formative. For journeys of under eight hours tourist-class tickets are booked; for longer periods first-class travel is provided—not for the free drinks but for the greater leg room and seating comfort so that the company's representatives can, on arrival, meet their tasks with greater efficiency.—I am, etc.,

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Euphoriant Elixirs

SIR,—A recent unpublished survey of more than 90 teaching and district general hospitals throughout the United Kingdom demonstrated considerable variation in the composition of "euphoriant (or Brompton) cocktails" used for the relief of pain and suffering in terminal cancer. Differences existed both in the active constitutents and in the vehicle in which they were dissolved. Some included morphine, some diamorphine, the majority cocaine, while in others chlorpromazine or prochloraperazine was added. In a number of instances both morphine and diamorphine were included, though the pharmacological rationale for this is not easy to see. The variation in the vehicle was even greater—for example, the alcohol content ranged from 0 to 40% and was frequently replaced by gin, whisky, or brandy, while the syrup content varied from 0 to 50%, with honey often substituted for sucrose. The chloroform content was equally diverse.

In the light of this, the introduction of a standard diamorphine and cocaine elixir in the new edition of the *British Pharmaceutical Codex*,[1] which becomes operative on 1 December 1973, must be considered a step in the right direction. Yet information about its keeping properties is minimal—the *B.P.C.* simply states that it ought to be freshly prepared and, if chlorpromazine is added, it should be protected from the light.

At St. Christopher's Hospice we have studied the stability of diamorphine in an almost identical elixir.

	St. Christopher's	*B.P.C.*
Diamorphine hydrochloride	10 mg	10 mg
Cocaine hydrochloride	5 mg	10 mg
Ethyl alcohol	1·25 ml (95%)	1·25 ml (90%)
Syrup (*B.P.*)	2·5 ml	2·5 ml
Chloroform water to	10 ml	10 ml

We examined not only the effect of time but also the effect of light and temperature and of varying the alcohol and sugar content. Assay was by visual assessment of thin-layer chromatographic plates by two independent observers.[2] As preliminary assays indicated that the cocaine had no effect on the rate of degradation of diamorphine it was subsequently omitted from the mixture. After eight weeks at 22°C, 10% of the diamorphine had hydrolysed to O^6-monacetylmorphine (that is, 10% = 8 weeks). O^3-Monoacetylmorphine and morphine were not detected. Storage at higher temperatures, 30° and 37°C, accelerated hydrolysis whereas at 4°C the rate was halved. There was no difference between replicates stored in the dark and those stored in diffuse light. The substitution of honey or an aldose sugar for sucrose increased the rate of hydrolysis. Doubling the concentration of alcohol resulted in a prolonged $t_{10\%}$, whereas halving it had the opposite effect. Further, and perhaps most important, the inclusion of chlorpromazine or prochlorperazine shortened the $t_{10\%}$ to two weeks. These results are summarized in the table. Finally, in an attempt to determine the effect of gastric acid and body temperature, diamorphine was added to simulated gastric fluid at 37°C.[3] A greatly increased rate of hydrolysis was noted, but even so after four hours more than 75% of the diamorphine remained.

Approximate $t_{10\%}$, of Various Diamorphine and Cocaine Elixirs

Elixir	Temperature (°C)	10% (Weeks)
Standard	22	8
"	4	>24
"	30	4
"	37	2
Double-strength alcohol (24%)	22	10
Half-strength alcohol (6%)	22	6
No syrup	22	10
Honey	22	6
Glucose	22	6
Prochhlorperazine (1·25 mg/10 ml)	22	2
Chlorpromazine (6·25 mg/10 ml)*	22	2

*Half the recommended strength.

It is, of course important to remember that a 10% loss of diamorphine does not mean a 10% loss of analgesic potency. If O^6-monoacetylmorphine is regarded as equipotent with morphine the loss of potency at the $t_{10\%}$ will be only 3%.[4] For an elixir usually prescribed in quantities sufficient only for one or two weeks a shelf-life of this length is more than adequate. Even so, our results suggest it may be unwise to follow local tradition and, for example, exclude alcohol completely. Similarly, an increase in the syrup content to 50% might adversely affect the keeping properties of the elixir, which would be more marked were honey substituted for sucrose. The considerable hydrolysis-accelerating effect of phenothiazines must also be emphasized.

The present elixir represents the end point of an evolutionary process that began in the last century when morphine began to replace opium in medical practice. However, some patients find an elixir of this nature unpalatable owing either to its "sickly" taste or to its alcoholic "bite." Thus there would seem to be a good case for reviewing the need for such an elaborate vehicle for orally administered diamorphine. Therefore, while welcoming the attempt to standardize opiate-containing elixirs, we would suggest that there is need for further studies to determine the best formulation in terms of both shelf-life and patient acceptability. In addition, and perhaps even more fundamental, there is a need to evaluate objectively the contribution of the cocaine to the pharmacological effect of the mixture.—We are, etc.,

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1 *British Pharmaceutical Codex*. London, Pharmaceutical Press, 1973.
2 Twycross, R. G., and Gilhooley, R. A. In press.
3 *United States Pharmacopeia, 18th Revision*. Easton, Pa., Mack Publishing Company, 1970.
4 Twycross, R. G., *British Journal of Pharmacology*, 1972, **46**, 554P.

Are PUFA Harmful?

SIR,—Your leading article under this title (6 October, p. 1) concluded with the words: "It is disturbing that we consume commercially processed foods without considering what they contain, how they are made, or what harm they may do."

Pertinent to this exclamation and to the subject which provoked it is the current vogue of so-called "coffee whiteners," which, as it happens, were featured in the issue of *Which?* for November 1973. These are convenient prepacked substitutes for milk or cream, generally containing glucose syrup solids and vegetable fat, which forms about 85% of the total, usually along with sodium caseinate. When these products are offered for sale in Britain the composition must, by law, be stated on the container. It happens that at least two of the principal British airlines dispense their whiteners in flight packets labelled "creamer," with no clue to the contents at all. To me, this verges on the positively misleading, though our British laws hardly impinge on this exercise because (1) the product is not actually sold and (2) it is doubtful whether the Food and Drug Act applies to aircraft in flight, frequently on overseas flights.

Nevertheless, this is surely a far from commendable practice and, if only for reasons of public health and welfare, it is regrettable that these corporations and organizations are not enlightened enough to to see that what they do is as much in conformity with the meaning of the law as it is with statutory enforcement.—I am, etc.,

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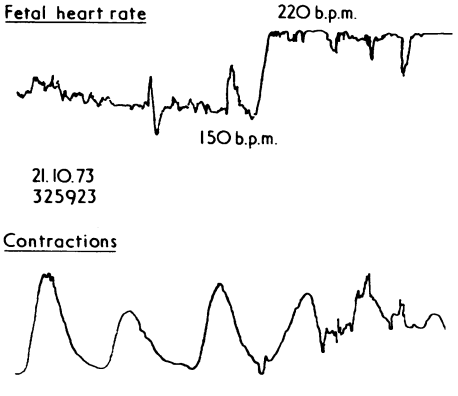
False Interpretation of Fetal Heart Monitoring

SIR,—Mr. I. L. Craft and others point out (29 September, p. 694) the possibility of a fetal scalp electrode erroneously recording the maternal heart rate. We would like to report an even more bizarre instance in which the fetal scalp electrode recorded the fetal and maternal heart rates additively.

The electrode was spiral and was made by Messrs. Rocket. The fetal heart rate was recorded continuously using a Sonicaid FM 2 machine. The recorded fetal heart rate apparently rose after 11 hours of recording from 150 beats/min to 220 beats/min.



However, auscultation of the fetal heart rate simultaneously, using a Sonicaid D 205 fetal pulse detector, showed that the fetal heart rate was in fact 140 beats/min. The maternal heart rate was 80 beats/min. Adjustment of the sensitivity control on the FM 2 machine had no effect on the artefactual recording.

We would advocate regular auscultation of the fetal heart when a fetal scalp electrode