of cutaneous cancer attributable to PUVA therapy was reported.

Finally, the epidemiological study carried out in the bergamot-oil-producing area of Calabria on subjects in contact with the oil has shown no oncogenic effects of the natural substance (Mezzadra, unpublished observations). Studies currently under way (Magnus, personal communication) have shown that one of the incriminated suntan solar products is not carcinogenic after more than 26 weeks' irradiation of the hairless mouse with a solar simulator under conditions far more drastic than those encountered by the normal holidaymaker.

In view of the current state of our knowledge, we feel that these data justify rejection of the hypothesis of any risk of cancer due to PUVA therapy, although we do recommend that vigilance is maintained. As for the use of 5-methoxypsoralen in suntan preparations, we feel that, considering the current data and the very low concentration of 5-methoxypsoralen in this type of preparation, the episodic character of exposure to ultraviolet rays, and the fact that these products all contain an efficacious ultraviolet filter, the risk may be considered very low compared with the potential benefits.

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¹ Pool BL, *et al.* *Arztl Kosmetol* 1979;**9**:349.

² Grupper C, *et al.* *Symposium 303*. Chicago: American Academy of Dermatology, 1979.

³ Stern RS, *et al.* *N Eng J Med* 1979;**300**:809-31.

ECT: balancing risks and benefits

SIR,—Dr P E Bebbington and his Maudsley colleagues (15 March, p 792) may disagree with Professor D A Pond's eminently sensible letter about unmodified ECT (9 February, p 403) but they offer no arguments to rebut the reasons he gives for its possible use. Psychiatrists who work in less favoured parts of Britain will be more likely to know of situations in which it would constitute the best available practice. Professor Pond says that it might be urgently needed to "control the patient's behaviour." Would his critics have felt less hostile if he had said "to relieve a patient's intolerable depression"?

Those privileged to work in "centres of excellence" should be careful not to nudge us further down the already alarming slide into "defensive medicine."

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Tinted visors and the hazard to motorcyclists

SIR,—The possible hazards of driving while wearing tinted lenses were the subject of correspondence in these columns in 1976 (starting on 15 May and ending 23 October). Since then the revision of British Standard 4110 has been completed and the new version, *Eye-protectors for Vehicle Users* issued. Only clear materials will satisfy the new version of this standard.

The Road Traffic Act requires that when a protective helmet is sold to a motorcyclist it shall comply with the relevant British Standard. By the end of this summer recent

amendments to the helmet standards will require that if a helmet is sold complete with a visor then that visor must also comply with the relevant standard. However, visors sold separately, or as replacements to original clear visors, do not come under the Road Traffic Act. They could possibly come within the compass of the Consumer Safety Act were a Regulation to be made under this Act.

Unless action is taken to make all new visors comply with BS 4110/1979, motorcyclists will continue to buy tinted visors whose density and colour are subject only to the whim of fashion. These are being used at night when a rider's life may well depend on his ability to see the potholes in our deteriorating roads and obstructions lying in the carriageway.

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Sorrows of dying

SIR,—Your leading article (1 March, p 592) on questions of dying repeats current attitudes towards the subject which leave one wondering whether much of the agonising is not misplaced. It is taken as axiomatic that the process of dying is sacrosanct. Relief of the suffering of dying is allowed but never its complete elimination, even at the express wish of the dying person. A clean break from life to death is forbidden. Drift and the operation of force majeure is at present the only acceptable method of dying.

Must this attitude remain for ever unchallenged by a more enlightened view, which sees a voluntarily accepted rapid transition as eminently desirable both for the sufferer and for those who minister to his needs? Safeguards there must be but surely some consideration must sooner or later be given to the continuing demand of at least 5% of dying persons for legalised euthanasia.

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Topical corticosteroids on the face

SIR,—Dr K D Crow (23 February, p 572) does not accept that 2½% hydrocortisone is any more likely to cause perioral dermatitis than the 1% concentration suggested in your leading article (19 January, p 136). An assumption of equivalent safety despite the higher concentration is entirely justified on pharmaceutical grounds since the additional 1½% hydrocortisone, being totally in suspension, would only provide a marginal increase in pharmacological activity. Clinical experience has confirmed that, in ointments, increasing the concentration of hydrocortisone above 1.0% without altering the base provides no increase in therapeutic activity.¹

In order to maximise the partition coefficient for significant bioavailability, the hydrocortisone should be present in molecular solution. This has been confirmed by the fact that a cream formulation containing only 0.1% hydrocortisone in solution (Dioderm) has been shown to be more active than 1.0% hydrocortisone cream BPC, where most of the hydrocortisone is in suspension.^{2 3}

The increased potency of synthetic corticosteroids derives mainly from the protection of the molecule against oxidative degradation of the 17-tertiary alcohol by epidermal enzymes.⁴ This

OH group may be converted into an ester (for example, betamethasone 17-valerate, hydrocortisone 17-butyrate) or an ether (for example, triamcinolone 16,17-acetonide) or removed altogether (for example, difluocortolone 21-valerate), with the result that pharmacological activity is enhanced dramatically, partly because of increased lipoidal solubility but mainly owing to resistance to local metabolism. In consequence of the latter, synthetic topical corticosteroids have to be transferred to the liver for metabolism. Since this is a slow process owing to low water solubility, they can remain in the epidermis for up to two weeks, as evidenced by the vasoconstriction which appears on reocclusion of the treated site.⁵ As the frequency of application to the skin normally exceeds the rate of transportation, a local reservoir builds up, producing the well-known side effects.

It is not justifiable only to indict the presence of fluorine in the molecule, and any criticism of fluorinated steroids that does not include all other corticosteroids which lack a free 17-OH group insidiously disguises the root of the problem. It has now been confirmed that hydrocortisone butyrate, which differs from hydrocortisone only by the presence of a 17-ester, behaves just like the fluorinated corticosteroids, especially as it can cause perioral dermatitis⁶; and the original claims of safety for use on the face⁷ have now been withdrawn.⁸ This is in complete contrast to the accumulating evidence of the mildness of naturally occurring hydrocortisone⁹—which does not, of course, form a reservoir in the epidermis.²

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¹ Kranz G, Schaefer H, Zesch A. *Acta Derm Venereol (Stockh)* 1977;**57**:269-73.

² Barry BW, Woodford R. *Br J Dermatol* 1976;**95**:423-5.

³ Whitefield M, McKenzie AW. *Br J Dermatol* 1975;**92**:585-8.

⁴ Greaves MS. *J Invest Dermatol* 1971;**57**:100-7.

⁵ Vickers CFH. *Arch Dermatol* 1963;**88**:72-5.

⁶ Cotterill JA. *Br J Dermatol* 1979;**101**:259-62.

⁷ Sneddon IB. *Br J Dermatol* 1973;**89**:505-8.

⁸ Sneddon IB. *Br J Dermatol* 1980;**102**:239-40.

⁹ Sneddon IB. *Br Med J* 1969;**i**:671-3.

Exercise training in chronic bronchitis

SIR,—I read with interest the article by Drs D J M Sinclair and C G Ingram (23 February, p 519). For the last three years it has been our routine practice to start patients with severe chronic bronchitis and minimal exercise tolerance on walking exercises using a Zimmer-type pick-up aid (pulpit). Immediately on recovery from the acute exacerbation of the condition exercise is continued under regular supervision in the day hospital or outpatient physiotherapy clinic for approximately three months.

We use as a baseline the maximum distance that the patient can walk without undue respiratory distress without using an aid. In our elderly severely affected "respiratory cripples" this distance is commonly only 5 or 6 m with encouragement. Using an aid with the height adjusted to the level of the styloid process of the ulnar, most patients can double their baseline distance immediately, but encouragement is essential as these patients are convinced that they are unable to walk more than a few steps. A personal diary card records approximate improvement in walking distances. By three months many patients record improved walking distances, confirmed by the trained therapist, of five to ten times the original baseline distance. Respiratory function tests are only carried out for general inpatient management or for

outpatient follow-up in the presence of new symptoms or recurrence of symptoms.

We do not have any codified data on the precise percentage of patients who have improved. However, on purely clinical experience we would confirm the importance of supervised encouragement in an increasing activity programme. The use of a walking aid allows the severe respiratory cripple to use his accessory muscles of respiration. The height of the aid is critical for optimum assistance. We would endorse the authors' views that instructed members of the family could readily encourage and supervise the maintenance of walking activity. Unfortunately, often both the advanced respiratory cripple and his family have been brainwashed by negative medical advice into believing that improvement in exercise capacity is impossible. Drs Sinclair and Ingram are to be congratulated on an excellent and positive paper.

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SIR,—May I congratulate Drs D J M Sinclair and C G Ingram on their excellent intention in investigating this very common and severely debilitating condition (23 February, p 519)? It is regrettable, however, that their inadequate scientific method makes the sceptical reader feel that they have in fact proved nothing. Firstly, there was considerable bias in their allocation of patients to treatment and control groups. There were nearly three times more smokers in the control than the treatment group and, perhaps more important, the control group lived in the country while the treatment group all lived in the city. We have no assurance that those patients who are more resistant to exercise do not live in the countryside.

Secondly, exercises do not constitute the only component of intervention. The weekly visits by a nurse and more frequent consultation with a physician bestowed on the treatment group but not the control group are quite likely to have an effect of their own, additive to the effect of exercise. Thirdly, there was an unacceptably high dropout rate from both groups: five out of 17 in the exercise group and six out of 16 in the control group. Given the already very small numbers involved, this seriously limits extrapolation from the study.

The first two of these problem areas might have been easily overcome with adequate study design. Randomisation of patients to exercise or control group, using one or other "blocking" technique to ensure an even distribution between the groups of important variables such as smoking, would have ensured greater comparability. Failure to randomise patients into the groups leaves us with no assurance that the observed differences were not artefactual. Weekly visits by the nurse could have been made to all patients, perhaps supervising diet in both groups as well as encouraging the exercise group to perform their exercises. The third limitation could have been overcome only by investigating more patients before rushing to publication.

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New Spanish laws on organ donation and postmortem examination

SIR,—I am informed by my Spanish colleague Dr A Anderiz that the Spanish Parliament has passed two new laws with reference to human organs and postmortem examinations. The first lays down that any person who dies in Spain on holiday and fulfils the necessary medical and legal requirements to be a donor of organs will have these organs removed as a matter of course unless the person was directly opposed to a transplantation while living or there is opposition from near relatives. According to the second law, postmortem examinations will be carried out as a matter of course on patients dying in Spanish hospitals unless the person had made known his opposition to them during life or there is direct opposition from his near relatives.

These new laws obviously could have implications for British tourists in Spain and could cause distress to relatives remaining in the United Kingdom.

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Blood glucose monitors

SIR,—We read with interest the report by Dr David J Webb and others (9 February, p 362) on home blood glucose monitoring. We have recently completed a study to compare blood glucose results, determined by two Hypocount monitors, with simultaneously determined plasma glucose results from our laboratory's Beckman Glucose Analyser.

Eighty-four patients from our diabetic outpatient clinic were studied, forty-seven of them by both monitors. Results obtained from the two monitors for the same patient correlated very well ($n=47$, $r=0.98$). An acceptable correlation was obtained between the results from the monitors and those obtained from the laboratory method ($n=131$, $r=0.95$). The monitor results, however, were slightly but significantly ($p<0.02$) lower than those obtained by the laboratory method (fig). This agrees with the observation of Dr Webb and his colleagues, who illustrated perhaps a more pronounced difference. These authors attributed that difference to their use of a laboratory method which measured reducing substances rather than glucose. We also observed a difference but used

a laboratory method which is specific for plasma glucose. We believe that the explanation lies in the use of whole blood with the Hypocount monitor as opposed to plasma, which is used in most of the laboratory methods for the measurement of glucose concentration. It is recognised that plasma glucose is higher than whole blood glucose; in patients attending a diabetic clinic the mean difference was reported to be 14.2%.¹ We suggest that the Hypocount manufacturers should make patients, clinicians, and clinical biochemists aware of the difference between whole blood and plasma glucose levels by an appropriate note in their manual.

We also noted that above a plasma glucose level of about 14 mmol/l (250 mg/100 ml) the accuracy of the Hypocount monitors began to deteriorate, and when plasma glucose levels reached 20 mmol/l (360 mg/100 ml) the monitor results were substantially lower. The scatter diagram in the report by Dr Webb and his colleagues also illustrates this, although in their case only a few results were monitored above 14 mmol/l. We believe that this may be due to the fact that the sensitivity of the Dextrostix test strip is exceeded at high glucose levels. The manufacturers state that the strip is designed to measure blood glucose from 0 to 14 mmol/l (0-250 mg/100 ml). The range on the Hypocount monitor, 0-24 mmol/l (0-430 mg/100 ml), is thus not accurate at the higher end. Users should be aware that significant under-reading of high glucose levels is to be expected with the Hypocount monitor. We believe, however, that the results are still useful clinically.

In conclusion, we share the view of Webb and his associates of the overall acceptability of the Hypocount monitor and believe that if the manufacturers noted in their instruction manual the difference between plasma and whole blood glucose measurements, and also the accuracy limits at high glucose levels, the usefulness of the Hypocount monitor would be further defined.

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¹ Morrison B, Fleck A. *Clin Chim Acta* 1973;45:293-7.

Setting up a drip

SIR,—While we found the article by Drs Barbara Bannister and C W H Havard (16 February, p 463) on setting up a drip useful, there are some practical points on the insertion and maintenance of small cannulas on which we would like to comment.

Firstly, as this is a painful procedure, it is kind to inject 0.25 ml of lignocaine intradermally 1-2 cm from the projected site of venepuncture. For distressed children over 1 year of age, sedation and analgesia with oral trimeprazine 2-3 mg/kg two hours before the procedure followed by intramuscular morphine sulphate 0.1 mg/kg one hour later may be invaluable.

We find that gentle tapping with the finger tips over the proposed venepuncture site will help the veins to stand out, while the use of a sterile metal stylet or a 19-gauge needle to puncture the skin will lessen the risk of "barbing" of the cannula as it is advanced. Skin puncture also provides a more sensitive feel for the actual moment of insertion of the cannula.

We also believe that the description of the venepuncture technique is misleading in that it states that blood will enter the flashback chamber after the "plastic shoulder of the cannula" has entered the vein. In fact, as soon

Correlation between results from Hypocount monitors and those from the Beckman Glucose Analyser. The straight line represents the theoretical regression line where $r=1$.

Conversion: SI to traditional units:—Glucose: 1 mmol/l $\approx$ 18 mg/100 ml.