtained results in twenty-four hours; in a series of fifty cases they had only one error. Schneider used female rabbits, aged 12 to 14 weeks; he gave a single injection, and obtained results in twelve to twenty-four hours; in a series of one hundred cases there were two errors, and in these two the technique was faulty. Schneider recommends the use of two rabbits in cases of urgency, as in some cases a result may be obtained in twelve hours, which may be confirmed later in another twelve hours. Magath and Randall used female rabbits over 2½ months old; they gave a single injection, and obtained results in thirty hours; in a series of eighty-five cases they had two errors. Friedman and Lapham used unmated mature female rabbits. The urine was injected thrice daily for two days in 4 c.cm. doses. Forty-eight hours after the first injection the rabbit was killed. Before they adopted this routine Friedman and Lapham used the single injection, with post-mortem eighteen hours later; but they found that it was not entirely reliable, although in case of urgency it could be used if too much reliance was not placed on negative results.

TECHNIQUE AND RESULTS

The rapidity and reliability of the test, according to these observers, suggested its use to us, and we consider that the results in a small series of fifty-three cases investigated at University College Hospital worthy of record.

The technique used in the first twenty cases was that of Adèle Brouha. A single intravenous injection of 8 to 12 c.cm. of urine was given to virgin rabbits weighing about 1 kilogram, and a post-mortem was done fifteen to twenty-four hours later. Urine from seventeen pregnant and three non-pregnant women was investigated;