island. As it is, their recommendations will drive out the few who already do manufacture there.

Unfortunately, similar attitudes prevail in many other developing countries. If, instead, they realized that it is possible for developing countries to attract foreign-owned factories to manufacture pharmaceuticals for export—as is already happening extensively in the Far East—it would open a new avenue through which the richer countries could fulfil their responsibility to contribute to the prosperity of the poorer.—I am, etc.,

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Epitaph for the M.C.H.C.

SIR,—The mean corpuscular haemoglobin concentration (M.C.H.C.) has a time-honoured place in the measurement of hypochromic anaemias. The advent of automatic apparatus for routine haematological investigations has forced a shift of emphasis away from the M.C.H.C. Such apparatus is now widely used in this country and in the U.S.A., and haematologists are well aware that the M.C.H.C. may not be what it seemed to be. However, this remains a well kept secret, with medical students and non-haematological graduates showing a touching faith in what they have been told and what they continue to be told.

FIG. 1.—Shows relationship between M.C.H. and M.C.V. measured by the Coulter Model "S".

The M.C.H.C. was introduced to show how completely the erythrocyte space was filled with haemoglobin. Happily, the M.C.H.C. when calculated from directly measured parameters was low in blood from patients with hypochromic anaemias. Currently however, automatic apparatus such as the Coulter Model "S" (Coulter Electronics Inc.) is churning out normal M.C.H.C.s to the accompaniment of hypochromic films. Either the automatic M.C.H.C. is nothing of the sort, the manual M.C.H.C. was a fraud, or our eyes are deceiving us. Questions are now being asked and some answers are emerging which merit attention.

As a hypochromic anaemia becomes more severe the red cells show a striking variation in size and shape. When the packed cell volume (P.C.V.) is measured by manual

methods, the result expresses the limitation upon centrifugal packing set by the variations in shape and size. J. M. England and colleagues (in press¹) have shown that the proportion of trapped plasma in the red cell column increases as the anaemia becomes more severe. The Coulter "S" calculates the P.C.V. from the red cell count and the mean corpuscular volume (M.C.V.), and therefore does not convey the fact that bodies of various shapes and sizes will not pack conveniently into a minimum volume.

FIG. 2.—Red cell size determines whether the cell appears well or poorly filled with haemoglobin.

Furthermore, correlation of M.C.V. and mean corpuscular haemoglobin (M.C.H.) as provided by the Coulter "S" shows a linear relationship (Fig. 1). If a genuine fall in M.C.H.C. was the explanation for hypochromia seen on the peripheral blood film then the curve would deviate to the right as it approached the axial origins. Since the M.C.H. is predictable from the M.C.V. this measurement may also be considered obsolete. It appears therefore that hypochromic features seen on a film represent the optical properties of small relatively thin cells (Fig. 2) and have little to do with haemoglobin concentrations.

It may be mentioned that the whole selection of indices occasionally assist in the diagnosis of spherocytosis, but this is no good reason for persisting in the belief that either the M.C.H.C. or M.C.H. convey anything of particular clinical value any longer.—I am, etc.,

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¹ England, J. M., Walford, D. M., and Waters, D. A. W., *British Journal of Haematology*, in press.

Shortage of Physiotherapists

SIR,—The Health Service is handicapped by a shortage of physiotherapists. A high proportion of women marry soon after training and qualification. The arrival of children keeps them from working for a time, but when the children reach school age and the mother wishes to return to part-time work

she finds she is discouraged by regulations. Particularly does this apply to the mother-physiotherapist who wishes to work almost full-time during the term and for very little time, or not at all, during school holidays. Where there is always a shortage of physiotherapists any available service is easily taken up even if only during term-time.

Physiotherapists are allowed to work up to four sessions (12 hours) each week at £2.62 per session. If they are able to work more than this their pay is calculated on a pro rata basis and works out at £2.25 per session, though, of course, they are then eligible for holidays and sickness benefit, but to be paid in this way they must work a regular number of hours throughout the year. A young, keen, energetic physiotherapist with children all school age wishing to work six or more sessions a week during term-time but not at all during holidays is not covered, and though finance offices bend the regulations to help as much as possible it gets very difficult to pay more than the statutory number of sessions during term-time, even though the local needs cry out for physiotherapists.

One does not have to be an administrative genius to see some simple changes in the regulations which could benefit greatly the public. First, the number of sessions allowed per week could be increased to six; even seven or eight does not seem to be unreasonable, for physiotherapists are desperately scarce. Secondly, the average number of sessions throughout the year could be used as a basis for calculation so that if she does not work at all during holiday time she could do at least six sessions per week during term-time, and only have an average of about four. If the first suggestion was also accepted then she could do as many as nine sessions during the term-time per week. For those legislators who are concerned that a sessional rate might allow a physiotherapist to be paid too much money, perhaps they could set an annual total over which a session would not attract any pay. £850 would seem a reasonable figure.

I trust publicity for these facts will do something towards changing the regulations and bringing back into the hospital service physiotherapy time which is now being wasted.—I am, etc.,

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Neuropathy after Clioquinol

SIR,—Dr. S. I. Terry's patient with transient dysaesthesiae following the ingestion of clioquinol (25 September, p. 745) is of interest.

From 1963 onwards I investigated the effect of modifying the gut flora of patients with so-called "intrinsic" allergy. Clioquinol, which is hardly absorbed, seemed potentially useful. The drug's safety was not in doubt: Gholz and Arons¹ had reported extensive investigations on 4,000 patients who had received the drug continuously for 4 years without untoward side-effects.

In the course of my investigation five patients developed numbness and tingling of their extremities, but no pain. One of these patients developed her symptoms after leaving my care. She was admitted to another hospital where a tentative diagnosis of transient encephalitis was made, but she was