that "after many attempts to find any small intact nerves, the search was abandoned." I am sure that in a case of this nature the dye would have enabled him to find most of these small intact nerves.

In a personal communication to me on the use of leucomethylene blue to detect the vagal fibres, A. A. Gunn stated that in 65 truncal vagotomies done in 1970, in 54 of these operations he found further fibres following testing with leucomethylene blue; 75 of the fibres so removed proved vagal. There is, therefore, no doubt whatsoever that these additional fibres would not have been detected otherwise.

I therefore submit that, although the leucomethylene blue dye is not, and I emphasize not, a test for completeness of vagotomy, it can be of considerable help in enabling the operator to detect the small nerve radicles, which he can then remove, thus ensuring that a satisfactory vagotomy is performed. The Burge machine is not easy to manipulate, and there are various factors which can upset its operative value.—I am, etc.,

MAURICE LEE.

London W.1.

Antimacrophagic Properties of Antilymphocytic Serum

SIR,—Antilymphocytic serum (A.L.S.) of whatever provenance has been found to have antimacrophagic activity which impedes capillary migration of macrophages.[1] Conflicting reports have appeared concerning the effect of A.L.S. on in-vivo carbon clearance with both suppression[2] and no interference[3] being found. Since this antimacrophagic activity might be of importance in determining A.L.S. immunosuppressive capacity in vivo, experiments have been carried out to determine whether or not A.L.S. depresses phagocytic activity of macrophages in vitro.

Adherent monolayers of normal guinea-pig peritoneal macrophages were allowed to form in a modified Sykes-Moore tissue culture chamber in a nutrient medium of TC 199 and 20% normal homologous serum. They were treated for varying periods up to eight days with 1 in 80 rabbit antiguinea-pig thymus serum (A.T.S.) after which carbonyl iron powder was added to the chamber. The serum was one which gave a 90% inhibition of macrophage capillary migration.[1] Treatment with the A.T.S. for these varying periods did not impair ability of these macrophages to take up the foreign particulate matter as compared to those untreated. Macrophages preserved their phagocytic activity even after eight days continuous *pretreatment* with A.T.S. while strongly aggregated throughout. Macrophage aggregation power of A.L.S. allied to migration inhibition activity thus appears to be divorced from a phagocytosis depressing action. The latter may indicate contamination of A.L.S. with antimacrophage serum[4] perhaps related to the method employed in raising the A.L.S.—since a survey of the literature suggests that the use of Freund's adjuvant in particular tends to result in antiphagocytic properties.

In referring to "antimacrophagic" properties of A.L.S. it is therefore important to distinguish the properties in mind. An extended account of these experiments will be presented elsewhere.—I am, etc.,

D. HUGHES.

M.R.C. Demyelinating Diseases Unit,
Newcastle General Hospital,
Newcastle upon Tyne.

REFERENCES

1 Field, E. J., and Hughes, D., *Lancet*, 1969, **1**, 893.
2 Sheagren, J. N., Barth, R. F., Edelin, J. B., and Malmgren, R. A., *Lancet*, 1969, **2**, 297.
3 Gill, P. G., and Gotjamanos, T., *Lancet*, 1969, **2**, 645.
4 Unanue, E. R., *Nature*, 1968, **218** 36.

Cardiac Arrest and Bone Cement

SIR,—I would be grateful if I could comment on the letters about acrylic cement packing of the femur in total hip replacement operations (29 August, p. 523).

The purpose of using acrylic cement with the femoral component of total hip replacements is to spread the load from the stem of the prosthesis to as large an area of the endosteal surface of the upper femur as possible.[1] To decrease the axial stress to physiological levels using screws, or drill holes plugged with acrylic cement as Mr. Eric S. Glen (p. 523) suggests, would require 43 ⅛in. (3·5 mm.) drill holes.[2]

Rotary strain mentioned by Mr. Glen is an important factor in femoral component loosening.[3] It has been shown[4] that a torque stress in excess of 90 in. lb. (102 cm. kg.) may be created in certain movements of a metal to metal hip replacement. The tensile strength of polymethylmethacrylate made in ideal conditions is nearly 10,000 lb./sq. in., but will be much less in vivo due to cleavage layers filled with blood. A simple sum will show that multiple drill holes plugged with cement would be required to resist the shear stress at the endosteal surface of the femur.

To get a firm packing of the cement into the endosteal surface of the femur the cement must be wedged by the stem of the prosthesis as it is inserted.[1] This wedging cannot take place if the cement is too soft, or if an efficient vent in the femoral shaft remains. Cine-radiographic studies (to be published) have shown the effectiveness of using a plastic tube inserted down the prepared femur while the cement is being packed. This allows the escape of blood and air from below the advancing cement. The tube is removed before the final packing push, made before the stem is inserted.

No one, so far as I know, has incriminated the pressurizing of the femoral medullary cavity with air and the debris of reamming, which will happen in an unvented femur as the cement is packed in, as the cause of a lowered blood pressure.

Regarding Dr. Phillida M. Frost's comment (p. 524) about acrylic cement temperature while polymerising; the temperature will depend on the thickness of the cement mass, and whether it is in contact with metal, which will conduct heat away, and also whether there is a good blood flow nearby to do the same. Charnley,[2] using his method of bone preparation in cadaveric femora, found a rise of temperature at the bone cement interface of only 12°C. Ohnsorge and Goebel[5] using curretted cadaveric femora, giving a greater thickness of cement, found temperatures up to 68°C.

Even very slight movement of the femoral component in total hip replacements causes symptoms, and usually failure. It would thus be unwise to alter a technique found satisfactory unless it can be proved that it is the cause of complications.—I am, etc.,

DEREK W. PARSONS.

St. Helier Hospital, Surrey.

REFERENCES

1 Charnley, J., *Journal of Bone and Joint Surgery*, 1964, **46B**, 518.
2 Charnley, J., *Acrylic Cement in Orthopaedic Surgery*, Edinburgh, Livingstone, 1970.
3 Parsons, D. W., *Journal of Bone and Joint Surgery*, 1969, **51B**, 567.
4 Parsons, D. W., Ansell, R. H., and Goddard, D., *Journal of Bone and Joint Surgery*, 1970, **52B**, 177.
5 Ohnsorge, J., and Goebel, G., *Archiv für Orthopädische und Unfall-Chirurgie*, 1969, **67**, 89.

Prophylaxis of Deep Venous Thrombosis

SIR,—In view of the continuing interest in deep venous thrombosis and the emphasis on treatment once the condition occurs (27 June, p. 773), a different approach may be of interest.

In 1965 the incidence of deep venous thrombosis and/or pulmonary embolism was giving rise to apprehension in the orthopaedic wards of this hospital when major surgical procedures were undertaken, particularly those on the hip. An investigation was begun and after several false starts it seemed clearly established that the principal prerequisites for deep venous thrombosis were postoperative infection of the wound and lack of attention to the diet of the patient before and after operation. As a result of continuing close attention to these two points, and principally to the methods and standards of cleanliness and sterilization in the hospital laundry and central sterile supply department, the incidence of these post-operative complications has been satisfactorily reduced. Cases of deep venous thrombosis are now minimal and can be explained in terms of trauma, age, infection, diet, etc.

Regarding diet, patients are asked to diet strictly while they are on the waiting list, avoiding fats and sugars as much as possible, and where they are noticeably overweight they are asked to reduce their weight by at least one stone (6·5 kg.). It is explained to them that they have to prepare themselves for operation as they would for any unusual physical effort. On admission to hospital, they are given chits explaining why they are put on a diet before and after operation. The diet has a high protein content before operation, and postoperatively is graduated from fluids to meat over a period of ten days. The patients accept this routine without protest, and the diets present no difficulty to the kitchen.

Attention was acutely focused on this condition some years ago, when a healthy woman of 35 admitted for excision of the head of the radius unexpectedly dropped dead from pulmonary embolism a few days after the operation. The term deep venous thrombosis is used to denote all postoperative degrees of this condition from