

when they were switched to betamethasone. In one patient (Case 7) severe spinal osteoporosis was discovered when he complained of backache three weeks after being switched to betamethasone from prednisolone, which he had been receiving for two and a half years. By inference this degeneration must have begun before the start of betamethasone therapy.

*Comparison Between Betamethasone and Triamcinolone.*—With a dose ratio of 1:4, two patients felt better on betamethasone, one preferred triamcinolone, and in one case there was nothing to choose. In two patients loss of weight with triamcinolone was reversed after switching to betamethasone.

*Comparison Between Betamethasone and Cortisone.*—Two patients were studied, and at an average dose ratio of betamethasone:cortisone of 1:37 there appeared to be an equal response, although one patient expressed a preference for betamethasone. The other was intolerant to effective doses of betamethasone because of the intensity of side-effects.

#### SUMMARY AND CONCLUSION

A new corticosteroid, betamethasone (16 $\beta$ -methyl-9 $\alpha$ -fluoro-prednisolone; betnelan), has been subjected to a pilot trial in 23 patients. In all but one of these it proved to be an effective and extremely potent steroid.

Side-effects commonly associated with steroid therapy do not appear, so far, to be noticeably different with the new steroid. As with other steroids, facial mooning has been seen and there has been increase in appetite and gain in weight. However, with the exception of one case, we have not witnessed dependent oedema, and in no case has there been any disturbance of serum electrolytes.

Dyspepsia has been much less than with prednisolone, even when this has been given as the enteric-coated preparation.

For practical purposes it appears that 1 mg. of betamethasone is marginally more potent than 1 mg. of dexamethasone, 4 mg. of triamcinolone, or 8 mg. of prednisolone.

Betamethasone is regarded as a useful and effective anti-inflammatory steroid, and as it costs less than equivalent doses of other steroids it constitutes a useful addition to the available steroids.

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*Caring for the Widow and her Family* is a booklet issued by Cruse Clubs, which contains notes for Cruse Clubs and social workers on how to handle the widow's special difficulties. It is in three sections: the first covers the practical points which have to be attended to after the husband's death; the second outlines the various pensions and grants to which the widow is entitled; while the third deals with the various external and emotional difficulties which the widow may have to face. (Obtainable from Cruse Clubs Counselling Service for Widows and their Families, 6 Lion Gate Gardens, Richmond, Surrey, price 2s. post free.)

## Medical Memoranda

### Myocarditis During Coxsackie B<sub>5</sub> Infection

This communication reports a case of myocarditis which occurred in a 12-year-old boy during a Coxsackie B<sub>5</sub> epidemic.

The epidemic, which occurred in a boys' preparatory boarding-school, began on June 21, 1960, and during the next month 51 boys were ill, of whom 32 were confined to bed. The first case which came to notice was that of a 10-year-old boy admitted to hospital on July 8 with persistent vomiting, headache, backache, slight meningismus, and a temperature of 102° F. (38.9° C.). Coxsackie B<sub>5</sub> was isolated from his faeces and a rise in neutralizing antibody titre was demonstrated in paired sera. After this case Coxsackie B<sub>5</sub> was isolated from the faeces of 18 other boys who were ill. The illness had an acute onset in half of these boys, and six of them had a relapse from 4 to 11 days after apparent recovery, with a return of pyrexia and symptoms. The symptoms and signs in the 19 boys from whom virus was isolated were, in order of frequency: pyrexia, malaise, headache, pharyngitis, nausea, chest pain, vomiting, abdominal discomfort or pain, backache, neck stiffness, and dizziness.

#### CASE REPORT

A boy aged 12 became ill on July 4, 1960, with headache, dizziness, pharyngitis, and nausea. On July 7 he had chest pain, abdominal discomfort, and backache, and was put to bed. He remained in bed for 14 days; his temperature during this period is shown in Fig. 1.

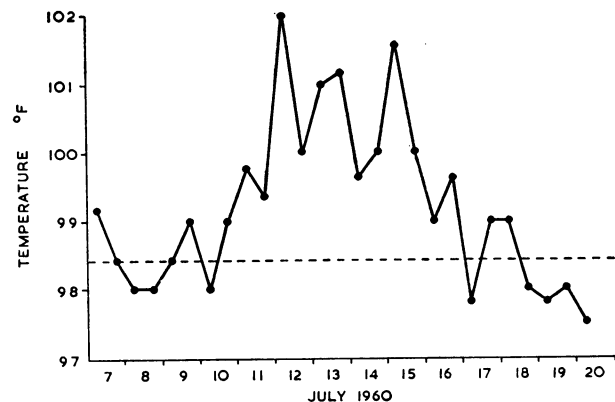


FIG. 1.—Temperature chart.

Vomiting was persistent on July 11 and occurred again several times on July 15. Coxsackie B<sub>5</sub> virus (10<sup>5.1</sup>TCD<sub>50</sub>/g.) was isolated in monkey-kidney-tissue culture from faeces obtained on the eleventh day of illness. An acute-phase serum was not obtained from this boy for antibody tests, but sera obtained 62 and 94 days from the start of his illness had a neutralizing titre of 1:180 from titrations in Hela cells maintained in medium 150 (Morgan, Campbell, and Morton, 1955) which were inoculated with serum-virus (100TCD<sub>50</sub>) mixtures previously incubated for one hour at 37° C. When discharged home on July 20 he still looked ill, and was advised to avoid any exercise. Clinical examination at this time revealed nothing abnormal apart from pallor and a tachycardia of 115 beats a minute. An E.C.G. was taken on July 22, 19 days from the start of his illness, and the serum glutamic oxaloacetic transaminase on that day was 18 units. Further E.C.G.s were taken on the 27th, 62nd, and 108th day from the onset of the illness (Fig. 2).

The record of July 22 showed ST depression in leads 2, 3, VF, V5, and V6; T waves were inverted in leads 3 and VF. The second and third records showed gradual improvement, and the record of October 19 was regarded as normal. These E.C.G. changes are consistent with a diagnosis of myocarditis.

E.C.G.s were also carried out on 15 boys from whom virus was isolated, including the one admitted to hospital, and on seven boys who were recently ill. All were normal records.

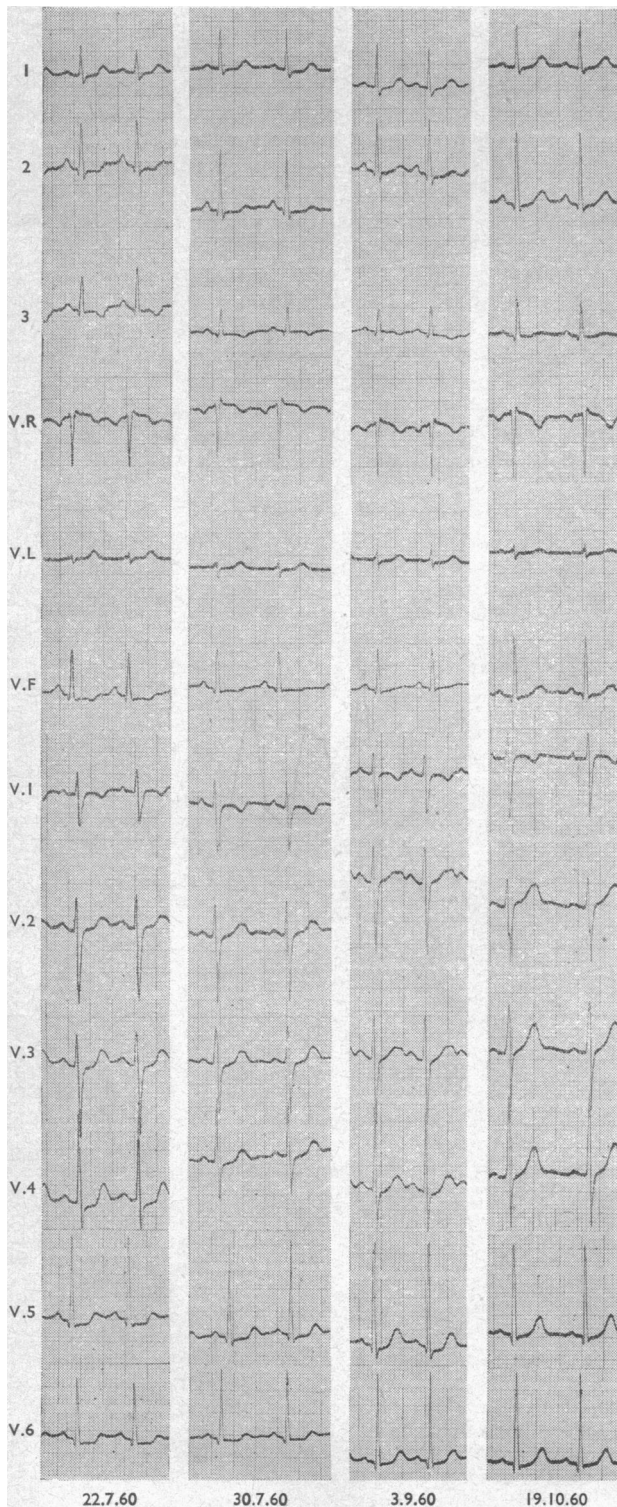


FIG. 2.—Electrocardiograms.

## DISCUSSION

It is assumed, from the isolation of virus, the presence of antibody in the convalescent serum, and the occurrence of the infection during an epidemic of Coxsackie B<sub>5</sub> virus, that the myocarditis was caused by this virus. It is noteworthy that the E.C.G. of the case described was still abnormal nine weeks from the start of his illness.

There are several reports of myocarditis in newborn infants infected with Coxsackie group B viruses (Montgomery, Gear, Prinsloo, Kahn, and Kirsch, 1955; van Creveld and de Jager, 1956; Javett, Heymann, Mundel, Pepler, Lurie, Gear, Measroch, and Kirsch, 1956; Verlinde, van Tongeren, and Kret, 1956; Kibrick and Benirschke, 1956; Suckling and Vogelpoel, 1958). So far as is known the patient whose case is reported above is the oldest child as yet recorded as having myocarditis during a Coxsackie B infection and is only the third recorded case of myocarditis in children infected with viruses of this group. The other two cases were in a 5-year-old boy infected with Coxsackie B<sub>2</sub> virus (McLean, Croft, Prince, and Heckmann, 1957) and in a 2½-year-old boy during a Coxsackie B<sub>5</sub> infection (Varcasia and Castelli, 1957). Myocarditis has not been reported in adults during Coxsackie group B infections, though pericarditis has been described (Fletcher and Brennan, 1957; Weinstein, 1957).

Although myocarditis may be a rare complication of Coxsackie group B infection in children and adults, otherwise unexplained E.C.G. changes in children or in adults or a history of chest pain may be resolved if the possibility of recent Coxsackie group B infection is borne in mind.

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The *American Journal of Digestive Diseases* is serializing a book, *Current Gastroenterology*, which will be published in bound form after the final instalment. The book is based on the postgraduate course sponsored by the American College of Physicians and given at the Louisiana State University School of Medicine.