your article, were treated by radium only, and there seems little doubt that the high uterine dose necessary for a radium menopause is more likely to lead to later malignancy than the lower dose given by external irradiation.

The indications for inducing a radiation menopause are few; for a radium menopause there are none.—I am, etc.,

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- 1 Doll, R., and Smith, P. G., *British Journal of Radiology*, 1968, 41, 362.
- 2 Dickson, R. J., *British Journal of Radiology*, 1969, 42, 582.
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Nutrition and Sleep

SIR,—Further to the interesting leading article "Nutrition and Sleep" (20 May, p. 418) one may ask whether sleep is not the "natural" state and wakefulness merely a respite for the satisfaction of instinctual (and socially inculcated) drives. The hibernating animal is unlikely to chance upon dangerous predators. On this model the satisfaction of drives would lead to sleep and their continued frustration to insomnia. This would fit the observation that rats became totally insomniac if kept without food¹ and the soorific value of the male orgasm.²

It has been observed that electrical stimulation in the regions of the tegmentum, posterior hypothalamus, and septal nuclei provide an extraordinarily powerful reward.^{3,4} Quoting these observations in a broadcast talk on drug addiction, Professor W. D. M. Paton has suggested that all drives may emanate from a single area in the brain and that the powerful appeal of narcotics arises from the simultaneous satiation of all drives by its effect on this area. It is noteworthy in this connexion that narcotic addicts go "on the nod" after intravenous administration.

It may be relevant to point out that sedative drugs used for alleviating agitation and anxiety reduce activity⁵ and cause drowsiness. Could the restless anxious state be a manifestation of frustrated social drives?—I am, etc.,

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- 1 Jacobs, B. L., and McGinty, D. J., *Experimental Neurology*, 1971, 30, 212.
- 2 Boland, B. D., and Dewsbury, D. A., *Physiology and Behaviour*, 1971, 6, 145.
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Fibrinolytic Therapy and Deep Venous Thrombosis

SIR,—Venous ulceration is an intractable and unpleasant aspect of the post-phlebotic limb and its prevention is clearly an admirable aim. It has been implied¹ that the stigmata of the post-phlebotic limb naturally follow upon an attack of deep venous thrombosis, and that they may best be prevented by using fibrinolytic therapy which has been

shown to promote the most rapid dissolution of the thrombus with the greatest likelihood of preservation of valve function.

Without denying modern concepts of the pathogenesis of the post-phlebotic limb or the logic of this approach to treatment we were nonetheless interested to find that of the 30 patients currently attending our venous ulcer clinic, only six gave a past history of deep venous thrombosis and of these, four were puerperal, one postoperative, and one spontaneous. Nine had a past history of trauma and in 15 there was no past history suggestive of deep venous thrombosis—despite putting the direct question in several different ways to each patient. Halliday's experience² of 103 venous ulcer patients was similar to ours. Thus, in the experience of these two clinics there seems to be very little that could have been prevented by the use of fibrinolytic therapy.

We, therefore, feel that whatever the other merits of fibrinolytic therapy, without epidemiological evidence to support it it seems incautious to recommend its use on the grounds of prophylaxis against the severe late sequelae of deep venous thrombosis.—We are, etc.,

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- 1 Kakkar, V. U., Howe, C. T., Laws, J. W., and Flanc, C., *British Medical Journal*, 1969, 1, 810.
- 2 Negus, D., *Annals of the Royal College of Surgeons of England*, 1970, 47, 92.
- 3 Halliday, P., *British Journal of Surgery*, 1971, 58, 104.

Differences in Thyroid Cancer

SIR,—May I comment upon your leading article on thyroid cancer (13 May, p. 365). You state: "Recently a rather different thyroid cancer, the medullary carcinoma, has been described" and quote three references to papers by E. D. Williams and others in the *Journal of Clinical Pathology*, dated 1965 and 1966. Only the informed reader would appreciate that this lesion was first described by Hazard, Hawk, and Crile in 1959.¹

I have the greatest respect for Professor Williams's work in this and other fields, and this comment is in no way a criticism of him. Indeed, in his 1965 paper, to which you refer, he states clearly that medullary carcinoma was first described by Hazard and his co-workers. It is a pity, when reviewers, including the writer, so frequently remark upon the American tendency to ignore European work, not to see a leading European journal give credit where credit is due.—I am, etc.,

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- 1 Hazard, J. B., Hawk, W. A., and Crile, G., *Journal of Clinical Endocrinology*, 1959, 19, 152.

School Meals

SIR,—Professor A. E. Bender and others (13 May, p. 383) have shown that the protein and energy content of the school meals fell short of the standards set by the Department of Health and Social Security. A recent survey that we have carried out on the lunch-time eating habits of over 560 senior school children has shown that nearly all the alternatives are even worse.

We obtained information on the source, nutrient content, and cost of the midday meal of these children from a questionnaire and from analysis of foods. Forty-one per cent. of the subjects took the school meal, 31% bought food outside the school, 20% brought food from home, 4% lunched at home, and 4% ate nothing at all. Children who ate at home had a meal which compared favourably with the school meal. We were concerned, however, about those who ate no lunch, and our attention was particularly attracted to the large proportion who either bought food outside the school environment or brought snacks from home.

Energy, Protein, and Sugar Consumption (median and range)

Source of Food	Energy kcal	Protein g	Sugar g
School Meal	680 (400-1,120)	20 (8-39)	19 (13-66)
Lunch at Home	555 (260-1,160)	19 (10-47)	19 (0-130)
Bought Food	680 (90-2,980)	15 (2-76)	29 (0-157)
Brought from Home	440 (150-1,250)	11 (3-40)	12 (0-150)

In the last two categories the protein consumption was considerably lower than that available from a school meal, and our survey indicates that the adolescent school children who bought food were selecting the less nutritious snack foods composed largely of "empty calories." Professor Bender's survey pointed out that high sugar intakes are to be condemned, and ours clearly shows that it is very easy for children to develop poor eating habits and to have an excessive sugar intake through high carbohydrate snacks and beverages. An improvement in the school meal itself would, of course be justified, but from the nutritional point of view, it still offers the best value for money.—We are, etc.,

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Trapped Nerves

SIR,—Your leading article on "Trapped Nerves" (6 May, p. 307) draws attention to the features of this clinically important group of conditions. The success generally attendant on decompression of the median nerve in the carpal tunnel and ulnar nerve at the elbow, even though the features are not wholly exlicable or unassociated with other lesions in the neck and upper limb, should lead clinicians to seek other sites of nerve entrapment in the limb as a cause of symptoms and signs difficult to explain on any other basis.

The resistant tennis elbow is a problem where, despite conventional methods that normally lead to success, no lasting relief is obtained. It is our view that these patients frequently suffer from an entrapment lesion of the radial nerve or its branches (normally the posterior interosseous) as a result of pressure from reactionary oedema arising from the lateral side of the elbow joint.

We have described elsewhere¹ the results of operations on 45 elbows in 43 patients with a follow-up ranging from six months to 15 years. In well over 80% there have been good or excellent results without recurrence. The posterior interosseous nerve

has been found to be compressed particularly in pronation and extension by the fascial edge of either the supinator or extensor carpi radialis brevis. Simple division of these structures anterior to the nerve is sufficient.

Your article also mentions that the lateral popliteal nerve is vulnerable to trauma at the neck of the fibula. Although there may be controversy over "the site of entrapment in unexplained palsies" we believe there is a relationship at times when the patients benefit from the small operation of decompression of the lateral popliteal nerve where it enters the leg under a fascial arch of peroneus longus.²

While we share your view that caution should be exercised on making too wide a claim for nerve entrapment we do believe this should be looked for particularly in unresolved clinical entities since the operation is frequently small and may be regarded as a therapeutic test and attended by significant relief of disability.—We are, etc.,

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- 1 Roles, N. C., and Maudsley, R. H., *Journal of Bone and Joint Surgery*, 1972, **54B**, 499 (awaiting publication).
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Excretion of Methoxyflurane Metabolites

SIR,—There have been a number of reports since 1964 associating methoxyflurane anaesthesia with renal dysfunction, manifested by postoperative diuresis, azotemia, and oxalosis.^{1,2} At least two of the possible metabolites of methoxyflurane are known to be nephrotoxic—namely fluoride and oxalate,^{3,4} and increased excretion of both these ions has been observed following the administration of relatively large amounts of methoxyflurane.⁵ The nephrotoxic effects appear to be dose-related, but significant increases in serum and urine fluoride levels and in urine oxalate levels have been reported even at low dose levels.⁶

We have confirmed in studies on obstetric patients that appreciable increases in fluoride and oxalate excretion may occur after minimal methoxyflurane administration. Observations were made on seven pregnant women who underwent caesarian section and

who received 0.1% methoxyflurane given for 10–20 minutes as a supplement to nitrous oxide/oxygen/relaxant anaesthesia. Twenty-four hour urine samples were collected on two successive days before the operation and on day 1, 2, 3, 4, and 7 after operation.

Fluoride was measured as free fluoride ion by means of an Orion fluoride electrode (Orion Research Inc., Cambridge, Mass) and oxalate by a colorimetric method.⁷ The results (Fig.) show that the concentration of fluoride in the urine increased from 10 to 20 times on the day after operation, falling to 5 to 10 times normal on the second day after operation, and to normal levels on the third to seventh day. Oxalic acid excretion increased from two to three times in three patients, and was unchanged in the remaining four cases.

The raised concentration of fluoride in the urine corresponded to that observed in mild fluorosis, while the increased oxalate output was sufficient to raise the calcium activity product above the formation product—that is, the point above which spontaneous nucleation of calcium oxalate crystals can occur.

Since oxalate and fluoride are rapidly excreted in the urine⁸ it is probable that the urinary concentration of these ions was considerably higher in the first few hours after operation than is indicated by the 24-hour values. These raised urine levels imply raised levels in the mother's blood and possibly also in the fetus, but these aspects were not investigated.

These findings in no way contradict the statements made by Drs. M. J. Cousins and R. I. Mazze (25 March, p. 807), but do reveal that even with very low inspired concentrations of methoxyflurane, administered for very short periods, it is possible to obtain high urine levels of fluoride.

Our clinical experience has not revealed overt renal dysfunction, but, in the light of the knowledge that nephrotoxicity is related to blood (and therefore to urine) concentrations of the ion, it must be appreciated that even in these low-concentration situations it is easily possible to surpass what appear to be toxicity-related levels of fluoride. In addition one must bear in mind that in a proportion of patients critical levels of oxaluria may be obtained under the same circumstances.

Finally, these are matters of maternal inquiry, and the effects on the fetus and the neonate of these metabolites of methoxy-

flurane have not as yet been assessed.—We are, etc.,

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- 1 Paddock, R. B., Parker, J. W., and Guadagni, N. P., *Anesthesiology*, 1964, **25**, 707.
- 2 Aufderheide, A. C., *Archives of Pathology*, 1971, **92**, 162.
- 3 Mazze, R. I., Trudell, J. R., and Cousins, M. J., *Anesthesiology*, 1971, **35**, 247.
- 4 Frascino, J. A., O'Flaherty, J., Olmo, C., and Rivera, S., *Journal of Laboratory and Clinical Medicine*, 1972, **79**, 192.
- 5 Taves, D. R., Fry, B. W., Freeman, R. B., and Gillies, A. J., *Journal of the American Medical Association*, 1970, **214**, 91.
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- 8 Zaremski, P. M., and Hodgkinson, A., *Clinica*

New Thoughts on Essential Hypertension

SIR,—We feel that your leading article (15 April, p. 121) on the relationship between vascular disease and high arterial pressure creates a rather misleading impression. It states uncritically that renin can cause vascular damage and quotes in support of this statement a study¹ which is not about vascular damage at all, but an account of the relationship between renin, angiotensin, and aldosterone secretion in experimental hypertension.

The administration of renin or renal extracts to experimental animals may indeed result in vascular damage, particularly if the animals have been previously nephrectomized. The vessels affected are the arterioles and the lesions are similar to those seen in acute experimental hypertension.² Byrom³ and Giese,⁴ who have performed careful studies in this field, support the view that the vascular damage seen in this experimental situation is a function of the rise in arterial pressure.

In our work at the Radcliffe Infirmary⁵ we have shown that abnormal permeability of arterioles resulting from angiotensin, noradrenaline, and renal extract administration is a result of vascular damage caused by an intolerable rise in arterial pressure acting on the mechanically weak muscular arterioles. We do not feel that there is convincing evidence that renin causes vascular damage or altered permeability by some direct action on the vessel wall.

Brunner *et al.*,⁶ whom you quote in your leading article, used the incidence of myocardial infarction and strokes in hypertensive patients to support their hypothesis that renin causes vascular damage by an effect independent of arterial pressure. Their thesis that renin may be an aetiological factor in the causation of myocardial infarction and strokes rests solely on the evidence of their own study. This may be criticized on the following grounds. (1) One diastolic blood pressure with standard deviations is given for each group. Arterial pressure is variable and single pressure readings are notoriously misleading. (2) No mention is made of systolic blood pressure. How did the three groups differ in respect of this value? (3) No mention is made of the possibility that racial or social factors may have influenced the incidence of vascular disease.

Twenty-four hour urine fluoride concentration and oxalic acid excretion in seven women undergoing caesarian section with light methoxyflurane anaesthesia. Arrow indicates operation. The dotted lines denote upper limits of normal.