returning to paid work was a function of prior level of mental ill health. Fourthly, other research in this unit shows that in areas of higher unemployment compared with those of lower unemployment unemployed people report feeling less stigmatised by the lack of a job, having more social contact with other unemployed people, and feeling less under pressure from other people to get a job.

Differential selection of unfit people in different areas is therefore unlikely to account for our findings.

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Fatal bronchospasm after topical lignocaine before bronchoscopy

SIR,—I would like to suggest an alternative cause for the demise of the patient described by Drs S P Ruffles and J G Ayres (27 June, p 1658).

Though bronchospasm is, of course, a well recognised effect of an allergic reaction, sensitivity to lignocaine is exceedingly rare, a great deal rarer than pneumothorax in an emphysematous patient. It is well known in anaesthetic practice that any patient suspected of developing bronchospasm should have a pneumothorax excluded. The clinical signs, particularly with regard to wheezing, are very similar.

In the case described by Drs Ruffles and Ayres difficulty was encountered in ventilating the patient after cardiac arrest, indicating a physical impediment to the ventilation rather than a physiological one. It would be interesting to know if bronchospasm can persist for 20 minutes in the presence of a cardiac arrest. We are not told if necropsy was performed in such a way as to confirm or eliminate the presence of a tension pneumothorax, but if this was not suspected it was probably not.

The patient certainly developed a pneumothorax, and we are not told why the authors consider it unlikely to have been the initiating factor. Fractured ribs from the resuscitation should have been shown at necropsy. We are not told whether the bronchoscope had been inserted before the cardiac arrest or whether its insertion, or the insufflation of the lignocaine, was associated with a bout of coughing.

While it is impossible to exclude a sensitivity reaction, it is also impossible to confirm it in this case in the absence of any immunological evidence of allergy, particularly when a pneumothorax that was discovered at necropsy cannot be eliminated as the primary cause of death.

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AUTHOR'S REPLY.—That the cause of death in our patient might have been a tension pneumothorax is possible, but, on balance, we believe that the lignocaine was more likely to have been responsible.

Ventilation of patients with severe asthma after a cardiorespiratory arrest is often very difficult even when an adequate cardiac output is maintained, and we believe that severe airway narrowing will persist in the presence of cardiorespiratory arrest during cardiopulmonary resuscitation. Though not mentioned in our report, fractured ribs were found at necropsy, and we had attributed the pneumothorax to these typical injuries after cardiopulmonary resuscitation. The episode of dyspnoea started two minutes after the lignocaine spray was administered, which is certainly too soon after delivery of the local anaesthetic to con-

plate passage of the bronchoscope, which had not been passed at the time of arrest. The patient did, however, cough a little after the lignocaine, something that is often seen. As far as the immunological evidence of allergy is concerned, it is difficult to know what Dr Scott would require for this at necropsy. In any case, we were careful to use the word sensitivity rather than allergy. We still believe that the most likely cause of this man's death was sensitivity to lignocaine, but, clearly, as with all single case reports, an open mind should be kept and I am sure that readers will draw their own conclusions.

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Preventing insulin dependent diabetes mellitus: the environmental challenge

SIR,—Diabetes Epidemiology Research International (22 August, p 479) emphasise the importance of environmental factors in the aetiology of insulin dependent diabetes with techniques developed for cancer epidemiology.

The possibility of an association between viral illness and insulin dependent diabetes has been entertained for many years. Epidemiologically, perhaps the most interesting recent development has been a series of reports, from both Europe¹⁻⁴ and the United States,⁵ of a substantial secular increase in the incidence of insulin dependent diabetes in the past two decades. Assuming that these increases are real (and their consistency suggests that they may be), however, it seems necessary to identify an agent that has experienced important changes in its epidemiology in children during this time if viruses are to be held responsible and the agent or agents identified.

The greatest attention has been focused on the enteroviruses,⁶ but there is no strong evidence of such changes in members of this group. On the other hand, the epidemiology of some other common infections of childhood—measles, mumps, and rubella, in particular—has been profoundly influenced by immunisation programmes in Europe and North America during the past 20 years. Both mumps and rubella have also been implicated in the aetiology of insulin dependent diabetes, although the evidence remains circumstantial.^{6,7} There is also the possibility that widespread immunisation has, coincidentally, changed the epidemiology of other, as yet unidentified or unsuspected, infectious agents.

In considering a mechanism whereby a reduction in the incidence of a disease, through immunisation, might result in an increase in the total incidence of a morbid outcome, it must be remembered that there is often an upwards shift in the average age of onset of infectious diseases in populations in which immunisation has been widespread but incomplete. It is feasible in such circumstances that infection at a later age may carry an increased risk of subsequent B cell destruction, sufficient to result in a net increase in the incidence of insulin dependent diabetes.⁵ Given the rarity of the disease in most populations, a modest increase in the absolute number of cases might represent a substantial increase in incidence.

The concept of an age related increase in the frequency of pancreatic complications is also congruent with the early ubiquity of viral infections and the unexplained rarity of insulin dependent diabetes in many developing countries in the tropics. Seen in this way, the occurrence of insulin dependent diabetes in developed societies might be considered to be the result of evolutionarily "unnatural" developments in public health. Low expressivity under traditional cir-

cumstances would also help to explain how the genotype predisposing to such a formerly fatal condition might have persisted with such frequency.

Furthermore, this reasoning suggests an intriguing link between the aetiology of insulin dependent and non-insulin dependent diabetes. Though the two forms of the disease differ fundamentally in their underlying pathology and mechanisms,⁸ the apparent increase in the incidence of insulin dependent diabetes in white populations has a parallel in the epidemic of non-insulin dependent diabetes that has occurred in this century in certain indigenous societies in North America and the western Pacific as a result of factors which, though probably unrelated, are also believed to be closely associated with socio-cultural change.^{9,10}

From this we might conclude that, to a large extent, both forms of diabetes are adverse consequences of fairly recent changes in human ecology.

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Keeping up with orthopaedic epidemic

SIR,—Mr Christopher Bulstrode's statement (29 August, p 514) is timely indeed. At a time when every effort is being made to "melt" the treatment of the arthritic hip by the total arthroplasty method into the routine running of the district general hospital few appreciate the problems entailed.

Total hip arthroplasty spells the beginning of treatment for a patient and must not be compared with soft tissue surgery. In our training, and in an attempt to satisfy the system providing the care, no allowance is made for the need to study the long term results of this or any other procedure.

The logistics of continuous follow up of patients with total hip replacements are still not fully appreciated. Patients and surgeons must realise that revision surgery will at times have to be carried out on the basis of radiographic changes alone; failure to do this results in progressive loss of bone stock, which makes revision surgery increasingly difficult, expensive, and of poor quality. Testing of components is essential, and the British Standards Institute is well aware of measures derived from clinical experience, but surgical technique can only be tested by assessing the long term results. In

this context roentgenstereophotogrammetry is a valuable tool and merits a controlled study.

Meanwhile, revision cases have increased from 4% to 54% over the past 14 years in my experience with referrals forming the bulk of these cases. The fact that total throughput has also increased is the result of establishing methods of management and having the support of an excellent team.

Mr Bulstrode is correct that after 25 years the Charnley hip is still the gold standard. With 25 year follow up only two months away the revision rate for mechanical complications in patients given Charnley hips in the centre for hip surgery stands at 3%, and strides have been made since 1962. Interestingly, in the first six years that the method was used, when some 2500 operations had been carried out, there were no revisions for loosening of the components or fracture of the stem. This basic standard has yet to be equalled, let alone surpassed.

The success of the Charnley operation is such that demand and expectations are increasing. It is illogical to imagine that any artificial joint will last for ever, and detailed study of every aspect is essential for the benefit of future patients and surgeons. My experience over the past 18 years has shown that patients appreciate open discussion, indefinite follow up, and revision surgery, provided that they have been taken into confidence at every stage and are informed of the progress being made in this form of treatment.

Failure to grasp this opportunity will be to the detriment of the patients and the profession. Oxford region is to be congratulated on its foresight in appointing a consultant in total hip arthroplasty, revision, and research. Let us hope that the consultant selected will now be offered the necessary support and facilities and that others follow the example. It is by selecting and supporting committed surgeons that progress will be made and problems avoided.

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Should sympathomimetics be available over the counter?

SIR,—As a consultant to the United States Food and Drug Administration, I attempted to further the agency's efforts to restrict the availability of amphetamine look alike containing ephedrine, caffeine, and phenylpropanolamine. I was therefore surprised at the intemperate and incorrect stance taken by Dr Andrew Whitehouse (23 May, p 1308).

My associates and I have recently reviewed the 10 year American experience of amphetamine fakery.¹ By examining the street drug market we found that users' problems were social and moral; there was no evidence that drug dependence was an important issue. Surprisingly, sparse validation exists that the contents of these products are highly toxic. Phenylpropanolamine, an ingredient that has received criticism, has minimal stimulant properties, a fact documented in earlier reports and current experimental reports.^{2,4} Recent writers about phenylpropanolamine seldom consult the considerable pharmacological literature comparing the drug with amphetamine.⁵ The published reports inevitably show that phenylpropanolamine is as different from amphetamine as night is from day.

Dr Whitehouse cites a few references to illustrate that sympathomimetics are dangerous and even fatal, yet most of these papers discuss products containing sympathomimetics in combination with anticholinergic-antihistamine drugs. I cannot find a convincing report to prove that an overdose

of pseudoephedrine or norephedrine (phenylpropanolamine) alone has ever been fatal. I can, however, find proof that a fatal danger of overdose exists with such atropinic drugs as chlorpheniramine, isopropamide, and scopolamine. I believe that it is well documented that toxicity caused by Ornade is secondary to its atropinic ingredients⁶; authors are prone to attribute its toxicity to sympathomimetics. Dr Whitehouse cites a paper that appeared in the *BMJ* with the provocative title "Fatal overdose to phenylpropanolamine."⁷ This described a patient who attempted to commit suicide by taking Contac 400, a preparation containing phenylpropanolamine and belladonna alkaloids. The authors obviously (and probably wrongly) attributed death to phenylpropanolamine but did discuss the belladonna. They compounded their erroneous reporting by citing other reports of deaths caused by such combination products (Ru-Tuss and Ornade), implying that the toxicity was solely attributable to phenylpropanolamine.

Dr Whitehouse makes his case for the national problem in the United States by citing two papers by Lake *et al* and one by Dougherty.⁸⁻¹⁰ The two papers by Lake *et al* reviewed the possibility that look alikes might contribute to psychiatric illness and contained responsible speculations. These papers are all review articles generated in response to a single case.¹¹ The young man in question, who had a family history of mania, presented in a manic state after consuming a black capsule with unknown ingredients.

Dougherty's paper is the only publication, to my knowledge, that describes a pattern of habitual use of look alikes with unknown ingredients in three drug abusing patients. Dougherty has suggested (personal communication) that the likely reinforcing ingredient was caffeine as these three and other patients did not enjoy using the products containing only phenylpropanolamine now sold in the United States. In a recent description of patients who may have died because of massive overdoses of look alikes the authors attributed death to caffeine, although ephedrine was also often present; phenylpropanolamine¹² was not.

Contrary to Dr Whitehouse's statement, consumption of over the counter sympathomimetics is not even a minor abuse problem in the United States. The problem in the United States, such as it was, was resolved without making these products available only by prescription. I suggest that such zealous overregulation of a group of products that meet the safety characteristics for over the counter drugs should be avoided in the United Kingdom as well.

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AUTHOR'S REPLY—I argued that over the counter sympathomimetics are abused and induce psychoses. Dr Morgan does not address himself to this but takes an opportunity to defend the safety record of phenylpropanolamine, which was just one of the drugs referred to. Furthermore, Dr Morgan does not seem to understand the distinction between drug abuse and drug dependence. He tells us that with respect to look alikes there was no evidence of drug dependence. At no point in the article do I claim that over the counter sympathomimetics are drugs of dependence, but I discuss their abuse. The fact that ephedrine is abused should not be surprising as it has been shown in man to be capable of producing the same subjective and physiological effects as amphetamine under double blind conditions.¹ I am not aware of a similar study of phenylpropanolamine, which is a weaker stimulant of the central nervous system. Such a study would need to assess the subjective effects of phenylpropanolamine alone and in combination with other sympathomimetics and caffeine, as a synergistic reaction between phenylpropanolamine and caffeine has been postulated by Lake *et al*, who pointed out that the likelihood of ingesting phenylpropanolamine with caffeine is high.²

Dr Morgan is critical of a report of an overdose of Contac 400, as a result of which a 15 year old girl died, showing the features of the adult respiratory distress syndrome.³ He rightly points out that the role of belladonna alkaloids should have been examined. I have been unable to find any evidence that anticholinergic drugs alone are associated with the adult respiratory distress syndrome, but a sympathomimetic has been reported to cause this condition.^{4,6}

If the problem of abuse of over the counter sympathomimetics in the United States was as minor as Dr Morgan suggests I fail to see why it was necessary to hold congressional hearings about it. Dr Morgan's assessment is at variance with that of Lake *et al*, who state, "Abuse of the stimulant look-alikes represents a serious problem in the United States."²

The abuse of over the counter sympathomimetics and the resultant psychoses are well documented,⁷⁻⁹ and such reports continue to appear.¹⁰⁻¹²

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