We have as yet no ideal screening tonometer, but the Schiötz instrument or a modern version of the Berens-Tolman ocular hypertension indicator would suffice until in the fullness of time we can mass-produce electronic tonometers at reasonable cost.

D. S. Lees in *Health Through Choice*¹² writes: "The fundamental point is that medical care should be open to experiment and innovation. At present it is closed." As the Supplementary Ophthalmic Service has been static and closed for 14½ years, would the Minister of Health consider opening the south-east corner of the Welfare State as a trial ground for experiment and innovation?—I am, etc.,

Tonbridge, Kent.

P. RICHARD DAY.

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SIR,—In the letters by Mr. O. Gayer Morgan and Mr. A. C. Shuttleworth (December 22, p. 1680) there was a lot of food for thought, especially as the Porritt Report suggested that an O.S.C.1 should be obtained before each re-examination. This, I submit, is not likely to be an acceptable suggestion to the public. In fact, I would like to see the O.S.C.1 waived altogether. The trouble that one must go through to obtain this certificate from the patient's point of view must be a greater deterrent than the charges.

However, the main purpose of this letter is to make a further suggestion concerning the early detection of glaucoma. I agree with those who think this should depend on the ophthalmic medical practitioners and the ophthalmic opticians within the Supplementary Ophthalmic Service, which we all know at heart is here to stay. This is where early glaucoma can be detected and that is where I would like to see the public able to go directly without the formality of an O.S.C.1. Of course many practitioners are extremely knowledgeable concerning eye diseases, but many are not. In this connexion there would seem to be an argument in favour of increasing the amount of time allocated to the medical student for the study of eye disease, which at the moment falls far short of ideal. Within the Supplementary Ophthalmic Service there is an equal variation in the quality of performer, and in my opinion this is a bar to the suggestion that tonometry is carried out as part of the eye test; an ophthalmoscopic examination to decide whether or not glaucoma exists is equally unsatisfactory unless in the hands of the most practised ophthalmic surgeons. At any rate, as is well known, there is such a thing as a normal-tension glaucoma, and fundal changes when seen usually indicate an advanced condition.

There is one method which was brought to my notice by my own ophthalmic optician which I would like to recommend, and that is the use of a Harrington-Flocks screen. This test takes less than five minutes to carry out for both eyes; it is easy to obtain the co-operation of the patient and it is a task that could be performed by anybody. I have no interest in the sale of this piece

of apparatus, but since I agreed to have one in my department I have found it of great value. I believe that further charts are in the process of being evolved, especially to answer the problem of the early detection of glaucoma; this would be splendid, but even so, at the moment, in my experience 85% of those affected can be picked up by means of this type of screen.

This is a mercenary world that we live in and it would seem to me that if something of the order of five shillings was paid for carrying out this test and it became compulsory a great step forward in the direction of glaucoma would result.—I am, etc.,

Princess Margaret Hospital,
Swindon, Wilts.

F. C. RODGER.

Calcium Requirements

SIR,—Your leading article of January 12 (p. 71) closely mirrors the argument of the W.H.O./F.A.O. report on this subject.¹ It therefore seems desirable to redress the balance by drawing attention to some of the deficiencies in the arguments produced by both.

The report states repeatedly that no syndrome of calcium deficiency has ever been described in man, but the experts can hardly be unaware that osteoporosis may be this very syndrome. Until this issue is settled they might have been wiser to be less dogmatic. It is true that they mention the possible "adverse effects" of low calcium intake in animals, but they omit all reference to the work which has been reviewed elsewhere and which shows that the "adverse effect" in question is in fact osteoporosis.² They quote a study which showed that calcium supplements stimulated growth in Indian children, but they go on to say that calcium intake need only be such "that unequivocal stunting is prevented."

It is in this spirit that the experts proceed to determine calcium requirement. The calcium requirement of an adult or group of adults is, of course, the amount required to preserve calcium balance. It has been shown in many studies that this value averages about 500 mg./day.^{3,4} The report, and your leader writer, lean particularly heavily on two of these studies. In one of them, 10-day balances were performed on Peruvian prisoners at different levels of intake.⁵ Unfortunately only 24 hours (instead of a minimum of five days) was allowed for equilibration at each intake level, and this study is therefore of doubtful value. In the other, which extended over many years,⁴ male Norwegian prisoners were found, when fully adapted to low calcium intakes, to have an average calcium requirement of 450 mg./day. However, the coefficient of variation of this figure is given as 25%, meaning that if every fully adapted male ate 675 mg. of calcium daily then 97.5% of them would be in calcium balance. Conversely if they all ate 450 mg. only 50% would be in calcium balance. If their average intake was 450 mg., as recommended by the W.H.O./F.A.O. Committee, an even smaller proportion would be in calcium balance, the exact figure depending upon the statistical distribution of intakes among the population. Moreover, it is not unlikely that women require more calcium than fully adapted male prisoners, and they would be in even worse state if the Committee's recommendations were adopted. Thus, leaving aside the controversial question of the pathogenesis of osteoporosis, the Committee's recommendations are totally inadequate even when judged by the work of Malm,⁴ on which they lean so heavily.

It may be asked how so many Eastern nations apparently manage on very little calcium. Perhaps the

operative word is "apparently." On the one hand little or nothing is known of the incidence of osteoporosis, backache, and fractures in these countries. On the other hand, the calcium intake itself is uncertain. There is an absolute dearth of dietary analyses and the few published figures are of little value. A small study which I have carried out in the Gambia has shown that the calcium intake there is much higher than is generally supposed.

It is true that the living organism can adapt itself to extreme hardship and deprivation, and in many parts of the world humans are surviving on intakes of all the essential nutrients far below those consumed in the Western world. Most of us, however, regard this widespread economically determined starvation as undesirable, to say the least. Surely the object of bodies like F.A.O. and W.H.O. is to bring the nutrition of the starving half of the world up to our level, not to reduce us all to theirs.—I am, etc.,

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B. E. C. NORDIN.

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New Methods of Resuscitation

SIR,—Dr. Graham M. Hunter's assertions (January 26, p. 261) cannot go unchallenged. The twin methods of mouth-to-mouth and external cardiac resuscitation represent a great stride forward in this field, and their great beauty lies in the fact that adequate artificial ventilation and circulation can be started within seconds by anyone trained in these techniques, and this includes lay people as well as doctors and nurses, without the use of any ancillary apparatus. Even under ideal conditions Holger Nielsen's method of artificial ventilation is barely adequate, as was well shown in Dr. Peter Safar's excellent film "Respiration Resuscitation Techniques." The toneless tongue does not form an obstruction during mouth-to-mouth resuscitation provided the method is correctly applied.¹ Vomit blown into the lungs is of little consequence compared with the urgency of getting ventilation started, and it can be the most convenient method of clearing the airway quickly, as it can be sucked out by bronchoscopy after the patient reaches the operating theatre and no harm will result. Naturally, if there are large quantities of vomit an attempt should be made to remove it, but this applies whatever method of ventilation is employed. To say that aesthetically the presence of blood or vomit is revolting is an attitude of mind I entirely fail to comprehend. I have performed mouth-to-mouth resuscitation on several occasions when vomit or bile has been draining from the patient's mouth, but the urgency of the situation entirely precludes thoughts of one's own contamination, and this is also the experience of others.—I am, etc.,

St. Mary's Hospital,
Eastbourne, Sussex.

P. H. VENN.

REFERENCE

- ¹ Recommendation 3 of the Symposium on Emergency Resuscitation, Stavanger, Norway, August, 1961.

SIR,—I am a practising morbid anatomist and I have been very exercised in my mind at the results as seen at post-mortem examinations of the application of methods of external cardiac massage. This particular technique has been described in detail in a film issued from the British Medical Association Film Library. Directions in the film include the statement that "in adults a depression of the ribs for 1½ in. (3.8 cm.) is essential."

I had very recently the misfortune to see in a hospital the immediate results of the application of this teaching. I was called upon to examine the body of a man, aged 64, who had been found collapsed outside a hospital, who was brought into the hospital apparently dead, where he was promptly treated by a team of resuscitators. The man did not survive this experience, but I am satisfied he was dead from his gross myocardial sclerosis at the time of the "resuscitative attack." I wish to put on record that in this case there were 15 fractured ribs, seven on the right and eight on the left. There was a small collection of blood in the peritoneal cavity and a 1½ in. (3.8 cm.) rupture of the liver on the anterior surface close to the ligamentum teres. The injuries that I have described here are comparable with those seen in "steering-wheel fatalities" after motor-car crashes.

I have, in the course of my duties, also had the opportunity of examining at least 12 cases during the past 12 months in which there were up to eight fractured ribs following this method of alleged resuscitation.

I think, Sir, on the facts presented, a strong case has been made for a careful review of this dangerous physical attack upon the inert bodies of the apparently dead.—I am, etc.,

London W.1.

DAVID HALER.

SIR,—Dr. Graham M. Hunter's plea (January 26, p. 261) for a conservative approach to methods of resuscitation is timely. At the height of the early wave of enthusiasm for mouth-to-mouth resuscitation I decided to try it on a patient who I did not know had been drinking heavily. Most of the air from my first breath went straight into his stomach and immediately returned with a quart or more of stomach contents, flooding his pharynx and trachea. With no suction to hand, it was too late to undo the mischief. Manual artificial respiration with the patient prone might have saved his life.—I am, etc.,

West Wickham, Kent.

IAN KENNEDY.

SIR,—I agree with Dr. T. H. Gillison (January 12, p. 124) that the old traditional methods of artificial ventilation should not be too eagerly abandoned, especially with respect to the resuscitation of drowned persons. I cannot agree, however, that the introduction of the Holger Nielsen method was a retrograde step.

A drowning man may swallow copious quantities of water before eventually losing consciousness, and this water, together with perhaps partially digested food, may very easily be regurgitated or vomited during the time of resuscitation. For this reason alone a prone position during resuscitation would in these cases be desirable. The prone position is also advantageous for the maintenance of a clear airway in cases where untrained personnel are handling the case.

Some time ago I saw a first-aider attempting artificial ventilation of a drowned person by means of a bellows