I have been unable to find a description of a stress fracture of the patella. Here are described two such fractures that occurred in young athletes, with another case history of an allied condition.

Case 1—A male student aged twenty-three was a middle-distance runner. In March 1954 he did much cross-country running. In the autumn of 1954, while still in training and still running, he began to get pain in the left knee. There was no history of injury. One day, while he was running for a bus, there was a sudden increase in the pain, and a click; and thereafter the knee became swollen with tenderness over the lateral part of the patella, which showed a vertical fracture of the lateral part in the radiograph (Fig. 1).

Three months later he still had pain and a radiograph showed further separation of the fragments (Fig. 2). The patella was explored and the small fragment of bone excised.
Macroscopically there was fibrous union between the fracture surfaces, but histological examination revealed normal callus (Fig. 3).

After an uneventful convalescence the patient regained full function and ran without pain.

Case 2 (Mr S. A. Jenkins's patient)—This doctor, a keen athlete aged twenty-eight, was, and is, a fast runner and hockey player. While running he developed pain in the knee, and a radiograph showed an undisplaced transverse fracture of the patella (Fig. 4). There was no history of injury.
Two days later separation of the fragments had occurred (Fig. 5) but, at operation, close apposition was secured with stout silk sutures through the patella and quadriceps expansion. The patient made an uneventful recovery with sound union (Fig. 6) and returned to his normal activities and sport.

Case 3—A schoolboy aged sixteen, keen on sport, developed pain in the right knee, with no injury. The symptoms were localised to the upper and outer quadrant of the patella and occurred only on running or playing games.

Clinically there was little to find other than a small boss on the painful part of the patella. Radiographs showed that the patella was bipartite—the opposite patella being normal—and that the joint surface had an irregular contour (Fig. 7). The boss coincided with the smaller part of the bipartite patella. Conservative treatment was of no avail and the fragment was excised at operation, at which it was cut away from the larger fragment with a knife. The articular cartilage at the junction of the two parts showed no damage to the naked eye. After a normal convalescence the patient obtained complete relief of all symptoms and a return to full function. Histological examination showed that the surface of the small fragment in apposition to the remainder was covered with fibrocartilage.

DISCUSSION

Stress fractures have been recorded in most of the bones of the lower extremity. Certain parts of certain bones are more often, and more obviously, affected than others, although with an increased awareness of the condition in general the diagnosis of unusual variants is being made more frequently.

In the patella this fracture should be obvious radiologically, particularly if tangential views of the bone are obtained. The absence of injury would surely emphasise that this is a stress fracture.

Apart from march fractures of the metatarsals, athletes are particularly susceptible to stress fractures of the tibia and fibula. It is interesting that, in the two athletes (Cases 1 and 2),
one fracture was vertical and the other transverse, though their sporting activities were apparently similar.

A bipartite patella on one side only is not uncommon, but I have never found this to be a cause of symptoms in the knee. The symptoms in Case 3 were typical of a stress lesion, being present only on running and at sport, and ceasing with rest. The irregularity of the joint surface as shown in the radiographs suggests that the smaller fragment had been pulled slightly askew and that this caused the symptoms.

Stress fractures are seldom badly displaced, and seldom require operative treatment, a general exception to this being now shared by the femoral neck with the patella.

SUMMARY

Case histories are given of three patients, two of whom had stress fractures of the patella, and one had a similar condition due to stress.

It is a pleasure to thank Mr Philip Wiles, under whose auspices the Stress Fracture Bureau at the Middlesex Hospital is run, for his help, and Mr S. A. Jenkins for the details of Case 2. I am also grateful to Mr M. S. Turney of the Photographic Department of the Middlesex Hospital for the photographs. Further, I would also like to thank all those surgeons who have sent details of other patients with stress fractures, and to welcome any further information about patients with this condition.