## The Intervertebral Disk

SIR,—The *Journal* of Feb. 12 has three contributions that illustrate the increasing importance of the intervertebral disk.

(1) When a stooping man begins to extend his spine, says Sir H. E. Griffiths (p. 255), the posterior margin of the disk is compressed between the posterior margins of the vertebral bodies.

*Comment.*—This could happen only if the vertebral body pivoted on the disk, as the tibia pivots on the talus. The vertebral bodies, in fact, move apart during extension of the joints, which are situated three centimetres behind the posterior margins of the bodies; pressure on the disk is therefore reduced.

(2) Perforation of the annulus fibrosus by a spinal needle is followed by seepage of the nucleus pulposus through the hole (Dr. C. Langton Hewer, p. 283).

(3) When pain in the leg follows septic infection of the lumbar canal we are required to believe ("Any Questions?" p. 292) that the disk must have been injured during a supposedly ill-performed lumbar puncture.

*Comment.*—The annulus fibrosus must disobey the rules of healing that are observed by all other tissues. Puncture even of an artery—whose contents are fluid and under high pressure—does not lead to escape of its contents. The nucleus, too, must be unlike all other tissues: it is fluid enough to seep out through a tiny puncture in a ligament and at the same time solid enough to interrupt nerve roots by pressure.

In order to make possible behaviour that is without parallel in biology, the quality of "turgor"—self-expansibility—is often attributed to the nucleus. But "to ascribe turgor or power of expansion to the nucleus is to invoke some property quite unknown in the physical world and takes medicine back to the obscurantism of the Middle Ages. . . . If the volume of a fluid increases, something must have been added to it from without; if it decreases, part of its substance must have been removed."[1]

The disk is nothing but a resilient bit of fibrocartilage, more cartilaginous in its centre and more fibrous at its margins. It cushions sudden or intermittent pressure by flattening and it is restored to its previous shape when the compressing force is removed. Its resilience is shown by the rarity of disk lesions in compression fractures of vertebral bodies. It is rarely seen as a whole because of its inaccessibility, and—on the principle *omne ignotum pro magnifico*—fairy tales have been invented about it that can be disproved only by the expenditure of much labour. We are a credulous profession and often prefer the incomprehensible to the simple explanation.

In other parts of the body pain that appears during muscular effort is due to strain of muscles or ligaments. In many cases of back strain the same cause can be demonstrated by local analgesia. Yet the recent fashion demands that we invoke a complicated mechanism whose reality cannot be proved, that makes of the vertebrochondral relationship a ball-and-socket joint, and that takes away from the pedicles and articular processes their historic function of weight-bearing.

We take advantage of this weight-bearing function when we allow a patient with a crush fracture to walk about with his spine in extension. Narrowing of an intervertebral space is always secondary to failure of the weight-bearing structures through decalcification, with sagging and sometimes the appearance of linear stress fractures.[2] The disk, which is not constructed to bear continuous pressure, accommodates itself by flattening. Narrowing of the space, therefore, is not the cause of the pain but a later effect of the decalcifying process.—I am, etc.,

Melbourne, Australia. MICHAEL KELLY.

REFERENCES

[1] Roberts, Ff., *Brit. J. Radiol.*, 1944, **17**, 54.
[2] Roberts, R. A., *Chronic Structural Low Backache*, 1947, London.

## Bronchography and Surface Analgesia

SIR,—Mr. R. C. Brock (March 12, p. 454) strongly condemns bronchography by direct tracheal puncture. He favours the use of an indirect method in which the iodized oil is trickled into the glottis from the nose or pharynx, and he argues that direct puncture is unnecessarily dangerous, more complicated, and gives no better results than the indirect method. Nevertheless, after trying both techniques, we are convinced that tracheal puncture is a safe procedure and that it has definite advantages over the indirect methods.

In the past our experience on the resident staff of the Brompton Hospital covered a period of thirteen years, during which time we saw almost all the bronchograms performed there. These amounted to over 10,000, the large majority of which were done by direct puncture. The only serious complications were four cases of cellulitis of the neck; all these occurred in patients with large amounts of heavily infected sputum, which we now regard as a contraindication to the use of this method. All recovered satisfactorily, although they occurred before the days of chemotherapy.

Direct puncture requires a little more apparatus than the indirect method, but in our opinion the superior results more than compensate for this. The method itself is easy to master with proper tuition, and its speed commends it to both doctor and patient. Our criterion of a good bronchogram is that every segmental branch of the appropriate bronchial tree shall be outlined. There is always an element of luck in bronchography, and it is impossible to guarantee one hundred per cent success with any method. Nevertheless, after long experience we are convinced that tracheal puncture produces a higher percentage of good bronchograms, particularly of the upper lobes, than the indirect transglottic methods. The direct puncture technique has the great advantage that the patient can be placed in the appropriate position for outlining each lobe before the oil is introduced.

Properly performed, tracheal puncture is painless, and patients who have had experience of both methods often prefer it because it is quicker. We have done bronchograms by direct puncture under local anaesthesia on intelligent children as young as six years without causing them any distress.

We agree with Mr. Brock that the cricothyroid membrane is best avoided; the needle should be inserted into the trachea just below the cricoid cartilage. A few minims of procaine are sufficient to anaesthetize the skin, and we agree that many patients will tolerate the introduction of the iodized oil without further anaesthesia. But a few will not, and it is not possible to pick these out beforehand. One good cough can ruin a bronchogram, and therefore we inject 0.5 to 1 ml. of 2% "butyn" into the lumen of the trachea as a routine measure. Tracheal puncture should not be used if the patient has large quantities of fetid sputum, and in such a case an indirect transglottic method is preferable.—We are, etc.,

G. S. TODD,
King Edward VII Sanatorium, Midhurst.
A. F. FOSTER-CARTER,
Brompton Hospital Sanatorium, Frimley.

## Penicillin-resistant Staphylococci

SIR,—Drs. A. Voureka and W. Howard Hughes (March 5, p. 395) state that they identified 315 distinct strains of staphylococci obtained from 241 patients on the basis of colonial appearance, haemolysis, and coagulase production. I find this difficult to believe, and thought that such nice distinction could only be obtained by phage-typing. I should be glad if anyone could confirm that such results are possible. Staphylococci are of major importance in Saskatchewan and constitute an important part of the work in bacteriology in Regina. Since phage-typing is not readily available it is important to know if such distinction in typing can be achieved by the naked eye. For myself, I think not.—I am, etc.,

Regina, Saskatchewan. N. G. B. MCLETCHIE.

## Adoption

SIR,—The Adoption Bill is evidently intended both to facilitate desirable adoptions and to safeguard children from being placed out unsuitably; it may be hoped that in its ultimate form, after the incorporation of desirable amendments, it will do both more effectively.

It starts with the statement (Section 1 (1)) that a child may be adopted by his mother with or without her husband, or by his natural father with or without his wife. Adoptions of a child by his mother and her husband are already frequent, and no doubt the great majority of legal adoptions by a child's own mother, which were stated in the debate in the House