lumbar vertebra, and secondly that with ageing, fibrocartilaginous metaplasia took place, starting in the deeper layers, often progressing later to ossification.

The remainder of the work deals with the interspinous ligaments. The first section, a study of the appearance in the foetus and infant, showed that the ligament develops concurrently with the spinous processes. This is followed by a detailed investigation into its structure, the main findings of which were in the upper three lumbar interspaces; the ligament could be subdivided into four fairly constant layers from before backwards, whereas, in the lower two spaces, only three layers could be distinguished, the fibres of which varied widely in direction and strength.

The next section deals with age changes, and, over twenty years old, degeneration was invariably found in the tendinous tissue of the ligaments. Later, cavities occurred, often microscopically resembling joints. The final section discusses ruptures in the interspinous ligament, which were formed in 21 per cent of subjects over twenty years of age. In the large majority the ruptures were located in the lowest two spaces, which are also the levels in which intervertebral disc prolapse is most common.

The monograph is purely an anatomical study; no attempt being made to correlate the various findings with any clinical picture. It is a painstaking study of structures whose importance as a cause of low back pain may not be sufficiently appreciated and will be of value to those interested in the subject.—J. N. ASTON.

Lumbar Intradiscal Pressure. Experimental Studies on Post-mortem Material. By Alf NACHEMSON. 9½ × 6½ in. Pp. 104, with 58 figures and 35 tables. 1960. Acta Orthopaedica Scandinavica, Supplement 43. Copenhagen: Ejnar Munksgaard. Price Dan. kr. 18.

This is an interesting work on the measurement of "intradiscal pressures" in cadaveric disc specimens by means of an electronic device which might some day be developed for use *in vivo*. To avoid the disadvantages of injecting fluids into the disc with an open-ended needle, as used by previous workers, the author has used a needle with a lateral opening covered by a sleeve of polythene tubing to act as a diaphragm. A number of technical difficulties face the transmission of the deflections of this diaphragm through the water-filled needle to a pressure transducer, and these difficulties, of which the most erratic was the inconstant elastic behaviour of the polythene diaphragm, are described.

The principal findings are, firstly, that the nucleus pulposus behaves as a hydraulic medium when loads are imposed on the intact disc, and this applies even when there is considerable degeneration. When degeneration is so severe as to produce cavities, the nucleus no longer behaves hydraulically as might be expected. Hydraulic behaviour is indicated by the record of pressure inside the nucleus remaining constant no matter what way the recording diaphragm of the needle is directed.

Secondly, it is shown that the "intradiscal" pressure is 30 to 50 per cent higher than what would be calculated from a known load on the area of the disc. In other words, the normal disc takes more load on to the nucleus than it does on the annulus, which implies that the vertical stress in the annulus is less than the tangential stress. These findings do not apply to the severely degenerate disc where the annulus takes a much higher load.

One aspect of this monograph which this reviewer feels should be criticised is the inclusion, without adequate discussion, of the part played by the posterior intervertebral joints and pedicles in the transmission of load. It is recorded that removal of the posterior elements caused a rise in intradiscal pressure of about 20 per cent, which implies that the posterior elements were transmitting this amount of weight. No attempt is made to explore further the mechanism of this unlikely happening, which is all the more exasperating since Nachemson was part author of a previous work which suggested that the posterior elements of the spine were not involved in the transmission of load. It is possible that the posterior elements may transmit load in extension but it seems impossible in the neutral or flexed position of the spine. This is an example of an observation's being afforded the dignity of publication when in conflict with commonsense; unless a researcher takes an investigation far enough to explain an apparent inconsistency, or far enough to show that he has eliminated all known experimental errors, its appearance in the literature merely confuses the issue.

Despite this reservation, the monograph is valuable and interesting, and will be helpful to others in a field of research which is only just starting.—John CHARNLEY.

Die Versorgung von Ohnhändern. By Prof. Dr Otto Boos, Oberarzt der Orthopädischen Universitätsklinik und Poliklinik, Tübingen. Mit einem Beitrag von Dr med. Ernst GOETZ, Ob. Reg. Med. Rat in der Ärztlichen Abteilung des Bundesministeriums für Arbeit und Sozialordnung, Bonn; und einem Geleitwort von Prof. Dr Lothar KREUZ, Tübingen. 9½ × 7 in. Pp. 151, with 33 figures (some in colour) and 14 tables. 1960. Stuttgart: Friedrich-Karl Schattauer-Verlag. Price DM 22.

This paper-backed book written in German deals with the treatment and after-care of people who lack all the digits of both upper limbs whatever the level of the defect.

The writer, Professor Boos, draws on his experience in World War II of 263 cases treated at the Oskar-Helene-Heim Clinic in Berlin, an institution which seems to combine some of the features of Roehampton. When he moved to Tübingen Professor Boos reviewed all the patients in south-west Germany—108 in number—who had been treated by Krukenberg's method of converting the forearm stump into a two-pronged claw. He reviews the prosthetic methods of cineplastic procedure of the upper arm stump and of the phalangisation of the metacarpals, and then deals with his favourite subject and gives a full description of the Krukenberg procedure, the difficulties which are encountered and the complications. He also deals with the subsequent treatment of cases based on the phantom hand in which muscle re-education is employed. He suggests that it is important for each patient to be trained for his daily life, the ultimate training to take into consideration the future occupation of the patient. About 58 per cent of patients without hands are employed. The amputees are generally fitted with a prosthesis which is activated by the prongs, and this was Krukenberg's original purpose, but most of these patients find that the bare stumps are more useful. They, however, need specially modelled handles for most objects they use.

A section is devoted to the great problem of training blind people who have lost their hands.

The book goes on to deal with the social as well as the surgical problems encountered. The author says he advised patients in all matters, even in the choice of their wives. Most of these people do marry. This is a point of great significance when it is considered that nearly half of these patients need to be helped with their toilet, and only slightly fewer with their washing.

The author considers that the treatment of the handless should be concentrated in special centres where the necessary arrangements can be made so that surgeons can gain enough cumulative experience.

Fortunately the loss of both hands rarely occurs in civilian life and one cannot but hope that the unique experience gained by this author and others will not need to be repeated.—LEON GILLIS.

Transactions of the International Society of Plastic Surgeons. Second Congress, London, 1959. Edited by A. B. WALLACE, M.Sc., F.R.C.S.Ed., Editor of the *British Journal of Plastic Surgery*. 10 × 7½ in. Pp. xxiv + 589, with many illustrations. Index. 1960. Edinburgh and London: E. & S. Livingstone Ltd. Price 90s.

Plastic and orthopaedic surgery are fields which have much in common and it is to be expected that in this volume, *Transactions of the Second Congress of the International Society of Plastic Surgeons*, there will be much to interest the orthopaedic surgeon.

Some eighty papers, embracing all aspects of reconstructive surgery, are reproduced in full, together with brief summaries in French, Spanish and German.

The papers are grouped in sixteen sections, chiefly according to the anatomical region discussed: for example—jaws, grafts for defects of facial bones and skull, genitalia, etc. Clearly this is no text-book and could be better described as a massive edition of a *Journal of Plastic Surgery*. As such it provides an interesting synopsis of advances, endeavours and problems in this expanding branch of surgery.

Some sections will be of particular interest to orthopaedic surgeons. There are eleven papers on various aspects of hand injury, and among these Littler's description of his neurovascular skin island transfer is outstanding. Harrison describes the retention of one slip of the intact sublimis with grafting for a divided profundus tendon. A novel means of splinting a finger in flexion is described by Planas of Barcelona, who inserts a simple stitch through the free border of the thumb nail and the nail of the finger to be held flexed.

Among several papers on tissue preservation, a preliminary report by Gibson of a living homograft cartilage bank with a rapid test for viability is of particular interest.

One might criticise the volume in that it lacks balance, that too much space is devoted to cleft lip and palate and not enough to the numerically greater problems of accidental trauma and burns. This is, however, the report of a Congress and its make-up was thus predetermined by the time allocated to the various subjects discussed.

The book is expensive at £4, 10s. but it is lavishly produced and the illustrations are excellent. It will interest all who undertake the surgery of repair.—R. L. B. BEARE.

Symposium sur l'Os Hétéroplastique. Under the Direction of Professor M. GUILLEMINET, Clinique de Chirurgie Orthopédique de la Faculté de Médecine de Lyon Hôpital Edouard-Herriot. 9½ × 7 in. Pp. 103, with 64 figures and 12 tables. 1959. *Revue de Chirurgie Orthopédique et Réparatrice de l'Appareil Moteur*, Volume 45, Supplement No. 1. Paris: Masson & Cie. Price \$1.65.

In this country bone heterografts have never been widely used. This symposium which records experiences with this material in several continental centres is therefore of great importance to us.