AEA Technology chosen to be as close as possible to those identified in the case-control study as being at high risk of prostatic cancer. It shows that, while increased mortality from prostatic cancer is detectable in subgroups related to the case-control study, the all cause mortality and all neoplasm mortality in these groups are no different from those in the generality of employees, and most are significantly lower than the national average. The results of the case-control study cannot, therefore, be interpreted as showing an increased occupational risk overall. Rather it shows a significantly increased risk for one disease which is not sufficient to detract from a considerable "healthy worker" effect when all mortality is considered.

Secondly, we have examined the dosimetric aspects of exposure to the radionuclides associated with an increased risk of prostatic cancer in the case-control study, especially zinc-65, the putative carcinogen that attracts most speculation from Rooney and colleagues. When account is taken of the enhanced concentration of zinc-65 in the prostate, the increased radiobiological effectiveness of Auger electrons, the incorporation of these radionuclides into DNA, and practical limits on employees' intake of these radionuclides, radiation doses to the prostate from conceivable levels of contamination with zinc-65 are too low by a factor of about 50—and probably by more than 1000—to account for the observed excess of cases of prostatic cancer, assuming internationally accepted models of radiation risk. This implies that the radionuclides are acting as a surrogate for some other agent. Details of our dosimetric calculations will be published elsewhere.

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Repetitive strain injury

Examine working practices

EDITOR,—The subtitle of Peter Brooks's editorial on repetitive strain injury ("Does not exist as a separate medical condition"), if not the editorial itself, risks seriously misleading the medical profession to the detriment of people doing manual work.¹ The subtitle will reinforce the prejudices of those doctors who believe that all people who attribute their ill health to their work are malingerers or potential litigants. The editorial does, however, hint at a more positive approach to preventing the panoply of muscular aches and pains that occur in working people and that, if not managed appropriately, may lead to anxiety and more chronic disablement. This approach stems from listening to the patient's views on causation and investigating the relevant work practices.

Regrettably, investigation of work practices, which is essential, is beyond the competence of most doctors, who are unfamiliar with the methods taught to occupational physicians. It is therefore quite usual for workers such as musicians, laundry assistants, or hospital cleaners to develop forearm or wrist pain that is exacerbated by their continuing the tasks; to be given inappropriate treatment by a doctor or a series of doctors; and to receive conflicting prognoses from doctors, workmates, and union officials without anyone looking at the job and giving advice on its modification.

Ultimately the patients will meet an orthopaedic surgeon who may well believe that the syndrome "does not exist as a separate medical condition" and alienation from the medical profession or even litigation follows.

The doctor has an important role in preventing such problems arising, and the key to this is an examination of the work done. When doctors suspect muscular syndromes related to work they should consider consulting a local occupational physician or employment medical adviser, who is probably experienced in managing such conditions. These conditions do exist and are usually quite easily managed if caught early. Moreover, the presence of symptoms in one patient is often a pointer to similar problems in several other people from the same workplace and leads to opportunities for inexpensive modifications that in turn result in reduced sickness absence and improved morale in the organisation. Doctors can have a positive role when dealing with such conditions.

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- 1 Brooks P. Repetitive strain injury. *BMJ* 1993;307:1298. (20 November.)

A real occupational illness . . .

EDITOR,—Though Peter Brooks is well known in Australia for his non-conformist views concerning repetitive strain injury (a term long discarded among medical practitioners in Australia in favour of the occupational overuse syndrome), this seems a poor reason for asking him to write an editorial in the *BMJ*.¹ I would have thought that the few, one sided references in his editorial would have alerted the editor to the possibility of it not being a useful contribution. A more balanced approach is expected of an editorial.

Although Judge Prosser's views made headlines in Australia, they did so because they were deemed bizarre. Most people who apply for compensation for the condition succeed in Australia and, I assume, in Britain. Those who fail are generally those whose complaints are not believed and those who sue for negligence on the part of the employer. This does not end the debate, but it indicates how one sided Brooks's editorial is.

The absence of abnormal histopathological findings reflects the fact that almost no biopsies have been done in this condition; when they have been a few authors have found abnormalities.² Moreover, histopathological abnormalities and disease are not synonymous—a fact strikingly illustrated in the sudden infant death syndrome.

Brooks is a generation younger than me. That is why he is unaware of the similar epidemic which developed in many of the labour intensive electronics component industries in the 1960s. There are peaks of occupational illness and accidents accompanying many innovations. These abate not because of brain washing but because workers and employers modify the workplace and teach their employees how to avoid the problems. This applies as much to asbestos mining as to typing.

The only factor that all patients have in common, whether they be typists, steel workers, or self employed musicians, is long periods of uninterrupted muscle contraction. That is why the muscles most affected in typists are the extensors of the wrist, which "fix" the wrist during typing, not the finger flexors. Hence isometric contraction myopathy might be a better name for the condition. It is certainly an improvement on the meaningless term "regional pain syndrome."

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. . . that is misunderstood and misdiagnosed

EDITOR,—Peter Brooks's editorial on repetitive strain injury¹ promotes the contemporary Australian view of this condition, which is based on the apparent reduction of the "epidemic" of the condition after the denial of its existence. Arguments have been propounded, largely on semantic grounds, that an injury does not result from repetitive use of the arm. Instead it is conceded that "pain occurs in the workplace" and "endemic work related musculoskeletal syndromes remain," yet the problem is considered to be a "complex psychosocial phenomenon."

Such obfuscation is a disservice to the medical profession. Judge Prosser's judgment that repetitive strain injury does not exist as a separate medical condition seems to have been based on the confusing medical evidence presented to him in court. Any thoughtful health service professional would surely accept that overuse conditions result from excessive musculoskeletal activity to which the body has not made a satisfactory adaptive response. "Overuse injuries" are seen commonly in sports medicine and regularly in the workplace. To suppress the recognition of the condition and therefore its assessment and appropriate management, and thereby to deny its sufferers reasonable means of redress, represents medical omnipotence based largely on diagnostic incompetence.

The answer lies in improving skill in musculoskeletal medicine, which will lead to greater understanding. Unless it is recognised that conventional techniques of orthopaedic examination can be inadequate in providing a satisfactory diagnosis, procrastination will prevail. Until more clinicians who are consulted by patients with musculoskeletal problems are capable of assessing the cervical spine and arm (as are those with osteopathic training) and can thereby detect the more subtle signs the medical profession in general will continue to be bemused by the plethora of "unfathomable syndromes," (Has the time not come for the term syndrome to be rejected in favour of neurophysiological labels?)

Of course there are often psychosocial and socioeconomic overtones. What disease or injury is ever considered in isolation? Employers should continue to be made aware of their responsibilities, particularly with regard to providing sound ergonomic advice. If legislation exists to promote such good work practice why should appropriate enforcement procedures be criticised? The argument regarding nomenclature (repetitive strain injury; work related upper limb disorder) should be subservient to an emphasis on specialist medical assessment procedures.

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Pain linked to repetitive work

EDITOR,—Peter Brooks's editorial correctly concludes that repetitive strain injury is a pain syndrome rather than a defined injury.¹ Having seen several patients with alleged repetitive strain injury for medicolegal reports, I support this position. There is, however, a relation between symptoms in this condition and degree of repetitive work. Those carrying out continuous work of

the hands or arms frequently complain of pain, numbness, swelling, and weakness. These symptoms are usually transient and most subjects who develop these symptoms do not seek assistance from doctors. More important, Higgs and colleagues have shown that workers who would change repetitive jobs involving the arms and hands were much less likely to complain of symptoms than those who carried out the same task every day.²

Lucire has proposed a model to explain how symptoms of this nature can persuade the victim that he or she has a compensable injury.³ If the sufferer believes that repetitive movement can injure the hands or arms; if this belief is reinforced from fellow workers, the press and others; if there is a conflict at work; and if a medical certificate is issued indicating work related injury, these symptoms are likely to persist. Although it is known that those who litigate have poorer response to treatment,⁴ this is in part due to inactivity of the affected limbs after stopping work because of the conviction that movement will cause further injury. Inactivity leads to weakness and atrophy of muscles and bone decalcification as well as to depression and anxiety. The delay in actions of this sort coming before the court further maintains symptoms and disability.

The lack of evidence of neurological injury and the association with work persuaded Gowers over 100 years ago to describe the symptoms and signs arising in repetitive strain injury as one of the occupational neuroses.⁵ Gowers's description would clearly include the symptoms that occur in repetitive strain injury today: "a group of maladies in which certain symptoms are excited by the attempt to perform some often-repeated muscular action, commonly one that is involved in the occupation of the sufferer." Plus ça change.

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Musicians helped by team approach

EDITOR,—Peter Brooks's editorial on the recent decision in a British court that repetitive strain injury does not exist as a separate medical condition is important.¹ Musicians are prone to aches and pains that are specific to their profession; they may also suffer from the health problems to which everyone is prone. If these problems are not recognised and tackled quickly the resultant inability to work for even quite short periods may lead to the loss of a career. The epidemic of repetitive strain injury in Australia destroyed the career of many fine professional musicians, but enforced inactivity and the use of prolonged splinting were almost certainly responsible for the effects seen.

A recent audit of over 200 musicians with upper limb pain attending the performing arts clinic at the Royal Free Hospital showed that half of them had clear cut orthopaedic or rheumatological problems. In the other half, who had no physical signs other than vague generalised muscle tenderness, a diagnosis of a regional pain syndrome was held to be appropriate.

There is no evidence that repetitive movements are causative.² On the other hand, data indicate that increased tension in the affected muscles may be an important causative factor.³ Postural

problems therefore need to be corrected by physiotherapists or teachers of the Alexander technique; technical problems should be corrected by skilled teachers of the instrument; and emotional problems and problems related to stress need to be alleviated with help from trained counsellors or psychologists. For many patients simple relaxation techniques are sufficient. β Blockers have a role in some cases if emotional stress or performance anxiety results in increased muscle tension. Antidepressants should be used if there is an element of depression. In our view, a multidisciplinary approach is essential.

Fortunately, repetitive strain injury has not affected musicians in Britain to anything like the extent that it affected musicians in Australia. There are several possible reasons for this. Firstly, the importance of a multidisciplinary approach has always been emphasised at meetings organised by the British Association for Performing Arts Medicine. Secondly, an important initiative was launched by the British Performing Arts Medicine Trust four years ago, supported by the Musicians' Union and the Musicians' Charities. A scheme was set up whereby some 30 primary care doctors trained in performing arts medicine were appointed as honorary medical advisers to all the main professional orchestras in Britain.⁴ These advisers now deal with the health problems of orchestral musicians quickly and efficiently and adopt the multidisciplinary approach to regional pain syndromes outlined above. Maybe other professional groups could benefit from this "music lesson."

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Alcohol and heart disease

Drinking advice inconsistent and unscientific

EDITOR,—John Kemm claims that advice about drinking "to individual members of the public has been fairly consistent over the past decade."¹ This is surprising.

In 1979 a special committee of the Royal College of Psychiatrists stated that the absolute upper weekly limit was about 56 units of alcohol.² In 1981, however, the Department of Health and Social Security stated that these weekly limits "were in fact quite high" but declined to give precise advice because this was "not necessarily appropriate" in view of variations in both drinkers and drinking circumstances.³

Thus at the beginning of the decade no good medical guidance was available and so various bodies framed their own. For instance, in 1984 the Health Education Council stated that 21-36 units a week for men, and 14-24 units a week for women, was unlikely to damage health.⁴ At around the same time the Scottish Health Education Group advised that 35 and 20 units a week were the maximum upper limits for men and women respectively.⁵

In 1986-7 the Royal Colleges of Psychiatrists, General Practitioners, and Physicians all issued guidelines on safe consumption. Although some confusion was caused by the use of the words "levels" and "limits" at various places in the text, they seemed to be fixing 21 units a week for men and 14 for women as sensible levels/limits, but they did not offer scientific justification for them.

Better Living, Better Life was published under the auspices of the Department of Health and the Royal College of General Practitioners last year.⁶ It gives inconsistent advice but at one point defines sensible drinking as about two units a day because at this level there is a "possible beneficial effect on the heart." But it then muddles this advice by saying that these effects are outweighed by the risk of other diseases and events such as child abuse and divorce.

I therefore suggest that the advice has been far from consistent. The only consistency is that it has become progressively more conservative, with no supporting scientific justification. Indeed, what has been consistent over the past decade is accumulating evidence that about 28 units a week for men and probably somewhat less for women not only is unlikely to be harmful but may be beneficial to health.

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- 6 Department of Health. *Better living, better life*. London: Knowledge House, 1993.

Current weekly limits too mean

EDITOR,—John Kemm uses careful selection from the evidence to defend the current recommendations on weekly limits of alcohol consumption.¹ Several studies have shown an inverse association rather than a "flat curve" between the risks of various cardiovascular diseases (morbidity and mortality) and alcohol consumption.² Whether men who drink about seven units a week have rates of heart disease close to the lowest depends on the studies chosen and the grouping of consumption.

In the British regional heart study the mortality from cardiovascular disease among moderate consumers (16-42 units a week) was three quarters that among those drinking 1-15 units a week.³ When a quadratic risk function over the range of consumption was assumed, the lowest risk of death from cardiovascular disease was estimated to be associated with consumption of 30 units a week, with the risk corresponding to consumption of seven units a week being 40% greater than the minimum. The Busselton study,⁴ which was based on small numbers and did not achieve significance, found that the lowest mortality from cardiovascular heart disease occurred in the group with the highest alcohol consumption; the minimum risk was estimated to occur at a consumption of 32 units a week, and the risk corresponding to consumption of seven units a week was 27% higher.⁴

Observed mortality from cardiovascular heart disease as a function of alcohol consumption in the American Cancer Society's study was irregular: this is one of the few studies that seems not to conflict with Kemm's assertion.⁵ The estimated minimum risk occurred at a consumption of 32 units a week, with the risk corresponding to consumption of seven units a week being only 12% greater.

All cause mortality shows more variation among studies, as expected,⁶ but analysis of two major British studies shows the minimum all cause mortality occurring at a consumption of about 26 units a week,^{3,7} with a 95% confidence interval (Fieller's theorem) of 20 to 32 units a week (J C Duffy, 19th annual alcohol epidemiology symposium, Krakow, 1993).

Alcohol contributes to problems of family and social life, public order, and employment, but such problems seem to be associated with a higher