follow, and in regard to exercise the programme once again emphasized the difficulty of quantifying exercise.

Of the subjects in the documentary, the man who took no regular exercise, the islander with his 5-10-mile walk each day, and Mr. Pyke with his daily static bicycle work-out can easily be classified, but the difficulty arises with the housewife and Sir Charles Forte. Sir Charles was classed as a regular exercise taker, but the exercises specified were mainly callisthenics, press-ups, and an occasional round of golf with minimal training value. The housewife on the other hand, while doing no planned exercise, was walking to school several times a day and up and down stairs at other times, which may add up to a fair quantity of useful exercise. Therefore though the housewife was classed as a non-exerciser, treadmill testing would probably have placed her as fitter than the exerciser Sir Charles Forte.

To have any value for cardiac conditioning exercise must be vigorous enough to produce a sustained heart rate of 200/min minus the age of the subject (not 160 minus the age), the training-effect benefits beginning about five minutes after the exercise starts and continuing for as long as the exercise is performed. If the exercise is not vigorous enough to produce the target heart rate but is still aerobic it must be continued longer than five minutes—that is, the value of any exercise is a product of vigour and duration. Isometric exercises are of little value in cardiac conditioning and are dangerous in hypertensive patients since they cause a steep rise in blood pressure. Callisthenics also have little training effect though they are admirable for maintenance of mobility. The main exercises of value for cardiac conditioning are walking/jogging/running (progress on two feet), cycling, and swimming and it is the time spent on these which shows the greatest cardiac benefit. —I am, etc.,

E. Ll. Lloyd

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1 Cooper, K. H., *Aerobics*. Toronto, Bantam Press, 1968.
2 American Heart Association Committee on Exercise, *Exercise Testing and Training of Apparently Healthy Individuals; a Handbook for Physicians*. New York, A.H.A., 1972.

Doctors, Drivers, and Confidentiality

Sir,—It saddens me to read Dr. M. G. Kremer's slur (18 May, p. 383) on all of us who work in occupational medicine, implying—nay, categorically stating—that we make approaches to our colleagues without the patients' consent. Whether or not this has happened in Dr. Kremer's experience I have no means of knowing, but is this justification for such a blanket accusation of unethical conduct? I hope, on reflection, he will examine his motivation in writing this about a body of professional colleagues whose interests, like his own, are the welfare of their patients.

In 27 years in industry I have always assumed that my colleagues are honourable men and women; we are all concerned with the ethics of our profession.—I am, etc.,

R. McL. Archibald
Honorary Secretary,
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London N.W.1

Medical Antiquities

Sir,—Dr. Sydney Brandon's Personal View (18 May, p. 380) was delightful. At the Exeter Postgraduate Medical Centre a splendid collection of the paraphernalia of ancient medical practice has been assembled by Dr. Tom Fison, from which selections are continuously on exhibition.

For those who live in London reference should also be made to the permanent exhibitions in the museums of the Royal College of Surgeons. These are, besides the historic collection of Lister's armamentarium, the collection of pharmacy jars arranged and annotated by Sir Victor Negus and the comprehensive collection of the instruments of general surgery assembled and displayed by Sir Eric Riches.

Every medical society should certainly do as Dr. Brandon suggests; but they should do so in their own institutions, where such instruments can be readily seen by every type of doctor. Such might lead to the maintenance of humility.—I am, etc.,

Norman Capener

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Renal Disorders in Hepatic Failure

Sir,—In the paper by Dr. S. P. Wilkinson and others (2 February, p. 186) the urine sediment is said to be a clearly distinguishing feature between functional renal failure and acute tubular necrosis in that it is normal in the former and abnormal in the latter. This is contrary to our experience. The urine sediment of patients with functional renal failure is usually as florid in its content of white blood cells, granular and waxy casts, and tubular epithelial cell casts as that of patients with acute tubular necrosis. This is particularly true when the patient is jaundiced, a finding almost invariably present in the patient with the functional renal failure of hepatic failure. I first observed this abnormality in 1963 and my attention was then drawn to an article on renal function in obstructive jaundice published by Elsom in 1937.[1] I have since confirmed to my satisfaction this most careful and rather elegant study of the urine sediment in patients with jaundice.

Needless to say, one ought also to take into consideration the fact that the urine sediment may be negative in some cases of classical acute tubular necrosis.—I am, etc.,

G. Eknoyan

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1 Elsom, K. A., *Archives of Internal Medicine*, 1937, **60**, 1028.

Perinatal Metabolism of Diazepam

Sir,—We were interested to read the letter from Dr. J. Kanto and others (30 March, p. 641) reporting neonatal plasma and urine levels of diazepam and its metabolites after administration of the drug to the mothers during labour. Their results for diazepam and desmethyldiazepam were similar to our own (3 November, p. 251), but as well as these compounds they found a further metabolite, oxazepam, present in plasma. In almost all cases in our study hydroxylated metabolites of diazepam were not present in neonatal plasma in measureable concentrations.

The suggestion that diazepam induces hyperbilirubinaemia in the newborn needs further consideration. While it is true that diazepam metabolites are largely eliminated from the body as glucuronides so also are the metabolites of many other compounds, including drugs commonly used in obstetrics. Competitive inhibition of bilirubin conjugation is therefore also likely from other drugs, which may be administered in much higher dosage than diazepam. Studies on the effect of diazepam on neonatal serum bilirubin levels have produced conflicting evidence. Rosanelli[1] has reported an increased incidence of hyperbilirubinaemia in premature infants whose mothers had received diazepam during pregnancy as compared with a control group. However, small doses of diazepam given during labour seem to have no effect on neonatal serum bilirubin levels.[2 3] Adoni *et al.*[4] have shown that 10 or 15 mg diazepam intravenously during labour had no effect on the bilirubin-binding capacity of cord blood serum. Their study followed the work of Schiff *et al.*,[5] who showed that sodium benzoate, which is a component in the injectable diazepam formulation, was capable of displacing bilirubin from albumin. We found no evidence that diazepam was responsible for neonatal jaundice.

Finally, the adverse effects observed in the neonate cannot be explained entirely satisfactorily on the basis of plasma levels of diazepam and its metabolites. The incidence of adverse effects correlates roughly with plasma levels of these compounds in the first 48 hours of life, but in many cases plasma concentrations remain high after the adverse effects have disappeared. This reflects the limitations of plasma level studies and the present lack of knowledge of the effects of drugs on the developing neonatal brain. —We are, etc.,

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1 Rosanelli, K., *Geburtshilfe und Frauenheilkunde*, 1970, **30**, 713.
2 Tulzer, W., *Wiener klinische Wochenschrift*, 1970, 82, 304.
3 Husslein, H., in *Psychosomatic Medicine in Obstetrics and Gynaecology*, ed., N. Morris, p. 229. Basel, S. Karger, 1972.
4 Adoni, A., *et al.*, *American Journal of Obstetrics and Gynecology*, 1973, **115**, 577.
5 Schiff, D., Chan, G., and Stern, L., *Pediatrics*, 1971, **48**, 139.

Medicine in China

Sir,—I enjoyed reading Dr. A. J. Smith's article (18 May, p. 367) about his visit to China and the effect that the cultural revolution has had on medicine there. I was particularly interested in how impressed he was at the sight of young men with fractured femora being treated by tibial traction without any form of splintage, lying in bed and moving freely and painlessly only four days after injury.

Dr. Smith would have been equally impressed if he had visited St. Peter's Hospital in Chertsey, where fractured femora are