rigidly in a position of flexion and rotation to the left, with the axis parallel to the ground. Cervical osteotomy at C.3-4 level with 25-degree correction was performed in December 1957. Patient walked in plaster after two weeks, was able to see ahead and felt more balanced. The improvement has been maintained.

Case 2—Woman aged thirty-three. Sanatorium treatment for pulmonary tuberculosis in 1944, with thoracoplasty five years later. Onset of ankylosing spondylitis in 1953, with marked rigid cervical kyphosis. The vital capacity was only 880 cubic centimetres. The deformity was so severe that atlanto-axial dislocation seemed imminent. Operation was undertaken at C.3-4 level with correction as shown (Figs. 1 and 2). Three weeks later she collapsed and died from heart failure. Necropsy showed that the osteotomy had caused no nerve root or spinal cord injury and that death was the result of her general debility.

Yours truly,

W. ALEXANDER LAW.

NAIL-PLATE FIXATION FOR TROCHANTERIC FRACTURES

From Mr G. K. McKee, Norwich, England

To the Editor of the Journal of Bone and Joint Surgery:

SIR,

It seems that there are conflicting statements in the article by Foster on “Trochanteric Fractures of the Femur Treated by the Vitalium McLaughlin Nail and Plate” (November 1958 issue) and the one by Bremner and Graham on “Treatment of Pertrochanteric and Basal Fractures of the Femur by Immediate Fixation with a Two-piece Nail and Plate” in the same issue.

Foster suggested from studies of the bending moment that the McKee type of nail-plate had about one-fifth of the strength of the others. Bremner and Graham stated that “in no instance did the McKee nail and plate break or bend, nor did the screws lose their grip”; this was in a series of 100 cases. This corresponds to my experience over the last fifteen years. I have occasionally found that the nail has bent, but not the plate; and if the nail does bend the site at which the bending takes place is beyond its entry into the bone (Fig. 1).

The discrepancy between the experimental observations of Foster and the practical records of Bremner and Graham is probably only apparent. Both findings may represent the truth, and the explanation lies in the fact that the experimental conditions used by Foster do not usually apply to the condition encountered in the body. If the lateral femoral cortex is intact there is a strong piece of bone bridging the angle between the nail and the plate which acts like a fulcrum on the nail and converts the bending strain on the nail-plate junction into a tension strain which the metal of the plate is well able to withstand, the bending strain being on the part of the nail inside the bone beyond the fulcrum (the lateral femoral cortex) (Fig. 1). At this point let me stress the importance of inserting the nail as vertically as possible—135 degrees or more should be the aim so as to lessen this bending strain on the nail itself.

If the lateral femoral cortex is involved in the fracture, or if during insertion of the nail the lateral femoral cortex splits into the fracture line, the use of a plate with slots instead of holes is a great safeguard against the bending of the nail or nail-plate junction and consequent adduction deformity. The slots allow “take-up” of the lower
fragment so that impaction can take place, thus taking the strain off the nail-plate and favouring consolidation of the fracture. (In fact I prefer to use slotted plates as a routine for these pertrochanteric or basal fractures: not only do they allow this essential impaction to take place in the unstable type of fracture, but they also give a greater choice of position in insertion of the screws.)

At first the nail-plate that I introduced* was held together by a set-screw, but this was soon replaced by a threaded stud on the nail and a locking nut—an improvement which has recently been adopted in the McLaughlin nail-plate. This modification gives much greater security and can be relied upon to hold the nail and plate when the fixation hole is round (as in the McKee pattern) but there is still a risk of giving way if the hole is slotted and adjustable (as in the McLaughlin pattern), as shown in Figures 2 and 3.

Yours truly,

G. K. McKee.