taneously without requiring pacing and that the majority of patients with anterior myocardial infarction do badly whether they are paced or not. Our figures and those of the authors whom we quoted lend some support to this belief but they do not prove the point. Our present policy continues to be relatively conservative, pacing only those patients in whom drug therapy is unsuccessful. It is apparent from Dr. Benaim's last paragraph that there is not, in fact, a marked difference of opinion between his views and ours.—We are, etc.,

HELEN TUCKER
PETER CARSON
GEOFFREY SHARRATT
J. P. P. STOCK

City General Hospital,
Stoke-on-Trent

1 Sowton, E., Leatham, A., and Carson, P., *Lancet*, 1964, 2, 1098.

Cranial Nerve Palsy in Tetanus

SIR,—The report of facial palsy in tetanus by Drs. M. Mishra and B. N. Sinha (19 August, p. 475) prompts us to record palsy developing in a nerve very rarely implicated in tetanus, the trochlear nerve.

A man aged 20 stood on a rusty nail and reported soon afterwards for treatment. He was given a course of procaine penicillin and 2 ml of tetanus toxoid, but eight days after the event he presented with trismus, rigid abdomen, and neck stiffness. He was treated with 50,000 units of tetanus antitoxin, 1 mega unit of crystalline penicillin six-hourly, and 10 mg of diazepam six-hourly intramuscularly. After seven days the diazepam was stopped and he was given chlorthalidone orally. The trismus and rigidity responded slowly but no opisthotonos developed and the temperature remained normal.

Left-sided ptosis was noted on the 14th day and the patient stated that he had been seeing double for a few days; he gave this as a reason for keeping his eye closed and indeed appeared to have no difficulty in opening the eye and keeping the upper lid elevated. He also had some difficulty with swallowing. There was a lag in the downward and outward movement of the left eye. This was associated with diplopia which did not occur on conjugate deviation upwards or to the right. He thus had palsy of the trochlear nerve, possible ptosis, and evidence of bulbar palsy. By this time trismus had virtually disappeared. Dysphagia resolved within three days and the ptosis became even less evident, but diplopia and superior oblique weakness remained until he was discharged a fortnight later. At the first review after a week diplopia had vanished.

Park¹ in a description of seven cases of "cephalic tetanus" reported facial nerve involvement in six, the seventh patient having ptosis and hypoglossal palsy. He also records the occurrence of oculomotor palsy, paralysis of upward gaze, dysphagia, and nystagmus. In reviewing the literature he found that out of 194 cases ptosis was present in 22 and some degree of external ophthalmoplegia in nine. The predominant lesion was seventh nerve palsy.

Isolated paresis in a condition otherwise characterized by hypertonic overactivity of muscles is an intriguing problem. We had considered the possibility of an iatrogenic aetiology since mephenesin is known to produce diplopia occasionally. However, diplopia is not regarded as a side effect of diazepam therapy and it would be difficult to explain the unilateral facial palsy, which

is the commonest manifestation of cephalic tetanus, on this basis.

Drs. Mishra and Sinha postulate that palsy develops because of a high concentration of toxin in motor end plates. They do not state where their patient's injury was, but we assume that it was on the face or nearby. Injury to the head or neck used to be part of the definition of cephalic tetanus, but this is no longer accepted and in our case the wound was in the ball of the foot. It is difficult to imagine toxin travelling centripetally along nerve fibres from the foot, diffusing through the spinal cord, sparing the medullary centres, and picking out isolated motor nuclei in the brain stem.—We are, etc.,

R. P. PATEL
M. SOROKIN

Lautoka Hospital,
Fiji

1 Park, D. M., *Journal of Neurology, Neurosurgery, and Psychiatry*, 1970, 33, 212.

Mode of Action of Verapamil

SIR,—Commenting on the drug verapamil, Dr. Brian Livesley and others (17 February, p. 375) state that "its exact mode of action is not known, but it can abolish the tachycardia induced by both isoprenaline and atropine." The reference which they quote in support of this statement is to unpublished observations made in dogs.¹ On the basis of this "evidence" they imply that verapamil acts, at least in part, by blockade of β -adrenoceptors.

This would appear to ignore and contradict the published information about the effect of verapamil in man.² In four subjects given 80 mg of verapamil orally the reduction in an isoprenaline tachycardia was similar to that obtained with a placebo, in contrast to the abolition of an isoprenaline tachycardia produced by 20 mg of propranolol. In addition, 80 mg of verapamil failed to reduce the tachycardia produced by severe exercise in six subjects. These results indicate that in man verapamil does not block adrenergic β -receptors.—We are, etc.,

D. G. McDEVITT
R. G. SHANKS

Department of Therapeutics and Pharmacology,
The Queen's University,
Belfast

1 Oram, S., Catley, P. F., Livesley, B., and Kidner, P. H., *British Medical Journal*, 1971, 4, 113.
2 Grant, R. H. E., McDevitt, D. G., and Shanks, R. G., *Lancet*, 1968, 1, 362.

Gateshead Tuberculin Survey

SIR,—Springett¹ suggested the need for one good tuberculin survey in Britain to determine a rational policy for the future use of B.C.G. vaccination on a community basis. Such a survey has already been started under Dr. Ian Sutherland's direction by the Medical Research Council.

Springett speculated that 7½% of 12-year-old children might be Mantoux positive. In recent years our routine surveys in Gateshead have shown a lower figure, and in 1970 the proportion positive by the Heaf test was of the order of 1%—this is a borough which for many years showed the highest incidence of tuberculosis in England. We therefore decided to conduct a careful

Mantoux survey in 1972. We used the M.R.C. preparations of human and Battey tuberculin, one in each arm. The results recorded were analysed by the M.R.C. Statistical Research and Services Unit. Their criteria were used to determine whether the results indicated a previous infection with human tubercle, with atypical mycobacteria, or with both, or with neither. Two age groups were tested—6 and 12 years. A selection was made, so far as possible, of schools representing a cross-section of social groups living in Gateshead. Acceptance rates were uniform in the various schools.

The total population concerned at age 6 was 1,563. We offered special testing to 564 (36%) and 481 accepted, but because of illness or other absence only 414 were tested—26.5% of the total age group. Of these four were positive to human tuberculin. All four had previously been given B.C.G. Two were positive to Battey tuberculin (0.5% of the children tested) and neither of these had had B.C.G.

There were 1,378 12-year-olds and we offered tests to 729. Of these 631 accepted, but because of illness or other absence only 571 were tested—41.4% of the total age group. Eight (1.4% of the children tested) were positive to human tuberculin. One of these had previously been treated for tuberculosis. Nine were positive to Battey tuberculin (1.6% of those tested) and one of these had had B.C.G.

This low tuberculosis infection rate among children is occurring in a town which still has a notification rate of over twice the national average, even though immigration into the borough is very low. Clearly we cannot be sure, even though we took a large sample, whether our figures are representative of the whole population, as we tested only 1,000 of the 1,300 offered testing, but we cannot help feeling that when the national survey figures do become available the end of mass B.C.G. vaccination may be in sight. We have already decided that skin testing 5-year-olds as a routine is no longer justified. It also seems to us of considerable interest that positive reactions to Battey tuberculin are more common than those to human tuberculin in a town as closely built up as Gateshead.

We are grateful for the advice and help of the M.R.C. tuberculin survey team, and to Dr. J. S. Greener for his independent reading of the results. The survey could not have been carried out without the co-operation and help of the Gateshead schoolchildren, their teachers, and the staff of the Gateshead Health Department.—We are, etc.,

E. L. FEINMANN
D. F. HENLEY
K. M. MARTISCHNIG

Queen Elizabeth Hospital,
Gateshead

1 Springett, V. H., *Tubercle*, 1971, 52, 136.

Pregnancy after Hysterotomy

SIR,—The conclusion reached by Drs. W. M. Clow and A. C. Crompton (10 February, p. 321) that there is a substantial risk of uterine rupture in pregnancy after hysterotomy is reinforced by a case recently under my care.

The patient, an unmarried 16-year-old, had had her first pregnancy terminated by abdominal hysterotomy at another hospital when she was