intervertebral joint space widens. Hence intermittent or pulsating traction acts merely on muscles, evoking the stretch reflex but not the suction that determines the effect on the protrusion.

The absolute contraindication to traction is acute lumbago.[2] Though pain and signs cease while the pull is maintained, the slightest diminution in tension causes such agonising twinges that it takes several hours to get the patient off the couch, and some aggravation lasts several days. I have also emphasised in succeeding editions of my book that traction is valueless (though not harmful, as in acute lumbago) in sciatica with neurological deficit. Impaired conduction shows that the bulge has become larger than the aperture whence it emerged; reduction by manipulation or traction is now impossible. This view was corroborated by a controlled trial in Norway.[3] As for the "nipped synovial fringe" dear to those who attribute back troubles to disorders of the facet joints, the plain fact is that synovial membrane is devoid of nerves and pain cannot arise from it.

By all means let us have trials, as Dr B O Scott suggests (31 January, p 284), but let them be designed to establish new facts or to investigate findings as yet uncorroborated.

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[1] Cyriax, J H, *British Medical Journal*, 1950, **2**, 1436.
[2] Cyriax, J H, *Textbook of Orthopaedic Medicine*, vol 1, p 450. London, Baillière Tindall, 1954.
[3] Weber, H, *Journal of the Oslo City Hospitals*, 1973, **23**, 167.

Cancer statistics

SIR,—May I reply to some of the criticisms made by Professor M R Alderson and by Dr L J Kinlen and Professor M P Vessey (31 January, p 280) concerning my recent paper (10 January, p 86).

Professor Alderson[1] has discussed some of the problems of medical information systems, but many difficulties still remain. Any alteration in a national registration system, whether it be for cancer or motor vehicle licences, involves a great deal of work which can be justified only if the result promises to be worth while. Collection of detailed data from original case notes is not impossible and is achieved at some large hospitals such as the Royal Marsden Hospital and Institute of Cancer Research, London, and the Christie Hospital and Holt Radium Institute, Manchester. The difficulties are then those of data abstraction, storage, and retrieval. Regional registries often lack staff to perform any but the most immediate tasks; they do not lack enthusiasm.

Both Professor Alderson and Dr Kinlen and Professor Vessey imply that I had either overlooked or minimised the value of epidemiological studies compared with that of survival rate investigations. I can only reply that perhaps a better title for my paper would have been "Cancer *treatment* statistics," since it was with this topic only that I was concerned in that communication. Indeed, I have recently used registry data for an epidemiological study of incident age distribution for cancer of the cervix in England and Wales, 1945-69[2], and I am also well aware of the excellent epidemiological work which is produced by Professor Doll's departments in Oxford.

In reply to Mr F E Whitehead (24 January, p 223) concerning SH3 returns I would like to make three points. (1) Consultation statistics (part 2, line 18) and treatment statistics (part 3, line E) are given for both new outpatients (that is, numbers of persons) *and* outpatient attendances (that is, numbers of visits). This makes a total of four radiotherapy *outpatient* statistics on each SH3 return, in addition to any *inpatient* statistics. (2) My communication referred only to numbers of new outpatients, whereas Mr Whitehead's comments were mainly based on information relevant to outpatient *attendances*. I would agree that attendance figures in parts 2 and 3 will almost inevitably differ, but this is not the point in question. Although the first attendance of a cancer outpatient in a radiotherapy department may be for treatment, the need having been confirmed elsewhere, by the nature of most treatment schedules the patient will be attending for treatment over a period of weeks, and consultation with the medical staff of the radiotherapy department is normally bound to occur. In this case the patient will count once as a new outpatient in part 2 of SH3, since he will receive a series of consultation attendances, and will also count once as a new outpatient in part 3 of SH3, because he is attending a number of times for treatment. (3) Mr Whitehead refers to both radiology and radiotherapy departments, although only radiotherapy statistics are under discussion.

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[1] Alderson, M R, in *Central Government Review Health Statistics, Vol 2, Review of UK Statistical Sources*, ed W F Maunder. London, Heinemann, 1974.
[2] Mould, R F, *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1974, **81**, 644.

Changing patterns of cancer

SIR,—Perhaps the most interesting observation in the changing pattern of bronchial carcinoma (leading article, 7 February, p 301) is a fall in the incidence of the disease in the younger age groups in both sexes. The rates started to fall in men up to the age of 49 in 1950 and it fell steadily between 1969 and 1972 in women under the age of 45.[1]

Is it certain that this fall is entirely due to changing smoking habits? The men reached their present level of consumption in 1940, and their annual consumption per head over the age of 15 has remained reasonably steady since then at just under 4000 cigarettes per year; the consumption amongst the women is still rising and reached 2560 by the end of 1972.[2] If a comparison is made between the average consumption among women who reached 45 ten years ago and those now reaching that age it can be shown that the latter had substantially higher cigarette consumption per head than that of their elder sisters, the difference being in the order of 3:2, but they have a falling incidence of bronchial carcinoma. Surely there must be another factor at work.

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[1] Office of Population Censuses and Surveys, *Registrar General's Statistical Review of England and Wales*, 1972. London, HMSO, 1974.
[2] Todd, G F, *Changes in Smoking Habits in the UK*, Tobacco Research Council Occasional Paper no 1. London, TRC, 1975.

Nucleus hospitals

SIR,—Your leading article (31 January, p 245) criticises the concept of nucleus hospitals, suggesting that community hospitals are going to be unable to act as supporting units. You cannot seriously suggest that "all patients admitted on medical grounds to hospital nowadays require the kind of support from laboratory and technical services that can best be provided in one large unit rather than half a dozen small ones." I presume that the urban counterpart of those patients cared for in existing rural community hospitals are being admitted to the medical wards of urban district general hospitals. Do they really need such sophisticated technological support? To suggest this suggests that a considerable number of patients are receiving second-class hospital care.

I agree that effective community hospitals need rehabilitation services and good domiciliary community care. Savings on large district general hospitals that may now not be built should go some way towards providing these.

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Psychiatric aspects of shoplifting

SIR,—I am prompted by Dr J Todd's communication "Pharmacogenic shoplifting?" (17 January, p 150) to advance some impressions regarding shoplifting.

The practitioner, perhaps helpfully prompted by and widely seeking information from relatives or other workers, can usefully bear in mind possible contributory or explanatory factors, including the following: (1) The pharmacogenic factors mentioned, adding also the "hang-over" effect of night sedation (and indeed the disorganising effect of insomnia itself), the possible side effects of antiepileptic, steroid, or antihistamine therapy, and the confused phases during electric convulsion therapy. (2) Schizophrenic patients—some florid but others offending while being vague or deluded. (3) Depressive states, in which some endogenous cases may well reflect a deliberate desire to be caught—that is, a suicidal equivalent or appeal for help—and other reactive cases with the inattentive patient preoccupied with problems or distress—for example, cases of recent bereavement. (4) Anxiety states with significantly impaired concentration as one aspect of reduced ability to cope normally. (5) Mentally handicapped individuals in whom the lure of glitter and possession is greater than their sadly ill-developed sense of right and wrong. (6) Organic cases with distraction through physical illness—for example, orthopaedic, neurological, gynaecological, or endocrine, with discomfort and diminished physical skill, or intracranial lesions, head injury, or most frequently, a dementia or pseudo-dementia with genuine confusion and impairment of memory. (7) An abnormal distracting influence—for example, trying to shop and cope with mentally handicapped or hyperkinetic youngsters. (8) The stress of crowded, bustling, noisy stores compelling the sensitive or claustrophobic patient to "escape," forgetting to pay. (9) Often the combination of several of the above factors which, when considered together, could reasonably constitute "a lack of intent." And finally (10)

genuine absent-mindedness which can beset any of us under pressure.

Shoppers are well advised not to take bags or commodious purses into stores, but rather easily-carried expansible net or plastic carriers to be loaded from baskets at the check-out point.

Thus in shoplifting cases and sometimes those where medical issues might reasonably be involved—for example, sexual offences, non-accidental injury to children, baby-stealing, amnesic syndromes, automatism, alcoholism, compensation cases, etc, a deal can often be done, particularly where relevant medical notes antedating the legal issue are available. One can attempt to spare the individual and the family concerned often additional, unnecessary, and unjustifiable trauma, as this might have devastating and potentially avoidable effects upon the emotional, marital, social, and possibly employment conditions and future stability of those concerned.

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Epilepsy

SIR,—I am writing in support of the letter from Dr D P Addy (22 November, p 460) which contained several meritorious and significant criticisms relative to Dr F B Gibberd's article on the treatment of epilepsy (1 November, p 270). I am in complete agreement that Dr Gibberd's presentation of the minor motor epilepsies and their treatment is less than satisfactory and am gratified to note that Dr Addy recommends the ketogenic diet as a therapeutic regimen for this disorder. While Dr Addy limits its usage to "resistant and severe cases," we employ the ketogenic diet regimen as our therapeutic instrument of first choice for the control of minor motor seizures.

Minor motor attacks are exceedingly refractory to the available anticonvulsant drugs, which, in our experience, have been essentially unrewarding. We have not obtained beneficial results with the standard antiepileptic agents —that is, ethosuximide, methsuximide, phenobarbitone, phenytoin, primidone, and troxidone—nor with other drugs recommended by some physicians—for example, acetazolamide, chlortetracycline, and pyridoxine. In addition, our experience with the use of the benzodiazepines (clonazepam, diazepam, nitrazepam) in the treatment of approximately 500 children with minor motor seizures indicates that they are of limited value in most cases. We achieved prolonged seizure control with these medications in only rare instances.

Our 40 years' experience with the use of the ketogenic diet regimen (4:1) in the treatment of minor motor seizures has consistently demonstrated it to be the most efficacious form of therapy for this type of epilepsy.[1-3] During this period we have studied and treated approximately 1500 children with minor motor epilepsy. We prescribed the ketogenic diet regimen to 915 of these patients with the following results: seizures were controlled in 485 (53%); there was marked improvement in 238 (26%); and 192 (21%) did not respond to this therapy. Anticonvulsant medication had been given adequate trial in 732 of this group and 183 had received no previous treatment.

In addition to its anticonvulsant properties, the ketogenic diet produces a marked tranquillising effect in some children, does not impair mental acuity as antiepileptic drugs frequently do, and is singularly free of toxicity Details relative to our method of prescribing and managing the ketogenic diet regimen are presented in a recent publication.[3]

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[1] Livingstone, S, *The Diagnosis and Treatment of Convulsive Disorders in Infants and Children*. Springfield, Thomas, 1954.
[2] Livingstone, S, in *Advances in Pediatrics*, ed S Z Leoine. Chicago, Year Book Publishers, 1958.
[3] Livingston, S, *Comprehensive Management of Epilepsy in Infancy, Childhood and Adolescence*. Springfield, Thomas, 1972.

Cell-mediated immunity in patients with cystic fibrosis

SIR,—In their paper on this subject (17 January, p 120), Mr A R Gibbons and his colleagues make the following statement: "In those patients with cystic fibrosis (CF) who responded well to prednisolone treatment their initially depressed migration index (MI) returned to normal, which suggests that impaired cell-mediated immunity plays a part in the pathogenesis of CF."

A low MI signifies sensitivity to an antigen. The expression of such sensitivity can be achieved only by functionally active immunocompetent cells. It is misleading to suggest that such a migration index represents an impairment of cell-mediated immunity (CMI).

It is also invalid to suggest that steroids could reverse an impaired state of CMI. Rather the reverse is true, that steroids might cause impairment of CMI.

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**We sent a copy of this letter to Mr Gibbons and his colleagues, whose reply is printed below.—ED, *BMJ*.

SIR,—We agree with the comment of Dr Feighery and Mr Woods that a low migration index signifies sensitivity to an antigen which can be achieved only by functionally active immunocompetent cells. However, we must emphasise that the functions of active immunocompetent cells may or may not be impaired, depending upon the antigens to which such cells are sensitised. Since comparative cells from age-matched controls and from blood donors did not show such sensitisation to those antigens to which the CF cells were sensitised then there is no doubt that the normal function of these immunocompetent cells in the patients with CF is indeed impaired.

When one considers that steroids are known immunosuppressants it is certainly not surprising that treatment of the CF patients with prednisolone caused a decreased sensitivity of these sensitised CF cells to the antigens. Indeed, therapeutic concentrations of steroids were able to reduce the ability of sensitised spleen cells and of lymph-node cells to destroy target cells in vitro.[1] Apart from this inhibition of sensitised cells by steroids, 90% of sensitised lymphocytes were killed when prednisolone 1 mg/l was present during the sensitisation phase.[2] In addition it was observed in man that if cortisol or prednisolone was given two hours before abrading the skin, then there occurred a marked reduction of emigration of both mononuclear cells and polymorphs into the area, thus inhibiting the mobilisation of macrophages.[3] We believe that the situation with regard to steroid therapy and inhibition of migration of leucocytes from CF patients is similar.

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[1] Rosenau, W, and Moon, M D, *Journal of Immunology*, 1962, **89**, 422.
[2] Cohen, I R, Stauy, L, and Feldman, M, *Journal of Experimental Medicine*, 1970, **132**, 1055.
[3] Boggs, D R, *et al*, *American Journal of Pathology*, 1964, **44**, 763.

Diagnosis of invasive aspergillosis

SIR,—Opportunist fungal infections in recipients of organ transplants, open heart surgery patients, and others[1-10] are becoming an increasing problem. Aspergillosis is particularly troublesome because the infecting fungus is seldom cultured, the disease progresses very rapidly, and consequently diagnosis is most commonly made post mortem.[2 5-8] Where treatment (amphotericin B) is given it is often unsuccessful, although there is evidence that early diagnosis would improve its effectiveness.[3]

Detection of fungal antigens or metabolites in patients' serum would aid the early diagnosis of infection, and monitoring serum antigen or metabolite levels might also assist in determining the effectiveness or required duration of treatment. Cryptococcal antigen detection is a routine test for the diagnosis of cryptococcosis, and detection of candida metabolites in serum shows promise as a means of rapidly diagnosing systemic candidiasis.[7]

We are currently looking for circulating aspergillus antigens and metabolites in the sera of infected animals which may find application in the improved diagnosis of systemic human infections. Because of the poor live diagnosis rate and, in absolute terms, the rarity of the disease in humans the difficulty we face is obtaining sera from known positive cases of invasive aspergillosis. If any readers have any such sera or would be willing to co-operate in storing sera from possible cases until diagnosis were made we would very much like to hear from them.

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[1] *British Medical Journal*, 1975, **3**, 264.
[2] Bach, M C, *et al*, *Lancet*, 1975, **1**, 180.
[3] Burton, J R, *et al*, *Annals of Internal Medicine*, 1972, **77**, 383.
[4] Gallis, H A, *et al*, *Archives of Internal Medicine*, 1975, **135**, 1163.
[5] Herbertson, B M, Royal College of Pathologists symposium on systemic fungal infections, 1974 (unpublished).
[6] Kammer, R B, and Utz, J P, *American Journal of Medicine*, 1974, **56**, 506.
[7] Murray, H W, *et al*, *Johns Hopkins Medical Journal*, 1975, **137**, 235.
[8] Rubenstein, E, *et al*, *Medicine*, 1975, **54**, 331.
[9] Turner, E, *et al*, *Chest*, 1975, **67**, 262.
[10] Zazgornik, *et al*, *Deutsche medizinische Wochenschrift*, 1975, **100**, 2082.
[11] Miller, G G, *et al*, *Journal of Clinical Investigation*, 1974, **54**, 1235.