was present but caused her little inconvenience. Repeat arteriography showed occlusion of the whole of the popliteal artery with well marked collaterals. She refused further operation in view of the paucity of her symptoms.

Occlusion of the artery was due to contact between the intimal surfaces of the vessel without thrombosis. Conservative removal of the gel restored pulsation, and patency of the artery was demonstrated arteriographically following the operation. However, re-occlusion occurred within one year, and this supports the opinion that in cases of complete occlusion arterial resection with autogenous vein grafting should be performed in preference to simple evacuation of the cyst.—I am, etc.,

J. C. MILLIKEN

Sir Patrick Dun's Hospital,
Dublin

¹ Haid, S. P., Conn, J. Jun., and Bergan, J. J., *Archives of Surgery*, 1970, 101, 765.

² Lewis, G. J. T., Douglas, D. M., Reid, W., and Watt, J. K., *British Medical Journal*, 1967, 3, 411.

Lymphocyte Sensitivity in Cancer

SIR,—Cellular electrophoresis has recently been applied by other workers in this unit to demonstrate lymphocyte sensitivity in cancer patients to a basic protein isolated from nervous tissue (encephalitogenic factor—E.F.)¹ and similarly derived extracts of tumour tissue (12 June, p. 613). Changes in electrophoretic mobility of irradiated guinea-pig macrophages that had been incubated with human lymphocytes and putative antigen were measured in a cytopherometer. The test probably depends on alterations in surface charge induced by non-antibody soluble proteins (lymphokines)—perhaps macrophage migration inhibition factor (M.I.F.)—released by human lymphocytes after interaction with specific antigen. Unfortunately the cytopherometer is capricious and consequently the more widely used macrophage migration inhibition (M.M.I.) test, which has given results parallel to the cytopherometer in a known delayed hypersensitivity condition,² would perhaps afford a technically simpler detection of lymphokine production.

Considerable experience of the M.M.I. test has been acquired in this unit,^{2,3} while a recent modification enables the use in one experiment of 300 or more microcapillaries. Thus 30–40 degrees of freedom are available in making a statistical evaluation of results so that migration inhibitions of about 10% become highly significant.

Peripheral blood lymphocytes, purified by a methyl cellulose carbonyl iron method,⁴ from a group of patients that included three neurological and 12 carcinoma cases were tested by M.M.I. in parallel with the cytopherometric method. Migration chambers were prepared as described elsewhere⁵ with capillaries containing a mixture of 5% human lymphocytes in guinea-pig peritoneal exudate cells.⁵ Migration inhibition due to addition of 33 µg/ml of basic protein to the nutrient medium (20% pooled normal guinea-pig serum in 199) was measured after 16 hours' incubation. A mixed lymphocyte reaction (mean migration=87.0%; S.D. 15.6; n=34) was partially eliminated by 100 r irradiation¹ of the guinea-pig cells. Results are set out in the Table.

	No. of Patients	Significant Inhibition P < .01	Not Significant
(a) Using Nervous Tissue Basic Protein (EF):			
Carcinoma	12	2*	10*
Neurological disease	3	0	3*
Sarcoidosis	1	1*	0
Control (autologous guinea-pig lymphocytes)	3	0	3
(b) Using Tumour Tissue Basic Protein:			
Carcinoma	4	4*	0
Neurological disease	3	2*	1*
Control (autologous guinea-pig lymphocytes)	3	2	1

*Lymphocytes tested by the cytopherometric method gave positive results in all cases, P < .001 (12 June, p. 613).

The M.M.I. test indicated significant inhibition with E.F. in only three of 16 cases (mean migration 96.6%; S.D.=10.7; n=16) which the cytopherometric method showed to possess highly significant sensitivity. Probable cytotoxicity of the tumour tissue extract evidenced by inhibition of control cells (mean migration 88.5%; S.D. 3.5; n=3) invalidated the stronger inhibitions (though not significantly different, P=0.4–0.3) obtaining with four carcinoma and two of the neurological cases in the experimental group (mean migration=76.7%; S.D.=10.7; n=7).

This preliminary study has shown that a modified M.M.I. test, employing human lymphocyte and guinea-pig peritoneal exudate cell mixtures of greatly enhanced sensitivity and reproducibility, failed to detect the lymphocyte sensitization to E.F. previously revealed using the cytopherometer. However, it is possible that further tumour antigen isolates may be less toxic in the M.M.I. test and yield specific inhibition.

The unquestionable superior sensitivity of the cytopherometric method may relate to

an essential difference between two methods both making use of biological amplification (through lymphokines acting on normal macrophage indicator cells) of a small initial specific cellular immune response. Lower levels of lymphokine may be required to produce measurable reduction of an artificially induced electrophoretic mobility in the cytopherometer than to effect the biological interaction responsible for inhibition of active migration in the M.M.I. test.

—We are, etc.,

D. HUGHES
D. W. PATY

M.R.C. Demyelinating Diseases Unit,
University of Newcastle upon Tyne

¹ Field, E. J., and Caspary, E. A., *Lancet*, 1970, 2, 1377.

² Hughes, D., Caspary, E. A., and Field, E. J., *Zeitschrift für Immunität und Allergieforschung*, 1970, 141, 14.

³ Hughes, D., and Newman, S. E., *International Archives of Allergy and Applied Immunology*, 1968, 34, 237.

⁴ Hughes, D., and Caspary, E. A., *International Archives of Allergy and Applied Immunology*, 1970, 37, 506.

⁵ Rajapakse, D. A., and Glynn, L. E., *Nature*, 1970, 226, 857.

Adaptation of Houses for Home Dialysis

SIR,—The article "Some Administrative Problems in Adaptation of Houses for Home Dialysis" (12 June, p. 637) performs a useful service in bringing to light sources of unreasonable delay experienced in completing home adaptation for renal dialysis patients.

Our experience in this department is that where the adaptation of an existing room is satisfactory this can be completed within three to six weeks of the case being brought to the attention of the Health Department, and always before the patient is ready for home dialysis. We are fortunate in two respects. Firstly, at the time when our first case was in hand, the health committee authorized the medical officer of health to deal with cases as they arise, thus avoiding the delay consequent upon the need to obtain committee sanction for individual cases. Secondly, the repairs section of the City Housing Department has carried out the structural alterations for us in each case and has done so skilfully, economically,

and, above all, with a sense of urgency. A representative of the repairs section is always present at the initial site meeting.

The Health Department's assessment officer also attends the site meeting and, in the knowledge of the rough estimate of cost arrived at there, explains in detail the basis on which the patient's contribution to the cost will be assessed. No difficulty has been experienced in this connexion.

There have been three cases in which room adaptation was not practicable and in each case rehousing was recommended. In the event, one case was dealt with by renal transplant, but the other two were transferred to suitable municipal tenancies within four and five weeks. I suggest that in many instances where room adaptation is not possible rehousing in more suitable accommodation may be the speediest course.—I am, etc.,

S. G. PHILLIPS

Public Health Department,
City of Birmingham

Chloroquine Myopathy

SIR,—Your recent leading article (12 June, p. 605) on chloroquine myopathy was timely in view of the extensive use of this drug in malaria and rheumatoid arthritis. However, the suggestion that only large doses lead to toxic symptoms may give rise to a spurious confidence when prescribing this drug in

small doses for long periods of time.

A patient with rheumatoid arthritis was known to have taken only one 250 mg tablet chloroquine daily for 18 months before she developed severe muscle weakness of both legs together with progressive macular blindness.¹ A biopsy of the left tibialis